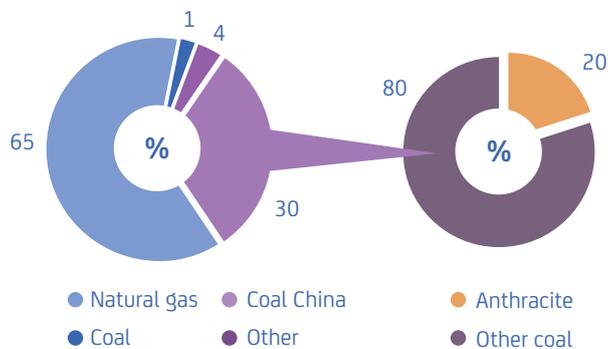


Fertilizer *facts*

Ammonia production: moving towards maximum efficiency and lower GHG emissions

Why is ammonia so energy intensive?

The synthesis of ammonia through the Haber Bosch process is the source of nearly all nitrogen fertilizers. On a worldwide basis, natural gas and other hydrocarbon feedstock such as coal (mostly in China) are used.

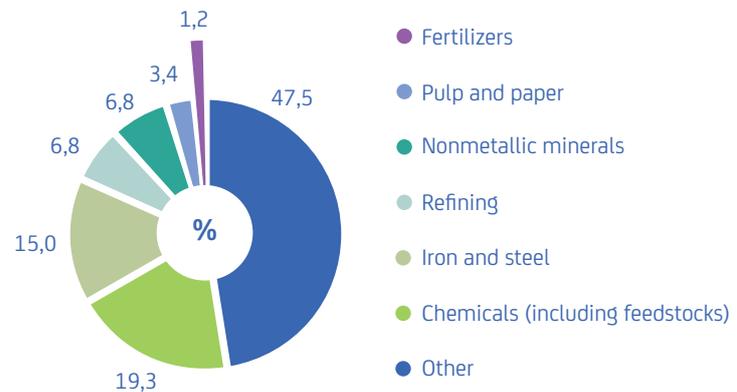


Global ammonia capacity by feedstock (IFA, 2014)

Energy efficiency in ammonia production is critical, since it accounts for most of the manufacturing cost and has a significant impact on the reduction of carbon dioxide (CO₂) emissions from the sector.

How much energy does the ammonia sector consume?

Fertilizer production consumes approximately 1.2% of the world's total energy on an annual basis. Ammonia production accounts for the bulk, or approximately 90% of the industry's total, with approximately 166 million tonnes produced annually.

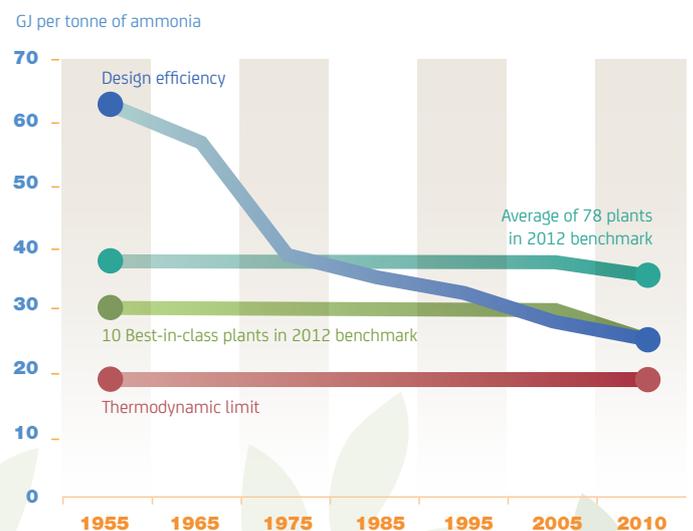


World industrial energy consumption by sector (EIA, 2010)

The fertilizer industry has made great strides

Large gains in energy efficiency in ammonia production have been achieved over the past 30 years. Ammonia plants have been equipped with the most advanced available technologies, leading to enhanced plant throughput and lower overall energy consumption and reduced CO₂ emissions. For example, a typical nitrogen plant built today typically uses 30% less energy per tonne of ammonia produced than one constructed 40 years ago (IFA).

IFA tracks progress in ammonia plant efficiency and CO₂ emissions to encourage members to improve their performance. The latest Association benchmark report indicates that the most efficient plants are performing close to maximum efficiency and that incremental advances in energy efficiency have resulted in significant reduction in greenhouse gas (GHG) emissions by nearly all the plants surveyed.



Global energy efficiency benchmark (IFA, 2012)