



Reducing European fertiliser and feed dependency through the CAP

This brief reviews how far EU Member States' CAP Strategic Plans address dependence on fertilisers and animal feed, and how action in this area could be stepped up before the Plans are approved by the European Commission.

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The Russian invasion of Ukraine has shed light on Europe's dependency on third countries for fertiliser and feed. Indeed, 25% of the EU's fertilisers are imported from Russia and 57% of EU maize imports come from Ukraine, which are mainly used for animal feed (Svein Tore Holsether cited by Bouderbala S., 2022; FAO, 2020). The Netherlands and Spain are the two EU Member States that rely the most on imports of soya and maize for feed, and France is the biggest importer of nitrogen and phosphorous-based fertilisers by volume. The disruption of Russian and Ukrainian exports, therefore, impacts agri-food markets, contributing to increased input prices for European farmers. The European Commission itself is aware of this dependency issue and underlined it in its March Communication on food security and food system resiliency, which was approved by the Council on 7 April. It refers to the dependence on fertiliser and feed imports and the need to support farmers in adopting practices to encourage both reduction and efficient use of fertilisers. Practices such as precision farming, organic farming and agroecology, as well as advice and training on nutrient management are cited in the European Commission Communication to illustrate the direction to take.

In this sense, it confirms the necessity of a fundamental reorientation of EU agriculture and EU food systems towards sustainability, in line with the Green Deal and its Farm to Fork Strategy.

The majority of EU funding for supporting the transition towards sustainable agricultural practices and resilient production systems comes from the Common Agriculture Policy (CAP), which is supplemented by national funding. The agreement reached in 2021 on CAP reform requires Member States to establish their own CAP Strategic Plans (CSPs), most of which were submitted in January 2022. This process of strategic planning is supposed to lead to a more result-oriented policy and more effective instruments and mechanisms, with the European Commission acting as a watchdog to ensure the legal and strategic alignment of the twenty-eight CSPs¹. Consequently, the European Commission's CAP 'observation letters' sent at the end of March invited Member States to revise their CSPs in order *"to strengthen the EU's agricultural sector resilience, to reduce their dependence on synthetic fertilisers and scale up the production of renewable energy without undermining food production and to transform their production capacity in line with more sustainable production methods"*. However, the European Commission did not provide the Member States with further recommendations on how to go about it.

This briefing builds therefore on these political commitments by elaborating on the opportunities within the CAP for contributing to reducing fertiliser and feed dependency and provides information on the degree to which they have been mobilised in the CSP based on:

- The overview published by the European Commission (European Commission, 2022);
- The detailed analysis for four Member States (France, Ireland, The Netherlands, and Spain²) based on the observation letters they received and their CSP. They were chosen because they are important users or importers of fertiliser and feed and their observation letters were among the first available.

1. Efforts to reduce the dependency on fertiliser: Reducing and optimising use

1.1. Organic farming

Organic production builds on soil fertility without using chemical fertilisers. Only organic fertilisers such as manure or litter are authorised for growing plants, while synthetic fertilisers are not allowed³. Organic production systems, therefore, reduce dependency on chemicals and on the energy needed to produce them.

According to the European Commission, almost all Member States aim to increase organic farming (albeit to varying degrees), both in terms of increasing area farmed organically and in

¹ There are 27 Member States but 28 CSPs, because Belgium was allowed to deliver one CSP for each of its two regions, Flanders and Wallonia.

² Most important users and importers of fertilisers and feed among the 19 first CSPs assessed

³ Chemically manufactured materials containing one or more of the primary nutrients necessary for plant growth: nitrogen, phosphorus, and potassium.

terms of the area supported by the CAP (European Commission, 2022). Among the nineteen first CSPs submitted, fourteen have set national values for organic farming, aiming at increasing their coverage by at least 25% by 2030 compared to 2018 (in proportional terms). Seven of them even aim to at least double it. To achieve this objective, seventeen have set targets against the CAP's dedicated result indicator for organic farming (R.29⁴). Of those, thirteen aim to increase by at least 25% (in proportional terms) the area receiving CAP support for organic farming by 2027 in comparison with the level in 2018⁵, and of those twelve, six propose to at least double it. Regarding interventions, organic farming is supported mainly through agri-environmental and climate commitments (AECC). Nine Member States also created eco-schemes for organic farming. A few Member States plan to support it under both instruments mainly differentiated for conversion to and maintenance of organic farming (European Commission, 2022).

Table 1 below summarises some relevant information for the four Member States studied in this brief: their current organic farming coverage, the target they set for R.29 and the budget they allocated to the interventions supporting organic farming. Annex 1 explains how these indicators are calculated in more detail.

Table 1: Indicators related to organic farming

Member state	Share of UAA under organic farming in 2019 (%) and ranking	R.29: Share of UAA benefiting from support for the conversion or maintenance of organic farming (%)	Budget (€) and share (%) dedicated to supporting organic farming specifically	Budget dedicated to interventions that include support for organic farming (€) and share of the total CAP budget
France	· 7.72 · 16 th	4.8	· 1 063 276 266.93 · 2.14	· 8 420 550 046.25 · 16.9
Ireland	· 1.63 · 26 th	7.46	· 255 622 200 · 2.6	· 100 000 000 · 1.02
Netherlands	· 3.75 · 22 nd	3.85	· 0	· 936 865 720 · 20
Spain	· 9.66 · 12 th	5.07	· 752 551 107 · 2.32	No other intervention

Adding the first two columns of the table together shows that it is unlikely that any of these Member States will reach the Farm to Fork target of 25% in 2030, even if all the supported area is in conversion. However, the way the targets are calculated is not always clearly explained in the Plans. This is in line with a general comment underlined by the European Commission: "the links between interventions, result indicators and specific objectives are in many cases not

⁴ In their CAP Strategic Plans, Member States have to define targets for result indicators (named R and followed by a number). These result indicators are used to monitor their performance regarding CAP objectives.

⁵ Increasing the support for organic farming does not necessary lead to an increase in coverage, if maintenance is prioritised over conversion.

properly identified and should be revised and completed [...] As a consequence, target values for some result indicators do not yet present an accurate picture of the Plans' priorities and ambitions." (European Commission, 2022).

Regarding interventions, apart from the Netherlands, all studied Member States have specific support dedicated to organic farming in Pillar II and dedicate between 2.14% and 2.32% of their total CAP budget to it. It also represents between 6.63% and 10.58% of their second pillar budget. France and Ireland also support organic farming through other interventions: an eco-scheme for France and investment aid for Ireland. The Netherlands supports organic farming with an eco-scheme and horizontal measures such as knowledge and cooperation, but these three interventions also target other agricultural practices, so it is not clear how much of their budget will be targeting organic farming specifically. In addition, both France (+36%) and Spain (+41%) report an increase in the budget dedicated to organic farming.

The focus on maintenance or conversion varies between the Member States. In the Netherlands, an eco-scheme supports maintenance, but the CSP does not clearly explain which intervention aims at promoting conversion. In France, maintenance is only financed through the eco-scheme, which does not fully cover the associated costs as the payment is limited to 82€/hectare (ha)⁶. In addition, conventional farmers introducing three crops in their rotation or certified High Nature Value (HNV) farms can receive the same eco-scheme payment, which might reduce the incentive for conversion for most farmers. Ireland and Spain include both types of payments. However, in some regions of Spain, it is not clear how much of the budget is dedicated to conversion and maintenance.

Overall, support for organic farming seems to have increased compared to the previous CAP, which should have a positive impact on reducing the EU's fertiliser dependency on third countries. However, in most cases, it remains insufficient to reach the Farm to Fork objective of 25% of the agricultural area under organic farming by 2030.

1.2. Use of nitrogen-fixing crops and protein crops

While nitrogen (N₂) is largely available in the air, plants can use it for their growth only when converted into ammonia (NH₃) in the soil. Synthetic fertilisers incorporated in the first layers of cultivated land bring ammonia directly to the plants. This chemically-produced fertiliser has contributed to increased yields since the 20th century, but with significant environmental externalities. An alternative that can reduce dependency on such nitrous fertilisers is the use of nitrogen-fixing crops (legumes such as soybean, beans, peas, lucerne, clovers, trefoils and lupin). These plants both grow without nitrogen fertiliser and leave the soil more fertile for the following crop which can be wheat, barley or other grains (Cooper and Scherer, 2012).

According to the European Commission, there is an increasing effort by several Members States to further promote protein crops and legumes in their Plans, as they are typically nitrogen-fixing crops and do not require nitrogen fertilisers, with about 2 million additional hectares

⁶ This level of payment was chosen to compensate the loss of direct payment for farmers and is the same whatever the type of eco-scheme. It is not based on the losses and income foregone associated with the maintenance of organic farming.

supported compared to 2022 (+50%) (European Commission, 2022). However, only a few Member States expect a subsequent increase over the 2023-2027 period. The main intervention used by Member States to support the development of these crops is coupled income support (CIS) for protein crops. Indeed, among the first nineteen Member States to send their Strategic Plan, eleven propose CIS for protein crops, allocating between 1% and 100% (21% on average) of their total budget for coupled support. This represents an increase in the budget of CIS for protein crops and legumes of 35% compared to the previous CAP.

Table 2 below summarises some relevant information on nitrogen-fixing crops for the four Member States studied in this brief.

Table 2: Indicators related to nitrogen-fixing crops

Member State	Share of UAA currently cultivated with nitrogen-fixing crops in 2013 (%) and ranking	Targeted output for the CIS for protein crops (ha) and share of the UAA (%)	Budget dedicated to CIS for protein crops (€) and share of the total CAP budget (%)	Budget dedicated to other support for nitrogen-fixing crops (€) and share of the total CAP budget (%)
France	<ul style="list-style-type: none"> · 2.11 · 11th 	<ul style="list-style-type: none"> · 1 901 228 / year by 2027 · 7 	<ul style="list-style-type: none"> · 235 770 080 · 0.48 	<ul style="list-style-type: none"> · 9 659 406.25 · 0.02
Ireland	<ul style="list-style-type: none"> · 0.19 · 25th 	<ul style="list-style-type: none"> · 20 000 / year at the end of the period · 0.44 	<ul style="list-style-type: none"> · 35 000 000 · 0.3 	<ul style="list-style-type: none"> · 0
Netherlands	<ul style="list-style-type: none"> · 0.15 · 26th 	NO CIS		<ul style="list-style-type: none"> · 762 218 720 · 16
Spain	<ul style="list-style-type: none"> · 2.22 · 10th 	<ul style="list-style-type: none"> · 1 535 783 / year · 6.30 	<ul style="list-style-type: none"> · 470 000 000 · 1.45 	<ul style="list-style-type: none"> · 236 386 232 · 0.73

Three out of the four Member States studied include CIS for protein crops in their CAP Strategic Plans. In these countries, the area dedicated to nitrogen-fixing crops is thus planned to increase substantially, from 2.24% to 6.30% in Spain and from 2.21% to 7% in France. In Ireland, the area supported should be 2.6 times the area currently cultivated but its expansion will remain limited by the fact that most of the Irish agricultural area will remain covered by permanent grassland.

The budget dedicated to coupled support for protein crops varies among these three Member States, from 0.36% of the total CAP budget in Ireland to 1.45% in Spain, representing between 0.59 and 1.93% of the total budget for direct payments. This budget allocation appears small in relation to the maximum allowed for coupled payments in the first pillar of the CAP which is generally 13% and can be increased by 2% precisely for supporting protein and nitrogen-fixing crops. This is particularly true in the French case, which aims for a bigger area than Spain, but with half its budget.

However, while supporting nitrogen-fixing crops contributes positively to reducing fertiliser use, coupled support might not be the best way to do it. Indeed, this type of support is not linked to any requirement on farming practices and can therefore support unsustainable

production methods, for instance, agricultural systems relying on high pesticide use. Other types of interventions should therefore be preferred, such as eco-schemes that can also address other practices. Amongst the Member States analysed here, France and Spain also support protein crops through agri-environmental and climate commitments. The Netherlands supports their production solely through their eco-scheme. However, as in the case of organic farming, these three interventions also target other agricultural practices, therefore it is not clear how much of their budget is dedicated to nitrogen-fixing crop development specifically.

Overall, support for nitrogen-fixing crops has thus increased compared to the previous CAP. Yet, it is mainly provided through coupled income support, which can fund unsustainable production systems.

1.3. Other measures targeting fertiliser use

Other measures can help to reduce fertiliser use, notably better nutrient management and improving soil quality, including via soil analysis, nutrient management plans, adequate training and advice, combined crops, crop rotations that include a higher share of protein crops, mixed farming and recycling of livestock manure, avoiding over-fertilisation and nitrogen leaching, investing in connected farm machinery (precision farming)⁷. All measures combined will increase the efficiency of fertiliser use in the EU and thus reduce demand for fertilisers, contributing to reducing dependency.

Among the nineteen first Member States to submit a CAP Strategic Plan, eight address this issue of nutrient management through at least one eco-scheme (European Commission, 2022). Some Member States also propose AECC for reduced fertiliser use and efficient nutrient management (for instance using nutrient management logbooks).

Table 3 below summarises some relevant information on fertiliser use and nutrient management for the four Member States studied in this brief.

⁷ Interventions targeting combined crops, mixed farming and recycling livestock manure have not been taken into account in the budget calculations.

Table 3: Indicators of fertiliser use and nutrient management

Member State	Chemical fertiliser use and imports (2019)			R.22: Share of UAA under commitments for improved nutrient management (%)	Budget dedicated to supporting nutrient management specifically (€) and share of the total CAP budget (%)	Budget dedicated to supporting nutrient management and other practices (€) and share of the total CAP budget (%)
	Type of chemicals fertiliser	Fertiliser use (kg/ha) and rank	Fertiliser imports (tonnes) and rank			
France	Nitrate	· 73.41 · 8 th	· 1 940 314 · 2 nd	7.7	· 32 896 100 · 0.07	· 404 528 116.25 · 0.82
	Phosphate	· 14.34 · 13 th	· 514 447 · 1 st			
	Potash	· 16.2 · 13 th	· 564 140 · 3 rd			
Ireland	Nitrate	· 63.69 · 16 th	· 341 345 · 12 th	42.44	· 189 647 675 · 1.93	· 610 042 650 · 6.21
	Phosphate	· 28.12 · 2 nd	· 127 794 · 9 th			
	Potash	· 37 · 4 th	· 158 435 · 9 th			
Netherlands	Nitrate	· 108.87 · 2 nd	· 413 595 · 9 th	No target	No interventions in the CSP	· 1 322 219 025 · 72.28
	Phosphate	· 5.9 · 27 th	· 140 112 · 8 th			
	Potash	· 29.6 · 5 th	· 383 453 · 4 th			
Spain	Nitrate	· 41.49 · 22 nd	· 851 909 · 4 th	0.34	No interventions beyond GAEC 10	· 2 030 530 · 146.96 · 6.27
	Phosphate	· 19.7 · 6 th	· 382 166 · 2 nd			
	Potash	· 15.1 · 16 th	· 368 194 · 5 th			

Amongst the four Member States studied, France and Spain import high volumes of fertilisers, because of their large agricultural areas. The Netherlands is also a significant user of nitrogen-based and potassium-based fertilisers, and Ireland of phosphorous-based and potassium-based fertilisers.

Ireland, Spain, and France set a target for the result indicator R.22 (the share of the agricultural area under commitments for improved nutrient management) but it remains relatively low for France and particularly low for Spain. The Netherlands, which ranks second in terms of chemical fertiliser use per hectare of UAA in the EU, does not define a target for R.22 in its CSP.

In the four Member States studied, there are interventions targeting fertiliser use reduction. However, these interventions are often very broad and target several practices at the same

time (e.g., reduced fertiliser *and* pesticide use). Reducing fertiliser use is therefore not always their main objective, which makes it difficult to assess their precise contribution to this goal. Likewise, the budget estimated in the last column of the table includes all interventions mentioning fertiliser use and nutrient management and will therefore be an overestimate of the actual amount dedicated to this objective specifically.

Amongst the measures contributing to reducing fertiliser use in the four Member States studied, the following appear especially relevant:

- The introduction of an additional GAEC requiring that CAP beneficiaries record all fertilisation in a logbook (Spain). Such basic data should help build more effective nutrient plans. However, the conditions to be set later in a Royal Decree remain unclear.
- The support for fertilisation management, increased grassland and nitrogen-fixing crops (France, Brittany and Ile-De-France specifically), and the eco-scheme for reducing fertiliser use by imposing a limit on the amount of chemical nitrogen applied per hectare and using GPS-controlled fertiliser sprayer (Ireland). Such 'connected technologies' should help increase efficiency.
- National initiatives: the National Fertiliser Policy and Nitrogen Reduction and Nature Improvement Act, combined with a strong national innovation system, focusing on developing precision farming (NPPL) (the Netherlands). Such national frameworks are likely to help accelerate the transition, provided they operate in synergy with CAP funding.

In addition, interventions targeting advisory services and investments could be used to help farmers optimise nutrient management and reduce fertiliser use. Yet, in the four Member States studied, it is not always clear.

Finally, soil quality should also be a point of more attention in the CSPs. As soils deteriorate in the EU, their capacity to nurture crops gets weaker and increases dependency to synthetic fertilisers. Better soil health would improve nutrient management and potentially reduce fertiliser dependency. The soil health and food mission could be more closely integrated into the CSPs with a view to incorporate scientific findings in the design of the measures (European Commission, n.d).

In summary, the situation created by the war in Ukraine underlines the need to focus CAP funding on solutions to problems such as fertiliser dependency, which would be beneficial from an environmental and geo-political standpoint. It is therefore suggested that Member States improve their intervention logic on this topic by a) properly linking interventions to R.22; b) improving the explanation of the potential contribution of the intervention to R.22 and to the Farm to Fork objective on fertiliser and nutrient management in the intervention section; c) providing more detailed budgets for these interventions, showing how much of their budget could, in practice, contribute to reducing fertiliser use; d) dedicating some of the interventions targeting knowledge transfer and investment to reducing fertiliser use or improving nutrient management, and earmarking part of their budgets to this aim; and e) requiring a sustainable management plan (and linked training and/or advice) in more AECC and/or eco-scheme measures.

2. Efforts to decrease feed dependency

2.1. Reducing the support for intensive/import-dependent livestock

The CSPs include interventions supporting the livestock sector and its competitiveness, through investments and coupled income support (CIS). Livestock farms that heavily rely on feed imports, notably maize and soya, can, almost always, benefit from this support. Such payments therefore indirectly support feed dependency, which negatively impacts the environment in third countries, for instance through imported deforestation.

At the EU level, most of the proposed CIS is for livestock (beef & veal, sheepmeat and goat meat, milk, and milk products) with a budget share of approximately 70% of the overall budget of CIS allocations, representing an increase by 1% compared to 2022 (European Commission, 2022). Among the first nineteen Member States to submit a CAP Strategic Plan, eighteen plan to implement CIS for livestock, in particular for cattle, allocating between 52% and 100% (73% on average) of their total coupled support budget to this. This is almost 3.5 times the budget allocated to CIS for protein crops. In addition, only a few Member States set either limits on the total number of animals eligible for CIS or maximum livestock density criteria. When they do, they are often too high to encourage any reduction in livestock numbers or extensification of systems.

Table 4 below summarises some relevant information on feed dependency and the intensity of livestock systems for the four Member States studied in this brief. Spain and the Netherlands import substantial volumes of feed (both soya and maize) and the Dutch livestock systems are the most intensive with a national stocking density of 3.80 LU/ha.

Table 4: Indicators related to feeding dependency

Member State	Maize imports (tonnes in 2020) and ranking	Soy imports (tonnes in 2020) and ranking	Livestock load (LSU/ha in 2016) and ranking	Budget (€) and share dedicated to CIS for livestock (%)
France	· 661 441 · 12 th	· 620 340 · 11 th	· 0.79 · 11 th	· 3 297 319 984 · 6.64
Ireland	· 1 313 414 · 8 th	· 12 592 · 20 th	· 1.27 · 7 th	· No CIS
Netherlands	· 5 945 756 · 3 rd	· 4 536 766 · 1 st	· 3.80 · 1 st	· No CIS
Spain	· 8 067 137 · 1 st	· 1 392 052 · 4 th	· 0.62 · 14 th	· 1 734 500 000 · 5.35

Out of the four countries studied in this brief, only France and Spain plan to implement CIS for cattle. It represents an important share of their total CAP budget (6.64% and 5.35% respectively) and it remains almost 14 times higher than the budget allocated to coupled support for protein crops in France and 3.7 times in Spain.

To be eligible for coupled support for cattle, France sets a ceiling of 120 livestock units (LUs) of bovines and a maximum stocking rate of 1.4 LU per hectare of forage area. The intention is to target extensive systems, but it is not clear if these requirements will prevent intensive systems (that rely strongly on feed imports) from accessing this support. Indeed, 75% of French cattle farms have less than 120 LU and the Plan does not explain how many farms are below the stocking density limit. In Spain, there are four different types of coupled support for cattle. While three of them mention “sustainable” or “extensive systems” in their title, only one of them imposes a ceiling on the number of heads and proposes a sliding-scale payment (one level of payment for small and medium farms and one for large farms), and it remains accessible to large farms.

In order to reduce feed dependency, coupled support for livestock should be limited, or at the least be focused on sustainable approaches. As in the case of France, CIS can be made conditional on maximum livestock densities and numbers, but these thresholds should be defined in such a way that the support favours feed-autonomous and low-input livestock systems. In addition, these measures make up for an important share of the total budget for direct payments. This could be redirected towards measures supporting reduction in herd sizes to promote feed autonomy and extensive livestock systems.

2.2. Promoting extensive cattle systems

Extensive cattle systems (relying on grassland and pasture for feed) are autonomous systems that do not depend on feed imports.

Most countries plan to implement interventions to target permanent grassland and pastures beyond GAECs 1 and 9. In particular, seven countries propose an eco-scheme dedicated to extensification and the maintenance of permanent pastures, and eight to only maintenance of permanent pastures (European Commission, 2022).

Table 5: Indicators related to extensive livestock and grassland

Member State	Share of permanent grassland in the UAA (% in 2019) and ranking	Budget (€) Extensive livestock and grassland	Budget (€) and share (%) of the total CAP budget dedicated to supporting measures supporting extensive livestock and grassland
France	· 33 · 10 th	· 256 870 7030.52	· 18.8 768 558 473 17.67%
Ireland	· 90 · 1 st	No intervention	· 128 128 000 · 1,30
Netherlands	· 42 · 6 th	No intervention	· 1 322 219 025.72 · 28
Spain	· 30 · 13 th	· 96 714 495 0.30	· 849 201 626.28 · 2.62

Ireland is the Member State with the highest share of permanent grassland in its agricultural area.

Overall, the four Member States have interventions targeting grassland and extensive cattle, in particular eco-schemes and AECCs. However, as for interventions related to fertiliser use, they are often broad in their scope and include many practices among which farmers can choose. Therefore, they don't specifically focus on the maintenance (or creation) of grassland and on the extensification of livestock systems. In addition, some Member States have proposed interventions targeting the maintenance of biodiversity in grasslands pastures, and other ecosystems. The budget estimated in the last column of Table 5 includes interventions mentioning grassland and extensive livestock but also targeting other practices and objectives. Therefore, it overestimates the real amount dedicated to this objective.

In addition to these very general interventions, some Member States also plan to implement more targeted measures. France proposes, for example, an AECC on feed autonomy promoting the introduction of grassland in crop rotation, outdoor access for animals and reduced consumption of concentrated feed and imposing a limit on the livestock load. However, if these measures seem relevant to encourage livestock feed autonomy, the budget allocated to them remains low. Indeed, the French AECC has a budget of €256,870,703 and the Spanish one on extensive livestock of €96,714,495, representing 7.79% and 5.58% of these Member States' budgets for CIS for livestock, respectively. These measures therefore appear insufficient to engender an overall change in European livestock systems towards greater sustainability. In order to reduce feed dependency, more budget should therefore be allocated to extensive livestock systems and measures to reduce livestock loads.

Conclusion

Overall, the results of the analysis carried out in this brief on four Member States (France, Ireland, the Netherlands and Spain) are consistent with the observations made by the European Commission. All four Member States plan to implement interventions related to reduced fertiliser use, nutrient management, protein crops, grassland maintenance and extensive livestock systems. However, the contribution to reducing fertiliser and feed dependency remains unclear. Indeed, many of these interventions are wide in scope and offer a broad range of practices amongst which farmers can choose. As a result, farmers are likely to choose the easiest practice to implement (sometimes the business as usual), leading to small changes in farming systems and low additionality at a moment when the EU needs more fundamental changes to its agriculture and food systems. In addition, where targeted interventions do exist, their budgets and target areas are often too small, so can induce only marginal changes in farming systems. They may be useful as demonstrators or as feasibility tests but cannot deliver the needed response to the pressing challenges highlighted by the war in Ukraine and the pre-existing environmental and climate issues. Finally, relevant result indicators are not always used (e.g. R.22) and the link with interventions is often poorly established, as mentioned by the European Commission (European Commission, 2022).

The Commission should therefore require Member States to better show how their interventions will contribute to the transition to sustainable farming systems, including reducing fertiliser use and supporting livestock herd reduction and extensification. To reduce fertiliser and feed dependency, they should focus on the following key points:

1. Aligning the CSPs with the 25% target of the Farm to Fork and the European Organic Action Plan:

While there is an overall growth of ambition effort for supporting organic farming, most Member States are still not planning to meet the Farm to Fork target of 25% of the agricultural area under organic farming in 2030. Improving budgets to align with this European strategic objective is therefore necessary.

2. Reduce coupled support, as it can fund unsustainable production systems, in particular for livestock:

The high levels of coupled support for livestock, especially without imposing any requirement on the type of livestock systems that can receive it, is problematic. Coupled support for livestock should be reduced and any granted should at least be conditional to maximum livestock loads and ceilings and these thresholds should be defined in such a way that the support favours autonomous and low input livestock systems.

3. Support nitrogen-fixing crops to reduce fertiliser dependency:

Relevant CAP tools include conditionality (especially the crop rotation GAEC), eco-schemes and agri-environmental and climate commitments. Such measures could furthermore target sustainable production systems specifically and are therefore preferable to coupled support for protein crops. The sowing of mixed crops (leguminous and cereals for instance) could also be supported.

4. Most measures targeting nutrient management and fertiliser use are broad and CSPs do not clearly show their contribution to reducing fertiliser use. As such, it seems very unlikely that Member States will reach the Farm to Fork target on this topic (-20% by 2030). Member States should better target interventions to this aim, assess their contribution to reaching this objective and allocate a substantial budget to them.

5. Very few Member States plan interventions aiming at reducing overall livestock numbers. Nevertheless, such measures could efficiently reduce feed dependency. These should be implemented hand-in-hand with measures aiming at shifting towards more plant-based diets to avoid substituting European meat production with imports. Luxembourg, for instance, proposes such a measure, paying farmers for each livestock unit of cattle reduced compared to a historical baseline.

6. Increasing the effort to improve soil quality, as its continuous reduction increases dependency to synthetic fertilisers.

If these changes were taken aboard by Member States, they could contribute to reducing fertiliser and feed dependency. In combination with other sustainability measures that are needed, they would also have positive impacts on the environment in the EU and worldwide, in particular on biodiversity, water and soil quality and climate change mitigation. Wider measures beyond the CAP will be necessary to complement such changes. For example, reducing demand for meat and dairy products in Europe, in tandem with measures to reduce European herds, is needed to avoid increases in imports from outside the EU. Working together with other policies in this way, CAP funds can be a powerful tool in the wider transformation of food systems that is envisioned in the EU's Farm to Fork Strategy.

Glossary

A number of terms and abbreviations are used to facilitate reading:

- **AECC:** Agri-environmental and climate commitment. CAP incentive-based instruments funded by Pillar II which provide payments to farmers for voluntary commitments related to preserving and enhancing the environment and maintaining the cultural landscape.
- **CAP:** Common Agricultural Policy
- **CIS:** Coupled income support
- **CSP:** CAP Strategic Plan
- **Eco-scheme:** Payment schemes, funded by Pillar I, aiming at the protection of the environment and climate.
- **GAEC:** Good Agricultural and Environmental Conditions. Standards described in Annex II of Council Regulation No 1306/2013 defined at national or regional level). Keeping land in good agricultural and environmental conditions is directly related to issues such as: minimum level of maintenance; protection and management of water; soil erosion; soil organic matter; soil structure. These standards are tied to the receipt of direct payments and some of the rural development payments.
- **Ha:** hectare
- **Pillar II:** constitutes the EU's rural development policy
- **UAA:** Utilised agricultural area

Annex 1 Methodology

Regarding the selection of interventions, we distinguish those focusing specifically on the practices we are interested in from the ones that focus on a broad range of practices or target other objectives (e.g., biodiversity). For example, the eco-schemes proposed by the Member States often support several practices at the same time, such as organic farming but also the maintenance of permanent grasslands etc. In these cases, the CSP often gives the budget for the whole eco-scheme and not the details per practice. The eco-scheme is then considered as a practice that "partially" supports the practice in question. The budget calculations are based on the information provided in section 5 and in the financial tables (section 6) of the CSP. However, budget information is not always consistent throughout the CSP, as underlined by the Commission. Therefore, the estimations of the shares of the total budget should be taken with caution.

- For organic farming, we have selected all the interventions that focus especially and partially on organic farming either through an eco-scheme or through an AECC or horizontal measures from Pillar II.
- For nitrogen-fixing crops, only CIS for legumes were counted as direct interventions. However, other CSP measures foster the cultivation of nitrogen-fixing crops, together with other practices. These interventions are then counted as additional.
- For nutrient management, we first selected as the main interventions the ones linked to R.22. However, as pointed out in the European Commission observation letters, the relevant result indicators selected by the Member States were often misused. We then selected interventions that referred to fertiliser use and supported practices to improve its use. We did not consider measures targeting soil analysis, combined crops, mixed farming and recycling of livestock manure unless they were explicitly linked to R.22.
- For feed dependency, only CIS for livestock were counted.
- Regarding the interventions linked to extensive livestock and grassland, we selected interventions promoting permanent grassland conservation and maintenance, as well as extensive livestock practices.

Table 6: List of interventions chosen among each CSP per topic

	Interventions related to organic farming		Interventions related to nitrogen-fixing crops		Interventions related to fertiliser use and nutrient management		Intervention related to feeding dependency	Intervention related to extensive livestock and grassland	
	Specifically	Partially	Specifically	Partially	Specifically	Partially	Specifically	Specifically	Partially
FR	AECC: · 70.01 · 70.02 · 70.03 · 70.04 · 70.05	ES: 31.01	CIS: · 32.06 · 32.07 · 32.08	AECC: 70.28	AECC: 70.06	AECC: · 70.10 · 70.12 · 70.28	CIS: · 32.04 · 32.05	AECC: 70.09	AECC: · 70.10 · 70.19 · 70.28 ES: 31.01
IE	AECC: 53 OFS	AECC: 53 OFCIS	AECC: 51 VCS		ES: 51 ECO (practices 3 and 5 ⁸)	AECC: 53 AEC- CGEN ⁸	No CIS	ES: 51 ECO (practice 2 ⁸)	AECC: 53 AEC- CGEN ⁸
NL	No intervention	ES: I.31 (practice 26) COOP: 77.1 KNOW: 78	No intervention	ES: I.31 (practice 4)		ES: I.31 (practice 17) AECC: 70.1 ANLb	No CIS	No intervention	ES: I.31 (practice 6, 9, 19, 20, 21) AECC: 70.1 ANLb
ES	AECC: 6503		· CIS: 1PD320018 08 V1	AECC: · 6501. 8 · 6501. 2		AECC: · 6501.1 · 6501.2 · 6501.8 · 6503 KNOW: 7202 ES: · 1PD3100 1805V1 · 1PD3100 1809V1	CIS (32): · 1PD32001 801 V1 · 1PD32001 802 V1 · 1PD32001 803 V1 · 1PD32001 804 V1	AECC: 6501.3	ES: · 1PD3100 1801V1 · 1PD3100 1802V1

⁸ For Ireland, the CSP provided additional information on the way each intervention contributed to result in indicators R.22. It was used to better estimate the budget dedicated to interventions targeting reduced fertiliser use and extensive/autonomous livestock systems

Table 7: Sources per context indicator

	Source	Criteria/element selected	Year
Share of UAA under Organic farming (%)	AgriData. Link	Context indicator 19: area under organic farming	2019
R.29: Share of UAA benefiting from support for the conversion or maintenance of Organic Farming (%)	National CAP strategic plan <ul style="list-style-type: none"> • France (p.143) • Ireland (149) • Netherlands (p132) • Spain (p.214) 	Result indicator R.29	2013 - 2029
Area currently cultivated with nitrogen-fixing crops	Eurostat		2013
	Industrial crops by NUTS 2 regions	Soya (I1130)	
	Dried crop pulses by NUTS 2 regions	Dry pulses and protein crops for the production of grain (P0000)	
	Plants harvested green and fallow land by NUTS 2 regions	Leguminous plants harvested green (G2000T)	
	AgriData. Link	Total UAA (ha)	
Targeted output for the Coupled support for protein crops	National CAP strategic plan <ul style="list-style-type: none"> • France (p. 561) • Ireland (332) • Spain (p.768) 	ha	2023-2027
Chemical fertiliser	FAOSTAT - Fertilisers by Nutrient: Link AgriData: link	Nitrogen, Phosphate, Potash Total UAA (ha)	2019
R.22: Share of UAA for improved Nutrient Management (%)	National CAP strategic plan <ul style="list-style-type: none"> • France (p.143) • Ireland (148) • Netherlands • Spain (p.214) 	Result indicator R.22	2013 - 2029
Maize and soy imports	FAOSTAT - Crops and livestock products: link	Maize and soybeans imported quantity	2020
	AgriData: link	Total UAA (ha)	2019
Average LSU/ha	AgriData: link	Context indicator 21: livestock units	2016
Share of permanent grassland in the UAA and ranking	AgriData: link	Permanent Grassland (%UAA)	2016

Share of leguminous fodder and soy in the UAA	Eurostat: nitrogen-fixing crops		2013 because it is the last year we have information about
	Industrial crops by NUTS 2 regions	Soya (I1130)	
	Plants harvested green and fallow land by NUTS 2 regions	Leguminous plants harvested green (G2000T)	
	AgriData: link	Total UAA (ha)	

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