



DiverIMPACTS - Deliverable 6.2

DiverIMPACTS
Diversification through Rotation, Intercropping, Multiple Cropping, Promoted with Actors and value-Chains Towards Sustainability

Deliverable 6.2
Common framework for agro-environmental policy analysis

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1. Glossary and abbreviations

BPS: Basic Payment Scheme, offers a basic layer of income support to farmers, to be topped-up by other direct payments targeting specific issues or specific types of beneficiaries. The BPS addresses the need to ensure a better distribution of support across the Union through the external and internal convergence.

CAP: Common Agricultural Policy. The set of legislation and practices adopted by the European Union to provide a common, unified policy on agriculture. The initial measures were introduced in 1962. Since then, the policy has been adapted and developed and has undergone a number of reforms.

CSF: Common Strategic Framework, translates the objectives of the Europe 2020 Strategy into workable actions for the 5 European Structural and Investment Funds (ESIF).

Cross-compliance: A system linking most CAP payments to a set of basic standards to ensure the good agricultural and environmental condition of land (GAECs) and certain obligations, known as statutory management requirements (SMRs). SMRs are defined in the respective EU legislation on the environment, climate change, public, animal and plant health, and animal welfare.

Direct payments: Aid granted directly to farmers to provide them a safety net. They mainly take the form of a basic income support, not linked to production. They help to stabilise farmers' income stemming from sales on the markets, which are subject to volatility. Direct payments are made from the European Agricultural Guarantee Fund (EAGF), commonly referred to as 'Pillar I' of the CAP.

EFA: Ecological Focus Areas. Land on farms dedicated to specific practices or features beneficial for the environment. Under greening, farms generally must dedicate at least 5 % of their arable land to EFAs.

ESIF: European Structural and Investment Funds, finance the EU territorial/cohesion policies. The ESIF include five different funds, which are all covered by Regulation (EU) No 1303/2013 of the European Parliament and of the Council, the so-called 'Common Provisions Regulation'. The Structural Funds have two components: the European Regional Development Fund (ERDF), providing financial support for the development and structural adjustment of regional economies, economic change, enhanced competitiveness as well as territorial cooperation throughout the EU; and the European Social Fund (ESF), seeking to contribute to the adaptability of workers and enterprises, access to employment and participation in the labour market, social inclusion of disadvantaged people, combating all forms of discrimination, and creating partnerships to manage reforms in employment. The other three funds constituting the ESIF are the Cohesion Fund, which supports exclusively less-developed Member States; the European Agricultural Fund for Rural Development; and the European Maritime and Fisheries Fund.

GAEC: Good Agricultural and Environmental Condition. Collective term for a set of basic standards, applicable under cross compliance, defining good agricultural and environmental condition of land.

Pillar I of the CAP: Part of the Common Agricultural Policy encompassing direct payments to farmers and market measures.

Pillar II of the CAP: Part of the Common Agricultural Policy encompassing rural development measures.

Rural development: An EU policy, commonly referred to as Pillar II of the CAP, addressing the economic, environmental and social needs of EU rural areas. Rural development payments are made from the European Agricultural Fund for Rural Development (EAFRD), with Member State co-financing.

SAPS: Single area payment scheme. Due to limited administrative capacities and the absence of historical data, new member states (i.e. those that joined the European Union in 2004 and 2007) were granted the possibility of applying the single area payment scheme instead of applying the standard direct payment

schemes. The single area payment scheme provides a flat-rate decoupled area payment paid for eligible agricultural land and replaces almost all payments granted in other than new member states.

SMR: Statutory Management Requirements. A collective term for a set of obligations defined in the respective EU legislation on the environment, climate change, public, animal and plant health, and animal welfare, and applicable under cross-compliance.

VCS: Voluntary Coupled Support. VCS allow, under Basic Payment (**BPS**), to provide coupled payments to production, to help certain sectors undergoing difficulties.

2. Introduction

The overall goal of DiverIMPACTS is to realize the full potential of crop diversification through rotation, intercropping and multiple cropping, promoted by actors and value chains towards sustainability, by demonstrating clear technical, economic and environmental benefits for farmers, value chains and society and by providing rural actors with those key enablers and innovations that remove existing barriers and ensure actual uptake of combined benefits at farm, value chain and territory levels.

In the European context, farmers operate in a complex web of external factors/drivers (agri-business sector, natural resources, climate change, market, global trade, policies), site-specific and personal characteristics (farm size, soils, agro-eco zoning location, infrastructure, machinery, human resources, expertise), resource inputs and outputs (labor, capital, fertilisers, pesticides, water, energy), all requiring decisions to be made at short term (e.g., land occupation and crop selection, how much to fertilize/irrigate where and when) and long term (e.g. cropping system design, conservation agriculture, rotation, organic farming).

Public policies play an important role in farmers' and other actors' decisions influencing sustainability of crop production. In fact, unlike many other sectors, agriculture is one in which direct public intervention remains the norm rather than the exception. This makes farming activity sensitive to changes in public policy. Farmers' decisions are heavily influenced by market support, direct payments, agri-environmental policy and environmental legislation. These decisions may be further shaped by water, energy or planning policies (COM (2000) 20 final). In this context a synthesis of key agro-environmental policies in the EU is presented.

Policy analysis is a key activity in the scope of DiverIMPACTS, as demonstrated of the first results of Survey of Crop Diversification Experiences carried out in WP1 - Task 1.1, Deliverable 1.1 "*Typology of diversification experiences with description of driving factors to support crop diversification*") which highlighted that Public Policy represents at same time an important drawback and an enabling factor for diversification initiatives (Figure 1).

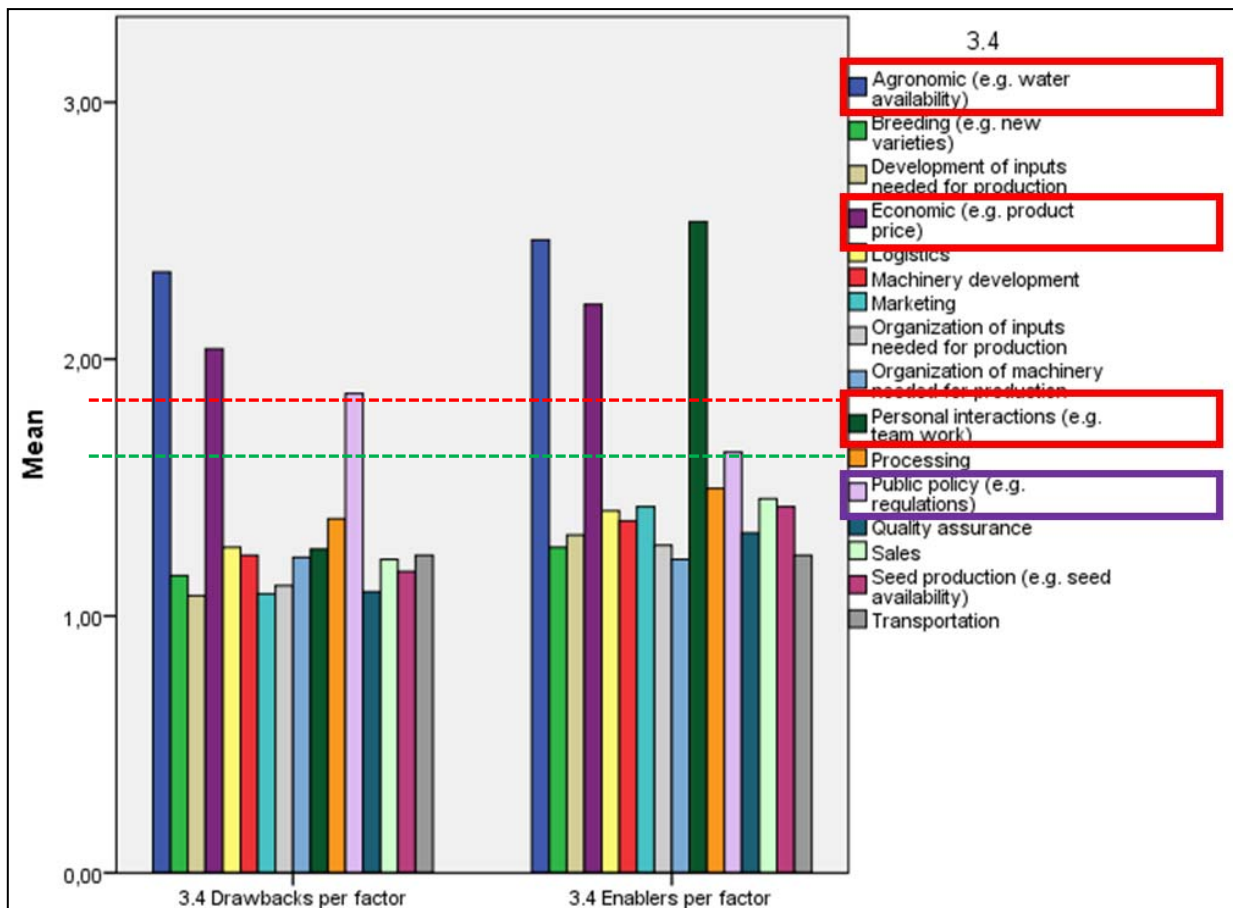


Figure 1 - Experienced drawbacks and enablers factors of CDE

Source: Survey of Crop Diversification Experiences - First results (available in the DiverIMPACTS collaborative workspace)

The purpose of this document is to present a framework for policy analysis to be applied in DiverIMPACTS Case Studies (CSs), as part of the WP6 (Strategies, methods and tools to sustain crop diversification all along the value chain) task 6.5 (Policy instruments and strategy). From this analysis we aim to obtain general policy lessons as well as CS specific recommendations to promote crop diversification. The application of the policy analysis framework requires the exploration of different data sources. Some of the data may be obtained from published sources (e.g. legislation, reports, official statistics), while other information (mainly at National/local level) requires the consultation of specific actors. This consultation may be operationalized through interviews or focus groups/stakeholders meetings, preferably in articulation with the work developed in WP2 (Promoting crop diversification in CSs through actor-oriented research). Figure 2 illustrates the main steps of the DiverIMPACTS policy analysis framework that are described in the following sections. The framework includes 4 procedural steps:

- Step 1 : Case study background and context. This step aims to identify the main problems underlying the emergence of the CS and the Investigated solutions to overcome those problems;
- Step 2: identifying and describing existing key policy instruments that link directly with DiverIMPACTS CSs, in relation to the underlying main problems, investigated solutions, and to analyse if policy instruments in place have a potential to promote crop diversification strategy, as well as identify the contribution and potential of crop diversification to wider EU agro-environmental objectives;
- Step 3: The analysis carried out in the previous step will allow to Identify any gaps in current policies and find areas for improvement and opportunities to overcome these gaps;

- Step 4: Based on the results of the previous activity, recommendations for tailored policy instruments to support crop diversified systems adoption will be developed, based on an extensive literature review, expert consultation and internal knowledge of the consortium (Stakeholder Platform of Task 6.1), and on the scientific evidence of the benefits of crop diversification (WP1, WP3 & WP4) and focused also (on the basis of the results of the WP5) on the value chain (contract arrangements, added value chain, market development, labelling and certification for sustainable agricultural practices, etc.). Cooperation with the Working Group on Policy established by the cluster of “Crop Diversification” EU projects funded by H2020 (TRUE, LegValue, Diverfarming, DiverIMPACTS, DIVERSify, ReMIX) will help to provide joint recommendations to policy-makers based on research project results.

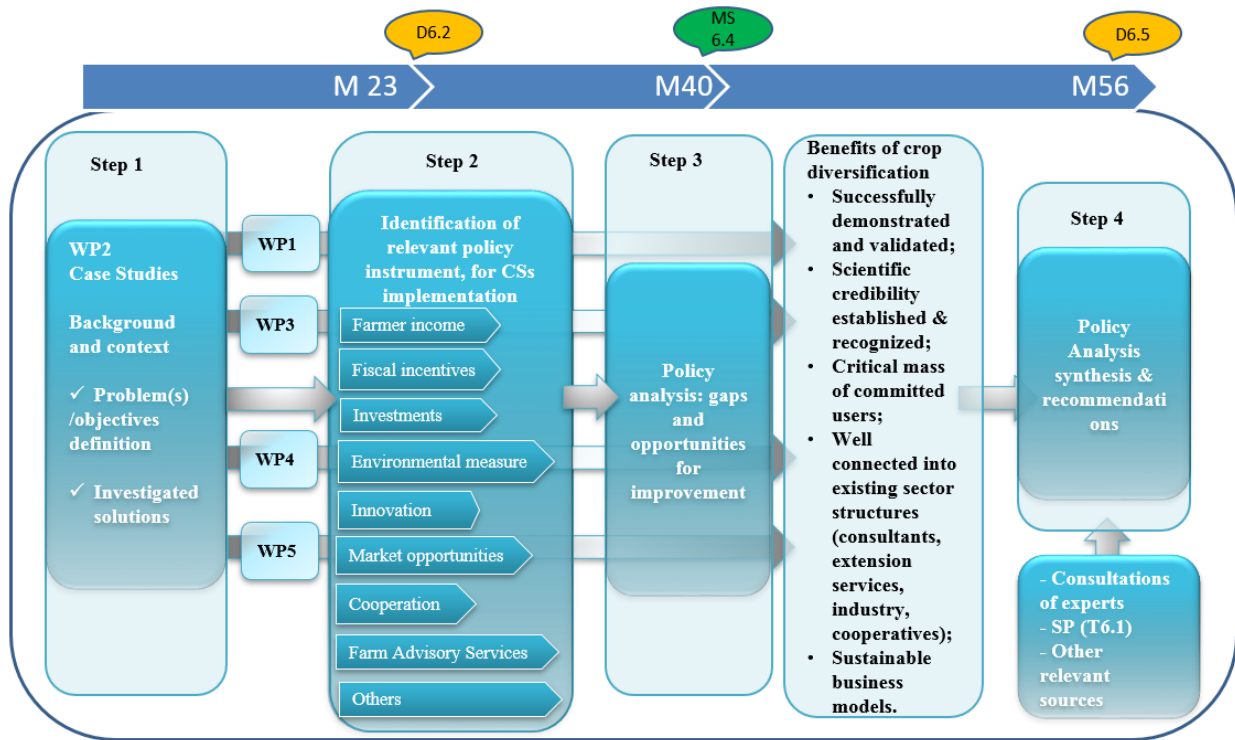


Figure 2 - Draft of Policy analysis framework and Task 6.5 timing

M 23 (Apr 2019) - D 6.2: Common framework for agro-environmental policy analysis
 M40 (Sept 2020) - MS 6.4: Final version of Case Study policy analysis (report)
 M56 (Jan 2022) -D. 6.5: Recommendations for policies to help foster crop diversified systems

Deliverable 6.2 focuses on the first two steps. It should be noticed that DiverIMPACTS lifetime is in the middle of the ongoing CAP programming cycle (2014-2020) and the new one (CAP beyond 2020), so that this document mainly refers to the current policy in place, while some preliminary reflection on the content of the proposal for the CAP reform are given in section 5.

3. Case study background and context

DiverIMPACTS builds on existing experiences of crop diversification (i) by networking 10 existing field experiments and expanding it to feed into the wider farming industry, (ii) by accompanying 25 multi-actor case studies (covering different pedo-climatic conditions, using different crops and diversification strategies, and (iii) involving a full range of actors, including farmers, advisors, cooperatives, logistic providers, industry and public engagement for society and consumers. Case Studies are allocated to one of the five innovation clusters (Fig. 3), to quantify the technical, economic and environmental benefits for farmers, along the value chain and for the society at large, compared with reference system (less diversified).

The case studies are coordinated by WP 2 "Promoting crop diversification in case studies through actor-oriented research". Each case study is represented by a case study leader and case study monitor and

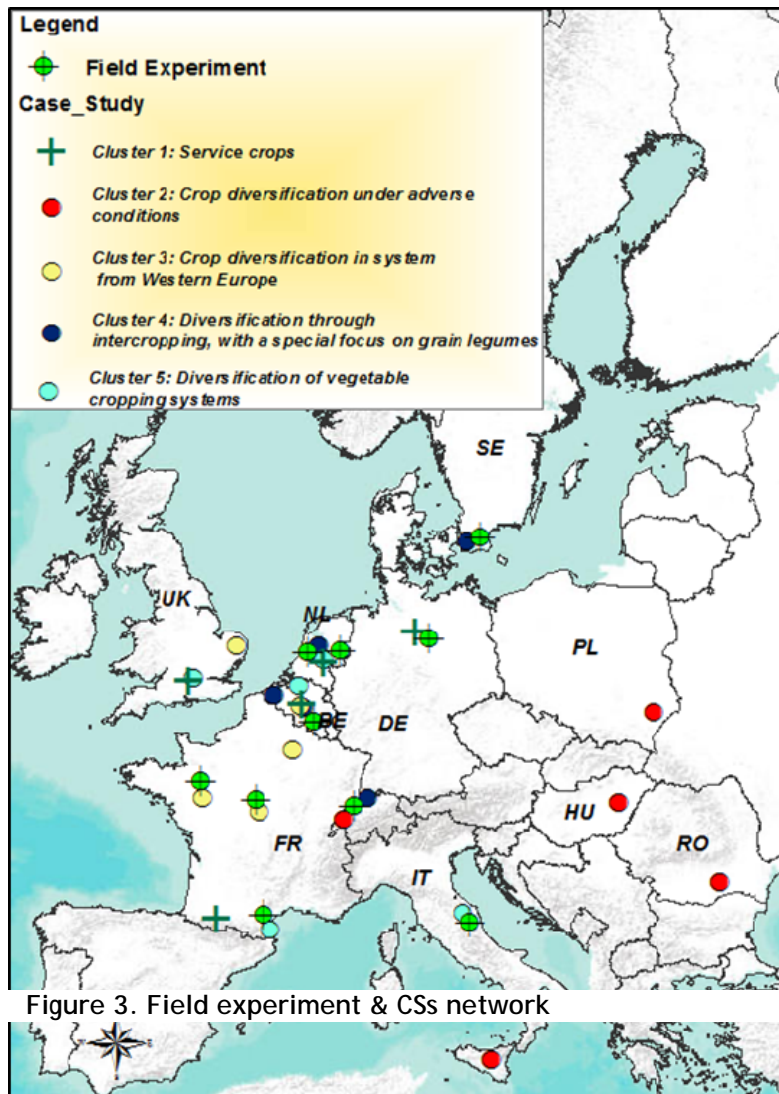


Figure 3. Field experiment & CSs network

allocated to one of the five innovation cluster:

- > Cluster 1: Crop diversification with, among other, a special attention for service crops (CS);
- > Cluster 2: Crop diversification under adverse conditions;
- > Cluster 3: Crop diversification in systems from Western Europe;
- > Cluster 4: Diversification through intercropping, with a special focus on grain legumes;
- > Cluster 5: Diversification of vegetable cropping systems.

This first step aims to identify at CS level the main problem(s) underlying the emergence of the CS, as well as the diversification strategy developed to overcome the problem(s).

The following tables give a first description of the background and context for all CSs, derived from the Case study profiles in the DiverIMPACTS website. (<https://www.diverimpacts.net/case-studies.html>).

Furthermore, based on the collected information of Deliverable 5.1: "*Ordered list of lock-ins for CSs*", the main lock-ins identified so far are underlined.

Legend of the tables on the Case Study analysis

Conv	Conventional
Orga	Organic
Mix	Mixed
KnowR	Lack of knowledge and references
Adv	Problem with advice context and availability of information.
Invest	Investments - need of investment to get adapted machinery/equipments
Innov	Innovation - need of innovation for specific use
Know	Lack of know-how and adapter methods to properly process the diversification products.
Vol	Volumes are low in a given area to be an incentive or to create a very efficient business model or small volumes can be a lock-in to investing in equipment which is adapted to bigger volumes or need bigger volumes to be optimised

Table 1 - Cluster 1: Crop diversification with, among other, a special attention for service crops

Country	Case study number and description	Main problems/objectives underlying the emergence of the CS	Investigated solution	Main lock-in	
				Farmer	Supply chain/market
NL	1. Breaking maize monoculture (Mix).	Yield gap (up to 25%) following maize monoculture. [Soil quality degradation: Water quality (leaching of nutrients and pesticides)]	Improve soil quality with the use of a service crop (cover or fodder crops).	KnowR Invest	
UK	2. Herbal or diverse leys use as service crops and valorised through grazing. (Mix)	Support some emerging dynamics from groups of farmers questioning the sustainability of their practices in terms of soil fertility improvement.	The focus will be on farmers producing cash crops and wanting to introduce short-term leys as service crops. Finding ways to valorise these service crops with herbivores is one major part of the challenge for specialist arable farmers.	KnowR Invest	
DE	3. Crop diversification to improve water quality in catchment basin. (Conv)	Maintain drinking water quality through the adaptation of farmer practices in water protection areas.	Modification of crop rotations, with the implementation of catch crops in rotations including spring crops, as a key strategy to reduce N-leaching risk and increasing N-efficiency and improving water quality (leaching of nutrients and pesticides).	KnowR	Vol
BE	4. Valorise cover-crops through sheep grazing (Mix)	Characterize the impact of cover crops' valorization by sheep on soil fertility. The first results underline the interest and suitability of this practice to reduce deep soil compaction and to improve soil homogeneity without an impact on nutrient bioavailability for the next crop. Nevertheless, several questions remain between sheep breeders and cash crop producers regarding the agro-economic interest for cash crop producers, the economic performance for sheep breeders linked to cover crop composition, the potential for reduced tillage, the environmental performances, and the definition of contract schemes.	Implementation of service crops gives an opportunity to support the development of sheep production and valorisation in the Walloon area with a cover cropping surface availability linked to the large occurrence of nitrate-vulnerable areas (58% of Wallonia) in the context of the surfaces of ecological interest. Through an innovative win-win contract scheme between sheep breeders and cash crop producers, sheep breeders would be able to develop their herds through additional surface valorisation.	KnowR	
FR	5. Breaking irrigated maize monoculture (Conv)	Impact of maize mono-cropping on water resources both in quantitative and qualitative terms; agronomic problems in terms of weed management, soil erosion, and soil quality and pest pressure (e.g., wireworms). There is a need to support the evolution/organization of the upstream and downstream parts, i.e., cooperatives, of the chain.	Crop diversification is a potential solution, as underlined by some trials that aim to set up rapeseed production in the rotation. Some farmers would like to introduce spring crops in the rotation; soybean, for example. The introduction of other cereal crops within the rotation may lead to the increased use of pesticides, which calls for solutions. The use of service crops involving, for example, cruciferous species (sown sole or intercropped with legumes), is also a promising alternative to control wireworms but requires further adoption.	KnowR Invest	Vol Invest

Table 2- Cluster 2: Crop diversification under adverse conditions

Country	Case study	Main problems/objectives underlying the emergence of the CS	Investigated solution	Main lock-in	
				Farmer level	Supply chain/market level
CH	6. Introduction of oilseed rape in association with service crops	The cultivation of organic rapeseed is stagnating, as there is a high risk of severe yield loss due to high occurrence of <i>Meligethes aeneus</i> , strong weed pressure, and limited nitrogen supply. Increase yield stability in order to promote rapeseed as a valuable crop in the rotation	Test, on-farm and in strips, the three possible solutions for controlling pollen beetles and other pests. We will use stone meal in different dosages, and outdoor experiments with different oil odors, such as mint. The third possibility is to test and evaluate different catch crops scientifically.		Vol
HU	7. Diversification of cereal-based rotations with soybean (Orga)	No leguminous plants in the crop rotation of Organic farm. Soybeans could be an interesting crop to test. Organic soybean production occupies 0.5% of arable land in Hungary, showing the potential to increase the amount of producers.	A stable connection with the farmers during on-farm experiments would lead to a better exchange and enhance crop diversification. It is crucial to support the creation of a network between farmers and seed producers and accelerate the flow of information with professional events, knowledge transfer, and publications.	KnowR Invest Adv	Vol Invest
RO	8. Diversification of cereal-based rotations under adverse conditions. (Mix)	Romania is not generating yields corresponding to its rather good and deep soil, with high organic matter content.	Assess whether a longer rotation, especially with leguminous crops, would help improve yields at a reasonable cost economically and environmentally.	KnowR Invest	Invest Vol
IT	9. Diversification of durum wheat cropping systems in semi-arid environment with sulla and other crops (chick pea and hemp). (Mix)	Economic sustainability is the main entry point framed in an environmental sustainability perspective with soil fertility and erosion being major concerns.	Identification of suitable pathways for innovative agronomic solutions and value chain options.	KnowR Invest Innov Adv	Vol Invest Know
PL	10. Introduction of oilseed rape/flax and cover crops. (Orga)	Low yields of rape and flax, and the lack of appropriate harvesting machinery for flax are the key problems for the farmers providing products for an oil processing factory	Improvements in crop rotation by introducing catch crops (e.g., mixtures of legumes and non-legume crops) to increase the rape and flax yield. The goal is better access or the establishment of machinery rings.	KnowR Invest	Vol

Table 3- Cluster 3: Crop diversification in systems from Western Europe

Country	Case study	Main problems/objectives underlying the emergence of the CS	Investigated solution	Main lock-in	
				Farmer level	Supply chain/market level
FR	11. Co-design of diversified systems in Pays de Loire. (Conv)	Improve the economic robustness of farms by taking advantage of local existing chain values or by developing new chain values and considering their environmental and agronomic context.	Crop diversification will first be improved by taking advantage of existing value chains (such as pulse crops, hemp, alfalfa, and others) and also by developing new local value chains. There will be a specific attention paid to the agronomic context and environmental constraints to foster the natural regulation of pests, diseases, and weeds and limit damages in a low-pesticides strategy, increase soil fertility, and limit the use of mineral fertilizers.	KnowR Adv	Vol Invest
BE	12. Sustainable diversification of organic stockless cropping systems (cereal, pea, quinoa, faba bean, vegetable, multispecies service crops) (Mix)	Organic stockless cropping systems are low diversified in the area, even though benefits of diversification are well known by farmers to control weeds or to improve soil fertility. For non-tillage farmers, crop diversification is a key solution to compensate non-ploughing effects on weed and on soil structuration.	Identify how diversification schemes are used to improve and maintain soil fertility and structure, on the one hand, and to control weed and disease on the other hand under such challenging cropping systems; - make the stockless farmers more at ease with no till and multi-cropping techniques, and identify interests of crop rotation towards weeds, diseases, and soil fertility management; - make the non-tillage farmers confident in the feasibility of using less or no pesticides and mineral fertilizers before their conversion to organic farming.	KnowR Adv Invest Innov	Vol Invest
FR	13. Introduction of innovative crops and of legumes to foster the sustainability of arable systems under oceanic climate. (Conv)	Introduction of innovative crops and of legumes to foster the sustainability of arable systems under oceanic climate.	the introduction of legumes in a crop sequence seems promising to simultaneously reduce nitrogen use, energy consumption, and greenhouse gas emission. Reduced tillage (plow only one time on nine), permanent cover, and organic supply help concentrate soil organic matter in the upper soil horizon and reduce erosion. While the impact on organic matter is satisfying, gross production and margins are maintained.	KnowR Invest	Vol
FR	14. Diversification of arable crops rotations, specialised on winter crops, under oceanic situations. (Conv)	Economic sustainability is the main entry point framed in an environmental sustainability perspective with soil fertility and erosion being major concerns.	Identification of suitable pathways for innovative agronomic solutions and value chain options.	KnowR Adv Invest	Vol Invest
UK	15. Growing pulses and innovative crops for a less resource intensive diet. (Mix)	Effects of more resilient diets on farming, and how it would have to change and adapt.	The main objective is to evaluate the effect of more diverse human diets on agricultural systems and structures.	KnowR Invest Innov	Vol Invest

Table 4- Cluster 4: Diversification through intercropping, with a special focus on grain legumes

Country	Case study	Main problems/objectives underlying the emergence of the CS	Investigated solution	Main lock-in	
				Farmer level	Supply chain/market level
NL	16. Spatial, temporal and genetic diversification of intensive systems (potato, pea, cereal, faba bean, service crop). (Orga)	Diversification in crops in arable systems can benefit the spread of beneficial insects and natural enemies. Furthermore, it may stop the quick spread of a disease. And there is the expectation it may increase yield/ha and a more (bio)diverse landscape.	Rigorously test the idea in experimental fields and on-farm and explore the real benefits for the NW European organic arable cropping systems and the potential added value for farmers, environment and consumers.	KnowR Invest Innov	
BE	17. Grain legumes intercropping (other than peas) with cereals. (Mix)	More leguminous produced in Belgium. Avoid import of leguminous, but also for reasons like diversification and less need of chemical N fertilizers.	Focus on logistic issues, post-harvest and on sociological barriers.	KnowR Adv Invest	Invest
BE	18. Grain legumes intercropping with cereal in organic systems (Orga)	Farmers are looking for added values where consumers are looking for more local products. There is a need for a match between local producers and buyers, farmers and food processors.	An integrated local chain approach (farmers, millers, bakeries, processors, consumers) for chainwide added value in organic farming systems is desired.	KnowR Invest Innov	Invest Know
SE	19. Co-design with farmers of intercropping systems for food or feed. (Orga)	Engage farmers and other stakeholders in a participatory process to reveal drivers and barriers for intercropping of grain legumes and cereals in organic farming	Participatory research will stimulate the implementation of intercropping practices through developing ground-breaking products based on cereal, lentils, fava beans, lupine, and peas.	KnowR Adv Invest Innov	
CH	20. Intercropping for species other than peas and faba beans in association with cereal.	The cultivation of grain legumes, like peas, was completely broken down some years ago, due to lodging, which resulted in a higher risk of late weed infestation. The previous low yields had reduced the organic pea-producing area to only 50 hectares in the whole of Switzerland. On the other hand, the demand for organic protein increased, due to a higher demand for organic eggs and pork. The production of home-grown grain legumes regained importance.	Growing soya or lupine in intercropping systems and on the comparison to the traditional pure seeded crops. Besides intercropping, we will also try a direct seeding or under-sowing with service plants. New intercropping systems for grain legumes should be developed and trials undertaken of different varieties and species combinations and the suitability of sowing, harvesting and sorting machinery for organic production.		

Table 5- Diversification of vegetable cropping systems

Country	Case study	Main problems/objectives underlying the emergence of the CS	Investigated solution	Main lock-in	
				Farmer level	Supply chain/market level
BE	21. Crop diversification through inter-farms co-operation (Orga)	Understand and find solutions for the social-economic and practical constraints that hinder interfarming between both dairy (animal production farmers) and vegetable farmers	On the organisational level the objective is to learn and to exchange with other case studies about the different topics to enhance crop rotation and to learn about new methodologies to work on impact changes with groups of farmers.	KnowR	
IT	22. Cereal-vegetable systems for food quality. (Orga)	Minor crops and their local/short value chains are a good opportunity, particularly to keep the added value at the farm level. Crop diversification is seen as instrumental to this objective	Introducing intercropping and strip cropping is seen as an evolution of usual practices carried out in the region, not the least by organic farmers that represent the bulk of the co-innovators involved in the case study. Such innovative cropping systems should increase soil coverage across the year and broaden the crop range, diversifying marketing channels and options. This finally enables retention of added value at the farm level.	KnowR Invest	Vol Know
NL	23. Multi-cropping for vegetable production in short supply chains. (Orga)	Farmers are looking for added values where consumers are looking for more local products. There is a need for a match between local producers and buyers, farmers and food processors.	An integrated local chain approach (farmers, millers, bakeries, processors, consumers) for chainwide added value in organic farming systems is desired.	KnowR Adv Invest Innov	
UK	24. Crop diversification in protected vegetable systems. (Orga)	There is a tendency to reduce the number of crops to manage mechanization, marketing, and other areas.	The case study seeks to find solutions for (organic) vegetable growers capable of maintaining a high diversity and possibly as a next step to increase it as stakeholders acknowledged that there are no easy solutions. The main focus for the case study will be the farmers: if they pinpoint the creation of a suitable market as the main issue, then buyers will be more proactively involved.	KnowR Invest	
FR	25. Short-chain protected vegetable system in Languedoc-Roussillon. (Mix)	The Roussillon region is focused on both local value chains and export-oriented vegetable production to Northern Europe and faces therefore economic, technical and logistic challenges.	Diversification was identified as a technical solution to consolidate production in the region, for instance, to deal with sanitary problems due to mono-cropping tendency, and as economic opportunity.	KnowR Adv Invest Innov	

4. Identifying and describing existing key policy instruments

The objective of the second step in the application of the framework is to identify and characterize current policies that are related to the targeted problems/solutions identified in Step 1, with the aims of:

- identifying and describing existing key regulatory and economic instruments that have a potential to support crop diversification strategy development in the different CSs;
- contribution and potentials of crop diversification to wider EU agro-environmental objectives based on the expected benefit from the different crop diversification strategy (and its combination):
 - **Rotation:** i) manage weeds, pests and disease limiting pesticides dependency and reduce associated impacts on environment; ii) increase soil fertility by species having good effects on soil structure and nutrient availability allowing a decrease of fertiliser use and associated costs on subsequent crops; iii) maintain or increase income at rotation level due to a lower dependence on inputs and/or when adding a crop with a high added-value; iv) diversify farmers' sources of revenues
 - **Multi cropping:** i) increase yields and revenues per year (two harvests during the same year instead of one); ii) increase soil cover and associated benefits on weeds, soil organic matter, soil structure, nutrient leaching, and erosion
 - **Intercropping:** i) to increase yields (LER¹ higher than 1) and yield stability compared to sole crops through complementary and facilitation effects for the use of resources (light, water, nutrients); ii) to allow a reduction of fertilisers and pesticides needs and associated costs and impacts on environment.

Europe's agriculture has received sustained support under the Common Agricultural Policy (CAP) over the last 50 years. This support has evolved over time, spurred by the growing recognition of agriculture's impacts on the environment (related to water, climate change, soil, air and biodiversity) promoting the integration of the environmental dimension into the CAP. Sustainable farming, which reconciles low environmental impacts, food security, and the viability of rural societies, presents a significant challenge to Europe's agriculture (EEA-SOER 2015).

In this step we consider a set of key policy instruments (i.e providing income support for farmer, support and fiscal incentives to promote investments, R&D for innovation, payment for agro-environmental measures and ecosystem services, support for promoting the establishment of Farm Advisory Services, as well as support of investment to promote the processing and marketing and/or the development of agricultural products and for the establishment and promotion of value-chain and local markets), of the actual CAP programming cycle (2014-2020), that are related to DiverIMPACTS CSs at EU level (wider context), as well as the EU legislation concerning the environment and climate. This list of instruments represent a first basis for policy analysis and will be further detailed/selected based

¹ Land Equivalent Ratio

on specific characteristics of each DiverIMPACTS Case Studies (also by considering National/Local policy instruments - local context).

Box 1 - Policy instruments

Policy instruments are those economic variables that can be manipulated by policy makers, and may include taxes, subsidies, regulations, payments for the delivery of a service or even direct provision of services and products through government. Policy instruments provide positive and negative incentives that are intended to affect behaviour of producers and consumers in such ways that the target variables are moving in the desired direction.

OECD 2008

4.1 Synthesis of key agro-environmental policies in the EU

The most relevant agro-environmental policies in the EU that link directly with DiverIMPACTS are presented in Table 6 and are derived from official published data (e.g. Directive, Regulation, Rural Development programmes, Public reports...), and mainly refers to the integration of environmental concerns into the Common Agricultural Policy.

Table 6 - Synthesis of main EU Policies relevant to DiverIMPACTS

EU Policies	Main objectives/scope	
Common Agriculture Policy (CAP)	<p>CAP is a key EU policy in a strategic sector in terms of enhance agricultural competitiveness, improve its sustainability and achieve greater effectiveness. To accomplish those challenges the architecture of CAP is organised into two pillars:</p> <p>CAP First Pillar instrument aims to reach two macro objectives:</p> <ol style="list-style-type: none"> improvement farm competitiveness by enhancing market orientation removing all existing restrictions to production through market intervention, and providing income support - trough the basic payments and coupled support provision of environmental public goods, through the "Greening payments". <p>CAP Second Pillar (Rural Development Policy 2014-2020), aims to pursue six priorities strongly focused on 1) knowledge transfer, innovation, 2) organization of agri-food chains 3) risk management 4) ecosystem protection 5) contrast to climate change and CO₂ reduction 6) social inclusion and development in rural areas. Objective 1 includes the measure of Operational Groups under EIP-AGRI.</p>	
Horizon 2020 programme	<p>Provides funding for research and innovation for 2014-2020. It supports projects in many fields, including 'Food security, sustainable agriculture and forestry, marine, maritime and inland water research and the bioeconomy' (Societal Challenge 2). Research and Innovation projects under H2020 include multi-actor projects and thematic networks, that are aimed at knowledge exchange. Both link to the Operative Groups of EIP-Agri, supported within the CAP Pillar 2, which will have a strategic role in the agricultural interest calls financed within the Horizon 2020 programme thanks to a multi-actor approach that sees the agricultural operators involved in all phases of the project (from the idea to the demonstration in field).</p>	
W A T E R	<p>Nitrate Directive (ND) - (Directive 91/676/EEC), and Groundwater Directive (GWD) (Directive 2006/118/EC)</p>	<p>The Nitrates Directive aims to protect water quality across Europe by preventing nitrates from agricultural sources polluting ground and surface waters and by promoting the use of good farming practices. GWD aims to protect groundwater against pollution and deterioration. This include procedures for assessing the chemical status of groundwater and measures to reduce levels of pollutants.</p>
	<p>Water Framework Directive (WFD)</p>	<p>The WFD aims to achieve a good qualitative and quantitative status of all</p>

	- (Directive 2000/60/EC)	water bodies in the EU. It intends to contribute to preserve, protect and improve environmental quality and the prudent and rational use of natural resources, introducing several new ecological, economic and social approaches and concepts in the EU water management (e.g. good ecological status, full cost recovery, public participation).
	Sustainable Use of Pesticide Directive (PD) - (Directive 2009/128/CE)	PD establishes a framework to achieve a sustainable use of pesticides by reducing the risks and impacts of pesticide use on human health and the environment and promoting the use of integrated pest management (IPM) and of alternative approaches or techniques such as non-chemical alternatives to pesticides.
Climate Change	Climate & Energy Package 2020	The 2020 package is a set of binding legislation to ensure the EU meets its climate and energy by implementing the 20-20-20 targets for the year 2020 (by 2020, reduce by 20% the emissions of greenhouse gases, increase by 20% the energy efficiency in the EU and to reach 20% of renewables in total energy consumption in the EU). The package is composed of the following main legislation:
	Greenhouse gas emissions	<u>Decision 406/2009/EC (Effort Sharing Decision)</u> on the effort of Member States to reduce their greenhouse gas emissions to meet the Community's greenhouse gas emission reduction up to 2020.
	Energy	<u>Directive 2009/28/EC</u> , on the promotion of the use of energy from renewable sources Energy Efficiency Directive (EED). Under the Directive, all EU countries are required to use energy more efficiently at all stages of the energy chain from its production to its final consumption. It covers all sectors except transport.
Soil	COM(2006) 231. Soil Thematic Strategy, to protect soils across the EU.	The Seventh Environment Action Programme (from 2014) recognises that soil degradation is a serious challenge, but in May 2014 the EC withdrew the proposal for a Soil Framework Directive, so that the main soil protection policies are linked with cross-compliance system, greening requirements and Rural development policy.
Air	Directive 2008/50/EC on ambient air quality and cleaner air for Europe	Reduction of emissions of ammonia (NH ₃) from livestock management and farming activities.
Biodiversity	The EU Biodiversity Strategy (BS) to 2020 (COM (2011)244), of 3 May 2011	The EU Biodiversity Strategy aims to halt the loss of biodiversity and ecosystem services in the EU and help stop global biodiversity loss by 2020. It reflects the commitments taken by the EU in 2010, within the international Convention on Biological Diversity. Natura 2000 is the key instrument to protect biodiversity in the European Union. It is an ecological network of protected areas, set up to ensure the survival of Europe's most valuable species and habitats, and it is based on Birds Directive and the Habitats Directive.
	Birds Directive 2009/147/EC	The Directive aims essentially to ensure the conservation of birds and their habitats, contributing to the maintenance of biodiversity.
	Habitats Directive (92/43/EEC)	The Habitats Directive ensures the conservation of a wide range of rare, threatened or endemic animal and plant species. Creates the Natura 2000 network.

The description of each instrument includes, whenever possible with the information available, the following aspects:

- Name of the instrument
- Rationale and objectives: description of the instrument and its objectives
- Geographical coverage (e.g. EU, national, regional, local)
- Targeted actors: who is targeted by the instrument?
- Financial issues: required funding/funding sources/revenues generated
- Links to other relevant instruments: does the instrument typically operate independently or within a policy mix?

➤ Link to DiverIMPACTS Expected Impacts (EI)

Table 7 - DiverIMPACTS expected impact (from DoA)

<i>Expected Impacts</i>	
<i>EI1:</i>	<i>"Higher arable land productivity, and land-equivalent ratio (LER) for intercropping systems"</i>
<i>EI2:</i>	<i>"Diversification and increased farmers' revenues through access to new markets and reduced economic risk"</i>
<i>EI3:</i>	<i>"Lower environmental impact of diversified cropping systems with reduced use of pesticides, chemical fertilisers, energy and water"</i>
<i>EI4:</i>	<i>"Improved delivery of ecosystem services, including biodiversity, soil fertility, pest and disease control, groundwater and surface water quality and carbon sequestration"</i>
<i>EI5:</i>	<i>"Organisation of resource-efficient downstream value chains with the involvement of relevant actors and decreased use of energy along the chains"</i>
<i>EI6:</i>	<i>"Market provision of food, feed and industrial products from harvested crops and residues/co-products to contribute to the sustainable development of the bioeconomy"</i>
<i>EI7:</i>	<i>"Increased awareness and knowledge/data exchanges among actors on the benefits of diversified cropping systems (covering different pedo-climatic conditions, using different crops) and on downstream value chain organisation across Europe"</i>
<i>EI8:</i>	<i>"Increase crop diversification and biodiversity in Europe, which is an objective of the common agricultural policy"</i>

4.2 Common Agricultural Policies (CAP)

Rationale and objectives

CAP is in place since 1957 (Treaty of Rome), and over time has undergone different reforms in order to address the challenges that have faced the sector. These reforms have increased market orientation for agriculture while providing income support and safety net mechanisms for producers, improved the integration of environmental requirements and reinforced support for rural development across the EU. The new policy continues along this reform path, moving from product to producer support and now to a more land-based approach. These have been identified as:

- **Economic:** food security and globalisation, a declining rate of productivity growth, price volatility, pressures on production costs due to high input prices and the deteriorating position of farmers in the food supply chain.
- **Environmental:** resource efficiency, soil and water quality, climate action and threats to habitats and biodiversity.
- **Territorial:** where rural areas are faced with demographic, economic and social developments including depopulation and relocation of businesses.

Since the role of the CAP is to provide a policy framework that supports and encourages producers to address these challenges while remaining coherent with other EU policies, this translates into three long-term CAP objectives: viable food production, sustainable management of natural resources and climate action and balanced territorial development.

To achieve these long-term goals, the existing CAP instruments had to be adapted. The reform therefore focused on the operational objectives of delivering more effective policy instruments, designed to improve the competitiveness of the agricultural sector and its sustainability/effectiveness over the long term. (Figure 4)

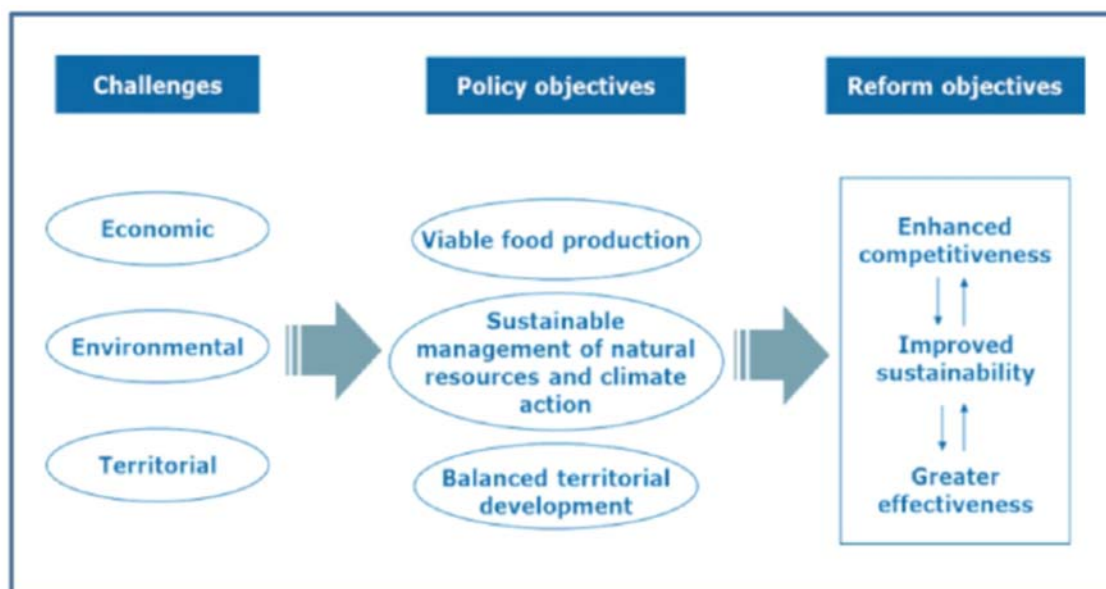


Figure 4 - The objectives of the new CAP 2014-2020

Source: Agricultural Policy Perspectives Brief, No 5, European Commission, December 2013.

To accomplish those objectives the architecture of CAP is organised into two pillars, four regulations (with one - horizontal - dedicated to the financing, management, monitoring, and the cross-compliance rules of the CAP).

For the period 2014-2020, PAC funding is covered by two funds:

- > EAGF - European Agricultural Guarantee Fund for the First Pillar, finances direct payments to farmers and agricultural market support measures
- > EAFRD - European Agricultural Fund for Rural Development, co-finances national rural development programmes (RDPs).

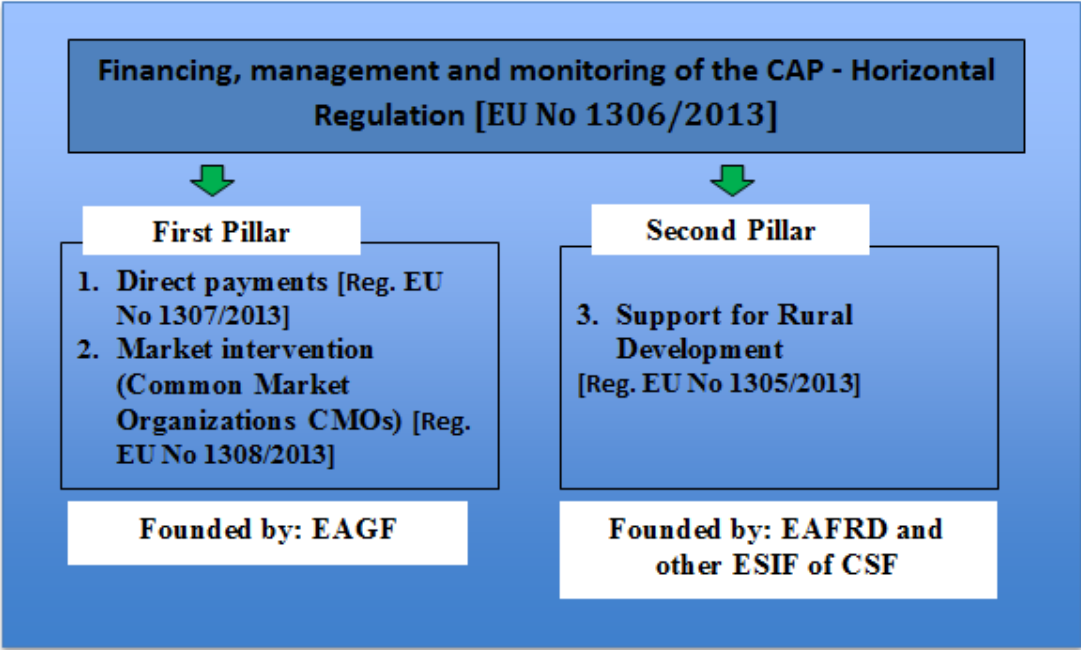


Figure 5 - The CAP 2014-2020 architecture

4.2.1 Cross-cutting (covering both CAP pillars)

Cross-compliance (see Annex I for details) is a mechanism that links elements of both pillars of the CAP to farmers' compliance with various basic standards, as well as to their application of fundamental good practice. Its mission is essentially to help agriculture to develop sustainably and link the CAP better to other EU policies, including in the area of the environment and climate. The system includes two types of requirement:

- > Statutory Management Requirements (SMRs): These requirements refer to 13 legislative standards in the field of the environment, food safety, animal and plant health and animal welfare.
- > Good Agricultural and Environmental Condition (GAEC): The obligation of keeping land in good agricultural and environmental condition refers to a range of standards related to soil protection, maintenance of soil organic matter and structure, avoiding the deterioration of habitats, and water management.

Through the provisions of cross-compliance, when farmers who receive Pillar I direct payments (with the exception of payments under the Small Farmer Scheme) or Pillar II area-based payments do not respect the standards concerned, their payments under these schemes can be reduced. Cross-

compliance thus helps to provide a foundational level of action with regard to the environment and climate (as well as other concerns of EU citizens).

Another set of cross-cutting provisions concerns the Farm Advisory System (FAS). All MS are required to set up/designate a FAS (this can be done with the support of a rural development measure - see section 3.2.2.5). In general terms, the FAS should help CAP beneficiaries become more aware of the relationship between farm practice and management, and various standards. Among the topics on which the FAS must offer advice to farmers, the following are directly linked to the environment and climate:

- the rules of cross-compliance (see above);
- the requirements of green direct payments (see next section);
- the basic requirements of maintaining agricultural area with regard to eligibility for direct payments;
- the Water Framework Directive; and
- the Sustainable Use of Pesticides Directive.

4.2.2 First pillar: direct payments & market measures

DIRECT PAYMENTS to farmers aims to:

- provide basic income support through the basic payments and coupled support
- provision of environmental public goods, through the “Greening payments” (practices beneficial for the climate and the environment)

MARKET MEASURES are the rules that regulate agricultural markets in the EU, the EU support to specific sectors, the promotion of EU agricultural products (through marketing standards, geographical indications, labels, etc.), the market instruments (private storage, intervention), the support to a more balanced food supply chain. International trade measures such as licences and tariffs, as well as competition rules, also come under this banner.

The changing of the direct payment scheme (together with the introduction of the greening component) is one of the most important element of the CAP reform. In fact, the single payment scheme has been split into 7 typologies (by giving to the Member States a large flexibility in its definition, except for the greening with a fixed 30% of the national ceiling):

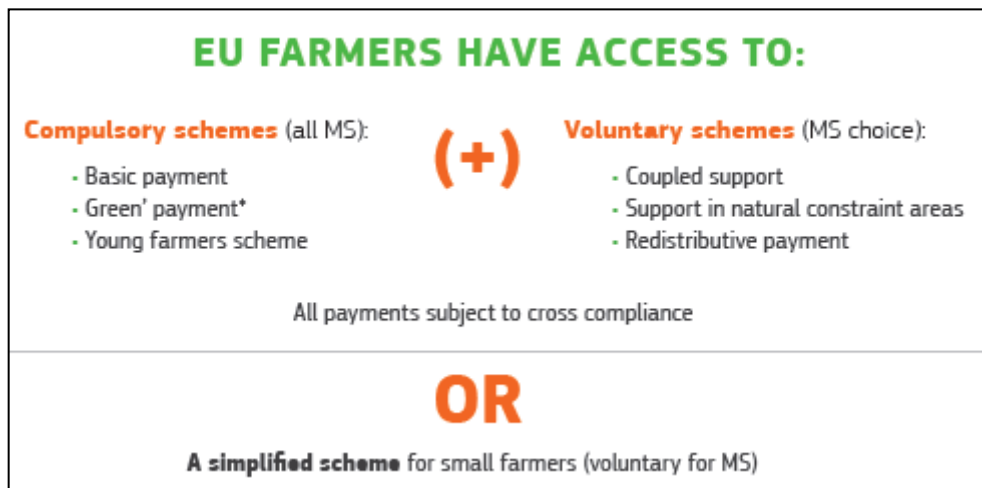


Figure 6 - Typologies of direct payments

Source: CAP EXPLAINED DIRECT PAYMENTS FOR FARMERS 2015-2020

In the context of DiverIMPACTS project the Greening payment and Voluntary Coupled Support could represent key regulatory and economic instruments for (potential) implementing the different crop diversification strategies in the Case Studies. Figure 7 depict the distribution of funds (in % of the national ceiling) amongst the direct payment schemes (except the small farmers scheme).

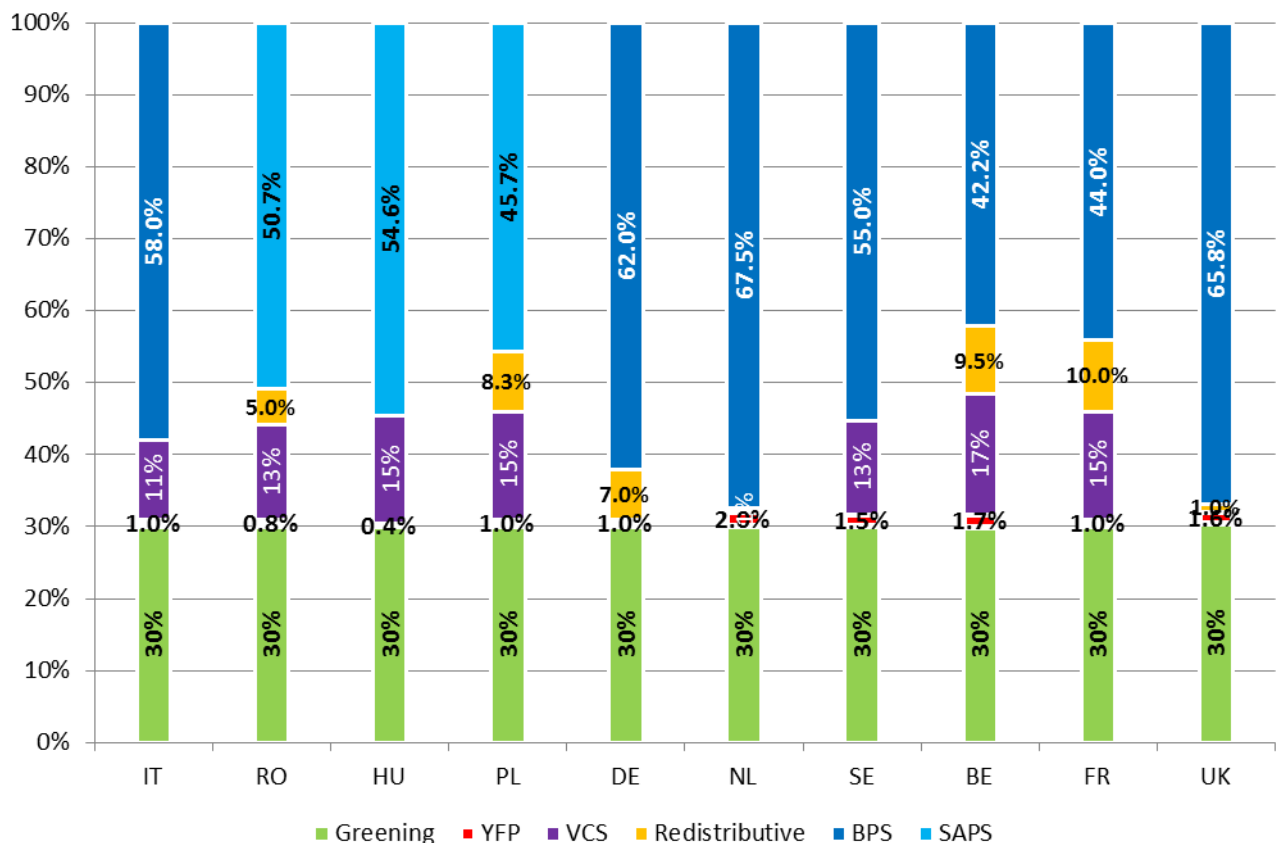


Figure 7 - Overview of percentages of national ceilings allocated by scheme (2016)

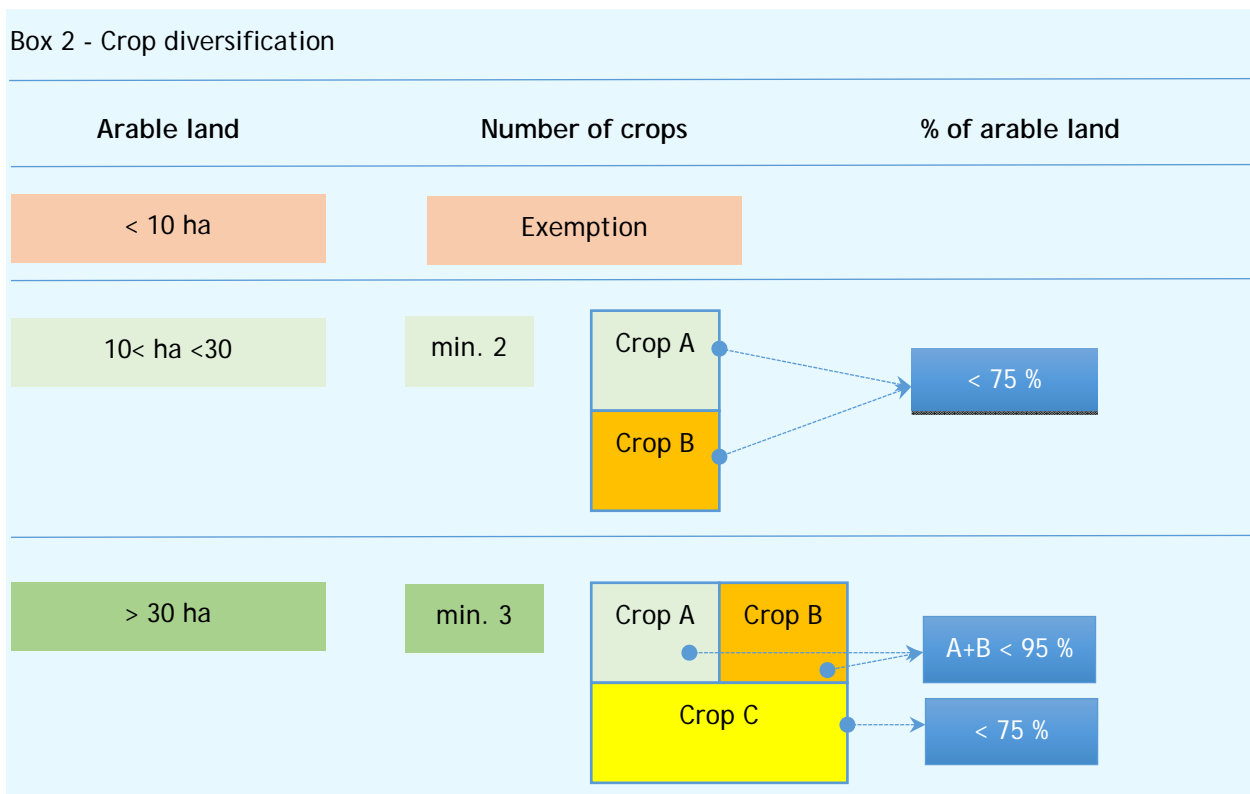
YFP=Young Farmer Scheme; VCS=Voluntary Coupled Support; BPS= Basic Payment Scheme; SAPS= Single Area Payment Scheme. Source: Cap explained direct payments for farmers 2015-2020

4.2.2.1 Greening payment structure

Greening payment are subject to the following obligations by the farmer:

1. crop diversification only applies to arable crops, while permanent crops (orchards, olive groves, vineyards, pastures) are exempted
2. maintaining existing permanent grassland
3. dedicating 5% of arable land to Ecological Focus Area (EFA), where the arable land of a holding covers more than 15 hectares, with a view to safeguarding and improving biodiversity on farms

The three agricultural practices must be respected jointly. These three practices have been set by the community regulation and are the same for all farmers in the European Union, without the possibility for the Member States to change their constrain.



Exclusion from the obligation to diversification are applied to:

- > farmer with crops cultivated under water for a significant part of the year or for a significant part of the crop cycle (rice)
- > farmer with more than 75% of their surface arable land is used to produce grasses or other herbaceous forage
- > farmer under the simplified scheme

The purpose of the requirement for EFAs on arable land is to safeguard and improve biodiversity on farms. Art. 93 of REG. (EU) No 1307/2013 establishes a list of features and areas that consist of:

- > areas directly impacting biodiversity, such as land lying fallow, terraces, landscape features, buffer strips, strips along forest edges, afforested areas and agro-forestry areas; or

- areas indirectly impacting biodiversity through a reduced use of inputs on the farm, such as areas covered with short rotation coppice (SRC), catch crops and winter green cover, and nitrogen-fixing crops (NFCs)

Member States by 1 August 2014, were to decide which of these features or areas could be considered as EFAs.

Table 8 shows the various options offered to farmers for the purposes of meeting the EFA obligation by the Country involved in DiverIMPACTS.

Table 8 - Member States' choices on EFA qualifying types (2015)

Countries	Land lying fallow	Terraces	Landscape features	Buffer strips	Ha of agro-forestry	Strips eligible ha along forest edges -NO PROD.	Strips eligible ha along forest edges - WHITH PROD.	Areas with SRC	afforested areas	Areas with catch crops or green cover	Areas with NFCs
IT	X	X	8-(9)	X	X	X	X	X	X	-	X
RO	-	X	7	X	-	-	-	X	X	X	X
HU	X	X	7-(8)	X	X	X	X	X	X	X	X
PL	X	-	7	X	-	X	X	X	X	X	X
DE	X	X	7-(8)	X	X	X	-	X	X	X	X
NL	-	-	1	-	-	-	-	X	-	X	X
SE	X	-	1	-	X	-	-	X	-	X	X
BE-FL	X	-	5	X	X	X	X	X	X	X	X
BE-WA	X	-	7	X	X	X	-	X	-	X	X
FR	X	-	8	X	X	X	X	X	X	X	X
UK-EN	X	-	1	X	-	-	-	-	-	X	X

Source: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52017SC0121&rid=1>

As highlighted (red border) in the table all countries (except Italy) allow farmers to use both catch crops or green cover and NFCs (which are most relevant for DiverIMPACTS CSs implementation) as EFAs.

A weighting factors (WF), reflecting the features' varying degrees of importance for biodiversity, must be used to calculate the value of the ecological focus areas. The WF for areas with catch crops or green cover, and areas with NFCs are 0.3 and 0.7 respectively.

To accommodate the diversity of agricultural systems and environmental conditions across Europe, the concept of 'equivalence' was introduced. Member states may allow farmers to meet one or more greening requirements through equivalent (alternative) practices. This means that some practices can replace one or several of the three established greening measures. These practices include agri-

environment-climate measures (AECM)² or certification schemes (i.e. organic farming) that are similar to greening and which yield an equivalent or higher level of benefit for the climate and the environment.

4.2.2.2 Voluntary Coupled Support

That support can only be granted to a list of sectors and productions, to the extent necessary to create an incentive to maintain current levels of production in sectors or regions where specific types of farming or specific agricultural sectors particularly important for economic, social or environmental reasons undergo certain difficulties.

Voluntary Coupled Support for durum wheat, flax and hemp can represent an additional aid of farmer income, as well as the introduction in the cropping system of some nitrogen-fixing crops provides an additional incentive as farmers can obtain voluntary coupled payments and fulfil the EFA and crop diversification requirements for the greening payment on the same crop area.

Table 9 shows the main sector programmed in the DiverIMPACTS Member States, under the Voluntary Coupled Support scheme.

² In formal terms, AECMs stand in a slightly different relationship to green direct payments than they do to cross-compliance, but in any case, the key EU rule of "no double funding" applies in each case: an AECM in a given area may not fund practices which are included in cross-compliance or remunerated by green direct payments.

Table 9 - Targeted sector programmed by DiverIMPACTS Member States under the VCS scheme.

Countries	Targeted sector				
	Protein crops	Grain legumes	Cereals	Flax	Hemp
IT	Support for protein crops, grain legume, fodder legumes (Centre); grain legume, fodder legumes (South)		Support for durum wheat (Centre/South)		
RO	Support for soybean and alfalfa	Support for grain legumes for industrialization (peas and beans)			
HU	Support for protein fodder, soybean and protein crops (grain)				
PL	Support for legume crops grain, and high protein crops			Support to Flax	
FR	Support for fodder legumes, soybean, protein crops, forage legume seeds		Support for durum wheat		Support to Hemp
DE	Not apply VCS				
UK-EN					
SE	Targeted sector refers to Beef and veal				
BE-FL	Targeted sector refers to Beef and veal				
BE-WA	Targeted sector refers to Beef and veal, Milk, and Sheepmeat and goatmeat				
NL	Targeted sector refers to Beef and veal, and Sheepmeat and goatmeat				

4.2.3 Second pillar: rural development

Rural development funds invest in local projects to support the socio-economic fabric of rural areas. Rural development funds can for example support the setting up of an artisan's business, invest in sustainable irrigation systems, organise trainings for farmers, help develop agri-tourism, etc. Rural development also plays a central role for climate-related actions by supporting farm modernisation to cut energy consumption, produce renewable energy, improve input efficiency and reduce emissions.

Rural Development Policy is part of the overall programming of EU territorial/cohesion policies, defined by the Common Strategic Framework (CSF). All European Structural and Investment Funds³ (ESI Fund) should contribute to the Europe 2020 strategy for smart (*developing an economy based on knowledge and innovation*), sustainable (*promoting a more resource efficient, greener and more competitive economy*) and inclusive (*fostering a high employment economy which delivers on social and territorial cohesion*) growth, in synergies between them.

To target the ESI Funds' investment towards the Europe 2020 strategy, 11 Thematic Objectives (TO) are defined into the CSF. Rural development contributes to the achievement of the TO with six priorities. Consistently with the CSF, each Member State has presented its own document to the European Union: the so-called *Partnership Agreement*⁴, represent the national framework that all RDPs must respect to ensure the consistency, coordination and integration with the actions of all ESI Funds. Figure 8 shows the Rural Development Strategic Planning, Figure 9 its integration with other programme, while Figure 10 analyses the interactions between EU 2020 target objectives, the TO of CSF and the priorities of Rural development.

³ Regulation (EU) No 1303/2013

- ERDF - European Regional Development Fund
- ESF - European Social Fund
- CF - Cohesion Fund
- EAFRD - European Agricultural Fund for Rural Development
- EMFF - European Maritime and Fisheries

⁴ The partnership brings together different institutional representatives (European Commission, Member State, authorities or designated institutions by the Member State, regional or local authorities) and social (Economic or Social Partners, Civil Society Organizations, NGOs). The Member States are responsible for partner involvement. The partnership is involved in the elaboration and in the analysis of the Progress Report, in the monitoring and evaluation activities.

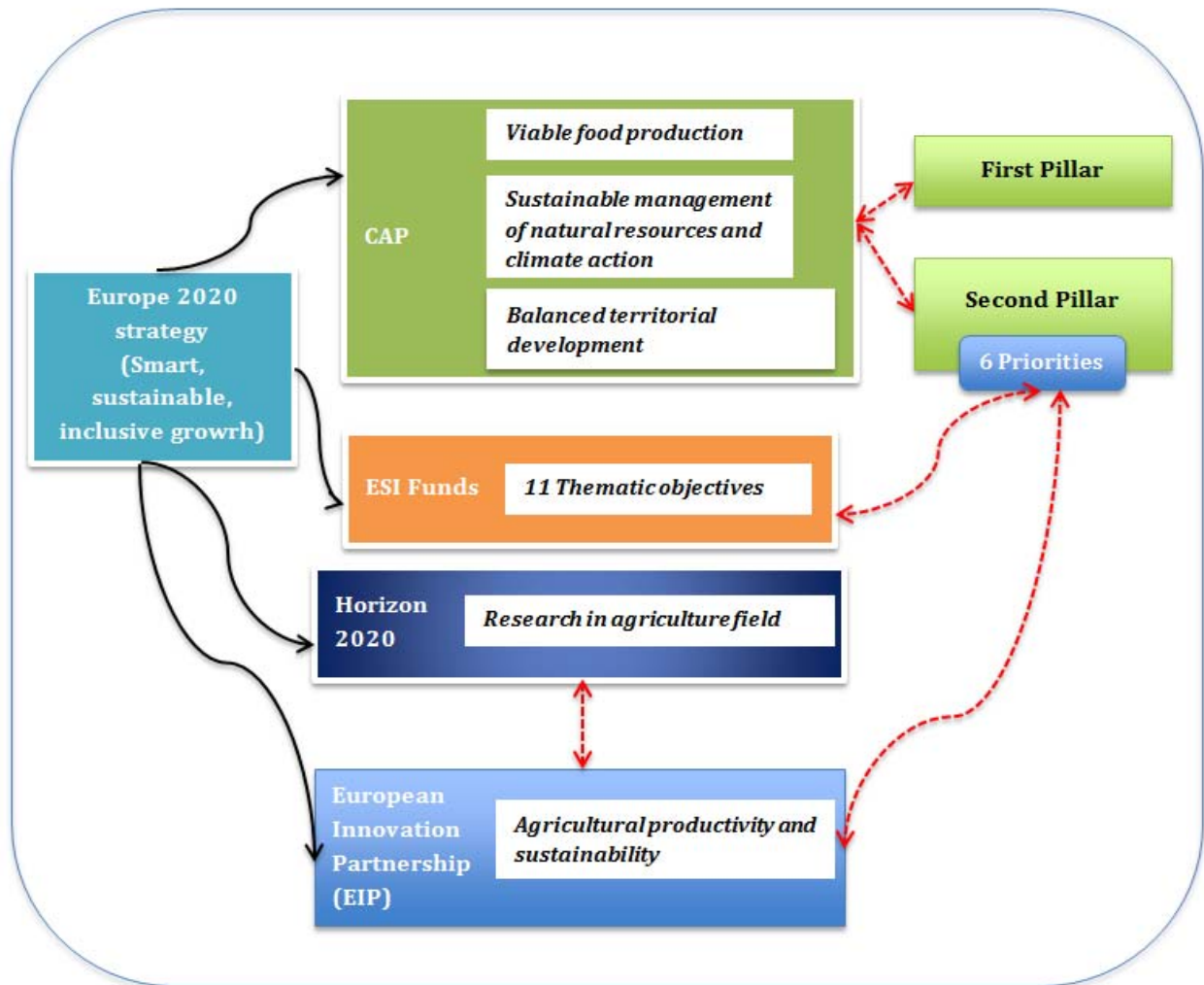


Figure 8 - Rural development Strategic Planning

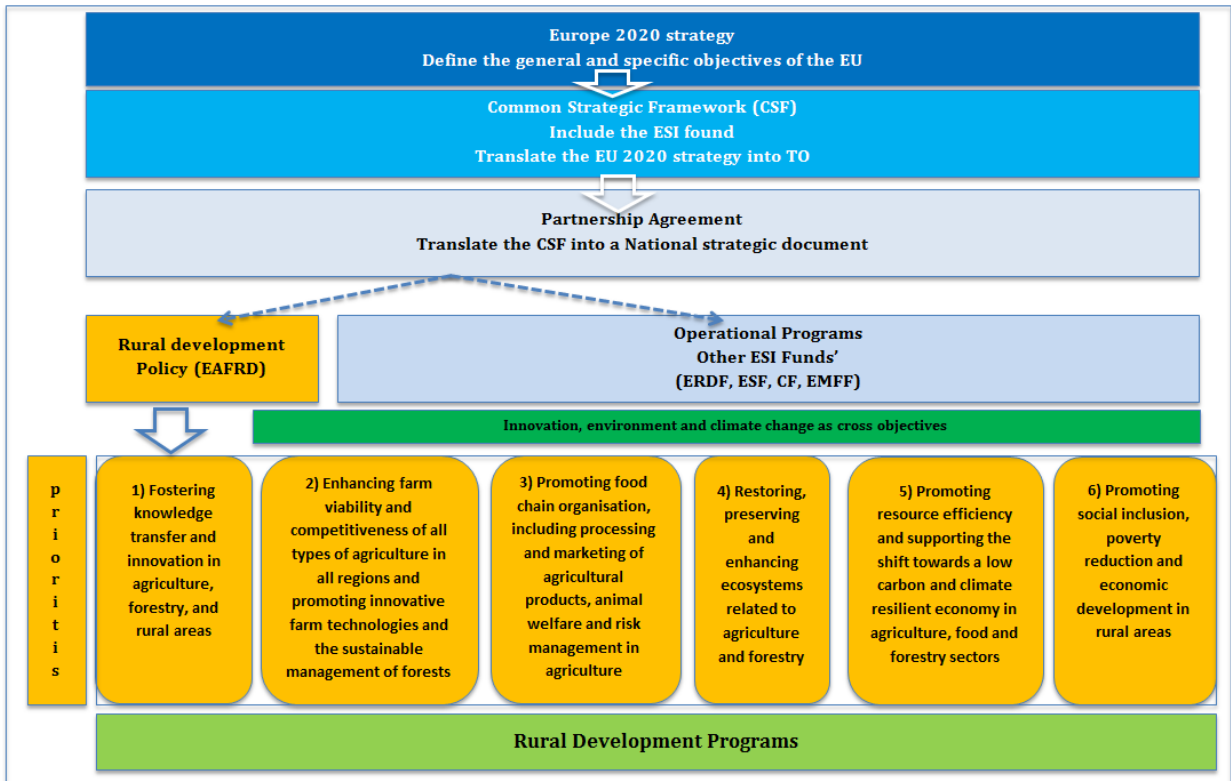


Figure 9 - Rural development policy and integration with other policies

Source: European Commission

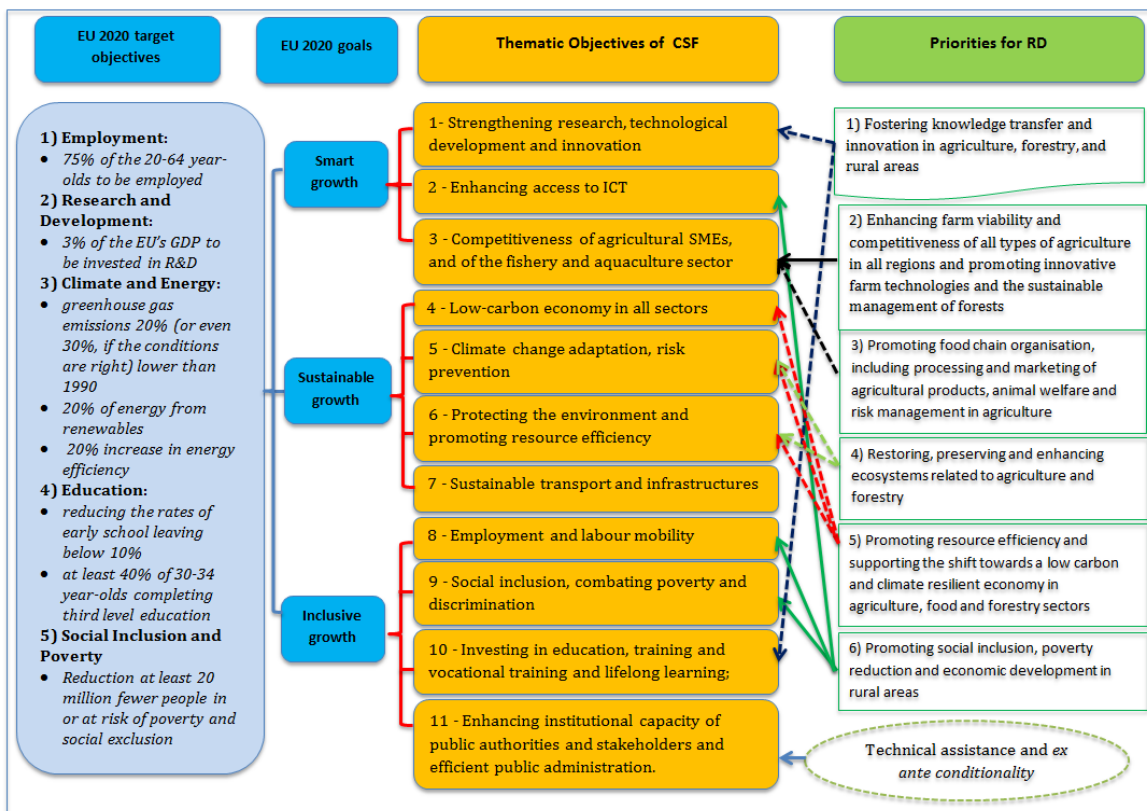


Figure 10 - EU 2020 objective and goals, Thematic Objectives of CSF and RDPs priorities

Source: EU Commission

The six priorities of rural development are articulated in 18 aspects, or "Focus area" (Fa - see annex II for details). The Focus areas represent one of the main new features of the new 2014-2020 rural development programming cycle. They arise from the observation that the intervention measures envisaged by the RDPs normally contribute to more than one strategic objective.

Figure 11 depicts the number of Rural Development Programmes per Country/Region linked with DiverIMPACTS Case Study. Member States with regional programmes (like Italy, France, German..) may submit for approval a national framework containing common elements for the regional Rural Development Programmes (RDPs). The National Framework (NF) outlines a group of measures that will be programmed in all the regional programmes as they represent national priorities as reflected in the Partnership Agreement.

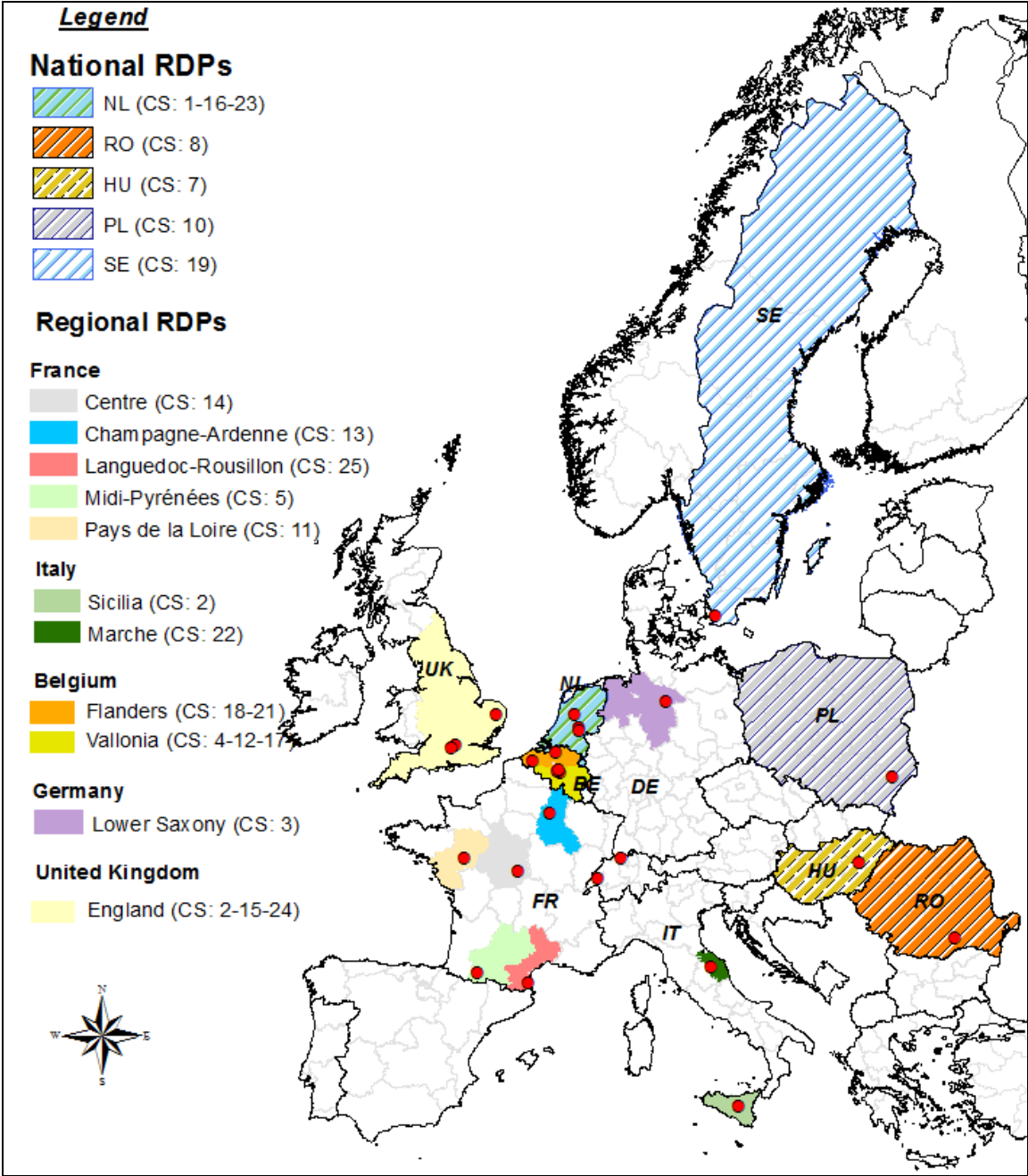


Figure 11 - Case Studies (red circle) link with National & Regional RDPs
 Source: Map based on DiverIMPACTS Case studies Map (<https://www.diverimpacts.net/case-studies.html>)

Each Member State shall establish a National Rural Network (NRN), which groups the organisations and administrations involved in rural development, aims to:

- increase the involvement of stakeholders in the implementation of rural development;
- improve the quality of implementation of rural development programmes;
- inform the broader public and potential beneficiaries on rural development policy and funding opportunities;
- foster innovation in agriculture, food production, forestry and rural areas
- works in connection and coordination with the European Network for Rural Development (ENRD), which has the function of linking national networks, organizations and administrations working in the field of rural development.

Overview of Rural Development measures

The regulation EU No 1305/2013 establish a set of measures⁵ and sub-measures to be programmed in the RDPs. Country/Regions have built their own RDPs according to the characteristics of agriculture and rural areas of their own territories, by activating the measures that better fit with the needs of their own rural area.

At least four priorities of RD shall be addressed by each programme. When a Member State submits a national programme and a set of regional programmes, the national programme may address fewer than four priorities. Furthermore at least 30% of the budget of each Rural Development programme must be reserved for voluntary measures that are beneficial for the environment and climate change. These include agri-environmental-climate measures, organic farming, Areas of Natural Constraints (ANC), Natura 2000 areas, forestry measures and investments which are beneficial for the environment or climate. All these measures contribute significantly to environmental enhancement and climate change because they are adapted to local needs.

A summary of the measures/sub measures - with particular relevance to DiverIMPACTS - defined in the RDPs regulation is presented in the table below, in which is indicated the reference article number, the title of the measure, its beneficiaries and a summary of the modalities of intervention in terms of maximum amount or rate, while in the last column an attempt to link the measure with implementation of DiverIMPACTS CSs, along two main direction:

- measure that have a potential to contribute to overcome some lock-in, mainly at farm/supply chain market level, as emerged in the Deliverable 5.1: *Ordered list of lock-ins for CSs*⁶
- measure that enable a pathway shift to a sustainable, resource efficient crop production system.

The summary refers to the general rules setting-out in the RDPs regulation, a more detailed analysis is necessary to understand how those measures are (and if) programmed in the specific National/Regional RDPs (in terms of eligibility criteria and selection process, budget allocation, support rate, etc.), in order to analyse its real contribution to CSs implementations.

⁵ " Measure" means a set of operations contributing to one or more of the Union priorities for rural development. In the National/Regional RDP Measure are often detailed in sub-measure and type of operation according to the characteristics of their agriculture.

⁶ Available in the DiverIMPACTS collaborative workspace

Table 10 - Measures of RDPs that have a potential to contribute for DiverIMPACTS Case Studies implementation

Art.	Measure	Sub measure	Beneficiaries	Maximum amount (€) or rate	Potential Link to DiverIMPACTS
14	M1) Knowledge transfer and information actions	M1.1 - Support for vocational training and skills acquisition	Provider(s) of formal training and actions (which are not part of regular education programmes or curricula)	The EU Rural Development Regulation does not set specific limits to funding allocations under M1.	The measure aims of promoting new forms of knowledge and support the interaction and cooperation between holding.
		M1.2- Demonstration activities and information actions	Provider(s) of demonstration activities and information actions		
		M1.3. - Support for short-term farm and forest management exchanges as well as farm and forest visits	Provider(s) of exchanges and visits		
15	M2) Advisory services, farm management and farm relief services	M2.1 - Support to help benefit from the use of advisory services	Providers of advice	For each Advice (voucher) € 1,500	This measure is oriented to providing tailored advice on specific issues that are directly requested by the recipients of the advice
		M2.2 - Support for the setting up of farm management, farm relief and farm advisory services	The authority or body selected to set up farm management, farm relief farm advisory or forest advisory services	Up to 200,000 € for 3 years for consultant training	
		M.2.3- Support for training of advisors	Entities providing the advisor training		
17	M4) Investments in physical assets	M4.1 - Support to improve the overall performance and sustainability of an agricultural holding	Farmers or groups of farmers	40% of eligible costs (50% in less developed regions). In some cases (young farmer, organic agriculture commitment) an additional 20% can be applied.	A large spectrum of investments can be founded under this measure depending on the choose of MS/regions: some example is: acquisition, construction and/or improvement of buildings at the

		M4.2 - Support for the processing, marketing and/or development of agricultural products	<ul style="list-style-type: none"> • Farmers or groups of farmers • Agri-food businesses 	40% of eligible costs (50% in less developed regions). An additional 20% in case of project realized by enterprises participating to the European Innovation Partnership (EIP) Operational Groups (GOs)	service of production, breeding, processing and marketing of products; purchase of new agricultural machinery and equipment, of new plants, machinery and equipment for the conservation, processing, transformation and marketing of products; creation of structures and equipment for company logistics; investments aimed at creating new products/processes and introducing new technologies, quality systems, traceability and environmental management etc.
27	M9) Setting - up of producer groups and organisations	M9.1) Setting-up of producer groups and organisations	Producer groups and organisations which are officially recognised by a Member State's competent authority based on a business plan. It shall be limited to producer groups and organisations that are SMEs.	10% as a percentage of marketed production during the first five years following recognition. The support shall be degressive. 100.000 € maximum amount per year in all cases.	The measure is intended to encourage the establishment of associations and producers' organizations in the agricultural and forestry sectors with the aim of organizing the offer of products coming from its own members to improve marketing and increase market competitiveness.
28	M10) Agri-environment-climate (AEC)	<p>M10.1 - Payment for agri-environment-climate commitments (compensation for costs incurred and income foregone)</p> <p>M10.2 - Support for sustainable conservation, use and development of genetic resources in agriculture</p>	Farmers or groups of farmers	<p>600 €/ha per year for annual crops</p> <p>900 €/ha per year for specialised perennial crops</p> <p>450 €/ha for other land uses</p> <p>200 €/ha Per livestock unit (LU) per year for local breeds in danger of being lost to farmers</p>	Aim of the measure is to encourage farmers and other land managers to introduce methods of agricultural production compatible with the protection and improvement the environment, the landscape and its characteristics, natural resources, soil, water and biodiversity.

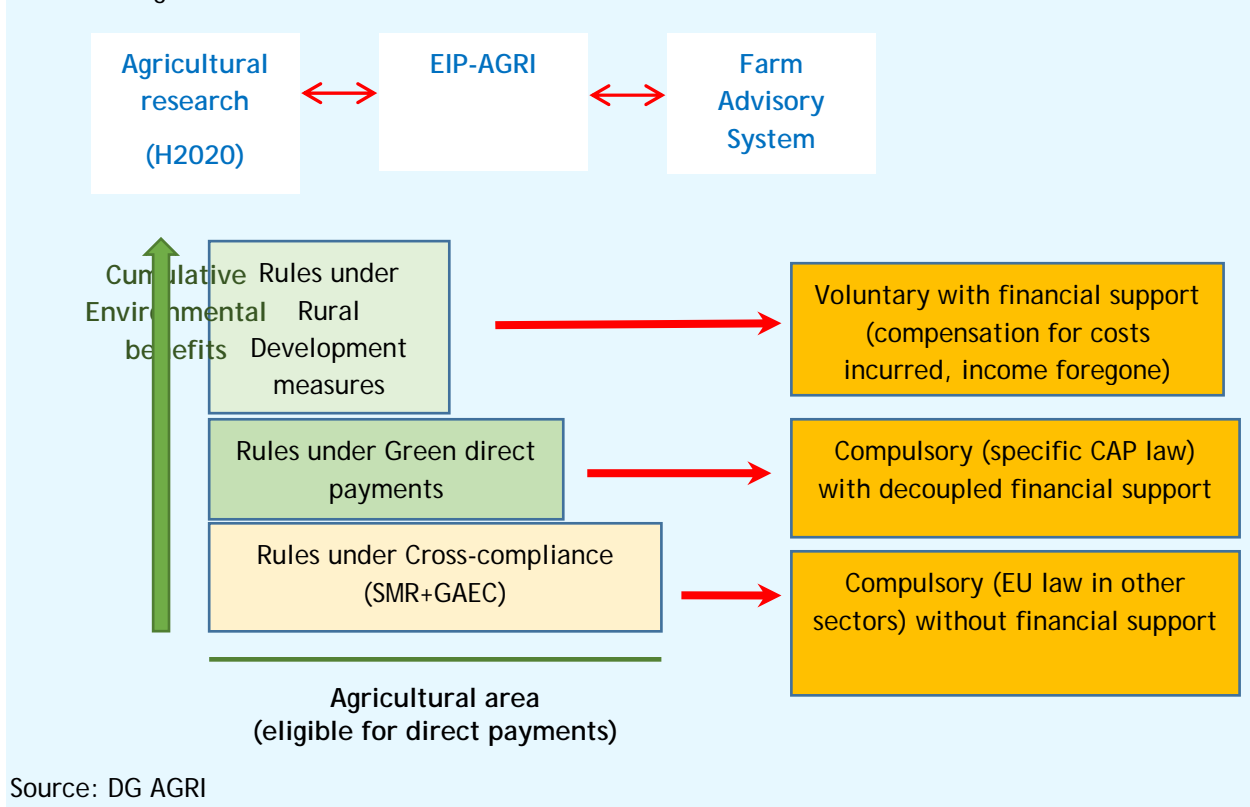
29	M11) Organic farming	M11.1 - Conversion of conventional farming to organic farming	Farmers or groups of farmers	600 €/ha per year for annual crops	Organic farming is expected to establish and maintain a sustainable management system for agriculture. The farming practices it promotes contribute to improving soil and water quality, to mitigation and adaptation to climate change and to improved biodiversity (e.g. by avoiding use of synthetic plant protection products and synthetic fertilisers and encouraging crop rotation, use of organic fertilisers and improvement to soil organic matter).
		M11.2 - Maintenance of certified organic farming		900 €/ha per year for specialised perennial crops 450 €/ha for other land uses	
30	M12) Natura 2000 & Water Framework Directive payments	12.1 - compensation payment for Natura 2000 agricultural areas	Farmers	500 €/ha per year maximum in the initial period not exceeding five years.	The sub-measure provides compensation payments to farmers for the additional costs and income foregone when implementing the Birds, Habitats & Water Framework Directive. The measure is designed to compensate farmers and foresters for the disadvantages they face as a result of mandatory activities they carry out as a result of the legal requirements set out under this directive, compared to the situation of farmers in other areas not affected by these
		M12.3 - Compensation payment for agricultural areas included in river basin management plans		50 €/ha per year minimum for Water Framework Directive payments.	

35	M16) Cooperation	M16.1 - Support for the establishment and operation of Operational Groups (OGs) of the EIP for agricultural productivity and sustainability	Operational Groups are expected to consist of partnerships involving a wide variety of stakeholders but most importantly, " <i>interested actors such as farmers, researchers, advisors and businesses involved in the agriculture and food sector.</i> " OGs are meant to be bottom-up instruments providing the space for testing innovative ideas and finding solutions for specific issues	The EU Rural Development Regulation does not set specific limits to funding allocations under M16.	Provides support for: <ul style="list-style-type: none"> • planning and realising projects implemented by the OGs, • disseminating the experience and the knowledge gathered as well as the results achieved by the projects supported.
		M16.2 - Support for pilot projects and for the development of new products, practices, processes and technologies	OGs established under M16.1		Provides support for pilot projects and the development of new products, practices, processes and technologies in the agriculture, food and forestry sectors
		M16.4 - Support for horizontal and vertical cooperation among supply chain actors for the establishment and development of short supply chains and local markets and for promotion activities in a local context relating to the development of short supply chains and local markets.	At least two entities, one being an entity linked to the agriculture, food or forestry sectors		RDPs identify two main objectives for sub-Measure 16.4: <ul style="list-style-type: none"> - creation, reorganisation and strengthening of local markets and short supply chains (SSC) through horizontal and vertical Cooperation; - promoting SSC, local markets and, in general, more local products. As a result, SSC and local markets can bring greater economic returns to the producer and enable diversification of local production.

		16.6 - support for cooperation among supply chain actors for sustainable provision of biomass for use in food and energy production and industrial processes	The actors involved are biomass producers, distributors and final users.		Cooperation takes place by the creation of a cooperation group that is expected to develop and implement joint projects for: <ul style="list-style-type: none"> - support to production of sustainable biomass, - use of biomass in the food and energy sector, - creation of clusters and networks in the biomass field, - development and innovation of products, services and technologies.
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The combined and complementary effects of various instruments of the I and II pillar define the green architecture of the current CAP. This whole set of complementary policy instruments is accompanied by related training measures and other support from the Farm Advisory System, insights gained from the European Innovation Partnership and H2020 research (as DiverIMPACTS), which should help farmers to implement appropriate solutions for their specific situations (Box 2).

Box 3 - The green architecture of the current CAP



Source: DG AGRI

Geographical coverage: CAP apply at different spatial extent from National to local area

Current status and time horizon: in place from 2014 to 2020

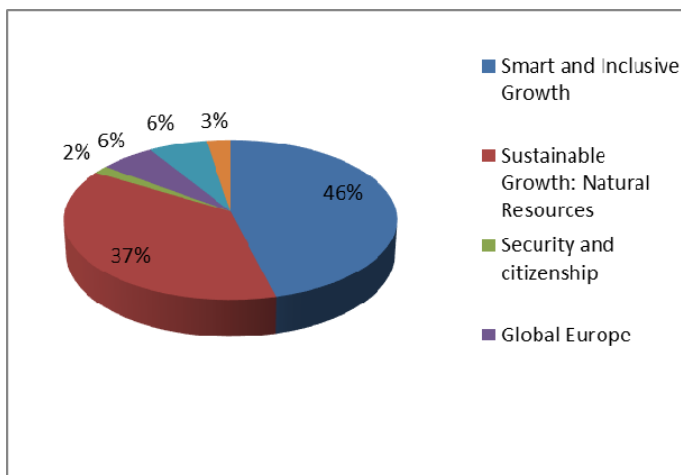
Targeted actors: As regarding for the First Pillar of the CAP the beneficiaries are:

- For direct payments the so called "active farmer".
- For intervening on agricultural markets both Public authorities (bought/store/disposal of products and export refunds) and private operators (storage of products). For sector-specific support (e.g. for fruits and vegetables, wine, olive oil sectors) active farmer, producer organisations and their associations, interbranch organisations.

The Second Pillar of the CAP - the RDPs - address the economic, environmental and social development of the EU rural areas, encompassing a broad range of activities than Agriculture, such as Tourism; Handicraft; Instruction; IT infrastructure (e.g. broadband infrastructure creation, improvement and expansion); Employment; business (non-agricultural activities) in rural areas development; investments in the setting up, improvement or expansion of local basic services for the rural population, including leisure and culture, and the related infrastructure; studies and investments associated with the maintenance, restoration and upgrading of the cultural and natural heritage of villages, rural landscapes and high nature value sites, including related socio-economic aspects, as well

as environmental awareness actions; promoting social inclusion, poverty reduction, etc., so that all the society living in rural area is interested in the Program application.

Financial issues: The funding source for the CAP is represented by the Multiannual Financial Framework - MFF [Regulation (EU) No 1311/2013] for the years 2014-2020. The MFF lays down the maximum annual amounts ('ceilings') which the EU may spend in 5 policy fields ('headings'). It provides a framework for financial programming and budgetary discipline by ensuring that EU spending is predictable and stays within the agreed limits. It also allows the EU to carry out common policies over a period that is long enough to make them effective.



Graph on the left shows the commitment appropriations for the policy fields for the programming period 2014-2020.

The CAP budget is allocated inside the 'headings' *Sustainable Growth: Natural Resources* and represent a total amount of ~403 billion of €, of which ~308 billion of € is for Direct Payments and market-related expenditure (Pillar 1) and ~95 (not considering the national co-funding) billions of € for Rural Development (Pillar 2).

Figure 12 - MFF 2014-2020

http://ec.europa.eu/budget/mff/figures/index_en.cfm

Links to other relevant instruments: CAP is linked with relevant EU legislation and initiatives in several environmental field:

A) Water

The most relevant cross-compliance standards with regard to water are SMR 1 on the Nitrates Directive, and GAEC 1-3, which concern: buffer strips alongside watercourses; compliance with irrigation authorisation procedures; and the protection of groundwater against pollution.

The FAS must offer advice not only on these cross-compliance rules but also on the Water Framework Directive (WFD) and the Sustainable Use of Pesticides Directive.

Green direct payments have an influence on water quality and sustainable water use through all three of the key requirements - by improving the structure of soil and its ability to retain water, and in some cases by cutting the risk of fertiliser and pesticide runoff (through buffer strips, field margins and restrictions on use on EFA in general).

Rural development policy has two main water-related focus areas: improving water management (especially with regard to water quality); and increasing efficiency in water use by agriculture. The measure Investments in physical assets can fund investments to promote more efficient water use by agriculture, for example:

- Investments on infrastructure related to the development and adaptation of irrigation scheme (such as the replacement of old and damaged irrigation channels, replace open channel with pressurised pipeline, water flow meter installation)

- Investment in more efficient irrigation systems, such as drip irrigation equipment versus sprinkler irrigation can help in reducing the volume of water abstracted for irrigation.

Water Framework Directive payments help farmers to address significant disadvantages arising from implementation of the Directive, while various CAP-supported EIP operational groups are addressing sustainable water management.

Agri-environment-climate payments to reduce Nitrogen use and organic farming are also relevant measures.

B) Climate change

The most relevant cross-compliance standards with regard to climate change are SMR 1 on the Nitrates Directive, GAECs 1-3 on water protection, and GAECs 4-6 on soil protection.

The FAS provide farmers to access advice on various topics relevant to climate change.

Within green direct payments, the requirement to maintain permanent grassland is highly important with regard to providing carbon sinks. Diversification of crop within the green direct payments also has positive implications for carbon sequestration, as do many of the options for implementing ecological focus area (e.g. use of catch crops/green cover and maintenance of landscape features).

Rural development policy define specific "focus areas" (sub-priorities) on cutting GHG and ammonia emissions from farming, and on fostering carbon conservation and sequestration in agriculture and forestry. The key investment measures for farming and forestry (*Investment in physical assets* and *Investments in forest area development*) can support investments in (among other): renewable energy production from farm or forest waste; more efficient use of energy or water; manure storage; precision farming (to reduce fertiliser use); low-tillage farming methods (to protect soil carbon); and the establishment and improvement of forest area and agro-forestry systems. A wide range of potential AECM operations involve climate-friendly soil management. A number of EIPAGRI projects (in some cases funded through the *Co-operation* measure) cover climate change mitigation or adaptation.

C) Soil

The cross-compliance standards with the most direct link to soil are GAEC standards 4 (minimum soil cover), 5 (minimum land management to limit erosion) and 6 (maintenance of soil organic matter). SMR 1 (on the Nitrates Directive) and GAEC standard 7 (landscape features) are also relevant.

The requirements on crop diversification and maintenance of permanent grassland within the green direct payments system, have positive implications for maintaining fertility and organic carbon in the soil, as well as for reducing erosion. With regard to EFA, some of the most beneficial options for the soil are fallow land, terraces, field margins, agro-forestry, catch crops, green cover and nitrogen-fixing crops.

An explicit focus area on preventing soil erosion and improving soil management is defined under rural development policy. In terms of measures, Investments in physical assets can fund the purchase of, for example, machinery for conservation tillage - to minimise breaking-up of the soil and to maintain a high level of soil cover in autumn and winter, thus potentially limiting GHG emissions, reducing erosion and building up soil organic matter. Farming practices covered by Organic farming and others potentially funded by AECMs can also contribute to these goals. Afforestation and the establishment of agro-forestry systems supported through the measure Investments in forest area development can be very effective against erosion.

D) Air

The cross-compliance standard SMR 10 on pesticides is the most direct link to air quality: aspects of correct use covered by the legislation concerned include non-use of spraying techniques in windy conditions. The Nitrates Directive (covered by SMR 1) also has a link to this.

Focus area of rural development policy, which covers GHG emissions also covers reductions in ammonia emissions from agriculture. Various investments potentially fundable through the measure Investments in physical assets can help achieve these reductions - e.g. construction of or improvements to manure storage facilities and animal husbandry buildings, as well as the purchase of machinery to inject manure directly into the soil. AECMs and the Organic farming measure between them cover more extensive grazing and reduced use of inputs.

E) Biodiversity and landscapes

The most direct link of cross-compliance to biodiversity is related to SMRs 1 and 2 - which cover, respectively, the Birds Directive and the Habitats Directive. GAEC 7 (retention of landscape features) is, also important both for biodiversity and for the landscapes which help to sustain it.

All the basic three requirement categories of green direct payments are potentially relevant to biodiversity and landscapes.

Within rural development policy there is a focus area on restoring, preserving and enhancing biodiversity and the state of EU landscapes. The key investment measures - *Investment in physical assets* in the case of farming, and *Investments in forest area* in the case of forestry - can be used to meet one-off costs arising from relevant steps such as: establishing landscape features such as hedges, ponds, wetlands or stone walls, as well as other elements of "wildlife corridors"; establishing agro-forestry systems; purchasing relevant equipment (e.g. for limiting the spread of chemicals through pesticides, artificial fertilisers or manure); and drawing up nature management plans. Ongoing costs for biodiversity- and landscape-friendly management can be met through the key area-based measures - AECMs, *Organic farming*, *Natura 2000 payments* and *Forest environmental and climate services*. Relevant management practices include the maintenance of wildlife-friendly areas (which may offer habitats or food, and in some cases are not cultivated), reduced use of chemical products, and the preservation of traditional plant and animal varieties and genetic resources.

4.2.4 Case Studies in DiverIMPACTS and linkage with CAP

Considering that CAP is translated into Member State National/regional legislation, in table 11 a first attempt to link the Case Studies (grouped by Member State) to CAP policies instrument is summarised, with particular focus on the measures aimed to support:

- knowledge transfer and advisory services (M1-M2)
- investment linked with field machinery/equipment (M4.1)
- investment for processing, marketing and/or development of agricultural products (M4.2, M16.6)
- development of new products, practices, processes and technologies in the agriculture, food and forestry sectors (M16.1 - M16.2, including results of H2020 project)
- establishment of producer groups and organisations (M.9)
- establishment and development of short supply chains and local markets (M16.4)
- payment for sustainable agricultural practices. (M10, M11, M12)

A more detailed analysis is necessary (through a consultation with local stakeholder) to understand how those measures are (and if) programmed in the specific National/Regional RDPs (in terms of eligibility criteria and selection process, budget allocation, support rate, type of operation, etc.), to analyse its real contribution to CSs implementations, as well as also by considering National/Local policy instruments.

Legend of the table Summary of Case Study analysis


VCS	Voluntary Coupled Support
CD	Crop Diversification
EFA	Ecological Focus Area
*	No data available (CH case studies)
	The measure is not programmed in the respective RDP, although it would be helpful for CS
==	The measure is programmed under other instruments of RDP, i.e. in BE-Wallonia, while M16.1 is not included in the Programme, the creation of a cooperation group like an OG is a task of the NSU (Network Support Units) of the Walloon Rural Network. In this way the OG will take advantage of the networking experience of the support unit, will be under its management and will be financed by the Technical Assistance.

Table 11 - Summary of Case Study analysis (description of Case Study are given in tables 1-5)

Country/region		CAP Policy instruments that have a potential to contribute to the application of DiverIMPACTS results																				
		I Pillar			II Pillar - Measure of RDP																	
		CS n.	V C S	C D A	E F A	KnowR			Advisory services			Invest		Innov/Know		Supply Chain/Market			Measures beneficial for the environment and climate change			
				1.1	1.2	1.3	2.1	2.2	2.3	4.1	4.2	16.1	16.2	9	16.4	16.6	10.1	10.2	11.1	11.2	12.3	
IT-Sicilia	9																					
IT-Marche	22																					
CH	6	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	20	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
RO	8																					
HU	7																					
PL	10																					
SE	19																					
NL	1																					
	16																					
	23																					
DE-Lower Saxony	3																					
BE-Wallonia	4																					
	12																					
	17																					
BE-Flanders	18																					
	21																					
FR- Midi-Pyrénées	5																					
FR - Pays de la Loire	11																					
FR - Champagne-Ardenne	13																					
FR - Centre	14																					
FR-Languedoc-Roussillon	25																					
UK-England	2																					
	15																					
	24																					



4.3 Description of EU agro-environmental policies which crop diversification can contribute to

4.3.1 Nitrate Directive

Rationale and objectives:

The Nitrate Directive aims to protect water quality across Europe by preventing nitrates from agricultural sources polluting ground and surface waters and by promoting the use of good farming practices. While nitrogen is a vital nutrient that helps plants and crops to grow, high concentrations are harmful to people and nature. The agricultural use of nitrates in organic and chemical fertilisers has been a major source of water pollution in Europe. The Directive aims to protect water quality across Europe by preventing nitrates from agricultural sources polluting ground and surface waters and by promoting the use of good farming practices. As water sources are not restricted within national boundaries, an EU wide approach was crucial to tackling the problem of pollution.

The Nitrates Directive obliges Member States to designate Nitrate Vulnerable Zones (NVZ) of all known areas in Member States whose waters - including groundwater - are or are likely to be affected by nitrate pollution. Vulnerable zones are defined as those waters which contain a nitrates concentration of more than 50 mg/l or are susceptible to contain such nitrates concentration if measures are not taken. Under the Nitrates Directive, all Member States have to:

- Designate as NVZs areas of land which drain into polluted waters or waters at risk of pollution and which contribute to nitrate pollution. Member States can also choose to apply measures to the whole territory (instead of designating NVZs), based on art. 3.5 of the directive (Austria, Denmark, Finland, Germany, Ireland, Lithuania, Luxembourg, Malta, the Netherlands, Romania, Slovenia, the Region of Flanders and Northern Ireland have followed this approach).
- Establish of Codes of Good Agricultural Practice to be implemented by farmers on a voluntary basis: It sets out various good practices, such as measures limiting the periods when nitrogen fertilizers can be applied on land; measures limiting the conditions for fertilizer application to prevent nitrate losses from leaching and run-off; requirement for a minimum storage capacity for livestock manure; and crop rotations, soil winter cover, and catch crops to prevent nitrate leaching and run-off during wet seasons.
- Establish of action programmes (AP) to be implemented by farmers within NVZs on a compulsory basis, considering available scientific and technical data and overall environmental conditions. AP must include measures already included in Codes of Good Agricultural Practice, which become mandatory in NVZs; and other measures, such as limitation of fertilizer application (mineral and organic), considering crop needs, all nitrogen inputs and soil nitrogen supply, maximum amount of livestock manure to be applied (corresponding to 170 kg nitrogen/hectare/year).
- Carry out a comprehensive monitoring programme and submit every 4 years, a report on the implementation of the Directive. The report includes information on nitrate-vulnerable zones, results of water monitoring, and a summary of the relevant aspects of codes of good agricultural practices and action programmes; The Nitrate Directive has been in place since 19 December 1991. The successive amendments and corrigenda to the Directive have been incorporated into the original text (Regulation (EC) No 1882/2003 and Regulation (EC) No 1137/2008). It is applied at European level and has been transposed to national law by Member States. Member States must establish and present to the European Commission reports every 4 years on the implementation of this Directive and the Commission should report regularly on the implementation of this Directive by the Member States.

Geographical coverage: The ND has been designed at EU level and implemented at national or local scale depending on the choose made by the Member States, as shown in figure 13.

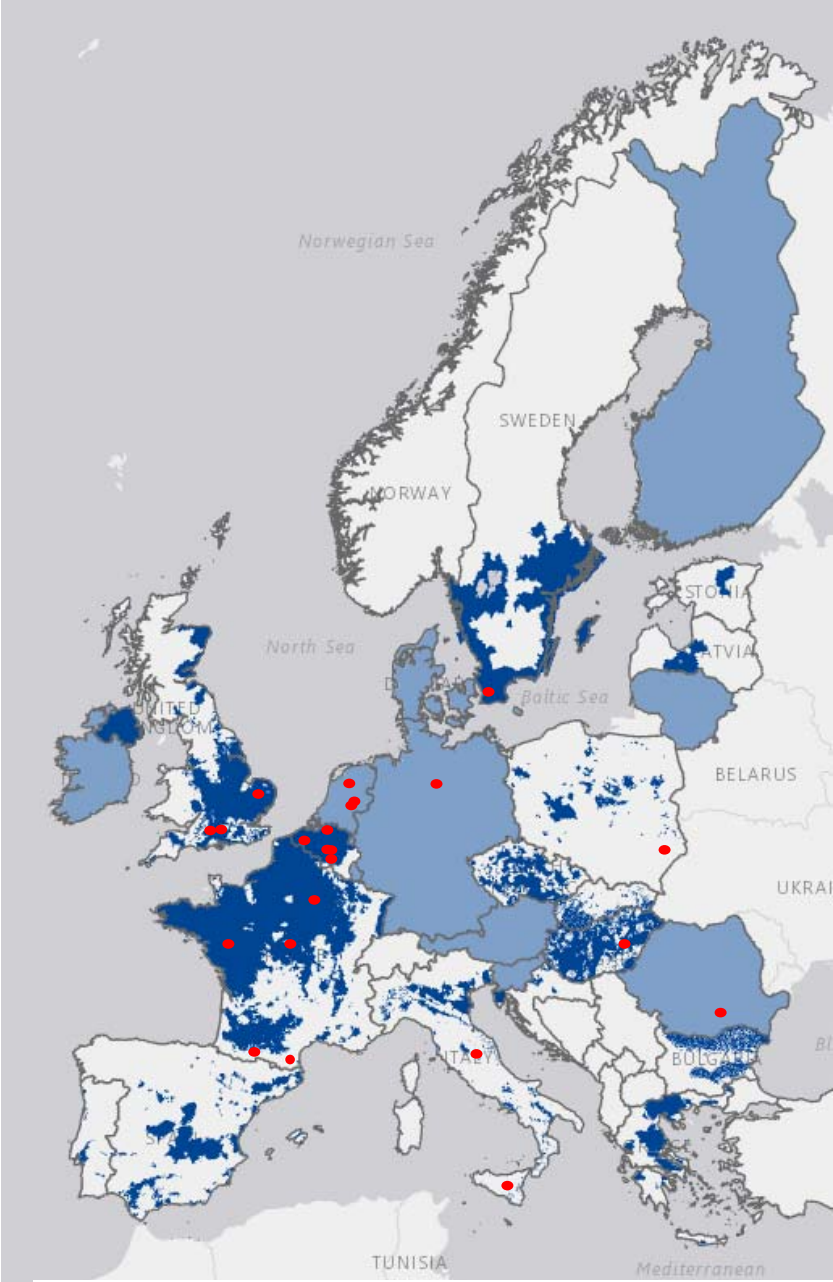


Figure 13 - Nitrate Vulnerable Zones (red dots represent Case Studies)

Source:
<https://water.jrc.ec.europa.eu/portal/apps/webappviewer/index.html?id=d651ecd9f5774080aad738958906b51b>

Targeted actors: The ND involves both public and private sectors: it is targeted to national/regional authorities, in charge of promoting local activities and strategies (planning, monitoring, etc.) as well as

to farmers, asked to adopt new farming strategies (best practices) in order to reduce the pollution of Nitrate.

Financial issues: No specific funds have been invested, even if specific rural development measures of Agri-environment-climate payments were dedicated to Nitrate rate reduction.

Links to other relevant instruments: The measures for action of the Nitrates Directive are also listed in the Water Framework Directive (Directive 2000/60/EC, Annex VI) and the Groundwater Directive (Directive 2006/118/EC, Annex IV, part B). Directive 2008/50/EC on ambient air quality and cleaner air for Europe (improve air quality by reducing ammonia (NH₃) emission). Climate & Energy Package 2020 (reduction of nitrous oxide (N₂O) and methane (CH₄) emission). Furthermore, it is linked with the cross-compliance SMR 1 concerning the protection of waters against pollution caused by nitrates from agricultural sources.

Link to DiverIMPACTS Expected Impact: This Directive is directly related with DiverIMPACTS objectives. The Nitrate Directive aims to prevent and protect ground and surface waters against pollution caused by nitrate leaching from agricultural sources. The Directive has imposed a maximum nitrate concentration level of 50 mg/l in water, and by establishing this limit it implies that farmers need to change farming practices to reduce the nitrate input. DiverIMPACTS promoting "*lower environmental impact of diversified cropping systems with reduced use of pesticides, chemical fertilisers, energy and water*" aim to contribute to this objective.

4.3.2 Water Framework Directive (WFD)

Rationale and objectives:

The Water Framework Directive (WFD) (Directive 2000/60/EC, of 23 October of 2000) represents the cornerstone of EU water protection policy, which requires that all EU waters should achieve good status by 2015. It seeks to provide a framework for the protection of inland surface waters, transitional waters, coastal waters and groundwater. In doing so the WFD aims to help improve freshwater quality and quantity, protect the environment and ecosystems and reduce water pollution. One of the major challenges to achieve these objectives is represented by the pollutants released into the aquatic environment from a variety of sources including agriculture, industry and incineration. The Water Framework Directive (WFD) aims to protect and improve the quality of water in Europe.

The WFD relates to the quality of fresh and coastal waters in EU, aiming to attain good ecological and chemical status of Europe's fresh and coastal waters. Specifically, this includes: protecting all forms of water (inland, surface, transitional, coastal and ground); restoring the ecosystems in and around these water bodies; reducing pollution in water bodies, and; guaranteeing sustainable water use by individuals and businesses.

The WFD requires all Member States to protect and improve water quality in all waters in order to achieve good ecological status. The legislation places clear responsibilities on national authorities. They must:

- identify the individual river basins on their territory - that is, the surrounding land areas that drain into river systems;
- designate authorities to manage these basins in line with the EU rules;
- analyse the features of each river basin, including the impact of human activity and an economic assessment of water use;
- monitor the status of the water in each basin;

- register protected areas, such as those used for drinking water, which require special attention;
- develop and implement “river-basin management plans” (RBMP) to prevent deterioration of surface water, protect and enhance groundwater and preserve protected areas. RBMP include a programme of measures (PoM) to be implemented in the plan horizon, that shall correspond to a cost-effective approach to achieve established objectives;
- ensure the cost of water services is recovered so that the resources are used efficiently, and polluters pay;
- provide public information and consultation on their river-basin management plans.

Geographical coverage: The WFD must be adopted at MS level. The territorial entity, in which it is implemented was the River Basin, now evolved in the concept of River District. In that geographical area the management of river bodies and their whole ecosystem is planned from local authorities, in charge of produce River Basin (District) Management Plans.

Targeted actors: The WFD regards Ms strategies. Even if in river basin management plans actions and measures aimed at increase water quality status are targeted on national or local policies, they also affect directly and indirectly farmers activity. Irrigation consortia for instance, are asked to provide more efficient water pricing policies able to reflect the whole (economic, social and environmental) value of water and also to plan actions for a better control of irrigation volumes.

Financial issues: One of the most innovative elements of the Water-Framework Directive (WFD) is the important role that economic analysis is assigned in achieving its environmental objectives. Full recovery and polluter’s pay principle, environmental and resource costs, are some of the main economic issues that WFD promote to gain a fair allocation of scarce water resources, also under economic perspective. No specific funds have been invested to perform such economic analysis, even if specific rural development measures were dedicated to the requirements of WFD. Subsidies for the farmers action or constraints due to WFD were established, for example, in Measure 12.

Links to other relevant instruments: The successful implementation of the Water Framework Directive depends strongly on agricultural land use, which is mainly influenced by the Common Agricultural Policy (CAP). The WFD is linked to several other EU directives some of the most relevant are: directives relating to the protection of biodiversity - Birds and Habitats Directives; directives related to specific uses of waters - Drinking Water, Bathing Waters and Urban Waste Water Directives; directives on topics such as Floods and the Marine Strategy Framework. Groundwater and Nitrates Directive forms an integral part of the WFD; the Sustainable Use of Pesticides and the Sewage Sludge Directives also provide for the control of materials applied to land.

The efficient implementation of rural development programmes are subject to so-called “ex-ante conditionalities”, a series of conditions which must in principle be met before a programme can become fully operational, to make spending as effective as possible. As regarding the analysis carried out in this document the most important ex ante conditionalities, in the sectors supported by the EAFRD, is linked with the Art. 9 of the WFD, located in the RDP priority 5, ex ante conditionality 5.2, Water sector, which is based on the fulfilment of the following criteria:

- A water pricing policy which provides adequate incentives for users to use water resources efficiently (Art.9 of the WFD), having regard where appropriate, to the social, environmental and economic effects of the recovery as well as the geographic and climatic conditions of the region or regions affected.
- An adequate contribution of the different water uses to the recovery of the costs of water services at a rate determined in the approved river basin management plan for investment supported by the programmes (Art.9 of the WFD)

- › The adoption of River Basin Management Plan (Art. 13 of the WFD).

Link to DiverIMPACTS approach and objectives: DiverIMPACTS approach aims to obtain a better sustainability of agriculture through the adoption of new farming strategies and tools, mainly focused on input reduction thus enhancing the contribute of “sustainable agriculture” to the environmental protection objective, in the specific, on water quality status.

4.3.3 Sustainable use of Pesticide Directive (PD)

Rationale and objectives:

The Sustainable use of pesticide Directive 2009/128/EC requires Member States to implement policies and actions to reduce the risks and impacts of pesticide use on human health, the environment and biodiversity. These policies must ensure the development and introduction of agricultural techniques that reduce reliance on pesticides, thereby lessening their risks and impacts on human health and the environment, encouraging the uptake of integrated pest management and alternative approaches or techniques, such as organic farming and the use of non-chemical alternatives to pesticides.

EU countries have drawn up National Action Plans (NAPs), to implement the range of actions set out in the Directive, the main actions relate to:

- › training of users, advisors and distributors
- › inspection of pesticide application equipment
- › the prohibition of aerial spraying
- › the protection of the aquatic environment and drinking water
- › limitation of pesticide use in sensitive areas
- › information and awareness raising about pesticide risks
- › systems for gathering information on pesticide acute poisoning incidents, as well as chronic poisoning developments, where available

Geographical coverage: The PD has been designed at EU level and implemented at national and local scale.

Targeted actors: The main entities involved in the implementation of the NAPs are central (different Ministries: Agricultural, Food and Forestry Policies, Environment, Health, Education, University and Research), and local (Regions, Provinces, Municipalities, entities managing Natura 2000 sites and protected areas) administration, as well as farmers and any other pesticide users, the producers and distributors of pesticides and all the parties proposing alternative methods and techniques, pesticide advisors, the railway and road managing agencies, and all those public and private entities, including associations, which manage green areas used by the general public.

Financial issues: specific economic instruments set out in the NAPs.

Links to other relevant instruments: Directive 2008/50/EC on ambient air quality and cleaner air for Europe, WFD, ND and GW Directive. Its application is an important component of the cross-compliance system.

Link to DiverIMPACTS Expected Impact: This Directive is directly related with DiverIMPACTS objectives, namely the adoption of diversified cropping systems with lower environmental impact: “*reduced use of pesticides, chemical fertilisers, energy and water*”.

4.3.4 Climate & Energy Package 2020

Rationale and objectives:

In the international framework the European Union's climate policy until 2020 is steered by the Kyoto Protocol to the United Nations Framework Convention on Climate Change and, within the European Union, the climate and energy package. The 2020 package is a set of binding legislation to ensure the EU meets its climate and energy targets for the year 2020. The package sets three key targets:

- cutting greenhouse gases by at least 20% of 1990 levels
- cutting energy consumption by 20% of projected 2020 levels - by improving energy efficiency
- increasing use of renewables (wind, solar, biomass, etc.) to 20% of total energy production

Through reaching these targets, the EU can help combat climate change and air pollution, decrease its dependence on foreign fossil fuels and keep energy affordable for consumers and businesses. The EU is taking action in several areas to meet the targets:

- The EU emissions trading system (ETS): The ETS is the EU's key tool for cutting greenhouse gas emissions from large-scale facilities in the power and industry sectors, as well as the aviation sector. The ETS covers around 45% of the EU's greenhouse gas emissions. In 2020, the target is for the emissions from these sectors to be 21% lower than in 2005.
- National emission reduction targets: This covers the sectors not in the ETS - accounting for some 55% of total EU emissions - such as housing, agriculture, waste transport (excluding aviation). The targets differ according to national wealth - from a 20% cut for the richest countries to a maximum 20% increase for the least wealthy (although they were still projected to have to make efforts to limit emissions). Progress is monitored by the Commission every year, with each country required to report its emissions.
- Renewable energy - national targets: EU member countries have also taken on binding national targets for raising the share of renewables in their energy consumption by 2020, under the Renewable Energy Directive.
- Energy efficiency: National Energy Efficiency Action Plans (NEEAPs) set out estimated energy consumption, planned energy efficiency measures, and the improvements individual EU countries expect to achieve. Under the Energy Efficiency Directive, EU countries must draw up these plans every three years. EU countries must report the progress achieved towards their national energy efficiency targets on an annual basis.

Geographical coverage: The Climate & Energy Package 2020 has been designed at EU level and implemented at national or local scale.

Targeted actors: The Climate & Energy Package 2020 involves both public and private sectors: it is targeted to national/regional authorities, in charge of promoting local activities and strategies (planning, monitoring, etc.) as well as to farmers, asked to adopt new farming strategies (best practices) in order to increase the renewables energy and reduce the energy consumption.

Financial issues: At least 20% (around € 206 billions) of Multi-Annual Financial Framework 2014-2020 is allocated for climate action, including both adaptation and mitigation. LIFE Climate Action supports projects in the development of innovative ways to respond to the challenges of climate change in Europe. In addition to the EU budget resources, DG CLIMA also manages the NER 300 programme for innovative low-carbon energy demonstration projects.

Links to other relevant instruments: Directive 2008/50/EC on ambient air quality and cleaner air for Europe, Rural Development policy.

Link to DiverIMPACTS Expected Impact: EI3 (Lower environmental impact of diversified cropping systems) and EI4 (Improved delivery of ecosystem services) could contribute to the emission reduction, while EI5 (decreased use of energy along the chains) is correlated with the target improving energy efficiency.

4.3.5 The EU Biodiversity Strategy (BS)

Rationale and objectives:

The Biodiversity Strategy includes specific actions to improve monitoring and reporting, to build on the biodiversity knowledge base and to continue to fill research gaps, including on the mapping and assessment of ecosystem services in Europe. Amongst other things, it will improve the understanding of the links between biodiversity and climate change, and of the role of soil in delivering key ecosystem services, such as carbon sequestration and food supply.

The EU strategy is built around six mutually supportive and inter-dependent targets which address the main drivers of biodiversity loss. They aim to reduce key pressures on nature and ecosystem services in the EU by stepping up efforts to fully implement existing EU nature legislation, anchoring biodiversity objectives into key sectoral policies, and closing important policy gaps. Global aspects are also addressed to ensure the EU contributes fully to implementing international biodiversity commitments.

The six targets covered by the EU strategy focus on:

1. The full implementation of the Birds and Habitats Directives (including the establishment of the Natura 2000 Network and ensure its good management);
2. Better protection and restoration of ecosystems and the services they provide, and greater use of green infrastructure;
3. More sustainable agriculture and forestry;
4. Better management of EU fish stocks and more sustainable fisheries;
5. Tighter controls on Invasive Alien Species; and
6. A greater EU contribution to averting global biodiversity loss.

Regarding target 3, it is split into two sections a and b:

3A) Agriculture: By 2020, maximise areas under agriculture across grasslands, arable land and permanent crops that are covered by biodiversity-related measures under the CAP so as to ensure the conservation of biodiversity and to bring about a measurable improvement in the conservation status of species and habitats that depend on or are affected by agriculture and in the provision of ecosystem services as compared to the EU2010 Baseline, thus contributing to enhance sustainable management.

3b) Forests - Not detailed in this analysis

Geographical coverage: The BS has been designed at EU level and implemented at national and local scale, with particular focus on Natura 2000 network.

Targeted actors: Authorities at all levels - EU, national, sub-national - responsible for ensuring the implementation of the Strategy, farmer.

Financial issues: The LIFE programme is the EU's funding instrument for the environment. Half of the LIFE programme budget is dedicated to supporting good practice and demonstration projects that contribute to the implementation of the Birds and Habitats Directives and the Natura 2000 Network, as well as to wider biodiversity goals.

Links to other relevant instruments: SMRs 1 and 2, GAEC7 of the cross-compliance system, greening, PD, Rural Development policy.

Link to DiverIMPACTS Expected Impact: EI3 (*Lower environmental impact of diversified cropping systems*) and EI4 (*Improved delivery of ecosystem services*) and EI8 (*increase crop diversification and biodiversity in Europe*), are directly linked with conservation/increasing of biodiversity.

4.4 Potential contribution of DiverIMPACTS in the implementation of agro-environmental policies

A summary of the potential contribution of DiverIMPACTS in the implementation of agro-environmental policies based on the Expected Impacts (EI), is shown in table 12.

Table 12 - Potential contribute of the DiverIMPACTS expected impact on the achievement of the EU agro-environmental objectives.

Potential contribute of DiverIMPACTS to EU agro-environmental policy objectives																	
Expected impact	Environment									CAP							
	Water				Soil	CC		Air	BS	I Pillar		Rural development priorities					
	ND	WFD	GWD	PD		EM	EN			C	E	1	2	3	4	5	6
EI1																	
EI2										X			X	X			
EI3	X	X	X	X	X	X		X	X	X	X						
EI4	X	X	X	X	X	X		X	X	X	X			X	X		
EI5							X						X		X		
EI6													X		X		
EI7												X		X			
EI8									X		X						

Rural development priorities

ND: Nitrate Directive	1	Fostering knowledge transfer and innovation in agriculture, forestry and rural areas
WFD: Water Framework Directive	2	Enhancing the viability and competitiveness of all types of agriculture, and promoting innovative farm technologies and sustainable forest management
GWD: Ground Water Directive	3	Promoting food chain organisation, animal welfare and risk management in agriculture
PD: Pesticide Directive	4	Restoring, preserving and enhancing ecosystems related to agriculture and forestry
CC: Climate Change EM: Emission EN: Energy	5	Promoting resource efficiency and supporting the shift toward a low-carbon and climate-resilient economy in the agriculture, food and forestry sectors
BS: Biodiversity strategy	6	Promoting social inclusion, poverty reduction and economic development in rural areas

5. DiverIMPACTS in the context of the CAP reform

DiverIMPACTS lifetime is in the middle of the actual CAP programming cycle (2014-2020) and the new one (CAP beyond 2020). On 1 June 2018, the European Commission presented the legislative proposals on the CAP beyond 2020. The proposal consists of three regulations:

- [COM\(2018\) 392 final](#) - establishing rules on support for strategic plans to be drawn up by Member States under the Common agricultural policy (CAP Strategic Plans) and financed by the European Agricultural Guarantee Fund (EAGF) and by the European Agricultural Fund for Rural Development (EAFRD)(CAP Strategic Plan Regulation)
- [COM\(2018\) 393 final](#) - on the financing, management and monitoring of the common agricultural policy (CAP Horizontal Regulation)
- [COM\(2018\) 394 final/2](#) - common organisation of the markets in agricultural products (CMO)

Support from the EAGF and EAFRD shall aim to further improve the sustainable development of farming, food and rural areas and shall contribute to achieving the following general objectives:

- to foster a smart, resilient and diversified agricultural sector ensuring food security;
- to bolster environmental care and climate action and to contribute to the environmental and climate related objectives of the Union;
- to strengthen the socio-economic fabric of rural areas.

Those objectives shall be complemented by the cross-cutting objective of modernising the sector by fostering and sharing of knowledge, innovation and digitalisation in agriculture and rural areas, and encouraging their uptake.

The achievement of the general objectives shall be pursued through the following specific objectives:

- a) support viable farm income and resilience across the Union to enhance food security;
- b) enhance market orientation and increase competitiveness, including greater focus on research, technology and digitalisation;
- c) improve the farmers' position in the value chain;
- d) contribute to climate change mitigation and adaptation, as well as sustainable energy;
- e) foster sustainable development and efficient management of natural resources such as water, soil and air;
- f) contribute to the protection of biodiversity, enhance ecosystem services and preserve habitats and landscapes;
- g) attract young farmers and facilitate business development in rural areas;
- h) promote employment, growth, social inclusion and local development in rural areas, including bio-economy and sustainable forestry;
- i) improve the response of EU agriculture to societal demands on food and health, including safe, nutritious and sustainable food, food waste, as well as animal welfare.

Achievement of the objectives shall be assessed on the basis of common indicators related to output, result and impact

The most important elements introduced in the proposal is the implementation of a new delivery model (NDM), whereby the EU will set high-level objectives and Member States are then be free to decide which measures to adopt under both Pillar 1 and 2 to achieve these objectives. This NDM will be

laid out within a national “CAP Strategic Plan”, which will be complied by Member States on the basis of a needs assessment and which must be approved, and its implementation monitored by the European Commission. The aim behind this new approach is to better enable the CAP meet local needs, make it simpler and results-driven. (Figure 14)

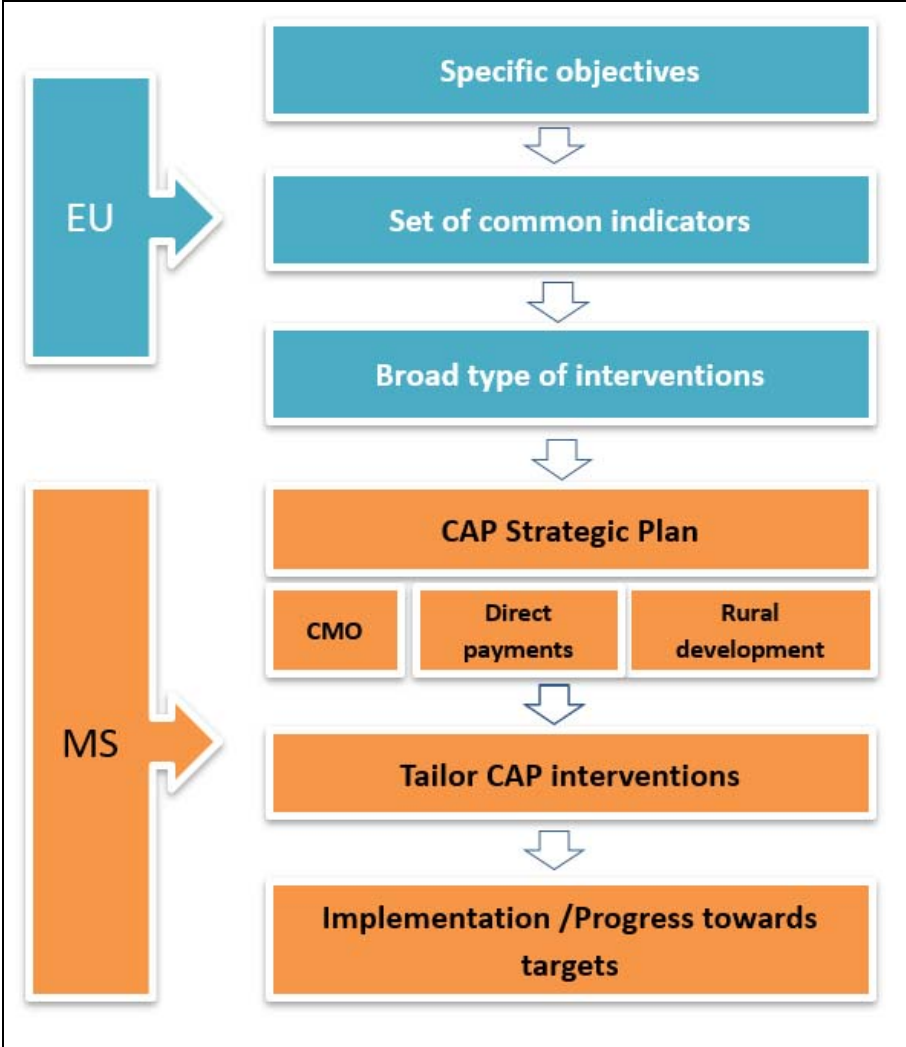


Figure 14 - The new delivery model for the CAP at a glance

The post-2020 CAP reform set out 9 specific objectives to adequately meet broad ongoing challenges related to the economic health of the farm sector, care for the environment, action over climate change, and a strong and economic and social fabric for the EU's rural areas - especially in view of emerging opportunities for action in the areas of trade, the bio-economy, renewable energy, the circular economy and the digital economy. (Fig. 15).



Figure 15 - The objectives of the CAP beyond 2020

Source: https://ec.europa.eu/info/food-farming-fisheries/key_policies/common-agricultural-policy/future-cap_en

Temporal and spatial diversification of crops can potentially contribute to the achievement of several CAP objectives by making farming systems more resource efficient, productive and resilient, and thus more sustainable. Table 13 shows the potential contribution of the project Expected Impact (EI) to the achievement of the different CAP objectives, as set out in the legislative proposal made by the EU Commission in the context of the post-2020 CAP reform.

Table 13 - Potential contribution of the DiverIMPACTS expected impact on the achievement of the CAP reform objectives.

Expected Impact	Contribute to CAP objectives								
	Ensure fair income	Increase competitiveness	Rebalance power in food chain	Climate change action	Environmental care	Preserve Landscapes & biodiversity	Support generational renewal	Vibrant rural areas	Protect food health quality
E11	X	X							
E12	X		X						
E13				X	X	X			X
E14				X	X	X			X
E15			X	X	X				
E16		X	X				X	X	
E17			X						
E18						X			

6. Conclusions

This document presents a first mapping of key regulatory and economic instruments, in place at EU level, that have a potential to contribute to the application of DiverIMPACTS results, as well as the contribution and potential of crop diversification to wider EU agro-environmental objectives. It turns out that there already exist a lot of instruments that could support crop diversification but they are not widely used, maybe not even known by actors. Also, these instruments might not be strong enough as real incentives. It will be interesting to discuss the level of knowledge of case studies on those instruments as well as their expectations.

Given its multiple goals, e.g., increase the level of production, reduce the amount of inputs and deliver ecosystem services, crop diversification constitutes a good lever to support most of the objectives of the Cap and contribute to the Sustainable Development Goals.

It has to be noticed that this mapping was based on the analysis of official documents (e.g. Directive, Regulation, Rural Development programmes...), on the collected information of the document "*First Introduction to the Case Studies in DiverIMPACTS*" and on Deliverable 5.1: *Ordered list of lock-ins for CSs*. It presents unavoidable limits linked to various issues:

- the complexity of the CAP and its translation into the 10 Countries (except Switzerland) where CS are located, especially regarding the RDP implementation at national/regional level, also considering that RDP are written in the different Countries languages. So that the analysis of Measures of RDP reported in table 11, was based on section 8 "Description of the Measure selected" of the index of the RDP (with a common structure for all EU Member States), only considering the presence/absence of the Measure.
- Problems/Objectives definition, investigated solution, are more detailed and clearer in some CS, while in others they are not yet fully clarified;
- there are also inconsistencies in some CS which aim to promote local/short supply chain but where some lock-ins have not been identified (i.e. in terms of Volume, Investments, Innovation...) as already outlined in D 5.1.

Also, the document is not to be considered complete and exhaustive, in fact, other policies might be highly relevant to foster crop diversification, i.e. seed policy and maybe others not yet discussed at this stage of the work, depending on the specific Case Study context;

This report mainly focuses on the current CAP programming cycle (2014-2020) instruments and related green architecture, with some preliminary reflection on the contents of the proposal for the CAP reform (CAP beyond 2020). As regarding the latter aspect, a inter-project Policy-WG, composed of researchers involved in the field of policies within the H2020 cluster on Crop Diversification (DiverIMPACTS, TRUE, LegValue, Diverfarming), has been established with the ambition to allow a constructive dialogue between the different approaches and methodologies used and to identify similarities and differences.

This cluster WG will activate a collaboration and a discussion on the following topics, in order to determine, in the best possible way, to what extent the above mentioned projects could contribute to the CAP reform:

- Scientific evidence of environmental and agronomical benefits of crop rotation/diversification;
- Current state of the art of crop diversification/rotation in Europe;
- Best policy mixes to promote crop diversification/rotation;

- Data, tools, methods for monitoring crop diversification & rotation: status and needs;
- Best candidate crops for diversifying European cropping systems;
- Contribution and potentials of crop diversification/rotation to wider EU objectives.

Despite the limits, this mapping is a first basis for further develop policy analysis in the CS, according with the timing of task 6.5:

Month 40 (Sept 2020)	Task	Date	Contributor
MS 6.4: Final version of Case Study policy analysis (report)	Apply framework (Step 2) in CSs, in order to complete/refine the analysis of policy instruments in palace, both at EU and National/Regional/Local level.	June 2019 - June 2020	CS Leader/Monitor + Stakeholder
	Report ready	Sept 2020	
Month 56 (Jan 2022)		Date	
D. 6.5: Recommendations for policies to help foster crop diversified systems	The analysis carried out in the previous step will allow to Identify any gaps in current policies and find areas for improved/new policy instruments (or a policy mix) to support crop diversified systems adoption (Step 3&4). Inspiration for the proposal of new policy instruments should come first of all from the sharing of experiences among DiverIMPACTS CSs. Maybe an experience that was successful in one area can be adapted in another one. Or we can learn with the problems encountered in a given case and take these lessons to avoid the same problems in the design of a new policy instrument in another CS.	Oct 2020 - Jan 2022	CS Leader/Monitor, SP, other experts, inter-project policy WG

7. Contributors

This deliverable was elaborated based on the inputs from different WPs, and in particular WP1 *"Identification of success and failure factors of crop diversification"*, with the Deliverable 1.1 *"Typology of diversification experiences with description of driving factors to support crop diversification"*, led by Dóra Drexler (ÖMKi), authors Dóra Drexler, Timea Jung (ÖMKi), Cordula Mertens (ÖMKi), Frédéric Vanwindekens (CRA-W), which provided a first description of the relative importance of driving factors (including policy aspect) to support crop diversification dynamics.

The Case study background and context definition is based on the input of WP2 *"Promoting crop diversification in case studies through actor-oriented research"*. The case study teams are acknowledged for the content of the Case Study profile available in the DiverIMPACTS website. Barriers for Case Studies were derived from the Deliverable 5.1 *"Ordered list of lock-ins"* of WP5 *"From lock-ins to innovations and value chain redesign"* led by Philippe Baret (UCL) and authored by Kevin Morel (UCL).

We would also thank Max Hubbard (DEFRA, member of the Stakeholder Platform) and Susanne Padel (ORC), for the document review, the helpful comments and suggestions provided.

8. References

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doi:10.1787/243786286663

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- Integration of CAP with relevant agro-environmental legislation initiatives
https://ec.europa.eu/agriculture/sites/agriculture/files/consultations/cap-modernising/env_background_final_en.pdf
- Integration of EU water policy objectives with the CAP
https://www.eca.europa.eu/Lists/ECADocuments/SR14_04/SR14_04_EN.pdf
- Overview of CAP reform 2014-2020 - Agricultural Policy Perspectives Brief
https://ec.europa.eu/agriculture/newsroom/156_en
- EAA- SOER 2015. The European environment – state and outlook 2015: an integrated assessment of the European Environment
<https://www.eea.europa.eu/soer-2015/about>
- COM(2000) 20 final - COMMUNICATION FROM THE COMMISSION TO THE COUNCIL AND THE EUROPEAN PARLIAMENT
Indicators for the Integration of Environmental Concerns into the Common Agricultural Policy
<https://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX%3A52000DC0020>
- Agricultural Policy Perspectives Brief, No 5, European Commission, December 2013
https://ec.europa.eu/agriculture/sites/agriculture/files/policy-perspectives/policy-briefs/05_en.pdf
- European Commission EUROPE 2020 A strategy for smart, sustainable and inclusive growth /COM/2010/2020 final/.
<https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52010DC2020&from=it>
- REGULATION (EU) No 1306/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 December 2013 (financing, management and monitoring of CAP)
<http://eur-lex.europa.eu/legal-content/IT/TXT/?uri=CELEX:32013R1306>

CAP - I Pillar

- REGULATION (EU) No 1307/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 December 2013 (Direct payment)
https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2013.347.01.0608.01.ENG
- REGULATION (EU) No 1308/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 December 2013 (Market intervention)
<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:347:0671:0854:EN:PDF>
- CAP EXPLAINED DIRECT PAYMENTS FOR FARMERS 2015-2020
<https://publications.europa.eu/it/publication-detail/-/publication/541f0184-759e-11e7-b2f2-01aa75ed71a1/language-it/format-PDF>
- Voluntary Coupled Support
https://ec.europa.eu/agriculture/sites/agriculture/files/direct-support/direct-payments/docs/voluntary-coupled-support-note-revised_en.pdf

CAP - II Pillar

- EC web site with Rural Development Programme (National and Regional) for all Member States

https://ec.europa.eu/agriculture/rural-development-2014-2020/country-files_it

- REGULATION (EU) No 1305/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 December 2013 (Rural Development)

<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32013R1305>

- COMMISSION IMPLEMENTING REGULATION (EU) No 808/2014 of 17 July 2014 (laying down rules for the application of Regulation (EU) No 1305/2013)

<https://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX%3A32014R0808>

- COMMISSION DELEGATED REGULATION (EU) No 807/2014 of 11 March 2014 (supplementing Regulation (EU) No 1305/2013)

<https://eur-lex.europa.eu/legal-content/IT/ALL/?uri=CELEX%3A32014R0807>

Nitrate Directive

- Web site with Working Document on the implementation of the Nitrates Directive

http://ec.europa.eu/environment/water/water-nitrates/index_en.html

- Maps of Nitrate Vulnerable Zones

<https://water.jrc.ec.europa.eu/portal/apps/webappviewer/index.html?id=d651ecd9f5774080aad738958906b51b>

- Directive 91/676/EEC concerning the protection of waters against pollution caused by nitrates from agricultural sources

<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31991L0676>

Water Framework Directive

- Directive 2000/60/EC establishing a framework for Community action in the field of water policy

<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32000L0060>

Pesticide Directive

- Directive 2009/128/EC establishing a framework for Community action to achieve the sustainable use of pesticides

<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32009L0128>

Post 2020 CAP reform

https://ec.europa.eu/info/food-farming-fisheries/key-policies/common-agricultural-policy/future-cap_en

Climate & Energy Package 2020

- Web site with key policy elements

https://ec.europa.eu/clima/policies/strategies_en

- Decision 406/2009/EC (Effort Sharing Decision) - greenhouse gas emissions

<https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:32009D0406>

- Directive 2009/28/EC - on the promotion of the use of energy from renewable sources

<https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=celex%3A32009L0028>

- Directive 2012/27/EU - Energy Efficiency Directive (EED)

<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1399375464230&uri=CELEX:32012L0027>

- NER 300 programme

https://ec.europa.eu/clima/policies/lowcarbon/ner300_en

- LIFE - Climate action sub-programme

<https://ec.europa.eu/easme/en/section/life/life-climate-action-sub-programme>

Biodiversity

- The EU Biodiversity Strategy to 2020 brochure

http://ec.europa.eu/environment/nature/info/pubs/biodiversity_en.htm

- Directive 2009/147/EC on the conservation of wild birds

<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32009L0147>

- Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora

<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31992L0043>

- LIFE - Environment sub-programme

<https://ec.europa.eu/easme/en/section/life/life-environment-sub-programme>

- Biodiversity Information System for Europe

<https://biodiversity.europa.eu/>

9. ANNEX I - RULES ON CROSS-COMPLIANCE PURSUANT Art. 93 REGULATION (EU) No 1307/2013

Table 14 - Cross compliance SMR and GAEC

SMR: Statutory management requirement

GAEC: Standards for good agricultural and environmental condition of land

Area	Main Issue	Requirements and Standards
Environmental, climate change, good agricultural condition of land	Water	SMR 1 Council Directive 91/676/EEC of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources
		GAEC 1 Establishment of buffer strips along water courses
		GAEC 2 Where use of water for irrigation is subject to authorisation, compliance with authorisation procedures
		GAEC 3 Protection of ground water against pollution
	Soil and carbon stock	GAEC 4 Minimum soil cover
		GAEC 5 Minimum land management reflecting site specific conditions to limit erosion
		GAEC 6 Maintenance of soil organic matter level through appropriate practices including ban on burning arable stubble, except for plant health reasons
	Biodiversity	SMR 2 Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds
		SMR 3 Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild flora and fauna.
	Landscape, minimum level of maintenance	GAEC 7 Retention of landscape features, including where appropriate, hedges, ponds, ditches, trees in line, in group or isolated, field margins and terraces, and including a ban on cutting hedges and trees during the bird breeding and rearing season and, as an option, measures for avoiding invasive plant species
Public health, animal health and plant health	Food safety	SMR 4 Regulation (EC) No 178/2002 of the European Parliament and of the Council of 28 January 2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety
		SMR 5 Council Directive 96/22/EC of 29 April 1996 concerning the prohibition on the use in stock farming of certain substances having a hormonal or thyrostatic action and beta-agonists

	Identification and registration of animals	SMR 6 Council Directive 2008/71/EC of 15 July 2008 on identification and registration of pigs
		SMR 7 Regulation (EC) No 1760/2000 of the European Parliament and of the Council of 17 July 2000 establishing a system for the identification and registration of bovine animals and regarding the labelling of beef and beef products
		SMR 8 Council Regulation (EC) No 21/2004 of 17 December 2003 establishing a system for the identification and registration of ovine and caprine animals
	Animal diseases	SMR 9 Regulation (EC) No 999/2001 of the European Parliament and of the Council of 22 May 2001 laying down rules for the prevention, control and eradication of certain transmissible spongiform encephalopathies
	Plant protection products	SMR 10 Regulation (EC) No 1107/2009 of the European Parliament and of the Council of 21 October 2009 concerning the placing of plant protection products on the market
Animal welfare	Animal welfare	SMR 11 Council Directive 2008/119/EC of 18 December 2008 laying down minimum standards for the protection of calves
		SMR 12 Council Directive 2008/120/EC of 18 December 2008 laying down minimum standards for the protection of pigs
		SMR 13 Council Directive 98/58/EC of 20 July 1998 concerning the protection of animals kept for farming purposes

10. ANNEX II - Priority of RDP and Focus area

Table 15 - Union priorities for rural development and focus area codes

Priorities	Focus area code	Focus area
Priority 1: Fostering knowledge transfer and innovation in agriculture, forestry, and rural areas	1A	Fostering innovation, cooperation, and the development of the knowledge base in rural areas
	1B	Strengthening the links between agriculture, food production and forestry and research and innovation, including for the purpose of improved environmental management and performance
	1C	Fostering lifelong learning and vocational training in the agricultural and forestry sectors
Priority 2: Enhancing farm viability and competitiveness of all types of agriculture in all regions and promoting innovative farm technologies and sustainable management of forest	2A	Improving the economic performance of all farms and facilitating farm restructuring and modernisation, notably with a view to increasing market participation and orientation as well as agricultural diversification
	2B	Facilitating the entry of adequately skilled farmers into the agricultural sector and, in particular, generational renewal
Priority 3: Promoting food chain organisation, including processing and marketing of agricultural products, animal welfare and risk management in agriculture	3A	Improving competitiveness of primary producers by better integrating them into the agri-food chain through quality schemes, adding value to agricultural products, promotion in local markets and short supply circuits, producer groups and organisations and inter-branch organisations
	3B	Supporting farm risk prevention and management
Priority 4: Restoring, preserving and enhancing ecosystems related to agriculture and forestry	4A	Restoring, preserving and enhancing biodiversity, including in Natura 2000 areas, and in areas facing natural or other specific constraints, and high nature value farming, as well as the state of European landscapes
	4B	Improving water management, including fertiliser and pesticide management
	4C	Preventing soil erosion and improving soil management
Priority 5: Promoting resource efficiency and supporting the shift towards a low carbon and climate resilient economy in agriculture, food and forestry sectors	5A	Increasing efficiency in water use by agriculture
	5B	Increasing efficiency in energy use in agriculture and food processing
	5C	Facilitating the supply and use of renewable sources of energy, of by-products, wastes and residues and of other non-food raw material, for the purposes of the bio-economy
	5D	Reducing greenhouse gas and ammonia emissions from agriculture
	5E	Fostering carbon conservation and sequestration in agriculture and forestry
Priority 6: Promoting social inclusion poverty reduction and economic development in rural areas	6A	Facilitating diversification, creation and development of small enterprises, as well as job creation
	6B	Fostering local development in rural areas
	6C	Enhancing the accessibility, use and quality of information and communication technologies (ICT) in rural areas