



## **The Donau Soja Protein Strategy for Europe**

### **The European Protein Challenge**

Due to suitable climate and soils, many European farmers are remarkably good at growing cereal crops such as wheat, barley and maize. This supports high levels of production of carbohydrate-rich grains used mostly to feed livestock. This productive agricultural system depends on two major inputs into European Union farms: about 11 million tonnes of synthetic nitrogen fertilizer, and the high-protein meal from about 36 million tonnes of soybeans to provide protein supplement for feeding animals. The increase in plant protein<sup>1</sup> requirements over the last 60 years in Europe is due largely to the increased consumption and production of meat and dairy products. After China, the European Union is now the second largest importer of soy from South America. While the European Union's agricultural system as a whole is 71% self-sufficient in tradable plant protein, 86% of the plant protein imported to meet the 29% deficit is soy. This protein deficit is a fundamental challenge to the resilience, acceptance and performance of our agri-food systems. This is Europe's Protein Challenge.

### **The case for a European Protein Transition**

Many European farming systems are not balanced with respect to the nitrogen cycle. Carbohydrate-rich cereal crops and oil-rich rapeseed grow very well over much of Europe and consequently many farmers specialize in growing them. World-wide, protein-rich grain legumes, which can bring agronomic and environmental benefits in crop rotations, account for about 14% of the global arable area but there is great variation in the extent of their use. Soybean is grown in intensive monocultures in the major exporting countries in South America where it commonly accounts for more than half of the cropped area. In contrast, grain legumes account for only 2 to 3% of the arable area of the European Union, mostly soybean, pea and faba bean in that order. The combination of this European cropping pattern with few grain legumes and the high consumption and production of livestock products is the basic reason why we have a protein deficit in Europe.

### **Addressing the Protein Challenge**

Addressing the Protein Challenge and delivering the Protein Transition requires a holistic approach. The system change needed can be regarded as a set of five pillars which are:

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<sup>1</sup> Proteins are nitrogen-based compounds and consequently protein production and use affects the nitrogen cycle. Due to this link, current farming and food systems are largely responsible for the human impact on the nitrogen cycle and the most exceeded planetary boundary. Protein production and consumption is a major driver of greenhouse gas emissions from agriculture and land use change, nitrate pollution of water and ammonia pollution of air, and loss of natural habitats and biodiversity.

1. **Sustainable and responsible imports:** Even with significant change, Europe is likely to still need plant protein imported from traditional exporting regions. We need to switch to certified produce from production regions and systems that are thoroughly validated against high environmental and social standards. The Protein Challenge is global. It is important that Europe leads change. In particular, collaboration with China is required to achieve a world-wide move towards more sustainable production of protein. We need to use standards for responsible production and trade. In this, Europe and China together can drive global change in plant protein production and use.
2. **Increased production of grain legumes in Europe:** Increasing grain legume production in Europe will bring a wide range of benefits and reduce the protein deficit. Especially in Europe, grain legumes increase diversity in cropping and support pollinating insects. They don't need nitrogen fertiliser because they fix their own nitrogen from the air. They counter the build-up of disease, pests and weeds in cereal-based crop rotations because they are biologically very different to cereals. The current low use of legumes means that we forfeit many of these agronomic benefits and associated environmental advantages. The general lack of cropping diversity is associated with stagnation in crop yields or higher costs as our main crops succumb to increased levels of weeds, pests and diseases. European farmers can respond to an increased demand for plant protein produced in Europe to high environmental and social standards. This meets the growing demand for non-GM products and can support regional/local value chains. The industry can collectively set standards for all protein sources and signal support to sustainable production. In particular, there is potential to improve cropping systems in central and eastern Europe using grain legumes. This means that trans-Atlantic trade would be partly replaced by east-to-west sourcing within Europe contributing to European cohesion, regional development, and rural development in now deprived rural areas. Also there is potential in western Europe to increase grain legume production without displacing cereal and oilseed production due to the yield benefits in crop rotations.
3. **Improved use of existing and new protein resources:** Plants are by far the most important primary source of protein. While co-products such as rapeseed meal, sunflower seed meal and distillers dried grains are already used by the feed industry, there remain opportunities for better use of agri-food residues in livestock feeding. Also, our grassland-based production systems could in many areas of Europe better use grass and high-protein grassland species such as clover (which is a legume) to reduce soy use. Forage crops such as alfalfa are other protein sources. There are also potential opportunities in for example algae culture.
4. **Increased efficiency of protein use:** Better matching of livestock diets to livestock protein requirements saves protein and reduces pollution by reducing the excretion of nitrogen compounds. This can make an important contribution to farmers' compliance with nutrient balance-based fertiliser management systems. Protein is usually an expensive component of feeds and so more precise feeding can also reduce production costs.



5. **Healthier and more sustainable diets:** The size of the European Protein Challenge is determined largely by the quantity of livestock products that is consumed and produced. Human diets that rely more on plant protein, especially pulses and soy, are generally healthier and more sustainable compared to the typical consumer diet in the EU today. While meat, milk and eggs provide us with high-quality protein, a large proportion of the population consumes more meat and dairy products than is recommended for a healthy diet. This has far-reaching consequences because a large livestock sector is required. Most of the plant protein-nitrogen consumed by these livestock is excreted and now causes a large proportion of the water and air pollution from agriculture. The impacts of this on the environment are particularly large where livestock production is regionally concentrated. Moderation in the consumption of animal products with a corresponding reduction in their production would improve the performance of our agri-food system in terms of human health, the environment, and land use.

### **Delivering change – The Protein Transition Action Plan**

The Protein Transition depends on combined efforts in the public and private sectors, all based on the use of sound science, technology and innovation. Some measures can be implemented now in conjunction with on-going commercial activities and current policy instruments. Others require longer term changes.

**For the short term (1-5 years):** There are still reports of poor standards of production in soy exporting regions. There is increasing concern that our imported protein sources are not sustainable with reports of unsustainable agronomic practices, exploitation of the rural poor, and continued habitat loss in the producing regions of South America. A first step in a response is an immediate tightening of standards within European value chains with a commitment to high social and environmental standards, and zero conversion of natural and semi-natural lands to agriculture and cropping respectively. This can be delivered by joint commitment across all trading organisations operating in Europe. The retail sector can contribute significantly to an impulse for change. For soy, we need to switch to 100% certification and we also need joint working across the trading sector to validate that the certification of that soy is really supporting high production standards. This could be achieved by a programme of evidence gathering to assess and validate the impact of certification. The overall goal is to raise production standards. This will increase the demand for other protein sources in Europe stimulating the development of alternative value chains. Labelling which helps consumers differentiate between products for a range of production characteristics (including GM-free labelling) can increase market opportunities for legumes grown in Europe the standards that prevail in the EU.

The scale of the challenge is fundamentally determined by consumption. Public agencies already have health guidelines that indicate that a large proportion of the population consume more meat and dairy products than is recommended for good health. The resulting 'healthy moderation' message could be more clearly communicated and debated in public. Healthy eating guidelines have not been prominently linked to sustainable development ("Sustainable



healthy eating”). We need unambiguous policy acknowledgement and public information about healthy and sustainable dietary choices. This will provide more favourable conditions for change in the food industry and sustain the current trend towards reduced livestock product consumption opening up options to reduce European livestock production, plant protein imports, and nitrogen pollution.

Short-term measures can also include increasing and improving the regulation of nutrient use in farming. The current development of farm-level nutrient balances in Germany is an example of how policy in related areas has the potential to support the protein transition by incentivising more precise protein feeding. Parallel to this, it is essential that the recent growth in grain legume cultivation in Europe is sustained by the Common Agricultural Policy and by continued technical support for farmers.

**For the medium term (1-10 years):** Parallel to, and building on, the short term measures, we need investment in technical innovation on farms and in other parts of the value chains. Technical development programmes such as those organised by Donau Soja in south-eastern Europe need to continue, integrated into the development of value chains. This requires ‘bottom-up’ innovation tailored to local circumstances within a wider framework of change. We need more research and especially more systematic translation of relevant agricultural and food research into practice at all levels: European, national and local.

The development of global standards for responsible trade and imports through collaboration with China is also a reasonable medium term objective that can be initiated now through the Donau Soja Europe-China Protein Council that was launched in Beijing in 2017.

Also in the medium term, the reform of the Common Agricultural Policy can be steered to support the Protein Transition. Further and more demanding measures to increase the diversity of cropping and to improve on-farm biodiversity can directly and indirectly support the production of grain legumes. All CAP reform measures can be proofed for their effect on the protein balance, both at member state and European level with national targets set. Increased support for relevant research, innovation and technical change focused on legume crops is required.

**For the long term (1-20 years):** Improvements in plant breeding are particularly relevant in the long-term. It usually takes more than 10 years from initial parent selection to the delivery of a new field-tested crop variety. The foundation of this is the availability of a more diverse range of well-characterised and tested parent breeding lines for breeding programmes. Traditionally, because the conventional genetic improvement of in-bred crop species such as wheat, barley and grain legumes such as soybean is not well rewarded by Plant Breeders Rights, there is under-investment by the private sector. This challenge is increased for those in-bred species that are not widely grown and which are being developed from a low area base. This means that public support is required if society is to gain from the potential of plant breeding, especially for legumes. In the case of grain legumes in particular, there is potential to improve crops in the medium and long term by incorporating new breeding material from other regions, for example from China.

The development of completely new value chain infrastructures is also a long-term undertaking which starts at the level of individual farm businesses and extends to the retailers. These are various, but of particular note is the development of new east-west trading within Europe.

## Conclusion

The Protein Transition depends on consensus. EU member states, businesses, and public-good organisation such as Donau Soja must cooperate to foster consensus and bring the components of change together. A halving of the European Union's soy imports from the peak level of about 40 million tonnes (soybean equivalent) in the years 2003 to 2008 is a realistic goal for 2030. If that is achieved, European agriculture will be more resilient; many Europeans will be healthier; the local, regional and global environment will benefit; and rural economies especially in eastern and south-eastern Europe will be more prosperous.





## **About the development of this strategy**

The overall goal of Donau Soja is a sustainable and European protein supply. For this, the development of soy production in Europe is part of a wider change in how we produce and use protein. The far-reaching consequences of protein production and use are now the subject of public debate. Building on the Europe Soy Declaration, Donau Soja has developed this strategy document to make a comprehensive contribution to the public debate on behalf of all the members of Donau Soja. The foundation of the strategy is a holistic and science-based understanding of the role of protein in the sustainable development of agri-food systems. The Donau Soja Science Advisory Board was consulted on the first draft before it was considered by the Donau Soja Board. With the support of the Board, a revised draft was sent to all members who were invited to comment. All comments received were reflected in finalising the document. The strategy was unanimously passed by the General Assembly of Donau Soya in April 2018. It is therefore a powerful statement from the agri-food sector as represented by Donau Soja of a commitment to support profound change.

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