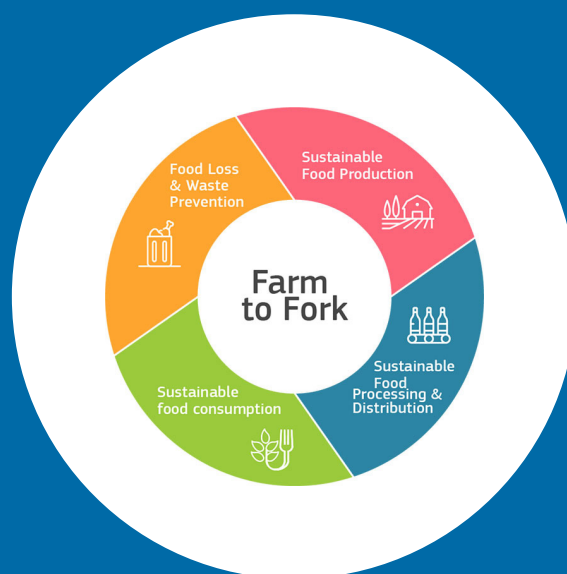




FUTURE
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Farm to Fork Strategy

– Implications and possibilities for organic farming in Sweden and at SLU

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SLU Future Food

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Summary

The focus of the EU Farm to Fork Strategy is on the redesign of the food system and environmental sustainability, as opposed to the Swedish National Food Strategy priority of increased agricultural production. Sweden has the possibility to realize the Farm to Fork Strategy goals, but when it comes to food systems redesign, more efforts will be needed. Here SLU can play a major role in supporting national policymaking.

The Farm to Fork Strategy paints an ambitious plan for the future of the European Union's (EU) food systems and has many similarities with the Swedish ambitions, which are mainly represented in the National Food Strategy. At the same time, there are several differences between the two strategies, such as the focus of Farm to Fork Strategy on environmental sustainability and system redesign, as opposed to the National Food Strategy priority of creating growth, increased agricultural production and rural employment. If the Farm to Fork Strategy were to set its quantitative targets at country level, such as halving of pesticides and antimicrobials, Sweden would probably not be able to meet most of them, as it already performs better than most countries in the European Union.

Regarding organic farming, Sweden has even higher ambitions for 2030, than the Farm to Fork Strategy. Sweden aims for 30 percent of farmland area in organic production in 2030. To reach the 2030 organics goal, Sweden bets on the new Common Agricultural Policy (CAP) instrument – the eco-scheme and National Food Strategy action plans to implement additional legislation and supportive actions, such as consumer information campaigns, education of all actors in the food chain, and increased exports.

Nevertheless, the core of the Farm to Fork Strategy is a food systems redesign, which requires more comprehensive policies. Sweden could take a leading role in the European Union by enacting policies that increase the accessibility of organic foods compared to their conventional counterparts. This might be done by internalizing the negative environmental effects of farming in the cost of foods and rewarding farmers for the provision of public goods. It will also be important to assess the global impact of each measure to avoid exporting the externalities to third countries.

SLU can play a major role in supporting national policymaking and encouraging the redesign of the Swedish food system. Sectorial expertise will be needed to assess the best measures in the eco-schemes, as well as their synergies and contrasts with other measures in pillar 2 and national policies. Academia should provide knowledge in underrepresented fields such as interdisciplinary and system change research, which can account for multiple sustainability aspects. There is also a need for increased knowledge in the production side solutions to increase organic production, such as suitable animal breeds for organic livestock rearing, organic fertilizers and pest control methods, and other solutions that will make organic farming more productive, sustainable and applicable. SLU can also contribute to the organic targets by providing knowledge and non-biased communication material to all actors of the food chain, as well as quality education to farm advisors to improve their commitment and understanding of sustainable practices in agriculture.

Sweden has the possibility to realize the Farm to Fork Strategy goals and ambitions, especially when it comes to organic farming. However, when it comes to food systems redesign, more efforts will be needed in the coming years to increase sustainability. To this end, SLU is a valuable resource for expanding the knowledge and creating innovative solution relevant for policymakers, industry and other food system actors for making the Swedish food system sustainable.

Uppsala, 2021
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Stockholm Resilience Centre and SLU

Introduction

The Farm to Fork Strategy

On 20 May 2020, the European Commission (EC) released the Farm to Fork Strategy, a part of the European Green Deal framework with high ambitions for the future of the European food sector (European Commission 2020b). The Farm to Fork Strategy aims to achieve sustainable food systems by linking together environmental, social and economic sustainability in light of the changes brought by the COVID-19 pandemic. It strives for resilient food systems, healthy diets and just livelihoods for producers. To do this, it sets ambitious numerical goals to reduce pesticides, fertilizers, antimicrobial use and nutrient losses, and to increase the total farmland area under organic farming (ibid.) (Box 1) and proposes a range of timed actions to improve food systems including revising a number of legal frameworks. Sweden is already on track to deliver several of the numerical targets (if calculated from the average European Union levels), being among the lowest users in the European Union of antimicrobials, pesticides and fertilizers (SBA 2020e). However, it would be difficult to reach the Farm to Fork Strategy goals if they were set at the country level rather than at the European Union level. For example, decreasing by 50 percent the use of antimicrobials from the current levels in Sweden might mean that livestock would not receive the care that they need (ibid.). On the contrary, if measures were tailored to the conditions of each member state and the quantitative goals were set at the European Union level, Sweden would have a head start compared to most other member states. The European Commission laid out a plan to

implement the Green Deal framework in the next programme period (2023–2027) of the Common Agricultural Policy (CAP) (Box 2) (European Commission 2020a). The reform centres on the national CAP Strategic Plans, where each member state will apply both pillars of the agricultural policy. These plans will be assessed by the European Commission, who will ensure that “from the outset the national strategic plans for agriculture fully reflect the ambition of the Green Deal, the Farm to Fork Strategy and the Biodiversity Strategy” (ibid., p. 8). The European Commission plans to assess each CAP Strategic Plan through consistent exchange with member states, such as providing recommendations about national priorities for each CAP Strategic Plan, and providing suggestions throughout the drafting of the Plans so that they include the goals of the Green Deal (Maréchal et al., 2020). However, while the negotiations for the programme period 2023–2027 are still ongoing, it seems clear that no part of the Farm to Fork Strategy (or of the Green Deal) will be mandatory for member states to integrate in their CAP Strategic Plans (Telemans 2020), and therefore the recommendations from the European Commission would be taken on a voluntary basis. It therefore remains unclear how the European Commission will be able to ensure that the goals in the Farm to Fork Strategy can be reached. The new CAP reform has therefore received substantial criticism from for example environmental NGOs.

From Farm to Fork: Targets for 2030

- Reduce by 50 percent the use of chemical pesticides and more hazardous pesticides.
- Reduce by 50 percent nutrient losses
- Reduce by 20 percent fertilizer use
- Reduce by 50 percent antimicrobials sales
- Increase to 25 percent the area of farmland under organic farming

Box 1: Farm to Fork quantitative targets.

The Swedish Food Policy

As a member of the European Union, Sweden applies the CAP at the national level. In addition to the CAP, Sweden has its own National Food Strategy (NFS), published in 2017, ratified by 7 out of 8 political parties and with the aim to guide Swedish food policy until 2030 (Löfven & Bucht 2017). While it strives for a more environmentally friendly food system, its primary goals are increased competitiveness, self-sufficiency and employment (Näringsdepartementet 2016). The National Food Strategy is composed by a bill, drafted by the Riksdag and containing the general goals of food policy in Sweden until 2030, and by different action plans issued by the government: the first one released in 2017, the second one in December 2019 (Sveriges regering 2019). The 2019 action plan includes the guidelines for the National Food Strategy until 2025. It sets the goal of 30 percent of organic farmland area, and 60 percent of organic food in public procurement by 2030, but does not explain further how these goals should be reached (ibid., p. 4).

The Swedish Board of Agriculture has expressed its views on the Farm to Fork Strategy and its relation to the National Food strategy. Overall, the Farm to Fork Strategy is considered in line with how Sweden wants to develop the CAP, for example by improving rural livelihoods and promoting knowledge transfer (Jordbruksverket 2020, p. 2). The main difference between the two strategies is that the Farm to Fork Strategy can be regarded as a transition strategy, while the National Food Strategy is a growth strategy. The Swedish Board of Agriculture is also concerned

about the possibility that, through the Farm to Fork Strategy, the CAP will include more aspects of the value chain (consumer concerns about health, market rules et cetera), which is not desirable in the Swedish perspective of having more autonomy. Sweden is a longstanding supporter of a market-oriented agricultural sector, and agricultural policies are shaped by this belief (OECD, 2018). For example, Sweden wants to interfere as little as possible with the market, opposing for example any possible “increased protectionism” (Jordbruksverket 2020b, p. 6) derived from higher standards in the European Union and spilling over to third countries. Moreover, the Swedish Board of Agriculture is sceptic of a strategy based on a top-down perspective and quantitative goals, such as the Farm to Fork Strategy. On the contrary, it believes that a strategy based on directions is more effective, such as the National Food Strategy. The National Food Strategy focuses on giving advice and creating the preconditions so that the desired developments can be achieved, such as funding research, education and innovation (ibid., p. 2).

Organic Farming in Sweden

During the last decades, Sweden has significantly increased the area of total farmland under organic production (FiBL 2020). However, the increase has slowed down during the last years, reaching 20 percent in 2019 with only a slight increase compared to the year before (SBA 2020a) (Figure 1). However, it is still well above the European Union average of 8 percent (European Commission 2020b). Public procurement of

The European Union Common Agricultural Policy (EU CAP)

The CAP is the longest-lived policy of the European Union (Smith et al., 2016). Its aim is to provide safe and affordable food to European Union citizens, safeguarding farmers, supporting rural areas and tackling climate change (European Commission 2020c). Its budget and regulations are updated every 7 years (ibid.) and divided in two pillars:

- Pillar 1 includes direct payments to farmers (72 percent of the current budget), which are area-based, i.e. farmers receive a payment based on the area they cultivate (European Commission 2017, p. 1). The funding comes entirely from the European Union budget (Lampkin et al., 2020)
- Pillar 2 supports rural development. It is co-financed by the European Union and member states, and is applied at the country level through national Rural Development Programmes (ARC2020 2013). Sweden has its own programme (Regeringskansliet 2019), whose actions are detailed each year in an action plan by the Swedish Board of Agriculture (SBA 2019a).

Box 2: The Common Agricultural Policy (CAP).

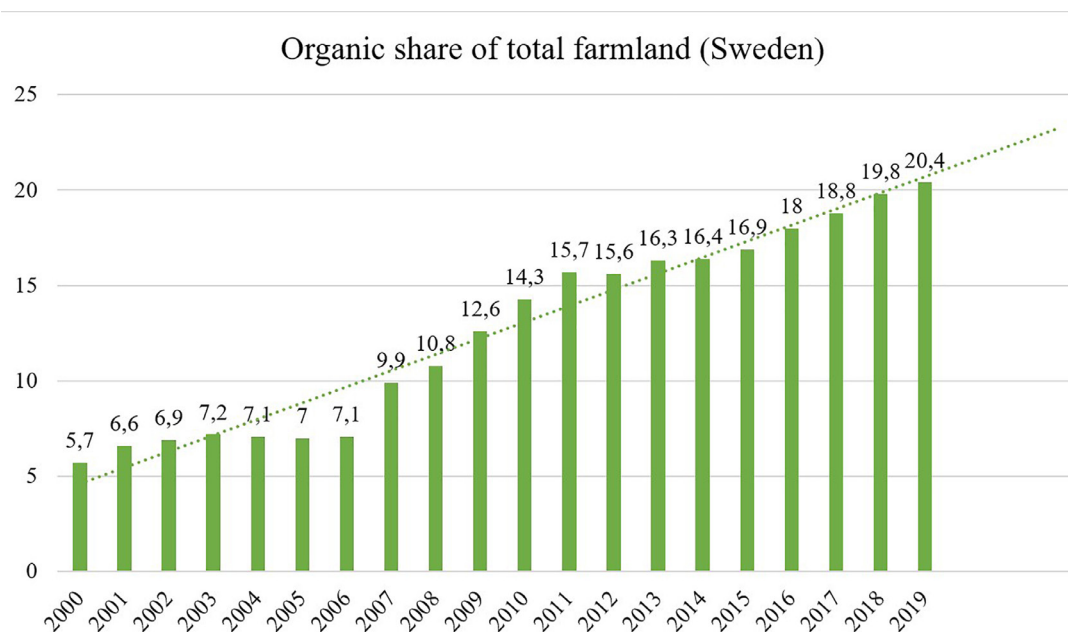


Figure 1: Organic area share of total farmland in Sweden. 2000-201 data from FiBL (2020). 2019 data from (Jordbruksverket 2020a).

organic food is also high in Sweden, coming at 38 procent in 2018, of which 64 procent is produced in Sweden (Ekoweb 2020, pp. 19–20). Sweden's organic production area consists mainly of pastures and forage for animal production, followed by cereals (SCB 2020); the largest organic sector is dairy production, followed by beef (Koch et al., 2018). Cederberg et al. (2011) have calculated that up to 90 procent of organic farmland in Sweden is used for feed production (ibid., p. 18). Currently, organic production is financially supported by both the European Union and Sweden within the measures of the CAP. During the programme period 2014–2020, organic farmers has received nearly 12 procent of the pillar 2 budget, which amounts to € 454 million (European Commission 2019, p. 3).

Aim of the Report

This report aims to explore the relations between the Farm to Fork Strategy and the Swedish food policy framework, more specifically the National Food Strategy and the Swedish adaptation of the CAP as related to the future of organic farming in Sweden. We explain the ongoing policy developments in terms of promotion of organic farming focussing on the following questions:

- What are the differences and similarities of between the Farm to Fork Strategy and the National Food Strategy in relation to organic farming?
- What is the role that SLU can take on in relation to the organic goals formulated in the Farm to Fork Strategy and in the National Food Strategy?

The Future of Organic Farming

The Future of Organic Farming in the Farm to Fork Strategy and the National Food Strategy

The Farm to Fork Strategy sets an ambitious goal for the organic sector: reaching 25 percent of the total European Union farmland area (including both arable land and pasture) under organic production by 2030 and substantially increasing organic foods in public procurement (European Commission 2020b, p. 10). The main tool to realise the Farm to Fork Strategy is the new Common Agricultural Policy (CAP); this policy will offer support for organic farming not only through the pillar 2 measures, but also through the future pillar 1 eco-schemes (ibid.). Eco schemes are payments that aim at supporting agricultural practices that contribute to the protection of climate and environment (Eurostat 2020). This has a high potential to increase funding for environmental improvements, as pillar 1 takes up the majority of the budget, and 20 percent to 30 percent of it has been ring-fenced for eco-schemes (Ricco 2020). Still, most of the CAP funding will be spent on area-based payments with low requirements for environmental

improvements. Figure 2 shows an overview of the policies and actors concerning organic farming. In March 2021, the European Commission published the Organic Action Plan for the European Union, where it lays out some measures to increase supply and demand for organic products. Green public procurement will play an important role, as it can steer production and especially consumption habits, including through organic food schemes. According to the Organic Action Plan, consumption will also be stimulated through promotional activities and increased availability of organic products, including in retail and processing. To improve organic production, efforts will concentrate on improvements in the current standards to contribute to resource efficiency, biodiversity conservation, climate neutrality and environmental care, as well as an increased share of the budget to research and development relevant for organic production (ibid.).

The current Swedish National Food Strategy action plan sets even more ambitious goals; by 2030, 30 percent of farmland should be under organic certification, and 60 percent of public procurement food should be certified organic

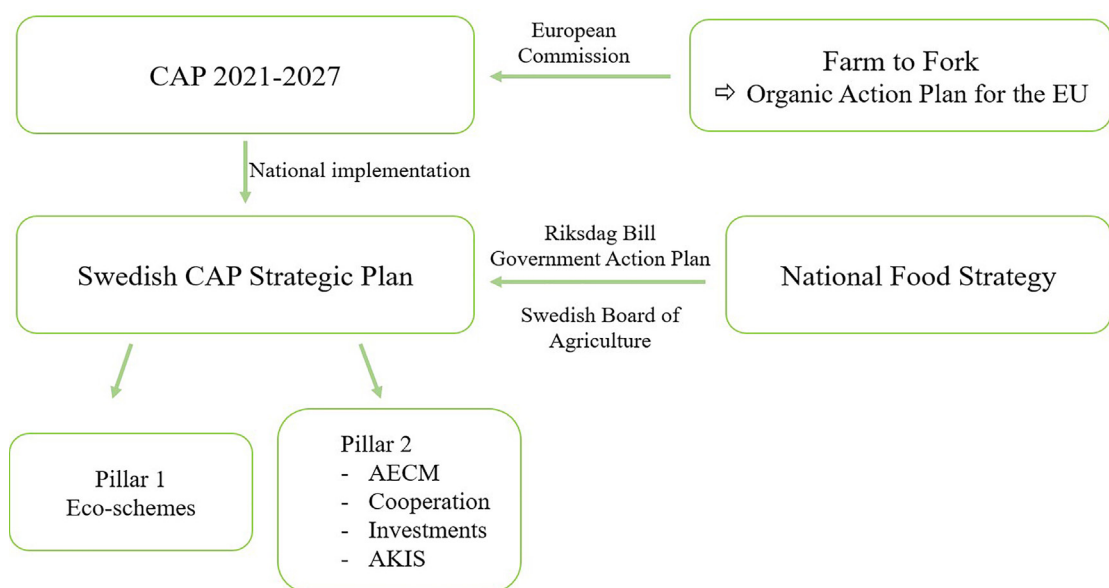


Figure 2: Overview of the main policies and actors regarding organic farming in Sweden.

(Sveriges regering 2019, p. 4). However, the action plan itself does not illustrate any concrete action to work towards those goals until 2025 (SBA 2020d) but includes a budget to fund several measures to increase organic farming within the Rural Development Programme budget, for example advisory services and training to support organic farmers (Jordbruksverket 2019, p. 20), as well as funding several initiatives to increase the knowledge about organic farming (SBA 2018).

Similarities and Differences between the Farm to Fork Strategy and the National Food Strategy

There are several similarities between the two strategies. They both have ambitious goals regarding the expansion of organic production, and consider all aspects of sustainability – environmental, social and economic, although to a varying extent. They both have a wide interest in providing a just livelihood for producers and create a vibrant rural life. Furthermore, the objectives of resilience, competitiveness and efficient use of resources are present in both strategies (Löfven & Bucht 2017; European Commission 2020b).

Nevertheless, these strategies also show some important differences. The difference is not so much in the targets (25 percent or 30 percent area) as much as in the justifications to reach them. The Farm to Fork Strategy is primarily guided by a vision of a sustainable food system, especially regarding the environmental aspect. Organic farming is seen as a way to improve biodiversity and to reach the other goals of the strategy, such as the decrease in pesticides and antimicrobial use. There are also considerations in regard to job creation and consumer expectations, but they seem to be secondary (European Commission 2020b). The National Food Strategy also mentions the ambition to reach the national environmental objectives (Sveriges miljömål 2020), but it seems to give a higher priority to an increased production for both national consumption and export, together with an increase in rural employment (Löfven & Bucht, 2017).

An important difference between the two strategies is the role of the consumer in the expansion of the organic sector. The Organic Action Plan (European Commission 2021) focuses on changing both production and

consumption equally, acknowledging that, if only production were stimulated, it would create an excess supply compared to the demand (European Commission 2021). The National Food Strategy has an opposite reasoning; the increase in organic production is pursued because of consumer demand for foods with higher environmental and health standards (Näringsdepartementet 2016). This could lead to conflicts between the two strategies (and within the National Food Strategy itself) in the medium term. There are already signs that Swedish consumers are shifting their “sustainable” preferences from organic products to Swedish or plant-based products (Ekoweb 2020). This competition between organic and plant-based might also be given by the fact that most organic Swedish production is in the livestock sector (Cederberg et al., 2011; SCB 2020), which also has the highest potential to increase the total farmland area under organic production (Koch et al., 2018) (Figure 3). Because of this, wanting to increase organic production and at the same time following consumer demand is a contradiction of the National Food Strategy; this year, the production of organic food is set to decline for the first time after decades (Ekoweb 2020), as consumers are not buying as much organic products, and farmers produce an excess of organic foods (ibid.). The dominance of animal products in the Swedish organic sector might bring another conflict with the Farm to Fork Strategy. In fact, the Farm to Fork Strategy has the explicit goal of leading consumers towards healthier diets. It is widely recognized that an important component of healthier diets is to consume less red and processed meat (Willett et al., 2019). At the same time, the consumption of meat in Sweden is already higher than the recommended level. This should be kept in mind, so that an expansion of organic farming will not be followed by a general increase in meat consumption at the national level.

In both strategies, an increased share of organic foods in public procurement is highlighted as a means to increase consumption. The declared aim of the Farm to Fork Strategy is for public procurement to set an example of increased organic consumption (European Commission 2021), and it aims to set minimum standards for sustainable public procurement by the end of 2021. The National Food Strategy sees public procurement as a way to “better guide towards and respond to society’s aspirations and laws” (Näringsdepartementet 2016, p. 17). This

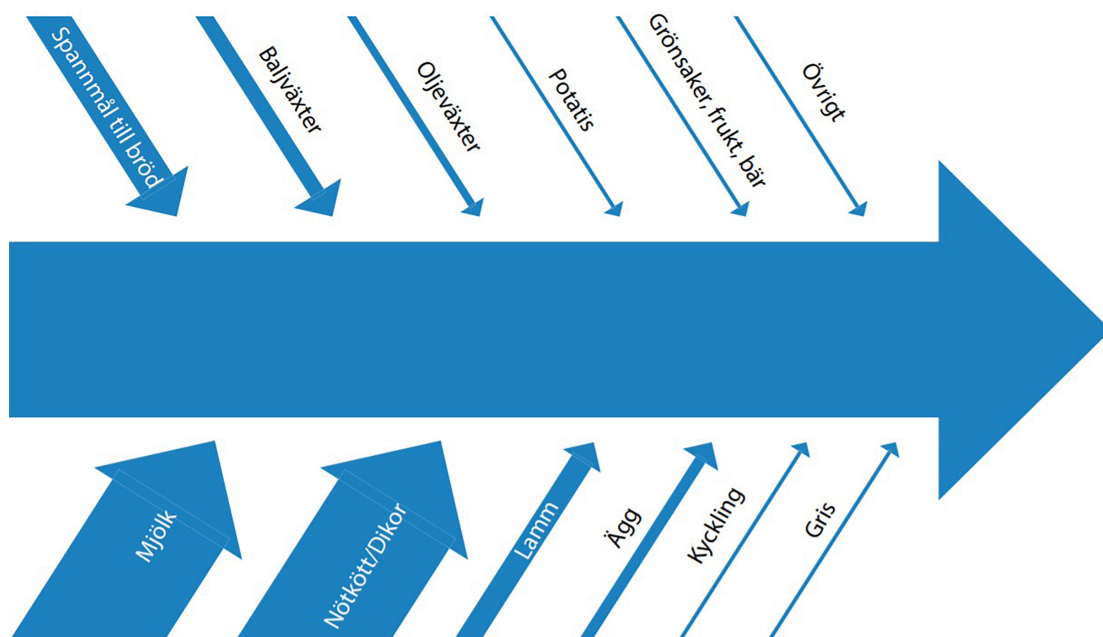


Figure 3: How different production branches affect the organic area target in Sweden. The width of the arrows corresponds to how much the doubling of one production can contribute to the area target. (Koch et al., 2018, p. 18).

includes organic products and environmental considerations, but it is not sure if, when consumers' trends will change, the objective of public food procurement will remain the same.

A final point of contention highlighted by the Swedish Board of Agriculture is the lack of a clear risk analysis in the Farm to Fork Strategy, which Swedish authorities believe is indispensable to decide whether the Farm to Fork Strategy's adoption is feasible (SBA 2020d). In a message to the European Commission, the Swedish government stresses the importance that the European Commission undertaking further risk assessments of the numerical targets in the Farm to Fork Strategy and its effects at the European Union level. The starting points of different member states are quite different, and therefore country level assessments are needed (Näringsdepartementet 2020).

Potential of the Farm to Fork Strategy for Sweden

Despite the differences, several core objectives of the Farm to Fork Strategy and the National Food Strategy are similar. Potentially the non-binding nature of the Farm to Fork Strategy might be positive for Sweden, since Sweden could adapt its targets to the local context. Sweden might take a place of leadership among member states by being an early adopter, showing possibilities for the implementation of the Farm to Fork Strategy and increasing national competitiveness. Finally, Sweden might use this opportunity to showcase its success stories, such as the low use of antibiotics in livestock farming.

Adoption of the Farm to Fork in the Common Agricultural Policy Strategic Plan

Sweden has the opportunity to implement the Farm to Fork Strategy objectives in its Common Agricultural Policy (CAP) Strategic Plan. The CAP offers several opportunities to encourage organic farming; the main are the new eco-schemes in pillar 1, and agro-environmental and climate measures (AECMs), cooperation, investments, and advisory services in pillar 2 (Maréchal et al., 2020). In Sweden, the measures in the CAP Strategic Plan are proposed by the Board of Agriculture after an iterative process with the Ministry of Enterprise and Innovation and numerous stakeholders in the food system. The government then receives the proposal and decides on a definitive Strategic Plan, which has to pass through the Swedish parliament before it is delivered to the European Commission by December 2021.

The eco-schemes will make up 20 percent to 30 percent of the pillar 1 budget (to be decided between the European Union Council, European Union Parliament and European Commission) (Röder & Matthews 2021) and should contribute to one or more of the three CAP environmental objectives: climate change action, environmental

care, preserving landscapes and biodiversity (Lampkin et al., 2020). These goals can be of compensatory nature, meaning that farmers are compensated for the additional costs that an environmentally friendly practice has. The other option is to formulate them as an incentive payment, meaning that they encourage farmers to adopt practices that are more ambitious than the obligatory environmental standards already present in the CAP and in the national policies. Farmers can then decide to follow or not these additional standards to be remunerated with the eco-schemes payments (Meredith & Hart 2019, p. 21). Each member state is able to decide which practices they want to compensate, and which goals they want to obtain, with an unprecedented margin of freedom (Lampkin et al., 2020).

Between January and March 2021, the Board of Agriculture published its proposals for the CAP Strategic Plan and the eco-schemes. One of the main principles for the Swedish reform is simplification, as the current period has been characterized by considerable struggles with getting money delivered to farmers (Ander 2019). Therefore, the Board of Agriculture proposed only three eco-schemes: organic production as a yearly payment; catch and cover crops and spring cultivation; flowering plains with the addition of flowering edge zones in forest areas (SBA 2021a). Yearly payments to organic production are considered a key simplification, as payments are currently given on a 5-year basis and are divided between farmers that are converting their production and farmers that have an established organic farm. The organic payment is suggested to take the largest share of the eco-schemes budget, starting with 750 million SEK and arriving at 870 million SEK at the end of the programme period (ibid, p. 37) – even though much is still uncertain regarding the final budget of the Strategic Plan. The move to pillar 1 might encourage an increased conversion to organic production, given the one-year commitment as well as the elimination of the difference between organic

farmers and farmers who are in the process of converting their production (Hilding-Rydevik et al., 2021).

In line with the sake of simplicity, most of the measures in pillar 2 remain similar to the current period. The additional budget left in this pillar from moving the compensation to organic farming into pillar 1 will be redistributed among the existing measures. However, it is also true that, at the European Union level, pillar 2 received a 19 percent cut compared to the 2014–2020 period, while pillar 1 was only cut by 10 percent (Massot 2021). Some measures with an additional budget are:

- A higher upper limit for young farmers seeking investments (SBA 2020c);
- An increased support for adapted barrier zones to reduce leakage, surface runoff and erosion of nutrients from arable land (SBA 2020b);
- Simplified and increased compensation for pastures and hay meadows by eliminating so-called commitment plans and strengthening advisory services for a correct management of these areas (SBA 2021b).

The different delivery method of the organic payments seems promising for the organic goal. The increased focus on protected zones, flowering plains and edge zones might lead to a progress in the Farm to Fork Strategy objective of reducing nutrient losses. However, the will to reach the quantitative objectives of the Farm to Fork Strategy seem to miss from the Board of Agriculture proposals. Moreover, there are no signals that Sweden wants to reserve more than 20 percent of the direct payment budget for the eco-schemes, or if it will move part of its pillar 1 budget to pillar 2 (these decisions are in the hands of the Ministry of Enterprise and Innovation) (SBA 2021c).

National Policy Measures for Organic Farming

The CAP Strategic Plan is not the only instrument that Sweden can use to reach the Farm to Fork Strategy targets. In one way, Sweden is already one step ahead with a more comprehensive food policy, the National Food Strategy. In particular, the Swedish government assembled a taskforce to identify the measures necessary to reach the goal of 30 percent of organic farmland and 60 percent of public

procurement in the National Food Strategy. However, it is important to notice that the Action Plan for the National Food Strategy and the targets for increased organic production come from the current government; if the majority were to change in the next elections, national priorities and ways to achieve them might change.

The taskforce assembled by the current government released a report with different measures to achieve the National Food Strategy goals (Koch et al., 2018). These measures show similarities with the Farm to Fork Strategy and the Organic Action Plan for the European Union. Koch et al., (2018) state that demand has to come from consumers, but at the same time, priority is given to measures that promote organic consumption, i.e., affecting consumers. For example, consumers and restaurants should receive clear information about the health and environmental aspects of organic products, through information campaigns to promote interest for serving organic food. Another recommendation is to create a website where all actors, from consumers to business, can get non-biased information on organic production and consumption. Other suggestions include information campaigns to increase knowledge about regulations for actors in the food chain, as well as educational programmes to enhance communication between consumers and producers. Regarding public procurement, the main actions focus on education across all actors, from cooks to politicians, especially in regard to economic viability of organic food procurement. Another measure includes regional platforms to connect local farmers and public kitchens (ibid.). At the production level, there is the need to increase knowledge on innovative technologies and techniques for plant nutrients, weed control, organic pesticides and fertilizers (ibid.). Furthermore, there is a lack of reliable resource of seeds, as well as animal breeds suitable for organic production, especially for pig and poultry production, which also relates to animal health (SBA 2020e). In line with the goals of the National Food Strategy, Koch et al., (2018) also suggest increased export of organic foods. Among the measures indicated are the creation of a separate web page dedicated to exports and to representing Sweden as an ‘organic country’, the identification of new markets, collaboration with Nordic countries, and educational programmes to export industries. Most of these initiatives have already been funded by the government

(administered by the Board of Agriculture). One example is EkoMatCentrum, who received funding for the 2018–2020 period to educate restaurants to increase their use of organic food, as well as creating market analyses to boost organics in the public sector (SBA 2018; EkoMatCentrum 2020). EPOK at SLU also received financing to create the educational and informational website ekofakta.se, where different actors can learn more about organic farming, its market, its rules and the main research in the field (SBA 2018; EPOK 2020). In particular, professionals that work in the food chain can find information and guidance on the certifications and rules around organic production and consumption. Other funding has gone into different research projects and institutions, such as SLU, RISE and Sveriges frö- och oljeväxtodlare (Swedish Seed and Oil Crop Producers), to improve technologies and practices in organic production (SBA 2019b). Most of these projects received funding in 2018–2021, while it is still not decided about which projects will be funded for the period 2021–2023.

Farm to Fork in Sweden Beyond the Organic Target

Even if Sweden will reach the 25 percent target of area under organic farmland, it does not mean that the core message of the Farm to Fork Strategy will be fulfilled. Farm to Fork Strategy is a transition strategy, and European Union countries are called to change the way they produce and consume food¹, as well as the structure and relations in the food chains (Moschitz et al., 2020; Sonnino et al., 2020).

A resilient food system cannot be achieved by input substitution alone, i.e. substitution fossil resources and chemical inputs for renewable resources and biological inputs, but foremost by a system change (Moschitz et al., 2020). Means to accomplish this includes an internalisation of the external costs of agriculture, as well as compensation for the provision of public goods. This can create a level playing field between more sustainable and conventional products, and

conventional farmers will be more motivated to improve their environmental performance (Brady et al., 2017). Other issues that are specific to food systems in Sweden are the high market concentration in the retail sector, which may hinder competition, and a lagging behind in including farmers in the digital economy (OECD 2018).

Regarding consumption, it has been demonstrated that pure educational campaigns do not automatically lead to healthier and more sustainable choices, since it is necessary to provide opportunities as well, such as those related to accessibility and cost (Sonnino et al., 2020). Furthermore, if Sweden wants to truly respond to consumer demand, it is necessary to take into consideration the need for plant-based foods and trying to increase the amount of plant-based organic products on the market. As the association Växtbaserat Sverige (Plant food Sweden) points out in its comment to the organic farming action plan of the European Union, it is more difficult to certify plant-based processed products. For example, plant-based drinks cannot be certified if they are fortified, while fortification is very important from a nutritional point of view when switching to dairy milk alternatives (Växtbaserat Sverige 2020).

A final factor to consider is that the measures taken at the Swedish and European Union level do not negatively impact the sustainability of other countries, as it is feared will happen if the Green Deal does not account for the European Union's global impact (Fuchs et al., 2020).

¹ It is unclear what a sustainable food system might be. The report by Chief Scientific Advisors (2020) commissioned by the European Commission points that there is not one common definition, but affirms that it "delivers food security and nutrition for all in such a way that the economic, social and environmental bases to generate food security and nutrition for future generations are not compromised." (ibid. p. 14). This definition is still vague and needs to be further defined.

The Role of SLU

Many of the measures to reach the Farm to Fork Strategy and National Food Strategy goals are centred on research and education at all levels of the food chain. Research also plays an important role in food systems change (OECD 2018; Sonnino et al., 2020). SLU in particular is often cited as a central institution to improve sustainability in Swedish agriculture and increase the share of organic farmland (Koch et al., 2018; OECD 2018; Gielen & Nyström 2019), for example through the projects Ekoforsk and EPOK, SLU Centre for Organic Food and Farming.

EPOK has received the assignment from the Swedish government, via the annual appropriations directives for SLU, to coordinate and communicate research related to organic agriculture and organic food chains (Koch et al., 2018). During the last decade, EPOK's covering of research has mainly focused on primary production, with a focus on productivity, profitability and increased environmental sustainability. However, the subjects of food, market and business have been limited, and there is still a gap between the actual research and the ability to communicate it effectively (ibid.). There is also a need to improve cooperation with other actors of the food chain, as well as investing more on dissemination activities (ibid.). To reach these objectives, Koch et al., (2018) suggest earmarking a higher part of the R&D funds to develop organic production; if the goal is to reach 30 percent of farmland under organic production, then there should be a 30 percent earmark on research that benefits organic production or both organic and conventional production alike. This means that the current circa 24 million kronor per year to these actors should increase to 50 million kronor per year (ibid., p. 69).

Having assessed the potential and challenges to reach the objective of the Farm to Fork Strategy below are some key areas of intervention for SLU.

Research on new inputs, crops, livestock, and technology

There are still many hindrances to the diffusion of organic practices, such as the lack of efficient organic fertilizers and pest control methods (Koch et al., 2018), as well as a lack of seeds and animal breeds that can perform well within organic farming (SBA 2020e). There is also the need to improve the use of technology in agriculture so that farmers will adopt them and increase the digitalization in the sector (OECD 2018). Continued research on organic agriculture and related technologies can help in solving bottlenecks, finding innovative solutions, and improving the perspectives for an increased organic production. On this note, EPOK is currently developing a new research agenda that will highlight the most pressing research needs in organic production.

Risk analysis on the Farm to Fork Strategy

Jordbruksverket (2020a) identifies the lack of risk assessment of the Farm to Fork Strategy as one of the main weaknesses of the strategy so far, while the government points out the different needs and effects that Farm to Fork Strategy would have on different member states (Näringsdepartementet 2020). Therefore, a national risk assessment would be needed to understand the effects of the Farm to Fork Strategy in Sweden. SLU can help fill this knowledge gap by contributing to a risk assessment on the Farm to Fork Strategy measures and their impact on Sweden in particular. An aspect that needs to be explored is how to reconcile the objectives of competitiveness and rural employment with the ones of environmental sustainability and health. This is relevant for both conventional and organic farming and the possibilities for expansion of the latter. For example, it could be useful to perform an assessment on how the expansion of organic farmland would influence the other quantitative targets (reduction in pesticides, fertilizers, antimicrobials).

Assessment of potential eco-schemes adopted in the Common Agricultural Policy Strategic Plan

The eco-schemes will play a significant role in the next programme period, as they will have a large budget and will be tailored according to the member states preferences and needs. SLU has already been involved in the discussions on the new Common Agricultural Policy (CAP) (see SLU 2019), but it can further develop its collaboration with policymakers by performing additional analyses of different eco-schemes proposed by the Board of Agriculture so far, providing an evidence base for the government's decision (Lampkin et al., 2020). Different measures need to be assessed on their own and in synergy with others, so that the funds are used in the most efficient way and provide the highest amount of public goods. Research projects could look at the potential effects of an eco-scheme for organic farming and assess the best way to implement it.

Increased collaboration and interdisciplinary research projects

Both the National Food Strategy and the Farm to Fork Strategy focus on the whole food chain, and the Farm to Fork Strategy takes into consideration all actors in the food chain from producers to consumers. At the same time, there is not enough connection between research and the real needs of the agricultural and food sectors (OECD 2018). To account for these shortcomings, there is a need for more research projects with an interdisciplinary character that involve different stakeholders (Koch et al., 2018; Sonnino et al., 2020). These multi-actor projects can foster, among others, greater exchanges between farmers and advisors, and contribute to their empowerment to provide a system change (Moschitz et al., 2020). A part of this can be realized within the agricultural knowledge and innovation systems (AKIS) in pillar 2, if the H2020 multi-actor projects were to be continued in the next programme period (ibid.). Some current research projects that can increase collaboration between researchers and other actors in the food chain are the project Mistra Food Futures, (Mistra Food Futures 2020) and the project SustAinimal (SLU 2020), both led by SLU. Platforms such as SLU Epok and SLU Future Food already work with fostering such collaborations and play an important role of knowledge dissemination.

Research and education at all levels of the food chain

There are increased calls for research to fill the knowledge gap in the middle of the food chain, meaning all those actors that connect producers and consumers (wholesale, processing, transport, et cetera). (Sonnino et al., 2020). There is also a gap between research results and their diffusion among a wider audience, as well as the need for non-biased information campaigns to gain trust on organic farming (Koch et al., 2018). SLU has already a prominent position in Sweden as a leader on agriculture, food and sustainability research. At the same time, the research institute RISE is already undertaking much research in this area. Therefore, SLU could either expand its research into even more into the value chain or collaborate with RISE to create increased knowledge that can be transformed into fact-based, reliable communication and educational material. EPOK already has a webpage to increase understanding of organic farming, called ekofakta.se, but it could be developed and advertised further.

Research and leadership on systems change

The core of the Farm to Fork Strategy is to redesign the European food systems to promote resilience, healthy diets and just livelihoods for producers. This means that research has to provide policymakers with the tools for such a redesign, by creating the necessary research and frameworks to implement sustainable food systems in Sweden. This could mean working on alternative food value chains to reduce market concentration, production systems based on the provision of public goods, and studies on the internalisation of externalities in the cost of food. Systems change research should not forget to include effects on third countries in its analysis. Some projects at SLU do include elements of systems change and transition theory (such as Mistra Food Futures) (Mistra Food Futures 2020), but this could be strengthened. SLU could also use its own property and operations to showcase solutions from radically improved agricultural production and food provisioning. SLU Future Food is a platform that already provides a research-policy interface and such activities could also be further strengthened.

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SLU Future Food

SLU Future Food is a platform at the Swedish University of Agricultural Sciences for research and collaboration to develop knowledge, solutions and innovations for a economic, ecological and social sustainable food system.

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