Illinois Fertilizer & Chemical Association
Supply • Service • Stewardship

THE U.S. FERTILIZER INDUSTRY AND CLIMATE CHANGE POLICY

The Fertilizer Institute
Nourish, Replenish, Grow

Fertilizer is a global strategic commodity and is critical for the production of food, feed, fuel & fiber.

Fertilizer nutrients – nitrogen, phosphorus and potassium – are all naturally occurring elements that are "fed" to plants and crops for healthy and abundant food and fiber production. They are currently responsible for 40 to 60 percent of the world's food supply. Harvest after harvest, fertilizers replenish our soils by replacing the nutrients removed by each season's crop. Each year, the world's population grows by 80 million and fertilizers – used in an environmentally sensitive way – are critical to ensuring that our nation's farmers grow an adequate supply of nutritious food for American and international consumers.

As consumers around the world demand improved diets, the global demand for fertilizers is growing rapidly. Under these circumstances, U.S. farmers compete with farmers from around the world for a limited supply of nutrients. For example, over 85 percent of our potash and over 50 percent of the nitrogen used on U.S. farms is now imported from other countries.

The United States needs a strong domestic fertilizer industry to ensure this valuable resource is available for a stable food production system. Today, the world's food supply, as represented by the grain stocks-to-use ratio, is near its lowest level in 35 years. In six of the last seven years, consumption of grains and oilseeds has exceeded production. *Many experts believe that we are just one natural disaster or substandard world harvest away from a full-scale food crisis.*

FERTILIZER IS A GLOBAL STRATEGIC COMMODITY.
Commercial fertilizer nutrients are currently responsible for 40 to 60 percent of the world's food supply.

THE FERTILIZER INDUSTRY IS AN ENERGY INTENSIVE INDUSTRY.

THE FERTILIZER INDUSTRY IS AN ENERGY EFFICIENT INDUSTRY.

CONGRESS NEEDS TO CONSIDER THE DRAMATIC IMPACT CLIMATE CHANGE POLICIES COULD HAVE ON OUR NATIONAL FOOD SECURITY.
Farmers must have fertilizer in order to continue to produce a stable food supply.

Today, the world's food supply is near its lowest level in 35 years. Now more than ever, the United States needs a secure, domestically produced food supply.

WHEN FORMULATING CLIMATE CHANGE RELATED POLICIES, CONGRESS NEEDS TO CONSIDER THE IMPACT THESE POLICIES COULD HAVE ON OUR NATIONAL FOOD SECURITY.

The fertilizer industry is an energy intensive industry & has taken early action to achieve **NUMEROUS ENERGY EFFICIENCIES.**

Each bushel of corn, wheat or soybeans needs the nutrients provided by commercial fertilizers. Fertilizers are natural ***resource-based*** products.

NITROGEN - A CHEMICAL REACTION

Nitrogen fertilizer begins with ammonia, which is produced by capturing nitrogen from the air and using a complex chemical reaction in which natural gas is the typical feedstock for the hydrogen needed to make the nitrogen available for plant uptake. The cost of natural gas represents between 70 and 90 percent of the cost of producing ammonia, the building block for most nitrogen fertilizers.

PHOSPHATE AND POTASH - MINED RESOURCES

The production of phosphate and potash fertilizers begins at the mines, where phosphate and potash reserves exist, yet many finished complex and phosphate fertilizers contain nitrogen and are thus also dependent on natural gas for their production.

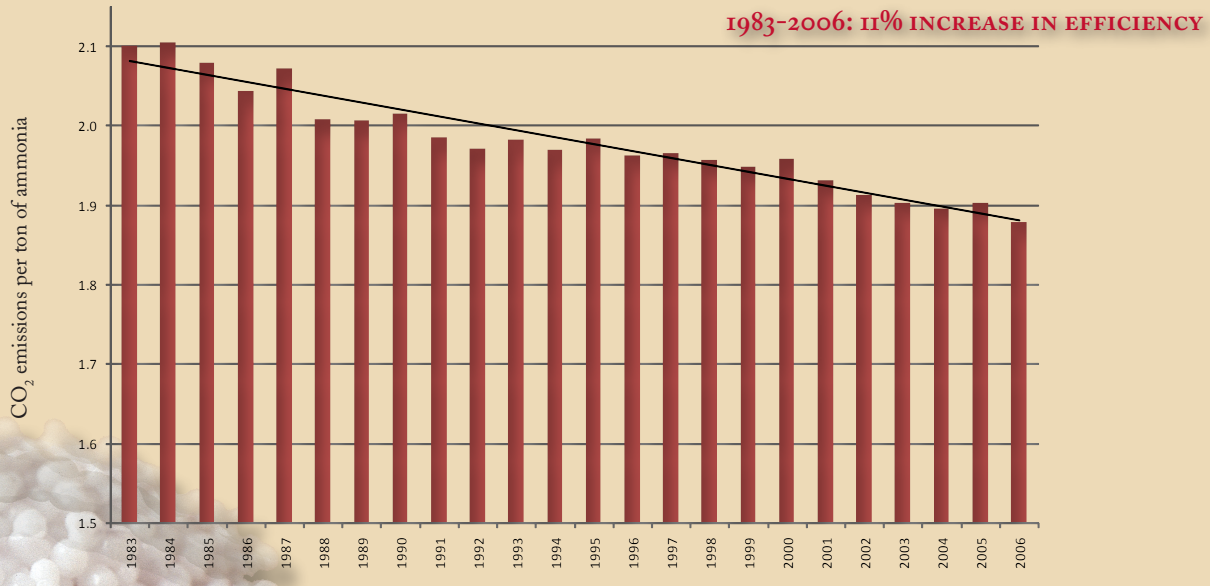
Among the three primary nutrients, potash production requires the least amount of energy.

FERTILIZER IS AN ENERGY EFFICIENT INDUSTRY -

The U.S. fertilizer industry – already one of the most energy efficient fertilizer sectors in the world – has voluntarily taken early action to achieve energy efficiencies. Between 1983 and 2006, the industry reduced the amount of natural gas used to produce a ton of ammonia by 11 percent, and the companies that comprise the industry are continuing to look for ways to reduce their overall carbon footprint.

Beyond early action toward efficient natural gas use, the industry also continues to reduce emissions through co-generation, in which waste heat is captured and utilized in place of carbon based energy.

CO_2 Emissions Per Ton of Anhydrous Ammonia Production



SOURCE: COMPUTED BY THE FERTILIZER INSTITUTE FROM DATA REPORTED BY USDA

Greenhouse gases are produced as a result of numerous industrial processes. In 2006, industrial processes from many industries generated emissions representing approximately 5 percent of total U.S. greenhouse gas emissions.

Specifically, in the fertilizer industry, greenhouse gas emissions come mostly from three industrial processes:

AMMONIA AND UREA PRODUCTION; PHOSPHORIC ACID PRODUCTION; & NITRIC ACID PRODUCTION.

AMMONIA AND UREA PRODUCTION:

Ammonia is the basic building block for most nitrogen fertilizers and many other important chemicals, including refrigerants and pharmaceuticals. CO_2 is emitted during the production of ammonia, and the majority of these emissions result from the use of natural gas as a feedstock in the ammonia manufacturing process. Natural gas is the feedstock used in the vast majority of ammonia manufacturing. A portion of CO_2 emissions also results from venting when more CO_2 is produced than can be sold.

NITRIC ACID PRODUCTION:

N_2O emissions result from the production of nitric acid, a compound that is primarily used to make commercial fertilizers. It is also used as a feedstock for the production of nylon and explosives. The nitric acid produced in the United States comes from the conversion of ammonia and produces energy as heat that helps support the manufacturing process.

PHOSPHORIC ACID PRODUCTION:

Phosphoric acid, which is produced using phosphate rock, is a basic raw material in the production of phosphate-based fertilizers. Phosphate rock releases some CO_2 when phosphate rock is reacted with sulfuric acid in the phosphate fertilizer manufacturing process. Additionally, some CO_2 is emitted from fuel combustion in this process.

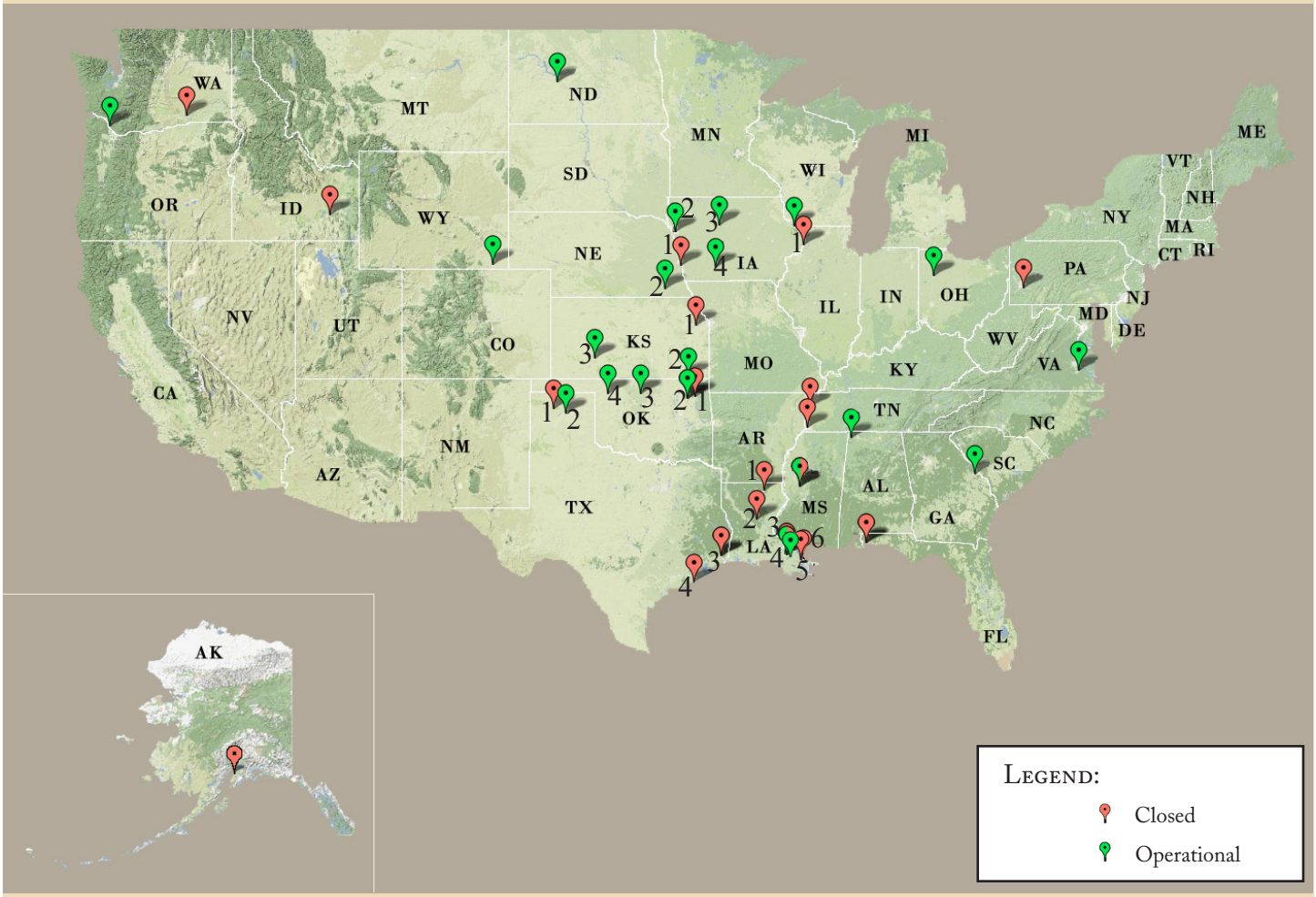
The fertilizer industry recycles many CO2 emissions.

The nitrogen fertilizer industry currently recycles more than one-half of the CO_2 it produces in the manufacturing process. Specifically, there are two types of CO_2 emissions from nitrogen fertilizer production – fixed process emissions which produce CO_2 that is pure and recyclable and combustion emissions which cannot be separated for recovery. Fixed process emissions are subject to the laws of chemistry and cannot be reduced. However, these emissions are used in a variety of ways including the manufacture of urea, beverage production, and carbon capture and storage for enhanced oil recovery.

According to the U.S. Environmental Protection Agency (EPA), between 1990 and 2006, U.S. ammonia and urea producers reduced their greenhouse gas (GHG) emissions by 4.5 million tons of CO_2 equivalent.

Nitric acid is also used in the nitrogen fertilizer production process. In the same timeframe, nitric acid producers have reduced their GHG emissions by 1.4 million tons of CO_2 equivalent. Sulfuric acid is used to produce phosphoric acid, a major raw ingredient in the phosphate fertilizer production process. Phosphoric acid plants generate a large amount of "green" energy via the heat produced in reacting sulfuric acid. This heat is captured and used downstream to produce phosphate fertilizer products thereby reducing the need to purchase energy from powerplants. Finally, phosphoric acid producers have reduced their emissions by 0.3 million tons of CO_2 equivalent.

Operational and Closed Ammonia Plants Since Fiscal Year 1999



Alabama
El Dorado - Cherokee

Alaska
Agrium U.S. Inc. - Kenai *(2 plants)*

Arkansas
Terra Industries, Inc. - Blytheville

Florida
Air Products & Chemicals, Inc. - Pace Junction

Georgia
PotashCorp - Augusta

Idaho
Simplot - Pocatello

Illinois
Rentech Energy Midwest Corp. - East Dubuque

Iowa
1. PotashCorp - Clinton
2. Terra Industries, Inc. - Port Neal
3. Koch Nitrogen Company - Fort Dodge
4. Green Valley Chemical Corp. - Creston

Kansas
1. Farmland Industries, Inc. - Lawrence
2. Coffeyville Resources, LLC - Coffeyville
3. Koch Nitrogen Company - Dodge City

Louisiana
1. Koch Nitrogen Company - Sterlington
2. Farmland Industries, Inc. - Pollock
3. PotashCorp - Geismar
4. A. CF Industries - Donaldsonville *(4 plants)*
   B. Terra Industries - Donaldsonville *(2 plants - 1 operational, 1 closed)*
5. Solutia Inc. - Luling
6. Cytec Industries Inc. - Fortier
7. Mosaic - Faustina

Mississippi
Terra Industries, Inc. - Yazoo City *(2 plants - 1 operational, 1 closed)*

Nebraska
1. PotashCorp - LaPlatte Bellevue
2. Koch Nitrogen Company - Beatrice

North Dakota
Dakota Gasification Company - Beulah

Ohio
PotashCorp - Lima

Oklahoma
1. Wil-Grow Fertilizer Company - Pryor
2. Terra Industries, Inc. - Verdigris *(2 plants)*
3. Koch Nitrogen Company - Enid
4. Terra Industries, Inc. - Woodward

Oregon
Dyno Nobel, Inc. - St. Helens

Pennsylvania
USX - Clairton

Tennessee
PotashCorp - Memphis

Texas -
1. Diamond Shamrock - Dumas *(2 plants)*
2. Agrium U.S., Inc. - Borger
3. Terra Industries, Inc. - Beaumont
4. El Paso - Freeport

Virginia
Honeywell - Hopewell

Washington
Agrium U.S., Inc. - Kennewick

Wyoming
Dyno Nobel, Inc. - Cheyenne

ANY NEW U.S. CLIMATE CHANGE POLICY MUST DELIVER

environmental progress *without* harming the economy.

It is imperative that Congress consider the value proposition for energy policy, the environment and the economy when evaluating its options on new climate change policies. *The U.S. fertilizer industry is operating at environmental efficiencies that are not matched by many of its competitors in the world market*. Farmers must have fertilizer in order to continue to produce a stable food supply.

During the last decade, 26 U.S. ammonia plants have closed primarily due to high natural gas prices. It is critical to our nation's food security and meaningful environmental improvement that Congress align climate with energy policy. This means not imposing a climate change policy that renders U.S. nitrogen manufacturing uncompetitive, drives natural gas prices higher and in turn, threatens to move more fertilizer production to less environmentally friendly and efficient areas of the world. Currently, the United States imports approximately 55 percent of the nation's nitrogen needs. *Of these imports, 82.7 percent comes from countries without climate change policies in place to regulate carbon*. Much of this imported fertilizer is also transported long distances, which in turn, creates additional GHG emissions.

Responsible legislation must consider the ultimate goal of reducing global carbon dioxide emissions without losing American jobs.

The fertilizer industry provides high paying jobs to hardworking Americans in production plants, in retail and wholesale businesses, and in a host of related industries such as rail, barge and truck transportation. With the U.S. economy facing some of the most serious challenges in modern history, it is critical that any climate change policy not jeopardize jobs that are such a vital link in food production and the U.S. economy.

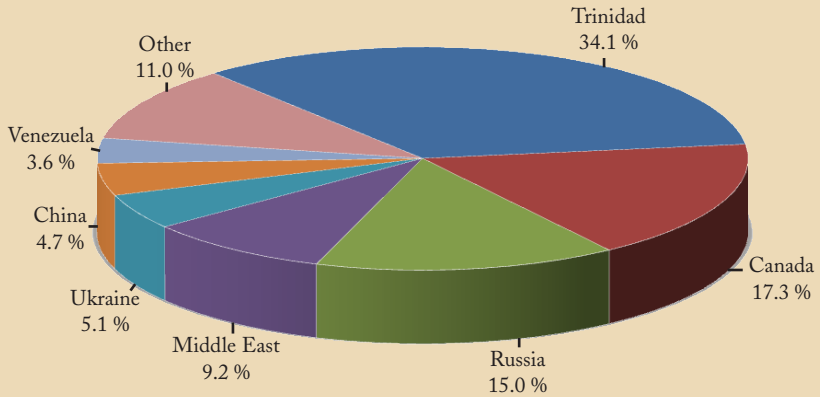
U.S. Nitrogen Sources - Ammonia Production and N Imports

SOURCE: COMPUTED BY THE FERTILIZER INSTITUTE FROM DATA REPORTED BY U.S. DEPARTMENT OF COMMERCE

U.S. Nitrogen Imports per Country, Fiscal Year 2007/08

82.7% OF THE U.S. NITROGEN IMPORTS ARE FROM COUNTRIES *WITHOUT* CLIMATE CHANGE POLICY

11.73 Million Tons of Nitrogen



FERTILIZER IS A GLOBAL STRATEGIC COMMODITY.

- Commercial fertilizer nutrients are currently responsible for 40 to 60 percent of the world's food supply.
- Over 85 percent of our potash and over 50 percent of the nitrogen used on U.S. farms is now imported from other countries.
- Many experts believe that we are just one natural disaster or substandard world harvest away from a full-scale food crisis.
- Every second, we have three new mouths to feed, while we lose an acre of farmland every 2.5 seconds.

THE FERTILIZER INDUSTRY IS AN ENERGY INTENSIVE INDUSTRY.

- The cost of natural gas represents between 70 and 90 percent of the cost of producing ammonia, the building block for most nitrogen fertilizers.

THE FERTILIZER INDUSTRY IS AN ENERGY EFFICIENT INDUSTRY.

- Between 1983 and 2006, the industry reduced the amount of natural gas used to produce a ton of ammonia by 11 percent, and the companies that comprise the industry are continuing to look for ways to reduce their overall carbon footprint.
- According to the EPA, between 1990 and 2006, U.S. ammonia and urea producers reduced their GHG emissions by 4.5 million tons of CO_2 equivalent.

CONGRESS NEEDS TO CONSIDER THE DRAMATIC IMPACT CLIMATE CHANGE POLICIES COULD HAVE ON OUR NATIONAL FOOD SECURITY.

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- Farmers must have fertilizer in order to continue to produce a stable food supply.
- Currently, the United States imports approximately 55 percent of the nation's nitrogen needs. Of these imports, 82.7 percent comes from countries without climate change policies in place to regulate carbon.
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NITROGEN (N)

is a primary building block for all organisms. It is essential to making proteins, helps keep plants green and is a critical component of soil organic matter.

COMES FROM THE AIR

PHOSPHORUS (P)

is found in every living cell. Phosphorus is a component of DNA and it also plays vital roles in capturing light during photosynthesis, helping with seed germination, and helping plants use water efficiently. Plants also use phosphorus to help fight external stress and prevent disease.

COMES FROM ANCIENT SEA LIFE

POTASSIUM (K)

is essential to the workings of every living cell. It plays an important role in plants' water utilization and also helps regulate the rate of photosynthesis. Other aspects of plant health influenced by potassium include the growth of strong stalks, protection from extreme temperatures, and the ability to fight stress and pests such as weeds and insects.

COMES FROM EVAPORATED OCEANS

1. *Fertilizers are drawn from nature – they are not man-made.*
2. *Farmers are not adding fertilizers to the ground. They are replacing nutrients that are lost at each harvest.*
3. *The world has no choice but to use fertilizers. Without them, more than two billion people would starve.*
4. *By helping to conserve land, fertilizers safeguard recreational land and wildlife habitats.*
5. *Farmers care about the environment as much as anyone.*

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THE ILLINOIS FERTILIZER & CHEMICAL ASSOCIATION REPRESENTS THE CROP PROTECTION, INPUT AND SUPPLY INDUSTRY.

The Fertilizer Institute
Nourish, Replenish, Grow

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TFI SERVES TO PROMOTE AND PROTECT THE FERTILIZER INDUSTRY, REPRESENTING THE PUBLIC POLICY, COMMUNICATION AND STATISTICAL NEEDS OF PRODUCERS, IMPORTERS, WHOLESALERS AND RETAILERS OF FERTILIZER, AS WELL AS THOSE COMPANIES THAT PROVIDE VITAL SERVICES TO THE FERTILIZER INDUSTRY.