

## CHAPTER 4

### EUROPEAN SOYBEAN MARKET ANALYSIS

#### FROM EXPERTS' VIEW

In this chapter the results of the expert interviews will be presented. First the analysis scheme based on the categories which have been set is introduced. As explained in subsection 2.3.4 the analysis was computer assisted by Atlas.ti due to a two-cycle categorization scheme. In order to involve the readers and enable them to better understand the correlations between expert's statements, extracts from the interviews have been comprehensively summarized without affecting the meaning. For this purpose each of the interviewed experts revised their respective summaries.

#### 4.1 Analysis of the expert interviews

As the ten interviewees were selected in a manner that allows comparing the statements in relation to another interviewee from the same market segment, the two interviewees belonging to the same market segment will be analyzed jointly. In that way, the perception of the respective branch shall be reflected.

In the first round of the computer-based analysis the interviews were analyzed paragraph by paragraph and according to the following categories:

- 1.) **Intentions:** From the viewpoint of the interviewees this category codes the interests and purposes of a European soybean market.
- 2.) **Chances:** Current favorable market conditions or developments which are observed by experts, that can influence the European non-GMO soybean market.
- 3.) **Forcing factors:** Factors which can, according to the experts, positively influence and promote the EU soybean market.
- 4.) **Barriers/ limitations:** Factors which can, according to the experts, negatively influence and hinder the EU soybean market.
- 5.) **Challenges:** Changes in the market that, according to the experts, need to be implemented first in order to increase the chances for the EU soybean market.

The second round of the interview analysis was done after the results of the first cycle were investigated. This cycle specifically followed the objective of the thesis to find out about the most important chances and limitations for the European soybean market. It became clear that all identified chances and limitations from the first round can be sorted towards the six topics: regionality, animal feeding, economic efficiency, policy, market and environment. Hence, in the second cycle the chances and limitations were coded using these six categories.

All interviews were analyzed in the same way according to the defined scheme. The sequence of the interviews is the same as already presented in table 1 of chapter 2.3.1 and therefore is based on the value chain. The scheme was designed to specifically address the objectives of the thesis. At first, the companies and positions of the interviewees are introduced. This is followed by summaries of the expert statements which could be sorted towards the specific categories as listed above.

As for the first category Intentions the statements of the experts are almost identical, this category is being summarized once in the beginning rather than reiterating each sector separately.

### **Intentions of a European soybean market from all sectors**

The question about the intentions of a European soybean market was answered almost identically from all interviewees. The goal is to become more independent of imports from overseas. The explanation is that Europe is highly dependent on Brazil based on the current structures. The secure supply of proteins, which is required for the processing, is the goal. It was also emphasized that the protein gap only exists in the processing industry, not however, if the soybean was consumed directly by humans. Due to the strong focus on the processing industry for soybean, catastrophic conditions are assumed, should the protein supply terminate abruptly.

Because the developments are, according to the experts, mainly based on the greening, also the aims of the Common Agricultural Policy (CAP) are named as intentions. This means to act more sustainably and ecologically in agriculture as well as make the agricultural sector more competitive. This is seen as the reasons for funding by

the experts. Furthermore, this is the reason for the formation of a new market. This means, the GMO regulations are used for creating a new market niche and establish a new market, if the demand is high enough. Hence, the Inner-European added value could be increased.

#### **4.1.1 Research and development**

The first segment of the value chain is research and development (R&D). In this segment the interviews started in December 2015. The interviewees were Mr. Miersch and Dr. Volker Hahn, both chairman of the association Sojaförderring, which was already established in 1980 as an association for soybean interested persons and institutions in Germany. Dr. Hahn is head of the working group for soybean breeding at the Landessaatzuchtanstalt (State Plant Breeding Institute) of the University of Hohenheim. Currently, there are still several ongoing projects in breeding climatically-adapted and profitable soybean varieties towards a genomics-based screening system. The decision towards soybean cultivation came in 2007 after the market for sunflower in Germany became too small. Mr. Miersch is chairman of the agricultural center for soybean cultivation and the development of the Taifun Life Food GmbH. The company is the biggest European manufacturer of organic tofu and supplies a total of 15 European countries. In their tofu production regional and organic farming plays a particularly important role.

#### **Chances**

Both interviewees believe that the trend towards regionality will prevail as this can currently be seen in several areas. Society is increasingly approaching nationalism, external fears are increasing and people believe what is grown here is better (Hahn, 2015). Mr. Miersch believes in a huge increase of regionality. The background is similar to Mr. Hahn: The desire of consumers to get back towards the manageable basics in an increasingly globalized world.

In addition, soybean has the significant advantage of a very good amino acid composition which makes most of the feeding stuff compounds dependent on soybean. Even though soybean utilization can be reduced, it is not possible to replace it entirely. If field beans and field peas also had the quality of soybeans, it would not be necessary for

the 2-3 mmt of imported soybeans from Brazil annually. Furthermore, soybean provides an alternative after more and more problems with rapeseed evolved. Through low input factor costs soybean could even compete with other crops. EU soybean commodity has to compete with world market prices (CBoT), as feed stuff manufacturers would otherwise obtain their products from Brazil. In addition, after the boycott of Russia, there is a chance to bring the East closer to the West again. From a breeding perspective there will not be any problems to grow soybean in Europe. Taking corn (silage and grain usage) and winter rapeseed as forecast models also soybean could be grown widely. It is important that produces soybean, being competitive to the world market price and/or a price premium, can be charged based on its regionality. Dr. Hahn claims that this premium shall not be based on the freedom from GMO as in ten years genetic engineering could no longer be detected. Hence, the EU could therefore no longer stay GMO free like an island (Hahn, 2015).

Both consider the greening as successful, yet one cannot rely on political subsidies since they can change very quickly. From an ecological perspective crop rotations are needed, especially legumes. In contrast to other legumes soybean is the only alternative which could be profitable (Miersch and Hahn, 2015).

Both identify opportunities in contract farming, which initially offer the farmers the necessary security so as to dare cultivating soybean. Furthermore, it depends on what is demanded in the crop rotation. What is the preceding crop effect and profit contribution? Even though soybean could not compete with corn, but it could be the second best option. With barley, for example, soybean could easily keep up. Also the fact that large companies such as ADM are reconstructing in order to process proceed regional, soybean must be based on a well-observed movement in recent years. The reason for that is a company would not decide on social personal philosophy but with which practice they can earn money (Miersch, 2015).

## **Market forcing factors**

Especially the Danube Soya association with all their members drives the movement. Without the association Danube Soya the development would certainly not be that far. Also the memberships in clubs and associations are very important in the beginning. Networking is decisive. But also the absorbing hand is a driving force, feed mills and processors which are the primary consumers and they can pay adequately. This is then followed by more cultivation. Consumers slowly follow. Nutrition and rationality are often officially addressed, which also shows for example in the trend towards animal welfare (Hahn, 2015). Also green genetical engineering can be a forcing factor. Thus, this has also been the driving force of the Taifun contract farming, as genetic modification and organic are not compatible (Miersch, 2015).

## **Market barriers**

According to the two experts the environmental conditions and finding adapted varieties are two of the major challenges that still exist today. Our yields are not necessarily low, if so, only due to regional conditions such as day length and climate (Hahn, 2015). Especially the cold night temperatures are a critical point (Miersch, 2015). There is a lack of adapted varieties and also in the field of seed germination capacities we face difficulties. However, to purchase qualitative seed from Canada the risk of GMO contamination or GMO traces is too high (Miersch, 2015). Another barrier is the maturity classification scheme and that a Serbian 00 maturity does not correspond to a German 00. Even though Crop Heat Units (CHU) can be calculated, it is still up to the farmers and their willingness to take risks. Late varieties produce higher yields, but might also face the risk of not being able to reach full maturity. European CHUs therefore offer a first indication (Hahn, 2015). The politically motivated zero tolerance for soybean seed is one of the major problems as the limit value zero no longer exists in reality in a system with such intense exchanges (Miersch and Hahn, 2015). It is discouraging that one cannot grow anymore when the smallest GMO contaminations are detected, even though such contaminations are not toxic (Hahn, 2015).

Furthermore, the areas are too little for the major companies to enter the soybean breeding business, which would create an entirely different potential. From the side of the consumers lacking interest in the factor feed is a barrier. Eggs based on non-GMO feed are going well, but, in the pork sector people are not interested in what has been fed to the animals. Overall the purchasing behavior is still too much price-oriented. This means that soybean in the food industry, for example soy milk, might only become popular if it will be cheaper than cow's milk. Another crucial barrier is the lack of education of farmers in the Eastern countries, where an enormous potential of arable land is available (Hahn, 2015).

Besides the dependencies also the overproduction of cereals based on a strong lobby is a barrier which hindering the development of the soybean market (Miersch and Hahn, 2015). Reasons for the global production distribution are the cereal and meat lobbyism.

Dr. Hahn: "Surely lobbyism is happening. The cereal people are intensely fighting soybean as they would like to grow and export more cereals and therefore rather import soybean. [...] it certainly makes no sense to clear the rainforest in the long term view and import soybean, only to be able to produce pigs which we do not need and export them again. This is really pretty crazy in large parts" (translated from German).

## **Challenges**

It depends on what one would like to achieve. For plant breeders large production acreages are important, which would be well to combine with the current trend of increasing animal production. However, it was the aim to achieve a change in consumer behavior including less meat consumption a significantly smaller area would be sufficient. Furthermore, the question is whether large breeders would invest into soybean breeding or not. Despite of that, there is confidence within the soybean food industry. It is expected over the next years that the consumption of soybean based food will increase (Hahn and Miersch, 2015). According to Mr. Miersch the most difficult issue at the moment is to find farmers who are willing to engage in the procedure of recognition and treatment. Knowledge transfer among farmers and agricultural consultancy in order to enable farmers to deliver soybean commodity to the grain elevator at the same place

where they deliver their wheat, would ease the situation. In the long run Dr. Hahn believes that the GMO contamination will be no longer a problem because new GMO methods might no longer be detectable. Possibly the topic of GMO would therefore no longer be relevant.

#### **4.1.2 Plant breeding industry**

Saatzucht Donau and the Norddeutsche Pflanzenzucht (NPZ) Hans Georg Lembke KG were selected as interview partners to cover the value-added chain within the plant-breeding industry. Associates of the companies Saatzucht Donau, Saatbau Linz, as well as Probstdorfer Saatzucht are devoted to research and breeding of soybeans for the last 30 years starting in the 80s and 90s. At Saatzucht Donau the respective interview participants were the CEO Johann Birschitzky and the soybean breeder Bernhard Mayr. NPZ is a family business, which is specialised in breeding of oleaginous crops, grain legumes, and forage crops. At the NPZ Katrin Beyermann was interviewed, who is in charge of the international sales in particular. However, despite the fact that soybean is part of their product portfolio NPZ is not involved in cultivating soybean as a commodity. Both enterprises are involved in the European and international market.

#### **Chances**

Ecological advantages of soybean cultivation are particularly the increase of diversity within the European landscape that is mainly shaped by cereal production; furthermore, soybean accumulates nitrogen, thus there is no need for further nitrogen fertilization. According to Birschitzki this may be especially interesting for eastern European farmers, since the production of soybeans at low cost is quite appealing in times where prices for agrarian products are plummeting, as it is currently the case. Cultivation of high yielding crops, such as rape, could thus recede, because farmers dread the high effort in farming. In spite of the fact that soybean cultivation does not benefit from any farming subsidies except greening, soybean production is increasing in countries such as Austria, Germany and the Czech Republic. Saatzucht Donau sees the future outlook very optimistic and Birschitzky and Mayr believe that efforts to breed soybeans are a relatively sustainable investment.

All interview participants stated unanimously that the current increase of agrarian lands together with a continuous rise of EU soybean production are politically intended and the issue of GMOs still displays a great deal in the fodder industry. GMOs are negatively associated in the EU and refused by consumers. Hence, decision makers expect an increase in demand for GMO-free products in the long run. This trend is currently also observable when it comes to raw ingredients within the food retail chain and demand for European GMO-free soybean-products is believed to advance further. According to Birschitzky it is foreseeable that consumers will be rejecting GMOs in the coming 5-10 years, particularly in the food industry. Consequently, he expects either a division of the soybean market into two parallel markets, or a further increased establishment of an explicit GMO-free market for raw food products (Birschitzky, 2016).

Moreover, Birschitzky and Mayr see a competitive advantage of European producers due to restrictions on imports as well as a political zero tolerance in respect to seeds. However, a zero tolerance policy is almost impossible to fulfil for seed importers. Furthermore, Birschitzky is convinced that further increased consumer awareness and a food retail living up to its sustainability standards will unleash an enormous potential in the European market for marketing GMO-free soybeans that will have been produced within the EU boundaries. According to Mayr especially south-eastern areas of cultivation in Europe might become the dominant production region. In accordance, Saatzucht Donau sees its competitive advantage in exporting qualitative and certified soybean seeds. The company believes in a soaring demand for qualitatively high seeds with high germination ability on eastern European markets and in CIS countries, which could not be supplied up to that amount without EU exports. Furthermore, both enterprises emphasise advantages for farmers when it comes to the positive effects of soybeans in regards to crop rotation as well as added value for livestock farming. The interview participants draw a comparison to corn-/soybean production in the US: “For the case that relatively similar areas are being farmed with corn and soybeans – 30 mn ha in the US you can see that soybeans are competitive viable towards corn. The same is essentially possible for certain regions in the EU” (Birschitzky, 2016) (translated from German). Concerning the yield Birschitzky and Mayr have no doubt that European producers are competitive. Cultivation areas in North America might be larger; however, the production yield in Austria is stronger due to a strong mechanization. Also, European



farms have more opportunely labour peaks in terms of temperature and crop rotation in comparison to North America, thus there is more time for seed preparation and sowing time. North American farmers are often confronted with delayed seeding dates due to late frost and wet conditions during spring time.

### **Market forcing factors**

Especially the engagement from the Danube Soya association is perceived by experts a leading force regarding the development of a European soybean value chain. Birschitzky emphasises the organised B-to-B-meetings, which promote a movement within the value chain. Looking at the classic market dynamics a market is determined by supply and demand; however, when it comes to GMO-free soybeans that are produced in Europe, Birschitzky believes that the supply depends asymmetrically on the consumers' behaviour. Political intentions are not enough to push for GMO-free soybean production in Europe (Beyermann, 2016). On the other hand Beyermann states that farmers in particular are the decision-makers, due to the fact that as producers they have to respond to the consumer's demands. Especially the political greening-regulation has proven to be a successful driver. Soybean production was able to establish itself well despite that greening in fact promotes all kinds of legumes, e.g. beans, peas, alfalfa, lupins. This depicts that soybean production actually developed well quite independently in the past (Birschitzky, 2016). Beyermann acknowledges the beneficial effect the greening measure has had, however, based on past experiences with other grain legumes she does not believe in positive long-term effects. Those were also cultivated on small areas in Eastern Europe for a long period of time, however, also recently boosted in production only due the greening program.

### **Market barriers**

One of the main market barriers towards competitive GMO-free soybean production from Europe is the fact that the fodder industry as quantity buyer still prefers soybeans from South America. South American producers can guarantee goods in bulk that are throughout consistent in quality, which, at the moment, European producers cannot ensure (Beyermann, 2016). Beyermann outlines the difficulty for farmers to offer consistency in production. Caused by the weather in 2015 the harvest was particularly

bad and farmers currently have to overcome it by richer soybean harvests in the future. Drought as well as insufficient experience lead particularly in Hungary, Romania, and Bulgaria to extremely low yields and created mental reservations towards soybean production. Additionally, Beyermann doubts that soybean commodity imports will cease completely. On a global scale meat-based diets and eating habits will be soaring further and thus demand for soybeans as fodder will be increasing respectively. Also Saatzucht Donau confirms that European producers have not the capacity to substitute soybean-imports within the next 5 years, since designated areas with according quality are not yet available. This, however, should not be a reason to discourage a further working towards the above mentioned goals. All interview partners confirm heavy obstacles due to the zero-tolerance policy on GMO-free soybean production for the seed industry. According to Birschitzky soybean imports from Brazil are able to come close to the European threshold value of 0.1 of GMO-contamination, however, the situation with seeding material is substantially more difficult. The reason is that many soybean producers in Canada have switched to planting with genetically modified seeds. On the other hand this also means that Canadian producers have lost connection to the EU seed market. Lastly, another problem poses lacking wholesale buyers and processing plants for GMO-free soybeans in Germany (Birschitzky and Mayr, 2016).

### **Challenges**

Only taking into consideration the areas under cultivation of soybeans the production already seems to be economically viable. However, every farmer has to decide for himself whether or not soybean production will pay off. In this regard the acceptance as well as value adding must rise, for instance through a broader application of small soybean toasters (Birschitzky, 2016). Thus, livestock farmers would have the possibility to process regionally produced soybeans for fodder purposes and reduce the acquisition of imported soybean-fodder.

Furthermore, it is important that import obstacles of soybean seeds should not have any impact on the soybean seed-breeding in Europe. It would be sensible to create coherent and uniform standards for different soybean breeds within the EU. Due to Europe's geographical and climatic diversity this poses difficulties when it comes to maturity classification, for instance. Coming up with a uniform system to distinguish

different MGs is an important step forward, however, it would need more time to match different maturity classifications (Birschitzky and Mayr, 2016). All interview participants stated that particularly information flow, and marketing are still in its infancy for the European soybean production and market, and a further improvement is essential.

For Beyermann farmers play a crucial role in this regard. They have to increase their know-how on soybean production within the European area if they want to increase production yields. Additionally, Beyermann states, is it yet unclear which and how much land is essentially eligible for soybean production at what production yields. This would clarify the actual European potential of soybean production (Beyermann, 2016).

#### **4.1.3 Acquisition and processing - feed industry**

In order to represent the perspective of the feed industry, staff at the Raiffeisen feed factories in Kehl (RKW) and Josera were interviewed. RKW is suitable as its business philosophy is based on the freedom of genetic engineering and regionality. The interviewee, Mr. Bernhard Stoll, is the managing director of RKW. He is also involved in the organization: Food without genetic engineering e.V. VLOG. In contrast, Josera is a family-based company that not only produces agricultural feed, but also pet food and feeds with special additives. Purchasing manager, Mr. Andreas Marquart, confirms that Josera products are all free of genetic modification. Furthermore, he emphasizes the high quality of its products.

#### **Chances**

Both feed producers are in agreement that a regional non-GMO soybean market could have the advantage of being able to market end products better. Products need an added value to ensure their market position. For this reason RKW only purchases raw commodities that are under 0.1% GMO contaminated. According to Stoll, these products are sold for higher prices, which are achieved by adding value to the end products. Marquart also describes the completely non-GMO quality assurance of Josera. In his view, if Josera also produced GMO products it would cause customers to question the integrity of the company. Marquart sees regional products and non-GMO products as the preferred marketing strategy. He considers the independence of overseas imports to be

irrelevant to large processors. Getting a higher added-value would depend on marketing. If they could pass the 10% higher costs on to end-consumers, they should be redistributed to the single segments of the agricultural value chain. It is difficult, but conceivable. Given the marketing of the products, customers pay more for them, even if the quality of the products is not superior.

Both interviewees currently see good opportunities to expand soybean acreages in Europe. Marquart predicts cultivation increases for the next three years, regardless of political support such as greening. It would make sense to value regional commodity flows instead of the globalized economy for the medium-term. Due to natural regulation of the market, according to Stoll, there is an economic limit of about 35% of regional non-GMO soybeans that can be placed in efficient market structures. In addition, there still exist enough providers and consumers for conventional, cheaper, GMO goods and end products. Hence, regional non-GMO soybeans will probably remain a market niche.

Soybeans are the most important regional protein component and are economically feasible, especially in the monogastric sector (Marquart, 2016). This cannot be replaced by other protein sources. Even if rape, grain legumes, and CCM are used as substitutes, soybean will be preferred in 30–50% of cases in the near future (Marquart, 2016). According to Stoll, this is an important aspect as substitution with other proteins would be difficult, e.g. through lower crude fiber content for monogastric animals. Stoll primarily focuses on the largest European soybeans consumption in the poultry sector (laying hens and broilers). This is because the simple value chain (without turnovers or different places to fatten and slaughter) can use high quality feedstuff (Stoll, 2016).

In Europe there is a high value placed on non-GMO food and seed productions (politically, and also increasingly for consumers). It would be an advantage to guarantee reliable amounts of high-quality non-GMO soybeans in the European market. The reason for this is that by controlling the soybean seeds from overseas there can be financial costs and difficulties in relation to GMO contamination. Test on a seed lot cost about 100 € per examination. This is reflected in the surcharge of 3 € per ton for analysis (Stoll, 2016). Hard-IP-commodity, which is tracked and certified throughout the whole commodity flow, also costs more than conventional products (Marquart, 2016).

The aim is to meet the existing demand for high quality and regional soybeans. Stoll states that he isn't worried about the future of the European market. The market development for more regional products, as well as the extension of European soybean acreages, indicates that situation.

### **Market forcing factors**

Since the media and NGO's are seen as driving forces, they strongly influence public perception of agricultural activities. They are able to control public concerns in certain ways (at least, some parts of the population) (Marquart, 2016). This phenomenon is especially evident in Europe when discussing GMO and non-GMO. Marquart and Stoll agree that food retailing has a significant role in respect to the marketing of regional products. They can heavily influence consumer interests for regional non-GMO soy products (Marquart, Stoll).

Besides large-scale processors and food retailers, farmers are seen as decision-makers, according to Stoll. Agricultural policies affect the market and cultivation. Ultimately, growing and harvesting must prove to be worthwhile in the long term for farmers.

### **Market barriers**

Stoll thinks that there is a restriction in the use of high-quality, non-GMO soybean in cattle and pig production. Usually, soybean is not used for cattle; other feeds and rape are used instead. Pig farming would suffer excessive financial pressures in order to use expensive European non-GMO soybean products (because of low prices for pork meat) (Stoll).

Furthermore, both Stoll and Marquart agree that local areas for soybean production are severely limited and would not be able to support a self-sufficient soybean market within Europe (Marquart, Stoll, 2016).

## **Challenges**

The challenge will be to create the appropriate marketing concept for non-GMO products, since GMO and non-GMO products will always compete (also in terms of price). If prices for those of non-GMO soybean commodities would rise significantly higher, it would mean a loss of customers of perhaps more than 80 %. Not all customers want non-GMO products and thus, pay for it.

The infrastructure for distribution and rehabilitation of non-GMO soybeans should be strengthened (Marquart and Stoll, 2016). Currently, oil mills are designed exclusively for large-scale production. It would be a challenge to develop the right technology for processing smaller amounts in order to offer additional grain elevators or collection points near farmers and, therefore, to have better processing opportunities (Marquart, 2016). For Stoll the quality of soybeans produced regionally would be the most important challenge. It is of the utmost importance to compete with the quality of Brazilian soybean. In this context, competitiveness should not be lost. European soybean is, however, still far from this state. For this reason, the plant breeding industry has to deal with the biggest challenges in making both the yield and the protein content competitive (Stoll 2016).

### **4.1.4 Acquisition and wholesale - oil mill**

Archer Daniels Midland (ADM) is one of the World's largest agricultural traders and processors. By reason of the reconstruction of the rapeseed processing plant in August 2016 in Straubing/Germany, non-GMO soybean commodities from the Danube region should be processed as well. Thus, the growing demand for non-GMO soybean meal should be covered in Germany, Austria and. ADM in Straubing, is the first grain elevator or collection point in Germany for non-GMO soybeans from the Danube region. The processing aims to provide soybean farmers from the Danube region a marketing opportunity and providing customers with regional processed goods. For the interview from the viewpoint of the processing industry, the managing director of ADM in Straubing, Mr. René Van der Poel, was willing to portray his visions.

## **Chances**

The processing industry (ADM, Van der Poel) sees the current growth trend of European soybean production, mainly caused by the greening regulations, as a chance. Moreover, it portrays an increasing sustainability and soybean protein demand from the costumers. When observing the trend of regionality, the topics non-GMO and regionality can be described as growing. Furthermore, the rape processing in Europe stagnates which leads to available processing capacities which could also be used for soybeans after reconstruction of the respective processing plants.

The project European non-GMO soybeans has a huge potential. The development is depended on two crucial factors: first, a constant availability of good quality (protein content) of the locally produced soybeans and second, the use of regional non-GMO soybeans has to increase (Van der Poel, 2016).

## **Marketing forcing factors**

Van der Poel mentions the greening as an important market driver.

As part of the agricultural and food value chain, the dairy industry is mentioned as market driver as well because the demand for non-GMO fodder is currently increasing. This trend for regional non-GMO supports the non-GMO labelling. This increases the demand because the costumers are informed about the fact that animals being fed with regional non-GMO products. Therefore, the costumer who demands regional non-GMO products displays a crucial market driver. This only works if the costumer is also willing to pay a surplus for these products. However, the current small use of non-GMO soybean meal cannot compete with the prices of the imported soybean meal from Brazil.

By labelling the product with non-GMO, the costumer recognizes the added value of the product and is probably willing to pay more. This is the only way one can make money on the European non-GMO soybean market due to the added value and if there is a growing demand. Moreover, the environmental conditions can be driver or inhibitor especially after the poor harvest year 2015 which scared farmers from cultivation of soybean. Van der Poel stressed that the coming season 2016/2017 would have to be two

good harvest years so that the market for regional non-GMO soybeans increases. If that is not the case, the EU soybean market will remain a very small niche.

### **Market barriers**

One inhibitor is the bad price compared to soybean goods from overseas. “The supply for the regional non-GMO soybeans last year was too high and the use was too low. This was not good for the farmers who had poor harvests at the same time because of the drought” (Van der Poel, 2016) (translated from German). But especially in starting phase it is important for farmers that the harvests are rich to draw interest for an ongoing soybean cultivation.

Logistics are another inhibitor because this makes it especially hard in the beginning of the value chains progress, where non-GMO commodities have to be completely separated. At the moment there is only a very small number of oil mills (3 in the whole Danube region) that process the non-GMO soybeans. Furthermore, there is coexistence between GMO and non-GMO goods at the moment. This is the reason for a high rate of impurities on the non-GMO side. Moreover, it is highly complicated to separate both goods from each other. Because many agricultural commodity retailers cannot deal with this complex process, the costumers have to get their goods right from the oil mills. This would be a competition between agricultural commodity retailers because costumers would not buy their non-GMO soybean commodities from them. There would be a conflict which could result in agricultural commodity retailers talking costumers out of non-GMO soybeans. The problem of goods separation and contamination also consists in the inner European transport – especially in countries neighbouring Ukraine. There are GMO contaminations detected in commodity goods in Slovakia or Romania. The Agricultural and food value chain of non-GMO products in general is not fully defined, yet. For example, animals are allowed to be fed with GMO products but the end product, e.g. meat, can be sold as non-GMO. It is not recognizable, that animals have been fed with GMOs. The legislation has not made that clear, yet (Van der Poel, 2016).



Van der Poel estimates Europe's soybean growing potential to about maximum 20% of annually soybean imports which could be reached (see chapter 3.2.3). He justifies this estimation with the restriction of the European crop rotation that makes a larger extension of soybean cultivation difficult. For a larger area, soybean would have to be able to compete with other crops such as corn and wheat (Van der Poel).

## **Challenges**

It is important to consider that not every country is interested in non-GMO products. For the Netherlands and Spain for example, non-GMO products are not an option, reasoned by another definition of sustainability. Therefore, every country has a different demand according to their requirements on products. Furthermore, questions of the future like for what do we produce in Europe? Do we have the next 3-4 years bioenergy, biodiesel or bioethanol or not? are important key questions as Mr. Van der Poel has described.

To create an added value in comparison to competing GMO products (non-GMO labelling), the food retail plays an important role, who has to go along with this development towards regional non-GMO products. Logistics still have to be adapted to the use of regional non-GMO soybean commodities. There has to be a separation in different areas of the agricultural and food value chain, so there can eventually be consistent high quality non-GMO products on the market. Furthermore, investments in the soybean plant breeding industry are very important. These are necessary to bred better yielding varieties. Higher amounts of protein and early maturing varieties should be the aim for European cultivation.

### **4.1.5 Associations - NGO's**

To consider a less market-based side, the managers of NGO's Danube Soya and the Bioland Verband were interviewed. Mr. Dr. Christian Eichert is also spokesman of the coalition for action Gentechnikfreie Landwirtschaft in Baden-Württemberg (GMO-free Agriculture in Baden-Württemberg) which was founded in 2014. Mr. Matthias Krön founded the association Soja Österreich together with soybean producers and

manufacturers mainly for the food sector. Later in 2012, this association developed into the Danube Soya association which focus is on the whole Danube region.

## **Chances**

Both of the interviewees see a clear trend of the consumer demand for regional and non-GMO. This awareness among consumers is already widespread and still increasing. The described demand is currently recognized by the food retail and it is also implemented more and more. Especially Rewe, Lidl and Edeka are pioneers in this area. The changes in the supermarket chains cause the supplying dairy industries to change their production into non-GMO feed. Obvious trends are noticeable when it comes to the milk market, organic meat consumption and an increasing tendency to a vegan lifestyle. Eichert concludes that the consumers' need and demand for regional, non-GMO and organic products increases as well. Edeka Südwest state to bring 10 times more of the today's amount of regional organic pork and beef to the market (Eichert, 2016). Moreover, consumers' general awareness about the source of goods is rising. Three and a half years from now, nobody will buy something as organic that has been shipped around the whole globe. Because, only regional makes it organic (trend saying: only regio makes bio to eco). (Eichert, 2016).

For these reasons, Dr. Eichert almost takes the development of the promotion of protein plants via regional soybean markets for granted. The organization prepares for this by extending important parts of the infrastructure. "At the moment, we extend the sector of quality assurance and full traceability by installing an independent team in the field. Therefore, South Americans do not do markets, but rather as regional and close as possible" (Krön, 2016) (translated from German). Also Krön sees this as an opportunity which makes a development of the regional soybean market indispensable "This movement towards regional protein is important, necessary and will come" (Krön, 2016) (translated from German). Furthermore, he rates the current prices for European produced soybean commodities from the Donau region, which is comparable to the Brazilian prices, as competitive advantage. This is a particularly strong argument because flex. the transport charges from Rotterdam to Bavaria can be saved by using regional produced soybeans.

## **Market forcing factors**

Both of the interviewees see the own initiative which means Bioland and Danube Soya as important elements to promote regional non-GMO soybean. Krön describes his program as intense. "Of course we want to promote change [...] it is about how we shape this development and who wants to be there and gain from" (Krön, 2016) (translated from German). And Eichert describes the Danube Soya association as an important cooperation partner and intermediary platform which connects actors along the agricultural value chain. According to Eichert, they try to extend more eco-specific markets. "It is about saving fodder together with companies in the Danube area" (Eichert, 2016) (translated from German). In this way, gradually soybean imports from overseas could be reduced.

Another essential factor is the offer on the market of non-GMO labelled products, which is important for consumers to recognize the industry's willingness to meet the consumers' demand for regional non-GMO products. However, the food retail has to be ready for the extension of regional protein crop production and therewith regional non-GMO products which have to be labelled as such. Therefore, food retailers play an important role as driving force for an European protein strategy (Eichert, 2016). The upstream parts of the value chain such as logistics and the processing industry are also driving forces, [...] since domestic production is also secured and jobs are created" (Eichert, 2016) (translated from German).

## **Market barriers**

Eichert describes the current projects for regional soybeans as important but the amount would be too little to compete as a relevant source to feed livestock.

Krön also names several factors that can inhibit the market development. On one side, it is the fear of animal producers that regional soybeans which can be processed to tofu for direct consumption could be a competitor or partially substitute animal products. Another fear is the fear of animal producers that the switch to regional non-GMO fodder might raise the costs (Krön, 2016). That fear concerns the competitiveness in case they would not get paid for using the regional non-GMO soybean commodities. The situation that small farmers have to compete with big commercial food chains also leads to fear

amongst farmers. The commercial chains are already using goods which are produced with regional soybean commodities – however, as opposed to small farmers, they have already established trade brands. Thus, they have an enormous economic advantage. But if the use of regional soybeans shows positive outcomes in terms of European prices, there is still an uncertainty if others have to pay the price for non-GMO products. For instance, the export of non-GMO Pigs ears to China, if they would bear the incurred costs for his value added product.

Another problem is the GMO impurity which is still high because the agricultural companies have not accommodated their infrastructure to non-GMO, yet. Moreover, there is a concept missing according to politics and marketing to establish regional soybeans more as a domestic protein crop for which the consumers are willing to pay a surplus. At the moment, the soybean is seen as foreign and not as regional (Krön).

### **Challenges**

According to Eichert, there is a solution for the inhibition of a too small amount that can be produced at the moment and that is the direct funding for farming land via politics. „At the moment, they are not brave enough to support sustainable ecological protein securing systems“ (Eichert, 2016) (translated from German). He describes the challenge as follows: „We need a completely new political approach from the year 2020 on“ (Eichert, 2016) (translated from German). Moreover, the infrastructure for the regional soybean cultivation would have to be extended. He sees an important task in supporting mobile toast- and mixing plants, for a greater opportunity to process soybeans (Eichert).

He also sees an important challenge in research to create suitable varieties for the EU (Eichert). According to Krön, the most important challenge is an improvement of the European crop rotations to improve agriculture in general. For the finished products he demands labelling programs to bring the net product from the regional production to the consumer in a better way.