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Report

CAP Strategic Plans shadow assessment of environmental needs

France

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THE REPORT SHOULD BE CITED AS FOLLOWS

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CONTENTS

1. INTRODUCTION

Science is unequivocal on the need to move fast to sustainable farming; the future Common Agricultural Policy (CAP) legislative texts as agreed among the co-legislators in June 2021 recognise that greater environmental and climate ambition is required and have made this an explicit requirement for Member States.

A major feature of the future CAP involves a fundamental change in the delivery approach towards one in which all CAP support (both Pillar 1 and Pillar 2) is focused on performance, delivering results against a set of EU objectives considering national and regionally identified needs. The *so-called* CAP strategic plans will be at the heart of this new model and could likely, if used at their full potential, help support a transition towards sustainable farming across the EU. However, given the significant flexibilities, which Member States used under the current CAP (for Pillar 1 greening payments) to maintain the status quo instead of increasing environmental performance, some doubts remain as to the final level of environmental ambition in the future CAP strategic plans.

A noticeable difference between the CAP in 2013 and what was recently agreed upon for the future CAP is that unlike under the current greening regime, Member States will have to justify their intervention logic and implementation choices on the basis of needs and pre-established objectives to achieve. This can potentially boost environmental ambition, since the previous lack of justification provided by the Member States regarding their greening implementation choices was indeed identified as one of the main reasons leading to very limited environmental and climate impacts (Alliance Environnement and Ricardo-AEA, 2018).

Another major difference between the current and future CAP is that the latter is being implemented in the context of the Green Deal, the most ambitious environmental narrative to date that sets out a strategy for the EU with climate and the environment at its centre. As a first step towards achieving this, a suite of new policies, notably the Farm to Fork Strategy and the Biodiversity Strategy, is envisaged. Agriculture and food are key sectors for the delivery of the objectives on the table and the CAP is the most important EU policy mechanism to deliver sweeping agricultural change, with the capacity to significantly impact agricultural practices. Even if in the legislative texts as agreed among the co-legislators the link made between the Green Deal objectives and the CAP strategic plans remain relatively weak and not legally binding, these plans can still be harnessed as effective mechanism to meet them.

It remains unclear exactly how these evaluations of needs will guide Member States' intervention logics, since they are finalising the drafting of their plans[1] and the European Commission has not explicitly stated how it will evaluate these national assessments and use them for its own approval process in 2022.

Focus of the report

This report aims at 1) providing French and EU stakeholders and decision-makers with evidence-based material to inform French CAP strategic plan intervention logic, and 2) providing a reference point for the evaluation of the French government's own needs assessment in their CAP strategic plan. Similar reports have been drafted for other EU Member States, including Germany, Spain and Hungary.

This report begins with an evidence-based evaluation of the state of the environment and climate in France. This evaluation looks at past trends, future outlook, and relevant policy objectives/targets in five key areas: climate, biodiversity, water, soil, and air quality. Then, the report introduces a list of needs in the farming sector based on that evaluation. The report then moves to priority actions, followed by suggestions for intervention measures and insights into harmful measures.

Finally, the report outlines the Green Deal objectives that relate to the needs and actions identified in the report.

[1] See annex 1

2. STATE OF THE ENVIRONMENT

2.1 Climate

"*Climate change has created challenges for the agricultural sector – and will continue to do so. Climate change-induced increases in temperatures, rainfall variation and the frequency and intensity of extreme weather events are adding to pressures on global agricultural and food systems*" (OECD, 2016)

2.1.1 Mitigation

Past trends and outlook

Greenhouse gas (GHG) emissions from French agriculture[2] represents 18% of total national emissions, a proportion significantly higher than the EU average of 11 %. France is indeed the most significant emitter of agricultural emissions in the EU with an agricultural sector accounting for 17% of EU agricultural emissions (EC, 2020 a).

The agricultural sector produces not only CO_2 (16% of national agricultural emissions) but also significant amounts of France's methane (CH_4) (45%) and nitrous oxide (N_2O) (42,6%), coming from livestock and crop (MAA, 2020 a). Methane mainly comes from (a) livestock due to enteric fermentation of ruminants and (b) due to manure spreading. Nitrous oxide emissions are mainly emitted due to the intensive use of nitrogen fertilizers (EC, 2020 a) GHG emissions from agriculture have decreased by 8% from 1990 and 2018, thanks to the decrease in livestock numbers and mineral fertilizer use. However, emissions have stabilised since, and according to the National Low Carbon Strategy (SNBC[3]), they are projected to reduce by only 5% by 2030 compared to 2015 (CGDD, DGEC, I4CE, MTES, 2020). Although organic production and leguminous plant production is increasing, the dominant trend is still in favour of intensive arable production (MAA, 2020 a).

Energy consumption in agriculture is another source of GHG emissions. Agriculture made up 2.9% of energy consumption in France in 2019 (Eurostat, n.d.). An estimated 11% of France's agricultural GHG emissions are from energy

[2] Agricultural emissions include emission from grassland & cropland

[3] The SNBC (*Stratégie Nationale Bas-Carbone)* is the French roadmap to carbon neutrality by 2050. It establishes 5-years carbon budgets and ceilings per sector and GHG types for the whole country. https://www.ecologie.gouv.fr/strategie-nationale-bas-carbone-snbc

consumption (including farm machinery, heated greenhouses, buildings) (CAN, 2021).

However, the Land Use and Land-Use Change and Forestry (LULUCF) sector in France is a net carbon sink, thanks to grassland and forest areas. This sector absorbed 25.7 Mt CO_2 eq. in 2018 and made it possible that same year to offset 6% of total greenhouse gas emissions from other sectors. This carbon sink increased sharply during the period 1990-2000 but then decreased from around -45 Mt CO_2e in the mid-2000s to -25 Mt CO_2e in recent years (Citepa, 2020 a).

Relevant policy objectives and targets

According to the "carbon budgets" allocated to the different sectors by the SNBC to achieve carbon neutrality of France by 2050, the agricultural sector should reduce its emissions by at least 18% by 2030 compared to 2015. This is three times more than the 5% indicated in the projections (SNCB, 2020). In terms of reduction rate, this supposes a sharp reduction of -1.35% per year over the period 2015-2030 compared to the - 0.20% per year observed over the period 2005-2015 (Citepa, 2020 a).

2.1.2 Adaptation

Past trends and outlook

The area subject to droughts has increased from 5% in the 1960s to nearly 15% today (Météo France, n.d). In early August 2020 – the hottest year ever recorded in France - nearly the entire country was affected by severe agricultural droughts, which will likely become more frequent and severe in the future. Long-term trends predict an increase in average temperature of 2 to 4°C by the end of the century on a business-as-usual scenario, and changing rainfall patterns, which will lead to '*more frequent and severe heatwaves, outbreaks of pests and diseases*" (EC, 2020 a).

The frequency of flooding episodes has also significantly increased since 1992, which led to important drops in income for farmers (CGDD, MTES, 2020 a). For example, the 2016 floods led to yield losses of 25-35% according to the Ministry of Agriculture. Since evaporation is slow compared to precipitation, crops suffocate and rot, as was the case with maize in 2018.

These phenomena will have different effects on farm activities depending on the region and the type of farms within the same region. Seasonality will change, which will affect not only yield but also the quality of seeds and crops, thereby weakening them and the qualities of products. They also have a considerable impact on animal and plant health. The risk of increasing phytosanitary pressure

due to the introduction of new pests, diseases and weeds also poses a significant threat to food security, as outlined by INRAE.[4]

Relevant policy objectives/targets

Regarding adaptation to droughts, in its first national climate change adaptation plan (PNACC), which covered the period 2011-2015, **France committed to a 20% reduction of the water withdrawn, excluding winter water storage, by 2020. This reduction target was not assessed, but from the same data source it seems to have been missed.** In addition, France updated its climate policy in line with the Paris Agreement in a second National Climate Change Adaptation Plan (PNACC-2). The updated policy doesn't include specific quantitative targets for sustainable water use or agriculture but sets recommendations along 6 axes that several ministries should consider. For example, it asks the Ministry of the Environmental Transition and Solidarity (MTES) to support better agricultural practices to strengthen ecosystem resilience and the Ministry of Agriculture (MAA) to support the transition towards an "*agriculture that respects biodiversity, landscapes and soils*".

Table 1: State of climate overview table

CLIMATE * **	Past trends and outlook		Prospects of meeting policy objectives/targets under the assumption of unchanged policy	
	Past trends (10-15 years)	Outlook to 2030	2025	2030
Mitigation				
Adaptation				

** Evaluation made by the author from the information above*
*** Colour code: red = deteriorating trends/not on track; yellow = trends show a mixed picture/ partially on track; green: improving trends/on track.*

[4] The INRAE (*Institut national de recherche pour l'agriculture, l'alimentation et l'environnement*) is the leading French public research body focusing on agriculture, food and environment.

2.2 Biodiversity

"*The enhancement of biodiversity protection and preservation of habitats and landscapes in the French context remains a key challenge on farmland. In the long term, the intensification and the specialization of production, as well as the territorial specialization, have driven negative effects on biodiversity of agricultural ecosystems*." (EC, 2020 a)

2.2.1 Common species: Farmland bird index and pollinators

Past trends and outlook

Long-term trends from monitoring of common farmland birds and grassland butterflies show significant declines and no sign of recovery in the EU (EEA, 2019). In France, the Farmland bird index has strongly decreased by 40% from 106.5 in 1995 to 63.8 in 2018, a decline worse than the EU average trend (EC, 2020 a). It should be noted that these trends do vary by region, although only Champagne-Ardenne and Rhône-Alpes regions showed a positive trend (+6% and +3% respectively) (CGDD, MTES, 2018)**Error! Bookmark not defined.**. One of the common farmland bird species experiencing heavy declines is the European Turtle Dove (protected under the EU Birds Directive), and the failure to protect this species has resulted in an ongoing infringement case against France (EC, 2020 b).

Butterfly numbers severely decreased in the 1970s and 1980s because of the intensification of agricultural practices (MAA, 2020 a). In France, around 10% of all butterflies are currently classified as being under threat. There is no data specific on grassland butterflies in France, but studies show that butterfly species diversity is lower - two to three butterfly species on average - when the crop is annual (which represents all major crops), compared to non-annual crops or in natural meadows, where an average of 13 species is observed (INPN, 2012; VigieNature, 2016). Insects associated with grasslands, heathlands and thickets, mainly butterflies, have the strongest tendency to decline among the species of community interest observed (CGDD, MTES, 2020 b).

Relevant policy targets/objectives

France has taken actions to protect common species, in particular pollinators. From 2016 to 2020, France established several measures to protect and preserve wild bees and pollinators in its National Action Plan "*France Terre de pollinisateurs*", covering agriculture and other sectors. In regard to the agricultural sector, this NAP aimed to revise the use of pesticides and soil management (maintaining and creating (semi) natural elements; developing more respectful

agricultural practices). The new plan is currently under revision and will be broken down into 6 axes with several actions vis-à-vis agriculture, such as strengthening the protection of pollinators from spraying during the flowering period, with a decree revising the rules for the use of plant protection products, and integrating actions favourable to pollinating insects in agricultural practices (MTES, 2021 a)

In 2018, France also adopted a National Plan for Biodiversity which sets a zero net soil sealing objective to protect bird habitats. It also aims, among a long list of 90 actions for biodiversity, at promoting agroecology, reducing pesticide use, protecting pollinators, and promoting ecosystems. Certain objectives are relevant for their indirect positive impact on birds and pollinators: for example, 15% of agricultural land must be farmed organically by 2022 and 50,000 farms must be "HVE"[5] certified by 2030.

2.2.2 Protected species and habitats

Past trends and outlook

France hosts a major part of the EU's biodiversity: 35% of all EU species and 58% of bird species nesting in Europe can be found in France (EC, 2020 a). Unfortunately, trends in conservation status indicate continuing degradation for more than one quarter of habitats or species, especially on agricultural land (INPN, 2018). Despite the fact that France has the second largest terrestrial area covered by Natura sites, in 2013-2018 only 20% of agricultural habitats (mainly grassland) were in a favourable conservation status (a slight improvement compared to the 18% from the period 2007-2012), while 57% were in bad conservation status and 20% in unfavourable-inadequate conservation status. Currently, only 28% of species in France are in favourable Conservation status. The impacts of agricultural practices extend beyond the agricultural area itself: according to the EC's evaluation "60*% of habitats assessments and 64% of species assessment are affected by agriculture*". Intensive agricultural practices such as pesticide use, habitat fragmentation, urbanization are the main drivers (EC, 2020 a).

Relevant policy objectives/targets

France has integrated the Aichi Biodiversity targets[6] and European objectives into its National Strategy for Biodiversity, which is currently being revised for the 2021-

[5] The HVE (*Haute Valeur Environmentale*) certification is granted to those French farms fulfilling a number of ecological criteria. There are some 15 000 such HVE farms in 2021.
[6] The 20 Aichi biodiversity targets were established by the Convention for Biodiversity: https://www.cbd.int/sp/targets/

2030 period to "*maintain or restore threatened habitats or species of particular interest in a favourable conservation status*" (MTES, 2021 c). The National Strategy has three objectives: the conservation of biodiversity; sustainable use of species and natural environments; and the fair and equitable sharing of the benefits arising from the use of genetic resources. Each region has developed its own strategy by further elaborating on the National Strategy according to each region's unique situation.

Besides the National Strategy for Biodiversity, France's National Plan for Biodiversity aims to accelerate the implementation of the National Strategy, reduce biodiversity net loss to zero, create new protected areas, and strengthen the ecological network in the territories. This network will help to stop the destruction and fragmentation of environments caused by built-up areas or the standardisation of environments by unsustainable agricultural and forestry practices. In 2019, the National Plan for Biodiversity also aimed to strengthen the framework for action to preserve and restore wetlands.

All these strategies fall under the umbrella of the EU Biodiversity Strategy to 2020, which has a (non-binding) objective to restore at least 15% of degraded ecosystems and to better integrate biodiversity into agriculture and forestry.

Finally, under the COVID19 recovery plan for France (France Relance), France has committed 50 million euros towards replanting 7,000 km of hedgerows between 2021 and 2022. More would be needed to make up what was lost in the 20th century (nearly 70% of hedges were destroyed between 1945 and 1983 (ECA, 2020).

Table 2: State of agricultural biodiversity overview table

BIODIVERSITY * **	Past trends and outlook		Prospects of meeting policy objectives/targets under the assumption of unchanged policy	
	Past trends (10-15 years)	Outlook to 2030	2025	2030
Common species and pollinators				
EU Protected species and habitats				

** Evaluation made by the author from the information above*
*** Colour code: red = deteriorating trends/not on track; yellow = trends show a mixed picture/ partially on track; green: improving trends/on track.*

2.3 Water

Agricultural production puts pressure on water abstraction and can increase nutrient and chemical pollution. These effects can impact water quality and quantity (EEA, 2019).

2.3.1 Water quality

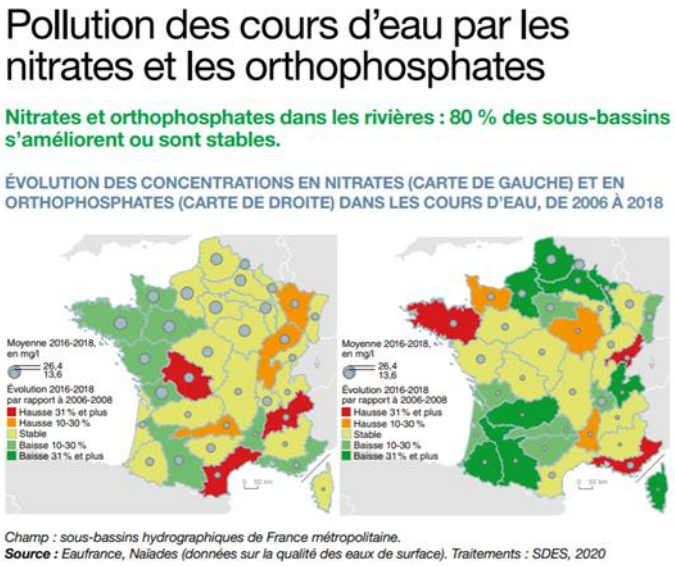
Past trends and outlook

The quality of water ecosystems is assessed by the ecological and chemical status of surface water bodies and chemical status of groundwater bodies. In France in 2015, around 54% of surface water bodies were in less than good ecological status and around 27% were failing good chemical status (EC, 2020). However, between 2009 and 2015, the share of surface water bodies assessed in good chemical status increased from 43.1% to 62.9% even though these developments differ from one region to another (northern and western regions are the most in difficulty) (Beaulaton et al., 2020). Regarding groundwater, around 31% are failing the good chemical status, but this trend has improved recently: from 2015 to 2017, 73% of groundwater stations showed high water quality compared to 66% in 2012, on average (EC, 2020 a).

One of the main threats to water quality is diffuse pollution from agriculture. **More than 70% of surface waters and 54% of groundwater in France are affected by agricultural pollution (mainly from chemicals and nitrates).**

Nitrate water pollution (i.e., nitrate concentration greater than 25 mg/L) from nitrogen fertilizers affects nearly 27% of groundwater and 57% of surface water. Moreover, this pollution is increasing in northern and eastern France (2016-2019), and decreasing in western regions, although due to historically high levels the west of France still has the highest overall nitrate concentrations due to high livestock density as well in areas with intensive crop cultivation (EC, 2020 a). In 2015, 68% of the French Utilized Agricultural Area (UAA) was reported as a vulnerable zone for nitrate pollution. Over the period of 1996-2018, 37% of groundwater deteriorated and 26% stabilized. (Beaulaton et al., 2020; MAA, 2020 a; CGDD, MTES, 2018).

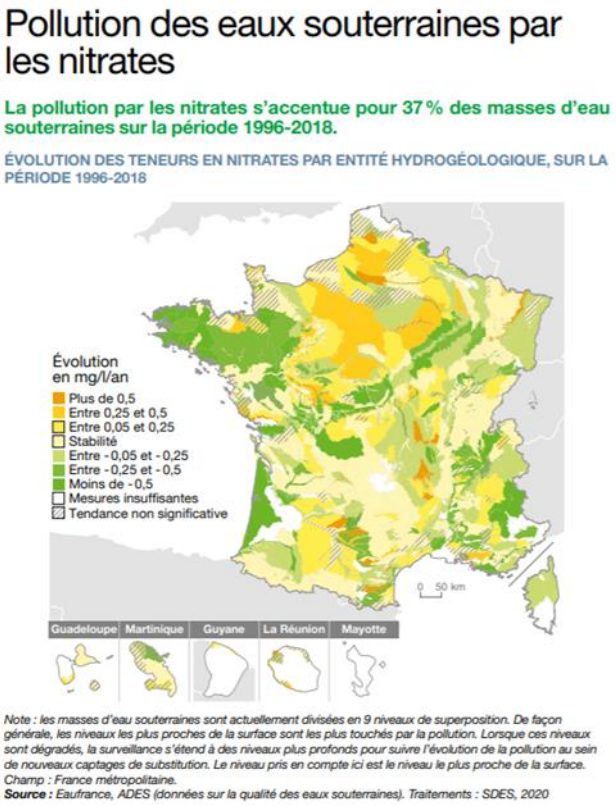
- Pollution from phosphorus - which contributes to the eutrophication of water bodies that causes algae blooms - has significantly decreased in Metropolitan France. The phosphorus surplus fell from 9 kg/ha of agricultural area used in 2000 to 0 kg/ha in 2015. This decrease is mainly due to the decrease in mineral fertilizer inputs. Since 2009, the phosphorus balance has gotten closer to zero (CGDD, MTES, 2018). The Bretagne region is the only region where the quantity of phosphorus per hectare of UAA is between 10 and 20 kg. All other regions are below that level (CGDD, MTES, 2018).



- Pesticides from fungicides, herbicides and insecticides also impact ecosystems. France is the second largest user of phytosanitary products in Europe [7]. Their presence in groundwater has risen from 14% in 2010 to 35% in 2018 due to past uses of pesticides. Although the concentration of pesticides in surface water has decreased by 20% from 2008 to 2018, several

[7] Spain is the first user with76 940 tons of active substance sold VS 72 035 tons in France,

pesticide types and particularly new types of pesticides are still detected in surface water (Beaulaton et al., 2020).



Relevant policy objectives/targets

The EU Water Framework Directive (WFD) requires the MS to achieve "good status" (ecological and chemicals) for all waters bodies (surface and groundwaters) by 2027 at the latest. France sought to achieve good status for two-thirds of water bodies by 2015. While this target has been achieved for groundwater since 2013, this is not yet the case for surface water according to the 2016 numbers (MTES, 2018).

Regarding pesticides, France has transposed the EU directive on Sustainable use of pesticides[8] in its "*Ecophyto plans*". The latest version sets objectives to reduce the use of phytosanitary products by 50% by 2025 and to phase out glyphosate by the end of 2020 for its main uses including agriculture, and by 2022 – i.e., by the end of the authorisation period at the EU level - for all uses at the latest[9]. Studies on pesticide use also show that Ecophyto Plans' impacts are below

[8] Directive 2009/128

[9] Numerous exceptions have been granted for extending farm use of glyphosate beyond 2020 for cases where farmers were left without adequate alternative to the herbicide (Lacroux, 2020).

expectations and France has not reached its 2020 target to phase out glyphosate (FNH, 2021). Today the French President Emmanuel Macron postponed the date of the exit of glyphosate to 2022 for a Europe-wide ban by the end of 2022 (Bect, 2020)

France has also transposed the European Nitrates directive by designating "vulnerable zones" covering water bodies that are polluted or at risk of pollution by nitrates of agricultural origin and by adopting an action programme. This action programme is divided into a National Action Plan (NAP) and Regional Action Plan (RAC) which specify, supplement, or reinforce national measures considering local characteristics.

The Regional Strategies for Biodiversity and the National Plan Biodiversity also set objectives such as fostering more transparency in phytosanitary products and supporting an agroecological transition.

2.3.2 Water quantity

Past trends and outlook

Water quantity can be assessed by the quantitative status of groundwater. In 2015, around 10% of groundwater was not meeting good quantitative status (EC, 2020). This trend has been stable since 2009 and France has achieved its objective of reaching good quantitative status for 2/3 of its groundwater in 2015 since 2013 (MTES, 2018).

Water withdrawals have been decreasing from the beginning of the 2000s except for in the agriculture sector (MTES, 2018). The agricultural sector represented 10% of all freshwater volumes withdrawn in France in 2015 (two-thirds coming from surface water) (MTES, n.d). "*The share of irrigated land (mainly maize) slightly declined from 5.7% (2010) to 4.9% in 2016. However, south-western regions, where maize production is significant, can face water summer deficits*" (EC, 2020). The French senate predicts that in 2050, the average drop in groundwater recharge in France will be 10 to 25%. A drop in the average annual flow of watercourses is also expected, by around 10 to 40% by 2050 (Senat, n.d)

Relevant policy objectives/targets

France has translated the WFD into its national law through a national framework directive rolled out at the regional level. To reach the WFD targets, the global objective in France is to achieve good status for 2/3 of groundwaters in 2015 and for 100% in 2027 at the latest.

Table 3: State of water overview table

WATER * **	Past trends and outlook		Prospects of meeting policy objectives/targets under the assumption of unchanged policy	
	Past trends (10-15 years)	Outlook to 2030	2025	2030
Water quantity				
Water quality				

** Evaluation made by the author from the information above*
*** Colour code: red = deteriorating trends/not on track; yellow = trends show a mixed picture/ partially on track; green: improving trends/on track.*

2.4 Soil

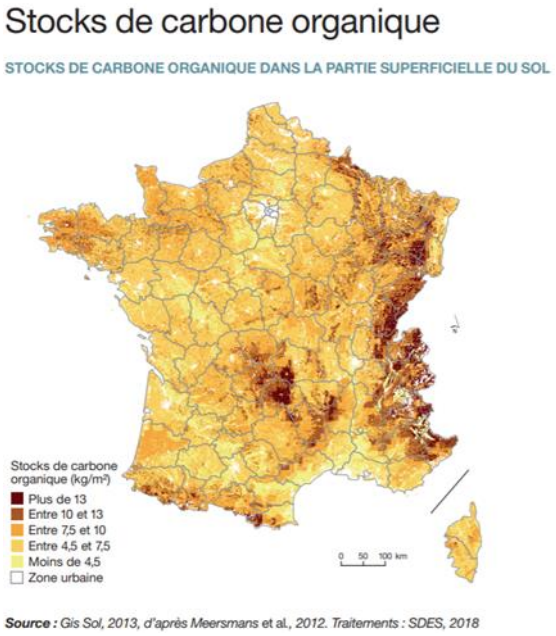
"*Soils deliver key ecosystem services such as nutrient provision, water purification, filtering of pollutants*" (EEA, 2019)

2.4.1 Soil Organic Matter (SOM)

Past trends and outlook

SOM can be defined as 'everything that is alive or was alive in the ground'. It is the largest reservoir of organic carbon, but SOM in French agricultural soils is in significant decline (ADEME, 2015).

SOM can be assessed by the Soil Organic Carbon (SOC) content and soil biodiversity. Those two characteristics "*are vital to the way ecosystems function and they largely determine the role of land in producing food, storing water, and mitigating climate change*" (IUCN, 2018). Data show that soil biodiversity and SOC are threatened by increasing unsustainable agricultural practices.



- **SOC:** 4 billion tonnes of carbon are stored in the first 30cm of French soils, but the amount varies significantly depending on the type of soil and its use. The lowest carbon stocks are found in vineyards (34t/ha) and very intensive crops, where the soil is turned over and releases carbon stocks; medium amounts of carbon stocks are found in large cultivated plains (60 kg/ha); and high amounts (80-90 kg /ha) are found in meadows, forests, and natural pastures (Ademe, 2015; CGDD, MTES, 2018). Permanent grasslands account for 22% of carbon stocks in France, but these stocks have decreased, and their surface area is expected to decrease by 40,000 ha/year at the current pace (MAA, 2020 a). The French *4per1000* initiative aims to achieve a 4% increase in soil carbon stocks per year, but "*without changes to land use, and without modifying agricultural and forestry practices, the evolution of soil carbon stocks is currently 2.3% per year, but with marked uncertainty (-0.2‰ to +3.2‰ per year)*" (INRAE, 2019). Further, this low rate of 2.3% is likely to decrease further without changes to current soil management practices (INRAE, 2019). Soil sealing also affects 20 to 30000 hectares per year in France, with detrimental impacts on farmland carbon stocks as well as on biodiversity and landscapes.

- **Soil Biodiversity**: Soil biodiversity represents the variety of life below ground (bacteria, fungi, worms…) which protects soils from erosion and compaction, improves its fertility and contributes to the degradation of certain contaminants (ESDAC, n.d). Soil biodiversity can be assessed by microbial biomass, diversity and density. Generally, in France, grassland (81 µg / g of soil) and forest (76 µg / g of soil) have a much higher microbial density than soils cultivated in monoculture (38 µg / g of soil) or soils of vineyards or

orchards (26 µg / g of soil). In France, the poorest soils are in the north and the northwest, where there are large areas of monoculture (CGDD, 2015).

Relevant policy objectives/targets

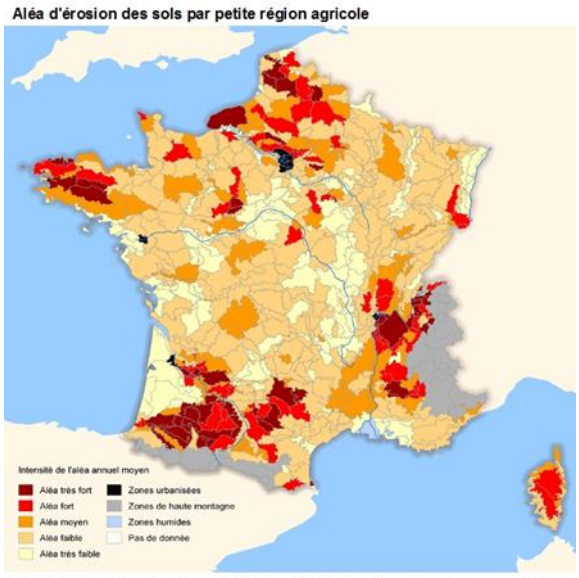
There are no specific, binding objectives or law for soils in France or in the EU. However, the EU has several non-binding strategies and frameworks regarding soil health. The EU is currently preparing a new EU Soil Strategy. As part of the EU Biodiversity Strategy, this initiative aims to preserve soil health "*to help achieve land degradation neutrality by 2030*" (EC, 2020 c). In addition, the 2016 Law on Biodiversity acknowledges the importance of soils as general interest by integrating it in the environmental code. The *4per1000* Initiative, internationally launched in 2015 in parallel with the Paris COP21, also establishes that an annual rate of 0.4% of carbon stocks in soil could absorb the increase in CO_2 in the atmosphere. INRAE estimates that there is a potential for +1.9‰ additional storage at national level. The SNBC also aims to prevent carbon depletion in soils by preserving permanent meadows, hedges, and improving soil organic matter through agroforestry.

The Farm to Fork Strategy also aims to reduce nutrient losses by at least 50% while ensuring no deterioration in soil fertility. This should reduce the use of fertilisers by at least 20% by 2030.

2.4.2 Soil erosion and pollution

Past trends and outlook

Erosion is widely recognized as one of the main threats to soil. Unsustainable agricultural practices can increase this phenomenon and its consequences. The estimated share of soil at risk of loss by water erosion in France is 2.8%, which is below the EU average of 6.6%. Almost 18% of soils have an average to very strong soil erosion hazard (water and wind) in France (EC, 2020 a; Gis Sol, n.d). Arable land situated in northern France is particularly vulnerable to water erosion due to poor soil cover, as well as southeast vineyards due to the type of soil "subject to the formation of a crust that clogs the surface ("*battance*") (MTES, 2017). The soils in Brittany are also affected by water erosion due to the combination of heterogeneous agricultural land and heavy rainfall (MTES, 2017). In the southwest, arable crops, maize and sunflower are also at risk of soil erosion.



Note : Aléa érosif des sols estimé à l'aide du modèle Mesales. Il combine plusieurs propriétés du sol (sensibilité à la battance et à l'érodibilité), du terrain (type d'occupation du sol, pente) et climatiques (intensité et hauteur des précipitations).
Source : SOeS-Gis Sol 2010. Traitements : SOeS, 2010.

Fertilizers and plant protection products and sealing and poor practices pollute soils and increase erosion. Phosphate fertilizers are responsible for around 75% of cadmium found in French soils, a pollution very problematic in agriculture for human and plant health. Despite the fact that phosphate fertilizers were used five times less in 2014 compared to 1972, and that the phosphorus balance has been close to zero since 2009, "*if the current fertilization and regulatory conditions are maintained, the cadmium content in French soils will increase by 3 to 5% after a century [Translated]*» (GisSol, 2011; Sterckeman and al, 2018). The northern and western parts of France are the most concerned by cadmium pollution.

Relevant policy objectives/targets

There are no regulatory threshold values for the use of soils (except to regulate the spreading of sewage plant sludge). However, France has several guidelines regarding soil erosion and pollution. For example, the 2015-2019 French plan for Health and Environment (*PNSE: Plan National Santé-Environnement*) sought to "*Prevent the risks linked to exposure to heavy metals (lead, mercury and cadmium*)" and "*Reduce exposure linked to environmental contamination of soils*" (DRIAAF IDF, 2018). Efforts to reduce soil erosion mainly come from regional land management and prevention and local water planning tools (River Basin Management Plans (RBMPs), or *SDAGE* in French). There are 12 SDAGEs in France, which define the main guidelines at basin level to achieve good water status as "*Adopt a management of agricultural land and space to reduce the risk of to reduce the risk of runoff, erosion and the transfer of transfer of pollutants to the aquatic environments*". Each SDAGE is then adapted locally in the form of a SAGE, where more precise objectives are defined.

Table 4: State of soil overview table

SOIL * **	Past trends and outlook		Prospects of meeting policy objectives/targets under the assumption of unchanged policy	
	Past trends (10-15 years)	Outlook to 2030	2025	2030
Soil pollution				
Soil organic matter: soil organic carbon content and soil biodiversity				
Soil erosion				

** Evaluation made by the author from the information above*
*** Colour code: red = deteriorating trends/not on track; yellow = trends show a mixed picture/ partially on track; green: improving trends/on track; grey = lack of information*

2.5 Air quality

Past trends and outlook

In 2018, the agricultural sector was responsible for 94% of the total ammonia (NH_3) emissions of France. The main contributors to NH_3 emissions were the input of mineral fertilisers (29% of the sector's emissions), followed by the management of bovine manure (25% of the sector's emissions) and the input of organic fertilisers (21% of the sector's emissions). The remaining emissions are split between grazing and the management of non-cattle manure in buildings and storage. The general trend is mainly driven by changes in cattle population and fertilizer application amounts (Citepa, 2020 b).

Ammonia emissions from the agricultural sector decreased 9.6% between 1990 and 2006 and have remained stable since. France is at high risk of non-compliance with its commitments to reduce ammonia by 2020-2029 and by 2030, as set by the National Emission Ceilings EU Directive (NECD) (EC, 2020 a). If there is no change to existing policies and measures, ammonia emissions are predicted to increase 3% in 2025 and by 4% in 2030 compared to 2005 (EC, 2020 a). However, if additional measures are implemented, levels are expected a decrease by 8% in 2025 and by 13% in 2030 (EC, 2020 a).

Relevant policy objectives/targets

In its SNBC and its National Air Pollution Control Programmes (NAPCP) France plans to reduce emissions of air pollutants in compliance with the EU NECD. The most relevant objectives and targets for agriculture are for ammonia emissions, with reduction targets of 4% between 2020-2024, 8% between 2025-2029 and by 13% from 2030 and onwards, as compared to year 2005 (MTES, 2020). Also, N_2O emissions must be reduced by 13 % over the period 2029-2033 as compared to 2018 (Citepa, op.cit.). According to models, France will reach those objectives only if it sets additional policies and measures.

Table 5: State of air quality overview table

AIR * **	Past trends and outlook		Prospects of meeting policy objectives/targets under the assumption of unchanged policy	
	Past trends (10-15 years)	Outlook to 2030	2025	2030
Ammonia concentration				

** Evaluation made by the author from the information above*
*** Colour code: red = deteriorating trends/not on track; yellow = trends show a mixed picture/ partially on track; green: improving trends/on track.*

3. SUMMARY OF THE NEEDS PER ISSUE: CLIMATE, BIODIVERSITY, WATER, SOIL

The following needs identified are based on assumptions made from the section above and from external sources.

3.1 Climate

Mitigation: Currently, GHG emissions from the French agricultural sector are stable. However, these emissions must reduce much faster than the current rate if France wants to achieve its 2030 target for GHG emissions. The primary source of agricultural GHG emissions are CH_4 and N_2O, so further actions must be taken mainly in the livestock sector and land management. These actions include:

- **Reduce the number of livestock** (especially beef, the highest methane emitters), manage enteric fermentation, and adapt animal feeding to reduce CH_4 emissions (CAN EU, 2021);
- **Better manage manure and slurry and reduce the net amounts of nitrogen contained in soils** by finding alternatives to nitrogen synthetic fertilizers in order to reduce nitrous oxide (CAN EU, 2021);
- Foster carbon storage by protecting grassland;
- Use more renewable energies and reduce energy consumption from heated greenhouses (CAN EU, 2021).

Adaptation: France is facing major problems from the increased number and severity of drought and floods. This will impact agricultural production, since this depends on climatic variables. Consequently, the agriculture sector should:

- Build up its resilience by **adapting agricultural production to the territory new specificities:** spatially reorganize production, relocate sectors, rethink organization and production within territories and adapt the cultures and species cultivated (INRAE, 2018).
- Invest in effective water systems to face oncoming hydraulic and heat stresses while avoiding water conflicts and ensuring good quantitative and qualitative status.
- Develop cooling systems in stables, shelters, and adapted transports for livestock in combination with the reduction of herd sizes, as above.

3.2 Biodiversity

Common species related to the agricultural landscape: The current farming practices threaten pollinators, birds, and other field species essential to agricultural biodiversity and to farm productivity and food security. To combat this, France should:

- Develop an **agricultural sector** that is **more extensive and less specialized** and **reduce its use of PPP**. It is of prime importance to restore habitats on farmland and to stop the current fragmentation and land use changes that are detrimental to birds and pollinators;

- Better assess, monitor, and inventory agricultural biodiversity so as to implement an ambitious action plan for protecting and restoring biodiversity on farmland within a short period.

Protected species and habitats: France is home to a major part of the EU's biodiversity, but agriculture is the main pressure for protected species and habitats. As the area and conservation status of **grasslands** decreases, it is important to set standards and develop actions to protect them. To be in line with the ambitious National Plan for Biodiversity, France needs to achieve its objective of zero net soil sealing as well as **wetlands preservation and habitat restoration**.

3.3 Water

Quality: French water bodies are affected by agricultural diffuse pollution from phytosanitary products, especially from nitrogen fertilizers. France needs to **reduce nutrient pollution from fertilizer use and nitrogen surplus**, and generally to reduce its dependence on phytosanitary products. Improvements in efficiency would also be needed to limit their quantity.

Quantity: The current state of groundwater quantity is positive, but water patterns are going to severely change in the coming years to the detriment of water quantity. As southern regions of France will become dryer, France should:

- Put in place a water-use reduction strategy, including for agricultural use;

- Put in place more efficient water usage through reducing water losses, improving the efficiency of irrigation practices, and recycling water.

3.4 Soil

Soil organic matter: Current trends show a general reduction in organic matter in agricultural soils, though there are large regional and territorial differences. Soil biodiversity faces significant pressures and soil organic content is very low on intensive agricultural land. To prevent carbon depletion in soils and strengthen storage, France should:

- **Protect permanent grassland** and foster sustainable farming **practices that enable carbon sequestration and protect life underground**;
- **Stop the intensive use of synthetic fertilizers**;
- **Record and gather data on soil biodiversity** and implement an action plan to foster soil organisms.

Soil pollution and erosion: The use of phytosanitary products and intensive agricultural practices pollutes soil and lead to soil erosion. Sustainable alternatives to phytosanitary products and sustainable farm practices that protect soil must be implemented.

3.5 Air quality

Ammonia concentration: France needs to reduce ammonia emitted by livestock and nitrogen fertilizers.

Table 6: Summary of the information from Sections 2 and 3 on the past trends and outlook and associated needs for each environmental issue

Theme	Past trends and outlook	Policy objectives/targets	Needs
CLIMATE			
Mitigation	• France is the most significant emitter (CO_2 + non- CO_2) of agricultural emissions in the EU. • The agricultural sector represents 18% of the total national emissions. They decreased by 8% from 1990 to 2018 but seem to be stable since.	SNBC: -18% of GHG in 2030 compared to 2005	Reduce emissions from livestock and crops.by reducing farm animal numbers and the use of fertilisers, and by improving soil management practices to conserve CO_2 and other GHGs in soils.
Adaptation	Droughts and floods have become more frequent and intense. France will be increasingly exposed to a changing rainfall pattern, which will lead to more severe water deficits during the growing season.		Adapt practices to the new climate & territory characteristics: relocating production, adapting the types of crops, shifting production, improving the efficiency of irrigation whilst not expanding irrigation in areas subject to water stress.

BIODIVERSITY			
Common farmland species	Farmland bird population has decreased by 40% since 1995 in France and wild pollinators are declining.		Adapt farming practices toward more sustainability: reduce the use of phytosanitary products, extensify practices, protect and restore landscape elements and other biodiversity habitats, reduce stocking densities for livestock.
Protected species and habitats	• Conservation status of agricultural habitats is largely assessed as unfavourable-inadequate and 60% of habitats and 64% of species are affected by agriculture. • Trends in conservation status indicate continuing degradation (decline) for more than one in four habitats or species.	National Strategy for Biodiversity: • Preserve, restore, strengthen and enhance biodiversity and ensure sustainable. • Reduce the net loss of biodiversity to zero.	
WATER			
Water quantity	• 10% of groundwater is not in good quantitative status • In 2050, the average drop in groundwater stocks in France will be 10 to 25%.	WFD: • Achieve good status for all of water bodies in 2027 • -50% of phytosanitary products by 2025 & end of glyphosate by 2022	Implement water use reduction strategies s combine with more efficient water using through reducing water losses, improving irrigation practices, and recycling water.
Water quality	31% of groundwater and 27% of surface water bodies are not in good chemical status. The quality of water course has improved over the last year but some regions still present significant pollution problem, in particular the Britany region.		Reduce nitrate and pesticide concentrations in water by stopping diffuse pollution from phytosanitary products, especially nitrate fertilizers.

SOIL			
Soil Organic Matter (SOC): Soil organic content and biodiversity	SOC and soil biodiversity are in decline. They are particularly low in very intensive crops where the soil is regularly ploughed.	Prevent carbon loss in soils by preserving permanent meadows, hedges, improving soil organic matter through agroforestry.	• Implementation of more sustainable agricultural practices: less intensive practices and less use of phytosanitary products, protection of environmentally sensitive permanent grasslands. • Develop knowledge and data on soil biodiversity, protect and increase carbon stock in the soil.
Soil erosion and pollution	France agricultural soils suffer from nitrate and phosphorus pollution. 18% of soils have an average to very strong soil erosion hazard (water + wind).		
AIR			
Ammonia concentration	94% of NH_3 emissions came from the agricultural sector in 2018. They decreased between 1990 and 2006 (-9.6%), and have remained broadly stable since.	NACPC: reduction of 13% in 2030 compared to 2005	Reduction of mineral and organic fertilizers use and better management of cattle manure.

4. LIST OF MOST RELEVANT MANAGEMENT PRACTICES RESPONDING TO THE NEEDS

From the analysis in the previous sections, it is clear natural resources in France are strongly and negatively affected by agriculture. Current trends are not so encouraging, particularly for air quality, biodiversity and climate. A profound transformation of French agriculture is needed to make the sector more sustainable, resilient and future proof. The upcoming CAP national strategic plan has the potential for enabling such a transformation through both the mandatory conditions on the subsidies and the voluntary schemes. But for the strategic plan to enable this shift, relevant measures should get the highest budgetary resources for optimizing their impact. It is therefore of paramount importance for the French strategic plan to contain:

- **A maximum budgetary transfer from the 1st pillar to the 2nd pillar** of the CAP, provided this is not used for measures that support intensification (like certain investment aid). This is because the direct payments of the 1st pillar favour conservative approaches and tends to dampen innovation and transformative changes, as shown by several studies on their impact[10], while drivers for change can be financed with the second pillar (non-productive investments, innovation, area payments for environment and climate). France should use the possibility to transfer funds from the 1st to the 2nd pillar up to the maximum permitted of **40 %** (as agreed at the European Council of July 2020, Member States can transfer to the 2nd pillar up to 25 % of their budgetary envelope set for the 1st pillar and can increase this percentage by 15 points, provided the amount will be used for environment and climate actions).

- **Efficient eco-schemes** at the level of at least 25 % of the 1st pillar from the start of implementation of the NSP (2023). Eco-schemes are in practice the unique financial support with a clear environmental focus in the 1st pillar.

- **Regionalized actions and measures**, due to the diversity of agricultural ecosystems in France. Standardized approaches at national scale or flat-rate support may not capture the reality of farming conditions and environmental

[10] In example, the study by the AgriFood economics centre (2017) on the impacts of Direct Payments: https://www.agrifood.se/Files/AgriFood_Rap- port_20172.pdf… draw among its conclusions that « *Pillar I direct payments create goal conflicts and that these are substantial. In particular, direct payments dramatically slow structural change which hampers productivity growth and income development*"

status at local level and lead to over-compensations, under-compensations or unfit measures, as experience has shown.

- Horizontal actions to enable the transition. Past experience has shown that desired changes in practices – like pesticides use reduction – have not occurred mainly because farmers were not properly supported in making these changes (FNH, 2021). **The transition should be supported by advisory services and actions supporting innovation**, demonstration farms networks and living labs, based on the model of the agricultural European Innovation Partnership (EIP-AGRI).

More specifically the following measures should be prioritized against the relevant needs as below:

4.1 Climate

In the livestock sector, cutting livestock numbers would be the most efficient way to reduce agricultural emissions. This option may however not be practicable without wider actions on consumption and education programmes to consumers. Because the CAP does not include consumption-driven measures, design production measures in the NSP should **avoid incentives to increase livestock numbers or intensify production and foster extensification and local sourcing of animal feed.** Therefore, the NSP should include measures such as:

- Specific area support to permanent grassland (and prohibit conversion of grassland to arable land)
- Financial compensation to farmers who commit to a reduction of their livestock density below a past reference level, along with necessary investment support
- Creation of quality labels – or modifying existing ones – that include carbon footprints in their specifications (and the cessation of subsidies that promote animal-based products).

Techniques to reduce synthetic fertilisers and scale-up no-ploughing on arable crop would significantly limit emissions and even open the way for turning agricultural soils into carbon sinks in line with the 4‰ strategy. To achieve this, measures should include:

- Requirements to include **leguminous** in the crop rotation,
- Farm investment aid for the **special machinery** needed for conservation farming (no-tillage) (without heavy use of herbicides)

- Investment support for **renewable energy supply** to farms (e.g., solar panels on farm buildings roofs) and to the downstream processing sector (e.g., for drying grain post-harvest)

- Agreed methodology for accounting carbon capture in soils

4.2 Biodiversity

Organic farming positively impacts biodiversity: land farmed organically has on average 30% more biodiversity than land farmed conventionally (EC, 2021)[11]. The French NSP should therefore:

- Help more farmers **convert to organic farming** and accompany them along the conversion period. This would be better achieved through **a combination of measures** including area payment for compensating the financial losses incurred during the conversion, followed by area payments for remunerating the public goods delivered due to organic practices, notably biodiversity. The whole process should be supported by advisory services and investment aid where appropriate.

- Drastically reduce pesticide use where land is not farmed organically, in order to halt biodiversity loss. This means that the protection of crops from pest and diseases must be achieved differently; the most promising way is with biocontrol. Not only does biocontrol protect biodiversity, but it also brings multiple benefits (Hulot and Hiller, 2021) and acts as an enabler of the transition to sustainable agriculture. **The French NSP should implement the recent French plan for biocontrol deployment** (MAA, 2020 b). The NSP should make use of several measures, in particular support to innovation groups and demonstration networks in the 2nd pillar in the context of the EIP-Agri. To overcome the risk hurdle at farm level, a **temporary crop insurance scheme** could be set up, as well as a biocontrol premium as part of the eco-schemes.

- Restoration of landscape features and other biodiversity-friendly habitats can be achieved through conditionality, ecoschemes, agri-environment payments and with the help of non-productive investments measures (2nd pillar). For example, **planting hedges** and agroforestry measures would be appropriate in many regions.

[11] Although it should be noted that there are wide variations depending on how intensive the organic management practices are, and what additional biodiversity friendly practices are in place (such as existence of wildlife habitat, ploughing or mowing regimes).

4.3 Water

Water quality will benefit from:

- The implementation of actions on extensification and biodiversity described above.
- The protection of local watercourses would be best achieved through conditionality (minimum buffer strips along water courses) by designing agro-environmental measures that apply along the watercourses on a sufficient width.

Quantitative limitation in water availability, especially during summers, can be achieved with:

- Healthier soils and improved soil management.
- **Agro-environmental measures favouring water capture by soils,** which are the main reservoir of water. These measures include protection from wind erosion and wind drying with the help of hedges and tree rows, soil covers and no-tillage.
- Implementing the WFD provisions including in conditionality and avoiding investments in unsustainable irrigation.

4.4 Soil

Soil biodiversity can benefit from the measures mentioned above for "climate", "biodiversity" and "water". Maintaining permanent grassland and crop rotation are key measures for soil health.

Another threat to soils is the expansion of urban areas and the subsequent soil sealing, which has increased dramatically in the past 10 years. This reduces the available fertile land that could be used for horticulture and local supply of fruits and vegetables, or other crop types, which can increase pressure on other areas of land. Thus, the objective of **zero soil sealing** that is part of the French national plan for Biodiversity (MTES, 2021 b) should be properly monitored and fulfilled.

4.5 Air

Ammonia pollution can be managed by a reduction of livestock numbers, especially in Brittany, and by reducing use of inorganic fertilizers. It can also be reduced by better management and use of nitrogen contained in livestock manure, fertilizers and animal feed.

Table 7: Summary table – Example of measures

Measures	Agricultural practices	CLIMATE		WATER		BIODIVERSITY		SOIL			AIR	Safeguards/ Comments	Targeting
		Mitigation	Adaptation	Quantity	Quality	Common species	Protected area species	Loss of soil biodiversity	Loss of SOM	Soil erosion	Ammonia pollution		
Land management	Crop rotation	X	X	X	X	X	X	X	X	X		Should be genuine rotation over years and not "crop diversification"	Arable land
	Inclusion of legumes in crop rotation	X	X						X			In case of alfalfa it should be long rotation cycles	Id.
	Cover crops / Catch crops	X	X	X	X				X	X		Mechanical destruction only	Id.
	Mulching and leaving crop residues		X	X	X				X	X		Agronomic practice to be adapted to local conditions regarding the quantity of mulch and residues	Id.
	Reduced or no tillage	X	X	X	X			X	X	X		Without herbicide application	Id.
	Landscape features, hedges, flowering strips	X	X	X	X	X	X	X	X	X		Not only preservation of existing features but also and more importantly creation of new features	Id.
	Conversion of arable land to grassland	X	X	X	X	X	X	X	X	X		Should be permanent grassland, not simply including grass into the rotation	Id.

Measures	Agricultural practices	CLIMATE		WATER		BIODIVERSITY		SOIL			AIR	Safeguards/ Comments	Targeting
		Mitigation	Adaptation	Quantity	Quality	Common species	Protected area species	Loss of soil biodiversity	Loss of SOM	Soil erosion	Ammonia pollution		
Biocontrol	**Biological control of pests and diseases**		X		X	X	X	X				Availability of biocontrol products should sharply increase	All crops
Organic farming	**Conversion to and maintenance of organic farming**		X	X	X	X	X	X	X	X	X	Regionalised actions plans should help calibrating the speed and dimension of the area in transition each year so as to adjust to the demand. Knowledge transfer support necessary.	All regions
Agrofor-estry	**Tree rows alternated with crops, husbandry under forest**	X	X	X		X	X	X	X	X		Local trees species should be used	Coastal areas, areas with risks of flooding
High nature-value farming	**Extensive farming methods (e.g., reduced fertiliser, fewer grass cuts, later cuts, low animal density)**	X	X			X	X	X	X	X	X	Focus on livestock would help containing livestock numbers within climate-compatible boundaries. Should be coupled with actions on sign of quality recognition (like IGP)	Potentially all regions, with specific focus on meat production

Measures	Agricultural practices	CLIMATE		WATER		BIODIVERSITY		SOIL			AIR	Safeguards/ Comments	Targeting
		Mitigation	Adaptation	Quantity	Quality	Common species	Protected area species	Loss of soil biodiversity	Loss of SOM	Soil erosion	Ammonia pollution		
Livestock management	**Reducing max livestock density**	X			X	X	X			X	X	Maximum livestock densities should be regionalised with a view to reflect the real capacity of each region to feed their animals	Most intensive productions as main targets
	Improved livestock health management	X	X								X	In application of the One Health concept	All livestock
	Solid manure application from animals on straw				X			X	X	X	X	Agronomic practice to be regionalised according to local soil types, etc.	Mixed farms
	Improved grassland management (e.g., choice of grass varieties, grazing patterns)		X			X	X	X	X	X		Double objective: to further increase carbon capture and to regenerate biodiversity.	All grassland areas
Knowledge transfer	**Local development groups and demonstration farms (EIP-Agri)**	X	X	X	X	X	X	X	X	X		Should make the link between science and practice. Using digital means and dedicated social network would help accelerate the transition.	Build a dense network of demonstration farms over the country

Measures	Agricultural practices	CLIMATE		WATER		BIODIVERSITY		SOIL			AIR	Safeguards/ Comments	Targeting
		Mitigation	Adaptation	Quantity	Quality	Common species	Protected area species	Loss of soil biodiversity	Loss of SOM	Soil erosion	Ammonia pollution		
Advisory services	**Targeted advice to farmers to accompany the agro-ecological transition**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**		Avoid one-size-fits-all advice. An approach along natural regions should be promoted (by contrast with advice per production).	Young farmers and new installations

No-go measure box

The box below highlights the measures to avoid as they will be counterproductive in achieving the identified needs.

- Investment aid coupled with increased livestock numbers:

Intensive agriculture has been supported by large investments in stables, that need fossil-based energy to function (e.g., for heating livestock buildings). New capacities for intensive pig or poultry production should not be supported by public funding, and therefore excluded from CAP pillar 2 investment aid. The same applies to greenhouses when heating is not based on renewables.

- Direct payments not delivering on environmental objectives (e.g., the area payment to natural handicap zones – so-called "ICHN" in France - may not deliver on the environment if it is not coupled with environmental conditions. Funding should instead be redirected to AECMs made available to these regions)

- Subsidising open-air water reservoirs, possibly with CAP pillar 2 investment aid: on average losses by evaporation reach 50 % and multiplying such storage would perturb water cycles, making soils dryer. No such investment should get EU support.

- Allowing organically farmed land to revert to conventional farming without losing EU support: changing land ownership sometimes leads to abandonment of organic production on farms. Although the organic status was generally gained with the help of public subsidies, there is no penalty in stepping back to conventional. This kind of move is not coherent with the global objective of 25 % organic farming land in the EU by 2030. Without altering the freedom to farm of each entrepreneur, it would be wise that an EU rule would limit granting new fresh support to farmers who voluntarily stopped organic production.

5. INTERVENTION MECHANISMS – EXAMPLES (NEW GREEN ARCHITECTURE)

The following examples illustrate how certain different CAP instruments (such as *eco-schemes*, agri-environment and climate measures) could be used to fund the different measures listed in section 4. Only one example is given per category of need, therefore, it is not an exhaustive list. Other potential measures like investment support are also not included. Further, different interventions can fulfil multiple goals, for example, the preservation or restoration of extensive permanent grassland can contribute to climate mitigation, biodiversity and water quality at the same time.

	Practices	Corresponding instruments Pillar 1	Corresponding instruments Pillar 2			
Corresponding needs in the national context		**Conditionality/ Eco-schemes**	**Environmental climate and other management commitments**	**Natural or other area-specific constraints[12]**	**Cooperation (EIP-AGRI OGs)**	**Knowledge and information**
CLIMATE						
Climate mitigation	Land management	Maintain permanent grassland (eco-conditionality)	Converting arable land into permanent pasture	No tillage on arable land	Weed control	Alternatives to pesticides including glyphosate
Climate adaptation	Agroforestry	Compensate income loss for areas planted with trees	Planting hedges and/or trees	Indigenous species	Exchange of good practices	New farming models

[12] In the Rural Development Programmes, it is possible to prescribe ANC conditions for certain measures e.g., for higher support (investments).

BIODIVERSITY						
Biodiversity protection and restoration	Restoration of landscape biodiversity	Eco-schemes for landscape features	Establishment and management of biodiversity areas including landscape features (additional area)	Flowers strips, landscape features	Exchange of good practices	Biodiversity needs, most appropriate management for specific habitats and species
	Pesticide reduction – biocontrol	IPM as an eco-conditionality criteria Biocontrol as an eco-scheme	Zero chemical pesticides	Flowers strips, landscape features	Test fields, demonstration farms network	Systemic approach to farm management, insect biology, biocontrol solutions
WATER						
Water quality (nitrates)	Livestock management	Low livestock density (compensating income loss)	Link animal numbers to pastured land, fix a maximum and minimum ceiling	Animal welfare	Extensive livestock farming	Animal husbandry, animal diseases prevention, "one health"
SOIL						
Soil protection and regeneration	Organic farming	Converting arable farms to organic farming (3 years)	Whole farm approach preferred in the long term	Option no tillage	Converting farms to organic	Eco-intensification[13] Weed control in no tillage organic

[13] Low-input, ecosystem-based, knowledge-intensive farming systems (Tittonell, 2014)

AIR						
Air quality	Manure management Livestock management (as above for water quality)	Eco-conditionality to align with the measures in the code of good agricultural practices that falls under the National air pollution control programme (NAPCP) (NEC Directive)	Link animal numbers to pastured land, fix a maximum and a minimum ceiling	Animal welfare	Extensive livestock farming	Animal husbandry, animal diseases prevention, "one health"

6. ALIGNMENT BETWEEN RECOMMENDED MEASURES AND THE GREEN DEAL

The management practices described in section 4 and the examples of intervention mechanisms given in section 5 have been chosen because their impact will help achieve the headline targets of the Green Deal (see box 1 below as a reminder).

Box 1: Green Deal headline targets

Climate law

Legally binding target of net zero greenhouse gas emissions by 2050 (2030 reduction target of 55 %, at least, compared to 1990 levels)

Farm to Fork

- *Reduce by 50% the overall use and risk of synthetic chemical pesticides and the use of more hazardous pesticides by 50% by 2030*
- *Reduce nutrient losses by at least 50%, while ensuring that there is no deterioration in soil fertility. This will reduce the use of fertilisers by at least 20% by 2030*
- *Reduce by 50% sales of antimicrobials for farmed animals and in aquaculture by 2030*
- *At least 25% of the EU's agricultural land under organic farming by 2030*

Biodiversity strategy

At least 10% of agricultural area is under high diversity landscape features

Measures have multiple goals and impacts and in their strategic plans, Member States should prioritise measures that have the highest number of incidental benefits to reduce the risk of trade-offs. For example, maintaining permanent grassland will help keep carbon in the soil and help fulfil the carbon neutrality target by 2050. Furthermore, this measure positively impacts biodiversity on the condition that they are extensively managed, both in terms of inputs and other management practices include stocking densities and grazing or mowing regimes, it will therefore help achieve the biodiversity strategy target. As another

example, biocontrol reduces pesticide use while also fostering new governance approaches on the farms, in line with the SDGs and the EU Green Deal objectives (Hulot and Hiller, 2021).

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Annex 1

Ex-ante analysis	SWOT analysis	Assessment of needs	Public/ stakeholder consultation	Final intervention strategy	First draft	Strategic environmental assessment	Second draft submitted to the EC	Approval of the CAP CSP
	Draft available (in French) per sub-objectives (5 February 2020)		**May 2021**	**21 May 2021**	**Informally submitted to the EC**	**Ongoing**		
	Link > 48 national needs indentified: farmers wages, competitivity, climate, natural ressources, biodiv,young farmers, local development, social needs, modernisation and knowledge		Synthesis of the Public Debate on the proposal (Jan 2021) Pour une autre PAC Definitive conclusion from the Ministry (3 April)	Link				

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