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Major companies worldwide have pledged to reach net-zero emissions, but pledges are one thing, and action is another. Momentum can, of course, be difficult to sustain. Carbon reduction may be imperative for the good of the planet, but it requires businesses to think and operate in new ways, to collaborate with more outside entities, to trust data-gathering processes that are new and developing — and to put R&D and innovation leaders at the center of the process.

Science Group convened a forum of R&D leaders and CTOs — including executives from Amcor, Bayer, Mars, PepsiCo,

Procter & Gamble, Solvay, and Stepan — to identify ways in which companies can translate net-zero ambitions into material progress. In particular, we wanted to help define the pivotal role that innovation teams can play in the journey. Here, we highlight insights that emerged from this forum about practices that help build a [pathway](#) for both industry and the planet to thrive.

A Mandate for Action

If companies want their net-zero pledges to be more than well-intended aspirations, they have to make carbon reduction a core business value: Management must lose sleep over it, the way they have historically lost sleep over safety, quality, and profits. Acting on net zero is a cross-functional initiative, and the division of labor can be murky. Marketing, distribution, and other business functions will contribute to the company's greenhouse gas (GHG) reduction target on their own timelines. Procurement, for instance, might be able to reduce emissions in short order, whereas R&D — which is, by definition, forward-looking — might be working three, five, or even 10 years out. The key, of course, is that all functions are working in concert toward clearly stated goals. R&D should swiftly and explicitly map out how its own role vis-à-vis carbon reduction differs from

that of colleagues in other parts of the business. R&D leaders' capacity to present scientific arguments to other executives can be a valuable assist to colleagues who must shape a similar plan.

Mapping out a companywide collaboration can be a process of self-discovery — one that reveals interdependencies and potential alliances. As R&D digs into its targets, its leaders should also consider how entities outside their own company — suppliers, customers, regulators, nonprofit advisers, and even competitors — can be recruited for what is, after all, as universal a mission as they're likely to encounter in their lifetimes. Companies may well have other worthy sustainability initiatives in the works, and leaders must be conversant with all of them and understand the interplay between them.

But it's also critical that companies give their R&D leaders and CTOs a clear mandate to reduce greenhouse gas emissions. Once they have it, they will be well placed to instigate changes to ensure that future products and services have lower associated GHG emissions. The R&D and innovation teams will be on the front lines, reducing GHGs by using alternative raw materials, reimagined product designs, and more climate-friendly technologies. To succeed, net zero must be embedded into each project from its earliest days so that a product's likely GHG footprint is evaluated early and often. Every R&D conversation should now take GHG into account. And lest anyone think this is a half-hearted exercise in virtue signaling, the team should be judged on how well it executes.

Manage the R&D Portfolio to Deliver Net Zero

R&D leaders should now evaluate the “carbon health” of their existing project portfolio to see how well it aligns with their targets. Reaching the goal means knowing exactly where and by when the reductions will happen, and not trusting it to luck or to future technologies that are only barely visible on the horizon.

To date, sustainability has often been the focus of special projects. Such an approach might help secure investment, demonstrate ambition, create momentum, and burnish a

company's image — and those are undeniably heady inducements. Still, we would argue that integrating carbon reduction into the day-to-day fabric of R&D is more vital. Net-zero success depends on the performance of the portfolio as a whole, not the rise or fall of individual projects. There's nothing wrong with a few big, speculative longer-term opportunities, but placing smart bets across the entire R&D portfolio is a savvier strategy. Not every project is likely to advance the cause of net zero. And, frankly, R&D can let a particular project underperform in terms of reducing GHG emissions — if commercial needs are simply too urgent, for instance, or if another department can offset the deficit by some other means — as long as the wider portfolio stays on track.

Choosing which initiatives to prioritize means identifying the most promising battlegrounds. There will be wins that R&D can instigate and move forward. A product might be a prime candidate for R&D to focus on immediately because rethinking its design or manufacture even minimally could have a significant impact on emissions, or because those changes could be made in the R&D kitchen without creating a ripple effect along the whole supply chain. But many of the big wins will require R&D to work with other partners inside and outside the organization, and although they may be harder and take longer to achieve, the outcome may merit the commitment and investment.

R&D leaders should expect to provide forecasts of their portfolio's impact on GHG emissions. Measuring the net contribution (even using a simplistic order-of-magnitude estimate of future impact) will allow the company to balance commercial needs and climate-change intent. Environmental, social, and governance reporting will become more prevalent over time as customers and stakeholders insist on knowing which companies have robust sustainability strategies, and the companies themselves realize that those strategies can reduce costs, spur growth, and minimize issues with regulators. Data on GHG emissions is not yet as accurate as the moment demands, but it will inevitably improve. In the meantime, R&D teams will need to get comfortable with using the available data and accepting approximations.

The Commercial Reality

It's often said that corporations have a choice: They can get "green" or they can make money. No one is pretending that there's no truth in this. But as consumers change, the regulatory environment evolves, stories about reputational damage proliferate, and considerations of carbon impacts become more ubiquitous, a different set of commercial realities will prevail. For now, R&D can build momentum by identifying the customers, products, and brands with a preexisting affinity for net-zero messaging. This is low-hanging fruit. It's here that carbon-friendly products can command a "green premium" or provide a competitive advantage. In arenas where regulation or standards favor — or even require — carbon-reduced products, the marketplace will likely accept a performance compromise or accept a price premium. Wherever the door is already open, innovators can capitalize on the market value of a climate-friendly product. Elsewhere, they will need to get creative and continually hunt for synergies and flywheels, where innovating for net zero brings other advantages.

Ideally, innovating to serve the needs of the market — that is, delivering on conventional value parameters — will create collateral opportunities to reduce carbon outputs. No one's going to object to lowering emissions if it seems to be a happy coincidence. There are manufacturing processes, that, in reducing carbon emissions, may also reduce either upfront capital costs or ongoing energy costs. Projects that can make use of them should be prioritized, and R&D leaders should articulate the benefits of carbon reduction, even if the top priority is cutting expenses.

This next proposal may seem counterintuitive in the extreme, but R&D leaders should also consider trading off on price and/or performance if a reduced-carbon product would enable a different kind of win. The words "new" and "improved" have been fused together in the advertising lexicon for more than a century, so companies won't be thrilled to announce that they've made a less-effective product because they wanted to cut GHG emissions at the plant. But regulation, as well as customer and stakeholder intent, have begun to will it.

"Accomplishing net-zero goals takes courage," said Robert

Reiter, head of R&D in the Crop Science division of Bayer. "There are going to be tensions, and at some point there will need to be trade-offs when the low-hanging-fruit opportunities are gone. I guess one can wait for regulation to level the competitive playing field, but sometimes a company just needs to lead the way."

About the Authors

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Acknowledgments

The authors wish to thank the Science Group CTO Forum participants for their contributions to this work: Victor Aguilar, Nici Bush, Nicolas Cudré-Mauroux, William Jackson, Jason Keiper, René Lammers, Caroline Potter, and Robert Reiter.



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