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# FARM TO FORK: SYSTEMIC CHANGE IS KEY TO EUROPEAN FOOD SECURITY AND RESILIENCE

ACCELERATING THE TRANSITION TO  
SUSTAINABLE FARMING AND HEALTHY DIETS

MAY 2023



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# 1. EXECUTIVE SUMMARY AND KEY MESSAGES

With much fanfare and after many years of consultation with a wide variety of stakeholders across Europe, the European Commission published its Farm to Fork Strategy (F2F)<sup>1</sup> in May 2020, a 10-year plan aiming to make food systems ‘fair, healthy and environmentally friendly’. It marked a milestone in designing a set of systemic and holistic food policies, with the announcement of a Legislative Framework for Sustainable Food Systems<sup>2</sup> (also referred to as Sustainable Food Systems Law), to be proposed in the autumn of 2023.

Since the publication of the F2F strategy, rising fuel, feed and fertiliser costs and disruption in the supply of key globally traded commodities, have resulted in record food prices, and increasing levels of global food insecurity. It has highlighted the vulnerability of the EU food system when confronted with global shocks – whether that is geopolitical instability, global pandemics, or climate change.

Over the last 12 months there has been a concerted attack by some stakeholders against the sustainable food policies outlined within the F2F strategy - the argument being that the strategy puts food security at risk. Some farming groups, politicians, food businesses and agri-food groups now advocate that the F2F strategy and the legislative initiatives under it, need to be reviewed, with a greater emphasis on increasing agricultural production and productivity to ‘feed the EU and the world’ – with a need to water down some of the greening measures.

This briefing highlights that short-term measures to return to ‘business as usual’ will have a negative impact on European food security in the long term. Rolling back the F2F strategy to scale up intensive systems of food production would not solve the current pressures on the global food supply - instead, it would move us even further away from a food system that is resilient to future shocks. The F2F strategy offers a unique opportunity to promote joined up policies that result in synergies for food security, production, sustainability, and health – it must not be weakened or abandoned.

In summary, this briefing highlights that:

- Food insecurity is a consequence of an unsustainable food system that threatens long-term food production. A shift to healthy and sustainable diets, combined with agroecological farming practices, is key to providing long-term food security for both European and global citizens.
- In a world that will inevitably face additional shocks in the form of environmental crises (climate change and biodiversity loss), we need policies oriented towards re-localising and democratising our food systems, building on traditional and ecological knowledge that supports resilience.



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- Food insecurity is not caused by a shortage of food supply, but by unequal distribution. There is more than enough food to enable the world to feed itself – however, food that could be used for human consumption is fed to animals, used as biofuels, or wasted rather than feeding hungry people. This is an inefficient use of limited land resources.
- Today the EU is a major exporter, in value terms, of high value commodities that are not part and parcel of global food security and is a net importer of calories and proteins.
- Shifting towards a food system in which arable crops are prioritised for human nutrition - and livestock numbers are accordingly reduced – offers significant potential to reduce pressure on Europe’s land area.<sup>3</sup> This would potentially save up to 70.7 million hectares of agricultural land whilst reducing imports of animal feeds such as soy and reducing pressure on land overseas.
- Europe can significantly improve food security and resilience outcomes by supporting a transition to organic and agroecological agriculture. This would reduce fertiliser imports, maximise the use of locally grown resources (leguminous crops) and improve climate and biodiversity outcomes.
- As European governments continue to mitigate the effects of price rises and market volatility, they must commit to taking measures that build longer-term resilience to future global shocks, based on an agroecological transition for healthy and sustainable diets.
- The EU must continue to support and strengthen the F2F strategy. The Legislative Framework for Sustainable Food Systems should establish a 2050 vision for sustainable food systems to provide a clear direction and ensure coherence among food-related policies. This must include ambitious provisions able to set a clear and common direction, possibly including intermediate and final binding targets that apply to the entire food system, from production to consumption, as well as a comprehensive evaluation mechanism to monitor progress.

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## 2. INTRODUCTION

### 2.1 THE FARM TO FORK STRATEGY

In its Farm to Fork (F2F) strategy, published in May 2020, the European Commission announced a new and unique Legislative Framework for Sustainable Food Systems, as part of the European Green Deal.<sup>4</sup> Supported by parallel initiatives (e.g., the Biodiversity Strategy<sup>5</sup>, the Forest Strategy<sup>6</sup>, the Sustainable Use of Pesticides Regulation<sup>7</sup>, EU Soil Health Law<sup>8</sup>), it represents the most systemic, coherent, and comprehensive European attempt to respond to the interlinked sustainability, health and food security challenges posed by today's food systems. The F2F strategy sets out ambitious targets that must be reached by 2030 if we are to keep our food system within planetary boundaries.<sup>9</sup> These targets include a 50% reduction in the use and risk of chemical pesticides; cutting nutrient losses by 50%; a 20% reduction in fertiliser use; and at least 25% of the EUs agricultural land under organic farming by 2030.<sup>10</sup> In addition, the Sustainable Food Systems Law is an exceptional opportunity to promote policy coherence at EU and national level, mainstream sustainability in all food-related policies, and strengthen the resilience and food security outcomes of food systems.

The F2F strategy involved many years of consultation with key stakeholders including governments, farmers, citizens, food businesses (retailers, processors, trade bodies etc.), academic groups and civil society organisations. Since its publication, Europe has confronted a number of crises and also experienced the continuing effects of accelerating climate change – including deadly floods, one the hottest summers on record (2022) and unprecedented forest fires.

### 2.2 FOOD SECURITY IMPACTS OF RISING PRICES

2022 bore witness to unprecedented spikes in food prices across the world. Although food prices have come down since their peak in March 2022<sup>11</sup>, they remain elevated in historical terms and remain at historical highs since the Covid-19 pandemic (still 28% above the 2020 levels). In addition, public finances in low-income countries are still being rocked by sky-high import costs for food and rapidly rising interest rates<sup>12</sup>, increasing poverty and instability within many food deficit countries. The number of people who are acutely food insecure reached a record high of 245 million in 2022<sup>13</sup> with an urgent need for assistance in 45 UN countries.<sup>14</sup> For the EU, the direct impact of recent shocks to the global food system is seen in higher food product prices. In poorer countries, by contrast, these shocks translate into food insecurity and a humanitarian crisis.

The price rise shocks created a ripple effect through international markets, with 23 countries imposing export bans on commodities such as palm oil and wheat (representing 10% of global calories) to stabilise domestic prices.<sup>15</sup> Food-import dependent countries, which also are impacted by their own internal conflicts, such as Yemen, Afghanistan, Syria, and Ethiopia, are much more vulnerable at a time of crises, with potentially serious humanitarian consequences.



FIGURE 1: Cereal Price Index January 2021 = 100<sup>16</sup>

### 2.3 THE F2F STRATEGY UNDER THREAT

Each time there is a geopolitical shock to the food system some farming and industry stakeholders return to the argument that sustainability measures hinders or threatens food production and European capacity to ensure food security in the short term. The EU is heavily reliant on imports of fertilisers and wheat/corn to feed its farm animals, which in turn maintains exports of European meat and dairy products. This, combined with increasing food, feed, and fertiliser price volatility, has precipitated a concerted attack by some stakeholders with vested interests, against the sustainable food policies in the Green Deal and the F2F strategy.<sup>17</sup> These stakeholders argue there is a need to reorient

policies and subsidies towards increasing agricultural production/productivity to ensure long-term food security and maintain supplies of food, feed, and fertilisers in the near term. However, this is often based on limited evidence that does not include the case for agroecological farming systems (reducing reliance on external inputs) combined with demand side changes (e.g., dietary change, reducing waste/inefficiencies etc).<sup>18</sup>

Against this backdrop, this briefing sets out why the F2F strategy and Sustainable Food Systems Law are key to building long-term resilience to future shocks and why they should be further strengthened, not weakened, to ensure food security for Europeans and people across the world.

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# 3. THE EU DOES NOT FEED THE WORLD

## 3.1 NUTRITIONAL DEFICIT OF TRADE WITH THE REST OF THE WORLD

Claims that the EU is 'feeding the world' with its agricultural exports are no longer tenable. In fact, in many respects the EU 'eats the world'.<sup>19</sup> Despite being the world's largest exporter of agri-food products in economic terms, the EU carries a significant trade deficit in nutritional terms. The EU's agri-food trade model revolves around importing low-value raw products, such as cocoa, fruits and soybeans, and exporting high-value ones – making a positive contribution to the EU economy, but not necessarily to the global food supply, resilience, or food security. Of the top-10 exported products, contributing to 44% of total exported value<sup>20</sup> most are 'premium commodities' (e.g., spirits, wine, cheese, chocolate, and other highly processed food commodities) which are bought by wealthier citizens in countries such as Japan, USA, and China. Counter to the often-quoted narrative that the EU 'feeds the world' the opposite is true -the EU is in fact a net importer of both calories and proteins, relying on imports for the equivalent of 11% of the calories we consume and 26% of proteins.<sup>21</sup>

The current global production of crops is sufficient to provide enough food for the projected global population of 9.7 billion in 2050 - the equivalent of 5935 calories per person per day is grown each year around the world.<sup>22</sup> One third of these calories (~1738) are used to feed farm animals (whose consumption, in turn yields ~594 calories) and an additional 1329 calories is wasted. Whilst estimates of the proportion of edible crops eaten directly by people as food vary, one study calculated that people consume 55% of crop calories, 40% of crop protein and 67% of crop weight directly - If all these edible crops were eaten by people, overall protein availability would double, and calorie supply would rise 70%.<sup>23</sup>

The current mantra that to solve the food security crisis that 'we must produce more in Europe to feed the world' is not responding to the reality of the situation. It locks us

into a deliberately biased understanding of food insecurity mechanisms and jeopardises our ability to fight climate change, biodiversity loss and the human health crisis. It fails to recognise that long-term food security and resilience depends on tackling the climate and biodiversity crisis on which our food system depends.<sup>24</sup> EU exports are currently dominated by heavily processed foods for affluent middle-income citizens that do little to improve global food security for the poorest.

## 3.2 THE EU FOOD SYSTEM IS OVERLY DEPENDENT ON FUEL, FERTILISERS, AND FEED INPUTS

The EU economy is highly dependent on energy from fossil fuels (especially oil and gas) which represent close to three-quarters of its total energy consumption. Most of this fossil fuel energy is imported: while the EU accounts for 8% of global fossil fuel demand, it accounts for only 0.5% of global oil production and 1% of global gas production<sup>25</sup>. Energy prices skyrocketed throughout 2022, and as a result, the cost of animal feed and fertiliser - which depend heavily on fossil fuels for their production - soared for farmers across Europe, contributing to record food prices, which reached an all-time high of 19.3% in February 2023 as compared to the previous year.<sup>26</sup>

In 2020/21, Europe used 10.2 million tons of fertiliser (9% of global total).<sup>27</sup> There are 179.9 million hectares of agricultural land within the European Union, of which 133.9 million hectares (74%) is fertilised.<sup>28</sup> During the first quarter of 2022, the global cost of fertiliser rose 30% on the heels of an 80% price hike in 2021.<sup>29</sup> The EU's vulnerability to market distortions in fertiliser trade is particularly acute since fertilisers represent 18% of input costs for arable crops. Furthermore, fertilisers have significant environmental impacts with nitrates as the main pollutant of European



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ground water<sup>30</sup> and nitrogen fertilisers accounting for 10.6% of greenhouse gas emissions from the agriculture sector<sup>31</sup>.

The rise in cereal prices had a direct impact on the production costs of many farmers, particularly poultry, pig, and dairy farmers, who rely on cereal consumption to feed their livestock. Animal feeds (wheat, maize, and soy) are the most important livestock production cost factor - feed costs account for approximately 50-60% of the cost of livestock<sup>32</sup>. The EU relies largely on imports for its feed, producing only 31% of the total feed consumed in the EU.<sup>33</sup> Soybeans and maize are the main sources of feed with the EU importing more than 25.4 million tonnes (2020/21) of soybeans per year for animal feed; compared to domestic production of 0.9

million tonnes.<sup>34</sup> Of maize production, 59% ends up as feed. The production of soybeans for feed is the second biggest driver of deforestation worldwide, behind conversion of forest to pasture, especially in South America.<sup>35 36</sup>

The food security crisis has shed light on Europe's dependency on third countries for fertiliser and feed which the EC has also recognised.<sup>37</sup> Overall, imports of feed and fertiliser disrupt nutrient cycles, are an inefficient use of calories and cause significant environmental impacts. The need to reduce European dependency to improve resilience to future shocks and improve long-term food security outcomes has never been more urgent.

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# 4. CLIMATE CHANGE AND BIODIVERSITY LOSS AS LONG-TERM DRIVERS OF FOOD INSECURITY

Global food insecurity had been growing steadily for some time, but recent global shocks have now pushed food prices to record highs. These shocks combined with ongoing geopolitical tensions has exposed the fragility and vulnerability of European industrial agriculture and its dependence on fossil fuels and fertilisers. It has also highlighted how industrial livestock farming is massively dependent on imports of cereals and oilseeds which could more efficiently be used for direct human consumption.

European food insecurity has its origin not in a shortage of supply but in economic inequalities and unequal distribution. The world produces enough calories to go around. Each day, farmers grow 2,800 calories per person on the planet and enough to surpass the recommended intake of 2,100 daily calories per person for the projected global population of 9.7 billion in 2050.<sup>38</sup> However, grains are fed to animals, used as biofuels, or wasted rather than supplied to those who need it the most.

Recent events highlight the need for long-term measures that build resilience to longer term shocks that are already starting to threaten global food security – namely climate change and biodiversity loss.

The Intergovernmental Panel on Climate Change (IPCC) Assessment Report<sup>39</sup> warns that climate change and related biodiversity loss 'have affected the productivity of all agricultural and fishery sectors, with negative consequences for food security and livelihoods'. It is widely recognized that planetary systems are dangerously close to breaking point.<sup>40</sup> The impacts of climate change are increasing in frequency and intensity around the world, particularly life-threatening heatwaves, floods, storms, and droughts - leading to further and longer-term impacts such as food insecurity, entrenched poverty, and economic losses.<sup>41</sup> Climate change has already reduced global agricultural productivity growth by 21% since 1961, and by up to 34% in Africa.<sup>42</sup> The 2022 heatwave in Europe reduced yields for maize, soybean, and sunflower oil.<sup>43</sup>

Agriculture accounts for over 50% of habitable land and is the leading cause of biodiversity loss.<sup>44</sup> According to the FAO the erosion of biodiversity will undermine the capacity of agricultural systems to adapt to changing conditions and shocks, such as climate change, the loss of pollinators, and outbreaks of pests and diseases that may jeopardise food security and livelihoods.<sup>45</sup>

Choosing to reorient EU policies and subsidies solely towards ensuring food supplies based on maintaining current levels of feed and fertiliser inputs in the near term, at the cost of safeguarding long-term resilience, would make long-term food security impossible.



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44 WWF. 2021. Bending the Curve: The Restorative Power of Planet Based Diets. [https://files.worldwildlife.org/wwfmsprod/files/Publication/file/7b5iok5vqz\\_Bending\\_the\\_Curve\\_The\\_Restorative\\_Power\\_of\\_Planet\\_Based\\_Diets\\_FULL\\_REPORT\\_FINAL.pdf?\\_ga=2.61332844.1932662057.1678270577-1177508605.1675845825](https://files.worldwildlife.org/wwfmsprod/files/Publication/file/7b5iok5vqz_Bending_the_Curve_The_Restorative_Power_of_Planet_Based_Diets_FULL_REPORT_FINAL.pdf?_ga=2.61332844.1932662057.1678270577-1177508605.1675845825) (accessed 9th March 2023)

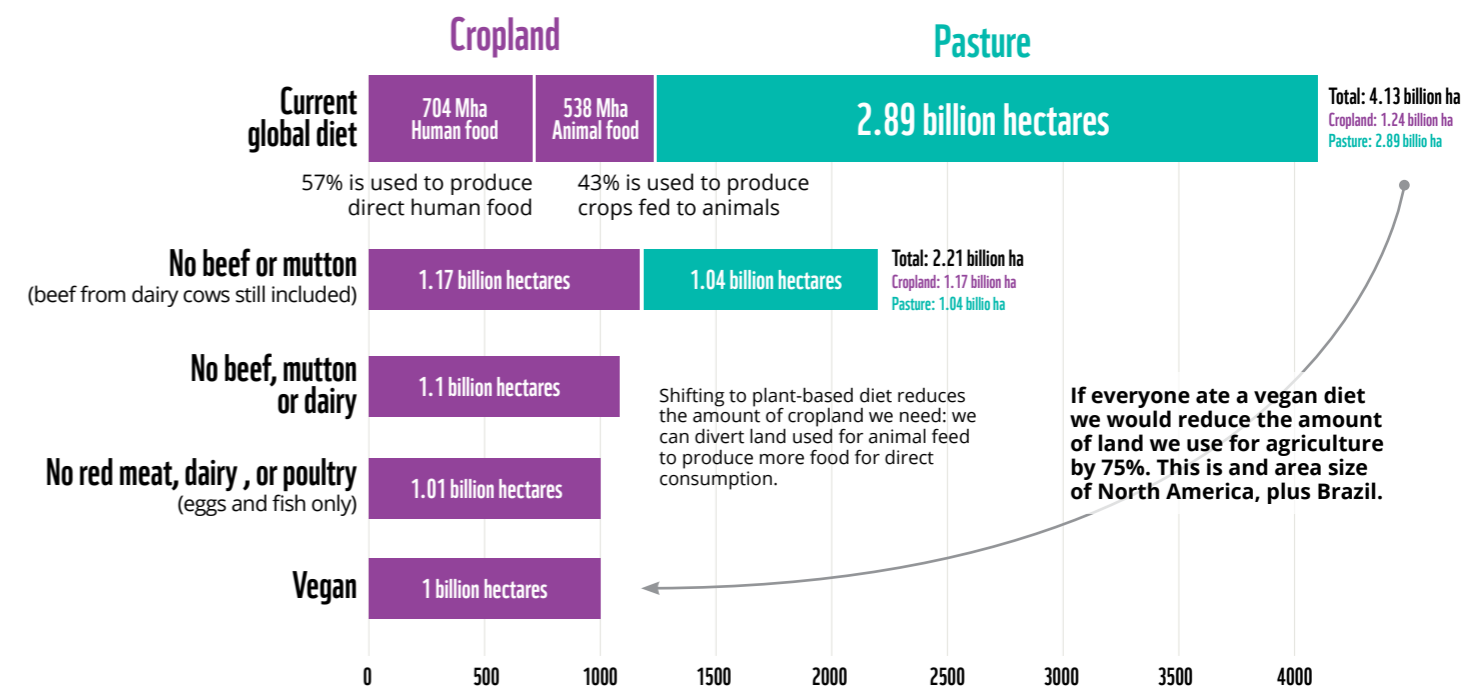
45 FAO. 2019. The State of the World's Biodiversity for Food and Agriculture. <https://www.fao.org/3/CA3129EN/CA3129EN.pdf> (accessed 8th March 2023)

# 5. BUILDING LONG-TERM FOOD SECURITY AND RESILIENCE IN EUROPE

Given the need to reduce Europe's dependency on the imports of feed and fertilisers and become more self-sufficient in the production of nutritious foods, there is a need to optimise how Europe uses its finite land resources - optimising the production of regionally grown nutrient-rich foods (and reducing the EU's calorie deficit) whilst reducing GHG emissions and restoring biodiversity. This briefing paper outlines three of the most impactful ways of achieving these goals: Shifting to healthy and sustainable diets; shifting to agroecological and organic forms of production; and shifting to fair trade with the rest of the world.

## 5.1 SHIFTING TO HEALTHY AND SUSTAINABLE DIETS

Globally, humans use half of all global habitable areas for agricultural production with 80% of agricultural land used for the rearing of livestock, through a combination of grazing land and land used for animal feed production. Despite being dominant in the land allocation for agriculture, meat and dairy products supply only 17% of global caloric supply and only 33% of global protein supply.<sup>46</sup> If we shifted towards a more plant-based diet we would not only need less agricultural land overall, but also less cropland – as the 'human food' component of cropland would increase while the cropland area used for animal feed would shrink much more significantly. Hypothetically, if everyone in the world adopted a plant-based diet, the world population could be fed using only 25% of the land that we use today (see figure 2 below).



Global agriculture land use is given for cropland and pasture for grazing livestock assuming everyone in the world adopted a given diet. This is based on reference diets that meet calorie and protein nutritional requirements.

FIGURE 2: Global land use for agriculture across different diets<sup>47</sup>

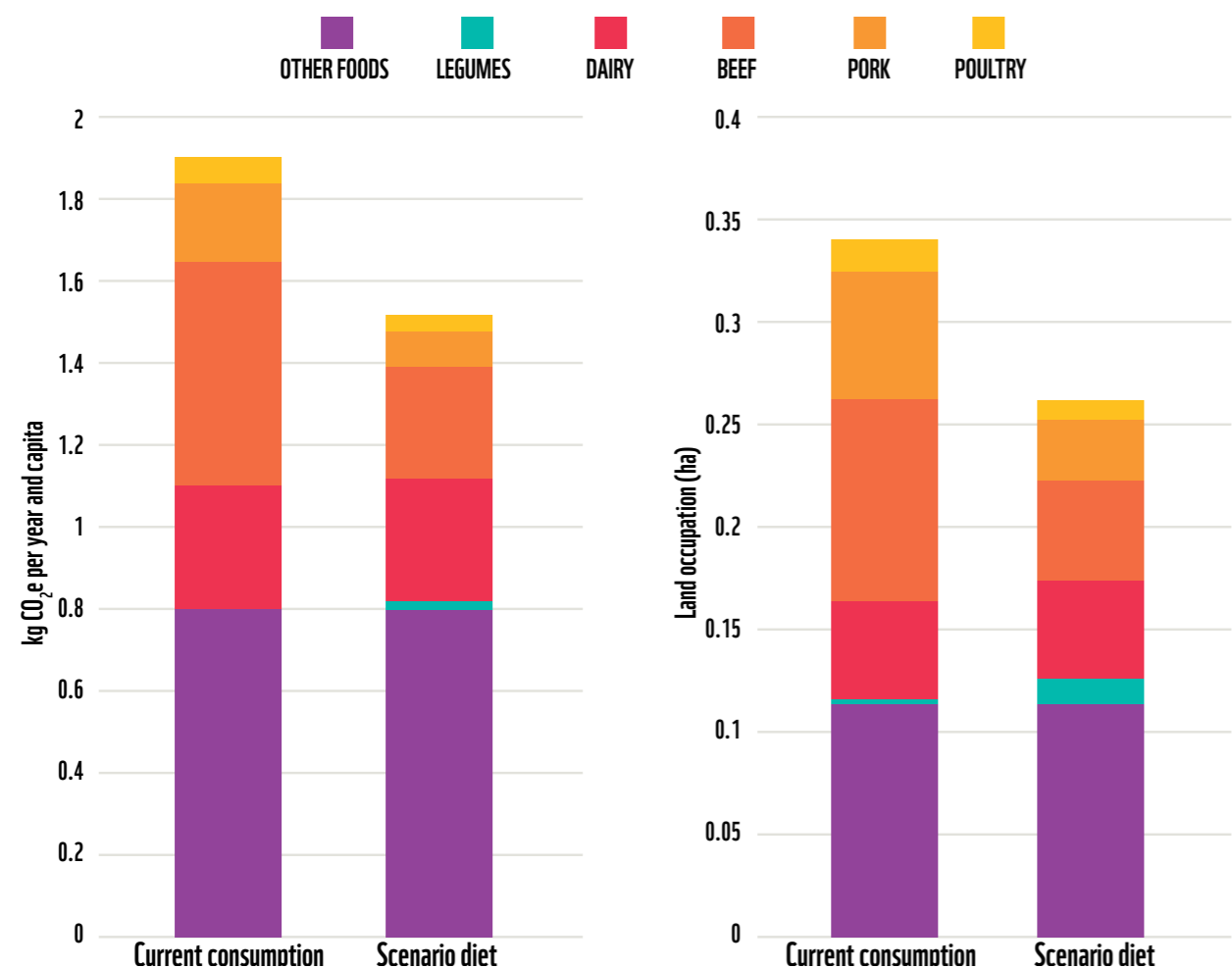
46 Our World in Data. 2023. Crop Yields. <https://ourworldindata.org/yields-and-land-use-in-agriculture> (accessed 14th March 2023)

47 Our World in Data. 2021. Land use. <https://ourworldindata.org/land-use-diets> (accessed 13th March 2023)

Within Europe, estimates suggest that livestock production accounts for up to 71% of farmland when land for feed crops are included.<sup>48</sup> The EU imports 69% of feed from overseas<sup>49</sup>, relying on a significant proportion of land overseas for its livestock production, most of which is in South America, where soy production drives deforestation.<sup>50</sup> In Europe, the share of cropland used for feeding livestock is larger than the global average since more animal products are consumed per capita than the global average and there is a strong export market in high-value animal products.<sup>51</sup> As such, according to research published in Nature, there is an opportunity for dietary change to save 70.7 million hectares of agricultural land, close to the size of France and the United Kingdom

combined - this dietary change would also reduce EU fertiliser use by 23.4%.<sup>52</sup>

Additional studies have also calculated that following diets in line with the EAT-Lancet diet<sup>53</sup> and reducing food waste by 50% could free up 29% of cropland and 72% of grazing land respectively, releasing more land for nature and bioenergy, whilst meeting a wide range of EU policy targets.<sup>54</sup> Reducing the consumption of meat, particularly originating from intensive industrial livestock systems, which are heavily dependent on imported feeds and fertilisers, would reduce the amount of total land needed and result in a wide range of other environmental, animal welfare and health co-benefits.<sup>55</sup>



**FIGURE 3: Climate impact (a) and land use (b) of the current Swedish diet in a scenario in which meat consumption is reduced by 50% and replaced by legumes.**

48 Greenpeace. 2019. Feeding the Problem. <https://www.greenpeace.org/static/planet4-eu-unit-stateless/2019/02/83254ee1-190212-feeding-the-problem-dangerous-intensification-of-animal-farming-in-europe.pdf> (accessed 9th March 2023)

49 CWG-SAP. 2019. Drivers of change and development in the EU livestock sector, study for the Federal Office for Agriculture and Food, Germany, Collaborative Working Group on Sustainable Animal Production. [https://era.susan.eu/sites/default/files/Drivers%20of%20change%20and%20development%20in%20the%20EU%20livestock%20sector\\_BLE\\_CASA\\_STUDY\\_0.pdf](https://era.susan.eu/sites/default/files/Drivers%20of%20change%20and%20development%20in%20the%20EU%20livestock%20sector_BLE_CASA_STUDY_0.pdf) (accessed 7th March 2023)

50 WWF. 2023. Soy. <https://www.worldwildlife.org/industries/soy> (accessed 9th March 2023)

51 Mottet, A. et al. 2017. Livestock: on our plates or eating at our table? A new analysis of the feed/food debate. (accessed 14th March 2023)

52 Sun, Z., Scherer, L., Zhang, Q. et al. 2022. <https://doi.org/10.1038/s43016-022-00634-4> (accessed 14th March 2023)

53 Eat-Lancet. 2020. The EAT-Lancet Commission Summary Report. <https://eatforum.org/eat-lancet-commission/eat-lancet-commission-summary-report/> (accessed 27th March 2023)

54 Elin Rööös et al. 2022. Agroecological practices in combination with healthy diets can help meet EU food system policy targets. <https://doi.org/10.1016/j.scitotenv.2022.157612>. (accessed 10th March 2023)

55 ibid

Analysis of the land use implications of dietary change in several other European countries also confirm that dietary change would significantly reduce the amount of land needed for animals (and their feeds). In Sweden for example, a 50% decrease in meat consumption, in line with Swedish dietary guidelines, and an increase in the production of legumes (55g of legumes per capita per day), would reduce land use by 23% and reduce total synthetic fertiliser use by 3%<sup>56</sup> - this is significant given that fertiliser use in Sweden is already lower than many other European countries<sup>57</sup> (see figure 3).

Importing human-edible crops to feed to animals allows the EU to export animal products, but a large share of the nutrients and proteins are wasted in the process – for each 100 calories fed to livestock, less than 20% are available for human nutrition in meat.<sup>58</sup> We are effectively feeding food to animals we could eat ourselves, which would reduce the land we would require and contribute towards meeting the EU's climate and biodiversity targets. Furthermore, given that EU citizens eat more than twice as much meat as recommended by health authorities<sup>59</sup>, meat reductions would support EU health targets, including the incidence of obesity and antimicrobial resistance. Research has highlighted that a 40% reduction in the consumption of animal products, combined with a transition to low-fodder and self-sufficient agroecological livestock farming (i.e., fed on European grasslands and legumes), would make it possible to move the EU from being a net importer to a net exporter of calories, reducing GHG emissions and European dependence on fossil fuel-based fertilisers.<sup>60</sup>

It should be noted that reducing EU feed imports would lead to decreased cropland demand in exporting countries and allow these countries to dedicate more land to food crop production, therefore contributing to global food security. However, if the EU were to reduce EU feed imports and increase the production of feed crops, without tackling meat consumption, this would lead to less EU production and exports of food crops<sup>61</sup>, with adverse impacts on global food security. Therefore, the importance of reducing EU feed imports for livestock, combined with dietary change and reductions in livestock production, cannot be underestimated.<sup>62</sup>

Overall, given the inefficiencies of protein and calorie conversion within livestock systems, shifting towards a system in which arable crops are prioritised for human nutrition - and livestock numbers are accordingly reduced

- offers huge potential to reduce pressure on Europe's land area. Increasing the proportion of plants within our diets can improve the resilience of the EU food system.

The F2F strategy states that it aims to 'promote sustainable food consumption and facilitate the shift to healthy, sustainable diets.' Given the evidence presented in this briefing, reductions in average EU citizens' meat consumption and corresponding increases in the consumption of whole-grain cereals, fruit and vegetables, legumes and nuts will be a crucial pillar of future global food security and resilience. Conversely, political efforts to allocate further land to feed production and maintain current levels of livestock production and consumption would be counterproductive to long-term global food security.<sup>63</sup>

## 5.2 SHIFTING TO AGROECOLOGICAL AND ORGANIC FARMING

An EU wide agroecological and organic transition would support a shift away from an industrial livestock production model based on feeding large amounts of imported human-edible crops (such as soy) to animals and integrating grazing livestock with the growth of a diverse range of crops. It would also drastically lower the dependence on nitrogen fertilisers by reintroducing legumes in crop rotations and help close nutrient cycles by integrating grazing ruminants (supporting biodiversity) and other agroecologically reared farm animals that help recycle food waste streams.<sup>64</sup>

Agroecology and organic production systems are often criticised for being non-viable on a large scale because they are more land-demanding due to lower yields and the common practice to produce nitrogen using leguminous crops, rather than relying on synthetic fertilisers.<sup>65</sup> However, these systems are feasible in terms of land availability if coupled with demand-side mitigation options, including dietary change and waste reduction<sup>66</sup>. European studies have also shown that agroecological practices, in combination with dietary change, can feed the projected European population by 2050, while halving nitrogen losses to the environment.<sup>67</sup> Research by the Institute for Sustainable Development and International Relations (IDDRI) highlights that an 'agroecological EU', combined with dietary shifts, would outperform today's system in providing nutrients/calories to

56 Rööös, E., Carlsson, G., Ferawati, F., Hefni, M., Stephan, A., Tidåker, P., & Witthöft, C. 2020. Less meat, more legumes: Prospects and challenges in the transition toward sustainable diets in Sweden. doi:10.1017/S1742170518000443 (accessed 13th March 2023)

57 <https://knoema.com/atlas/Sweden/Fertilizer-consumption#:~:text=In%202020%2C%20fertilizer%20consumption%20for%20kilograms%20per%20hectare%20in%202009.> (accessed 27th March 2023)

58 RISE. 2018. What is the Safe Operating Space for EU livestock? [https://risefoundation.eu/wp-content/uploads/2020/07/2018\\_RISE\\_Livestock\\_Full.pdf](https://risefoundation.eu/wp-content/uploads/2020/07/2018_RISE_Livestock_Full.pdf) (accessed 9th March 2023)

59 EPHA. 2021. Meat Production & Consumption (in Europe) and Public Health. <https://epha.org/wp-content/uploads/2021/10/meat-production-consumption-in-europe-and-public-health-an-exploration-final.pdf> (accessed 8th March 2023)

60 Bruegel. 2022. (accessed 9th March 2023)

61 Carlsson, J.O., Parodi, A., van Zanten, H.H.E. et al. 2021. Halting European Union soybean feed imports favours ruminants over pigs and poultry. <https://doi.org/10.1038/s43016-020-00203-z> (accessed 15th March 2023)

62 ibid

63 Springmann, M. et al. 2022. [https://www.cell.com/one-earth/fulltext/S2590-3322\(22\)00205-6?returnURL=https%3A%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS259033222002056%3Fshowall%3Dtrue](https://www.cell.com/one-earth/fulltext/S2590-3322(22)00205-6?returnURL=https%3A%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS259033222002056%3Fshowall%3Dtrue) (accessed 9th March 2023)

64 Billen, G. et al. 2020. Reshaping the European agro-food system and closing its nitrogen cycle: The potential of combining dietary change, agroecology, and circularity. <https://doi.org/10.1016/j.oneear.2021.05.008> (accessed 7th March 2023)

65 Ibid

66 Muller, A. et al. 2017. Strategies for feeding the world more sustainably with organic agriculture. <https://doi.org/10.1038/s41467-017-01410-w> (accessed 10th March 2023)

67 Ibid

the rest of the world, and become a net exporter of calories (exporting 12% of what it consumes).<sup>68</sup>

Of the 6,000 plant species humans have eaten over time, the world now mostly eats nine, of which just three - rice, wheat, and maize - provide 50% of all calories.<sup>69</sup> However, the focus on staple crops has also eroded traditional diets and left countries heavily reliant on imports for what are now their staple foods. In many countries, cash crops have taken the place of more diverse food cropping and nutritionally important foodstuffs. The development of high-yielding wheat varieties during the 'Green Revolution' has also accelerated production and dietary shifts, leading for example to the replacement of pulses and millets with wheat

monocultures in India<sup>70</sup>. Diversifying agricultural production away from reliance on these three globally traded grains, through investment in alternative crops, would increase resilience to climate and biodiversity impacts that threaten the future viability of major grains.<sup>71</sup>

To achieve the policy targets as outlined in the F2F strategy, the widespread adoption of agroecological practices, alongside drastic dietary change, and waste reductions, would be required. Recent research, based on five explorative storylines for future EU food systems, were modelled and showed that an agroecological transition based on localisation would meet all the targets of the F2F strategy<sup>72</sup> (see figure 4).

Policy area	Target	1 Business as usual	2 Agroecology for exports	3a Localisation for protectionism	3b Localisation for sustainability	4 Local agroecological food systems
Climate	30% / 40% reduction in emissions	+12%	+6.9%	+15%	-44%	-47%
Ammonia	19% reduction at EU level	+5%	+5%	-9%	-20%	-57%
Pesticides	50% reduction in pesticide use	+13%	-24%	5%	-20%	-57%
Organic production	25% of land under organic management	5.7%	40%	5.7%	5.7%	50%
Fertiliser use	20% reduction in fertiliser use	+64%	+20%	+58%	+11%	-21%
Biodiversity	10% of agricultural land feed	17%	2.4%	19%	48%	23%
Biodiversity carbon seq.	Planting of 3 billion trees	47 billion	7 billion	52 billion	133 billion	64 billion
Antimicrobials	Reduced use by 50%	+42%	+11%	-26%	-77%	-93%

FIGURE 4: Scenario outcomes in relation to EU 2030 Farm to Fork and climate policy targets. (Green = target met; orange = target not met, pink = target not met, but reduction made). It shows that the scenario based on local agroecological systems would be the only one to meet all policy targets. Notes: 1- Current climate target. 2 - Proposed updated climate target. 3 - Some synthetic fertilisers still used

68 Iddri. 2021. An agroecological Europe by 2050: What impact on land use, trade and global food security? [https://www.iddri.org/sites/default/files/PDF/Publications/Catalogue%20Iddri/Etude/202107-ST0821\\_TYFA%20World\\_1.pdf](https://www.iddri.org/sites/default/files/PDF/Publications/Catalogue%20Iddri/Etude/202107-ST0821_TYFA%20World_1.pdf) (accessed 10<sup>th</sup> March 2023)

69 WBCSD. 2021. Staple crop diversification. <https://www.wbcsd.org/download/file/12605> (accessed 10<sup>th</sup> March 2023)

70 IASToppers. 2023. India needs to focus on Millets and Pulses and not Wheat and Rice. <https://www.iastoppers.com/articles/india-needs-to-focus-on-millets-and-pulses-and-not-wheat-and-rice> (accessed 13<sup>th</sup> March 2023)

71 GLOPAN. 2020. Future Food Systems: For people, our planet and prosperity. <https://www.glopan.org/foresight2/> (accessed 7<sup>th</sup> March 2023)

72 Ibid

The F2F strategy has committed 'to develop interventions aimed at supporting the transformation of agricultural and food systems, based on the principles of agroecology and in line with the priorities of the European Green Deal.'<sup>73</sup> It aims to half nitrogen surplus and expand organic agriculture on 25% of the land, reducing feed and fertiliser import dependency. It would significantly improve food security and resilience outcomes by reducing fertiliser imports, maximise the use of locally grown resources (leguminous crops) and improve climate and biodiversity outcomes. Efforts by some stakeholders to preserve a 'business as usual' approach will not shield us from the current multiple crises – in fact long-term food security outcomes will get worse unless the underlying causes of global warming and ecosystem decline are tackled. Our ability to deal with future shocks to the food system will also be significantly compromised.

### 5.3 SHIFTING TO FAIR TRADE POLICIES WITH THE REST OF THE WORLD

As this paper has outlined, the EU's agri-food trade model revolves around importing low-value raw products and exporting high-value ones, making a positive contribution to the EU economy, but not necessarily to the global food supply. The EU also relies heavily on the imports of animal feeds and fertilisers which are linked to tropical deforestation and the loss of natural ecosystems. Because of its influence on trade, and as one of world's largest food importers, the EU can use its trade policies and agreements to stimulate

and incentivise more sustainable policies and practices by its trade partners and consequently influence the long-term food security outcomes of these countries.

The EU, through its F2F strategy, has committed to use its external policies to promote sustainable food systems beyond its borders. It provides an important platform to negotiate relevant sustainability provisions in free trade agreements and monitor the impact of these provisions on food systems. The EU should explore preferential trade frameworks that differentiate between foods based on whether they are sustainably produced and distributed, and/or on their impact on citizen health and nutrition<sup>74</sup>. Trade policies should support developing countries that are highly vulnerable to future shocks because of their high dependency on imports of staple crops from a limited number of exporting countries (including the EU).<sup>75</sup> In parallel, steps to rebuild domestic food production capacity over the coming years, based on a diversity of locally relevant and nutritious crops, grown using agroecological principles, will improve food security outcomes and help to mitigate price spikes caused by future global shocks.

Overall, the EU should reorient its agricultural sector and its role as a major food trader. Europe can become a net exporter of nutrient rich foods and proteins to truly contribute to global food security, but this requires a transition from industrial to agroecological research and practices, alongside a transition towards healthier and sustainable diets with fewer animal products.



73 EU. 2020. Supporting the transformation of agricultural and food systems through agroecological approaches. <https://europa.eu/capacity4dev/desira/documents/supporting-transformation-agricultural-and-food-systems-through-agroecological-approaches> (accessed 10<sup>th</sup> March 2023)

74 ECDPM. 2020. EU trade policy for sustainable food systems. <https://ecdpm.org/application/files/8216/5546/8614/EU-Trade-Policy-Sustainable-Food-Systems-IPES-Food-ECDPM-Joint-Briefing-Note-October-2020.pdf> (accessed 13<sup>th</sup> March 2023)

75 IPES Food. 2022. Another perfect storm? [https://ipes-food.org/\\_img/upload/files/AnotherPerfectStorm.pdf](https://ipes-food.org/_img/upload/files/AnotherPerfectStorm.pdf) (accessed 13<sup>th</sup> March 2023)



## 6. CONCLUSIONS

Geopolitical events including global conflicts and Covid-19 have highlighted how vulnerable and precarious our food system is in the face of external shocks. Recent rises in European energy and food prices, combined with increasing animal feed and fertiliser costs, have squeezed farmer and citizen incomes resulting in significant rises in food insecurity in both the developed and developing world. How these events are handled by European politicians and other decision-makers has far-reaching implications for each one of us. We confront a planetary and human health crisis. We are at a crossroads: we can either row back and return to business as usual – focussing on short-term productivity gains, based on damaging models of agricultural production, consumption and trade - or invest and accelerate the transition toward healthy and sustainable food systems now to increase our resilience against future crises and ensure long-term food security for all.

In Europe there is an opportunity to promote shorter value chains, reducing reliance on fossil fuel-based inputs, with greater emphasis on increasing the production of a diversity of plant-based crops, such as fruits, vegetables, nuts, legumes etc, ensuring great self-sufficiency in the production of these crops.<sup>76</sup> Interventions to encourage healthier and more sustainable diets through reduced consumption of industrially produced meats, which often depend on high

volumes of grain for feed, can free up land and mitigate the impact of the recent global food security crisis. European policies to address short-term food insecurity should not be implemented at the expense of resilience to future climate or biodiversity induced shocks.

Whilst the F2F strategy is not perfect, it offers a once-in-a-lifetime opportunity to take a systemic and holistic approach to tackle the underlying drivers of long-term food security. It must not be abandoned or weakened. An agroecological approach, combined with dietary change, reductions in food waste and fair-trade policies - all of which are highlighted in the F2F strategy - gives Europe an opportunity to be a net exporter of calories, nutrients, and protein, while improving long-term food security and resilience.

The F2F strategy needs to be translated into action. The EU Legislative Framework for Sustainable Food Systems should establish a 2050 vision for sustainable food systems and ensure coherence among food-related policies. This must include ambitious provisions able to set a clear and common direction, possibly including intermediate and final binding targets that apply to the entire food system, from production to consumption, as well as a comprehensive evaluation mechanism to monitor progress.<sup>77</sup>



<sup>76</sup> Queiroz, C., Norström, A.V., Downing, A. et al. 2021. Investment in resilient food systems in the most vulnerable and fragile regions is critical. <https://doi.org/10.1038/s43016-021-00345-2> (accessed 13th March 2023)

<sup>77</sup> WWF. 2022. Valuing food for a game-changing EU legislative framework for sustainable food systems. [https://www.eu.awsassets.panda.org/downloads/wwf\\_vision\\_paper\\_valuing\\_food.pdf](https://www.eu.awsassets.panda.org/downloads/wwf_vision_paper_valuing_food.pdf) (accessed 14th March 2023)

# OUR MISSION IS TO STOP THE DEGRADATION OF THE PLANET'S NATURAL ENVIRONMENT AND TO BUILD A FUTURE IN WHICH HUMANS LIVE IN HARMONY WITH NATURE.



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