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Science-Based Targets Key to Private-Sector Success in Carbon-Constrained Future

Rather than waiting for international agreements to address climate change, some businesses are turning to science-based targets to determine their share of future global greenhouse gas budgets and planning accordingly.

BY LISA NELOWET GRICE

The global climate agreement reached in Paris, coupled with developments in climate science, is now driving companies to link greenhouse-gas reduction goals to a global risk-based greenhouse gas budget.

The World Economic Forum Global Risks Report 2016 ranked failure of climate change mitigation and adaptation as the most potentially impactful risk facing the world. According to the Intergovernmental Panel on Climate Change (IPCC), greenhouse gas-induced climate change—if left unchecked—is on a course that will harm people, economies and ecosystems globally. For example, we may see increasingly frequent flooding of coastal cities in North America, food shortages in Asia and worldwide coral loss. Climate adaptation costs have reached estimates of $500 billion per year.

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While companies have long set greenhouse gas reduction targets—driven variously by energy cost savings, customer expectations, regulatory conditions and stewardship—those goals were rarely, if ever, calibrated to the magnitude of global effort required to mitigate climate change.

Strategic business planning amid climate change requires attention to a suite of tactics addressing target setting, energy management, product portfolio, and climate risk mitigation. This article delves into the first of these: successful approaches to target setting.

Global Agreement Activates Global Budget The climate agreement in Paris brings the final piece to a novel approach to GHG target setting—Science-Based Targets or SBTs. Advances in climate science enabled global scientists in the 2014 IPCC report to propose the global greenhouse gas budget (cumulative emissions over time) that is likely to constrain global temperature change to the degree needed to avoid the worst climate change impacts. IPCC's *Climate Change 2014: Impacts, Adaptation, and Vulnerability* is that consensus report consolidating worldwide climate change research under the auspices of 242 lead authors, with review by 49 governments, citing 12,000 scientific references, to assess climate change-related risks and opportunities for societies, economies and ecosystems. That same temperature target was agreed to in Paris—keep global temperature change to less than 2 degrees Celsius (3.6

degrees Fahrenheit). With that agreement, policy aligned with science, and the movement for science-based reduction targets has taken off.

The IPCC proposed global greenhouse gas budget is 2,900 gigatons of carbon dioixde (cumulative emissions since the industrial age). Since we have already ''spent'' 1,900 gigatons of carbon dioxide of that budget, we have about 1,000 gigatons of carbon dioxide remaining. If we continue at the same emissions rate of around 49 gigatons per year, we will exhaust our budget in about 20 years. Science-based target setting is about determining how to allocate that 1,000 gigatons of carbon dioxide budget.

Companies Busting the Status Quo Rather than waiting for some global agreement that may never come regarding how the 1,000 gigatons of carbon dioxide budget should be allocated across nations and sectors, companies have begun to assess what their share of the budget, and associated emission reductions, ought to be. This proactive approach is driven fundamentally by the desire to find an optimal operating position in a carbon-constrained future where energy costs are higher (greenhouse gas emissions are dominantly from fuel use), regulations tighter and stakeholders more distressed about climate impacts.

As it turns out, science-based targets require far greater aspirations than more casually set targets—requiring greater willingness to disrupt the status quo. To maintain warming below 2 degrees requires 40 percent to 70 percent global anthropogenic greenhouse emission reductions by 2050 compared to 2010—and emissions levels near zero or below in 2100. Xerox, Iberdrola, Honda and GlaxoSmithKline are just a few of the 210 companies to date that have publicly committed to setting science-based targets.

Science-based target-setting is a clear departure from the traditional approach to target-setting. Historically, companies have established voluntary emission reduction targets using either a top-down, bottom-up or combination approach. The top-down approach considers what level of reduction would be meaningful to the company's business interests and stakeholders. In the bottom-up approach, companies establish targets based on a determination of measures and costs for achieving emission reductions. A thorough approach may construct a marginal cost abatement curve (MAC) from a range of company-specific emission reduction projects that have been costed and collated to express how much abatement can be achieved at what cost. Neither of these approaches focused on ensuring that targets aligned with a scientifically determined global carbon budget.

Dell provides a good example of a science-based target: the company has committed to reduce greenhouse gas emissions from facilities and logistics operations 50 percent from 2010 levels by 2020. For many companies, the energy intensity of their products is more impactful than their own operations. In that vein, Dell has also committed to reducing the energy intensity of its product portfolio 80 percent from 2011 levels by 2020.

Evolving Methodology Allows Company-Specific Tailoring To help companies establish science-based emission reduction targets, a group of four advocacy groups—World Resources Institute, World Wildlife Fund, CDP (formerly the Carbon Disclosure Project) and the United Nations Global Compact—launched the Science-Based Target Initiative. Their methodology, the Sectoral Decarbonization Approach, aligns a company's emissions targets to its sector's projected level of economic activity and potential for emissions reductions. The Initiative's website serves as a clearinghouse of information on alternative methodologies to science-based target-setting as well.

The various methodologies proposed to help companies set emission reduction targets in line with the 2 degree decarbonization scenario have commonalities. Each takes a global carbon budget, estimates emission reductions required to meet that budget, and proposes that companies reduce emissions in line with that budget. Sector-specific methods project sectoral emissions over time to then attribute a share of the projected emissions budget to a company in the sector. Other methods allocate the global carbon budget based on a company's economic contribution to GDP. Others simply propose that companies reduce emissions proportionate to global requirements.

Some of these methodologies rely on the low-carbon future mapped out by the International Energy Agency in its 2 Degree Scenario (2DS). The 2DS defines the most economical and feasible energy system pathway and associated emissions trajectory consistent with at least a 50 percent chance of limiting the average global temperature increase to 2 degrees Celsius. That scenario identifies a number of sectors, specifically transport, industry and buildings, as well as subsectors, such as cement and air transport, and end uses, such as lighting and space heating. For each sector, the 2DS considers how fuel-switching pathways and available technologies may be employed to reach the end goal. Companies can use the 2DS to project carbon dioxide budgets for their sector, and subsequently their share of that sector budget.

Evolving Methodology Allows Company-Specific Tailoring Regardless of the methodology selected, companies may have different approaches to SBT setting for different ''scopes.'' Scope, in the common parlance of voluntary greenhouse gas emissions accounting, refers to where emissions occur in the commerce lifecycle. Scope 1 refers to emissions directly from an organization's own operations, e.g. emissions from stacks, tailpipes and fugitive sources. Scope 2 is a special case of indirect emissions, specifically emissions from purchased electricity, steam, heating and cooling. Finally, Scope 3 emissions are indirect emissions from everything else—purchased goods and services, employee business travel, waste treatment, use and disposal of sold product, even emissions from investments.

The reason for three overlapping Scopes is simply to encourage differentiated action. Consider, for example, the many opportunities to reduce emissions from burning fuel for electricity. The power company can choose to use less carbon-intensive fuels and reduce its Scope 1, while the electricity user can be more efficient and reduce its Scope 2, and the fuel provider can produce less carbon-intensive fuels and reduce its Scope 3. For each of the three scopes, organizations may engage different approaches to SBT setting.

To whittle down the vast array of potential Scope 3 (other indirect) emission sources that should be included in target-setting, the SBTI outlines several criteria for relevant Scope 3 emissions. Three of these criteria are size, influence and risk. The first, size, means

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exactly that—emissions that are a big part of an organization's total greenhouse gas emissions. The second, influence, is relevant when an organization can effect emission reductions, such as working with suppliers. Kellogg, for example, in furtherance of its goal to reduce Scope 3 emissions by 50 percent by 2050, is supporting half a million farmers in their supply chain to improve agricultural practices. And finally, there is risk, which more specifically means the extent to which emissions create risk exposure–financial, regulatory, legal, and reputational. Other criteria include stakeholder values, outsourcing arrangements, and sector-specific guidance.

Evolving Methodology Allows Company-Specific Tailoring

For individual companies, local governments and other institutions, mitigating climate change mitigates business risks. Climate change-related risks threaten operations, supply and products. IEA notes that temperature changes as little as 4 degrees Celsius are likely ''to have profound negative impacts on the potential for economic growth.'' Take, for example, IPCC's projection that climate change will reduce renewable surface water and groundwater resources significantly in most dry subtropical regions. This projection has a clear impact for organizations dependent on water resources in these areas—either directly or indirectly through the supply chain. Similarly, IPCC's projection that coastal systems and low-lying areas will increasingly experience submergence, coastal flooding and coastal erosion presents grave risk to assets in such locations. Strikingly, IPCC predicts that a large fraction of both terrestrial and freshwater species faces increased extinction risk under projected climate change during and beyond the 21st century. Projected climate risks presenting concomitant business challenges are varied and widespread—including risks from wildfire, flooding, health problems, coral reef destruction, species extinction and impacts to water availability, fisheries productivity, crop production and snow cover.

For companies, local governments and other organizations setting greenhouse gas reduction targets, there are benefits beyond climate change mitigation. Achieving targets through strategic use of energy efficiency and renewable energy results in cost savings, reduced local air pollution, and improved energy cost and supply resiliency. Proactive reductions position an organization effectively for regulatory developments aligned with climate science. And a robust SBT enables effective marketing and communications with customers and other stakeholders concerned about an effective response to climate change. And finally, climate mitigation reduces or eliminates the costs of climate adaptation.

With science and policy aligning around a global greenhouse gas budget, companies have greater clarity on what constitutes an effective greenhouse gas reduction goal of their own. In establishing such a science-based target, companies can work toward their most effective strategic position in a carbon-constrained future.