

THE RISK REVOLUTION

The Strategy

Owning the Right Risks

by Kevin Buehler, Andrew Freeman, and
Ron Hulme

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In the 1970s a revolution occurred in the field of corporate strategy. A boom in mergers and acquisitions launched new professions in M&A banking, M&A law, and strategy consulting. Given an active and efficient market for corporate control, companies shifted their focus from owning the most attractive businesses to owning the businesses in which they had a competitive advantage. If an owner was not advantaged, even its fastest-growing or most profitable businesses could be sold at a premium. Conversely, when the company was competitively advantaged, keeping even its least exciting businesses made sense.

At the same time, as we describe in “The New Arsenal of Risk Management,” a revolution occurred in how financial services companies understood, bought, and sold risk. In 1973 Fischer Black and Myron Scholes published their famous model for valuing options, which made it possible to put a value on risk transfer. With computing power multiplying, huge new markets arose for option-like contracts that transferred all kinds of

financial risk, including interest-rate and credit risk. Similar markets for various commodities emerged shortly afterward.

Now these two revolutions are coming together to trigger a third in the corporate approach to risk management. Many fundamental operational, financial, marketing, and strategic choices involve the kind of rigorous quantification of risk that has taken hold in the financial markets. Should we pursue this M&A deal? How advantageous would it be if we became less vertically integrated? Should we manufacture or outsource? How might demand for a product change according to a competitor’s behavior—or slow if China’s economy deteriorates?

The answers to these and similar questions will increasingly depend on whether or not a company is the natural owner of the risks involved. Tools and markets for risk transfer and insurance now allow companies to identify, value, and trade many of the risks they previously shouldered themselves. Those risks that can’t be traded can often be contracted

out to third parties or consolidated in business units and sold off. Meanwhile, the companies can focus on managing or even acquiring risks for which they are competitively advantaged.

Engineering and managing a company's evolving risk portfolio has become an organizing principle for strategic choice, and companies that succeed in doing this generate far higher returns on their equity than those that stick with their traditional portfolios. That's partly because when they focus on their natural risks, they can typically support higher debt levels: Interest payments—unlike dividends—can offset taxes. Companies can also save on operating costs; those that outsource IT, for example, typically pay less in fees than those that own and manage the infrastructure and service themselves. Indeed, third-party providers can often draw on scale and knowledge economies to lower their cost base, giving them a natural advantage with respect to the risks involved.

In the following pages we outline a five-step program to help corporate managers adjust to the revolution in corporate risk management. It makes sense to begin the program at the enterprise level, although the steps can also be applied within business units. Each step gives a useful perspective on the evolution of thinking about corporate risk. (See the exhibit "Five Steps to Better Risk Management.") Before describing the program, however, we'll look at one company that has already successfully made the adjustment.

The Case of TXU

TXU Corporation (formerly Texas Utilities, now Energy Future Holdings) was the incumbent electric utility in northern Texas when the state deregulated wholesale and retail electricity markets in 2002. The company was fully integrated—it operated power-generation plants and managed a retail electricity-distribution network. Deregulation triggered market competition, capacity over-investment, and commodity price exposures, putting TXU under severe financial pressure; by late 2003 its market value had dropped by more than half and its debt load had risen above 70% of its market capitalization.

When John Wilder joined TXU as CEO, in February 2004, he determined that even a

small decline in wholesale power prices would put the company at risk of bankruptcy. He responded by initiating a restructuring program around two core principles: TXU would embrace risks for which it was competitively advantaged while actively mitigating all others; and it would dynamically manage risk capacity to ensure continued solvency and liquidity.

TXU's primary competitor, Reliant Energy, exited the Texas power-generation business in a multistep process culminating in the sale of Texas Genco to a group of private equity buyers. Other generators moved to hedge their risks with highly discounted, fixed-price power-purchase agreements. But Wilder, against example and advice, determined that TXU was the natural owner of generation and needed to remain in the business, despite the large exposure to wholesale energy prices—especially gas prices—involved. He believed that any other party would charge more to take over the risk than TXU stood to lose by holding on to it.

Wilder recognized that TXU's vertically integrated retail business provided a natural hedge: Should the wholesale market turn down, the company could keep residential retail prices high to compensate as long as it preserved market share through strong marketing and customer service. More than half of TXU's power sales were residential, and the company determined that retail pricing could mitigate perhaps one quarter of its exposure to wholesale energy prices. Wilder also understood that wholesale prices were heavily influenced by TXU's own investment and pricing decisions, which provided further cover. His first move, therefore, was to reject the complex hedging and structured finance programs that several leading investment banks were eagerly proposing.

However, cash flow in the generation business was still too susceptible to fluctuations in energy prices for TXU to maintain an adequate cushion against financial distress. Wilder undertook a program of divestitures, capital structure changes, outsourcing, and operational improvements. In his first 60 days he divested four noncore businesses, including the company's Australian utility, a telecom start-up, and a natural-gas distribution company that had never been integrated with TXU's power operations because of regulatory

Kevin Buehler (kevin_buehler@mckinsey.com) is a director at McKinsey and is based in New York. **Andrew Freeman** (andrew_freeman@mckinsey.com) is a senior expert on risk at McKinsey and is based in London. **Ron Hulme** (ron_hulme@mckinsey.com) is a director at McKinsey and is based in Houston.

constraints. He used the \$7 billion in proceeds to repurchase debt and convertible securities, creating crucial risk capacity by reducing the company's fixed obligations. Next he outsourced TXU's call centers and billing operations at guaranteed savings (proving that TXU was not the natural owner of those risks). And he launched a major initiative to make operations leaner in the company's plants. Utilizing sophisticated risk-management tools such as enterprise Monte Carlo simulations and detailed credit risk models, TXU could quantify the risk capacity created by these actions and balance it against exposure.

Wilder used some of the new capacity to restore TXU's exposure to wholesale prices,

unwinding expensive financial hedges employed by the company's prior management team. His market foresight paid off: Wholesale power prices had more than doubled by the end of 2005 and continued to rise in 2006 and 2007, yielding profits not curtailed by unnecessary hedging. Had prices fallen, the retail business would have protected TXU against distress.

As power prices rose and performance improvements kicked in, TXU's cash flow increased dramatically; soon the company had more equity capital than it needed to support the risks it bore. In order to reduce its equity base, TXU repurchased almost 40% of its shares at an average price of \$25. (By early

Five Steps to Better Risk Management

The five steps outlined in this article form a dynamic cycle. Companies that understand their risks can more easily identify those for which they have a natural advantage. With that clarity, a company's capacity and appetite for risk are easier to assess. Those assessments inform decision making at all levels. Companies with a strong culture of risk-adjusted decision making are better positioned to identify and understand changes in their risk profiles, triggering the cycle again.



2007 the price had risen to \$65.) When financial models in late 2004 indicated that the company still had excess risk capacity, TXU borrowed \$4 billion to buy back even more shares.

Over the next two years TXU actively managed commodity hedging, corporate debt, project finance, outsourcing, and share buybacks to further optimize its risk capacity. In 2006 it generated EBITDA of \$5.34 billion (up by more than \$2.5 billion from 2003, despite a 40% reduction in the company's asset base) and EPS of \$5.55 (up more than fourfold from 2003). Its share price increases created more than \$32 billion in value and placed it fourth among S&P 500 companies in terms of stock performance. TXU estimated that its risk-return restructuring program contributed some 75% of that value.

In 2007 TXU was taken private by a consortium of private equity players in the largest-ever leveraged buyout—\$45 billion. The economics of the LBO depended in large part on the buyers' ability to continue to manage TXU's exposure to commodity price risk. The private equity owners hedged a substantial portion of the company's commodity exposure over the next few years, using financial leverage to create an elegant structure that could be expected to ensure the necessary debt coverage through largely annuitized operating cash flows (achieved by hedging the commodity risk). In effect, the owners have created a low-cost call option on wholesale power prices. The owners took advantage of the extremely LBO-friendly market in which the transaction was signed—one in which the combination of hedging and debt was thought to create a lower cost of capital than that created by public equity. Time will tell how TXU's owners and creditors adapt to the new risk environment.

By following the same process and making risk a strategic organizing principle, other companies may be able to turn in the kind of performance that TXU achieved. First the company identified the key risks it faced and determined which ones it owned naturally. Then it worked out how much capital it needed to bear its natural risks. This led to strategic, operational, and financial decisions that gave the company only as much risk capacity as it needed. Finally, risk management was institutionalized throughout the organization.

We'll look now in more detail at the five steps in such a process.

1. Identify and Understand Your Major Risks

Risk management begins with taking stock: You must be able to specify the risks you run and have some sense of how they might play out, whether for or against you. Identifying risks sounds easy, but in fact getting agreement around the ones you face can be quite difficult. Functional and business unit heads may understate or dismiss some of their risks in order to hang on to their share of the budget. The legal and financial functions may have different views of risk and no easily shared language or tools for discussing them. The legal department may not want to disclose an uncertain liability in the company's annual report, whereas the chief risk officer may want to address it through contingency planning to ensure that the company's overall risk capacity is adequate.

The focus must be on the few risks that really matter. People's tendency to compromise can lead to an excessively long list of risks: One diversified metals company we advised identified some 60 across its various business units. In our experience, four to six key risks typically account for most of a company's cash-flow volatility, with the most common being demand risk, commodity risk, country risk, operational risk, and foreign-exchange risk. Of course, the precise list will vary by company, industry, and geography. We found that the top six risks for the diversified metals company contributed 92% of the overall cash-flow volatility.

In theory, we all know, risks can play out in many ways and each outcome has a probability. But even when people recognize multiple potential outcomes, they tend to focus on—and then manage to—the likeliest one or the one they fear most. In many cases failure to consider the full range of likely outcomes creates a dangerously skewed sense of the company's vulnerability to a particular risk. When deciding whether to invest in big projects, companies often fail to make the connection between cost overruns and arbitrary return hurdles—a good example of single-point forecasting that ignores or misprices risks.

In some cases probability distributions can be ascertained from traded markets—for

instance, implied volatilities can be derived from the price fluctuations of options traded on commodity futures markets. In other cases they must be extrapolated from a statistical trend analysis of historical data. But risk probabilities often require more-subjective assessments. Fortunately, an array of decision tools can help, including scenario planning, agent-based modeling, and Delphi method surveys. And although extreme outcomes are rare, events at the least likely points of your probability distribution may have a major impact, as Nassim Taleb writes in *The Black Swan: The Impact of the Highly Improbable*. Thoroughly analyzing your risk exposure means discussing such possibilities.

It's a good idea to identify risks that can be reassigned within the company rather than transferred to external markets. One obvious example is foreign-exchange netting across a multinational. You should also consider how risk exposure may change as the company's industry evolves. The arrival of Chinese producers in the aluminum industry, for example, meant that rising labor costs in developed economies could no longer be passed on to customers.

2. Decide Which Risks Are Natural

In assessing natural ownership, we have found it helpful to address three questions: 1) Does the company's business portfolio contain natural offsets, such as commodity offsets for a vertically integrated oil producer and refiner? 2) Does the company have superior capabilities for managing the risk—such as information advantages in traded commodities or project management skills for large investments—or is it in fact disadvantaged, as an airline would be compared with a petroleum refiner regarding jet fuel prices? 3) Are the accessible risk-transfer markets reasonably efficient? Some markets, like that for interest-rate derivatives, are so efficient that they offset the benefits of natural ownership for even sophisticated commercial banks.

Natural-ownership assessment yields a clear risk strategy for the company. Risks for which the company has a natural advantage create superior returns and (subject to the constraints of overall risk capacity addressed below) should not be hedged or transferred to others. In fact, the company should seek to

load up on these risks whenever possible, because other entities are likely to heavily discount them. In contrast, risks for which it has no advantage should be mitigated whenever risk-transfer markets are reasonably efficient. When such markets are unavailable, the company may be able to develop risk-transfer opportunities, such as long-term contracts and joint ventures with partners that have offsetting risk positions.

In a well-known case illustrating how natural ownership can help to determine strategy, Southwest Airlines persevered through the industrywide downturn following September 11, 2001, maintaining its now 34 years of profitable performance. In the 1990s Southwest initiated a sophisticated hedging strategy to reduce its fuel costs by as much as 50%. The strategy has generated gains in excess of \$4 billion, including \$1 billion in 2005 alone—105% of Southwest's operating income for that year. Less often discussed is the reasoning behind Southwest's hedging decision. For its executives, hedging fuel-cost risk was only part of a larger strategy centered on the stability of costs, service levels, and fares. They knew that rising fuel prices were the biggest threat to their business model, and they chose to remain a low-cost carrier no matter what happened. If fuel prices rose, their hedge meant they would win in the market because their labor and productivity advantages would be strengthened by an edge in fuel prices as well. If prices stayed flat or fell, they would still be the low-cost leader. In other words, Southwest profited by being the first to recognize that oil-price risk was not natural for an airline to bear.

3. Determine Your Capacity and Appetite for Risk

To assess your company's risk capacity, first quantify your operating-cash-flow risk. Start by running a Monte Carlo simulation, drawing on the risk probability distributions you determined in step one. Widely used in the financial sector, this technique offers an extremely efficient way to run numerous what-ifs across multiple variables. Once the simulation has been run, the probability of cash shortages or surpluses over each of the coming years can be quantified. The exhibit "Profiling Cash Flow at Risk" illustrates how this concept can be practically applied.

Many companies will want to manage their capacity for other kinds of enterprise risk as well. For example, a company in a cyclical industry might want to assess and manage its overall equity value at risk, seeking to keep its expected stock price volatility below an absolute level or the expected level of a peer group. Alternatively, a company might place a high premium on meeting EPS guidance and want to assess and manage earnings at risk. No matter what measures companies decide to prioritize, a probability-based view of risk capacity is likely to be helpful.

Without strong risk-analysis processes, most companies gravitate toward one of two extremes: Many have an unduly large appetite for risk and make too little provision for negative scenarios, so if problems occur and credit sources dry up, they must slash important cash outflows and may even have trouble meeting debt obligations. For these companies, the cost of a \$1 shortfall in cash flow may be \$2 to \$4 depending on the opportunity

cost of forgone investments or the restructuring costs of financial distress.

In contrast, but far more common, other companies have too limited an appetite for risk and hold excess capacity, often driven by the desire to retain a target credit rating. These companies typically maintain capital structures with excess cash and little or no debt—a strategy that can raise a company's cost of capital and in the process lower market value by as much as 15%. They impose risk-averse standards such as inflated investment hurdle rates or conservative price and margin forecasts to ration investment capital, choking off value-creating growth opportunities. In some cases they also hedge interest-rate, currency, or commodity-price exposure to which they already have natural hedges in their operations. By linking analysis of their risk capacity to their appetite for risk, companies can reach a much better understanding of their overall position.

4. Embed Risk in All Decisions and Processes

Risk management is not an exercise to be undertaken just once by experts or once a year by risk departments. It is a mind-set, a culture, a way of approaching problems, processes, and decisions. Psychology and behavioral economics have established that we have difficulty correctly incorporating risk into our thinking, and companies need to establish the capacity for risk-informed decision making. But if risk is to be embedded in a company's day-to-day operations, the whole range of decisions and processes to which risk-return management is relevant must be clear. Four areas can benefit substantially from risk-informed approaches:

Investment decisions. By adopting a probability-based approach to investments, companies can avoid many of the pitfalls inherent in more-traditional evaluations. For example, instead of a single NPV estimate, companies can assess probability ranges (between the 25th and 75th percentiles, for example) along with the probability of a negative NPV. The distribution can also be viewed under alternative project structures, such as in-house management using multiple subcontractors versus a turnkey contract whereby a single contractor agrees to a fixed price and delivery schedule for a project. The Black-Scholes options-

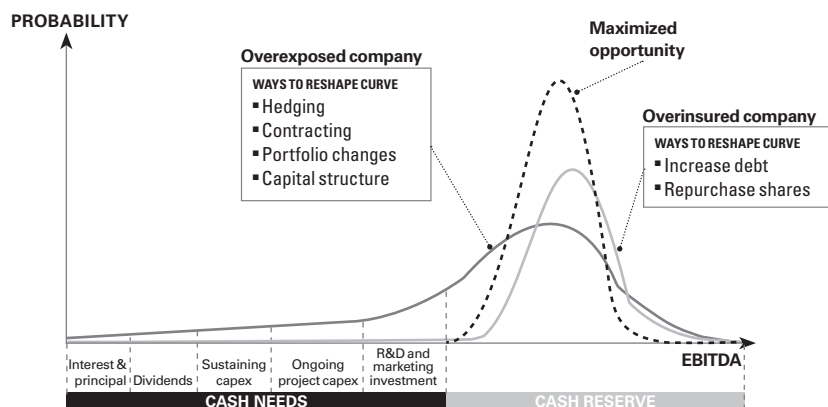
Profiling Cash Flow at Risk

The graph below shows the probability distributions of future operating cash flows for two hypothetical companies—one that is overexposed to risk and one that is overinsured against it—and how those distributions map against each company's cash needs (arranged from left to right according to their necessity to a company's survival).

The most likely cash-flow scenario for either company—the highest point of its solid line—is well to the right of its cash

needs. But the overexposed company's range of scenarios shows some probability that it will be unable to fund planned capital investments and may even fail to meet interest and dividend obligations. In contrast, the overinsured company has almost no chance of such shortfalls, but it is failing to use capital efficiently to maximize returns.

Either company can come closer to the optimal probability curve with the help of risk-management tools and techniques.



pricing formula and other risk-assessment tools can also help companies quantify the value associated with real options, such as deferring or accelerating an investment program in response to unfolding events.

Commercial decisions. Most industrial purchasing and pricing decisions, whether for spot or long-term contracts, can benefit from what we call *risk-book* concepts, which derive from the trading book commonly used by asset-management and securities-trading firms. Risk books essentially separate complex risks into buckets, enabling more-effective matching and measurement of exposure. A soft-drink bottler, for example, could use risk books to better manage its commodity risk by quantifying specific exposures to aluminum and plastic packaging, high-fructose corn syrup, and trucking fuel costs—and then assessing whether these highly correlated risks would be better managed through hedges, procurement contracts, and sales contract terms or at the corporate level through a portfolio of oil futures hedges.

Financial decisions. Most financial policy decisions involve risk trade-offs that should be viewed in the context of enterprise cash-flow and value trade-offs. Should the company employ more hedging to increase its debt capacity? Should the capital budget be cut to provide a cushion? Should the company use equity instead of cash and debt to fund an acquisition? Too often such decisions are made under arbitrary debt-to-equity guidelines or, worse, to achieve target credit ratings. They should be informed instead by cash flow at risk and other risk-management tools.

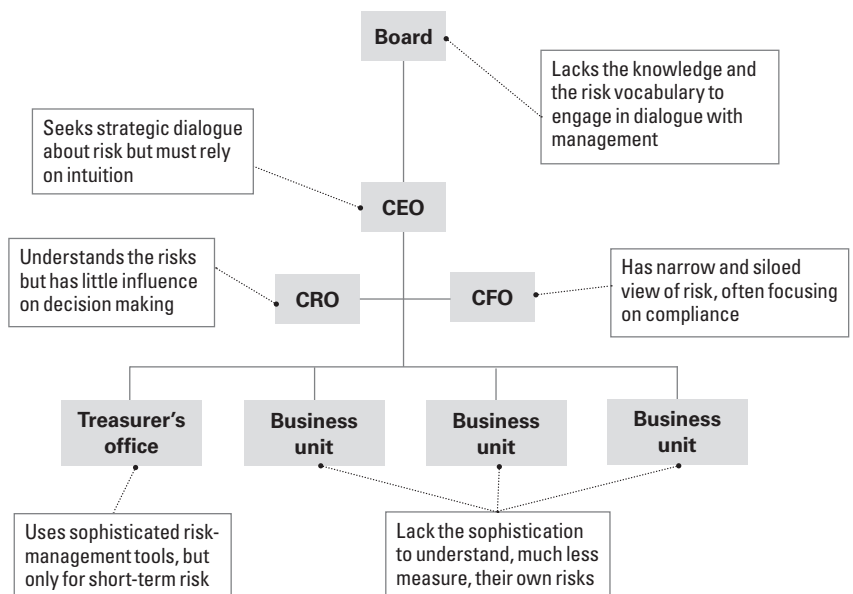
Operational decisions. Supply-chain design, outsourcing, inventory policy, and proposed changes in a manufacturer's global footprint all involve significant risk-return trade-offs; decisions around these, too, benefit from an enterprise-risk perspective. For example, a global manufacturer that has shifted production to an emerging market in order to save on labor costs might consider locating a second plant in a developed economy, creating a diversified production base to offset political risk in the emerging economy. Similarly, a manufacturer running a lean operation might be less vulnerable to significant and costly disruption if it builds some flexibility into its supply chain through more, rather than fewer, key supplier relationships.

Most industrial companies neither coordinate nor evaluate the above decisions using risk-management tools. Yet each of these decisions consumes or creates risk capacity, and each involves uncertainty and risk exposure. The problem may come down to the skills of the decision makers. Investment and operational decisions are usually made by business unit managers, procurement decisions by the purchasing department, pricing decisions by sales force managers, and financial policy decisions by the CFO. Typically these people take a base case or a high and a low case and use them as a forecast, ignoring the rest of the probability distribution.

In an ideal world, business managers and decision makers would analyze the impact of a proposed project or investment on the firm's overall level of risk and make precise trade-offs to maintain an optimal risk exposure. In the real world, companies with good risk management have a strong risk culture informing decisions at all levels. This should include incentive systems that encourage individuals to value the whole enterprise rather than their personal fiefdoms and to make decisions with an eye to real long-term

The Risk Culture at Most Companies

In most organizations the identification and management of risks is highly fragmented, so the board and the CEO find it hard to engage in a meaningful and informed analysis; the CEO usually ends up relying on his or her gut instinct.



economic outcomes rather than short-term performance. As noted in “The New Arsenal of Risk Management” (Reprint R0809G), such a culture is one of the defining features of Goldman Sachs.

It is not easy to persuade managers to think about risk in the way we’ve described, but our experience is that this can make a real difference. A highly motivated CEO who understands the power of managing both risk and returns can inspire an entire management team and corporate culture. Though developing an institution-wide approach to risk requires a lot of education and the application of consistent discipline over a period of years, it tends to have a lasting positive impact on company performance.

5. Align Governance and Organization Around Risk

Overseeing a risk-management effort requires constant vigilance and commitment from a company’s managers, beginning with the board. The best risk managers, like Goldman Sachs and TXU, have a culture of continual questioning and openness, in which information is simultaneously challenged and filtered to reduce the chance of surprises. But most companies have no clear risk-governance structure; the effort becomes fragmented, just as risk itself is siloed and therefore not understood at the enterprise level. The exhibit “The Risk Culture at Most Companies” reminds us of the complex organizational challenges that must be overcome to culturally embed risk.

Just as a strategy must be formulated in the context of the organization that will be expected to execute it, so systematic or strategic risk management can occur only if the organization is aligned from top to bottom with a common understanding of the company’s key risks and overall level of exposure. But most companies seek only to identify the different aspects of risk and perhaps to take some mitigating steps.

Even companies with an appreciation of risk and some sophistication about managing it usually don’t go far enough. Commonly they adopt a decentralized approach: Risks are owned by business units, and headquarters provides oversight and some aggregation of risks through portfolio choices. This is typical at large project-based companies with com-

plex risks of long duration. But often in these cases understanding of risk-reward trade-offs at the aggregate level is limited, and these firms usually combine large equity cushions with heavy insurance investment. Business units tend to see the risk function as an internal police force determined to curtail independent activity.

In our experience, the most effective model is a centralized one, with a powerful chief risk officer who reports to the CEO but also presents regularly at the board level. Companies with this structure tend to manage volatile risks that require vigilance and discipline. Risk is embraced for the opportunities it creates.

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Corporate strategists have largely ignored risk. But the simultaneous revolutions in financial services and M&A paved the way for a breakthrough in how companies approach strategy. Now the key question is less about your ownership of assets and capabilities than about your ownership of risk, and a variety of tools and techniques for guiding your decisions are available. Of course, adjusting to the new world isn’t easy. Identifying risks, let alone determining whether or not they are natural, is far from straightforward. Quantifying risks requires managers to learn new skills. What’s more, it’s not just a question of top-level analysis: The risk-aware company demands some assessment of risk in every decision that managers make. Finally, aligning the organization around risk takes a concerted effort that someone must own—ideally the CEO or a senior executive who reports directly to the top. But the rewards to be earned from facing up to these challenges are significant. Risk-savvy companies will generate far higher returns for their shareholders and use capital far more efficiently than we have seen to date. Perhaps most important, the capital and skills made available by more-professional risk management will also make it easier to manage the really big uncertainties facing all of us in the coming decades.

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