During 2012, FMC focused on a standard waste intensity measurement across all sites. This effort resulted in a 29 percent decrease in total waste produced per ton, driven primarily by efforts to reduce the volume of waste sent to landfills.

FMC reduced energy intensity by an additional 4 percent during 2012. The company’s newly established Energy Management Center of Excellence has begun its work to systematically identify efficiency opportunities across our manufacturing network.

Greenhouse gas intensity remained essentially flat in 2012. The resources employed to assess energy management will also have a positive impact on greenhouse gas intensity.

The intensity of criteria emissions increased by 8 percent in 2012 primarily due to abnormal disruptions in production at our lithium operation in Argentina.

FMC improved its water efficiency by nearly 8 percent in 2012.
We work hard to minimize the environmental impact of FMC operations and that of our supply chain.

During 2012, the use of standardized key performance indicators (KPIs) across the enterprise helped our operations better understand the patterns of their resource utilization and waste generation. We are proud of our employees’ efforts to improve FMC’s waste, water and energy intensity by 29 percent, 8 percent, and 4 percent respectively year over year. Yet, we believe we can continue to identify opportunities for resource and waste efficiency through the coordinated efforts outlined in this section. While the intensity of criteria emissions increased in 2012, this was driven primarily by suboptimal operating rates at our lithium operation in Argentina. We expect this intensity to improve over the course of 2013.

FMC made a choice to incorporate sustainability into every aspect of our business, knowing that environmental consciousness, one of the market-shaping shifts we’ve identified, will increasingly influence demand for our products, just as another market-shaping shift, scarce resources, will continue to impact cost volatility for our manufacturing operations. We are implementing processes to systematically assess these issues and define improvement plans that create increased efficiency and reduced risk throughout our operations and supply chain.

Sustainable Procurement Practices

FMC built a reputation as a responsible and reliable supplier of quality products because we carefully and systematically manage risks that might impact our integrity in the marketplace. We believe our customers’ valuable brands deserve our full measure of protection and we take steps to provide that protection not only in our manufacturing but also in procurement.

In early 2011, FMC formed a global procurement organization to oversee the sourcing of goods, materials and services across the company. This group reviewed best practices in procurement and vendor relationships to revise our own procurement procedures and assure that our program is best in class. One result of these efforts was the 2012 launch of eProcure. This program standardizes processes globally through a suite of online systems designed to efficiently and responsibly manage procurement worldwide.

These improved procurement systems help us analyze data in numerous ways and in real time. They also allow FMC to make informed and consistent procurement decisions that create cost- and risk-reduction opportunities.

FMC has long chosen to work with suppliers who share in our commitment to ethical and sustainable business practices, but in 2012 we formalized that commitment by implementing a new supplier selection and management process that explicitly incorporates both minimum standards and preferred practices to support our sustainability principles. To explain our minimum standards clearly to existing and potential suppliers, we published FMC’s first Supplier Code of Conduct, which sets forth FMC’s expectations regarding legal compliance, environmental, health, safety, ethical, human dignity and fair labor practice issues. Suppliers also have a responsibility to take reasonable measures to ensure that their vendors and sub-contractors are acting in harmony with these same priorities.

Members of FMC’s volunteer group ‘Greenadelphia’ participate in a local tree planting. The group works to integrate sustainable practices at FMC’s corporate headquarters in Philadelphia, Pennsylvania.
FOCUSED FORWARD

experience of 129 years, this team will become a central repository of best practices in energy management.

The EMCOE has begun a multi-year process to assess FMC manufacturing sites worldwide and identify opportunities to increase plant energy efficiency. In 2013, the team will conduct its first comprehensive plant energy assessments associated with this new program. These initial assessments will lead to energy improvement plans for our two pilot locations, with the long-term goal of improving energy efficiency across FMC’s global manufacturing network.

While energy represents FMC’s largest potential area of impact, we’ve also begun to assess current waste management activities at our sites to determine whether a similar cross-group effort can accelerate expected sustainability gains.

Sustainable Manufacturing Practices

Within FMC-owned operations, we focused our 2012 efforts on energy, waste, water and greenhouse gas intensity. As we continue to expand our manufacturing operations, we will need to use more resources to make products that support growing populations and their rising demand. A key element of our sustainability program is managing our own impact by discovering less intensive and more cost-effective ways of producing our products.

In addition to our usual efforts to manage a competitive cost structure by targeting annual efficiency improvements, FMC has several major initiatives underway to ensure we are using current best practices across our sites. We expect such efforts to produce near-term efficiency wins while identifying longer-term improvement potential across the company.

The first of these efforts is a Manufacturing Excellence program, launched in 2012, with focused projects at three of our manufacturing locations. We expect these projects to increase plant productivity and deliver resource efficiency benefits.

Additionally, FMC recently created an Energy Management Center of Excellence (EMCOE). This team is comprised of representatives from the procurement, manufacturing, engineering and sustainability groups and is championed by senior leaders in operations, technology, procurement and sustainability. With the help of external resources added to its combined professional

Taking Energy Further

Along with identifying efficiency opportunities, each of our sites continues to define operation-specific projects that decrease our environmental impact, including the following:

- Our Green River, Wyoming, facility expanded the throughput of its mine water product in support of a local utility that increased its needs for SO₂ abatement. FMC mine water is being used by the utility as an alternative to mixing refined soda ash with water for use in its SO₂ scrubber. Using this alternative allows the utility to use less fresh water. As mine water requires less processing than other soda ash products, FMC was also able to improve our average energy efficiency per ton produced while avoiding an estimated 25,000 tons of greenhouse gas emissions each year.

[Natural soda ash production already produces significantly less greenhouse gases than alternative synthetic production processes. See FMC’s 2011 Sustainability Report for details.]

Follow the QR code to learn more.

- Our peroxygens plants in Tonawanda, New York, and Rheinfelden, Germany, utilize clean, renewable hydroelectric power generated by nearby facilities for use within our operations. FMC estimates that these power sources reduce our indirect emissions of greenhouse gases by 25,200 tons of CO₂e annually.
INNOVATIONS IN SOLUTION MINING

At our Green River, Wyoming, site, FMC dry mines approximately 4.5 million tons of trona ore from 1,600 feet underground. We also solution mine the equivalent of 2 million tons of additional trona using secondary recovery techniques in old dry mines, employing innovative mining methods to maintain the long-term sustainability of this mineral resource.

Over the last several decades, we have led the industry in pioneering dry, long wall and solution mining techniques. We continue to pursue mining methods that are safer, more energy efficient and better for the environment. To maintain our industry leadership, we are investing $13 million in a pilot project using directional drilling techniques for technologically advanced solution mining. Initial research shows this patent-pending process improves sustainability by reducing process greenhouse gas emissions by over 25 percent, and has the potential to salvage billions of additional tons of trona that might otherwise be left behind.

Conscientious Expansion

In July 2012, FMC announced plans to invest more than $100 million in an advanced microcrystalline cellulose (MCC) manufacturing facility in Rayong, Thailand. During project planning, FMC worked with the Thai government to study the impact of the future operation on the environment, community and local economy. A portion of the study included an extensive life cycle assessment.

The new plant will increase FMC’s global capacity to produce food-grade MCC by 35 percent. This increased production will be done using best practices that minimize waste generation and greenhouse gases per ton. The new, state-of-the-art facility will bring jobs and spending to the local economy while strengthening FMC’s ability to efficiently serve pharmaceutical and food customers. The plant is scheduled to open in late 2014.

Efficiency in Logistics

There are thousands of shipments per year associated with inbound raw materials for our facilities or outbound FMC products destined for our customers. Given the high cost associated with transportation, it has always made business sense to create efficiencies at every opportunity—and those efficiencies typically have a positive environmental impact, too. Examples follow on the next page.

We understand that being mindful of our local environment is important. Here, wild antelope graze near our site in Green River, Wyoming.
Sustainability goes beyond how we make our own products. By working together with our customers, we cultivate a more sustainable supply chain and help diminish our collective impact on the environment.

Take, for instance, seaweed-derived carrageenan. FMC offers an online Carbon Footprint Calculator for customers to compare the environmental impact of carrageenan against products with similar thickening functions: gelatin, xanthan gum or starch. This web-based tool calculates each raw material’s water consumption, fuel and energy use, agricultural requirements, and pesticide and fertilizer use. Carrageenan often emerges as the best choice.

Fueling Lithium Production

FMC’s Lithium division is at the forefront of developing lithium-ion battery technologies for a new generation of electric vehicles, among many other applications. FMC’s contributions begin high in the Andes Mountains, home to nearly two-thirds of the world’s lithium resources. Our lithium production facility currently uses natural gas for energy, which is transported by truck to our site in Argentina. Such trucking of fuel poses a challenge on steep mountain roads that are vulnerable to mudslides and high winds. These factors led FMC to focus on finding a safer, more reliable way to get fuel to the site.

After analyzing options, we are now in the process of receiving permits to construct and utilize a pipeline to deliver natural gas to the facility. Construction of this $23 million project is targeted to begin in 2013. Once completed, the 145 kilometer pipeline will minimize human contact with fuel, eliminate thousands of truck/trailer trips, deliver a much-needed energy source to nearby communities, and support future social and economic development. This project reduces safety risks, increases the reliability of the fuel supply and reduces the need for backup energy from fuel oil.

Expanding Sustainable Packaging

Sustainable logistics involve more than transportation. How we package our products also offers opportunities to reduce resource consumption and waste.

Moving More with Less

Our Industrial Chemicals Group continues to find opportunities to create shared value by optimizing logistics in delivering products to our customers. One tool to maximize efficiency is through use of bulk shipments via truck and railcar, which account for 75 percent of ICG’s total volume. We reuse these bulk containers throughout their productive life and ultimately refurbish or recycle the containers’ materials.

In 2012, FMC was awarded the Union Pacific Railroad’s highest customer safety honor, the Pinnacle Award, recognizing our safe and responsible shipping of sodium hydroxide. As partners, Union Pacific and FMC are working together to drive efficiency.
FMC uses rail to ship 87% of its products from Green River, Wyoming. Over the last five years, efficiency improvements have allowed us to move more product in less trips, decreasing the fuel use and GHG associated with our shipments.

Over the last five years, the average number of railcars in FMC soda ash shipments from our Green River site has increased, positively impacting our fuel economy.

1.3 million tons CO₂e of GHG emissions avoided annually; roughly equivalent to the electricity use of more than 175,000 homes for an entire year.*

Between 2008 and 2012, the percentage of FMC soda ash rail car fleet with expanded product capacity has increased – enabling us to reduce the number of shipments required for product transport.

Nearly 30,000 tons CO₂e of GHG emissions avoided annually; roughly equivalent to taking more than 5,000 passenger vehicles off the road for a year.*

Both bulk rail and truck transport produce zero packaging waste.

Bayport, Texas, is home to our main manufacturing facility for high-purity hydrogen peroxide, which is trucked to customers. Over the last five years, we have boosted trucking efficiency by using new trucks and retrofitting our existing fleet.

Diesel saved over the past year by improving truck design and increasing product concentration.

New tire technology has been added to a number of our trucks, making them lighter and decreasing rolling resistance. This change is part of our continued focus on fuel efficiency.

*Source - EPA: http://www.epa.gov/cleanenergy/energy-resources/calculator.html
In each remediation situation, we start with shared goals in mind, doing whatever we can to take all stakeholders’ concerns into consideration. Each project requires a unique plan and an understanding of the community it affects, so we engage with public advisory groups, community partners and citizen task forces to facilitate conversations about each community’s needs. By collaborating on remediation plans, FMC aims to replenish resources, spur economic growth, protect the vitality of our business and the environment, and strengthen our community relationships.

FMC’s ongoing remediation projects are at various stages of completion. FMC made progress on multiple projects and reached several milestones in 2012. A few examples are described here:

• The remediated site of FMC’s former research center near Princeton, New Jersey, now serves as Princeton HealthCare System’s state-of-the-art medical center, which opened in June 2012.

• FMC worked with the city government, regulatory agencies and local leaders in Nitro, West Virginia, to successfully repurpose an old municipal landfill site into a community access boat ramp that now attracts visitors to the area. FMC handled the majority of the cleanup work, earning the 2012 Environmental Excellence Award from the West Virginia Department of Environmental Protection for our dedication to long-term stewardship of the site.

ENVIRONMENTAL REMEDIATION LIABILITIES

At the end of 2012, the U.S. government’s National Priorities List included FMC as a potentially responsible party (PRP) at 29 sites where our potential liability has not yet been settled. In addition, we received notice from the U.S. Environmental Protection Agency or other regulatory agencies that we may be a PRP, or PRP equivalent, at other sites, including 38 sites where we have determined it is reasonably possible we have environmental liability.

Green Jug Juggernaut

During 2012, FMC Brazil expanded its sustainable packaging line for agricultural products. Derived from sugar cane and other renewable resources, FMC’s “Green Family” of containers is growing:

• The breakthrough Green Jug drum is manufactured in a way that generates 40 percent less greenhouse gases than traditional packaging.

• The stackable JoinJug offers a space-saving option for warehouses, eliminating the use of traditional packaging materials and reducing the number of fuel-burning truck miles.

Development of the Green Family is just the beginning of a larger process to identify FMC locations where the use of bio-plastic packaging makes sense for our customers and their supply chain requirements. To that end, we continue to invite customers to suggest new ideas for packaging and shipping.

Responsible Remediation

FMC’s approach to remediation focuses on returning our formerly used sites to productive new uses. In the past decade, we have restored eight brownfield sites to beneficial reuses, including sports complexes, hospitals, retail developments, car dealerships, community centers and light industrial parks. In many cases, there is more than one type of redevelopment use on a single former property. Over the last three years, we have spent approximately $90 million on remediation of historic sites.

In each remediation situation, we start with shared goals in mind, doing whatever we can to take all stakeholders’ concerns into consideration. Each project requires a unique plan and an understanding of the community it affects, so we engage with public advisory groups, community partners and citizen task forces to facilitate conversations about each community’s needs. By collaborating on remediation plans, FMC aims to replenish resources, spur economic growth, protect the vitality of our business and the environment, and strengthen our community relationships.
• In **Pocatello, Idaho**, we received approval from the U.S. Environmental Protection Agency to remediate the site of this former FMC plant. We are engaging with local stakeholders as we proceed with remediation efforts.

• In **Front Royal, Virginia**, FMC worked with a community advisory team to devise a sustainable cleanup plan for multiple contaminants. Two decades of planning and remediation culminated in the 2012 groundbreaking for the final phase: a multi-million dollar groundwater treatment system. The 440-acre site, now owned by the Front Royal Warren County Economic Development Authority, will support commercial redevelopment as well as wildlife habitats.

• In **San Jose, California**, 6,256 sports fans attended the October 21, 2012, groundbreaking for a Major League Soccer stadium, setting a Guinness World Record for the largest groundbreaking ceremony ever. FMC helped remediate and redevelop the site, once home to a former FMC division that manufactured and tested defense equipment.