



# The European fertilizer industry:

## Sitting at the crossroad between nutrition and energy

---

by **Jacob Hansen**, Director General, Fertilizers Europe

**Over the past six months, the European Commission has made two important proposals.**

**On 1 June 2018 the European Commission presented its legislative proposals for the future of CAP after 2020. Based on nine objectives and with an increased focus on the environment and climate, the intention of the European Commission is to encourage the transition towards a more sustainable agricultural sector and the development of vibrant rural areas.**

Moreover, on 28 November 2018 the European Commission published its future strategy vision entitled: 'A Clean Planet for all: A European strategic long-term vision for a prosperous, modern, competitive and climate neutral economy'. Within this, the European Commission states its ambition for a climate neutral economy by 2050, aiming to take a global lead in the climate agenda.

What do all these developments mean for the industry and what kind of challenges and opportunities emerge? What is the future role of our

sector in the context of the European Union's ambition to lead sustainable agricultural production and to maintain a strong industrial base while moving towards a decarbonised society?

### **The vision of the European fertilizer industry to 2030**

With this in mind, Fertilizers Europe has undertaken an extensive exercise to look into the future of the fertilizer industry, to identify the main trends

and developments and to take a conscious and well-thought position on the role that the European fertilizer industry will play in some of the key societal challenges. From dialogues with key stakeholders, such as the agri-food sector, NGOs, academia as well as internal discussions, a picture emerged where the fertilizer industry lies at the crossroads between nutrition and energy. Mineral fertilizers already now feed about half of the global population and they will continue to play a key role in ensuring food security in the future while at the same time reducing its environmental footprint. From the energy side, ammonia, the building block for all mineral nitrogen fertilizers, can be used as an excellent energy carrier and can play an integral role in the transition towards a low carbon economy.

The vision of Fertilizers Europe for 2030 is an attempt to answer the question of how to produce enough nutrients for the plants that are needed by a growing global population, in a more energy and environmentally efficient way, while at the same time helping find solutions to other societal challenges such as meeting the growing demand for cleaner energy and better use of resources.

This vision falls into two parts: the way fertilizers are used and the way they are produced. It also translates in two key messages: 'applying more knowledge per hectare' from the agriculture perspective and 'taking on challenges' from the industrial perspective.

## Feeding Life 2030

Meeting future food needs remains a challenge. Today, fertilizers help to feed almost 50% of the global population, yet some 10% of the global population remains undernourished. Meanwhile, the UN estimates that the world's population will continue to grow, reaching 8.6 billion by 2030 (up from 7.6 billion today). In other words, we need to find a way to feed an extra Germany every year.

In Europe, undernourishment is not a concern because the large majority of farmers apply mineral fertilizers



**“ Today, fertilizers help to feed almost 50% of the global population ”**

to enhance the yield and quality of their products. The focus for Europe is to meet future food needs in a more sustainable way in order to provide European consumers with high quality, nutritious, diverse and sustainably-produced food.

Mineral fertilizers are, and will remain, an essential source of nutrients for the plants, as they are needed to balance and supplement organic sources in order to give plants the optimal growing conditions. The challenge is to improve the efficiency of fertilizer use and the solution lies in 'applying more knowledge per hectare'. But what does this mean in practical terms?

The vision foresees that professional farmers and growers will become even more knowledgeable and demanding in terms of nutrient input by 2030. They are expected to focus increasingly on nutrient use efficiency and to do this, they will rely more profoundly on professional advice, planning and new tools as well as technology. Better fertilizer products precisely targeted to the specific crop combined with new technologies,

tools and real-time data will offer improved results. Precision farming entails great opportunities for the future because it allows farmers to apply fertilizer where it is required, in the amount that is needed, optimizing overall application, and increasing yields. It can also have a very positive effect on the environment, as better and more targeted fertilization will increase the growth of plants and thereby diminish losses to the environment.

## Decarbonisation – ammonia is the missing link

Europe has the ambition to take a lead in the global battle against climate change.

The EU's objective of a net zero emissions economy by 2050 represents a huge challenge for the mineral fertilizer industry given the natural gas-based and energy-intensive nature of nitrogen fertilizer production. The European fertilizer industry is already affected by the EU Emission



***The EU's objective of net zero emissions economy, across all sectors, in 2050, represents a huge challenge***

Trading Scheme (ETS). Further decarbonisation will affect the industry in multiple ways, exposing it to the risk of carbon leakage (whereby industries move production from high to lower-regulated regions). However, provided that systems are put in place for maintaining a level playing field, the EU ammonia industry could become an important player in the low carbon transition.

In our vision, the nitrogen fertilizer industry, as a producer of ammonia, offers the key to unlocking clean energy potential by acting as a carbon-free energy carrier. It is the missing link in making decarbonisation a reality.

The commitment of our industry to optimise its production processes does

not end here. The industry will also be challenged by the demand for better and more targeted fertilizers, thus more efforts in terms of innovation and product development and being ready to take advantage of new science and technologies related to plant growth.

The fertilizer producers in Europe will also continue working on optimising resource use and looking for new and more effective ways to recycle a wide range of by-products in its production process, turning them into valuable plant nutrients. In 2030, the synergies between fertilizer producers and industries such as nylon production are expected to continue.

### **Looking further ahead into 2050**

In terms of designing and building new production facilities for mineral fertilizers, 2030 is just around the corner. It is instructive to imagine the world of 2050 and see if the steps taken in 2030 will be in line with the projected reality.

The EU's objective of net zero emissions economy, across all sectors, in 2050, represents a huge challenge for the mineral fertilizer industry. While it is difficult to imagine nitrogen fertilizer production to be totally carbon-free without extensive use of carbon capture and storage, the good news is that with the technologies we

know today such a future is realistic and possible, in principle.

In 2050, ammonia, which is the raw material for nitrogen fertilizer production, could be made from 'green' hydrogen derived from the electrolysis of water, powered by renewably-produced (green) electricity. This hydrogen will be produced at the most convenient sites where solar, wind or other forms of green energy are abundantly available. Ammonia can be produced near those sites, since ammonia is the most effective hydrogen storage available. But ammonia can also be produced at existing ammonia production sites, connected to the hydrogen network via the former natural gas pipeline grid.

It is possible to imagine a situation in 2050 in which carbon neutral European production of fertilizers nourishes agricultural production. The European fertilizer industry will hopefully become very innovative and efficient

in global terms, while reducing its carbon footprint to meet the EU's 2050 challenges. However, such a situation is conditional on an abundant amount of carbon-free and competitively priced electricity being available and the expansion of networks for the transportation of ammonia/hydrogen.

### From vision to reality

The purpose of Fertilizers Europe's exercise to formulate this vision is to challenge the status quo of the industry, align efforts, spur innovation and

initiate a constructive dialogue with stakeholders to deliver future-proof solutions to the most pressing challenges in our societies. To succeed, industry's efforts have to be underpinned by relevant policy framework that includes cost-effective solutions and ensures a level playing field on regulatory, energy and carbon cost.

While it is true that our vision for the future of the fertilizer industry in Europe is very ambitious, with the right commitment from both industry leaders and political decision makers it can become a reality. ■

We invite all stakeholders to consult our vision document 'Feeding Life 2030' and engage with us on the future role of the European fertilizer industry in helping address major societal challenges.

To download the full report "*Feeding Life. The European Fertilizer Industry at the crossroads between nutrition and energy*" visit

<https://www.fertilizerseurope.com/feeding-life-2030/>