Greenhouse gas emissions decreased 3 percent primarily due to decreased process emissions at our Green River facility.

FMC’s water intensity increased 5 percent. The increase was driven by drought conditions at our Green River site which necessitated increased water intake to maintain the proper water level in its containment lake.

In 2013, the cross-functional EMCOE team and third-party experts completed audits of two manufacturing sites: Rockland, Maine, and Milazzo, Italy. These sites were selected for pilot analyses because they are at different stages of energy monitoring and management, and as such, the results could provide information on the range of energy savings that might exist across FMC. Based on the audit results and cost/benefit assessments, we began implementation of several projects including repair of compressed air leaks and the installation of three heat recovery boilers, variable-frequency drives, piping and tank insulation, and programmable controls. The next audit will be conducted in 2014 at our largest operation and energy consuming facility in Green River, Wyoming.

**Greenhouse Gas Emissions**

Our natural soda ash mining and processing operation in Green River consumes the largest share of FMC’s energy usage and generates the most greenhouse gas emissions (GHG). Dur GHG emissions include both those occurring from fuel use, as well as process emissions – naturally occurring emissions released during the mining and processing of natural soda ash. FMC’s 2013 GHG emission intensity decreased 3 percent due to lower process emissions at this facility.

We will conduct an EMCOE audit in 2014 to find new ways to decrease Green River’s energy and greenhouse gas emissions. However, it is important to note that production of natural soda ash from our Wyoming site already uses 40 percent less energy and produces about 40 percent less GHG than production of the alternative synthetic soda ash.

**Water Management**

In 2013, FMC’s water intensity increased 5 percent versus 2012. The Green River site is our largest consumer of water, where in addition to use in solution mining, water sources are used to remove naturally occurring impurities that enter our process with the trona ore. We collect this process water in a containment lake, allowing us to recover any remaining soda ash value. Process water from the containment lake is also used as an extremely energy-efficient source of cooling capacity versus energy-intensive mechanical chillers. However, the lake depends on natural precipitation for level maintenance. With continued drought conditions in the Western United States, the containment lake reached critically low levels in 2013 and additional water intake was necessary to maintain the appropriate lake level. This maintenance was the primary driver for FMC’s increased water intensity in 2013.

It is well recognized that major global shifts involving population growth and climate change are creating substantial concerns about water availability. To understand FMC’s exposure and to determine how to mitigate potential risks, we conducted a Water Risk Assessment (WRA) that cross-referenced water use details from our manufacturing sites with the World Resources Institute’s “Aqueduct” water mapping tool. Based on those results, we analyzed the potential water source risk for our manufacturing sites, our key suppliers.

The WRA identified nine FMC facilities in water stressed areas with significant water dependency but only two – Green River, Wyoming, and Minera del Altiplano, Argentina – indicated future potential water instability. We are confident that we have adequate water availability in the near term. As a result of these findings we are working to better understand each situation and develop conservancy and contingency strategies to ensure long-term availability.

In addition, to ensure that potential water risks are considered in all future investment decisions, the WRA is being integrated into FMC’s long-term corporate planning. It will factor into decisions involving mergers and acquisitions and the Capital Deployment Process.

FMC’s 2013 waste intensity increased by 11 percent vs. 2012. This was driven primarily by increased waste shipments from our Bessemer City, North Carolina, location in 2013 versus 2012. One of the site’s large volume by-products could not be distributed in a timely manner due to demand fluctuations necessitating disposal. Other significant factors included increased focus on elimination of out-of-service equipment and materials across all of our sites and, in some cases, tighter cross-contamination standards leading to increased rinsing of equipment and resulting wastewater.

**Waste Reduction**

FMC will perform a detailed waste assessment project in 2014. We expect this project to inform our strategy for waste reduction and decreasing waste-to-landfill.

Our decision to include Agricultural Solutions active ingredients contract manufacturers in our results also has a significant impact on waste. FMC employees work closely with these partners to continuously improve process yields and reduce waste intensity. In 2013, several significant reduction projects were implemented, including:

- Modification of process routes for several key active ingredients to improve overall yields and reduce waste loading.
• Improvement in recovery of solvent streams and spent catalyst materials.
• Implementation of a system to recover a key raw material from a waste gas stream.
• Elimination of packaging material by converting material supplied in drums to bulk supplied material.

In addition to more standard waste types, processing of trona ore and seaweed results in high-volume/low-toxicity materials that must be disposed of or re-used. Volumes of these materials are associated with production as they are largely unused portions of a raw material being processed. We work to minimize the amount of material going to landfills and seek beneficial applications whenever possible.
• Processing of trona ore results in large amounts of excess inert shale (rock). FMC produced approximately 866,000 tons of this material in 2013. Additionally, production of steam and electricity required to process trona ore generated approximately 44,000 tons of boiler ash. We use the following hierarchy to determine how best to dispose of the materials:
  • Haugesund, Norway: The process at Haugesund focused on getting in place the right structure, processes and systems for safe, effective and efficient sourcing and production. Highlights include:
    ▶ Installation of a data focused culture to drive improved rates and yields. This production workstream proved the most challenging, as significant operational knowledge had been lost due to retirements and turnover in recent years and there were equipment failures throughout the project. The site is finally starting to see results as rates, quality and customer satisfaction have all improved considerably and process knowledge has deepened due to the changes.
    ▶ Development of a new organizational design to ensure effective operational oversight and cross-departmental alignment.
    ▶ An upgraded maintenance system that focuses on preventative rather than reactive maintenance.

The chart below shows the total amounts of bio-solids produced and their final destination:

- Soil Conditioning 91%
- Other [compost, organic fertilizer, cattle feed] 6%
- Landfill 3%

FMC’s Manufacturing Excellence (ME) program, launched in 2012, drives sustainability and safety improvements in key performance metrics and encourages long-term changes in organizational culture. While each project may address different areas of manufacturing, they all build on an integrated three-phase process: pre-assessment, analysis and implementation. ME projects were completed at three sites in 2013:

- Green River: We developed and implemented safety and productivity systems and processes at pilot portions of the site that are expected to accelerate both safety and operational progress. Initial ME results included:
  ▶ Continued use in the process [this allows us to recover any remaining alkaline value];
  ▶ Return shale to its place of origin – underground in formerly mined areas;
  ▶ Manage on-site via a well-engineered storage area that is regularly inspected by regulators.

- FMC repurposes bio-solids at each of our Health and Nutrition production sites that generate them. Rather than going to a landfill, the materials are used for practical applications including:
  ▶ Composting the material
  ▶ Use in organic fertilizers
  ▶ Soil conditioning or ‘landfarming’
  ▶ Cattle feed supplements

In 2011, FMC Brazil began offering its line of Green Jugs. The manufacturing of these products generates less greenhouse gas emissions than traditional plastic packaging. They represent the next generation in sugar-based bioplastic packaging solutions.

To answer customers’ needs, in 2013 FMC introduced the Double Green Jug. This solution features an inner layer of nylon for use with solvent-based products and its stackable design eliminates 172 kilograms of cardboard packaging.