

ESG driving operational improvements

As processes turn increasingly green, manufacturing and engineering leaders are adapting

▶ Gregory DL Morris

Results from a *Chemical Week* survey of operations executives, supported by Argo Consulting (Chicago), on operational excellence and environmental, safety, and governance (ESG) best practices found that building a well-defined strategy to improve ESG in operations remains a work in progress for 49% of respondents (*chart*). Some 39% said there is a strategy already in place, and 11% said they did not have a formal ESG operations strategy in place.

Responses show that chemical makers have yet to fully leverage this opportunity.

“Building an effective and highly efficient operational foundation is imperative to meet rising ESG responsibilities and commitments, while maintaining business vitality and integrity, and enabling capital and expense reallocation to support alternative ESG growth technology development and deployment,” says Chuck Deise, Argo senior vice president and partner, chemical process industries business.

Other key findings were that 52% were considering using a best practice ESG operating model, 39% had such a model in place already, and 13% were currently not using such a model. About 57% of respondents said they expect capital intensity to increase because of ESG. The survey, with 79 respondents, was conducted between 27 September and 10 October.

Producers say they are working to integrate ESG performance with day-to-day operations and starting to see benefits.

“We have structured ourselves and aligned our corporate systems around EHS performance,” says Daryl Roberts, senior vice president of operations and engineering at DuPont. “We have not reorganized around ESG at the site level, however, because we do not want that to be a standalone function. We want it integrated with regular operations. Our engineers are already working on how to reduce emissions or water efficiency. ESG performance is embedded in operations.”

ESG performance is also embedded in performance evaluation. “ESG metrics are part of our bonus plan as an organization,” Roberts says. “That applies from the

boardroom to the shop floor and even extends to succession plans.”

Capital expenditure has evolved as a result, Roberts adds. “We used to have a set system of standalone budgets for sustainability, but we found that most of the work in that area had a return because ESG



BENKO: Quality, efficiency, and ESG are all intertwined for Huntsman.



SAMPSON: Dow takes holistic approach to environmental, social, and governance performance at all levels.

performance became a customer requirement in many cases. So now the individual business leaders have engaged at that level and are earmarking opex.”

At the capex level, Roberts adds that “any project is being viewed through the lens of climate impact. That is a new piece. What are the greenhouse gas emissions, what is the water use? How can those be reduced? We have to understand all of that before we put any steel into the ground.”

Roberts supports common metrics across the process sector as a way to both drive and measure progress. That said, given the wide diversity in size and operations around the

chemical industry, he stressed that “for all companies, having a trajectory toward reduction of emissions and water use is what matters, regardless of the starting points.

“We are advocates of international standards such as the Global Reporting Initiative,” he continues, “because it is important for the metrics to be accepted outside the industry. It can’t seem that we have set something just for our own benefit.”

John Sampson, senior vice president of operations, manufacturing, and engineering at Dow, stressed the integration of ESG performance at all levels. “From my perspective, it makes a world of difference that we take a holistic approach to our ESG principles and focus.” Dow has embedded ESG metrics into our annual cash bonus, which tracks global employee resource group participation, representation of women globally, and representation of US minorities, Sampson adds.

Last year, Dow announced updated sustainability targets focused on climate change and plastic waste. “Our operations team is the lynchpin to our ability to meet those targets,” Sampson says. By 2030, Dow will reduce net annual carbon emissions by 5 million metric tons versus the 2020 baseline, a 15% reduction. By 2050, the company intends to be carbon neutral.

“A proof point of that reduction is our Texas-9 cracker which has the lowest carbon intensity in our fleet, producing 60% less CO₂ per ton of production than average and is the largest, most capital and operationally efficient cracker in our fleet.”

Sampson also notes Dow’s recent investor-day announcement to build “the world’s first ever net-zero carbon emissions cracker complex at Dow’s Fort Saskatchewan site in Alberta, Canada.” At the other end of the plastics lifecycle, Dow will close the loop by enabling 100% of its products sold into packaging applications to be reusable or recyclable by 2035.

“We will remain focused on development of phased site emissions reduction plans,” Sampson says. “That includes replacing or upgrading end-of-life and high carbon-intensity assets with more efficient and lower conversion cost solutions, and continued

integration of cost-efficient clean energy.”

Programs to make the company safer, more productive, and more are all intertwined with ESG, says Brit Benko, Huntsman senior vice president of environment, health, safety, and manufacturing excellence.

As Huntsman evolved as a company, it has moved downstream and differentiated its operations while retaining some commodity production where that vertical integration makes sense. “As a result of those portfolio adjustments, our company-wide emissions have shrunk by 80%,” Benko says. She stressed that a more fully representative number is the reduction of 40% in greenhouse gases per unit of production.

“At our Baroda, India, facility we shifted from coal-fired boilers to natural gas,” Benko says. “That lowered emissions, but also made the facility more efficient and reliable.”

That was an example of a Scope 1 reduction. Benko says operational improvements across Huntsman are also driving Scope 2 and 3 reductions. “We just put in place a contract for renewable electricity for our Rotterdam facility. Again that is an improvement in reliability and efficiency, as well as Scope 2 reductions.”

The first eight years of Benko’s career were spent in the field, not in the office. “I am a field person, an ops guy,” she says. “Most of the solutions are not going to come from corporate. They are going to come from the men and women on the ground.”

Benko has been in her position for a little more than a year, and found a corporate structure well tuned to implementing ESG improvements into operations. “The structure has not changed significantly,” she says. “The vice president of manufacturing has a dotted-line report to me. One change I did make is to have the sustainability executives report to me; previously they reported into the regional structure.”

ESG terminology per se is not widely used at BASF, the company says, “but the underlying principles of EHS excellence, climate protection and sustainability, corporate social responsibility, and governance still apply. We have implemented CO₂ emission reporting on a production plant level, both in the North America region and around the world. These programs are supported by a rigorous system of tracking and auditing to ensure that our investments and initiatives are performing as planned and have a clear and positive link to operational excellence.”

BASF has set climate protection goals

including reducing greenhouse gas emissions by 25% by 2030 as compared to 2018 levels, and being net CO₂ neutral by 2050. “To support those targets, we have formed partnerships to develop new technologies including electrifying the steam cracker, the most energy- and emissions-intensive part of the chemical manufacturing process,” the company says.

A partnership with RWE will provide an additional offshore wind farm with a capacity of 2 gigawatts to provide the Ludwigshafen, Germany, headquarters site

with green electricity and enable CO₂-free production of hydrogen.

In the US, Electricity de France (EDF) is a partner with BASF for renewable energy. “Together with EDF, we are working to increase the renewable energy supply for our Freeport and Pasadena sites in Texas,” the company says. “Once completed, approximately 70% of the energy supply to the Pasadena site and more than 90% of the power purchased in addition to the energy produced at the Freeport site will be from renewable resources.” ■

