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The Great Agri-Food Transformation:
Challenges and Opportunities for the European Union

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ABSTRACT

Since its inception, agriculture has been the *conditio sine qua non* societies cannot develop. Despite the numerous changes it has undergone, agriculture remains a crucial sector for the European Union. However, the climate and health crises highlighted the need to make changes in the way the EU agriculture is structured and managed. The need to limit global temperature increases and to prevent the occurrence of further health crises requires the active participation of all sectors, one of the main ones is agriculture. Being able to impact and be impacted in turn by the surrounding environment, its adaptation to the EU climate action is deemed essential to contribute to the Great (as needed) Agri-Food Transformation, through which agricultural production practices as well as consumer choices should turn towards more environmentally and socially sustainable solutions. Hence, the present thesis stems from such need, with the aim to assess whether the current Common Agricultural Policy can not just participate but also lead this process. To do this, it is essential to put the CAP in the right historical context, understand what supports its foundations, recognise the main actors involved in its modelling, highlight the strengths to be bolstered and the gaps to be bridged so as to put agriculture on the podium of the major contributors to the EU climate action, the UN Sustainable Development Goals, the Paris targets and - last - the Great Agri-Food Transformation.

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INTRODUCTION

Agriculture is not a sector *comme les autres* in that it is able to shape the environment as well as to impact our lives. Just as planet Earth has a central and marginal role in our universe, so too agriculture (sometimes invisible to us) crosses and shapes our lives in silence. However, it is also a victim of the major environmental and social changes that are conditioning our future. In the light of the world we are living in, a Great Agri-Food Transformation is not just desirable but also needed. It is a precondition without which it will be difficult (if not impossible) to reverse the process that is leading our eco-systems to collapse. Hence, the present thesis aims to assess the Common Agricultural Policy's nature and power as well as whether it can contribute to the Great Agri-Food Transformation. Exploring its history, evolution, and potential is not an end in itself, but interests all the areas with which it approaches. To do so, it concentrates on the main moments that impacted its nature, the projects that shaped its structure and the EU institutions, national authorities, and farmers' choices that made its identity. The attempt is to place it in a broader context so as to understand whether or not it is able to influence it in turn.

Chapter 1 aims to highlight the pillars upon which the Common Agricultural Policy has been built as well as the main events that shaped it prior to 2014. In particular, it will present an overview about the main changes that interest it, from its inception to the conclusion of the Paris Agreement. The aim is to draw the lines along which to place the central corpus of such evaluation. Moving on, it will concentrate on the Paris Agreement, cornerstone and origin of an unprecedented historical period geared towards safeguarding and protecting planet Earth. Exploring this passage is indeed essential in order to understand the cascade process that has engulfed the European Union and led it to turn its gaze towards environmental and climate policies. Last, it will deal with the European Union and its agricultural sector, focusing on the climate change's effects and the Paris Agreement's environmental and political consequences. It will conclude by reviewing the EU policies in support of the global climate agreement.

Along these lines, Chapter 2 aims to illustrate the achievements of the 2014-2020 CAP from both an environmental and socio-economic perspectives in order to outline the strengths and weaknesses to be updated or modified in the 2021-2027 programming period. For this reason, it is divided into two parts: the former will assess whether and to what extent the 2014-

2020 CAP measures contributed to adaptation and mitigation to climate change, boosted the ability of the agricultural and forestry sectors to make the best of climate change, enabled the agricultural sector to increase its resilience, and reduce EU societies' vulnerability; while the second will assess whether CAP 2014-2020 resources are well distributed within (internal convergence) and between Member States (external convergence), whether these ensured income support to EU farmers and whether promote rural development programmes (RDPs) so as to - again - understand what needs to be changed or enhanced in the 2021-2027 period.

Then – just as Chapter 1 - Chapter 3 aims to highlight the pillars upon which the 2021-2027 CAP has been built as well as the main events that contributed shaping it. In this case, the first part will overview the main changes introduced by the EU elections held in 2019, as the new Parliament and the new Commission (together with the European Council) are responsible for formulating and approving the strategic orientation of the CAP for the period 2021-2027, the definition of its position in the Multiannual Financial Framework (MFF), as well as the related legislative framework. Whereas the second part will concentrate on the European Green New Deal and the associated sub-strategies that will impact the EU agricultural sector and will provide insights on how the CAP could be changed to better contribute to the EU climate and environmental goals. Then, the third part will explore the relationship between the Covid-19 pandemic and the Paris targets, the EU climate goals and the European agricultural sector. Furthermore, it will provide evidence-based policy recommendations on how to pursue climate objectives at global and EU level. The fourth part will investigate how the Covid-19 pandemic has impacted the EU Green Deal and how it has altered the MFF 2021-2027 (and in consequence the CAP budget) approval process. Last, the fifth part will present an overview about the CAP post-2020 strategic direction and its core elements in that essential to understand the pillars on which the CAP 2021-2027 has been built.

Last, Chapter 4 will assess whether the changes introduced in the 2023-2027 CAP are ambitious enough to de facto contribute to the Great Agri-Food Transformation. To do this, it will put together what has been discovered in the previous chapters and present a comparative assessment between the previous and the current Common Agricultural Policies as well as explore (whenever possible) Member States' National Strategic Plans (NSPs). In particular, the chapter consists of three parts: the first part will outline the main elements of the 2021-2022 transition period and the process by which the EU institutions arrived at this agreement; the second part will assess whether there is coherence between Pillar I and Pillar II measures and the EU climate and environmental goals; the last part will assess whether the 2023-2027 CAP

is ambitious enough to meet the socio-economic challenges the agricultural sector must address and is able to fill the gaps that emerged in the previous chapters such as the precarious working conditions farmers are subjected to, the disparities in the distribution of resources within and between Member States, the distribution of resources between Pillars and measures.

To conclude, this thesis is based on open sources such as legislative texts and empirical evaluations and studies conducted by the European institutions and agriculture-related bodies. In this context, it is worth noticing that the CAP 2023-2027 definition process is still ongoing, as the Member States' National Strategic Plans are still under the evaluation of the European Commission. Hence, what is deduced in this thesis remains susceptible to change, although it is unlikely that the general orientations outlined in this context will be subject to radical change.

1. ON THE ROAD TO THE GREAT AGRI-FOOD TRANSFORMATION

1.1 INTRODUCTION

Since humans' arrival on the evolutionary scene, our primate ancestors have hunted and gathered food from the wild. The transition from foraging to the practice of farming, including cultivation of agricultural products and rearing of animals, is thought to have occurred only a few millennia ago, probably due to different factors like improving environmental conditions, overhunting, higher population density and new subsistence technologies. Therefore, how did this transition happen? For many years it was assumed that what has been called the «agricultural revolution» was actually a sudden change which took place within a very short time. However, today it seems more realistic to assume that - more than a single, sudden innovation - it has rather been a slow evolution of both human and arboreal species. According to the most accredited hypothesis, the ultimate transition towards cultivating crops and raising animals for food occurred when different and independent populations proved to be ready at a cognitive and psychological level.¹ In this view, the very first “agricultural” people felt the urgency to satisfy needs other than the most basic ones and, above all, to exercise their control over nature.

Indeed - during this long evolutionary period - farming villages developed into complex organizations and gave rise to larger and denser human settlements like cities, states, and empires. The practice of farming became demographically necessary given that, as a consequence of the agricultural development, world population increased from 10 million to 50 million (Hassan, 1981). Hence, agriculture radically transformed social organizations and individual communities since the new farming societies required a wider range of tasks, encouraging specialization and hierarchical training: those who did not become farmers took on different roles like merchants, soldiers, teachers, or governors. In addition, contrary to hunter-gatherer societies, agricultural communities developed a system of ownership where the management of individual properties required the formulation of appropriate rules that, in turn, involved new social figures to enforce them (Bellwood, 2020). Therefore, agriculture

¹ Archaeological records show that the first farming sites appeared, autonomously, in several parts of the world, including Asia, the Americas and the “Fertile Crescent”, an area crossed by four great rivers that cradled some of the earliest civilizations.

completely transformed human history leading our ancestors on to a new historical pathway where natural ecosystems have become increasingly managed.

The next paragraphs will explore the nature of the changes occurred in the agri-food systems since the occurrence of the “second agricultural revolution”, together with the historical evolution of the European Agricultural Policy until the World Trade Organization Doha round (2001-2016). The aim is to provide an orienting framework within which to position what will then be stated in the later chapters of the present research.

The first agricultural revolution, which massively converted uncultivated lands into farmlands and pasturelands, resulted in the doubling of agricultural productivity and subsequently in the industrialization of agriculture in most of the temperate regions of Europe and overseas. More precisely, in a little more than two centuries – between the nineteenth and the twentieth - the farm businesses of advanced industrialized economies developed new means of transport, new mechanical equipment, and new fertilizers, thus prompting the practice of farming to become increasingly reliant on industries.

The construction of railroads and steamships - together with the production of trucks, boats, and aircrafts - enabled farmers and farming regions to receive industrial inputs from far territories and to sell their products even to distant markets. In addition, the advent of these new “transport opportunities” laid the foundations for a globalized food system where technology producers, agricultural producers and food processors became progressively integrated and dependent on each other.

Then, farm mechanization made it possible to double the amount of output per worker, to increase crop and livestock yields and, not least, to save precious time. Industrial activities were oriented towards the development and manufacture of innovative equipment that - already by the middle of the nineteenth century - was widely adopted by big-size peasant farms. Conversely, lacking the opportunities to mechanize themselves, many small-size peasant farmers had to end their activities and move to urban centres.

Ultimately, at the end of the nineteenth century, mineral fertilizers made their first appearance in the industrialized countries. Nevertheless, it was not until the first half of the twentieth century that purified and synthetic fertilizers spread to all the developed countries, thus becoming a hallmark of industrial crop production. The pace of this change was so high that - already by the middle of the twentieth century - increased application of nitrogenous fertilizers,

herbicides, pesticides, and agrichemicals gave rise to concerns over the dangers of such substances.

Over the course of the industrialization - in the attempt to increase efficiency and productivity - a large number of farmers decided to devote skills and resources to a narrowed range of specific activities (e.g., cultivating corn and rearing beef cattle for meat), thereby increasing farming reliance on new technologies like chemicals and large tractors.

Beginning in 1850, the construction of the abovementioned transport infrastructures enabled many European regions to access a wider range of inputs and consequently to specialize in different activities. The lowlands of the North concentrated on selling grains and exporting livestock and animal-derived products, the coastal areas specialized in the production of wines and alcoholic beverages, while the outlying suburbs focused on the production of perishable products like fruits and vegetables. At the same time, the introduction of steamships made it possible to connect Europe with overseas countries such as the United States, Canada, Australia, New Zealand, South Africa, North Africa, Argentina, and Brazil. In all these territories, farmers could leave behind the difficulties existing in Europe like the absence of large expanses of lands together with the legal and economic burdens associated with property. Hence, already by the second half of the nineteenth century, overseas farmers proved to be more productive and better equipped than those of the old continent. Overseas agricultural products (e.g., grain, meat, and butter) completely pervaded the European markets due to their cheaper prices and the lower costs of transoceanic transportations. The massive import of overseas products prompted a decrease of European production which - plunging income, land rents and investments into decline – forced thousands of peasant farmers to abandon their lands. Thus, at the beginning of the twentieth century, most of the European regions still combined the use of fertilisers and industrial mechanical equipment with manual cultivation and medieval artisan-made machineries. In other words - unlike “modern agriculture” - the practice of farming underwent in Europe only a partial process of specialization, being at that time mainly oriented toward self-consumption and sufficiency.

Then - in the immediate aftermath of the Second World War - the desire for self-sufficiency became a central element of the European political agenda. The ethos of that time was mirrored by the notion of “*productivism*” which entailed the gradual shift towards fewer and larger farms in the name of productivity. In this perspective, bigger meant better. Politicians and governors, agronomists and economists, all quivered for farms to become more

dynamic and technological with the new means of production. In order to do this, small landholders, as well as little farmers, were forced to leave their lands in exchange of wage employments or – alternatively – squeezed out of business. As a result, thousands of peasants joined those already exiled and never returned. This trend has proven to be coherent across all the Western European countries to the extent that, already by the 1950, the number of farms dropped dramatically whereas the size of those survived continued to increase. For instance, data reveal that between 1950 and 2000 the number of farms in Germany fell from 1.6 million to 600.000 whereas, in the same period, the number of farms in France declined from 2.3 million to 700.000 (Muirhead and Almås, 2012). Thus, over the course of half a century, small and mid-size farms almost disappeared while - contrary to what might be expected - the production of food did not suffer any backlash and continued to grow exponentially.

In this view, the notion of agricultural “*exceptionalism*”² deserves further attention as understanding this concept makes easier to understand the evolution of the European agricultural policy during more than half a century. Beginning in 1947, the agricultural sector was included in the set of thematic areas covered by the General Agreement on Tariffs and Trade (GATT) that, as an exception, allowed under specific conditions agricultural export subsidies as well as imports’ quantitative restrictions on agricultural commodities. However, it was not until the implementation of the Common Agricultural Policy (CAP) that agricultural “*exceptionalism*” fully consolidated. In the words of Giovanni Federico (2005):

After the war, no European government dared to liberalize its domestic market for agricultural products. Under the stimulus of the wartime experiences of [food] shortages they set as paramount the aim of increasing total output to achieve, whenever possible, self-sufficiency and to raise farmers’ incomes.

Thus – already by the 1950s - tariffs, subsidies, non-tariff barriers and quotas were intended and employed as protective instruments for the agricultural sector. The Common Agricultural Policy was first introduced by Article 39 of the Treaty of Rome along these same lines, establishing on 25 March 1957 the European Economic Community (EEC) which was finally announced as a done deal on 30 June 1962. At that time, CAP’s primary objective was to safeguard food security against the outside competition in a moment when thousands of farmers

² The notion of agricultural “*exceptionalism*” is grounded on the idea that agriculture is not a sector *comme les autres* and therefore that governments’ intervention is necessary to avoid producers, consumers and society being adversely affected by agriculture.

continued to abandon their lands for settling in the most promising cities. In addition, the first common policy area was even the most expensive as, already in the Sixties, about the 70 per cent of the European budget was directed to the CAP with almost the 90 per cent of the EEC agricultural commodities covered by protections. The combination of massive production with excessive public funding had such an unpleasant outcome that for the next two decades there was a continuous series of reform initiatives which, however, were never agreed since guaranteed prices caused farmers to receive increasingly higher payments as they reacted to CAP's implementation by expanding agricultural production. As a result, increase in agricultural productivity combined with the European markets' inability to absorb the entire farmers' output led the European food commodities' surpluses to be exported also to foreign markets.

Therefore, it is not surprising that since its inception the CAP was considered by non-European countries as dangerous and detrimental. Australia, Canada, New Zealand, and the United States protested the EEC's excessive subsidies to agricultural products' exports. Ottawa and Canberra faced a significant issue concerning the EEC self-sufficiency ratio (SSR) [meaning that only fixed quantity of specific products (e.g., wheat) could be produced in the Community and that the rest should be imported from the outside] since the SSR suggested at that time appeared above its actual level. Ultimately, New Zealand - due to its special economic relationship with the United Kingdom - harshly protested London's intention to join the Community.³ Therefore, despite agriculture was still trapped in protectionism, the growing European production turned out to be a fearsome competitor.

At that time, a crisis was going on since it was seemed that protectionism could not be brought down. As Stefan Tangermann (1996) pointed out:

Given the highly complex nature of agricultural trade policies, the prevalence of non-tariff measures and the degree of separation of domestic markets from world markets, agricultural protection does not easily lend itself to liberalization through the standard tariff-cutting approach.

It was only with the GATT's Uruguay round (1986-1993) that serious talks about the merits of freeing agricultural trade and the criticisms over continued agricultural protectionism occurred. In particular, after more than forty years of state intervention, the governments of the world's

³ However, on 1 January 1973 the United Kingdom became a member of the European Economic Community (EEC).

major producing nations decided to reduce the weight of agricultural restrictions and the agricultural sector was finally really covered by the GATT (which also was intended as a possible response to the escalating cost of the Common Agricultural Policy). Thus, the round proved its centrality in that – despite CAP basic principles remained unaffected - corrective measures were introduced so as to reduce over-production and excessive expenditure. Together with this, the Uruguay round was likewise significant for the internal structural measures it established, such as reforestation grants and aid payments conditional on environmentally friendly *practices* that, in turn, resulted in more environmentally friendly *policies*.

In this view, industrialized agriculture had brought with it environmental issues since trees were dejected, croplands and pasturelands expanded, and waterways interrupted so as to increase even more productivity. Since the middle of the twentieth century, evidence have suggested that food production was among the major sources of poor health and environmental degradation, especially contributing to chemical pollution, biodiversity loss, water regulation, land-system change as well as nitrogen and phosphorus natural cycles interference. In particular, the excessive applications of chemical fertilisers threaten the same nitrogen and phosphorus cycles and trigger dramatic environmental reactions such as nitrous oxide emissions, eutrophication of aquatic and terrestrial ecosystems, acidification of water and soils as well as groundwater contamination. Together with this, agricultural intensification prompts land-system change that, in turn, massively contributes to greenhouse-gas emissions (e.g., through deforestation and burning of biomass) and biodiversity loss through terrestrial and aquatic species extinction, habitat fragmentation, reduced biodiversity intactness, and environmental degradation. Ultimately, food production has been identified as the world's largest consumer of water, “the bloodstream of the biosphere”, thus further threatening human health and environmental sustainability (Willet et al. 2019).

Along these considerations, it is not surprising that - after having promoted practices aimed at encouraging specialization and productivism for more than forty years – with the 1992 reform, the Common Agricultural Policy turned its focus on “the promotion of high-quality products; the prevention of natural disasters in the most remote regions; the renovation and development of villages and the promotion and conservation of the rural heritage” (Muirhead and Almås, 2012). Hence, quality substituted quantity, meaning that smaller volumes of food had to be produced with more environmentally friendly techniques. Together with this, “the fundamental changes made to the way the CAP was financed involved a shift from price support to direct support via the European budget and a move away from a system of unlimited

guaranteed prices to one of quantitative limits on production and income compensation for farmers”.

However, it was only in 2003 that the emphasis was really switched from securing food supply to the conditions under which food had to be produced as well as the food production’s consequences on natural ecosystems. With a view to the European Union’s 2004 and 2007 enlargements,⁴ subsidies were untied from the production of specific crops and directed to single farm payments scheme under the umbrella of the Fischler reform. Then, Agenda (2000) helped to consolidate rural development activities in order to compensate the reduced farmer incomes by focusing on food quality and safety, public health as well as animals, plants, and ecosystems welfare. Subsequently, the 2008 “Health Check” reform introduced other significant novelties in that it inserted into the rural development policy five additional instruments concerning climate change, renewable energy, water management, protection of biodiversity and, in conclusion, promotion of innovation. Thus, to sum up, the CAP reforms that populated the 1990s and early 2000s sought to end the connection between payments and production levels that carried overproduction, including through the introduction of agri-environment payments and cross-compliance. Nevertheless, the World Trade Organization Doha round (2001- 2016) put the Common Agricultural Policy under scrutiny again. It was intended as an occasion to address the global trade-related issues remained unresolved in the previous rounds such as the maintenance of agricultural subsidies, the access of the less developed and developing countries to the world richest agricultural markets as well as the rise of new powers like China, India, Brazil, and South Africa. However, due to the incompatible interests of the governments concerned, the Doha Round - largely conditioned by thorny agricultural issues - remained fruitless.⁵

⁴ With these enlargements, 7 million farmers added to the 6 million already existing in the European Union.

⁵ The United States and the European Union, for instance, did not hesitate to maintain their agricultural subsidies regime.

1.2 THE PARIS AGREEMENT ON CLIMATE CHANGE

1.2.1 The Making of the Paris Agreement

On 12 December 2015, 195 countries, reunited at the Twenty-First Conference of Parties (COP 21) of the United Nations Framework Convention on Climate Change (UNFCCC), made history by adopting the Paris Agreement on Climate Change (PA).⁶ This landmark agreement came at the end of a long process lasted more than twenty years, since its inception dates back to the 1992 Rio de Janeiro Earth Summit for then being concluded in Paris, where the Conference was held.

Beginning in 1992, the States Parties to the UNFCCC have sought to reach an agreement on the measures to adopt for preventing greenhouse gas emissions (GHG) to increase the global temperature and thus to result in an environmental disaster with no return. The Intergovernmental Panel on Climate Change (IPCC) - set up in 1988 to provide governments with all the necessary information to deal with climate change - has reported that the rise in global average temperature must be kept below 2°C as compared to pre-industrial level. However, despite the IPCC had come up with this conclusion already in the Eighties, the divergences in States' capacity to cope with global warming made difficult to reach a deal. It was only with the adoption of the Kyoto Protocol (11 December 1997) and its entrance into force (16 February 2005) that such divergences were recognised for then being used as a starting point for a static differentiation ("targets and timetables" approach), according to which the states identified as "developed" had to respect specific emission reduction targets whereas the others had not. In this view, it is worth noticing that emerging economies like China and India - being regarded as "developing" - were not subjects to any type of restrictions. Thus, when the Protocol expired in 2012, it was no longer possible to agree on new targets in that - having found themselves in the paradoxical situation of having to meet binding targets while the rest of the world refused to do so - the European Union had lost interest in continuing with this approach (Savaresi, 2016).

Then, the UNFCCC States Parties embarked upon the Bali Conference (COP 13) (Decision 1/CP.13, Bali Action Plan, FCCC/CP/2007/6/Add.1.). It was convened in the background of the IPCC's Fourth Assessment Report (AR4) which - once again - reasserted

⁶ It entered into force on 4 November 2016 when 55 States representing more than 55% of the total global greenhouse gas emissions deposited their instruments of ratification.

that rising global temperature was to be attributed to greenhouse gas emissions of anthropogenic nature and that actions should be taken so that human societies can survive on Earth. Thus, it was decided that all the UNFCCC States Parties would work together to find a compromise on the long-term measures to be adopted, although the decision about the actual content of such compromise was procrastinated to the Copenhagen Conference (COP 15). In detail, the long-term agreement should have considered “*the issues of adaptation, the provision of financial support to the less-developed countries by the developed nations for climate action, and the question of technology transfer that would help developing countries to pursue growth by means used by the advanced industrialised nations*” (UNFCCC 2008). However, even though in the two years that followed the Bali Conference there was an increase in collective awareness and emerging economies like China and India were forced abiding to more stringent environmental protection measures, these negotiations proved inadequate to address the complexity of these matters and almost ran aground.

Subsequent negotiations opened the way to some developed countries, such as the European Union, to elaborate a more sophisticated approach to differentiation, mitigation, and adaptation. More developed nations suggested a strategy centred on three major objectives: first, the definition of an annual target for global emissions and a target for the global reduction of greenhouse gas emissions by 2050 compared to 1990 emission level; second, a statement by the less developed and developing countries concerning the year in which their emissions would reach a peak; third, the formation of a system of global carbon trading that would foresaw aid to the most vulnerable states as well as transfer of technology and finance to the less developed countries. In response, less developed and developing countries entirely refused the strategy proposed, arguing that the definition of a global target without indicating how the burden of mitigation should be distributed was equivalent to unilaterally impose restrictions on the less developed states and that developed nations – considered responsible for global warming - should be the first to cut their emissions according to what indicated by the IPCC’s AR4. Furthermore, developing countries added that eventual development paths with less greenhouse gas emissions would have depended on the financial and technological support received by developed nations combined with their specific development needs (Jayaraman, 2015).

The COP 15 came to an end on 18 December 2009 with the non-inclusive and last-minute Copenhagen Declaration, signed by only 28 countries.

New negotiations started at Durban in 2011, where more than 70 countries - strongly supported by the European Union – sought to reach an agreement with a solid mitigation commitment within an agreed time frame. Nevertheless, even in this case, such initiative met the opposition of India, China and few other states which claimed it was incorrect to begin negotiations without having previously determined the principles upon which mitigation commitments would have been defined. In the end, the Durban Platform has - on one hand - removed all reference to equity and shared but differentiated responsibility whereas - on the other hand - by breaking the ranks of developing countries prompted states like China and India to accept a new mandate for adopting a legally binding climate agreement.

Over the period between Durban (2011) and Paris (2015) three different streams emerged since, with the exception of the European Union, adjustments in developed countries' policies did not keep pace with the commitments previously made; China approached developed countries by agreeing to declare a peak year for its emissions and committing itself to increase the share of renewable energy in its electricity production as well as reducing emissions from its economy;⁷ while India, together with a group known as the “Like Minded Developing Countries” (LMDC), continued to reject the presentation of a climate agenda as well as the introduction of the so-called "Equity Reference Framework", related to the process for reaching a fair agreement rather than on the content of the agreement itself. Then, in occasion of the Warsaw Conference (COP 19) it was agreed that all States Parties would present national climate action plans referred to as Nationally Determined Contributions (INDCs) with specific reference to adaptation, mitigation and, only for the less developed countries, the financial and technological assistance to be received from the developed ones. However, the negotiations remained fruitless (again) as the opposition between more and less developed countries could not be mitigated.

Therefore, the Paris Conference on Climate Change was expected to be the deadline for the adoption of a legally binding agreement with regard to emissions reduction targets to be implemented by 2020. On 5 December 2015, the Ad Hoc Working Group on the Durban Platform for Enhanced Action (ADP) – established to draw up the final document (Decision 1.CP/17) – transmitted the negotiating text to be discussed in Paris, a fundamental step to enable the Parties to reach an agreement under the UNFCCC. Nevertheless, at the beginning

⁷ The commitments made by China are the outcome of a summit held at Beijing in November 2014 between Barack Obama and Xi Jinping.

of the Conference there was still no consensus on how to collectively address climate change as the Parties' positions on some of the substantive issues of the agreement remained irreconcilable. At this stage, the herculean diplomatic effort made by the United States and other numerous Parties became evident in that a "high ambition coalition" - consisting in the United States, the European Union, Australia, Brazil (although Australia and Brazil joined the "high ambition coalition" later) and 79 African, Caribbean, and Pacific countries – was presented. It was intended to counterbalance the coalition composed by China, India and the "LMDC" group since all these states were still considered essential to reduce greenhouse gas emissions.

In the end - despite on the eve of the conference few would have bet that the Parties would have reached an agreement - on 12 December 2015, 195 countries formally adopted the Paris Agreement on Climate Change.

1.2.2 The Core Elements of the Paris Agreement

The final document of the Twenty-First Conference of Parties (COP 21) consists in a thin 11-page treaty accompanied by a 20-page decision document, conceived to address all the technical and substantive aspects for the adoption and implementation of the Treaty. The core elements of the Paris Agreement concern the means of implementation, adaptation, and mitigation.

The Preamble of the Agreement has political and moral value since it introduces for the first time the concept of "climate justice". This term – being inexorably tied to the principle of equity - has often been used in discussions on the impact of global warming, the measures required to deal with it, and the distribution of the burdens arising from the transition to low-carbon societies. The issue of climate change adaptation is of particular concern to the less developed and developing countries which during the negotiations insisted on introducing a "ranking" of vulnerability to climate change with the aim to determine the extent of financial and technological support to be received from developed countries. In this view, numerous authors have acknowledged the impossibility to solve climate crisis without dealing with distributive justice-related questions such as the financial and technological assistance to be given to the less developed countries. However, the Agreement presents a flaw since it does not refer to a climate change displacement coordination facility nor make explicit how equity

should be implemented, thus turning this principle into an empty concept if developed countries do not respect their emission reduction targets.⁸

Article 2.1(a) of the Agreement entails a collective long-term goal since it asserts that all States Parties must ensure that the rise in global average temperature is kept “*well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognising that this would significantly reduce the risks and impacts of climate change.*” However, the agreement does not provide any indication nor quantitative measures on how these targets must be achieved or how individual states must curb their emissions. To make matters worse, despite the Agreement was conceived as legally binding among the Parties, the choice of the modalities for implementing the provisions have been left to the signatories. Therefore, already at the time when the Agreement was approved, the absence of specific guidelines to individual states made the achievement of some of the main Conference objectives very unlikely, if not impossible.

Along these considerations, another peculiar aspect of the Paris Agreement concerns the “Nationally Determined Contributions” (NDCs) to mitigation actions, since none of the provisions contained in the document provide specific reduction obligations or mention them as legally binding. In detail, the nature of the legal provisions on the NDCs is conciliatory in that meant to facilitate international cooperation rather than prescriptive, thus making the Agreement dependent upon the willingness of individual Parties.

Conversely, the PA explicitly refers to the principle of common but differentiated responsibility (CBDR) which was strongly required by the less developed countries. Contrary to the mechanism of static differentiation embedded in the Kyoto Protocol, the Paris Agreement dismantles the net distinction between developed and developing countries’ duties by asserting that all Parties “*aim to reach global peaking of greenhouse gas emissions as soon as possible*” and “*undertake and communicate ambitious efforts [...] with the view to achieving the purpose of this Agreement*” (Art. 4.1 and Art. 3 PA). However, whereas “*Developed country Parties should continue taking the lead by undertaking economy-wide absolute emission reduction targets. Developing country Parties should continue enhancing their mitigation efforts and are*

⁸ In one of the provisions of the last text submitted to the Parties, there was mention to the principle of equitable distribution of the global carbon budget – defined in terms of allowed global emissions - considered by the IPCC as the most “appropriate global indicator of climate change”. However, in the final part of the negotiations, the Agreement has turned away from this notion and every reference has been withdrawn (Jayaraman, 2015).

encouraged to move over time towards economy-wide emission reduction or limitation targets in the light of different national circumstances” (Article 4.4 PA). Then, Article 9.1 states that *“Developed country Parties shall provide financial resources to assist developing country Parties with respect to both mitigation and adaptation in continuation of their existing obligations under the Convention”*. In this view, it is worth noticing that the initiatives undertaken by the developed countries with regard to capacity building as well as financial and technological assistance to the less developed states are subjects to the global “stocktake” and periodic reviews. Therefore, on one hand, the Paris Agreement draws a more blurred classification while, on the other hand, it retains the principle of differentiation with regard to adaptation, mitigation, transfer of finance and technology as well as support for capacity building to the less developed countries.

Then, the Agreement provides for a periodic review of the actions that the Parties are willing to undertake in order to meet the commitments made during the negotiations (“pledge and review” approach). The first revision was projected for 2018 - ahead of the entry into force of the post-2020 pledges and the first “global stocktake” to be carried out in 2023 – whereas subsequent reviews were scheduled to take place every five years. Thus, the “pledge and review” approach left ample leeway to signatories on how to contribute for tackling climate change.⁹

One evident problem emerged from this mechanism concerned the modalities with which the Parties reported their pledges – without precise canons – so resulting in great confusion about, for instance, the choice of a reference year to reduce their emissions. Consequently, the Agreement has addressed such problem by establishing a mechanism to assess the effectiveness of the actions fostered by the Parties as well as their alignment with scientific knowledge. Thus, the Paris Agreement not only requires all signatories to make efforts to grips with climate change, but also establishes a review mechanism to correct or improve the Parties’ actions, although it is still too early to evaluate the adequacy of this architecture in the long term.

Ultimately, the Paris Agreement is the first multilateral environmental agreement to openly refers to human rights and to have - at least partially - built a bridge between them and climate change. In this view, greenhouse gas emissions and rising global temperature are

⁹ It is worth noticing that, over the course of almost twenty years, States Parties have gradually phased out the top-down “targets and timetables” approach embedded in the Kyoto Protocol for moving towards the bottom-up “pledge and review” approach embedded in the Paris Agreement.

threatening the enjoyment of basic human rights such as the right to life, health, and adequate nutrition. Nevertheless, it is important to distinguish the impact of climate change on the enjoyment of rights from the measures adopted in response to this phenomenon since, in the first case, states are required to mitigate the catastrophic effects of the climate crisis while, in the second case, adaptation and mitigation measures might negatively affect the enjoyment of such rights. In detail, the decision document asserts that *Parties “should, in all climate change related actions, fully respect human rights”* (Decision 1/CP.16, 8). Consequently, international and regional human rights bodies should monitor and, when necessary, sanction any human rights violations associated with climate change response measures as well as encourage the development of concrete policies on climate and sustainable development. In conclusion, despite its glaring shortcomings, the Paris Agreement must be regarded as the best possible compromise at the time of its conclusion.

1.2.3 What does the Paris Agreement mean for agriculture?

The Paris Agreement has recognized in its Preamble the fundamental need to guarantee food security and assess the vulnerabilities of agri-food systems due to climate change. In particular, the Agreement has identified agriculture as a critical sector since not only it is adversely affected by climate change, but also able to mitigate it in turn. Thus – not being agriculture a sector *comme les autres* – to ignore agricultural emissions is to reduce the possibilities of meeting the global climate targets.

As abovementioned, the Paris Agreement consists in Nationally Determined Contributions (NDCs), climate action plans containing the measures States Parties are willing to adopt to limit the increase in global average temperature. In order to address climate crisis in the agricultural sector, Countries have associated national agricultural practices with the 2°C global target. In particular, following the adoption of the Agreement, the 60% of the NDCs submitted by the signatories included mitigation actions, whereas the 90% contained adaptation measures in the agricultural sector. Moreover, at least 119 countries have reported in their NDCs that urgent actions are needed to reduce agricultural emissions (Wollenberg et al, 2016), 148 NDCs included mitigation measures in the agricultural sector, 157 Parties referred to Land use, Land Use Change, and Forestry (LULUCF), whereas 168 mentioned agriculture and LULUCF together (FAO, 2016).

However, mitigation contributions laid down in the NDCs fall significantly short of what was needed to limit global warming, thus revealing that much greater efforts were required to reduce emissions. In order to deliver on the Paris Agreement, the UNFCCC's finance mechanisms [e.g., Green Climate Fund (GCF) and Global Environmental Facility (GEF)], together with scientific organizations [e.g., CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS)], were commissioned to provide financial and technical support to the Parties, particularly to implement national adaptation and mitigation measures. Their contribution consisted in assisting countries to establish early warning systems, optimise water management in agriculture, develop low-emissions farming practices, adopt less harmful fertilisation techniques, and enhance soil carbon sequestration. In addition, it was decided that the efforts made by the Parties to achieve the global target would be monitored by the UNFCCC, starting from the global stocktake which will take place in 2023.

In order to make monitoring successful, more responsible and transparent mechanisms to optimise communication and verification arrangements are to be developed under the framework of the Paris Agreement, whereas the Parties are required to report in detail information on their emissions and climate-related actions.

Along these considerations, support from the scientific community is essential since the tools and data currently available determine the criteria for reducing global emissions in the agricultural sector. Notably, the contribution of science has already proved decisive through the development of Climate-Smart agricultural programming tools, such as the one designed by the CGIAR that consents to monitor the progresses made towards the achievement of the Paris targets by verifying data on food safety, adaptation, mitigation, resilience, and productivity of the agricultural sector. However, at the time when the Agreement was adopted, available agricultural development pathways contributed to mitigation by only 21-40% (Wollenberg et al, 2016). Particularly, researchers estimate that – since agriculture contributes with ~ 5.8 GtCO₂e yr⁻¹ (11%) of total anthropogenic greenhouse gas emissions (without land-use change-related emissions) - to achieve the objective of keeping the rise in global average temperature below 2°C, it is necessary to reduce agricultural greenhouse gas emissions by 1 gigaton carbon dioxide equivalent by 2030 (~1 GtCO₂e yr⁻¹ by 2030), even though current agricultural technologies only permit a reduction equivalent to 0.61 GtCO₂e yr⁻¹ by 2030.¹⁰

¹⁰ Agricultural emissions out of total developing countries' emissions account to 35%, whereas the percentage is 12% in developed economies according to GHG emissions inventory reports to the UNFCCC (Wollenberg et al, 2016).

Thus, how to reduce emissions further? Only the adoption of new climate policies and innovative technologies would enable to reach the desired target. Despite advanced low-emissions technologies (e.g., methane inhibitors to reduce dairy cow emissions or devices to control soil–plant microbial processes to retain carbon longer on the ground) are about to be produced, the development of such transformative techniques seems still not enough to reach the 2°C target. It follows that global, national, or regional agriculture-related bodies must provide political incentives for encouraging farmers to adopt innovative practices on a large-scale, such as policy interventions to encourage the passage towards more profitable production methodologies, employ innovative tools to monitor carbon reduction, provide public incentives to meet sustainability standards, introduce carbon taxes in the agricultural sector, and deliver financial support for a low-emissions agriculture.

The transition towards a low-carbon agriculture might have significant implications both at global and regional level, not only from an environmental but even from a socio-economic perspective. Hence, policies aiming at decarbonisation might generate collateral damages such as price increase, able to adversely affect the economies of the less developed countries, exacerbate food insecurity and, consequently, cause migratory flows likely to trigger social turmoil. These considerations highlight the importance of carefully designing and differentiating political initiatives related to transition, not only by considering the long-term environmental effects, but also the short and medium-term socio-economic ones. For instance, Jensen et al. (2019) have demonstrated - through a review of the Aglink-Cosimo economic agricultural model – that reducing emissions by an extent consistent with the Paris targets – can adversely affect agricultural production, especially from a regional perspective. On the other hand, the expected increase in population density for the coming decades will bring the necessity to increase global food production, thus compensating this possible reduction in agricultural productivity and offering great opportunities for farmers (e.g., agricultural co-benefits for inducing growers to adopt low-emission farming practices). The same agricultural development would benefit from the efforts made to render high-tech technologies accessible to everyone.

Therefore, special emphasis on agriculture might speed up the transition towards a low-emissions economy and sustainable global food security. On this depends the survival of more than 550 million farmers (Campbell, 2016).

1.3 EU CLIMATE ACTION AND THE EU AGRICULTURAL SECTOR

1.3.1 Climate Change and European Agriculture

Following the energy, transport, industry, residential and commercial sectors, agriculture is the fifth largest contributor of GHG emissions (11.3%) in the European Union, even though with significant differences among Member States (e.g., 3% Malta – 32% Ireland).¹¹ In addition, according to the European Environment Agency (EEA), agriculture is the main threat to biodiversity. Hence, as the share of emissions originating from agriculture continues to grow, the European Union is called to review its production system in the agricultural sector.

Between 1990 and 2014, non-CO₂ emissions from the agricultural sector decreased by 21%, due to a significant reduction in the number of livestock and use of fertilisers as well as improvement in farm practices and manure management. However, the pace of this process has slowed down [between 1990 and 2000, emissions decreased by 16%, whereas, between 2001 and 2012 by 8% (EEA, 2016a)] and further emissions reduction in the agricultural sector proved difficult. In detail, a further reduction in emissions while maintaining practices of business as usual (BAU) might amount to only 4% (Hoelgaard, 2016). In this view, the introduction of innovative techniques and new production methods (e.g., more efficient use of fertilisers and better organised food production with reduced emissions per unit of product) might mitigate emissions originating from food production in the European Union. Together with this, changes in consumption patterns might help to further reduce food production-related greenhouse gas emissions. Meat and dairy products, for instance, have the greatest impact in terms of carbon production and water consumption per kg of food. Thus, given that livestock and feed production respectively generate more than 3 billion tonnes of CO₂ equivalent, reducing meat and dairy consumption would contribute to curbing emissions from the agricultural sector.

However, how exactly climate change impact the European agriculture? Given that agricultural activities require a perfect equilibrium between quantity and quality of soil, water, sunlight, and heat, the impact of climate change has been particularly felt by European farmers due to changing rainfall patterns, rising average temperatures, variability in seasonality, and extreme weather events like heatwaves, droughts, storms, and floods. In particular, the rise in

¹¹ *Data source:* National emissions reported to the UNFCCC and to the EU Greenhouse Gas Monitoring Mechanism provided by Directorate-General for Climate Action (DG-CLIMA).

average temperatures affects the length of growing seasons (e.g., cereals are harvested several days earlier compared to the past) influencing the harvest in many European regions. Thus, on one hand, agricultural productivity in Northern Europe is likely to increase due to the extension of the growing season, so allowing the cultivation of new products (IPCC, 2014b), whereas, on the other hand - due to extreme heat waves, reduction of precipitation and less availability of water – agricultural productivity in Southern Europe is likely to be adversely affected. Rising temperatures and extreme weather events might also affect growing seasons by disrupting agricultural production through the spread and proliferation of weeds, parasites, and diseases (EEA, 2015a).

Table 1: Summary of projected impacts of climate change on EU agriculture by EU region

VARIABLE	CLIMATE IMPACT	SOUTH	NORTH	WEST	EAST
Temperature	Heat stress for plant production (high regional variation)	--		-	
Temperature	Increased temperatures and reduced frost period leading to increased crop range and suitability		+		
Temperature	Increase in temperature and humidity leading to livestock stress and mortality	--	-	-	-
Water availability	Reduced summer rain fall, overall decrease in water availability + droughts. Aquifer and ground water recharge rate is reduced	--	-	-	-
Water availability	Increased flood events + frequency. Crop damage and limits to soil workability. Impact exacerbated by hard flood defences in urban areas*.		-	--	--
Water quality	Salinisation and increased pest and disease problems in water courses	--	-	-	-

VARIABLE	CLIMATE IMPACT	SOUTH	NORTH	WEST	EAST
Pests and disease	Spread of pests and diseases from increased range varying by pathogen**. Impacts on both crops and livestock	-	--	--	-
Fire risk	Increased fire risk frequency with high inter-annual variation. Primarily on forests but risks also to cropland	---			
Wind damage	Increased risk of wind damage to crops and forests	-	-	-	-

Source: Directorate-General for Internal Policies “The Consequences of Climate Change for EU Agriculture. Follow-up to the COP21- UN Paris Climate Change Conference”, Research for Agri Committee (2017) [IP/B/AGRI/IC/2016-20]

Note: - = negative impact + = positive impact. The significance of the impact is denoted by the number of symbols. * e.g. river canalisation, flow restrictions, etc. forcing water into more rural areas and floodplains; ** Arthropod-borne diseases tend to favour warmer and drier conditions, whereas mildew and cereal stem rot may reduce as a result of increased temperatures.

In order to develop efficient climate adaptation schemes, farmers and landowners necessitate support measures such as insurance schemes, access to credit and resources for small-size holders, and financial risk management (IPCC, 2014a). In order to mitigate the economic damages caused by climate change, the European Union has set up assistance funds, whereby it is worth mentioning the European Agricultural Fund for Rural Development (EAFRD) financed, in turn, by the European Investment Bank (EIB). Additionally, production losses might be offset by adjustment agricultural practices, such as rotation of crops according to periods of water availability, change of sowing dates depending on temperatures and rainfalls, as well as cultivation of agricultural varieties more suited to new environmental conditions.

Nevertheless, the increase in population density constitutes a problem also for the European Union in that global demand for food is expected to increase even by 70% in the coming decades with a consequent increase in food demand equal to 60%. The question therefore arises as to whether it is possible to meet the growing demand for food and, at the same time, reduce the environmental impact of the agricultural sector in the EU. Reducing

European food production does not seem a viable solution since - being the EU one of the world's largest food producers - this would contribute to increase global food prices, thereby having negative consequences in terms of food security. To make matters worse, increasing agricultural production in presence of over-exploited lands would automatically results in greater use of chemical products, extremely harmful for the environment. Possible solutions to reduce agricultural GHG footprint concern the optimization of the carbon sequestration and storing processes in soil and biomass, changes in energy use through the development of renewable energy infrastructures (e.g., employment of biomass for heat, use of agricultural crops and residues for biofuels, the construction and installation of solar, wind and hydro-power infrastructure). Three sorts of farming activities would therefore benefit the environment: first, reduction of agriculture greenhouse gas emissions through changes in breeding practices, dietary adjustments, improvement in manure, croplands, and grassland management as well as restoration of degraded land; second, carbon sequestration in soil and biomass; third, displacing greenhouse gas emissions through agricultural activities and sectors (Martineau et al., 2016).

In any case, none of these activities would be sufficient on its own. Hence, there remains the problem of meeting the future growth of global demand for food without further worsening the climate crisis. It is worth recalling that earmarking additional lands for cultivation would surely produce negative consequences on natural ecosystems, whereas converting forest lands into croplands and pasturelands would increase greenhouse gas emissions, further endangering biodiversity as well as nature's capacity to adapt to climate change.

Thus – with the aim to mitigate climate change and ensure food security – a modification of the European agricultural system is required as well as to make collective efforts with a view to reducing greenhouse gas emissions.

1.3.2 What does the Paris Agreement mean for European Agriculture?

Political initiatives to deal with climate change must take into consideration the impact of agriculture on natural ecosystems as well as its importance from a socio-economic perspective. The future of the European Union – and of the entire planet as well - depends on the actions that have been and will be taken in the future to mitigate and improve the state of the environment.

In this view, Article 4 of the Paris Agreement recognizes the responsibility of States Parties to implement - on a national basis - the commitments included in their Nationally Determined Contributions (NDCs). In detail:

Each Party shall prepare, communicate and maintain successive nationally determined contributions that it intends to achieve. Parties shall pursue domestic mitigation measures, with the aim of achieving the objectives of such contributions.

Each Party's successive nationally determined contribution will represent a progression beyond the Party's then current nationally determined contribution and reflect its highest possible ambition, reflecting its common but differentiated responsibilities and respective capabilities, in the light of different national circumstances.

Thus, at the time when the Agreement was approved,¹² the European Union agreed to reduce its overall greenhouse gas emission of at least 40% by 2030 - as laid down in the EU's 2030 Climate and Energy targets - and of 80%-95% by 2050 compared to 1990 level (COM(2011)112 final). In this respect, a study conducted by the European Environmental Agency (EEA) has revealed that reducing emissions by 40% would have been possible just with the adoption of new policies and greater adaptation efforts. Furthermore, the success of these objectives would have been conditional upon the EU's ability to channelling public and private financial resources towards sustainable and innovative technologies as well as to adopt effective regulations on greenhouse gas emissions.

In its Communication - delivered on 2 March 2016 for then being discussed two days later by the European Ministers of Environment – the European Commission has presented the follow-up to the Paris Agreement on Climate Change and its implications for the European Union's Climate Policy, stressing further the need to keep alive the Paris *momentum* and to concentrate on the implementation of the global and national commitments (NDCs). The Communication covered all the sectors to be reviewed and presented the investments required in the field of innovation as well as the changes to be made in the economic structure of the European Union. In addition, a timely ratification of the Paris Agreement, together with the implementation of the EU 2030 Climate and Energy Framework (EUCO 169/14),¹³ have been

¹² The Paris Agreement was formally adopted by the European Union on 5 October 2016 and entered into force on 4 November 2016.

identified as necessary steps to prove the EU's commitment to meet the Paris targets. Former Dutch Minister for the Environment, Sharon Dijksma, stated that: *“In Paris 195 countries adopted the historic climate agreement, a true turning point to limit the temperature increase and to prevent risks posed by climate change. Now member states will make it a reality by taking concrete actions at EU and national level”* (European Council, Council of the European Union, 2016).

Hence, on 23 October 2014, the European Council agreed the EU 2030 Climate and Energy Framework for the period 2020-2030. Then, on 22 January 2014, the framework was presented by the European Commission to the EU Member States. It provided for a binding EU greenhouse gas emission reduction target of at least 40% by 2030 compared to 1990 levels; an increase of the share of renewable energy sources consumed of at least 27% in 2030; an improvement in energy efficiency of 27% compared to previous projections; the completion of the internal energy market by achieving a minimum 10% target for the existing electricity interconnections by 2020 (at least with respect to the energy islands, in particular the Baltic states and the Iberian peninsula).

However, what does the Paris Agreement concretely mean for European Agriculture? After having agreed the Paris Agreement, the European Commission has acknowledged that *“The multiple objectives of the agriculture and land use sector, with their lower mitigation potential, should be acknowledged, as well as the need to ensure coherence between the EU's food security and climate change objectives”*. In this view, the EU 2030 Climate and Energy Framework validates the Paris targets, providing for the reduction of national greenhouse gas emissions in specific sectors, such as those covered by the Emissions Trading System (ETS), the Effort Sharing Decision (ESD), and the LULUCF decision.

In particular, the ESD Decision (Decision No 406/2009/EC) provides for national annual greenhouse gas emissions allocations according to Member States' relative wealth within the European Union, binding on Member States for the period 2013–2020. In turn, Member States are required to report on their ESD emissions on an annual basis, meaning that in the case a Member State fails to honour its annual emissions allocation, a deduction from the allocation for the following year (equivalent to the share of emissions in excess multiplied by 1.08) is expected. Together with this, it provides for “geographic flexibility”, meaning that a Member State can transfer up to 5% of its emissions to another Member State in case the latter has produced lower emissions compared to its “emission ceiling”, and “temporal flexibility” which

enables Member State to bank or borrow emission allocations from year to year within the “trading period”. The last instruments provided for by the ESD are the credits from project activities, such as mitigation projects for non-EU developing countries and community-level projects.

Concerning the LULUCF Decision (Decision No 529/2013/EU), it aims to improve the data quality to meet the accounting and reporting requisites provided by the Kyoto Protocol. In addition, it provides for the “no-debit rule”, meaning that the EU and Member States must ensure that GHG emissions from the sectors covered by the LULUCF are counterbalanced by equivalent reduction in the same sectors. Last, Article 10 of the LULUCF Decision provides that Member States must report on the LULUCF measures they are willing to adopt to reduce emissions. To conclude, the ESD, ETS, and LULUCF sectors are all covered by the Monitoring Measures Regulation [Regulation (EU) No 525/2013]. It required Member States to report on the policies introduced to meet climate targets (Article 13), decarbonization initiatives (Article 4) and, ultimately, national adaptation strategies (Article 15).

Returning to our treatment, the long-term Paris targets involves the need to focus more on mitigation measures in agriculture, forestry, and other land-using sectors (AFOLU). In particular, the Agreement requires States Parties to report information on their LULUCF emissions, without providing for specific methods but presenting a "menu of options" (SWD(2016)249). Along these considerations, even the UNFCCC and the Kyoto Protocol require Parties to report (separately) on their greenhouse gas emissions, so that mitigation measures and emission sources can be clearly distinguished, prompting agriculture, forestry, and other land use (AFOLU) to be treated in two different ways under the EU Climate Mitigation Framework 2020. In particular, non-CO₂ agricultural emissions - together with waste, transport, and heating of buildings - are covered by the Effort Sharing Decision (ESD), whereas CO₂ emissions and carbon sequestration have been incorporated into the land-use, land-use change, and forestry (LULUCF) Decision, still not part of the EU climate policies and EU emission-reduction targets. Hence, to sum up, CO₂ and non-CO₂ emissions are to be addressed by separate frameworks.

Table 2: Coverage of GHGs and sectors by the three EU climate reporting frameworks

MECHANISM	GHGS COVERED	SECTORS	RELEVANCE TO AGRICULTURE
Effort Sharing Decision (ESD)	All GHGs covered by Kyoto (CO ₂ , CH ₄ , N ₂ O, HFCs, PFCs and SF ₆) with targets based on CO ₂ equivalence. NF ₃ not included in ESD despite introduction under Kyoto second commitment period.	<ul style="list-style-type: none"> • Energy supply (not generation) • Industrial energy use and processes • Transport energy use (excluding international maritime shipping and aviation) • Buildings (household energy use) • Services and small industrial installations • Agriculture (non-CO₂ only) • Waste 	Non-CO ₂ emissions from agriculture Explicitly excludes emissions from land use, land use change and forestry (LULUCF)
Land Use, Land Use Change and Forestry (LULUCF) Decision	Reporting and accounting on selected GHG emissions relevant to Kyoto reporting requirements - CO ₂ , CH ₄ , and N ₂ O.	<ul style="list-style-type: none"> • For each accounting period: emissions from afforestation, reforestation, deforestation and forest management (since 1990). Member States may also prepare and maintain accounts to reflect emissions and removals resulting from re-vegetation and wetland drainage and rewetting. Reporting only on cropland & grazing land management and preparation for accounting from 2021. 	CO ₂ emissions from cropland and grazing land management.

MECHANISM	GHGS COVERED	SECTORS	RELEVANCE TO AGRICULTURE
Emission Trading System (ETS)	<ul style="list-style-type: none"> • Carbon dioxide (CO₂) • Nitrous oxide (N₂O) • Perfluorocarbons (PFCs) 	<ul style="list-style-type: none"> • Power and heat generation • Energy-intensive industry sectors including oil refineries, steel works and production of iron, aluminium, metals, cement, lime, glass, ceramics, pulp, paper, cardboard, acids and bulk organic chemicals • Civil aviation 	<p>N₂O emissions from the production of nitric, adipic, glyoxal and glyoxalic acids used in the manufacture of fertilisers.</p> <ul style="list-style-type: none"> • Bioenergy facilities with potential to use agriculturally produced biomass. • Zero carbon rating of biomass at point of collection

Source: Directorate-General for Internal Policies “The Consequences of Climate Change for EU Agriculture. Follow-up to the COP21- UN Paris Climate Change Conference”, Research for Agri Committee (2017) [IP/B/AGRI/IC/2016-20].

Along these lines, the EU 2020 Climate and Energy framework and the Global UNFCCC framework require each Member State to submit, on an annual basis, a National Inventory Report (NIR), a Common Reporting Format (CRF),¹⁴ and the sum of the EU Member States’ relevant information on greenhouse gas emissions and removals (EEA, 2016a). Then, information are disaggregated along sectors and sub-sectors (so-called “Key Categories”) so as to permit Member States to clearly identify where the emissions come from and to develop the measures needed to mitigate them.

¹⁴ Notably, the CRF offers a comprehensive picture of the different sectors’ emissions, in that it presents the overall data about non-CO₂ emissions generated by the sectors covered by both the ESD (CRF 3) and the LULUCF (CRF 4).

Table 3: Sector specific breakdown of emissions reporting for agriculture and forestry (UNFCCC)

AGRICULTURE (CRF 3)	LULUCF (CRF4)
A. Enteric fermentation	A. Forest Land
B. Manure management	B. Cropland
C. Rice cultivation	C. Grassland
D. Agricultural soils	D. Wetlands
E. Prescribed burning of savannas	E. Settlements
F. Field burning of agricultural residues	F. Other land
G. Liming	G. Harvested wood products
H. Urea application	H. Other
I. Other carbon-containing fertilisers	
J. Other	

Source: UNFCCC CRF reporting categories

Agriculture has been included in the set of sectors of which emissions must be reduced by 30% compared to 2005 levels, although it remains the possibility of reaching a compromise between agriculture and other sectors under the Effort Sharing Decision (ESD).

Ultimately, how should efforts be shared among the EU Member States? To answer this question, the European Commission has introduced the principle by which the wealthiest Member States are required to further reduce their greenhouse gas emissions, notably by stating that *“targets for the Member States with a GDP per capita above the EU average will be relatively adjusted to reflect cost-effectiveness in a fair and balanced manner”*. In this view, national emission reduction targets could range from around 40% for wealthiest Member States to 0% as the case of Bulgaria (IP/B/AGRI/IC/2016-20). Thus, wealthiest Member States with high agricultural GHG emissions are called to set an example and to make greatest efforts to combat climate change.

1.3.3 Other EU Policies Complementing Paris Ambitions

In support of the aforementioned, the Renewable Energy Directive (RED) (Directive 2009/28/EC) provided for a binding target of 20% with regard to the total energy consumption from renewable energy by 2020, to be met by contributions of individual Member States. Furthermore, the RED expected that each Member State would take at least the 10% of

transport fuels from renewable sources by 2020. Nevertheless - even in this case - the way in which such directive has to be implemented is left to the discretion of each Member State.

In 2014, the share of the total renewable energy consumption in the European Union accounted to 16%, whereby renewable energy employed in the transport sector accounted to 5.9% (EEA, 2016b). Renewable energy in the transport sector has important implications even for agriculture due to the employment of heavy farm machineries and since biofuels are in large part obtained by crops, thus making agriculture contributing to both the ETS sectors (renewable electricity, heating, cooling) and non-ETS sectors' objectives (transport biofuels). Place that renewable energy production has been supported by the EU Member States through incentives, financial grants, and energy crop schemes, the deployment of renewable energy in the agricultural sector has increased since the application of Directive 2003/30/EC. Along these lines, beginning in 2008 all the areas dedicated to the production of industrial crops in the European Union have been re-incorporated into agricultural lands and merged with lands destined to agri-food products cultivation. Then, in 2012 the European Commission began to manifest its interest to the damages caused by the indirect land use change (ILUC) through the drawing up of an appropriate legislation, whereby biofuels feedstocks had to abide to sustainability codes laid down in Article 17 of the RED. Whilst, in 2015, the ILUC Directive (Directive (EU) 2015/1513) was approved, thus capping biofuel feedstocks contribution to 10% national energy targets as well as requiring Member States to incorporate these provisions into national legislation by 2017. Consequently, following the adoption of the Paris Agreement, EU Member States agreed to review the RED together with updating renewable energy objectives in the sense of limiting the share of biofuels based on food to 3,8% by 2030, identifying new objectives to increase the share of biofuels based on wastes and residues to 3,6% by 2030 as well as amending some sustainability criteria.

Ultimately - beyond bioenergy – European Union's agricultural lands offer the necessary space to install large-scale renewable energy infrastructures (e.g., wind turbines and solar photo voltaic installations), thus permitting agriculture to contribute to other sectors' climate change mitigation attempts as well to increase energy security and decentralized energy production.

Other policies complementing Paris targets with relevance for the EU agriculture include the "Framework Strategy for a Resilient Energy Union with a Forward Looking Climate Change Policy" (COM(2015)080 final) which in turn provides for the development of EU electricity networks. The aim is to integrate even greater shares of renewable energy that - by

enabling the EU energy system decarbonisation at relatively low costs - would contribute to meet the Paris objectives and to develop a new sustainable bioenergy policy. Other areas concerned are soil, environmental tax reform, water, wastewater treatment, organic pollutants from dispersed sources, health policy, cohesion spending and, ultimately, research and development (IP/B/AGRI/IC/2016-20).

Along these considerations, it is also worth mentioning the EU intended action on climate change adaptation laid down in the “Climate Adaptation Strategy” (COM(2013)216) which set out three major priorities: first, encouraging Member States to develop adaptation strategies and action plans; second, promoting better informed decision-making through knowledge-gap strategies and Climate-ADAPT web portal (intended to provide adaptation information); third, making infrastructures more resilient, promoting products and services by insurance-finance markets and, not least, encouraging adaptation in key vulnerable areas such as the Common Agricultural Policy, Cohesion Policy, and the Common Fisheries Policy.

Unlike mitigation policies, the Adaptation Strategy does not require Member States to meet binding targets, primarily due to the less quantifiable nature of adaptation activities. Conversely, it aims to provide relevant information so as to support Member States in developing their own adaptation measures in coherence with the principle of subsidiarity. The Strategy, then, presents principles and recommendations to integrate adaptation measures into the 2014-2020 CAP. Along these lines, climate mitigation and adaptation activities are to be financed through the Multiannual Financial Framework (MFF) with at least 20% of the 960€ billion EU budget and the LIFE environment fund that amounted to 864€ million. Together with this, at least the 30% of funds bestowed through the Member States’ Rural Development Programmes must be invested in voluntary mitigation and adaptation measures, also financed by the INTERREG Europe and Horizon 2020 research and innovation programme. Ultimately, following the adoption of the Paris Agreement, the European Investment Bank (EIB) agreed to invest around 100€ billion euro in climate projects around the world as well as to increase the share of its investments in developing countries’ climate projects to 35% by 2020.

Then, Climate Adaptation Strategy’s second objective consists, on one hand, in filling the knowledge-gap by developing collective awareness on the consequences of climate change with the aim of elaborating adaptation measures whereas, on the other hand, the European Climate Adaptation Platform (Climate-ADAPT) provides relevant information to support Member States in developing adaptation measures and informed decision-making.

Furthermore, Climate-ADAPT Platform aims to improve farmers' access to insurance schemes as well as risk management tools.

In conclusion, with regard to climate adaptation the Paris Agreement has identified the collective target of “*enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change, with a view to contributing to sustainable development and ensuring an adequate adaptation response*” (UNFCCC, 2015). Then, Article 7(7) Paris Agreement gives indications on the practices States Parties should adopt to strengthen institutional arrangements so as to optimise the learning of relevant information, increase collective knowledge about climate change, provide developing states with assistance for identifying their adaptation needs and priorities, and finally to provide optimum effectiveness and durability of adaptation actions. In the end, the sharing of knowledge might be of fundamental importance both for the states with experience in climate-related adaptation measures, since it would enable them to lead the way in the development of sustainable technologies and agricultural practices, as well as the states in the early stages of their development.

1.3.4. EU Food 2030

In the wake of the Universal Exposition on food held in Milan in 2015, the European Commission has launched its new “EU Food 2030” strategy with the aim to address the criticalities of the European food system through research and innovation policies. Such initiative can be considered as part of the European Union's effort to meet the “UN Sustainable Development Goals” (SDG). Particularly, its ultimate objective is to develop - through cooperation, research, scientific progress as well as public and private investments - solutions to four major priorities.

First, “*Fostering R&I on nutrition for sustainable and healthy diets*” that concretely expresses itself by supporting the development and implementation of EU Food Safety Policies, EU Nutrition Policy Framework as well as the Sustainable Development Goals. Furthermore, such priority consists in six sub-objectives that are: tackling malnutrition and obesity, improving nutrition for healthy ageing, supporting protein alternatives to meat, ensuring food authenticity and developing future safety systems, recovering forgotten crops for nutrition and resilience, promoting healthy and sustainable African diets.

Second, developing “*Climate-smart food systems that are adaptive to climate change, conserve natural resources, and contribute to climate change mitigation*”. Such priority is especially relevant for the EU Strategy on Adaptation to Climate Change, EU environmental policies, the Paris Climate Agreement (COP21), the Sustainable Development Goals and, ultimately, the Common Agriculture Policy. Even in this case, it comprises the following sub-objectives: strengthening sustainable aquaculture for Europe, enabling precision farming for small farmers, boosting photosynthesis for food & energy, fighting climate change through healthy soils.

In detail, precision farming practices, by using satellites images and high-tech technologies, would enable agricultural inputs such as water, fertilisers, and pesticides to be employed more efficiently. Unfortunately, these devices are often unaffordable to small and medium-size farmers. In consequence, a technological transition seems thus indispensable to attract workers in the countryside and to increase farmers’ salaries as well as European agricultural productivity.

With regard to “boosting photosynthesis for food & energy”, this process would increase the production yield of some varieties of crops (e.g., rice and wheat) as well as alternative energies like biofuels, thus contributing to SDG N°7 aimed at ensuring safe, accessible and sustainable energy for all.

Ultimately, in relation to “fighting climate change through healthy soils”, data revealed that the 25% of arable lands have already been degraded and eroded, thus resulting in a reduction of European agricultural yield. In this view, using soil responsibly is essential to meet the increased demand for food expected in the future. Moreover, the environmental sustainability of CO₂ storage tools employed hitherto remains under investigation, as opposed to the already proved capacity of soils to absorb it. Thus – to sum up - this sub-objective aims to promote a better land management through new practices of governance and to implement the principles of “food-first” and “efficiency-based biomass”. A wise land administration will certainly contribute to combating soil depletion, halting biodiversity-loss, restoring terrestrial ecosystems, and managing forests responsibly.

The third EU Food 2030’s priority aims to develop “*circular and resource efficient food systems*”. Its sub-priorities consist in achieving zero food waste, tackling primary production waste streams, converting food waste into bio-based products, rethinking food packaging and labelling, sharing data for short-circuit food systems. Such priority supports the development

of the EU Circular Economy Package, including the Waste Directive and Climate Action policies, the satisfaction of Sustainable Development Goals, and the modernisation of the Common Agricultural Policy. More in detail, it has been estimated that European agricultural sectors consumes more than 50% of available fresh water and that each European resident throws about 123 kg of food per year, costing the EU millions of euros. In addition, about 1.4 billion tons of manure are annually produced which, together with the phosphorus present in wastewater and that of antibiotics into the environment, contribute to environmental degradation. In this view, circular and efficient food systems would enable to reduce the amount of food lost and wasted by 1.3 billion tons per year. Thus, modernizing farming practices would contribute to reduce wastes and to improve the efficiency and sustainability of the EU food system.

The fourth EU Food 2030's priority concerns "*Food systems innovation and empowerment of communities*". This priority supports the European Commission's Digital Single Market Strategy, the EU Urban Agenda, the Europe for Citizens programme and the UN Sustainable Development Goals. It aims at creating healthy food systems that promote business practices beneficial for the EU society, create new jobs and sustain urban, rural, and coastal communities' economies. Furthermore, its objective is to establish closer link between societies and industries as well as to turn commercial practices into more responsible, fair, supportive, inclusive, and sustainable ones. More concretely, the share of rural areas in the European Union is around 88% of its total surface, whereas the share of rural workers is around 55% of its total labourers. Therefore, it is obvious that agriculture has a considerable impact on the European Union's economy as a whole. Nevertheless, a large percentage of products is still lost during transport, while small and medium-size peasant-farmers have often yet to face difficulties such as access to expensive machineries and technologies. Hence, optimising connections between consumers and producers, together with expanding equipment and logistic services, would allow to significantly reduce waste and to strengthen local food centres. To sum up, the fourth priority aims at producing sustainable and widely accessible food, supporting public participation in the development of food policies and, not least, implementing data-driven food and nutrition systems.

In conclusion, although the EU Member States have made commitments to combat climate change, the effectiveness of the abovementioned measures will inevitably depend on the modalities and timing of their implementation. Unfortunately, the pledges laid down in treaties and national strategies do not always produce good results. For this reason, the next

chapter will concretely assess the measures and strategies introduced by the EU Member States under the CAP's umbrella between 2014 and 2020 with the aim to understand the political, economic, and environmental consequences deriving from them.

2. ON THE 2014-2020 CAP

2.1 ON THE 2014-2020 CAP AND CLIMATE CHANGE

At the end of a process lasted more than two years, in 2013 the European Commission agreed that at least 20% of the 960€ billion EU budget for 2014-2020 should be allocated to climate mitigation and adaptation objectives (three times the previous period). In parallel, the 2014-2020 European Agricultural Fund for Rural Development (EAFRD) identified climate change mitigation and adaptation as cross-cutting objectives (Regulation (EU) No 1305/2013) to which at least 30% of the EAFRD contribution to RDPs should be allocated. It was a turning point since the Rural Development Program seemed to be the one part of the CAP to seriously address the downsides of climate change. Thus, the following sections will assess whether and to what extent CAP measures and instruments concretely contribute to the EU climate action and the related specific objectives.

2.1.1 The Relevance of CAP's Objectives to European Climate Needs

This section will assess whether there is coherence between the CAP's objectives related to climate action and the actual environmental needs at state and farm level. To do this, the evaluation conducted by Alliance Environnement (2018) will be considered, which - through the analysis of the CAP's regulations and the legislation set out by EU 2020 Climate and Energy framework ¹⁵ – provided answers to the above question.

Article 5 Regulation 1305/2013 and Article 2 Regulation 215/2014 set out the priorities and sub-priorities contributing to CAP climate objectives. In detail, supporting farm risk prevention and management; restoring, preserving and enhancing biodiversity, the state of European landscapes and high nature value farming in Natura 2000 areas and in areas facing natural or other specific constraints; improving water management, including fertiliser and pesticide management; increasing efficiency in water use by agriculture; increasing efficiency in energy use in agriculture and food processing; preventing soil erosion and improving soil management; facilitating the supply and use of renewable sources of energy, products, wastes, residues and other non-food raw material, for the purposes of the bio-economy; reducing

¹⁵ The EU 2020 Climate and Energy framework includes the Effort Sharing Decision (ESD), the LULUCF Decision, the EU Climate Change Adaptation Strategy (COM(2013)216), and the Renewable Energy Directive (RED).

greenhouse gas and ammonia emissions from agriculture; fostering carbon conservation and sequestration in agriculture and forestry; fostering local development in rural areas.

Concerning CAP's priorities and sub-priorities' relevance at Member States level, Alliance Environnement (2018) considered ten case studies (Croatia, Czech Republic, France, Germany, Hungary, Ireland, Lithuania, the Netherlands, Romania, and Spain), each representative of specific climate challenges, biogeographical conditions, and agricultural systems but all with the need to reduce GHG emissions. Climate-related needs at national level are encapsulated in the Member States' Rural Development Programmes (RDPs). Therefore, in order to assess whether and to what extent CAP's targets are pertinent to national climate needs, an analysis of the case studies' RDPs has been carried out. The table below presents the cases in which the needs expressed at Member State level are clearly in line with CAP objectives.

Table 4: Climate-relevant focus areas reported as needs in case study RDPs.

SUB-PRIORITIES	CZ	DE	ES	FR	HR	HU	IE	LT	NL	RO
3b-Improve risk management (A)	x		x	x	x	x	x	x	x	x
4a-Increase biodiversity (A)	x	x	x	x	x					x
4b-Improve water management (A)	x	x	x	x	x	x	x	x	x	x
4c-Prevent soil erosion/improve management (A, M)		x	x	x	x	x	x			x
5a-Efficient water use (A)	x	x	x	x	x	x			x	x
5b-Energy efficiency (agriculture) (M)		x		x		x	x		x	
5c-Supply/use of renewable energy/raw material for bioeconomy (M)	x		x	x	x		x	x	x	

SUB-PRIORITIES	CZ	DE	ES	FR	HR	HU	IE	LT	NL	RO
5d-Reduce GHG emissions (A)	x			x		x	x	x	x	x
5e-Carbon conservation/sequestration (agriculture) (M)	x			x			x	x		
5e-Carbon conservation/sequestration (forestry) (M)				x			x	x		
6b-Local development (A)		x	x	x	x	x				x
Adaptation (general) (A)	x		x	x	x	x				x

Source: Alliance Environnement (2018)

Table 4 illustrates that, on one hand, each CAP's sub-priority is relevant for at least three case studies among those here examined, whereby "improve water management" (4b), "improve risk management" (3b), and "more efficient water use" (5a) are the most shared ones, followed by "prevent soil erosion/ improve soil management" (4c), "supply/use of renewable energy/raw material for bioeconomy" (5c) and "reduction of GHG emissions" (5d). On the other hand, "carbon conservation/sequestration" (5e) in both agriculture and forestry seems to be the least relevant priority for the case study countries. This might be due to the fact that the 2020 Climate and Energy Framework does not include specific targets to reduce emissions or increase removals in the LULUCF sectors. However, what stated in the RDPs does not always run out a state's total range of priorities. For instance, even though Czech Republic's RDP does not specifically refer to "prevent soil erosion/improve soil management" (4c), the policies adopted and the measures implemented demonstrate that even such priority is considered a need by the country. Along these lines, although only three Member States (FR, IE, and LT) have explicitly mentioned forest "carbon conservation/sequestration" (5e) in their RDPs, four other countries (ES, DE, HR, and HU) have declared their forestry needs, whereas three (DE, HU, and HR) undertook to expand and protect forest areas. Finally, national climate mitigation needs can also be derived from the reports submitted to the IPCC which, as indicated in Article 10

LULUCF Decision, should present the measures to reduce LULUCF emissions which Member States intend to adopt. Thus, despite there is not a real obligation to include national needs in the LULUCF reports, their insertion helps to estimate the level of their coherence with the CAP's climate objectives.

At farm level, the 2014-2020 CAP has been assessed through a public consultation carried out for the European Commission in 2017 (Ecorys, 2017). In this case, farmers were invited to select from a list of eight options what they considered to be the three most important environmental challenges to be addressed in the agricultural sector. The most selected options corresponded to reduction and loss of biodiversity (21%), soil degradation (18%) and water use (13%). However, 58% of respondents expressed its dissatisfaction on how the Agricultural Policy was managing these issues. Then, interviewees were asked to mention what were, in their opinion, the most significant environmental objectives that CAP should pursue, thus revealing the necessity to "provide sustainable renewable energy sources" (20%), "improve the adaptation to climate change and the resilience of agricultural systems" (16%) and "promote carbon conservation and sequestration in agriculture and forestry" (15%). Moreover, a rather high number of respondents claimed that "afforestation" (19%) and "improvement of forest resilience" (18%) should be included among the CAP's main objectives. Farmers were ultimately asked to point out the climate issues they observed, those they got used to and how CAP supported this change. Few respondents replied to having perceived CAP's support, albeit it does not mean that it actually did not. It is indeed likely that interviewees underestimated the support offered by the Common Agricultural Policy, even just for the stabilising effect of Direct Payments. As we can notice, consultation did not leave much room to climate mitigation since, unlike climate adaptation, the inability to mitigate does not directly affect farms' productivity and profitability. Nonetheless, farmers and foresters aware of emission reduction practices consider these activities of paramount importance for their businesses. Thus - with the exception of limiting emissions in agriculture and forestry – CAP's priorities and sub-priorities laid down in Article 5 Regulation 1305/2013 and Article 2 Regulation 215/2014 appear to be of relevance for respondents, meaning that the CAP shares the same farmers' and foresters' objectives.

2.1.2 The 2014-2020 CAP's Contribution to Climate Adaptation and Resilience

The IPCC defined climate adaptation as “*the process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities*”. Although the EU Climate Adaptation Strategy did not require Member States to meet binding targets - primarily due to the less quantifiable nature of adaptation activities and to the absence of climate adaptation obligations set out in international treaties - the next paragraphs will assess whether and to what extent 2014-2020 CAP measures have contributed to adaptation of the agricultural and forest sectors, improved their capacity to benefit from the positive outcomes of changing climate conditions and allowed the agricultural sector to enhance resilience and reducing vulnerability of European society. In this respect, it is worth recalling that the concept of climate change vulnerability is largely bound to location and context and that consequently the effectiveness of CAP measures varies significantly from one area to another. Thus - not being possible to conduct a quantitative analysis - the present evaluation will investigate how the CAP measures have been implemented and targeted at EU, national, regional and farm level in order to illustrate CAP qualitative effects on climate adaptation.

2.1.2.1 Impact of Pillar I Measures on Climate Adaptation

The evaluation-study conducted by Alliance Environnement (2018) revealed that Pillar I Direct Payments (DP) can either prevent or encourage farmers' adaptation to climate change in that - on one hand – these can ease investments deemed essential to shift towards more resilient systems and contribute to reduce farmers' sensitivity to commodity price volatility in a context where it is expected to exacerbate; whereas - on the other hand – member states' implementation choices, when aimed at supporting farms reluctant to change as well as dangerous agricultural practices - might also lead to maladaptation.¹⁶

¹⁶ The IPCC defined maladaptation as “any changes in natural or human systems that inadvertently increase vulnerability to climatic stimuli; an adaptation that does not succeed in reducing vulnerability but increases it instead”. In other words, climate maladaptation consists in practices that emit greenhouse gases and undermine agricultural sector and forestry's vulnerability. Barnett and O'Neill (2010) identified five categories of maladaptation practices namely those increasing greenhouse gas emissions, burdening the most vulnerable subjects, having a high opportunity cost, reducing incentives to adapt and hindering pathways beneficial to climate action.

Following this premise, Pillar I greening payments are incentives to which each farm is entitled for adopting climate and environment friendly farming practices. These might have climate outcomes even though the modalities of their implementation have not been conceived for this purpose. In detail, there are three greening requirements namely crop diversification, maintenance of permanent grassland and maintenance/creation of Ecological Focus Area (EFA).

The first requirement aims at encouraging crop diversification in the agricultural sector, in particular where the production of monoculture is still dominant (Italy, Romania, Spain, Poland, North-Western Germany, and South-Western France). It might be beneficial to climate adaptation since crop rotation and diversification might improve farms' resilience to climate crisis due to improvement in soil quality, less dependence on water resources, and reduced risk of spreading pests and diseases. However, the fact that this measure encourages diversification rather than rotation limits its climate adaptation potential. In addition, crop diversification requirement resulted in the conversion of less than 1% of EU arable lands due to the chance given to EU Member States to adopt alternative schemes. For instance, by making use of such option France has permitted its maize growers to continue the production of monocropping, thus constituting an unequivocal case of maladaptation (Alliance, 2018).

The permanent grassland measure aims at maintaining permanent grasslands by encouraging Member States to not reduce them by more than 5%. It is in turn divided in "permanent grassland ratio" (PG) and "environmentally sensitive permanent grassland" (ESPG). Both measures can have unintended positive climate outcomes: the former by limiting soil erosion and strengthening resilience to floods, while the latter by maintaining a high level of biodiversity and benefitting water retention in soils. Concerning PG, with the exception of four countries (BE, DE, FR, and UK), all Member States implemented this measure between 2014 and 2020. However, the different definitions attributed to "permanent grassland" produced nonhomogeneous results. For instance, the definition attributed by Spain to "permanent grassland" has prompted a decrease in the number of eligible wooded permanent grasslands, threatening their abandonment and forest fires (maladaptation). On the other hand, although at Member States level, 7.7 million hectares permanent grasslands covered by Natura 2000 have been identified as ESPG, only 4.7 million hectares – corresponding to 61% of all the areas covered by Natura 2000 – have been declared as such by the EU farmers. Overall, data suggest

that the ESPG measure strengthens the application of existing legislation both inside and outside Natura 2000, even though to a much lesser extent with regard to the lands outside.

The EFA requirement aims at guarantying that at least 5% of farms' arable lands is treated as Ecological Focus Area. It promotes farming practices beneficial for biodiversity and the health of the soil, such as the maintenance of a vegetation cover, thus being beneficial for climate adaptation too. Already by 2016, farmers declared 14% of EU arable lands as "Ecological Focus Area" (EFA), the 73% of which consisting in nitrogen fixing crops and catch/cover crops. Both these practices are valuable for climate adaptation in that the former favours farmers' self-sufficiency by reducing their vulnerability to price shocks, whereas the latter increase soil moisture and soil organic carbon, thus counteracting soil depletion and droughts. In addition, data reveal that EFA has helped to increase areas cultivated with nitrogen fixing crops such as legumes and soya and to spread the use of catch and cover crops in several EU countries (DE, FR, CZ, UK). Concerning fallow lands - representing 24% of EFA areas – numerous EU countries have used them since, by strengthening resilience to floods and soil erosion as well as protecting and improving biodiversity, have likewise proven beneficial to climate adaptation. Nonetheless, the effect of EFA on the maintenance of landscape features is mitigated by its limited uptake and the fact that these are often already covered by national legislation or cross-compliance, although the EFA measure might be more effective.

Overall, the moderate effects of all greening measures on climate adaptation must be attributed, *inter alia*, to the undemanding implementation choices made by the EU Member States.

Moving on, the Basic Payments Scheme (BPS) provides hectare-based contributions subject to an internal convergence process. This measure has proved beneficial in that it has allowed the survival of numerous farms that otherwise would have disappeared. However, the BPS may also indirectly and unintentionally hinder climate adaptation by supporting risk-prone agricultural practices and obstructing structural changes beneficial for adaptation. This is precisely what emerged from the case studies interviews conducted by Alliance (2018), namely that the BPS can encourage or hinder climate adaptation without there being a dominant trend. In detail, Basic Payments are quantified on the basis of farms' production potential, using indicators like type of crops and hectares cultivated. In this respect, for instance, Spanish respondents revealed the existence of maladaptation practices since irrigated farms located in Spanish desertic areas receive Basic Payments although their activities deplete natural resources. To make matters worse, these contributions are still tied to historical references,

meaning that the level of support provided under the 2014 BPS is still really close to the level of support historically provided to Spanish farmers (interviews with the Ministry of Agriculture and WWF in Spain). Thus, in the absence of screening for maladaptation activities, basic payments might – in certain specific occasions – turn farms more vulnerable and promote maladaptation.

The last mandatory instrument consists in the Young Farmers Scheme (YFS) which provides additional payments to the farmers under the age of 40. This measure can help climate adaptation in that older farmers are generally more reluctant to adopt sustainable agricultural practices, at least because their retirement is expected before the negative consequences of climate change can affect them. However, even in this case, although 14 Member States have allocated the maximum share possible (2% of their total DP envelope), between 2014 and 2018 only 317 million € (corresponding to 0.79%) were actually allocated to young farmers. Therefore, in order to encourage a generational turnover that is beneficial for climate adaptation, it is deemed essential to attribute more resources to young farmers under the YFS.

Along these lines, the 2013 reform introduced the Redistributive Payment Scheme, an optional non-binding contribution meant to sustain farmers with smaller holdings in order to ensure effective income support. In detail, place that DP are allocated on the basis of the hectares cultivated or owned, in 2015 20% of farms (holding about 82% of the EU lands) received 82% of DP funds (DGAgri, 2017). Therefore, this measure is essential to foster climate adaptation in that supporting diversification of farm size and practices reduces vulnerability to climate change at farm, national and EU level. Thus, farm diversification – as opposed to the large and intensive agricultural mono-production – is essential for better land management and so agricultural and food security. However, the resources allocated to this measure proved to be lower than what could be allocated, with Member States assigning between 0.5% and 15% of their available funds in this measure. Hence, case studies interviewees revealed that Member States preferred to limit the impact of CAP reform on farmers' incomes rather than to increase their resilience to climate crisis.

Ultimately, the Voluntary Coupled Support (VCS) aims at granting income support to *“sectors or regions, where specific types of farming or specific agricultural sectors particularly important for economic, social or environmental reasons undergo certain difficulties”*. This measure can have unintended positive consequences by supporting vulnerable sectors which are of benefit to adaptation. For instance, in the period 2015-2018,

sixteen Member States provided support to the protein crop sector (10.6% of the total amounts earmarked to VCS) with consequent positive effects for crop diversification and farmers' feed-self-sufficiency. In particular, improved feed-self-sufficiency might be beneficial to farmers' climate resilience since it reduces crop price volatility in a context where it is expected to increase due to the changing climate conditions. However, there are no obligations for the EU Member States to use this measure for supporting the most vulnerable systems in that VCS contributions can also be directed to livestock and dairy productions although with a system of digressive contributions depending on the farm size and number of cattle. Though, empirical data and case studies interviews revealed that VCS allocation criteria subordinated climate objectives to economic targets. In this respect, considering the total VCS amounts between 2015 and 2018, 41% has been allocated to beef and calves, 20% to milk, and 12% to sheep and goats, thus providing that the most funded farm sectors also coincided with the most polluting ones. To make matters worse, there are neither criteria nor controls to guarantee that Member States use the VCS for supporting vulnerable sectors without promoting maladaptation practices. In Spain, for instance, Managing Authorities used the VCS to support the water-intensive productions of rice and tomatoes in some desertic regions, thus causing, *inter alia*, greenhouse gas emissions and further drought. The Spanish Ministry of Agriculture justified rice production in the Guadalquivir basin by stating that it benefits the environment and biodiversity even though, on the contrary, it requires large amounts of resources and causes GHG emissions. Hence - in light of the above - the VCS has been often used to support unsustainable farming practices, therefore hampering climate adaptation.

2.1.2.2. Impact of Pillar II Measures on Climate Adaptation

Since about one-fifth of the EU population lives in highly heterogeneous rural areas, Pillar II provides a flexible approach so that rural development programmes can be adapted to regional and local needs. Practically, it allows national, regional, and local authorities to design their multiannual RDPs so as to include a combination of measures selected from a "menu" of options which – for the purpose of this evaluation - have been split in RDP soft measures, investment measures, risk management measures and land management measures. In particular, the present section aims to scrutinize whether there is coherence between the II Pillar measures' theoretical effects on climate adaptation and the actual results deriving from their implementation, with a view to understanding what needs to be modified or upgraded to get the best possible result in the next programming period.

The *RDP soft measures* aim to improve knowledge sharing, training, and advisory services and include M1, M2, M16 and M19. Measures M1 (knowledge transfer) and M2 (advisory services) are of paramount importance to the objective of climate adaptation in that, by educating farmers and other stakeholders about climate change and practices beneficial for the environment, these streamline the implementation of adaptive measures. However, despite M1 and M2 have been respectively included in 93% and 79% of the EU28 RDPs (2016), numerous Member States' Managing Authorities reported that their implementation has mostly been oriented to economic targets or other environmental issues rather than to climate adaptation. In detail, in 2016 two Member States had still to adopt measure M1 whereas, among the other twenty-six, fifteen had yet to implement any kind of training program. In particular, measure M2 proved to be difficult to implement due to its administrative complexity for both beneficiaries and managing authorities to the point that some of the latter (FR, CZ, and DE-Saxony-Anhalt) have given up its implementation, thus hindering climate adaptation. Furthermore, the low level of programming (ES, FR) and delays in their implementation (DE, RO) mitigated the potential effects of M1 and M2. In consequence, on 1 January 2018 the Omnibus Regulation came into force with the aim to facilitate the implementation of both these measures. However, critics pointed out that the introduction of such regulation came too late to produce satisfactory results before the end of the 2014-2020 period. In addition to this, the lack of coordination between the management and financing of training and advisory services is another critical point in that some Member States (FR and DE) financed their programmes through national, regional or private funds whereas some others (SP and RO) mainly through EU funds. In this context: *“The responsibility for combining contradictory requirements (competitiveness, environment, rural development) is most often put on the shoulders of individual farmers who are unequipped to deal with such complex issues”* (Laurent and Labarthe, 2006). To conclude, the last challenge related to M1 and M2 consists in providing information in a form that make them understandable to farmers and stakeholders. The most worrisome aspect is that what has been aforementioned results in a dangerous unawareness which quite often leads farmers not even be aware of the need to adapt.

Moving on, measure M16 (cooperation) might encourage climate adaptation through programming and dissemination of environment-friendly resource management practices and through diversification of agricultural activities and practices. For instance, this measure has been used in France to fund a group of farmers (GIEE) committed to knowledge sharing and collective experimentation in the field of agroecology, thus encouraging the transition toward

sustainable agricultural practices. However, even though 95% of EU28 RDPs has included this measure, in 2016 only 2% of the financial target had been met due to delays in its implementation.

Then, measure M19 (LEADER/CLLD) consists in a bottom-up local development approach aimed at the creation of a European Rural Development Network to connect national organizations and administrations involved in rural development in the European Union. To this, at least 5% of the EAFRD contribution in all the RDPs must be allocated. Furthermore, it enables Member States to implement programs for "young farmers, small farms, mountain regions, short supply chains, women in rural areas, climate change mitigation and adaptation, biodiversity, and restructuring of certain agricultural sectors". As it was the case for M1 and M2, climate-related projects supported under LEADER in the previous programming periods proved mostly oriented to capacity-building and energy-efficiency rather than to climate adaptation (Frelth-Larsen et al, 2014). A solution to strengthen the role of climate action in LEADER projects could be to better promote experience sharing and knowledge exchanges.

The *RDP investment measures* (M4, M7, M8 and M14) have great potential for climate adaptation since investments in technologies and infrastructures can enable farmers and foresters to better adapt to climate change. In detail, measure M4 (investments in physical assets) can benefit climate adaptation through direct investments aimed at improving the exploitation of natural resources (e.g., irrigation systems, water storage infrastructures, etc...) and the livestock production techniques (e.g., pasture management equipment, housing for livestock, etc...). In 2016, 111 out of 118 RDPs (99% of EU28 RDPs) included this measure which amounts to about one-fifth of the total expenditure directed to RDP measures. Together with this, the Managing Authorities of nine Member States (out of ten case study countries) reported that his measure have had some positive effects on farmers' adaptive capacity. However, the first downside of M4 is that investments directed to better manage natural resources can – here too - lead to cases of maladaptation. For instance, the modernisation of Andalusian irrigation systems has, on one hand, strengthen farmers' resilience to droughts but, on the other hand, it has increased water demand where already scarce. In other words, short-term adaptation to climate change could turn, in the long run, in maladaptation in areas where the infrastructures are placed (Reidsma et al, 2009). The same applies to all regions affected by drought or water scarcity (e.g., Southern European regions) whether such investments are not associated with appropriate changes in agricultural practices. In this regard, Article 46 EAFRD Regulation which establishes the need to improve infrastructures provides nothing

about how to manage the resources saved. Moving on, the second downside is that modern technologies and infrastructures are often energy intensive with consequent GHG emissions. The third regards the fact that such expensive investments can lead farmers to further specialise in order to increase production, thus trapping them into systems detrimental to climate adaptation. Ultimately, the last downside related to M4 concerns the administrative burden associated with the Water Framework Directive which dissuaded farmers from applying for this measure. A solution provided by the measure itself might be to support collective investments in order to share the associated risks, improve collaboration among farmers, encourage knowledge-transfer, favour the sustainable use of natural resources and – consequently - improve the adaptive capacity of holdings and territories.

Measure M8 (investments in forest development and viability) can benefit climate adaptation by means of practices such as afforestation (M8.1), thus promoting the sustainable use of former farmlands that otherwise would be abandoned; support to agroforestry (M8.2), improvement of forests' resilience through better risk mitigation (M8.3 and M8.4) and introduction of species to protect and expand biodiversity (M8.5). In this respect, wherever sub-measure 8.3 (promoting fire protection) has been implemented (e.g., Aquitaine and Andalusia), it led to a decrease in the number of fires. 102 out of 118 RDPs (91% of EU28 RDPs) included measure M8 and, in the territories where the measure has been implemented, it almost always had positive effects on farms' adaptive capacity.

Ultimately, measures M7 (basic services and village renewal) and M14 (animal welfare) do not have intended effects on climate adaptation, although Managing Authorities have used them to support adaptive agricultural actions and practices such as maintenance of pastoral activities in Aquitaine (FR), drawing up or updating strategies to address climate adaptation in Croatia, and improvement of livestock productions' infrastructures such as installation of ventilation systems. However, among the territories where M14 has been implemented, it benefits climate adaptation just in Ireland.

The *RDP risk management* measures include M5, M6 and M17, whose M5 (disaster risk reduction) and M17 (risk management) aim at decreasing farmers' vulnerability to climate change through better risk management. In detail, measure M5 promotes preventive interventions such as the construction of drainage systems in areas where an increase in rainfall is expected. Even though in 2016 only 39% of EU28 RDPs has opened M5, 284€ million (corresponding to 13.5% of the programmed expenditure for the entire programming period)

have been invested in this measure. As result, M5 had significantly contributed to reduce farmers and foresters' vulnerability in Croatia and in the Saxony-Anhalt (DE) region, where projects have been funded to encourage adaptation.

Measure M6 (farm and business development) aims to encourage diversification of agricultural and non-agricultural practices and comprises investments in small farms, young farmers, non-agricultural activities, and new business in rural areas. However, although it is well known that diversification is beneficial for climate adaptation and that young farmers are more careful about sustainability issues and more prone to adopt environment-friendly practices and technologies, only a small part of the EU total public spending has been attributed to this measure.

Measure M17 aims to improve risk management through crop, animal, and plant insurance (M17.1), mutual funds (stakeholder risk sharing) for environmental adversities (M17.2) and an Income Stabilization Tool (IST) (M17.3) to increase farmers' resilience to extreme events and price shocks related to climate change. According to case studies' analysis, M17 contributed to reduce the vulnerability of farmers and foresters in the Netherlands, Croatia, Hungary, and Aquitaine (FR), while in Lithuania and Romania it had no or limited impact. In this respect, the effects of M17 on climate adaptation have been substantially hampered due to social barriers and severe unawareness which made farmers reluctant in participating in collective projects such as mutual funds. A solution to this could be to promote targeted information campaigns in order to inform farmers and other stakeholders about the activities of mutual funds and their potential benefits. Together with this, measure M17 might hinder adaptation by encouraging hazardous practices when farmers feel protected and empowered. The introduction of risk-based premiums that encourage farmers to change their practices and – consequently - reduce their risk can solved this matter (Smit and Skinner, 2002). Nevertheless, in 2016 only 12% of EU28 RDPs has opened M17, probably due to the fact that some states already had similar national measures aimed at risk mitigation and management (ES) and that – generally – Managing Authorities do not adopt measures intended not to make full use of the resources. Indeed, although the resources allocated to agricultural risk management increased compared to the 2007-2013 programming period, the share of the II Pillar budget allocated to M17 amounts to only 2% while the share of the total CAP budget amounts to 0.4% (Dwyer et al, 2016). In this view, the implementation of M17 would further increase farmers' resilience to environmental and financial shocks.

In conclusion, *RDP land management measures* include M10, M11, M12, M13 and M15. These measures are crucial for the objective of adaptation in that – by promoting agricultural practices aimed at improving soil structure, limiting soil erosion, improving water retention and water use efficiency, increasing biodiversity and enhancing benefits from ecosystem services – contribute strengthening farmers’ climate resilience. In detail, measure M10 (agri-environment-climate) and M15 (forest environment) include climate adaptation among their targets. However, even though there is not a direct connection between climate adaptation and M11 (organic farming) and M13 (areas facing natural constraints), Member States allocated significant resources to these measures.

In detail, measure M10 - the only compulsory II Pillar measure - might encourage climate adaptation by establishing areas of semi-natural vegetation and landscape elements as well as supporting agricultural practices (e.g., crop diversification, cover crops, use of forage crops) aimed at improving farms’ resilience to climate change and adverse climatic conditions. In this view, in 2016 96% of EU28 RDPs included measure M10. However - to be more effective - this measure should be better tailored considering the different location-specific climate challenges. In addition, it has been stated that the burden associated with adopting new agricultural practices and methodologies is all on producers rather than on the entire value-chain. In this respect, numerous stakeholders argued that all the actors involved in the value-chain should co-finance M10 with a view to offer the maximum possible incentive to farmers. On the other hand, others argued that it would be better to offer results-based incentives (already trialled in some Member States), even though it is still not clear how results should be measured (Keenleyside et al, 2014).

Moving on, measures M11 (organic farming), M12 (Natura 2000 and Water Framework Directive) and M13 (areas facing natural constraints) are not designed to benefit climate adaptation. However - by supporting diversification of farming practices, improving soil quality, and offering a viable alternative to chemical inputs such as fertilizers – these can have positive unintended effects on climate adaptation.

In detail, measure M11 can improve the resilience of farming systems through farm diversification and improved soil quality. Together with this, organic agriculture offers economic advantages as there is no use of chemical substances whose prices are often subject to dangerous fluctuations (Scialabba and Müller-Lindenlauf, 2010). However, although in the last decades the areas under organic certification increased, organic production is not yet able

to meet consumer demand and in 2019 only 9% of EU agricultural lands resulted covered by this measure, committing just 1.7€ billion (9.1% of total RDP expenditures) (Bartz et al, 2019). This change happened so fast that numerous Member States and regions had to increase the budget for this measure, often redirecting the one planned for M10. Thus, M11 has undoubtedly encouraged climate adaptation even though its potential has been hampered by a modest budget and targets.

Measures M12 (Natura 2000 and Water Framework Directive) and M13 (areas facing natural constraints) can contribute to adaptation by protecting biodiversity and wetlands and supporting pasture-based livestock production and grass-based systems in territories where the production cannot be altered. Measures M12 and M13 are thus beneficial for adaptation as they limit the abandonment of lands which can be used for grass-based livestock breeding. In particular, the grazing of animals encourages adaptation since animals can move according to changing environmental conditions thus allowing the salvation of different farming systems and habitats as well as the mitigation of the ongoing concentrations of livestock. However, the potential effects of M12 and M13 have been hindered since Member States have seldom tailored these measures to support economically vulnerable but climate resilient agricultural practices or adaptive activities. Particularly, measure M13 merely provides economic compensation for the perceived costs arising from natural constraints and it does not require farmers to spend the money received in adapting to climate change. Thus, given that the resources allocated to M13 amount to more than 30% of the EAFRD in all RDPs, it does not seem appropriate to allocate such a number of resources unless there is a change in the way the EU conceives it.

In conclusion, measure M15 (forest environment and climate services) can support climate adaptation through the improvement of soil capacity to absorb carbon and the overall sink potential of forests. At the EU28 level, 28% of RDPs included measure M15, corresponding to around 0.9% of total EU's wooded lands. However, since most of the areas covered by this measure are in the UK, M15 had there the greatest results rather than in the European Union as a whole.

2.1.3 The 2014-2020 CAP's Contribution to Climate Mitigation

The IPCC defined climate mitigation as “*an anthropogenic intervention to reduce the sources or enhance the sinks of greenhouse gases*”. The GHG inventory reports submitted by the Member States to the UNFCCC in 2016 illustrated that the EU agricultural sector contributed with about 430 million tonnes of CO₂ eq (10%) to total EU greenhouse gas emissions (see 1.2.1). This contribution includes emissions from enteric fermentation (3A), manure management (3B), rice cultivation (3C), agricultural soils (3D), field burning of agricultural residues (3F), cropland (4B), and grassland (4C) (see Table 3). Along these considerations, about one third of the 2014-2020 CAP measures have been designed to mitigate the downsides of climate change, mostly through the adoption of sustainable agricultural practices aimed at reducing GHG emissions and supporting soil carbon sequestration. However, it is questionable how and how much these measures have contributed to meet the Kyoto Protocol target of a 20% reduction in GHG emissions between 1990 and 2020. Although in 2016 the EU total emissions had already fallen by 20.7%, substantial reductions occurred before 2010 with agricultural emissions increasing slightly from 2013 (Alliance Environnement, 2018). Hence, the following paragraphs will assess the 2014-2020 CAP measures' contribution to the objective of climate mitigation.

2.1.3.1 Impact of Pillar I Measures on Climate Mitigation

The evaluation-studies on the impact of 2014-2020 Pillar I on climate change revealed the absence of a direct relation between this and climate mitigation. In particular, Pillar I direct payments can either hinder or encourage climate mitigation in that - by supporting income in territories that would otherwise been abandoned - their impact on emissions might be positive, neutral, or negative depending on member states' implementation choices and how these lands would be used for other purposes. In this regard, the quantitative analysis conducted by Brady et al. (2017) on the economic and environmental potential impacts of Pillar I direct payments revealed that – on one hand – direct payments can hold in the sector lands and farms that would otherwise be abandoned or gone out of business, whereas - on the other hand – it revealed that up to 2050 direct payments might cause GHG agricultural emissions, nutrient surpluses, and pesticide inputs to increase from 2.3 to 2.5%. However, although this scenario expects direct payments to increase GHG agricultural emissions, no specific impact can be recognised at the EU level.

Likewise, the Basic Direct Payment, the Small Farmers' Payment, the Redistributive Payment Scheme and Payments to areas facing natural constraints can either harm or benefit climate mitigation whenever support is offered to continue agricultural activity in areas where it would otherwise cease or carried out differently. For instance, after being abandoned a land can equally deplete or produce greater biomass depending on site specific factors. However, here too, there is no general path leading to net GHG emission reductions, as it depends on member states' implementation choices together with the sort and mode of production.

In the attempt to evaluate the overall greening measures' potential impact on climate mitigation, Gocht et al. (2017) estimated an annual GHG reduction equal to 0.2% of total agricultural non-CO₂ emissions by 2050, whose major contribution to be attributed to the EFA. This requirement might benefit climate mitigation as it influences soil carbon stocks in farmed landscapes and the biomass above the ground through the installation of hedges, isolated tree, trees in line, etc. However, between 2014 and 2017, the EFA covered just 2.4% of the European farmlands (Louhichi et al., 2017). In contrast, the evaluation conducted by Alliance Environnement (2018) estimated a more optimistic scenario where GHG agricultural emissions would have been greater than 3.5% in 2016 in absence of ESPG and EFA, the former accounting for most of the saving. In general, both the "permanent grassland ratio" (PG) and the "environmentally sensitive permanent grassland" (ESPG) can benefit climate mitigation although the former allows a wide range of agricultural activities with nonuniform consequences for climate mitigation, whereas the latter is better tailored to reduce net GHG emissions since meant to preserve the areas covered by Natura 2000 while permitting Member States to add other critical areas such as those with high carbon content in the soil. Hence, this measure ensures that lands designated as permanent grasslands are not converted or ploughed inconsistently by farmers. However, the evaluation conducted by Louhichi et al. (2017) revealed that the permanent grassland measure protected just 1.5% of the EU farmlands. In addition – here too - the different definitions attributed to "permanent grassland" resulted in nonhomogeneous results across the EU: while between 2014 and 2015, 1.5 million hectares of lands have been declared eligible as permanent grasslands in 15 Member States, 5.3 million hectares have been withdrawn in 12 Member States, foremost in Spain which in 2015 declared 31% of permanent grasslands ineligible (Alliance Environnement, 2018). Thus, when farmers refrain from cultivating lands not designated as permanent grasslands, the release of CO₂ can be prevented and soil carbon sequestration continue. However, considering that the same European Court of Justice (2013) stated that permanent grasslands can be ploughed and re-

seeded without losing their status, it is more likely that lands not designated as permanent grasslands are put into production, thus increasing greenhouse gas emissions.¹⁷ In this view, although measures affecting land use can have a positive impact on GHG agricultural emissions, according to the European Court of Auditors the “*greening is unlikely to provide significant benefits for the environment and climate, mainly because of the significant deadweight which affects the policy*” (European Court of Auditors, 2017).

Moving on, the Small Farmers Scheme (SFS) aims to ease the administrative burden related to income support management through strategies such as exempting small farms from cross-compliance and greening requirements. Between 2014 and 2020, it has been adopted by 15 Member States and whether the greening measures (despite their criticalities) can be beneficial to climate mitigation, the SFS measure can counteract their positive outcomes and thus disfavour climate mitigation.

Ultimately, the Voluntary Coupled Support (VCS) can either disfavour or encourage climate mitigation depending on member states’ implementation choices. In particular, when EU countries use the VCS to support livestock production, it is likely to increase “livestock units” (equal to 1 cattle, 2 pigs or 10 sheep) and consequently GHG emissions. On the other hand, when used to support the protein crop sector, it is likely to result in GHG emission reductions, due to the lesser need for chemical fertilisers. Nevertheless, in 2018, only 1.7 million hectares have been cultivated with protein crops, while the intensive livestock production - still on going in the European Union - gave rise to concerns over the hazards arising from unsustainable production practices.

¹⁷ In the attempt to demonstrate the impact on emissions of land use change, Alliance Environnement (2018) estimated that for each percentage point of declared permanent grassland that remains unploughed (361,000 hectares) corresponds a CO₂ reduction between 0.7 and 1.8 Mt CO₂ eq, depending on the specific characteristics of the soil.

Table 5: Principal sectors supported through Voluntary Coupled Support

SECTOR	TOTAL EU HEADS/HECTARES (MILLION)	NUMBER OF MEMBER STATES	TOTAL BUDGET 2017 (€M)	AVERAGE PAYMENT PER HEAD OR HECTARE (€)
Beef and veal	65.1 (heads)	23	1713	88/head
Milk	23.3 (heads)	19	889	73/head
Sheep and goats	86.1 (sheep - heads)	21	583	12/head
Protein crops	1.7 ha	15	469	99/ha

Source : Alliance Enivrement (2018)

Table 5 illustrates that most of VCS budget has been allocated to support beef and veal production (1713€ m), followed by milk production (889€ m), sheep and goats production (583€ m) and, at the end, protein crops production (469 €m). In this respect, although in some cases extensive livestock farming on carbon-rich soils can benefit climate mitigation, there are no obligations to limit the number of animals that a farmer could breed while continuing to receive VCS.

However, one must wonder what would happen without this measure. The European Commission provided a comprehensive empirical analysis based on the JRC and Capri modelling to support its 2018 legislative proposal. Its findings revealed that, in absence of VCS, there would be a 2,5% reduction in beef and veal production and a 0,7% reduction in milk and dairy production (European Commission, 2018). Consequently, the withdrawal of this measure would result in substantial GHG emission reduction with consequent positive impact on climate mitigation (although a reduction in the number of animals could result in land use change, the environmental impact of which cannot be estimated *a priori*). Likewise, the evaluation conducted by Jansson et al (2018) demonstrated that, in absence of VCS, there would be a reduction in beef and veal production and thus in GHG emissions by about 2 Mt Co2eq/year at the EU level. Last, the evaluation carried out by the OECD (2017) indicates that

in absence of VCS lands set aside would increase by 12%, although the environmental impact of such change would depend on Member States' and farmers' implementation choices.

Overall, even though the positive impact of protein crop production might outweigh the negative impact resulting from animal farming, the absence of eligibility criteria entails that the most funded farm sectors also coincide with the most polluting ones and that additional emissions arising from livestock reared as a consequence of VCS exceed the reduction in emissions arising from protein crop productions.

2.1.3.2. Impact of Pillar II Measures on Climate Mitigation

The effectiveness of Pillar II concerning climate mitigation should be assessed having regard to its measures' contribution to wider agricultural trends. In quantitative terms, the results of the GHG simulation carried out by Alliance Environnement (2018) show that in 2016 Pillar II measures (whose impact could be quantified) have led to 1.1% reduction in GHG emissions compared to the baseline scenario (2013). Along these lines, whenever all the climate targets set by the Member States in their RDPs are achieved by 2020, Pillar II measures would lead to a 1.5% reduction in emissions (the largest contribution to be attributed to M10 and M11). However, here again, the Pillar II's impact on climate mitigation will be assessed measure by measure with a view to recognise the strengths and the weaknesses to be modified or upgraded in the period 2021-2027.

Starting with the *RDP soft measures* (M1, M2, M16, M19), Labarthe e Laurent (2009) asserted that these might be beneficial to climate mitigation since better informed farmers and farm managers are inclined to adopt sustainable farming practices. In detail, measure M1 (transfer of knowledge and information actions) has involved, until 2016, 258.108 participants throughout Europe (Alliance Environnement, 2018). It has potential as regards to climate action since it provides farmers with relevant information about sustainable agricultural practices able to contribute to climate mitigation. However, even though there is growing evidence that investing in M1 would raise awareness concerning the practices to be amended to reduce GHG agricultural emissions and thus contribute to climate mitigation, EU Member States are not obliged to include it in their RDPs.

Likewise, by propagating information on service provision, conditionality, and climate change (as required by the EU Regulation), measure M2 (advisory services, farm management and farm relief services) can contribute to climate mitigation. In particular, measure M2 can be

targeted to raise awareness about – *inter alia* - cross compliance, the Water Framework Directive, the sustainable use of pesticides regulation, and the plant protection regulation. Nevertheless, although measure M2 was one of those affecting the largest number of people (42.439 farm holders registered all over Europe until 2016), Member States can choose whether to include or not climate friendliness in their RDPs (Alliance Environnement, 2018).

Moving on, measure M16 (cooperation) might contribute to climate mitigation through collective actions aimed to deepening and expanding scientific knowledge on climate change as well as sustainable practices able to mitigate it in turn (see 2.1.1.2). In this case, although it is impossible to assess M16's impact on emissions, it is worth mentioning that such measure has been used to support several major research projects such as those concerning sustainable resource management practices, strategies to reduce methane emissions and carbon footprint, farm management practices to increase carbon storage, original pasture management schemes to boost carbon content in soils, etc. Therefore, although it is not possible to conduct a quantitative assessment, wherever M16 has been implemented there have been improvements in farmers' capacity to mitigate climate change.

Then, measure M19 (LEADER/CLLD) does not aim at climate mitigation although it can support actions to reduce agricultural emissions as well as the transition towards low-carbon societies. Nonetheless, its nature suggests that it is more likely to strengthen existing expertise rather than promotes original sustainable strategies.

The *RDP investment measures* (M4, M7, M8 and M14) offer considerable potential to climate mitigation since investments to reduce agriculture greenhouse gas emissions through improvement in manure, cropland, and grassland management as well as to enhance carbon sequestration and storing in the soil can contribute to climate mitigation (Martineau et al, 2016).

Measure M4 (investments in physical assets) can be divided in productive and non-productive investments, both contributing to climate mitigation of which the former through investments in plant production (e.g., support and cover constructions for perennial crops, biogas stations, and food processing equipment) and livestock production techniques (e.g., livestock housing and cattle production equipment), whereas the latter through better exploitation of natural resources (e.g., restoration of wetlands and moorland). In quantitative terms, between 2014 and 2016, M4 has received 580€ million, thus making this measure one of the most accessed and

effective at the EU level.¹⁸ Nevertheless, a small number of resources (1% of budget earmarked to M4) has been allocated to address manure management, thus revealing that more should be done to curb manure-related emissions and to encourage climate mitigation.

Measure M7 (basic services and village renewal in rural areas) can have unintended positive outcomes on climate mitigation since investments in transport, energy, and water-management infrastructures as well as investments to enhance villages and landscapes' cultural and natural heritage (including – *inter alia* - actions supporting environmental awareness) might contribute to the objective of climate mitigation. However, the total expenditure earmarked to rural development amounted to just 64€ million. Thus, it is not surprising that investments carried out by means of these measures have had a lower impact on climate mitigation if compared to other investments at EU level.

Then, measure M8 (investments in forest development and viability) can benefit climate mitigation since practices as afforestation (M8.1), and agroforestry (M8.2), can affect soil carbon conservation and sequestration. In particular, M8.3 and M8.4 can contribute to climate mitigation by improving forest resilience through better risk mitigation. Likewise, M8.1 can encourage climate mitigation through better carbon sequestration and conservation in the soil. However, it proved less effective in reducing agricultural GHG emissions since dependent on the site-specific conditions where the measure applies. Hence, the need for the Member States to include in their RDPs the specific areas and lands to be converted into woodlands and forests, together with a description of their environmental and climatic characteristics, in order to avoid the potential downsides of this measure. In general, although the measure M8 proved essential to improve and stabilise agricultural soils' organic conditions and thus to address climate needs, the limited budget earmarked to this measure along with the obstacles placed on forest owners to access M8 have, in some cases, limited its effectiveness (Alliance Environnement and EFI, 2017).

To conclude, although measure M14 (animal welfare) does not include activities of direct interest for climate mitigation, more efficient farms can reduce the amount of GHG emitted throughout the entire production process. However, between 2014 and 2020, M14 has just received 1.5% of II Pillar budget. To give an idea, in the same period, 40€ billion have been

¹⁸ The potential impact of M4 has been assessed considering the number of livestock units and the mitigation potential resulting from changes in livestock housing and manure storage (Alliance Environnement, 2018).

conferred as hectare-based contributions compared to 205€ million bestowed per annum to improve animal welfare, thus proving how inadequate the 2014-2020 CAP was to support agriculture in the challenges it faces. These issues should not be addressed by introducing further regulations that would overburden producers and encourage imports from countries not forced to conform with high standards. In this view, the 2021-2027 CAP should rather reward compliance with the requirements encapsulated in M14 as well as to compensate the expenses incurred to conform with these provisions.

Among the *RDP risk management measures*, only M6 includes climate mitigation among its targets. Nevertheless, as mentioned above, measure M5 promotes preventive interventions such as the construction of drainage systems in areas where an increase in rainfall is expected. Thus, it can encourage climate mitigation via landscape elements (e.g., hedges) which, established through preventive or restorative actions, enhance soil carbon stocks. In contrast, measure M17 does not provide advantages for the purpose of climate mitigation unless insurances are made conditional on the adoption by farmers of risk prevention measures with positive - albeit marginal - effects on mitigation. Hence, insurers might for instance insist on the introduction of landscape elements such as trees or hedges in order to mitigate the downsides of extreme weather events as floods and overflows, thereby benefitting soil carbon stocks.

Ultimately, the *RDP land management measures* (M10, M11, M12, M13 and M15) are significant to the objective of climate mitigation in that – by promoting agricultural activities aimed at maintaining permanent pasturelands, limiting the application of chemical fertilizers, reviving traditional grass and crop management, improving soil structure, and limiting soil erosion – might limit the downsides related to production and do not further exacerbate the ecological debt. On one hand, measure M10 (AECM) include climate mitigation among its targets, and it aims to support farmers and farm managers to adopt agricultural practices opposing climate change. In this view, contracts are concluded according to the needs and features of the lands involved. On the other hand, even though there is not a direct connection between climate mitigation and M11, M12, M13, and M15, significant resources have been allocated to these measures which can still be beneficial for climate mitigation.

Measure M11 (organic farming) contributes to climate mitigation since longer rotations and better resources management enhance carbon sequestration and reduce GHG emissions per hectare cultivated. In addition, it contributes to mitigation in that reduction in inputs results in

improved environmental conditions in all the territories where the measure applies. However, although in the last decades there has been an increase in the areas certified as organic, in 2019 only 9% of EU agricultural lands resulted covered by this measure. Thus, given that the reduction of inputs is proportional to the support provided by the CAP, one can assert that - although this measure proved beneficial for climate mitigation – it could perform even better with a higher budget.

Concerning measure M12.1 (Natura 2000), the GHG simulation carried out by Alliance Environnement (2018) revealed that payments to farmers under Natura 2000 had the greatest mitigation effects in that supporting plans to protect and restore wetlands and peatlands contribute to preserve carbon-rich soil and limit soil erosion, thus encouraging climate mitigation. In addition, since M12.1 compensate farmers for the losses resulting from compliance with existing criteria, it is reasonable to assert that M12.1 encourages climate mitigation in that, without such support, compliance would be much more difficult. However, it is worth recalling that the Alliance' simulation incorporates a high risk of double counting since ploughing and emission reductions attributed to Natura 2000 can also be attribute to ESPG. In this respect, EU Regulation 1306/2013 provides that the amounts associated to restrictions that farmers should comply with under the ESPG greening measure must be subtracted from payments designated under Natura 2000, operation that the simulation is not able to perform.

Measure M13 aims to support agricultural production in areas facing natural constraints such as mountain areas. It is difficult to establish its contribution since, on one hand, it avoids land abandonment and loss of pasture areas that, in turn, result in soil carbon protection and forest fires prevention (often due to land abandonment) but, on the other hand, it supports animal production where otherwise would be abandoned, thus contributing to release GHG emissions. However, although its impact on GHG emissions is still not clear, it is likely to be marginal because of such potential effects that cancel each other (Rodrigo-Comino et al, 2017).

Measure M15 (Forest-environment-climate) can benefit climate mitigation as it preserves forest microclimate, conserves wetland habitats, and maintains carbon content in the forest soil. However, it contributed to maintain the “emission status quo” as, on the one hand, the measure protected and increased carbon in the soils while, on the other hand, the impossibility to adjust certain management practices hindered changes in land management practices affecting soil carbon stocks.

To conclude, measure M3 (quality scheme) aims to enhance market opportunities as well as to determine quality standards that farmers should meet. In this case, although M3 does not mention climate mitigation among its targets, it might still be beneficial whenever production methods and specific management practices with low environmental impact are adopted as quality standards. Hence, an option might be to create ad hoc certifications to be conferred to producers who excel by going beyond those who met only the minimum environmental protection requirements. However, the evaluation of the Member States' RDPs for the programming period 2014-2020 shows that no Member State has opened M3 with the aim to encourage climate mitigation.

2.1.4 Conclusions

The previous sections aimed to illustrate CAP's strengths and weaknesses to be upgraded or amended to get the best possible result concerning adaptation and mitigation. In this respect, we observed that, although the number of measures having mitigation and adaptation among their targets increased, there is still much room for improvements.

In detail, what abovementioned illustrates that member states' implementation choices and the fact that few measures have been conceived with adaptation and mitigation in mind limited CAP measures potential. Even when CAP measures have been designed to accomplish environmental goals, Member States should better tailor them according to the different location-specific climate challenges. To top it all off, the EU included neither criteria nor controls to guarantee that CAP's financial resources were used to pursue the real objectives of CAP measures.

It is clear that, between 2014 and 2020, Member States' greater concern was to minimise the novelties introduced by the 2013 CAP reform concerning farmers' income support as well as to maintain, when not increase, agricultural production. In other words, Member Countries subordinated mitigation and adaptation to economic interests, sometimes even sustaining maladaptation practices.

At Member States level, failures in implementing CAP measures (absence, tardiness, or undemanding implementation choices) as well as their limited uptake, modest budgets, and unambitious targets undermined Pillar I measures' effectiveness concerning mitigation and adaptation. Furthermore, the low level of programming and coordination at EU level caused

Pillar I measures not to be implemented due to similar instruments existing at national and/or regional level. Also Pillar II measures - designed to support sustainable agricultural practices beneficial for climate adaptation and mitigation - have sometimes triggered production intensification or missed their targets due to the Member States' implementation choices and the limited resources allocated to them. However, it is fair to admit that the difficulties encountered to implement these measures shall also be attributed to their high administrative complexity.

Ultimately, farmers' little understanding of both Pillar I and Pillar II measures hindered CAP's potential concerning adaptation and mitigation. Hence, in order to better inform farmers and other stakeholders about all the benefits that the CAP measures might offer, it is deemed essential to promote better targeted information campaigns.

Overall, although the EU has committed itself to pursue the UN's Sustainable Development Goals (SDGs), the 2014-2020 CAP appears to be not designed to seriously contribute to their achievement. In this respect, we illustrated hectare-based instruments received most of the funding provided through the CAP. It follows that without a radical CAP reform - in particular of the budget planned for Pillar II - the EU will not meet its commitments even in the 2021-2027 period. To stem environmental degradation and pursue mitigation and adaptation goals, adequate funding of targeted measures will be required. This will also be essential to allow companies changing their production practices without losing their profits. A "win-win" arrangement should therefore combine environmental protection with the need to support farmers' income. This could be done – for instance – providing farmers with bonus when leaving strips of fallow lands each tot. meters of crops and/or strengthening existing tools aimed at conserving carbon in the soil. Yet another option might be to encapsulate the EU soil protection legislation within the CAP frame. To conclude, the 2021-2027 CAP will play a crucial role to enable the Great Agri-Food Transformation to come true.

2.2 THE POLITICAL ECONOMY OF THE 2014-2020 CAP

Since its inception, the Common Agricultural Policy remained the most important cost item in the EU budget. Even though its foundations maintained their value, the need to adapt to changing environmental, socioeconomic, and political conditions has caused it to be subject to numerous reforms, among which is the 2013 reform. It was meant to – inter alia - ensure income support to the EU farmers, promote rural development programs (RDPs), reiterate the EU commitment towards an open trade policy as well as to reach a more equitable distribution of CAP resources, both among Member States (external convergence) and among farmers (internal convergence). In addition, the European Institutions agreed that the 2014-2020 CAP budget would have amounted to 38% of the EU total budget (408€ billion) of which 71% allocated to Pillar I (around 309€ billion) and 24% attributed to Pillar II (around 99€ billion), with the remainder destined to market-related expenditures. The following sections will assess whether and how the CAP has managed to achieve these goals, with a view – here too - to understand what should be modified or upgraded in the period 2021-2027.

2.2.1 The CAP Budget Battle

2.2.1.1 Internal Convergence

The 2013 reform introduced the Internal Convergence Requirement meaning that “*the value of per hectare payment entitlements for the Basic Payment Scheme, within a member state, must move towards a more uniform level*” (European Commission, 2018). Since the EU 2004 and 2007 enlargements, the unequal distribution of CAP direct payments has been a source of frustration both at Member State and farm level. Introduced in 1992 by the MacSharry reform to support farmers’ incomes and to compensate reduced market prices, the direct payments have been so extended that to date are no longer able to fulfil their functions. Furthermore, since these are calculated according to the hectares farmed/owned rather than on what is produced or how production takes place, direct payments are unable to improve the agricultural yield of the less productive farms.

In 1991, the European Commission published its reflection paper "The development and future of the CAP" which denounced that just 20% of EU farmers received 80% of the European Agricultural Guidance and Guarantee Fund resources. As abovementioned, the 2013 reform

should have redistributed direct payments from large companies to smaller farms through the mechanisms of degressivity/capping and redistribution. However, between 2014 and 2020, the proportions remained plus or less the same with 80% of direct payments attributed to just 20% of EU farms (holding about 82% of the EU lands). In fact, although empirical data suggest that between 2014 and 2020 more than 7.2 million farms obtained CAP financial support, in practice more than 80% of these farms received modest sums. In confirmation of this, the data collected by the Directorate-General for Agriculture and Rural Development (DG AGRI) demonstrated that, in 2015, just 131.000 farms received more than 30% of Pillar I resources (Matthews, 2017). Thus, it is quite evident that, almost three decades after the 1991 EC's reflection paper, the issue remained unsolved. However, one must wonder for what reason.

Degressivity and Capping should have streamlined, better targeted, and limited direct payments above a fixed level. In detail, Member States would have to scale down DPs by at least 5% for the part exceeding a maximum of 150.000€ per farm. However, this did not happen due to the chance left to the Member States to subtract the salaries paid to farmers, thus undermining these mechanisms' effectiveness. In detail, in 2015, 15 Member States had applied the minimum 5% reduction on payments exceeding 150.000€, 9 Member States had deduced salaries from the total amounts of direct payments received, while just those remaining had actually "capped" direct payments (Swinnen et al, 2015). As result, in 2015, only 109€ million, of which about two thirds from Hungary alone, have been "capped" from direct payments (Matthews, 2016). Subtracting salaries before capping cannot be justified since there are no evidence that agricultural employees benefit from direct payments but, in contrast, it is much more likely that all the resources go into the owners' wallets, whose need for such high-income support can at least be questioned.

Moving on, the Redistributive Payment Scheme - an optional non-binding contribution aimed at ensuring *de facto* income support to small-size farms - provides additional resources for the first hectares below a fixed threshold up to 30% of national ceilings for direct payments. However, this scheme could not be applied to the whole holdings' surfaces but just up to 30 hectares or, at most, to the 50% of the total area when bigger than 30 hectares. In addition, the resources allocated to this measure proved to be lower than what could be allocated, with Member States assigning between 0.5% and 15% of their available funds in this measure.

Furthermore, besides the criticalities mentioned above, other problems lie elsewhere. Indeed, small farms like vineyards and intensive livestock farming might have high incomes while

extending over few hectares; whereas low-income farms such as mountain farms with extensive grazing might be considered of high-income due to the large area over which their activities take place. In other words, although the 2013 reform has sought to reach a more equitable distribution of direct payments among farms, the mechanisms introduced did not work since the same logic of calculating direct payments according to the number of hectares is flawed.

One solution to this problem could be to change the system of direct payments itself, calibrating the resources to be attributed just according to farmers' real income. Thus, direct payments to farmers with real income above a certain level would be automatically limited, regardless of their farm size. This mechanism would seem to respond to the paradox by which European taxpayers support farmers with incomes far higher than the European average. However, even this solution presents criticalities since, with more than 40% of EU farmers having an additional income outside the agricultural sector (this percentage is higher for smaller farms), not counting farmers receiving pensions and other subsidies from Member States, low agricultural incomes do not necessarily entail the need to receive support. To support farmers with low agricultural incomes without ascertaining whether there are other sources of revenue would mean to invest in another unsuccessful mechanism. Furthermore, if the resources to be attributed to farmers had to depend on the incomes declared, there would probably be an increase of “imaginative” accounting. This does not mean that farmers in need of support should not receive it, but the intention is rather to point out that redistributing direct payments without changing how these are calculated does not resolve the problem of low yields and low incomes.

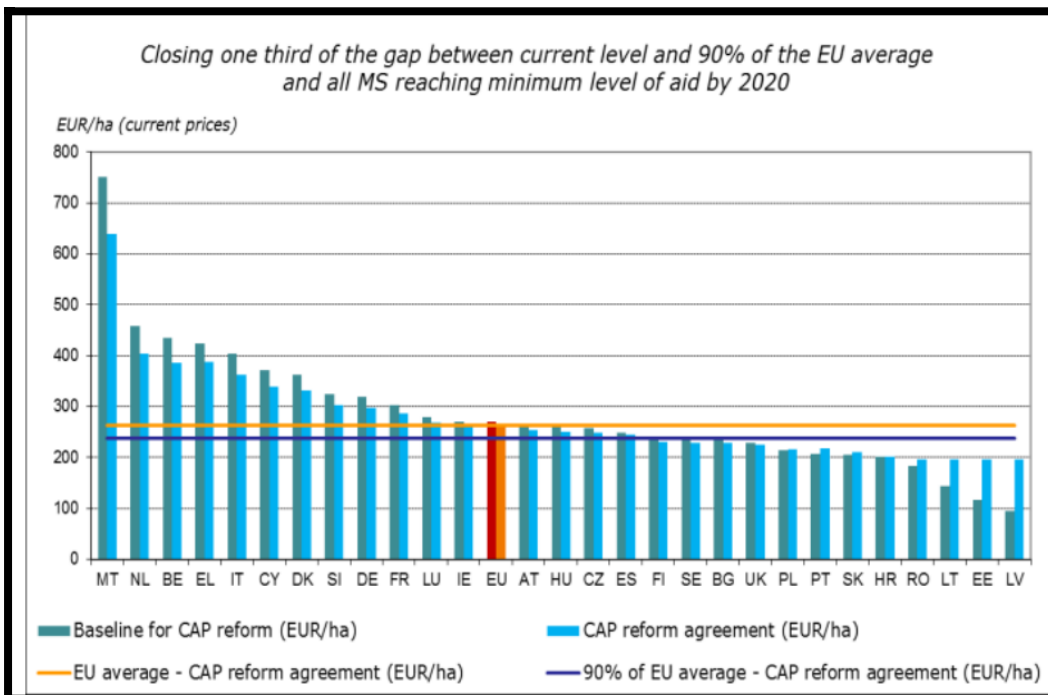
To conclude, the assumption that direct payments might contribute to farmers' resilience in the face of unstable market returns is grounded on the idea that direct payments provide more stable incomes compared to revenues coming from market activities. However, this is true for all public subsidies. In particular, Pillar I direct payments do not seem to be effective to address agricultural incomes' fluctuations since - as abovementioned - these are often precluded to those farms experiencing the greatest vulnerabilities. In contrast, II Pillar's risk management measures (M5, M6, M17) – aim at increasing farmers' resilience to extreme events and market shocks – as well as social assistance mechanisms and tax credits seem to be more appropriate to *de facto* increase farmers' resilience.

2.2.1.2. External Convergence

Started with the 2004 enlargement - which enable ten countries from Central and Eastern Europe to join the European Union - the process of gradual allocation of resources to the newest Members States did not cease until the 2013 reform occurred. As aforementioned, the reform aimed to, *inter alia*, reduce the great differences in the amounts of direct payments distributed at farm and Member State level. In particular, new Member States held that lower direct payments put them at disadvantage in the Single Market and so these demanded that equal treatment across the EU be introduced by the reform. But - since the gap in the resources distributed depended on the differences existing in the production methods, input prices, costs of labour, purchasing power and living standards among Member States - it was a question of how to achieve a more equitable distribution without leading to disruptive economic and social transformations. Hence, the European institutions decided that Member States having direct payments above the EU average would have experienced a progressive reduction in their resources, in a variable proportion depending on their distance from the average, in order to compensate the increase in those Member States having direct payments lower than 90% EU average. In detail, these latter had to fill this gap by at least one third over six years, with a minimal floor for direct payments set at 196€ per hectare in nominal prices by 2020 (equal to about 164€ per hectare in 2011 price). Since direct payments are calculated on an annual basis, the present section will focus on the CAP spending patterns in 2014 with a view to assess whether there is coherence between what had set in 2013 and what has been done to achieve external convergence.

Figure 1 illustrates European Council's predictions made in 2013 concerning the variation in the distribution of direct payments that should have occurred due to the 2013 reform. These projections are based on potential eligible land in 2009 and consider both budget cuts and external convergence. As we can see, Member State receiving sums above the EU average (left) would have experienced a reduction in the amounts of direct payments received (e.g., MT, NL, BE, EL), whereas Member States receiving sums below the EU average (right) would have received greater support (e.g., LV, EE, LT). The figure shows that, apart from Malta, without redistribution the gap between the Netherlands and Latvia would have amounted to about 350€/hectare, compared to about 200€/hectare that there would be in presence of this mechanism.

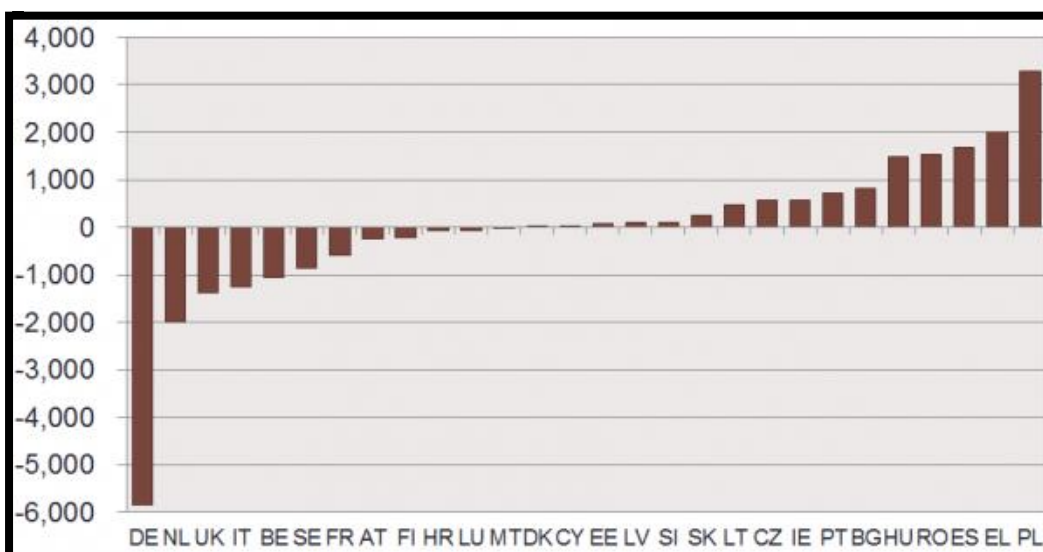
Figure 1: Changes in the Distribution of Direct Payments



Source: European Commission (2013)

Moving on, Figure 2 below illustrates the trend of the net transfers in 2014, defined as CAP revenue resources minus each Member State's contribution to CAP budget. In particular, even though Figure 1 shows that at least ten Member States (MT, NL, BE, EL, IT, CY, DK, SI, DE, FR) should have contributed to external convergence, Figure 2 reveals quite a different scenario.

Figure 2: Net gainers and losers from CAP expenditure, 2014 (€m)

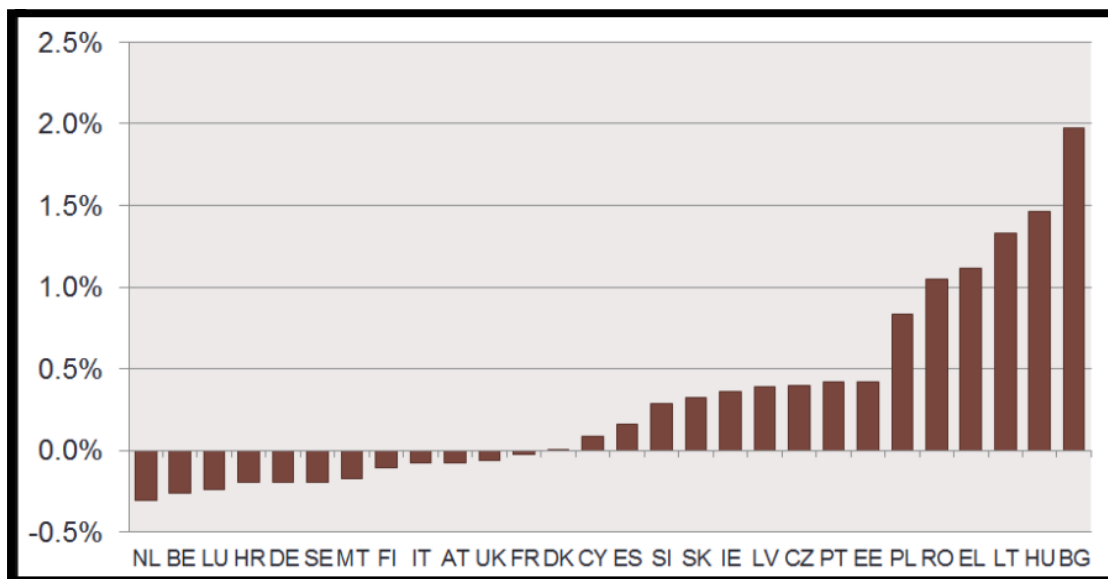


Source: Matthews (2015)

The total amount redistributed among Member States in 2014 amounted to 13.6€ billion with 43% of net contribution provided by Germany alone, followed by the Netherlands, the United Kingdom (although below the EU average), Italy, and so forth. On the other side, among the net beneficiaries of the redistribution, it is worth highlighting Greece (EL) in the second place (although above the EU average). However, it should be noted that larger Member States, just because of their size, tend to assume prominent positions both as net payers and net beneficiaries. Hence, it seems necessary to re-propose this calculation according to Member States' Gross National Income (GNI).

In this regard, Figure 3 illustrates a scenario that is more in line with the Council's predictions. Here are the Benelux countries the greatest contributors to the external convergence process, whereas the greatest receivers remain the Eastern Member States (BG, HU, LT, RO, PL).

Figure 3: Net gainers and losers from CAP expenditure according to EU Member States' GNI, 2014 (€m)

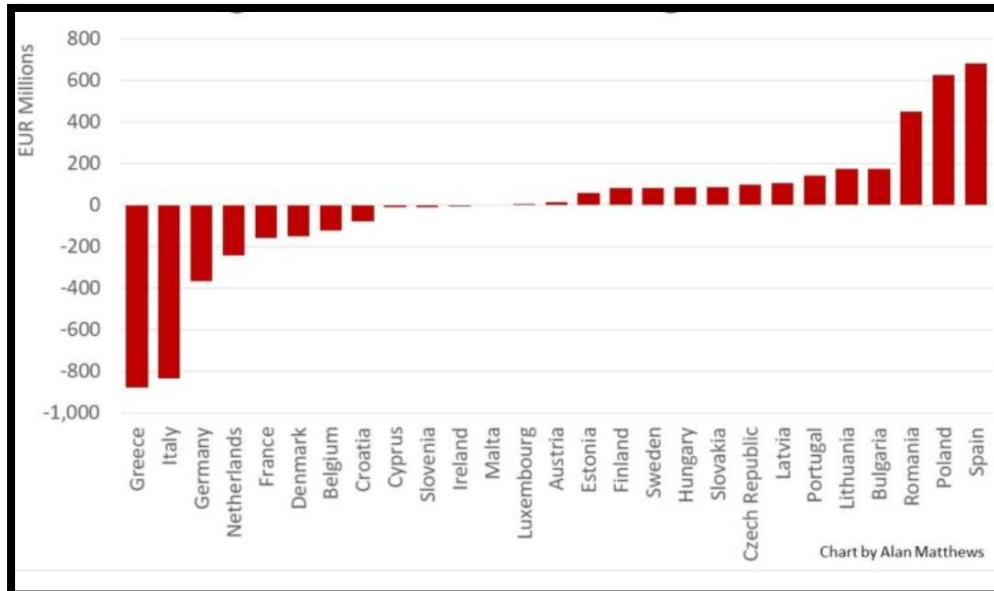


Source: Matthews (2015)

Hence, even though the 2013 reform has in part reduced existing differences in amounts of direct payments per hectare, significant disparities persisted. As result – in response to the need to revise the CAP - on 2018 the European Commission called for a continuation of the external convergence process. Particularly, it proposed that all Member States with direct payments below 90% EU average continue the convergence process started in 2013 and fill 50% (not one third) of the gap, with a minimal floor for direct payments set at 204€ (not 196€) per hectare by 2027. Furthermore, the EU also proposed that all Member States, not just those with direct

payments above the EU average, including net beneficiaries, contribute to full external convergence of direct payments.

Figure 4: Gains/Losses in moving from external convergence to full convergence



Source: Matthews (2020)

Figure 5 illustrates Alan Matthews’ forecasts concerning which Member States would be the losers and which the winners should full convergence be achieved. Potential major losers are placed on the left (e.g., Greece, Italy, Germany), while potential major winners are laid on the right (e.g., Spain, Poland, Romania). It is not surprising that, after the EC proposed full convergence, almost all the countries on the left side of the graph expressed their opposition (Italy among the major dissenters) arguing that full external convergence would exacerbate the vicious circle that sees high-income farms receiving most of direct payments to the detriment of the smallest and that - not considering the differences existing in agricultural production levels, land and input prices, wage levels, purchasing power and living standards among Member States – it would create distortions in the functioning of the Single Market.

To conclude, even though it is ironic that such states contest the nature and the adverse effects of direct payments in the moment in which they are called to redistribute them and although there are no magic formulas to properly distribute CAP resources, these arguments are difficult to contest at least according to what we said so far.

2.2.1.3. Pillar II in the 2014-2020 CAP budget

In the 2014-2020 period, Pillar I budget has been expanded at the expense of Pillar II. Of the total agricultural budget of 409€ billion, Pillar II received less than a quarter plus 161€ billion since co-financed by national governments. To top it all off, EU Member States could also benefit from the chance to transfer up to 15% of their national direct payment ceilings to rural development and so also backwards through "reverse modulation" which allowed them to transfer up to 15% of their rural development budget to direct payments, with a further chance for Member States receiving direct payments below 90% EU average to extend this percentage to 25%. Even the proceeds obtained from degressivity and capping can be redistributed according to the same logic. As might be expected, transferring resources from Pillar II to Pillar I proved to be an attractive option for numerous Member States, even when aware that it would inevitably compromise rural development. Hence, the modalities with which Member States distributed the available resources can be considered as an implicit statement of the value attributed to the Pillar I's purposes (support farmers' incomes and compensate reduced market prices) compared to that attributed to Pillar II's objectives (fostering agricultural competitiveness, ensuring sustainable management of natural resources and climate action, and achieving balanced territorial development of rural economies and communities, including the creation and maintenance of employment).

Despite the Commission's emphasis on increasing the level of EU's environmental and climate ambition, the proposed distribution of resources for the period 2021-2027 seems to confirm this imbalance. In detail, the Commission proposed to reduce total CAP budget by 15%, for which Pillar I budget would be reduced by 11% and Pillar II budget by 27%. According to this draft, resources available for Pillar II and consequently for rural development, would be reduced by a quarter, while those intended to support agricultural income preserved. Thus, it seems that are not just the Member States but also the Commission to express its priorities through the CAP budget, meaning to maintain Pillar I as the main element of support to the detriment of the resources to be destined for Pillar II. As widely discussed, although the Commission proposed to continue capping direct payments allocated to the largest beneficiaries, this remains a missed chance for the CAP to shift support from specific targets and performance-free payments towards more targeted payments for the supply of public goods. Not to mention that well-structured farms will continue to benefit from most of the resources at the expense of the smaller ones.

In contrast, to turn the Commission's rhetoric reliable, a significant share of the EU budget should be allocated to Pillar II as it provides more appropriate measures and tools to reward environmental services and *de facto* support farmers' income.

In his "Rethinking EU budget spending on agriculture in the next MFF", Alan Matthews listed three possible solutions to make the allocation of CAP funds for the period 2021-2027 suitable to encourage Member States to achieve ambitious results with the resources at their disposal.

The first solution is to redirect the share of the budget allocated to Pillar I to Pillar II measures that pursue similar goals in that, although 30% of total direct payment allocations (about 12€ billion) has been reserved for such instruments - due to the undemanding implementation choices made by the EU Member States and to the significant deadweight which affects them - these did not produce satisfactory results. That should be no surprise in that, as aforementioned, Pillar I measures are annual, generic, and imprecise. In contrast, being multiannual, targeted, location-specific, and developed in collaboration with farmers and farm managers, Pillar II instruments seem far more effective.

The second solution, raised for the first time in the Commission's "Reflection paper on the future of EU finances", is to co-finance Pillar I direct payments in that it would encourage a more efficient use of available resources. Having to make their contribution, Member States would be encouraged to make the best of their expenditures. Furthermore, co-financing would place resources allocated to Pillar I and II on the same level as well as to direct more resources towards high added value measures such as RDP land management measures (M10, M11, M12, M13 and M15) and RDP investment measures (M4, M7, M8 and M14) or - as an alternative - to negate them for measures of no added value for the EU (e.g., Voluntary Coupled Support).

A third solution is to distribute CAP resources more equitably both among and within Member States by continuing the processes of external and internal convergence excluding big-size farms from receiving basic income support. Instead, such farms might receive support through Pillar II instruments aimed, for instance, at encouraging the adoption of beneficial agricultural practices and technologies for climate adaptation and mitigation (see sections 2.1.2 and 2.1.3).

Other remedies could be to allocate resources only when actual results are achieved, or good performances demonstrated as well as to provide funding to support specific projects. The logic should be rewarding for compliance and compensating the expenses incurred for the provision

of public goods. In this view, indicators to assess goals achievements should be carefully selected since, especially in the agricultural sector, time intervals between implementation of projects and the occurrence of results can be very long and, above all, even well calibrated interventions might still fail to achieve their targets due to external agents such as diseases or financial shocks.

2.2.2 Assessing CAP Influence on EU Labour and Land Markets

Till two centuries ago, most of the European population lived and worked in small family farms. It was just with the occurrence of the industrial revolution that the transition to modern societies occurred. In particular, the creation of the CAP was a true turning point since it determined the passage from labour force to capital and from family members to salaried employees to the extent that - to date - just a small proportion of EU inhabitants earns a living wage from the agricultural sector and provide food for the whole Europe. The present section will investigate the CAP impact on the EU labour and land markets in order to underline the shortcomings that the next programming period should address.

Even though it is well known that large farms have significant environmental impacts and tend to hire less labourers - just like at its beginning - the CAP continues to provide support to large-size farms to the detriment of the smaller ones. The logic of "productivism" has had and still have disastrous consequences on employment, wage levels and, in general, working conditions. The fact that the statistical data state that, in 2016, more than 22 million people worked in the agricultural sector, does not mean that these are full-time jobs (most are in fact part-time or seasonal jobs) which indeed amounted to about 9.5 million, 4.4% of total EU labourers, with significant variations from one state to another (from less than 2% in the United Kingdom and Germany to more than 10% in Romania, Bulgaria, Poland and Greece). Among these, about 35.1% are women. These calculations do not consider irregular jobs in the agricultural sector which, according to a study conducted by the European Federation of Food, Agriculture and Tourism Trade Unions in 2010, represent about 25% of the total workforce. However, between 2005 and 2016, the number of full-time agricultural labourers fell by about 25%, replaced by the chemicals, machineries, and digitalisation, so revealing that the two previous programming periods did not do enough to sustain progress without compromising the number of workplaces and the working conditions in the EU agricultural sector. Along these considerations, empirical data regarding EU agricultural employment in relation to CAP

subsidies demonstrate that each million euro of CAP contributions correspond to five workplaces lost. Even though this is a matter of concern mainly for the Eastern and Southern European countries, where unemployment is high and there are less job opportunities, it must be noted that no other European policy affects the well-being of the EU citizens as much as the CAP does.

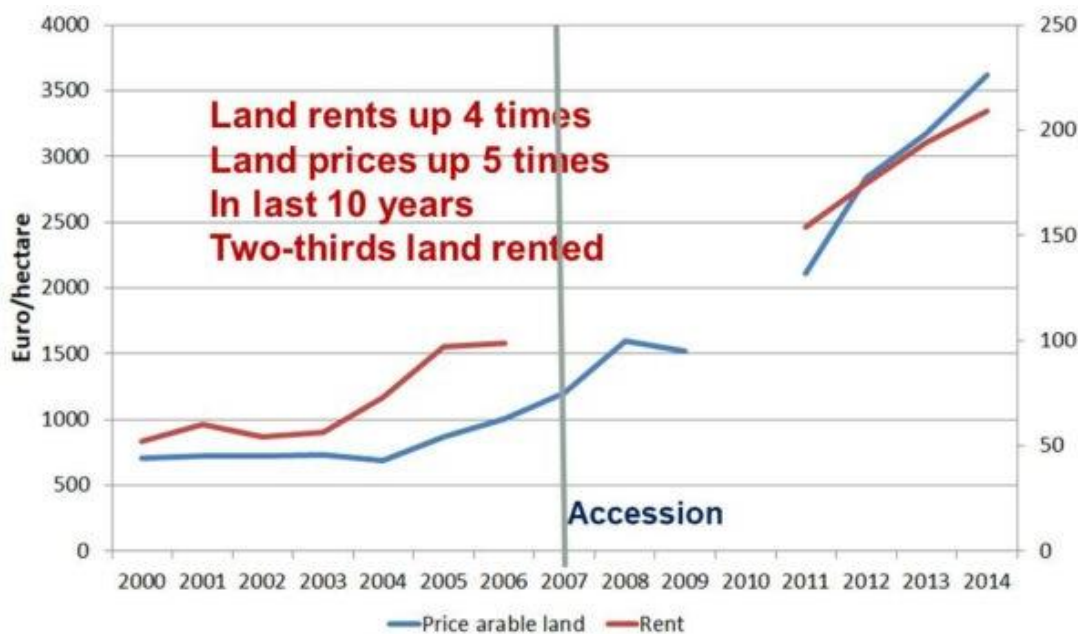
As it happened in the immediate aftermath of the Second World War, between 2003 and 2013, 25% of EU farms has gone out of business and almost half of EU countries have lost between one third (Belgium, Czech Republic, Germany, Italy, Poland, United Kingdom, etc.) and two thirds (Bulgaria, Slovakia) of their farms. Among these, about 96% had less than 10 hectares. Indeed, small-size farms - representing about 80% of all EU farms - are those most exposed to closures and bankruptcies. In contrast, in the period 1990-2013, some Western European countries have witnessed a dramatic increase in the number of holdings larger than 100 hectares. Hence, EU farms are getting bigger and bigger whereas the smaller ones are forced to close or be absorbed by large companies.

Even though the 2013 Ciolos reform has attempted to redistribute resources to the benefit of the small-size farms, between 2014 and 2020, just 20% of EU farms received 80% of direct payments. This has in turn resulted in job losses, degradation of agricultural land and agri-food products as well as increase in intensive crops and livestock farming. The liberalization of markets and the unequal distribution of direct payments are at the basis of such occupational disaster since these have encouraged further agricultural specialisation and the alignment of the EU prices to the world prices. More in detail, the fall in prices occurred to such an extent that often producers failed covering the production costs, further increasing the importance of direct payments. But since the latter are hectare-based and do not depend on price fluctuations, farmers' incomes continue to be highly variable. For instance, despite the granting of direct payments, following the liberalization of the dairy market, vulnerable producers faced extreme financial difficulties. In contrast, when prices are high, DPs go to farmers who do not need extra funds. Thus, the real victims of the direct payments regime are the small and mid-size farms, together with some specific sectors where bankruptcies and closures are frequent.

Moving on, since direct payments are hectare-based, these have encouraged land acquisition. For instance, in Eastern Europe - where until the countries joined the EU most of the lands was still cultivated extensively and a large proportion of the population was employed in agriculture - farm sizes are increasing. The price of the lands - pushed upwards by the

increase in the land market over the last ten or fifteen years - makes it difficult for those without a farming tradition to enter the profession. For example, since its accession to the EU in 2007, Bulgaria experienced a dramatic rise in agricultural land prices, which increased four to five times in a ten-year period.

Figure 6: Trend in land values in Bulgaria since 2000



Source: Eurostat

Northern Europe presents similar trends since in countries like Belgium, the Netherlands and Denmark, land prices are reaching unrealistic levels compared to farm real incomes to the point that - to date - Northern European farmers might purchase for the same price up to ten times more land in other Member States than they could do in their own countries. In addition, numerous sales contracts are concluded under dubious circumstances, in presence of corruption and illegality. In Hungary, for example, agreements circumventing national regulations have permitted non-Hungarian companies to purchase around one million hectares of lands in the last 20 years, a phenomenon known as “land grabbing”. In contrast, Southern Europe accommodates most of the small and medium size farms. In this respect, it is worth mentioning that direct payments are just paid to those that cultivate at least one hectare of land, so turning millions of farms invisible to the agricultural registers. Therefore, by receiving more subsidies, well-established high-income farms might get debts to continue expanding to the detriment of the small farms that, lacking sufficient capital, succumb. To top it all off, large companies see lands as financial investments rather than organs to produce public goods. The land is indeed

farmed by fewer and fewer farmers using practices that damage the soil, triggering catastrophic social and environmental consequences.

The 2021-2027 CAP should provide support to small farms that produce public goods rather than to large and industrialised companies. European farmers themselves are demanding that the EU addresses the problems of high farmland prices combined with low profitability of the agricultural sector. In this respect, just like farms are required to conform with environmental standards to be eligible for CAP subsidies, equivalent obligations should be included to protect labour. Such "social conditionalities" should include training of labourers, adequate wages and compliance with health and safety standards.

European Institutions should do as much as possible to protect farmers and rural communities' cultural and gastronomic heritage and to pass it on the new generations. In this respect, although the Young Farmers Payments has been introduced in 1980, it is often still not enough to start new farming businesses. In quantitative terms, between 2007 and 2013, YFPs have been allocated to about 190.000 young farmers whereas, in the same period, about 3.5€ million have been attributed to about 3.5 million farmers aged 65 and over, whose retirement is expected within 5 to 10 years and who (for the most) will leave their small or medium-sized farms without successors. Furthermore, as mentioned in paragraph 2.1.2.1 (Impact of Pillar I Measures on Climate Adaptation), older farmers are in general more reluctant to adopt sustainable agricultural practices, at least because their retirement is expected before the negative consequences of climate change can affect them. Between 2014 and 2020, just 317€ million (0.79% of total CAP budget) have been allocated through this measure, not enough to encounter the needs of the young farmers. Thus, it is essential to introduce strong and well-targeted mechanisms at European, Member State and regional level that will encourage generational change, help creating new jobs and promote the agroecological transition of our agri-food systems.

Despite what abovementioned, an increasing number of persons would like to enter the agricultural sector, with or without CAP support. Some benefit from innovative programmes such as farm incubators, acquisition of land through common funds, and agricultural cooperatives. Some others are targeting new sectors such as organic farming, short food supply chains, social farming, and on-farm food processing, which increase the added value of products and contribute to local food production, employment, and environmental protection.

Whenever the budget destined to Pillar II would be increased and the measures embedded considered as economic, social, and environmental earning opportunities at EU, national and farm level, these could facilitate the entrance into the sector of aspiring farmers and agricultural entrepreneurs. Let us recall, for instance, that measure M6 (farm and business development) aims to encourage the diversification of agricultural practices and comprises investments to small farms, young farmers, non-agricultural activities, and new business in rural areas. Just like M6, also measures M11 (organic farming), M16 (cooperation), M14 (animal welfare) can contribute to transform EU agriculture into a more sustainable sector and a viable source of employment and income for labourers. The time has come to adopt policies that benefit smaller and more efficient units which protect jobs and communities and encourage the entrance of new people into the sector.

2.2.3 The CAP Position in the Global Agri-Food Trade

Since its inception, EU's excessive export subsidies had caused drops in global agricultural prices and obliged numerous farmers to abandon their lands. It was the 2015 WTO's Resolution that liberalised agri-food trade and abolished the limits imposed on production. According to the data collected by the United Nations Conference on Trade and Development (UNCTAD) - at the time when the Ciolos reform was approved – the EU exports accounted to 38% of total agri-food exports at global level, whereas intra-EU trade accounted to 26-28% of world agri-food trade (Matthews, 2015A). In addition, between 2010 and 2020, the EU agri-food products trade balance recorded an annual average growth of about 10%, reaching 62€ billion of net trade in 2020 (European Commission, 2021). To date, the EU has a surplus in its balance of payments for agricultural products, meaning that it earns more from exports than it spends on equivalent imports. Hence - having acquired a prominent role in the global agri-food markets - the EU is able to influence agri-food prices, agricultural labourers' incomes, and the eating habits of non-EU countries. However, since it is impossible to conduct here a thorough evaluation about the EU position in the global agri-food market, this section will better assess whether and to what extent the CAP has impacted developing countries' price and production levels between 2014 and 2020.

Since the 1990s, the direct payments regime has been the main source of support for the EU agricultural production. However, there is still indecision about its overall impact on

non-EU countries' economies. Or better, since there are still opposing opinions about its consequences on EU food production, one cannot be sure about EU exports international impact. On one hand, numerous agricultural economists believe that DPs exert just a little influence on production (recent estimates suggest an increase in EU production equal to around 5-6%), thus having a limited impact on global agri-food trade. In contrast, other scholars claim that - in absence of Pillar I measures - both production and exports would be reduced, thus stimulating local agri-food production. However, almost all agree that EU exports' success cannot be attributed to the CAP alone. Indeed, in the attempt to increase production and further reduce costs, EU farmers adopted various strategies such as the application of less stringent environmental controls and the construction of more productive livestock infrastructures (e.g., larger animal housing). Nevertheless, the 2015 milk sector liberalisation proved how fast things can degenerate in that it abolished production limits introduced in the 1980s, so triggering a downward spiral in the dairy products prices.

Along these lines, even though export subsidies' withdrawal has doubtless advantaged developing countries' economies, this does not mean that the CAP is flawless. The EU has indeed pursued the explicit target to increase its agri-food production for a long time. However, since the EU internal market is not able to absorb all the EU agricultural commodities, these are exported outside. In this sense, despite its limited growth potential, the African continent provided great opportunities to the EU. For instance, in 2017, 35% of EU's wheat exports were placed in North Africa; between 25% and 60% of EU's shipped flour absorbed by Sub-Saharan Africa; and 43% of EU's poultry exports acquired by Sub-Saharan and West Africa countries (Bartz et al, 2019). Even though it is true that EU commodities compete with local products (e.g., wheat with millet, cassava, and yams), there are no empirical evidence suggesting the existence of an unconditional relation between share of EU exports and level of agri-food production in developing countries since it depends on the products bought and sold.

In the attempt to assess CAP impact on developing countries' economies (in particular on the most vulnerable developing countries) Alan Matthews and Rossella Soldi (2019) examined the relationship existing between CAP subsidies and EU export prices as well as how these impacted the scope of such exports towards vulnerable developing countries (VDCs). More in depth, their assessment focuses on three agri-food commodities: milk powder, chicken meat, and processed tomato-derived products.

First, almost all milk powder imports in VDCs come from the EU. As mentioned, the end of the "milk quota" regime (in place since 1984) has led to growth in the EU dairy exports. Nevertheless, as long as Pillar I and II measures aimed at stimulating agri-food production continue, such change does not reflect in itself a radical transformation in the CAP subsidy policy. However, despite the dramatic drops in dairy products prices, it allowed the EU to expand its milk production and hence to dominate emerging global market frontiers. But since the EU exports compete with those of big economies like the US and New Zealand - which also influence price levels - the impact of the EU's milk sector liberalisation on the global dairy market is neither significant nor negligible. It follows that the relationship between EU exports and global price levels is not unconditional but can be modelled by external factors such as the presence of major competitors in the world market.

Second, even though 46% of chicken meat imported by the VDCs comes from the EU, empirical evidence excludes that CAP subsidies lowered prices in the global market. Indeed - due to the higher feed costs and the higher environmental, human, and animal safety standards - the European chicken meat's price is higher than that of other exporting countries. However, while empirical evidence negates the existence of an absolute connection between export shares and price levels, this does not mean that EU exports do not harm in other manners VDCs' economies. Rather, even though EU chicken meat has a higher price - due to the absence of policies aimed to stimulate local production - local producers in importing VDCs still have troubles competing with these.

Concerning EU tomato paste, VDCs import just a small share (12%). However, as explained in section 2.1.2.1, tomato production in the EU has sometimes been supported under the Voluntary Coupled Support Scheme (VCS) which - on one hand - triggered maladaptation practices whereas - on the other hand - supported farmers according to the historical Single Farm Payment (SFP) model. As result, such producers might assume that the resources allocated to them depend on their production level, thus further increasing tomato production and lowering tomato prices. Hence, even though the assessment conducted by Alan Matthews and Rossella Soldi illustrates that EU's tomatoes exports to VDCs have no significant impact on global and local tomato prices, a further expansion of their production would turn such impact significant.

Moving on, EU's agricultural imports raise concerns as well in that these still consist in traditional raw materials and former colonial products (e.g., palm oil, soybeans, cocoa, coffee,

bananas, and cotton). In addition, the excessive exploitation of natural resources and the use of chemical substances to increase agricultural production are both dangerous issues related to EU's imports. In this sense, avocado production is a proper example since it depletes water resources in territories where already scarce. Another example consists in soy production in that - widely used as animal feed in the EU's hog and chicken meat production - it depauperates Latin America's agricultural lands, once covered by grass and woods.

Hence – on one hand - the relation between EU exports and agri-food production in importing countries (including vulnerable developing countries) is a controversial issue. It is indeed not unconditional but rather it depends on elements other than CAP measures (e.g., the presence of major competitors in the world market and/or the policies carried out by the importing countries' managing authorities). On the other hand, EU imports seem no longer sustainable as these much exceed the global "fair" impact on land, water, and air. In particular, even though EU imports can be an important source of income for developing countries, these might lead to environmental degradation and do not promote long term economic and social transformations. Overall - despite production limits and export subsidies are no longer in place - the direct payment regime continues to produce distortions in international trade as well as an obstacle to the structural changes essential to develop the agricultural sector both inside and outside the European Union. Hence, if the EU is to honour its commitments - among which its pledge towards open trade policies and the Paris climate targets - it should restructure its agri-food sector so as to make it more sustainable and equitable on a global level.

2.2.4 Conclusions

The previous sections aimed to provide an overview about the most significant issues related to the CAP resource management introduced by the 2013 Ciolos reform or emerged during the 2014-2020 period. In particular, we shed light on the internal and external convergence processes, the weight of Pillar II in the total CAP budget, the Pillar I impact on the labour and land markets and, last, the relationship existing between EU imports/exports and emerging countries' price and production levels.

Concerning internal and external convergence – as we have seen - the 2013 reform aimed to provide *de facto* income support to small and medium-size farms through redistribution of direct payments both among and within EU Member States. In detail, three mechanisms should

made the allocation of resources more equitable, namely degressivity, capping and the voluntary redistributive scheme. However, the freedom left to the Member States on how to implement them compromised their effectiveness. Nevertheless, it has been pointed out that – even if modified - these mechanisms would not be able to cope with unstable market returns and support farmers’ income since the same logic of direct payments seems to be inadequate to do this. Being calculated on the basis of the hectares cultivated or owned, direct payments do not solve the problem of low incomes, that is low productivity. Along similar lines, the 2013 has also sought to redistribute resources among states without leading to disruptive economic and social transformations in the new Member States. However, we illustrated that – here again - by not considering the peculiarities of the EU Member States, the continuation of the external convergence process could paradoxically exacerbate disparities among farmers and lead to distortions in the functioning of the single market.

Then, the present research highlighted the disastrous effects of direct payments on the EU labour and agricultural land markets. In particular, it detected a direct relationship between the amounts of CAP resources and the prices of agricultural lands, whereas an inverse relationship between the amounts of direct payments allocated to large farms and the number of jobs in the agricultural sector. Since both these relations have disastrous economic and social effects, we proposed the introduction of “social conditionalities” so as to make the reception of CAP resources conditional upon the fulfilment of conditions aimed to protect and create jobs, encourage generational change and – by avoiding specialisation - promote the transition towards a fairer and more sustainable agriculture.

Moving on, the Chapter illustrated that there is no unique empirical relationship between direct payments, EU imports, EU exports and production in that the causal relation depends on numerous factors such as the nature and the share of the products brought and sold, the presence of other actors, and the policies adopted by the importing states. However, even though there is still no clearness about the extent of CAP’s influence, there is no doubt that the EU has a tight grip on developing countries. In particular, EU imports still seem to have colonial characteristics and are no longer socially and environmentally sustainable; whilst EU exports tend to hinder structural changes as well as to distort international trade.

Regarding Pillar II, it has been penalised in the 2014-2020 CAP budget and is in danger of being so also in the 2021-2027 period. To turn the Commission’s rhetoric reliable, the CAP should reallocate its resources from targets and performance-free payments towards more

targeted payments for the supply of public goods. A significant part of the EU budget should be allocated to Pillar II as it includes measures that are more suitable to pursue CAP objectives as well as to support farmers in the transition period. In addition, it has been proposed to transfer the resources from Pillar I greening measures to Pillar II measures that pursue similar goals, to co-finance Pillar I, and to exclude large farms from the direct payment system and support them through Pillar II.

Overall, Pillar I direct payments do not seem to address the challenges that European agriculture should face. A better Common Agricultural Policy requires that instruments are conceived according to the objectives that the EU intends to pursue. These could be designed according to the principles suggested by Brady et al (2017) "polluter pays" and "provider of public goods gets". To conclude, it should be essential to replace direct payments with targeted payments aimed at supporting small businesses providing public goods without compromising the efficiency of the agricultural production. This is an occasion to move agriculture on to a more sustainable development path the EU cannot miss.

3. THE CAP UNDERGOING RESTRUCTURING

3.1 WHAT DID THE EUROPEAN ELECTIONS MEAN TO THE CAP?

The 2019 was a decisive year for the future of the CAP in that the European elections defined the structure of the new Parliament and the new Commission that – together with the European Council - are responsible to formulate and approve the EU's rules. Among the issues examined by these institutions are the CAP's strategic orientation for the period 2021-2027, the definition of its position in the Multiannual Financial Framework (MFF), as well as its relevant legislative framework. Hence, the present section will provide an overview of the main changes introduced by the EU elections likely to affect the future shape of the CAP.

The Parliament has considerable budget powers wherein among the most important is the power of discharge. In it, the AGRI Committee has also a central role in that it delivers opinions on legislative proposals under co-decision procedure and is responsible for monitoring the European Commission's activities concerning a wide range of issues, such as the need to address the crisis in the milk sector, the animal welfare issue, and the strategic considerations for the post-2020 period. In this sense, the AGRI Committee's members can also support the need to maintain sufficient budget appropriations for the EU agricultural sector. For instance, during an exchange of views held in February 2018, the AGRI Committee's members strenuously defended the CAP against the Commissioner designated for the budget and human resources Günther Oettinger. In that occasion, numerous MEPs reiterated their idea that CAP support is crucial for farms' survival and that even small budget cuts would have significant impacts on farmers' incomes. Together with this, the European Parliament has adopted numerous non-legislative measures concerning the EU agricultural sector. It has, for instance, put pressure on the Commission so that a financial package of 500€ million was adopted to mitigate the crisis in the dairy sector. Or again, in response to the Commission's Communication on the future of food and agriculture, the European Parliament clarified that the CAP reform must respect the right of developing countries to define their own agricultural and food policies, without undermining their food production capacities and their long-term food security (James McEldowney, 2019).

Between 2014 and 2020, two political groups dominated the AGRI Committee: the centre-right European People's Party (EPP) and the centre-left Alliance of Socialists and Democrats (S&D). However, constituted on May 2019, the new European Parliament witnessed a loss of seats for

these two groups (that have lost the joint control of the Parliament) and an increase in the seats for the Liberal group (Renew Europe, RE), the Greens and the Eurosceptic parties. In this regard, a decisive factor has been the success of the Brexit party in the UK.¹⁹ Nevertheless, these political groups have appointed the members of the parliamentary committees, including the 48 members of the new AGRI Committee.

The new composition of the AGRI Committee reflects the changed composition of the European Parliament as both the EPP and the S&D lost one seat while Renew Europe went from 4 to 7 seats and the Greens from 3 to 5 seats. In addition, the share of “pro-Europe” parties has increased from 67% to 71%, a proportion that enabled the appointment of Norbert Lins (EPP) as Committee President. In it, the most represented Member States are Italy, France, Spain, and Ireland; although also Central and Eastern European countries are well represented with 11 members coming from Czech Republic, Romania, Poland, Lithuania, and Hungary. Furthermore, a more in-depth analysis on the AGRI Committee’s composition reveals that at least 21 members (44%) out of 48 are farmers or their previous income came from representing farmers' interests. Examining the Committee’s composition is crucial for understanding the strategic orientation of the 2021-2027 CAP as it is normal that activities carried out prior to or together with the parliamentary activity will influence the choices made by the AGRI Committee’s members concerning the Common Agricultural Policy (Matthews, 2019 B).

Even the European Commission has a central role in delineating the Common Agricultural Policy since it is managed by the Directorate-General for Agriculture and Rural Development (DG AGRI), responsible to adopt delegated and implementing acts for its practical implementation. It defines the rules and policies governing the agricultural sector prior consultations with civil dialogue groups and the approval of the Parliament and the Council. The polls and the public opinion reports conducted on agricultural issues (e.g., the support provided to farmers and the environment) are published regularly on the web page “EU citizens, agriculture and the CAP”. The same Commission conducts impact assessments concerning agriculture and rural development when planning, preparing, and proposing new European legislations. Following their approval, the agricultural sector is monitored through the Common Monitoring and Evaluation Framework, meant to assess concrete CAP’s results in order to improve its effectiveness.

¹⁹ The UK's exit from the EU also meant a reduction in the number of seats in European Parliament from 751 to 705.

On 21 June 2019, the European Council appointed Ursula von der Leyen as European Commission President, although with a narrow landslide (383 out of a minimum of 374). Numerous commentators pointed out the small margin with which the President has been confirmed to suggest that she will not be able to count on a stable majority in the European Parliament for the adoption of her legislative proposals. However, among her first decisions there was that to strengthen the architecture already set-up by former Commission President Jean-Claude Juncker, further institutionalising the roles of vice-president and executive vice-president (leading a political sector). In detail, the President appointed eighteen commissioners and eight vice-presidents, three of whom with an executive nature. This means that the Commissioner-designate for Agriculture Janusz Wojciechowski is under the leadership of the Executive Vice-President Frans Timmermans, in charge of the European Green Deal.

The Commission has then published a series of documents assessing the main environmental and socio-economic challenges that the EU agricultural sector must face, namely the climate crisis, low agricultural incomes, declining employment, low agricultural productivity, compliance costs, ageing of agricultural population, low levels of vocational training, price and income volatility. More in depth, in the words of President von der Leyen in her mission letter to Janusz Wojciechowski (1 December 2019):

Your task over the next five years will be to ensure that the agricultural sector continues to deliver on its enduring commitments while supporting it to adapt to changes in climate, demographics and technologies. I also want you to have a specific focus on healthier and more sustainable food production. This will be an important part of the European Green Deal.

I count on your support to swiftly conclude negotiations on a modern and simplified Common Agricultural Policy for the post-2020 period. The final agreement must be ambitious in terms of food security and environmental and climate objectives. It should incentivise the uptake of digital technologies and ensure the sector can remain competitive, provide a fair income and support young farmers.

Once negotiations are concluded, you should focus on the full implementation of the new policy. You will work closely with Member states on their Strategic Plans to ensure that they strike a balance between EU-wide objectives and national priorities. You will pay particular attention to the benchmarks and requirements on environment- and climate-related objectives.

I want you to contribute to the new 'Farm to Fork' strategy for sustainable food, looking at how the agri-food sector can improve the sustainability of food production across the food chain, including through organic production.

As part of our zero-pollution ambition, you should ensure that agriculture and food production contribute to our climate, environmental and biodiversity goals, notably by reducing the use of pesticides, fertilisers and chemicals in Europe and beyond.

I would also like you to look at ways to strengthen the system of geographical indications. It is a key part of maintaining high food quality and standards and ensuring that our cultural, gastronomic and local heritage is preserved and certified as authentic across the world.

You will develop a new long-term vision for rural areas, working closely with the Vice-President for Democracy and Demography. You will ensure that the needs of rural areas are specifically catered for in national Strategic Plans under the new Common Agricultural Policy.

As the world's biggest food importer and exporter, you should promote Europe's high-quality food standards worldwide. As a rule, you will work under the guidance of the Executive Vice-President for the European Green Deal. The Directorate-General for Agriculture and Rural Development will support you in your work.

The letter shows that the focus is on a high level of environmental and climate ambition. Ambition confirmed by the mandate bestowed to the Commissioner-designate for Health, Stella Kyriakides, to develop a "Farm to Fork" strategy. This is an historic decision since it is the first time the Commission has instructed to draw up a comprehensive approach for the European agri-food sector. In this context, Commissioner Wojciechowski is responsible for monitoring agriculture's contribution to the overall sustainability of the agri-food system. Likewise, other Commissioners-designate can influence the Common Agricultural Policy. For instance, the Commissioner for Innovation, Research, Culture, Education and Youth, Mariya Gabriel, is responsible to allocate resources to research; the Executive Vice-President Valdis Dombrovskis must negotiate and conclude free trade agreements, including agricultural market access; the Commissioner-designate for the budget, Johannes Hahn, has the mandate to assist the Commission President in drawing up a Multiannual Financial Framework and determining the resources to be allocated to the initiatives to be undertaken in these policy areas, agriculture included; ultimately, Executive Vice-President Frans Timmermans is in charge of ensuring that the EU is on track to achieve climate neutrality by 2050. Thus, even though the responsibilities to delineate the next Common Agricultural Policy fall on the Directorate-General for Agriculture and Rural Development, it is clear that also other Directorates-General will have a central role in shaping it.

3.2 THE EUROPEAN GREEN DEAL AND THE PAC

On 11 December 2019, the European Commission announced the European Green New Deal (GND), an ambitious plan aimed to counteract ongoing climate change by transforming the European Union into the first climate neutral continent by 2050 and by ending dysfunctional exploitation of natural resources. Even though the European Green Deal goes in the same direction as the US Green Deal, it differs from it in that it envisages concrete actions. More in depth, the fight against climate change underpinning the European Green Deal will focus on transports, energies, agriculture, constructions, and industries. In addition, it provides for the gradual introduction of new regulations in several areas interconnected with each other, including climate, environment, energy, transport, industry, agriculture, and sustainable finance. To do this, the Commission has projected two instruments: the Sustainable Europe Investment Plan and the Just Transition Fund (JTF). In the CE's plans, the former would have had an endowment equal to 260€ billion (up to 2030) to support industrial reconversion into eco-sustainable projects, whereas the latter a budget equal to 320€ billion (over a ten-year period) to provide economic support to the areas most dependent on fossil fuels.

Thus, the Green New Deal will act as a precondition for the EU's future climate-environmental and industrial-technological policies. The same Commission has defined it as the new EU growth strategy through which economic development will be dissociated from the unsustainable exploitation of natural resources and decarbonisation and economic growth will go hand in hand. This is a mockery to those who believe that “degrowth” is essential to respect planet's limits and call for a drastic change in living standards to not destroy the Earth. In contrast, the Green Deal aims to reconcile how we live, produce, and consume with the physical limits of our planet. It is a broad transformation pathway that includes extensive reforms in multiple sectors.

Along these lines, the Green Deal includes a roadmap with ten crucial steps that will change or impact the Common Agricultural Policy. In addition, it contains provisions to make the transition towards sustainable, equitable and just societies possible. Apart from the “From Farm to Fork” (F2F) initiative, also other strategies – the European Climate Law, the EU Biodiversity Strategy 2030, the Circular Economy Action Plan, the Zero Pollution Action Plan - will impact the EU agricultural sector. Hence, the present section outlines the Green Deal

sub-strategies that will impact the EU agricultural sector and provides insights on how the CAP could be transformed to better contribute to the EU's climate and environmental targets.

The ten-year From Farm to Fork Strategy responds to the alarming reports published by the International Panel on Climate Change (IPCC) on climate crisis, by the Intergovernmental Science Policy Platform on Biodiversity and Ecosystem Services (IPBES) on biodiversity collapse, by the European Environment Agency (EEA) on the progress made by the EU. In particular, the latter has acknowledged that - despite progresses have been made in some sectors - the EU is still far from achieving the targets set out in its Climate Action Programmes. Furthermore, the F2F responds to the need to adapt the EU agricultural and food sectors to the Green Deal's ambitions. It includes a roadmap and six priorities to turn the agri-food sector fairer, healthier, and sustainable: 1. "ensuring sustainable food production", 2. "ensuring food security", 3. "stimulating sustainable food processing, wholesale, retail, hospitality and food services practices"; 4. "promoting sustainable food consumption and facilitating the shift to healthy, sustainable diets";²⁰ 5. "reducing food loss and waste"; 6. "combating food fraud along the food supply chain". In addition, the F2F sets out the targets the EU should pursue so as to reduce greenhouse gas agricultural emissions, that are 1. "a reduction by 50% in the use of chemical and hazardous pesticides by 2030"; 2. "a reduction of nutrient losses by at least 50% while ensuring that there is no deterioration in soil fertility"; 3. "a reduction in the use of fertilizers by at least 20% by 2030"; 4. "a reduction of 50% by 2030 in the overall EU sales of antimicrobials for farmed animals and aquaculture"; 5. "reaching 25% of agricultural land under organic farming by 2030".

Compared to the CAP, the F2F adopts a broader point of view, considering the entire food chain and recognising that sustainable goals entail action not only in agriculture, but also in industries and consumptions. This is a historic change since, over the last sixty years, the CAP has never included (or has done so in a limited manner) the components "food" and "nutrition" and has only marginally addressed the issue of climate change. This progress is mainly due to three novelties: the growing evidence about the catastrophic consequences of environmental degradation; the increase in support for the Greens in the Parliament that influenced European

²⁰ The fact that excessive consumption of food and unhealthy diets are much more common among low-income households raises questions about the accessibility of high-quality, healthy, and environmentally friendly food and diets.

Commission's policy guidelines; the end of DG AGRI's exclusive power in determining agricultural programmes.

The F2F will require significant changes in the CAP in order to improve the value of food and diets and reduce the negative health and environmental impacts of agriculture. As stated in her mission letter, the Commission President encourages Wojciechowski to quickly conclude a final agreement for the post-2020 CAP, urging him to focus on healthier and more sustainable food production (e.g., organic farming, precision agriculture, agri-forestry) and to reduce as much as possible the use of pesticides and fertilisers as well as citizens' exposure to endocrine disruptors. In other words, Commissioner Wojciechowski is responsible for minimising air, water and noise pollution caused by agricultural and food production. Together with this, the F2F indicates the elements likely to support the transition, such as research and innovation, investment and funding, stakeholders' involvement and an efficient monitoring process. Concerning investment and funding, on 18 December 2019 the Parliament and the Council agreed on the creation of a "green list" - also known as a taxonomy - a system to label economic activities that will help to direct capital flows towards sustainable investments. According to the EC, the green list will enable investors and industries to count for the first time on a clear definition of what is "green", giving a real boost to sustainable investments.

Hence, the F2F can be considered as an attempt to move towards a "common agricultural and food policy"- strongly recommended by numerous think tanks and academics (see, for instance, Centre for Food Policy, 2019; De Shutter et al., 2019; Recanati et al., 2019) - whence the transition towards more sustainable agricultural-food systems must entail active participation of consumers, food business operators, and producers; all indispensable to enable the Green New Deal to come true.

Moving forward, the European Climate Law introduces the 2050 climate neutrality target into the EU legislation. It aims to transform the way EU policies are designed and to set the direction to achieve neutrality in an equitable and cost-efficient manner. In other words, it aims to ensure that all EU policies and sectors do their own part in achieving climate neutrality. In practical terms, the Law is committed to balance GHG emissions and removals, in line with the Paris Agreement; define a GHG reduction path with a detailed timetable and a set of progress assessments; define an adaptation plan, in addition to mitigation efforts. On the other

hand, the European Climate Pact aims to encourage broad social engagement, inform stakeholders, and promote cooperation.

Following these premises, it is worth recalling that GHG agricultural emissions are covered by the Effort Sharing Decision (ESD) concerning EU's climate ambitions in non-ETS sectors (see 1.2.2). In detail, the ESD encompasses non-CO₂ agricultural emissions (together with transport, waste, and heating of buildings), whereas CO₂ emissions and carbon sequestration are incorporated into the LULUCF Decision. Hence, the 30% GHG emission reduction target only includes non-CO₂ emissions (e.g., manure and fertiliser emissions).

In its communication “Stepping up Europe’s 2030 climate ambition. Investing in a climate-neutral future for the benefit of our people” (COM/2020/562), the European Commission proposed to expand the European Trading Scheme (ETS) in order to include more sectors. It also proposed to review the Effort Sharing Decision (ESD) and to merge agriculture and LULUCF into a single sector so as to include CO₂ emissions and GHG removals from LULUCF into the EU 2030 Climate and Energy Framework (EUCO 169/14). This merger would make the EU climate neutral as soon as 2035, non-CO₂ greenhouse gas emissions would be reduced by 35% between 2015 and 2030 and the LULUCF carbon sinks - currently in decline - would be increased. On the other hand, Member States will be required to set more stringent national non-ETS emission reduction targets by 2030 (agricultural emissions included) whereas the CAP should provide more incentives to reduce agricultural emissions. These changes should also help ensuring effective carbon pricing across the EU. However, the EC provided no indications on how agriculture could be included in the European Trading Scheme, whether it will be subject to LULUCF Decision’s procedures (e.g., “no-debit rule”), nor are quantitative targets set. Thus, the CAP must deal with such issues.

Since numerous plant and animal species present on agricultural lands are quickly disappearing, the EU Biodiversity Strategy 2030 aims to “bring nature back into our lives” and address the root causes of species loss. It stems from the Court of Auditors' harsh criticism on the poor CAP’s performance in protecting and enhancing biodiversity. Indeed - as discussed in the previous chapters - Pillar I Greening Measures have not been able to reverse species decline. Hence, the EU Biodiversity Strategy sets out eight specific targets: 1. “protecting at least 30% of the EU's lands and 30% of marine areas and integrating ecological corridors into a "trans-European nature network"”; 2. “preserving at least one third of the EU's protected areas”; 3. “setting binding targets for the restoration of degraded but carbon-rich ecosystems”;

4. “preserving habitats and species by preventing the degradation of their conservation status”;
5. “preventing the decline of pollinators”;
6. “reducing the use of pesticides and fertilisers by at least 50% and 20% respectively by 2030”;
7. “turning at least 10% of agricultural land high biodiversity value areas”;
8. “encouraging the adoption of agro-ecological practices and dedicating at least 25% of the agricultural area to organic farming by 2030”.

Being both encapsulated in the wider European Green Deal, it is no surprise that the EU Biodiversity Strategy 2030 and the From Farm to Fork initiative share the same ambitions. Both recognise that farmers have a central role in conserving natural ecosystems, the importance to help them engage in the transition towards fully sustainable practices (e.g., precision farming, organic farming, stricter animal welfare standards), as well as the benefits that these could derive as result of its restoration. It is indeed essential that the EU Biodiversity Strategy acts in tandem with the F2F strategy and, of course, with the future CAP.

This suggests that the CAP should be reformed in order to become more suitable to contribute pursuing the Green Deal’s biodiversity goals. For instance, to preserve biodiversity and prevent its degradation will require the introduction of specific instruments and measures in the 2021-2027 CAP. In addition, farmers would be more encouraged to provide ecosystem services if there were economic incentives (payments for ecosystem services - PES). However – here too - the EC provided no indications on how the CAP should be shaped and oriented, thus calling into question its coherence and comprehensiveness with regard to the European Commission’s ambitions.

Even the Commission's proposal to revise the Renewable Energy Directive (Directive 2009/28/EC) (see 1.2.3) might have implications for the EU agricultural sector. The aim is to provide clean, affordable, and secure energy and to mobilise industries for a clean and circular economy. In such case, agriculture might assume a prominent role since it can offer carbon-neutral raw materials and the biomass to be used as a source of renewable energy. However, exploiting biomass in a sustainable manner is only possible in presence of significant changes concerning the relations among producers, consumers, and recyclers or - in other words - among agricultural practices, consumption behaviour, food processing and recycling. For this to happen, harmonisation among agriculture, energy, industry, and food policies as well as Pillar II measures and the European Cohesion Policy is deemed essential.

However, even though the proposal to turn agriculture a renewable energy provider seems in line with the EU Biodiversity Strategy 2030, in truth it is a blunder as - instead – extending agricultural areas could lead to biodiversity loss. Likewise, some EU Biodiversity Strategy’s targets might collide with the ambition to reduce non-CO2 GHG emissions such as methane emissions related with extensive pasture-based cattle production systems. Therefore, what abovementioned should be considered when designing the CAP post-2020.

Last, European food is famous for being safe, nutritious and of high quality. The Green Deal states that the EU should act as a global leader and the European standards become the global sustainability standards. With this in mind, the EU will develop a "Green Deal Diplomacy", meant to convince and support others to do their own part in promoting sustainable development, where the Commissioner-designated for Trade will negotiate sustainable development chapters in trade agreements. The F2F confirms this ambition by stressing that through its external policy - including international cooperation and trade agreements - the EU will pursue the development of green alliances on sustainable food systems with all its partners in bilateral, regional, and multilateral fora (EC, 2020c).

Since the Doha Round (WTO) negotiations are stalled, the EU has multiplied bilateral trade agreements. However - although the latest generation of bilateral trade agreements include climate and environmental provisions - these are vague and poorly enforceable. In addition, the international promotion of more sustainable production worldwide might be subject to preferential imports to stricter climate, environmental and health conditions. As an answer to concerns that trade will override EU climate, environmental and labour rights ambitions, the Commission President proposed the creation of the Chief Trade Enforcement so as to monitor compliance with sustainability provisions contained in the EU trade agreements. However, these issues have not received sufficient attention either in the F2F or in the legislative proposals for the future CAP.

The Commission has then proposed that the sectors more exposed to international competition will be subject to a border carbon adjustment mechanism to reduce risks of carbon leakage. In this view, Commissioners-designated for Economy, Paolo Gentiloni, will contribute to designing a border carbon tax that would be progressively introduced in selected sectors. Place that the agricultural sector will not be among the first covered by this tax, the success of this initiative would encourage a more rigorous approach to reduce GHG agricultural emissions.

To conclude, what abovementioned should be considered when designing agricultural instruments in order to make them more consistent with the European Green Deal's targets. There is a strong need to shape the CAP's climate and environmental instruments (cross-compliance requirements, Pillar I eco-schemes, Pillar II climate and environment-related interventions) in a manner that is consistent with the Green Deal's objectives. However – here again – the Green Deal provides no information on how these instruments should be designed and implemented to allow agriculture to give its own contribution to the EU climate neutrality target.

3.3 THE CORRELATION BETWEEN COVID-19 AND CLIMATE TARGETS

In an attempt to contain the spread of coronavirus diseases 2019 (Covid-19), governments around the world adopted unilateral measures, including total or partial restrictions on the movement of goods and persons. As result, roads have emptied, planes have grounded, and numerous factories have shut down, leading to a general slowdown in the world economy and a reduction in emissions. Both climate change and coronavirus diseases are interconnected global health emergencies that threaten the survival and living conditions of mankind. The evaluations conducted by Saadat et al. (2020) and by the International Energy Agency (IEA, 2020) reveal – respectively - that the health crisis has led to a general improvement in air and water quality and that in 2020 global CO₂ emissions have been reduced by around 8% compared to 2019 levels. However, this is not the first global crisis with economic and environmental repercussions that humankind has had to face. In 1973, for instance, the oil crisis led to a reduction in global dependence on fossil fuels with consequent reductions in global CO₂ emissions. Subsequently, the 2008 financial crisis led to an economic slowdown with consequent decrease in GHG emissions, although this decrease was short-lived as in 2010 emissions had already risen again (Meles et al, 2020). Thus, the long-term impact of the Covid-19 pandemic on global economy and climate change will depend on how the world will emerge from this crisis and the recovery plans that governments will adopt. This section aims to scrutinize the relationship between Covid-19 pandemic and Paris targets, EU climate targets, and EU agricultural sector as well as to offer general policy recommendations, based on empirical evidence, on how to meet climate targets at global and EU level.

3.3.1 How did the Covid-19 impact the Paris targets?

Since the health crisis and the climate crisis are interrelated with each other, a response to both crises can only be successful when addressed in tandem. While numerous governments plan their responses to the economic crisis, the Twenty-six Conference of Parties (COP 26) of the United Nations Framework Convention on Climate Change (UNFCCC) aims to address this double challenge.

In this view, Nationally Determined Contributions (NDCs) are crucial instruments to tie efforts to recover from Covid-19 pandemic to national environmental and climate strategies. The Paris Agreement provides for a periodic review of the commitments made in the NDCs (“pledge and review” approach) according to a five-year timetable (see 1.1.2). However, even though the Parties were supposed to meet in autumn 2020 to submit their updated NDCs, the meeting has been postponed to autumn 2021 due to the raging in the pandemic. This is the first, clear and perhaps unique tangible consequence of the Covid-19 on the Paris targets. The other consequences are indeed less tangible and much more uncertain.

Due to the still ongoing adjustments in Parties’ economic policies, it is still not clear how Covid-19 will affect global greenhouse gas emissions in the future. However, the simulation conducted by Reilly et al (2021) on global GHG emissions demonstrates that, in the absence of policies aimed at addressing global warming, the Covid-19 pandemic will have just a small impact on GHG emissions from 2030 onwards. In particular, the simulation considered possible future scenarios with and without Covid-19 pandemic and with and without the Paris targets. Given that a 1% GDP reduction leads to 0.8% emissions cut, the data collected during the simulation illustrate that - as result of the slowdown in economic output and regardless of the Paris Agreement - there will be a 4.4% reduction in GHG emissions in 2025 and 4.2% in 2030. Thus, as occurred in 2010, emissions will increase again over time. However, even in the case in which Parties’ commitments made under the Paris Agreement remain unchanged, there would be no significant impact on emissions in the long term. Hence, the main consequences of Covid-19 on climate change and, consequently, on the Paris targets will not occur straight on emissions but rather on the global commitment to increase the pledges made in Paris in 2015.

In this regard, it should be noted that almost all the developed countries have committed themselves to reduce emissions below 2005 and 1990 levels, while developing countries have committed to precise percentage reductions in emissions, according to a particular growth prospect in business-as-usual (BAU) conditions. Even though the pandemic has lowered the

cost to achieve these goals, directing fiscal stimulus spending towards sustainable investments to reduce GHG emissions would further reduce costs and encourage greater commitment to even more ambitious goals. China and the European Union - which together account for 35% of global GHG emissions (Harvey, 2020) - have already announced their willingness to do more, meaning becoming climate neutral by 2060 and 2050 respectively.

However, the analyses conducted by Arthur Wyns and Kim Robin van Daalen and the UN Climate Change on the NDCs submitted ahead of the COP26 reveal that climate ambition level has barely increased since the governments seem to have ignored the environmental crisis in their action plans. More in detail, Arthur Wyns and Kim Robin van Daalen examined the NDCs (updated to 31 December 2020) submitted by 48 Parties, responsible for around 30% of global GHG emissions. Even though the IPCC has stated that - in order to maintain the rise in global average temperature below 1.5°C, global emissions must be reduced by at least 45% by 2030 – just nine NDCs associated the efforts to recover from the pandemic with climate commitments that, whether unchanged, would result in a 0-5% reduction in global emissions by 2030 compared to 2010 levels. Therefore, all Parties should improve their climate ambition if they want to protect global public health and not force humankind towards a point of no return. To do this, Parties should incorporate climate change adaptation and mitigation plans into their NDCs. For instance, Countries could direct fiscal stimulus towards the creation of climate-resilient health systems or the adoption of environmental and health crisis prevention tools (e.g., deforestation prevention and early warning systems). These mechanisms would permit the pandemic and climate change dangers to be managed in tandem. As abovementioned, more ambitious climate targets and investments in sustainable growth projects would lead to a permanent decline in global GHG emissions as well as a virtuous economic recovery aimed at creating resilient, sustainable, and net-zero emission societies.

The summary reports published by UN Climate Change on 17 September (FCCC/PA/CMA/2021/8) and 25 October 2021 (FCCC/PA/CMA/2021/8/Rev.1) on the NDCs submitted ahead of the Glasgow COP26 seem to confirm the above trend. However, the good news is that - compared to the previous ones - numerous new or upgraded NDCs showed greater coherence among mitigation and adaptation measures, made more ambitious commitments to meet the UN Sustainable Development Goals, and included actions to recover from the Covid-19 pandemic. In detail, the Parties provided more in-depth information on adaptation and mitigation measures, including targets for specific sectors and areas (e.g., energies, transport,

buildings, industries, agriculture, LULUCF and wastes). The inclusion of such quantitative targets - with more precise deadlines and associated indicators - reveals a greater attention on climate issues where adaptation strategies (when embedded) have been oriented towards energies, waste, transports, agriculture, and food as well as livelihoods, human health, human habitats, urban areas, and disaster risk management. On the other hand, mitigation strategies have been directed towards renewable energies (85% of NDCs), circular economy, waste reduction, recycling, improved manure and livestock management, sustainable fuels, and climate-smart agriculture. In all this, carbon pricing – meaning assigning an economic value to CO₂ emissions - has often been identified as a valuable incentive to adopt low-carbon technologies and lifestyles. Last, some Parties considered in their NDCs the implications of Covid-19 pandemic and almost all Parties have included implementation strategies, although the correctness of such information varies significantly from one state to another.

In quantitative terms, even though the estimated GHG emissions levels for 2025 and 2030 are now lower than the levels estimated in the immediate aftermath of the Paris Conference, the implementation of the NDCs considered in the synthesis published on 17 September 2021 would result in a 58.6% increase in GHG emissions by 2025 and 59.3% by 2030, compared to 1990 level. In other words, although estimated emissions would be 3.4% lower in 2025 and 11.9% lower in 2030 compared to 2010 emission level; in absolute terms, the updated NDCs' implementation would entail a 16.3% increase in GHG emissions by 2030. Hence – given that to keep the rise in global average temperature below 1.5°C global emissions must be reduced by at least 45% by 2030 - the NDCs considered seem to condemn humankind to an unprecedented catastrophe.

Unfortunately, even the synthesis report published on 25 October 2021 seems to confirm the above trend, meaning that the Parties are diverging from the direction science indicates we should be going. In detail, although 70 Parties have committed themselves to reduce their GHG emissions almost completely by 2050, the implementation of all available NDCs (including new and updated) would result in a 16% increase in GHG emissions by 2030, compared to 2010 emissions level. The IPCC has warned that such an increase could lead to a rise in global average temperature equal to 2.7°C by the end of the century. Raising the level of ambition is not only important but also necessary. This is the reason why it has made clear that Parties should continue updating their climate commitments also during the XXVI UN Climate Conference, arena where the plans to ensure the survival of the planet are to be defined.

With one year of delay due to the Covid-19 pandemic, between 31 October and 13 November 2021, States Parties met again at the Twenty-Six Conference of Parties (COP-26) with the aim of improving climate commitments made under the 2015 Paris Agreement and charting the path humankind will have to run through to keep the temperature increase below 1.5°C. During the Conference, the Parties discussed about: first, innovation, diffusion of clean energies and how forests and soil can contribute to the 1.5°C target; second, the steps forward made by the global financial sector to reduce emissions and adapt to climate change; third, the transition to clean and renewable energies; and last, sustainable agriculture, social justice, and the creation of the “green corridors”. The agreement reached at the end of more than two weeks of negotiations was signed by almost 200 countries.

Even though the Glasgow Climate Pact contains provisions to reduce the use of fossil fuels, to regulate the international credit market, to eliminate fossil fuel subsidies, and is accompanied by separate agreements such as that for a 30% reduction in methane emissions by 2030 (subscribed by more than 100 countries), the one to stop deforestation by 2030 (subscribed by more than 100 countries) and that to phase-out coal (signed by 40 countries), numerous environmental organisations defined it as inconsistent.

According to the International Energy Agency’s estimates, even if all the Countries will meet the commitments made in their NDCs, the global average temperature will be 1.8°C higher in 2100. In addition, despite the EU, the US and China have announced their willingness to become climate neutral by 2050 and 2060, numerous scientists and activists have defined such ambitions too vague and impossible to achieve without medium-term strategies. Hence, the research group Climate Action Tracker has examined the plans for 2030 submitted by more than 200 Parties, thus coming to the frightening conclusion that – whether unchanged – their implementation would lead to a temperature increase of at least 2.4°C. To make matters worse, it is worth underlining that the agreements reached by the States Parties are not binding and that there is no instrument to oblige States to respect their commitments. Hence, although the National Determined Contributions submitted ahead of the COP-26 seem slightly more ambitious than those presented in the run-up to the Paris Conference, there has not been a turnaround.

To conclude, even though the Covid-19 pandemic has caused a temporary drop in global GHG emissions, what abovementioned demonstrates that the virus will not produce detectable long-term climate effects as these will depend on governments’ recovery plans and on their

commitments made to meet the Paris targets. Whether emissions will be not reduced by 2030, governments will have to drastically cut them afterwards in order to compensate the negligence of these years. Hence, it is deemed essential that all Parties significantly and urgently increase the level of ambition in their NDCs if they intend to achieve the optimal emission level suggested by the IPCC.

3.3.2 How did the Covid-19 impact the EU climate targets?

As mentioned in section 1.2.2, at the time when the Paris Agreement was approved, the EU has committed itself to reduce GHG emissions by at least 40% by 2030 and 80%-95% by 2050 compared to 1990 levels. Such commitment has been made even more ambitious – reduce GHG emissions by 50-55% by 2030 and achieve climate neutrality by 2050 – due to the European Green Deal, essential to honour the pledges made in Paris in 2015. However, prior to the Covid-19 pandemic, such ambitions were considered at least very challenging, especially for the EU Member States without experience in this area.

Since the Covid-19 pandemic’s impact on economic activities and thus on GHG emissions will depend on the pace and the direction of the policies that governments will implement, in the attempt to comprehend such connection, Tensay Hadush Meles, Lisa Ryan e Joe Wheatley (2020) simulated three possible future scenarios: the economic growth scenarios elaborated by McKinsey in 2020 (rapid containment and muted recovery) and that expected by S&P (2020) - in line with that of the International Monetary Fund (IMF 2020) – that assumes a sudden production drop equal to 7.3% with a partial backlash in 2021.

Table 6: Implications of Covid-19

SCENARIO	POLICY	REDUCTION IN 2030%	YEARS BEFORE 2030 40% REDUCTION REACHED	ESTIMATED % COST SAVING VS PRE-COVID (BASELINE)
Muted Recovery	Continue	43.3	2.6	- 6%
	Green Deal	52.5	5.9	- 11% to – 16%

SCENARIO	POLICY	REDUCTION IN 2030%	YEARS BEFORE 2030 40% REDUCTION REACHED	ESTIMATED % COST SAVING VS PRE-COVID (BASELINE)
Rapid Containment	Continue	41	0.7	- 1.5%
	Green Deal	52.5	5.2	- 3% to – 4%
S&P	Continue	41.9	1.5	- 3%
	Green Deal	52.5	5.5	- 6% to – 8%

Source: Meles et al. (2020)

Table 6 illustrates the effect of the pandemic in the three possible economic growth scenarios – and thus on EU's GHG emissions - in the presence or absence of the European Green Deal. Estimates for each scenario indicate that the 40% emissions reduction target would be achieved in advance regardless of the pace of growth. In detail, in absence of the European Green Deal, the “muted recovery” scenario would witness a 40% reduction in emissions 2.6 years earlier (43.3% in 2030), the “rapid containment” scenario 7 months earlier (41% in 2030), and the “S&D” scenario 1.5 years earlier (41,9% in 2030). However, it is worth highlighting that, in the presence of the European Green Deal, the estimates further improve as in the “muted recovery” scenario the 40% target would be reached almost six years before, in the “rapid containment” scenario 5.2 years before, whereas 5.5 years before in the S&P scenario.

Furthermore, Table 6 illustrates the estimated cost saving in achieving these targets due to the pandemic, compared to the pre-covid baseline scenario. In the absence of the Green Deal, in the “muted recovery” scenario there would be a 6% reduction, in the “rapid containment” scenario a 1.5% reduction, while in the “S&P” scenario a 3% reduction. Here too, estimates improve in the presence of the Green Deal as costs would be further reduced by 11-16% in the “muted recovery” scenario, 3-4% in the “rapid containment” scenario and 6-8% in the “S&P” scenario.

Hence, according to the Tensay Hadush Meles, Lisa Ryan e Joe Wheatley's simulation, the European Union is going in the right direction. It is however essential that the Green Deal proceeds without interruptions and that no obstacles are placed in emission reductions due to the Covid-19 pandemic. Indeed, even though the estimates paint a rather optimistic picture, it should be remembered that these relate to the 40% reduction target and not to the 50-55% reduction target. Should the EU relax its climate action, future mitigation measures should be more drastic so as to achieve the 50-55% reduction target. In other words, although the pandemic has led to a short-term decrease in emissions that allows the EU to reach its 40% target, existing climate measures will not be sufficient to reach the 50% target by 2030, and the climate neutrality by 2050.

The global and EU economies have been hardest hit. As governments around the world are elaborating the best solutions to reboot their economies, these could tie climate action and environmental resilience to financial support to businesses. In addition, ambitious climate measures could be encapsulated in an economic stimulus package under the Green Deal. In general, innovative ideas are essential to develop concrete policies against emissions and climate change as well as a more sustainable economic structure able to improve societies (e.g., sustainable services and buildings, renewable energies, smart transport services and infrastructures). Hence, the evaluation of the possible consequences of the Covid-19 pandemic is essential to understand whether the EU's climate ambitions are consistent with the commitments made in Paris and - at least in this case - these seem to be.

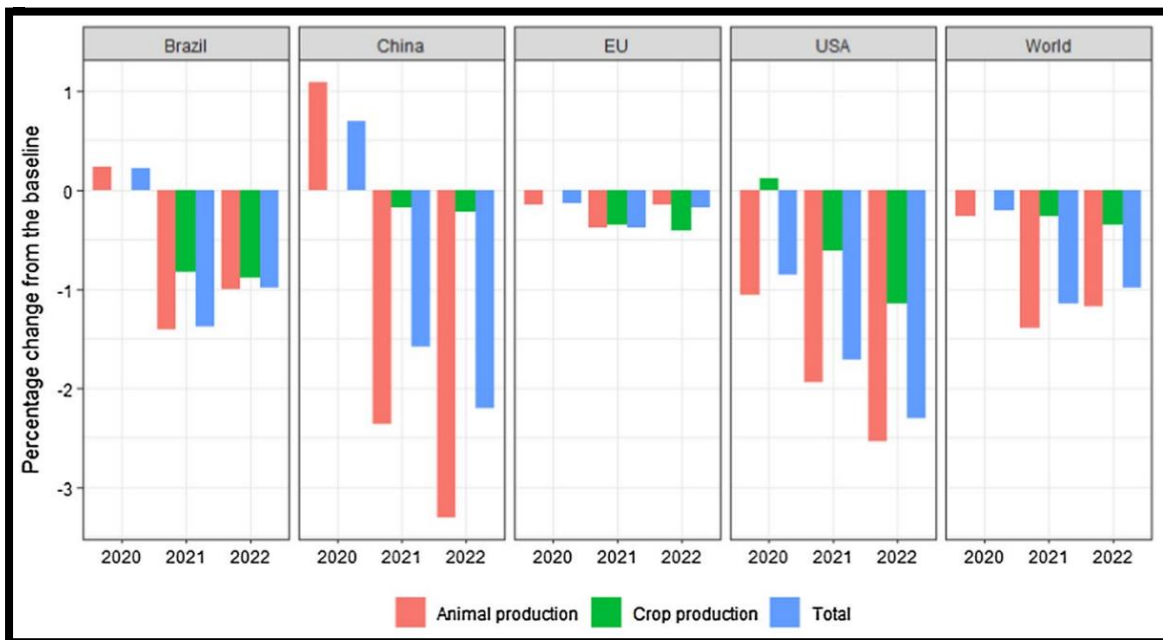
3.3.3 How the Covid-19 impacts EU Agriculture?

Generally, consumers do not think about how food is produced or arrives on their tables. However, the Covid-19 pandemic has destabilised the food value chain and raised concerns over the enormous infrastructure responsible for ensuring safe and reliable food. Indeed, the coronavirus almost paralysed the entire food supply chain by contracting workers' freedom of movement, changing consumer preferences, causing closures of food production facilities, exerting financial pressure, and altering food trade policies. Besides - in the immediate aftermath of the Covid-19 outbreak - the excessive purchase of essential goods has caused entire shop shelves to remain empty. Nevertheless, food supply chains' resilience prevailed over all these issues, thanks to the farmers, producers, distributors, and retailers who worked hard to ensure food on our tables.

Along these considerations, changes in the agri-food demand and food trade policies have in turn caused adjustments in the agri-food production and associated GHG emissions. In particular, raw materials whose prices have come under strong downward pressure and whose production has changed the most coincide with high-value goods such as meat, dairy products, and raw materials for biofuels. Since products such as maize and rape act as raw materials for biofuels, the demand of the former relies on that of the latter. More in depth, the fall in biofuels demand has led to a partial fall in demand for such foodstuffs and so in their production. However, since food demand is in general less elastic than that of other goods, the Covid-19 pandemic has caused just modest changes in agri-food products consumption, production, and their associated GHG emissions.

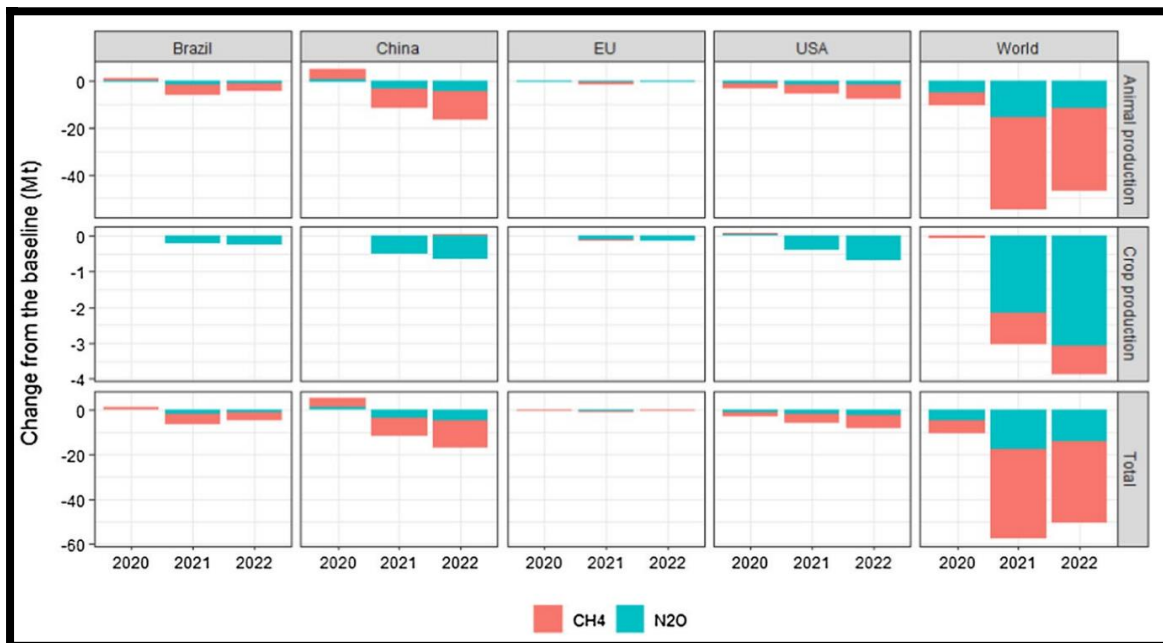
Figure 7 illustrates the estimated Covid-19 impact on annual EU agricultural GHG emissions resulting from production changes. Its small magnitude is due to the modest cut in emissions that are reduced by 0.2% in 2020, 1.1% in 2021 and 1.0% in 2022, corresponding to about 50 Mt CO₂ equivalent in absolute terms (Elleby et al, 2020).

Figure 7: GHG emission from agricultural production (percentage difference from the baseline)



Source: Elleby et al (2020)

Figure 8: GHG emission from agricultural production. Difference from the baseline



Source: Elleby et al (2020)

Figure 8 illustrates the estimated Covid-19 impact on ethane (CH₄) and nitrous oxide (N₂O) emissions associated with animal and plant production. With specific regard to the EU, most GHG emissions reduced are CH₄ emissions resulting from animal production. However, these estimates do not consider the consequences of the European Green Deal since not yet implemented in 2019. Hence, given that the EU Green Deal will impact consumption and production in the long term, it is possible that these numbers paint a worse picture than it is in truth.

Moving on, the Covid-19 crisis has caused serious disruptions in the food chain, especially in practices such as livestock breeding, planting, harvesting, and processing of labour-intensive crops. Furthermore, the barriers to market access threatened food quality and freshness and, consequently, food security. Given that all the stages of food supply chains are interrelated with each other and that small setbacks can lead to great losses in terms of yield and production, labour shortages combined with the spread of the pandemic has put the capacities and the survival of thousands of agricultural enterprises at risk.

Restrictions on circulation within the EU and from third countries also prevented seasonal workers from travelling. Even though EU institutions and national leaders committed themselves to ensure that food supplies would not be interrupted and labour shortages filled to prevent agricultural products from being wasted, the pandemic has revealed that current EU

legislation on legal migration [e.g., directive on seasonal workers (DIRECTIVE 2014/36/EU) and the EU Blue Card Directive (DIRECTIVE 2009/50/EC)] is inadequate to ensure that migrant workers' rights are respected.

Hence, the labour shortages that occurred during the worst phase of the coronavirus pandemic confirm what has been stated in section 2.2.2, which is that the European agriculture is dependent on seasonal labourers that, most of the time, are obliged to accept precarious working conditions in the agri-food sector. Indeed, most agricultural workers receive wages below the European average and have no health insurance or paid sick leave. To make matters worse, thousands of migrant labourers - both EU and non-EU citizens - live in shacks or dilapidated structures where it is impossible to respect safety distances and where the pandemic has had devastating effects. Even though the European Commission introduced the “green lanes” to ensure free movement of agri-food products and seasonal workers and approved a temporary framework for state aid measures to support farmers and agri-food enterprises, such short-term measures are not sufficient and EU instruments such as the directive on seasonal workers should be updated so as to turn them binding for all the EU Member States, responsible for providing at least decent working conditions. Therefore, although it is important to support farmers, injecting more money into a broken system will not resolve the crisis. In contrast, these measures might end up not helping the workers at all since handing out more money to employers does not mean higher wages or better working conditions for agricultural labourers. Reliance on short-term CAP measures threatens to further deteriorate their working conditions.

In line with the European Green Deal, the new CAP should subordinate direct payments to compliance with labour and social standards, encourage local people to enter the agri-food sector and ensure fair and clear labour contracts regarding the rights and responsibilities of all parties. Article 39 TFEU makes this target clear by stating that the CAP should “*ensure a fair standard of living for the agricultural community, in particular by increasing the individual earnings of persons engaged in agriculture*”. Hence, the EU institutions and Member States should act now if they really want to turn the agri-food system fair and sustainable where the food we eat is not produced by the exploitation of the people and the planet.

Last, international trade enables products to be transferred from surplus areas to deficit areas, preventing shortages related to domestic production alone. However, the Covid-19 crisis led numerous governments to review measures so as to regulate trade in agri-food products - limiting their exports and encouraging imports - sometimes causing the disruption of food

supply chains. At the root of this change there is the need to ensure that agricultural production is maintained in the internal market. However, even though exports limits are effective in the short term, these can lead to distortions and loss of effectiveness in the long term. Agri-food producers might suffer losses in that the limits placed on exports might prevent them from accessing international markets, thus leading to oversupplies, prices reduction, and, in general, a deterioration of their economic power. In addition, trade restrictions and falling price levels can cause a decline in agri-food production. Ultimately, the loss of a state's competitive advantage in international markets might trigger a spiral in which the worsening of the reputation of the exporting state leads importers to reduce their confidence in the world market and international trade, thereby destroying the business opportunities of other exporters (Espitia et al., 2020). In addition, due to international trade restrictions imposed by the main exporting countries and the resulting consumer fear of higher prices or shortages of raw materials, chaotic purchasing behaviour has been observed in importing countries. Indeed, prices of agri-food products have increased due to trade constraints, risks, and uncertainties in international markets.

Place that trade restrictions and bureaucratic barriers should be removed to prevent price increases and that governments should facilitate and not restrict the movement of workers and agri-food products, to ensure the maintenance of agricultural production in the internal market and food security, the EU should encourage the development of territorial markets and short supply chains as locating production facilities close to consumers helps to shorten food supply chain, reduce emissions and energy consumption due to the lack of transports, allow farmers to reach customers directly and sell their crops at higher prices. Consequently, small producers should have simple and unhindered access to credit and the EU should support small and medium-size farms during this transformation. Ensuring access to credit, also enables efficient investment decisions that result in increased agricultural capacity and profitability.

3.4 THE EU RESPONSE TO COVID 19 PANDEMIC

3.4.1 New Multiannual Financial Framework and the Next Generation EU

Soon after its inauguration, the new Commission found itself fighting an invisible enemy and facing a health, economic and systemic crisis. The Covid-19 emerged in all its magnitude at a critical time for the EU, putting on the table previous Commission proposals for the EU budget 2021-2027 that - even before the broke out of the pandemic - had caused frictions and fractures. On 27 May 2020, the Commission launched its proposal for a new Multiannual Financial Framework (MFF) reinforced by the “Recovery Fund” mechanism to provide aid through loans and grants. Furthermore, following the measures introduced by the European institutions to counter the pandemic [Pandemic Emergency Purchase Programme, Support to mitigate Unemployment Risk in an Emergency (SURE), European Stability Mechanism (MES) and the EIB loans] the EC presented the so-called "Next Generation EU" - a temporary reinforcement tool incorporated in the EU budget – meant to provide financial support to the Member States. In detail, it allows them to borrow up to 750€ billion on the financial markets, according to the strength with which the pandemic overwhelmed their economies. Such resources will be obtained through the issuance of securities. In the words of the Commission President:

The recovery plan turns the immense challenge we face into an opportunity, not only by supporting the recovery but also by investing in our future: the European Green Deal and digitalization will boost jobs and growth, the resilience of our societies and the health of our environment. This is Europe's moment. Our willingness to act must live up to the challenges we are all facing. With Next Generation EU we are providing an ambitious answer (European Commission, 2020).

Hence, the new EU budget 2021-2027 (MFF) and the Next Generation EU are the prerequisites for the EU Green Deal and the recovery from the Covid-19 pandemic, that is for the EU environmental and economic renaissance. In this regard, it is also worth mentioning the REACT-EU mechanism (50€ billion), aimed to support green investments and digital innovation, and the Just Transition Mechanism (30€ billion), meant to guarantee concrete support to the areas most dependent on fossil fuels.

The solid balance provided by the EU budget will allow the European institutions to access financial markets due to a positive credit rating. The bond issuance will occur over a long period, with the first deadlines matured in 2028 and the last in 2058. In turn, Member States

will repay the bonds through the expansion of the resources to be allocated to the EU in the coming years (from 1.0% to 1.08% of EU GNI). On the revenue side, the new regulations introduced by the Commission will simplify the VAT through the imposition of a 0,3% uniform rate to all Member States' VAT bases and the introduction of new taxes concerning financial transactions and non-recycled plastic packaging (Plastic Tax).

Following the presentation of the European Commission proposal, a contrast between two groups emerged. On one hand, the countries most inclined to sharing the risks and issuing Eurobonds on the international financial markets (Italy, Spain, France, Germany); on the other hand, the so-called "frugal" countries (the Netherlands, Austria, Sweden, Denmark, Finland) less inclined to share the debt but in favour of solutions more in line with rigorous European policies, including aid granted through loans and strict conditionalities. This stalemate has been overcome through the compromise solution proposed by the European Council President Charles Michel who - after four days and four nights of negotiations - on 21 July 2020 succeeded in persuading Member States to accept his third proposal. Even though the overall allocations planned for the EU budget 2021-2027 and the Next Generation EU remained plus or less the same (1074€ billion and 750€ billion), the amounts of subsidies and loans diverge a lot from the original proposal. The compromise solution has indeed reduced subsidies from 500€ billion to 390€ billion and expanded loans from 250€ billion to 360€ billion. It is a compromise solution for both sides since the "frugal" countries obtained the inclusion of more loans at the expenses of subsidies, whereas the opposing coalition obtained that no major changes were applied in the amounts of resources allocated to them.

The last stage occurred in the European Parliament, co-holder of the power to approve the EU budget. The EP has raised strong criticism over the Multiannual Financial Framework 2021-2027, threatening to halt its approval through the veto and so to undermine the whole package. It expressed its dissent through a Resolution (2020/2732(RSP)) containing 26 points (adopted with 465 votes in favour, 150 against, and 67 abstentions) intended to challenge the reduction in the budget resources - from 1.100€ billion to 1.074€ billion - and the consequent reduction in the allocations designated for projects like Horizon Europe and the Just Transition Fund. Indeed, once the support provided by the Next Generation EU will be exhausted, the MFF's contribution would be below 2020 levels. This would mean renouncing *a priori* to the achievement of the Green New Deal's targets. More in depth, paragraph 15 of the Resolution reiterates the need to adopt a long-term budget that pursues environmental protection, fight

against climate change, and the UN's sustainable development goals. The Resolution goes on proposing the adoption of a transparent and efficient monitoring mechanism accompanied by the principle of "do not harm". The Resolution concludes by recalling the need to set serious and lasting commitments to promote the elimination of fossil fuel subsidies and the implementation of tools such as the ETS, the Digital Tax, the Carbon Tax, essential to strengthen the common foreign policy as well as establish a common fiscal policy.

However, on 17 December 2020 the package has been adopted without considerable alterations. The new European budget 2021-2027 encompasses seven sections: 1. single market, innovation, and digital agenda; 2. cohesion, resilience, and values; 3. natural resources and environment; 4. migration and border management; 5. security and defence; 6. neighbourhood and the rest of the world; 7. European public administration. The resources disbursed under the heading "natural resources and environment" will be used to support programmes such as the EU Biodiversity Strategy 2030 and the From Farm to Fork initiative, including interventions in the EU agricultural sector. In all this, the value attributed to climate targets amounts to 30% of the MFF 2021-2027 and the Next Generation EU. Concerning taxation, the final resolution provides for the introduction of a Plastic Tax, a Carbon Tax, and a Digital Tax.

3.4.2 The Covid-19 impact on the EU Green Deal

On 16 September 2020, the European Commission proposed during her State of Union Address to reduce EU total GHG emissions by at least 55% compared to 1990 levels (ambition that the EP can increase). In addition, to accomplish the ambitions laid down by the Next Generation EU (economic recovery and a green transition the EU must follow the European Commission's path delineated in the Green Deal. To do this, the EU action will rotate around four key elements: carbon pricing, sustainable investments, new industrial policies, and a just transition. One third of the resources provided by the long-term EU budget will be allocated to the European Green Deal. Along these lines, a central element consists in the chance to strengthen existing instruments aimed at environmental restoration with *ad hoc* emergency tools aimed to ensure that the economic recovery and the green transition go hand in hand, through investments and reforms.

On this matter, the EU Biodiversity Strategy 2030 and the EU Forest Strategy will play a central role in enabling greater resilience since - together with InvestEU - will mobilise around 10€ billion over the next 10 years. Then, the From Farm to Fork initiative and the European Agricultural Fund for Rural Development will contribute to protect natural resources through the valorisation of the agri-food value chain. Last, the Just Transition Fund (JTF) will be a crucial element as it will support the areas most dependent on fossil fuels during the green transition process and the pursuit of the Green Deal goals, while avoiding dangerous social change.

According to the Commission's estimates, pursuing climate and energy ambitions will have a positive impact also on economy and employment since it might lead to a 1% increase in GDP and create 1 million new job positions. In particular, the Circular Economy Action Plan might create almost 700.000 job positions, while promoting environmental resilience.

Concerning *ad-hoc* emergency tools, these should pursue the targets agreed by the European institutions, such as promoting reforms and investments to drive the transition towards a “green, digital and resilient” Europe. In order to engage in a serious transition path, it is essential to elaborate a long-term plan, inseparable from a serious coordination of investments between the European institutions and the Member States. What emerges is the strong willingness to maintain the control over interventions and structural reforms in the next years, from which the obligation for Member States to submit "National Recovery and Resilience Plans". In this case, a possible obstacle consists in the troubles that Member States could encounter while planning their targets and the implementation methods the European Commission and the other EU institutions should examine (COM(2020) 456 final).

However, the Commission and the Council have been strongly criticised for the shallowness of their rhetoric and the absence of instruments aimed to ensure that Member States will adopt ambitious climate and environmental plans. In fact, there are no environmental restrictive clauses to prevent harmful and cross-compliance practices which are not strictly economic in nature. In addition, doubts remain about the functioning of the "green taxonomy" instrument that - as mentioned - should provide uniform legal requirements at European level to label investments as eco-sustainable. To top it all off, the new regulation on taxonomy assumes a rather minor role within the EU Green Deal. However, the most critical aspect is perhaps the weakness of the "green constraints" that should guide interventions and investments. Apart from not being described in detail, these are not accompanied by robust and

convincing guarantees ensuring that the implementation of the Next Generation EU is consistent with the European Green Deal's provisions. At last, the expansion of the resources designated for the Recovery and Resilience Facility (360€ billion in loans and 312.5€ billion in grants), at the detriment of other European initiatives, undermines the trust towards the EU institutions. For instance, at first designed with a budget of 30€ billion, the European Council has reduced the resources destined to the Just Transition Fund to such an extent that now amount to 10€ billion.²¹ The same fate has befallen to the budget designated for Horizon Europe, which has gone from 13.5€ billion to about 5€ billion. Being essential for the digitisation and the green transition, this reduction will have consequences for numerous projects.

Therefore, what is presented as a great transformation is rather a gentle approach to climate change. The *ad-hoc* measures designed to impact the economic-employment sector aim at returning to pre-pandemic "normality" as soon as possible, where the transition towards fairer and low-carbon societies seem to be a secondary objective. Whether that happens, it can trigger the so-called "rebound effect", meaning a sudden increase in GHG emissions once the economic production is returned to pre-Covid levels, so also threatening the Green Deal's ambitions. In addition, faced with a negligent approach, the "rebound effect" might neutralise all the efforts made to date. One has thus the impression that a coherent path has not been traced to enable the full realization of the Green Deal. In quantitative terms, the objective to allocate at least 30% of the EU 2021-2027 budget to environmental and climate-related targets would correspond to approximately 547€ billion, that is about a quarter of the resources *de facto* needed to reduce emissions by 50-55% by 2030. In contrast, empirical evidence show that a more radical change would provide new opportunities for the European Union. In particular, the simulation conducted by the International Energy Agency (IEA) quantifies the implementation of policies coherent with the Paris Agreement (e.g., the 46% reduction in fossil fuel imports) with a saving of about 275€ billion every year. Such shallowness in designing appropriate instruments and resources clearly shows the need to make greater efforts for achieving economic and climate-relevant targets.

²¹ Overall, the JTF has gone from having a total allocation equal to 40€ billion (7.5€ billion JTF, 30€ billion Recovery Fund and 2.5€ billion MFF) to about €20 billion.

3.5 THE CAP REFORMED

3.5.1 On the Road to the New Common Agricultural Policy

At the beginning of 2017, the European Commission launched a public consultation aimed at understanding how the CAP could be further modernised and simplified. According to the findings of such consultation, on 29 November 2017, the European Commission published its communication “The Future of Food and Farming” [COM(2017)713] containing the guidelines to reform the CAP. After almost a year of talks with the European Parliament and the Member States, on 1^o June 2018, the European Commission presented three legislative proposals concerning the CAP for the period 2021-2027: the “proposal for a regulation on CAP strategic plans”; the “proposal for a regulation on the Common Market Organization (CMO)”; and the “proposal for a horizontal regulation on financing, management and monitoring of the CAP”.

Among the main drivers of the Commission's proposals there is the need to streamline the CAP. Indeed, the 2014-2020 CAP was even more complex than its predecessors, whence the EU Member States and farmers’ desire to adhere to less complex rules and be subject to less stringent inspections. Then, the second driver of the EC's proposals consists in the need to modernise the CAP to make it more suitable to deal with new opportunities and challenges such as the worsening of the economic indicators because of the Covid-19 crisis; a bigger number of free trade agreements leading to greater market access; the need to meet civil society's expectations regarding the sustainability of agriculture and food; the need to get the most out of technological and digital innovation so as to improve the implementation and monitoring of the CAP instruments and accelerate their implementation in rural areas. Ultimately, the last driver coincides with the need to open EU budget negotiations for the period 2021-2027. The negotiations for the overall budget and those for the CAP are indeed interconnected as it is the MFF legislation that determines the expenditure ceilings for the EU policies, including the CAP. It follows that the European Council conclusions on the MFF contribute to shaping the financial aspects of the CAP, as happened in the Council conclusions for the 2014-2020 and 2021-2027 periods.

Moving on, the main innovations consisted in: first, more targeted and strategically programmed direct payments and rural development interventions; second, a new "green" architecture based on environmental conditions to be met by farmers and additional voluntary measures under both pillars; third, an effectiveness-based approach ("new implementation model") according to which the EU Member States should report annually on their progresses. Furthermore, the proposals introduce new National Strategic Plans to give EU Member States greater independence in their choices on how to implement policies to pursue CAP targets, depending on their needs and priorities. According to such proposals, Managing Authorities should draw up and submit to the Commission their National Strategic Plans with all the indications on how to implement CAP instruments. Then, the Commission should monitor the implementation of such measures and evaluate the results achieved (not just compliance with the EU standards), according to common indicators encapsulated in the Performance Monitoring and Evaluation Framework (PMEF). In all this, the total CAP budget would be reduced by 12% compared to the 2014-2020 period and pre-allocated to the Member States at the beginning of the 2021-2027 period. However, CAP budget would not be equally distributed between Pillars, evidence that what abovementioned in section 2.2.1.3 - namely that the EC's priority is to maintain Pillar I as the main element of income support to the detriment of the resources to be destined for Pillar II - is true. Indeed, even though the drop in Pillar II budget would be partly compensated by an increase in the resources allocated to it by the Member States (+10%) and 10€ billion would be granted by the programme Horizon Europe, this might not be enough to prevent an overall reduction in the resources destined to Pillar II. To top it all off, EU Member States could still redistribute resources up to 15% from Pillar I to Pillar II (and so also backwards) with the chance to further increase them up to 15 percentage points to cover climate and environmental actions and 2 percentage points to support young farmers. European Commission's proposals also encompass Member States' allocations for both Pillars (EAGF and EAFRD). In detail, as mentioned in section 2.2.1.2, it proposed that Member States having direct payments below 90% EU average should continue the convergence process started in the 2014-2020 period, with all Member Countries (not just those with direct payments above the EU average) contributing to full external convergence. Member States' allocations in the CAP Strategic Plan Regulation are calculated according to this.

The Commission attempted to initiate negotiations soon after the presentation of its proposals so that these could be agreed prior to the EP renewal in May 2019. However, a contrast emerged in the Council where numerous Member States voiced their opposition about

a CAP budget reduction and called for an overall increase in the MFF in order to maintain the level of CAP spending, whereas other Member States called to reduce even further the Commission's proposed budget (Matthews, 2018). However, negotiations started *de facto* in 2020, following the renewal of the European Parliament and the establishment of the new Commission.

From the earliest debates in the European Parliament, a clear contrast emerged between the Greens and the three main EU political groups (EPP, S&D, Renew Europe). In particular, the Greens considered the proposals not in line with the ambitions of the Green Deal and the Paris Agreement and tried - albeit unsuccessful - to include the Biodiversity Strategy and the From Farm to Fork initiative into the package. However, the Parliament has criticised the Commission proposal to cut the CAP budget by about 3-5% and suggested to maintain the CAP spending in real terms. Nevertheless, it would just be possible with an increase in the MFF ceiling. In addition, it proposed that direct payments would be reduced above 60.000€, setting the ceiling at 100.000€; that more protection would be guaranteed to farmers in trouble and that the crisis reserve - designed to help farmers in case of price or market unstableness - be converted into an *ad hoc* instrument with its own specific budget. Ultimately, the EP has called for sanctions to be tightened, bringing the amount of the penalties from 5 to 10% of total payments to be imposed on Member States not in line with EU objectives on environment, animal welfare, and food quality (Council of the EU, 2021).

However, following 25 trilogues, 3 super trilogues, one jumbo trilogue, and over 100 formal meetings, three years after the publication of the Commission's proposals, on 25 June 2021, the European Parliament and the Council of agriculture ministers agreed the provisional agreement to "a fairer, greener, more animal friendly and more flexible" Common Agricultural Policy. The three draft regulations agreed by the trialogue cover strategic plans, market organisation, financing, management and monitoring of the CAP. The agreement has then been approved on 23 November 2021 by the European Parliament.

3.5.2 The Core Elements of the CAP post-2020

Even though the present section does not present a proper assessment but rather an overview about the post-2020 CAP strategic orientation, it is nonetheless essential to understand the new CAP's foundations. In addition, it will provide the basis upon which the

next chapter will be drawn up since aimed at assessing whether the 2023-2027 CAP will do its own part to enable the Great Agri-Food Transformation to come true.

First, the reformed CAP includes a series of measures aimed at encouraging farmers to participate in the transition towards more sustainable and ambitious climate, environment, and animal welfare agriculture, in line with the targets of the EU Green Deal, the Biodiversity Strategy and From Farm to Fork initiative. In detail: “each EU Member will be required to be more ambitious about environmental and climate action goals compared to the previous planning period and will be required to update the plan when climate and environmental legislation changes”; “National Strategic Plans will contribute to Green Deal goals, whether CAP recommendations set out how this contribution is expected to occur”; “CAP beneficiaries will be required to meet compulsory requirements in order to receive CAP support (e.g., conservation of carbon-rich soils through protection of wetlands, minimum share of at least 3% of arable land to be destined to characteristic landscape elements to protect biodiversity, chance to receive support through eco-schemes to reach 7%)”; “Member States must destined at least 25% of their income support funds (up to a total of 48€ billion) to the eco-schemes”;²² “at least 35% of Rural Development Fund will be allocated to measures supporting climate, biodiversity, environment, and animal welfare”; “in the fruit and vegetable sector, operational programmes will devote at least 15% of their expenditure to the environment (compared to 10% in the current programming period)”; “40% of the CAP budget should be climate-relevant and support the overall commitment to dedicate 10% of the EU budget to biodiversity targets by the end of the EU Multiannual Financial Framework (MFF) period”.

Second, the CAP post-2020 places greater emphasis on the agriculture’s social dimension by introducing reforms aimed at supporting the transition towards a more equitable agriculture that better supports those who need it most. To do this, EU Member States will have to redistribute at least 10% of their direct payments to small and medium-sized farms and indicate in their strategic plans how they intend to do this (in principle through redistributive payments, unless they can demonstrate that the same result can be achieved through other instruments); the new legislation provides that EU Member States should give a flexible but binding definition of “active farmer”, including the activities carried out by them, as only active farmers can receive certain EU aid; farmers and others benefitting from direct payments will

²² It is a new mechanism that will reward virtuous farmers in terms of climate and environment (e.g., organic agriculture, agroecology, integrated pest management) and which will promote animal welfare.

be subject to an administrative sanction if they do not offer adequate working conditions, in line with relevant EU legislation; income support levels will converge more within and across EU countries; EU Member States will redistribute at least 3% of their direct payments budget to young farmers in the form of income support, investments, and start-up aids; gender equality and increased participation of women in agriculture are, for the first time, part of the objectives of the CAP strategic plans. This is the first time that EU agricultural legislation includes a social dimension, thus marking a historical progress in the way the CAP considers the conditions of agricultural workers (IP/21/2711).

Third, the new CAP provides for political reforms aimed at increasing its competitiveness. In detail, it strengthens farmers' position in the agri-food chain by giving them more chances to combine forces and derogate from special competition rules. The CAP will continue to be market orientated and the EU farmers will continue to operate according to market signals, thus seizing the opportunities that trade outside the EU offers. Last, a new agricultural reserve will be established to support market measures in times of crisis, with an annual budget of at least 450€ million.

Fourth and final, the CAP budget 2021-2027 should contribute to the overall Union expenditure on climate. Total CAP budget will be equal to around 387€ billion (in current prices) with 291.1€ billion attributed to the European Agricultural Guarantee Fund (EAGF) and 95.5€ billion to be destined to the European Agricultural Fund for Rural Development (EAFRD), including 8€ billion from the Next Generation EU. In all this, as the EU Member States are responsible for redistribution of resources, these will continue to benefit from the chance to transfer up to 25% of their CAP appropriations between income support and rural development. In nominal terms, the CAP budget remains unaltered compared to the 2014-2020 baseline. Between the original Commission proposal and the Council decision there has been an increase of almost 20€ billion (in 2018 prices). Alan Matthews' calculations - based on the commitments made in 2020 multiplied for seven - suggest a reduction from 6.4% to 10% (depending on the baseline) compared to MFF 2014-2020 at constant prices and a slight rise in current prices. In addition, the decrease is greater for Pillar II budget than for Pillar I (Matthews, 2020)

3.5.3 Conclusions

The decision to extend the strategic planning from Pillar II's Rural Development Programs to the whole PAC as well as the inclusion of the requirement according to which National Strategic Plans should consider the obligations arising from specific climate legislations represent steps in the right direction. However, the question of whether the next CAP can help EU agriculture to reach the Green Deal's goals depends on numerous elements such as the soundness of the legislative framework, the ambition of the Member States in implementing their National Strategic Plans, the role of the Commission, and the potential negative impact on farmers' incomes. For sure, a question arises as to whether the Member States' competent authorities will be ambitious enough when drafting their National Strategic Plans. While the Commission is making great efforts to ensure that National Plans will reflect the Green Deal's ambitions, National Ministries seem to prefer not to be engaged in such a manner. Indeed, since the CAP resources are pre-allocated as part of the EU's Multiannual Financial Framework, the EU Member States' competent authorities are well aware that these will not be affected by the level of ambition of their strategic plans.

Hence, although the Green Deal will bring opportunities to the EU agricultural sector, it seems that the same cannot be said for the opposite. The new CAP will be much less effective in achieving the Green Deal's goals than it could have been. There are also doubts about its effectiveness in reversing the deterioration of numerous agri-environmental indicators. One can draw the pessimistic conclusion that the main objective in these CAP negotiations has been to secure the minimum changes needed to maintain the flow of CAP funding. However, initiatives like the EU Climate Law, the From Farm to Fork, the Biodiversity Strategy might reverse this trend. Even though it will take time to understand what the implications of these changes will be, the next chapter aims to recognise whether the new CAP will contribute to or hinder the Great Agri-Food Transition.

4. THE CAP POST-2020: “ALL CHANGE IS EVOLUTION, NOT REVOLUTION”

4.1 THE CAP TRANSITION PERIOD: 2021-2022

The new CAP will begin on 1 January 2023. In order to ensure support to the EU agricultural sector until the implementation of the National Strategic Plans, the European Institutions agreed a transitional regulation (REGULATION (EU) 2020/2220) in vigour for the biennium 2021-2022. Over this period, the resources are to be retrieved from the 2021-2027 CAP budget, plus an additional 8€ billion from the Next Generation EU (EURI) earmarked for the European Agricultural Fund for Rural Development (EAFRD).

More in depth, place that no agreement could be reached by January 2020, on 31 October 2019 the European Commission presented two regulation proposals so as to ensure that farmers could be provided with the CAP resources over a transitional period (until 31 December 2021). More in depth, the first draft proposed to extend the validity of certain specific technical provisions related to the financial discipline of direct payments until 2021, as well as the chance to transfer resources from one pillar to another; whereas the second draft proposed to introduce transitional provisions to apply to the regulations in force concerning the resources designated for the year 2021.

Then, during an exchange of opinions held in the Council on 27 January 2020, a contraposition came up between a minority in favour of a one-year transition period and a majority in favour of extending such period until the end of 2022. Furthermore, the Commission’s original proposal provided to allocate 15€ billion at 2018 constant prices (EURI), among which 50% to be disbursed in 2022 and an extra 25% to be distributed between 2023 and 2024. However, the Council amended this proposal by reducing the additional EURI resources by about 50% (8€ billion), of which 30% to be provided in 2021 and 70% to be granted in 2022. As regards the resources allocated to rural development, the Commission’s original proposal provided to extend existing Rural Development Programmes during the transition period. On one hand, Member States with non-exploited resources should use them during the transition, whereas, on the other hand, Member States without available resources could use the EAFRD envelope for the 2021-2027 period. Nevertheless, the Commission failed to explain the logic in support of this double approach, just pointing out that it could reject additional resources whether not

duly justified by Member States. Hence, it seems that the European Commission has tried to direct Member States to spend the 2021-2027 MFF resources on projects in line with the Green New Deal's ambitions. On the other hand, in response to the COVID-19 pandemic, the Council expressed its willingness to make 2.68€ billion (at current prices) available from 2021 so that Member States could use them to support extended Rural Development Programmes. Hence, Regulation (EU)1303/2013 would continue to be valid to the 2014-2020 Rural Development Programmes extended for the period 2021-2022. During this time, Member States must increase their ambitions for 2025 or at least destine the same share of EAFRD resources to climate and environmental measures. It is a solution to a potential gap identified by the Court of Auditors in the Commission's original proposals, which could have led Member States to assume that, if more than 30% of those resources had been spent on AEC measures between 2014 and 2020, these could have allocated less to agri-environment-climate measures during 2021-2022.

On 28 April 2020, the AGRICOM's members met to discuss the proposal, so voting unanimously the report presented by the rapporteur Elsi Katainen (Renew Europe). Among the main amendments are: an automatic mechanism to extend the transitional period by a further year if the agreement for the EU budget 2021-2027 had not been reached by 30 October 2020; a provision dedicated to the allocations made to Member States in the transitional period, to be calculated based on the amounts agreed upon for the period 2021-2027 or - alternatively - based on the amounts available extended to 2020; other provisions concerning the use of the EAFRD 2021-2027 budget in order to cover expenditure on outstanding commitments at the time of the exhaustion of the resources as well as regarding the extension, up to a maximum of five years, of the agri-climatic-environmental measures (e.g., M11 and M14). Further amendments concern risk management instruments, the extension of the internal convergence process, the budgetisation of the crisis reserve, the continuation of transitional national aid and operational programmes in the fruit, vegetables, and wine sector.

During the negotiations held between May and November 2020, the Parliament and the Council reached a partial and provisional political agreement on the essential aspects of the CAP transitional regulation. This agreement covers: the prolongation of the transition period by a further year; the extension of some agri-environment-climate commitments to more than three years (e.g., organic farming); the proposal to make the extra 8€ billion Next Generation EU (EURI) available since 2021; the distribution of such resources according to a 30:70 ratio, to be distributed in 2021 and 2022; the provision that at least 37% of the resources should be

allocated to organic farmers, environmental, climatic and animal welfare actions and at least 55% to support young farmers and farm investments; to increase the support ceiling for the creation of new businesses for young farmers. In addition, the Common Position provides for the chance to extend the 2013 Direct Payments Regulation (Member States applying the single area payment scheme might decide to grant transitional national aid in the period 2015-2020 in order to avoid a sudden decrease in support to certain specific sectors), that is to continue providing payments between 2021 and 2022 under the same conditions and limitations as the 2015-2020 period.

On 15 December 2020, the European Parliament approved the transitional rules agreed with the Council (653 votes in favour, 19 against and 22 abstentions). Then, on 23 December 2020 the Council adopted the text for then being published five days later in the Official Journal of the European Union as "Regulation (EU) 2020/2220 of the European Parliament and the Council of 23 December 2020". It entered into force one day later, except for certain provisions for which specific rules enforce as specified in Article 11 of the Regulation.

The CAP's operating modes during the transitional biennium 2021-2022 can be summarised with the slogan "existing rules, new budget". For the direct payments, the current rules are extended for the 2021-2022 period, which implies that Member States that have adopted the derogation from the internal convergence model might continue this process even after 2019 or - in other words - the new provisions on degressivity, capping and redistribution will be postpone by more than two years. In addition, the Directorate General for Agriculture has integrated the EURI resources (8€ billion) into the European Agricultural Fund for Rural Development, making them available as early as 2021-2022. Place that the Commission's original proposal provided for resources equal to twice the amount to be committed between 2022-2024, such provision can be considered a Council and Parliament's success. Last, Regulation (EU) 1308/2013 on the rules concerning the organisation of the agricultural markets includes aid schemes and operational programmes to support specific sectors.

Based on the transitional regulation, the EURI additional resources will pave the way for a "resilient, sustainable, and digital" economic recovery, in line with the EU's environmental and climatic goals and the new European Green Deal's ambitions. Article 1(2) Transitional Regulation provides that the amended Rural Development Programmes (RDPs) submitted for the period 2021-2022 must commit at least the same share of resources (30%) employed in the years 2014-2020 for the agri-environment-climate measures; whereas Article 7(12) states that

the same minimum quotas apply also to the extra EURI resources used in each Rural Development Programme ("principle of non-regression"). Overall, at least 37% of the additional resources provided by the EURI should be allocated to remarkably successful measures to protect the climate, the environment, and the animal welfare. Furthermore, the extension of existing commitments should be limited to 2023, although an exception to this rule is possible based on the nature of the commitments themselves, as well as the environmental, climate and animal welfare objectives. A list of potential measures includes: (a) organic agriculture; (b) climate change mitigation and adaptation, including reducing greenhouse gas emissions from agriculture; (c) soil conservation, including improving soil fertility through carbon sequestration; (d) improvement of water use and management, including water conservation; (e) creation, conservation and restoration of habitats beneficial to biodiversity; (f) reduction of risks and impacts of pesticide and antimicrobial use; (g) animal welfare; and (h) LEADER cooperation activities.

In addition, 55% of the additional EURI resources should be allocated to measures promoting the rural areas' socio-economic development, in particular investment in tangible goods, farm and business development, support for basic services and village renewal in rural areas and cooperation. Again, an indicative list includes: (a) short supply chains and local markets; (b) resource efficiency, including precision and smart agriculture, innovation, digitisation and modernisation of production machinery and equipment; (c) safety conditions at work; (d) renewable, circular and bioeconomy energy.

In this context, in order to allow EU Member States to spend the resources where most needed, the transitional rules permit some elasticity between compliance with the "no-regression" principle and the provision to allocate at least 55% of additional resources to promote socio-economic development. However, there might be a clash between these obligations. Whether a Member State or region were to allocate a high proportion (more than 45%) of its rural development expenditure to agri-environment-climate measures, it would not be able to allocate the minimum 55% share of the resources to the rural areas' socio-economic development. In this case, the Regulation allows Member State to derogate from one of these options. However, by giving Member States the chance to decide what the main concern is, there is a risk that the transition to sustainable agriculture will be hindered. Indeed, such a move could be overshadowed by investments that support production without considering the Green New Deal's agri-environment-climate objectives.

Moving on, the transitional regulation eases restrictions on the application of risk management tools and state aid rules. Under the Regulation (EU)1305/2013, EU Member States might incorporate an income stabilization tool into their Rural Development Programs so as to compensate farmers who experience a 30% drop in their average annual production or income. In order to promote the use of such instrument, the transitional regulation grants Member States the chance to reduce the compensation threshold from 30% to 20%. State aid rules do not apply to national tax measures where the income tax base applied to farmers is calculated over a multi-year period. By allowing EU Countries to level out the tax base over a number of years, the regulation aims to mitigate the consequences of income volatility and encourage farmers to save in the “good years” to cope with the bad ones.

Last, the maximum participation rate in the European Rural Development Fund (EAFRD) is set at 100%, meaning that there is no obligation for Member States to provide corresponding funds to draw on the Next Generation EU resources. On the other hand, the maximum support rate for aid beneficiaries under the EURI in the so-called "other" regions (regions that are not less developed nor regions in transition, hence, *de facto* developed regions) has increased. Usually set at 40% (physical investments) with the chance of being expanded by a further 20 percentage points, now can be increased by other 35 percentage points whether aimed at activities that "contribute to a resilient, sustainable and digital economic recovery" and provided that the combined maximum support does not exceed 90%. However, the criterion of granting up to 90% of aid for physical investment in the European developed regions, justifying it as a stimulus to economic recovery can at least be questioned. Companies could be alarmed if a competitor appeared at their door with a public support equal to 90% of the investment expenditure.

In conclusion, one can state that the transitional regulation will permit farmers to continue receiving the support needed for their activities as well as provide Member States the time to draw up their CAP Strategic Plans, in line with the Green New Deal's ambitions (above all the From Farm to Fork initiative and the Biodiversity Strategy 2030). However, a one- or two-years delay is disappointing when the CAP 2021-2027 is an improvement over the previous one. Back in March 2020, the European Court of Auditors alerted about the risks associated with a long transition period, that is it could hinder achieving the target of making the agricultural supply chain sustainable. Hence, despite the numerous appeals from the scientific community to turn the transition process around, the transformation of the agri-food sector - assuming there will be one - will be postponed by at least two years.

4.2 ON THE 2023-2027 CAP AND CLIMATE CHANGE

Even though there is not a legal obligation to bind the CAP and the Green Deal together, the agricultural sector conversion is essential to pursue the EU environmental targets. In this view, on 25 June 2021, the trilogue agreed that at least 25% of the 258.594€ billion EAGF should be destined to the eco-schemes and that at least 35% of the 77.85€ billion EAFRD should be allocated to measures that enhance environmental, climate and animal welfare practices. However, even though the European institutions introduced the CAP 2023-2027 with enthusiasm, numerous scholars (e.g., Matthews, Navarro and López-Bao, and Pe'er) did not hide their concerns about a program that seems not to be up to the expectations introduced by the European Green Deal, the From Farm to Fork initiative and the Biodiversity Strategy 2030. Hence, since it is not possible to know in advance what the CAP contribution to climate adaptation and mitigation will be, the next sections will present a comparative assessment between the previous and the current Common Agricultural Policies as well as explore (whenever possible)²³ Member States' National Strategic Plans (NSPs) so as to comprehend whether the changes introduced are ambitious enough to contribute to the EU climate and environmental action.

4.2.1 Pillar I Contribution to the EU Climate Action

Article 16 Regulation (EU) 2021/2115 splits Pillar I measures into two categories: the decoupled direct payments (the schemes for the climate, the environment and animal welfare also called “eco-schemes”; the basic income support for sustainability; the complementary redistributive income support for sustainability; the complementary income support for young farmers) and the coupled direct payments (the coupled income support and the crop-specific payment for cotton). As these continue to absorb most of the CAP 2021-2027 budget, Pillar I maintains a prominent role in the CAP post-2020. Hence, the present section aims to assess whether there is coherence between Pillar I measures and the EU climate and environmental goals.

²³ On 31 December 2021, Belgium, Bulgaria, the Czech Republic, Germany, Latvia, Lithuania, Luxembourg, Romania, and Slovakia did not send their National Strategic Plans to the European Commission, meaning that these have not respected the deadline set for the presentation of their NSPs.

Following this premise, the ecological programmes or “eco-schemes” (former greening payments) assume a central position in the CAP 2023-2027. Introduced as a non-binding instrument, these aim to support sustainable agricultural practices such as crop rotation, organic farming, precision farming, carbon farming and so on. The resources allocated through this measure (25% of Pillar I budget) take the form of an annual payment disbursed to farmers who - on a voluntary basis - adopt one or more eco-schemes, in that intended to encourage them to go beyond the minimum environmental requirements these are already required to meet. The “eco-schemes regime” includes also a "learning period" (2023-2024) during which the Member States might allocate less resources to such environmental programs.

The agreement on the eco-schemes came at the end of a long mediation process. Even though the compromise has been announced as a Parliament’s success, numerous critics pointed out that subordinating the eco-schemes to the Member States’ implementation choices could limit their potential and that, whether not well explained, these could not produce concrete results. The evaluation conducted by BirdLife Europe, European Environmental Bureau (EEB) and WWF European Policy Office (2021) on twenty-one National Strategic Plans seems to confirm this position. In particular, their assessment illustrates that the eco-schemes submitted to the European Commission are much less ambitious than what would be needed to make the agricultural transition possible. Indeed, just 19% has a chance to contribute pursuing the EU's environmental and climate goals, 40% would require upgrades to produce concrete results, and 41% is not even aligned with the EU action to combat climate change and protect the environment.

For instance - with regard to precision agriculture - the eco-schemes submitted to the European Commission do not include quantitative parameters to reduce the chemicals use in the EU agricultural sector and, whether the proposal to allocate resources according to the hectares cultivated using precision technologies be approved, this would advantage the large-industrialized companies that do not really need extra support as well as end up supporting traditional agricultural practices with no environmental advantages. Likewise - concerning animals health - the eco-schemes "end-of-pipe" and aimed at grassland management do not include quantitative limits on the maximum livestock numbers or on antimicrobial use, thus ignoring the emissions resulting from intensive livestock production. Even the eco-schemes about “no-till” agricultural practices present shortcomings in that, being the most common alternative to ploughing, these could lead to increase pesticide use and thus to cases of maladaptation. Last, also the eco-schemes aimed at crop diversification seem to produce

limited results in that, just as happened with the crop diversification requirement, the chance left to Member States to adopt alternative schemes and the absence of guarantees regarding the increase in crops number and plots size could limit their potential or, at worst, perpetuate agricultural industrialization and specialization (maladaptation). More in general, almost all the eco-schemes able to produce tangible results are under-funded and risk being replaced by less demanding commitments aimed at obtaining economic opportunities. In contrast, the transition to virtuous agricultural practices should be rewarded when their environmental gains are unequivocal and the sustainable agricultural practices at risk without additional support.

In addition, the European agricultural associations' request to allocate at least 70% of the budget destined to the eco-schemes to the livestock sector is another matter of concern. This demand aims to compensate the reduction in direct payments associated to the "historical titles" and the internal convergence reforms. However, using eco-schemes to counter the changes introduced by the CAP 2023-2027 rather than adopting real commitments to protect the environment and the climate would be a missed chance as well as a huge mistake.

Hence, even though it is clear that eco-schemes can *de facto* contribute to climate mitigation and adaptation, such evaluation (albeit based on the first documents made public by the Member States) reveals that - just as happened with Pillar I greening measures - also the ecological programmes risk turning in a missed chance. Hence, it is essential that the Member States increase their level of ambition and the European Commission assess the NSPs in a critical manner. According to the European Green Deal "*measures such as eco-schemes should reward farmers for improved environmental and climate performance*", whereas the Farm to Fork initiative states that these should "*offer a major stream of funding to boost sustainable practices*".

Moving on, the main change introduced by the CAP post-2020 about the Basic Income Support for Sustainability (former Basic Payment Scheme - BPS) concerns its name itself in that meant to legitimise it as an instrument aimed at producing public goods: "*an income support to remunerate farmers' contribution to sustainability*". Then, the second innovation concerns the criteria by which the resources allocated might be established: as a standard annual payment associated to hectares or depending on the payment entitlements, as chosen by the Member States. In other words, MSs can decide whether to use the Single Payment System (SPS) or the Single Area Payment System (SAPS). In turn, the SPS can be applied according to the historical model (i.e., based on the historical values) or according to the regional model

(based on a uniform value established at the regional level). The regional model – called also "flat rate" - provides greater gains in that it permits improving CAP's accountability in respect to the European citizens and to stop criticism about the historical model that "rewards" farmers for the hectares owned rather than for "virtuous" behaviours. On the other hand, the SAPS is a simplified income support scheme addressed to Member States that joined the European Union in 2004 in order to facilitate the implementation of direct payments (Frascarelli, 2020).

Chapter 2 has illustrated that - being calculated according to the hectares cultivated or the product sown/farmed rather than on the agricultural practices adopted - the Basic Payment Scheme could indirectly and unintentionally support maladaptation practices, hence hindering EU climate and environmental action. However, even though the CAP 2023-2027 has introduced changes so as to turn the Pillar I measures fairer and more equitable, it is still up to Member States to decide which model to implement. Hence, place that it is not possible to determine *a priori* what Member States' implementation choices will be and so the same for their results, in the light of the advantages related to the regional model it would be desirable to set aside the historical model rather than to consent (once again) Member States to choose.

Along these lines, Article 29(2) Regulation (EU) 2021/2115 concerning the Complementary Redistributive Income Support for Sustainability (former Redistributive Payment Scheme) states that "*Member States shall ensure redistribution of direct payments from larger to smaller or medium-sized holdings by providing for a redistributive income support in the form of an annual decoupled payment per eligible hectare to farmers who are entitled to a payment under the basic income support referred to in Article 21*". Throughout this assessment (see 2.1.2) we illustrated that, by supporting the small and medium-sized farmers' income, this measure could encourage them to adopt sustainable agricultural practices which would help to counteract the climate change negative consequences. However, it has also been noted that, due to its non-binding nature, Member States could make unambitious choices, thus hindering its results and potential. In other words, environmental goals have been subordinated to economic interests. Place that a solution to this problem could have consisted in making this measure binding, its nature has long been subject of debate between the Council, the Parliament, and the Commission. However, in contrast with what could be expected, this measure remains non-binding, meaning that its application is still up to the Member States' discretion. So, place that in the previous programming period the competent authorities redistributed less than what they could, it is likely that the same will occur between 2023 and

2027 and that, despite its name, this measure will not make a significant contribution to the EU climate and environmental action.

The last coupled instrument consists in the Complementary Income Support for Young Farmers (former Young Farmers Scheme - YFS). Article 30 Regulation (EU) 2021/2115 states that it should provide additional resources to the farmers under the age of 40 who have just entered the agricultural sector and are entitled to receive aids under the Basic Income Support. Such support can be granted for up to five years from the date of application and cannot exceed the maximum amount set aside for the creation of new rural activities amounting to 100.000€. Then, it remains up to Member States establishing the number of hectares for which this measure can apply. In addition, young farmers can obtain additional resources through the income redistribution mechanism which - starting from a 13% base - can be increased by other three percentage points (no longer 2%). Among the changes introduced in the current programming period, the most important concerns the nature of the measure itself, which has changed from being binding to non-binding. It is a significant transformation since - even though section 2.1.2 illustrated that despite its binding nature Member States redistributed less resources than what they could - the CAP 2023-2027 does not guarantee improvements. Indeed, while it has been widely illustrated that young farmers are more likely to adopt sustainable agricultural practices and that - consequently - assigning them more resources might encourage adaptation and mitigation, the steps forward (increase in resources to be redistributed from 2 to 3%) and those backward (transformation of the measure from mandatory to voluntary) rise doubts as to what such measure's consequences will be for the environment and the climate.

To conclude, the Coupled Income Support (former Voluntary Coupled Support) allows Member States to allocate up to 13% of their income support budget to *“certain sectors and productions that are particularly important for social, economic or environmental reasons and encounter certain difficulties”* *“in order to improve [their] competitiveness, sustainability, or quality”* with the chance to extend this percentage to 15% provided that such resources are allocated to the protein crop sector and that these do not exceed the amount laid down in Member States' National Strategic Plans.

As sections 2.1.2.1 and 2.1.3.1 illustrated, such measure can either prevent or encourage climate mitigation and adaptation depending on member states' implementation choices, or better on the products and the practices sustained. For instance, when used to support the protein crop sector, it is likely to reduce GHG emissions; whereas, whether directed to water-

intensive productions (e.g., livestock, dairy, rise and tomatoes) it is likely to produce maladaptation practices. Thus, the only cases in which coupled payments can be of environmental and climate benefit are those in which these are associated with production of public goods. A solution to this could be to limit the Coupled Income Support's scope in the 2023-2027 programming period. However, despite Article 32(2) Regulation (EU) 2021/2115 states that "*Member States shall not be required to demonstrate the difficulties encountered in relation to protein crops*" so allowing Member States a privileged access to this measure when used for legumes - the new CAP does not prevent Member States from directing the Coupled Income Support to highly polluting productions (e.g., milk and dairy, sheep and goat, beef and veal, rise and tomatoes) once provided adequate explanations for the targeting of such sectors.

In addition, Article 52(5) Regulation 1305/2013 provided that Coupled Income Support contributions could just be used to maintain production level in the sectors and regions concerned, whereas Regulation 2021/2115 does not present the same clause, meaning that Member States can use this measure also to expand production. This can be dangerous when the measure applies to intensive livestock productions in that it would lead to additional emissions. To prevent this, Member States are required to meet two conditions: such aids must not distort the market and there must be a clear need to support as well as environmental or socio-economic gains. However, place that in an unofficial document submitted to the AGRIFISH Council in March 2019 numerous Member States requested to eliminate restrictions on the sectors that could be sustained through the Coupled Income Support, to increase its percentage up to 23%, and to exclude it from the mechanisms of degressivity and capping, it is likely that - just as happened between 2014 and 2020 - Member States will direct such resources towards cost-effective but environmentally harmful productions. Hence, as the 2023-2027 CAP has not introduced significant changes concerning the Coupled Income Support, it will be up to the Member States to rise their ambition level as well as to the Commission to steer them towards sustainable choices. If the European Commission will turn a blind eye to the wrong choices, it is probable that – here too - climate mitigation and adaptation targets will be subordinated to economic interests. The Coupled Income Support environmental consequences will depend on this.

4.2.2 Pillar II Contribution to the EU Climate Action

In its Communication “A long-term Vision for the EU's Rural Areas - Towards stronger, connected, resilient and prosperous rural areas by 2040” published on 30 June 2021, the European Commission presented a plan containing the political instruments through which Member States will strengthen rural areas and contribute achieving the European Green Deal’s climate and environmental objectives. In turn, the plan includes a Rural Pact and a Rural Action Plan where the first aims to orient the parties involved in fulfilling the rural populations’ aspirations and needs, while the second aims to support territorial cohesion and improve rural areas in economic, social, and environmental terms. In general, this project originates *inter alias* from the need to safeguard and enhance the rural areas’ natural resources which - through the restoration of natural landscapes, the contraction of the supply chains, and the green transition of agricultural activities - will be more resilient to climate crisis and unexpected market fluctuations. Against this backdrop, CAP Pillar II has a central role in guiding agri-businesses in the direction of sustainable practices. In addition, the growing demand for organic food, shrinking agri-food chains, and on-site products processing can create economic opportunities for agricultural activities and rural areas, in line with the From Farm to Fork initiative. However, despite its importance to the above reasons, the resources destined to Pillar II have been reduced. Hence, the question arises to what extent this can contribute to the EU's climate and environmental ambitions. This section aims to illustrate whether the changes introduced can compensate for the cut in the resources allocated to it and contribute to the Great Agri-Food Transformation.

Comparing the current with the previous programming period, what emerges is that the European Institutions streamlined Pillar II’s architecture, passing from 20 measures to 8 possible interventions (1. environmental, climate-related, and other management commitments; 2. natural or other area-specific constraints; 3. area-specific disadvantages resulting from certain mandatory requirements; 4. investments; 5. setting-up of young farmers and new farmers and rural business start-up; 6. risk management tools; 7. cooperation; 8. knowledge exchange and dissemination of information). In addition, Regulation (EU)2021/2115 is less detailed compared to Regulation (EU) 1305/13 due to the need to simplify the regulatory framework at EU level, shifting the focus to results and effectiveness. Hence, Member States are freer to decide how best to achieve common objectives while meeting the specific needs of their farmers, rural communities, and societies as a whole. Below

is an examination of the potential contribution of Rural Development interventions encapsulated in CAP 2023-2027.

Table 7: Comparison between 2014-2020 and 2023-2027's Pillar II measures/interventions

2023-2027 INTERVENTIONS	2014-2020 MEASURES
1. Environmental, climate-related, and other management commitments	<ul style="list-style-type: none"> • M10 Agri-environment-climate • M11 Organic farming • M12 Natura 2000 • M15 Forest environment and climate services
2. Natural or other area-specific constraints	<ul style="list-style-type: none"> • M13 Areas facing natural constraints
3. Area-specific disadvantages resulting from certain mandatory requirements	
4. Investments	<ul style="list-style-type: none"> • M4 Investments in physical assets • M7 Basic services and village renewal in rural areas • M8 Investments in forest development and viability • M14 Animal welfare
5. Setting-up of young farmers and new farmers and rural business start-up	<ul style="list-style-type: none"> • M6 Farm and business development
6. Risk management tools	<ul style="list-style-type: none"> • M5 Disaster risk reduction • M17 Risk management
7. Cooperation	<ul style="list-style-type: none"> • M16 Cooperation • M19 LEADER/CLLD
8. Knowledge exchange and dissemination of information	<ul style="list-style-type: none"> • M1 Knowledge transfer • M2 Advisory services

Source: own compilation

To begin with, the intervention area "environmental, climate-related and other management commitments" contributes to climate change mitigation and adaptation and thus to the pursuit of the EU climate and environmental objectives (see 2.1.1.2 and 2.1.3.2). In this case, Member States provide resources for land management commitments that go beyond the relevant binding standards set by cross-compliance, as well as other mandatory requirements under the EU and national legislation. Member States are required to include agro-climatic-environmental commitments in their National Strategic Plans. In detail, these must allocate at

least 30% of EAFRD resources to interventions related to climate and environmental objectives.

Article 70(2) states that: “*Member States shall grant payments only to farmers or other beneficiaries who undertake, on a voluntary basis, management commitments which are considered to be beneficial to achieving one or more of the specific objectives set out in Article 6(1) and (2)*”. The wording “farmers or other beneficiaries” is what distinguishes the AEC measures from the abovementioned “eco-schemes”, intended just to farmers. In addition, Member States might allocate resources to commitments contained in the AEC measures just when these are different from those included in the eco-schemes. Hence, coordinating these two instruments so that both can contribute to the EU's climate and environmental goals is not just a challenge for the Member States, but also a danger for the farmers who fail to qualify for both. In general, supporting stewardship commitments might include premiums to organic farming and maintaining and/or converting organic lands; payments to other interventions aimed at supporting environmentally sound production systems such as agroecology, conservation agriculture and integrated production; forest conservation and services; premiums to establish agroforestry systems; animal welfare; conservation, development, and sustainable use of genetic resources. Below is an overview of the actions included by the Member States regarding one among the Commission's main objectives in agriculture: “maintenance and conversion of organic lands”.

The evaluation conducted by IFOAM Organics Europe (2021) illustrates the gaps existing in the NSPs regarding organic farming. In particular, the assessment focuses on the participation of farmers, NGOs and associations as well as on organic-related measures and resources contained in the NSPs submitted by the Member States by November 2021. The examination demonstrates a certain incoherence between the EU goal to achieve at least 25% organic land by 2030 and what planned by the relevant Managing Authorities. Indeed, although Member States such as Belgium, Croatia, Sweden, Hungary and Denmark have set ambitious goals and budgets, other countries did not provide adequate incentives so as to encourage farmers to convert to organic farming (Spain, France, Poland, Germany, and Lithuania), set ambitious quantitative targets (Austria, France, Germany, the Netherlands, Poland), reduced the resources compared to the previous programming period (Finland), or decided to allocate more resources to less ambitious traditional agricultural practices. In addition, two Member States (Germany and Luxembourg) menace withdrawing resources from organic agriculture due to an alleged overlap between the agro-climatic-environmental measures and the Pillar I eco-schemes. Then,

in order to avoid what happened in the previous programming period (see 2.1.1.2 and 2.1.3.2) it is essential that the European Commission induces Member States to reward farmers who produce environmental public goods, maintain at least the same amount of resources as the previous programming period, design agro-climatic environmental measures in a manner that is compatible with the eco-schemes, include in their National Strategic Plans targets in line with the EU ambitions, and continue to develop organic agriculture. In contrast, it is unlikely that, in absence of such criteria, conventional farmers will convert to organic farming and contribute to the EU climate action.

Moving on, in the 2023-2027 CAP Member States maintain the chance to grant support to compensate - in whole or in part – the additional costs and lost earnings due to natural or other area-specific constraints. More in depth, such support is granted to the active farmers placed in the areas listed in Article 32 Regulation (EU)1305/2013 and classified as: mountain areas, areas subject to significant natural constraints, other than mountain areas, other areas subject to specific constraints. As explained in the previous chapters, such intervention can contribute to adaptation by protecting biodiversity, wetlands, and pastures in the areas where protection cannot be altered. However, it was also pointed out that in the 2014-2020 programming period such measure lost its potential as nothing was provided about how farmers should spend the resources obtained (e.g., sustainable investments). Even though one might assume that the European Institutions filled this gap, Regulation (EU)2021/2115 does not contain any provisions regarding how these resources should be invested. Along these lines, the evaluation conducted by BirdLife (2021) illustrates that all the sixteen National Strategic Plans considered do not include measures to protect wetlands and grasslands. Or rather, just seven Strategic Plans present measures able to slow land degradation, but none is capable to reverse this trend. Likewise, no National Strategic Plan presents measures able to protect biodiversity and thus to contribute to the EU Biodiversity Strategy 2030's objectives. Hence – here too - in order to make this measure suitable to accomplish the European Union's environmental and climate goals, it is essential that the European Commission induces Member States to rework their Plans so as to make them more in line with its ambitious rhetoric.

Along these lines, Member States might grant resources to the areas subject to binding requirements arising from the implementation of the EU environmental directives. When establishing areas with disadvantages, Member States might include Natura 2000 agricultural and forest areas designated pursuant to Directives 92/43/EEC and 2009/149/EC; other protected natural areas with environmental restrictions applicable to agriculture or forestry

(provided that such territories do not exceed 5% of the Natura 2000 areas listed in each CAP Strategic Plan); lands under Directive 2000/60/EC on agricultural areas included in river basin management plans. In general, this intervention aims to compensate - in whole or in part - the additional costs and lost earnings to which such areas are subject. In other words, it attempts to lighten the administrative burden associated with compliance with EU environmental and climate directives (see sections 2.1.1.2 and 2.1.3.2. related to RDP investment measures) in order to let the impacted territories to adopt Pillar II interventions without dreading the associated burdens. Although it is too premature to understand its consequences, it is probable that such intervention will encourage mitigation and adaptation to climate change and thus the EU's climate and environmental goals.

Regarding “investments”, the 2023-2027 programming period provides that Member States can just support tangible and/or intangible investments that contribute to pursue precise climatic goals. However, since the 2014-2020 CAP did not provide anything about how to manage natural resources and/or utilise those spared, the improper use of such measures has limited their potential and sometimes led to maladaptation (e.g., Andalusian irrigation system). With particular regard to irrigation, Articles 74(2), (4a) and (7) Regulation (EU)2021/2115 states that:

(2) Investments in irrigation shall be supported only where the Member State concerned has sent to the Commission a river basin management plan as provided for in Directive 2000/60/EC for the entire area in which the investment is to take place, as well as for any other areas whose environment may be affected by the investment [...]

(4a) Member States may grant support for an investment in an improvement to an existing irrigation installation or element of irrigation infrastructure only if: (a) it is assessed ex ante as offering potential water savings reflecting the technical parameters of the existing installation or infrastructure [...] (b) Member States shall set percentages for potential water savings and effective reduction in water use as an eligibility condition in their CAP Strategic Plans [...]

(7) Member States may grant support for an investment in the creation or expansion of a reservoir for the purpose of irrigation only if it does not lead to significant negative environmental impact.

Such dispositions are meant to side-step maladaptation practices as well as to provide the Commission with all the essential tools to discard the NSPs in cases in which the Member States do not conform with these criteria. Hence, the changes introduced are improvements compared to the past and must be evaluated positively.

Concerning forest protection, it will be based on a Forest Management Plan. The maximum support at EU level is equal to 75% of the eligible costs but might be increased in the following cases: afforestation and non-productive investments related to environmental and climate goals; investment in rural areas' basic services; investments to restore agricultural/forestry potential subsequent to natural disasters or catastrophic events. Place that in the 2014-2020 102/118 RDPs included measure M8 and that - where introduced - had produced good results, we did not suggest anything other than for the Member States to allocate more resources to this measure and to indicate in their RDPs the areas and territories designated as beneficiaries of such intervention. In accordance, Article 73(2) Regulation (EU)2021/2115 states that: *"For holdings above a certain size, to be determined by the Member States in their CAP Strategic Plans, support for the forestry sector shall be conditional on the presentation of the relevant information from a forest management plan or equivalent instrument in accordance with the sustainable management of forests as defined in the General Guidelines for the Sustainable Management of Forests in Europe"*. The article introduces an important change because - here again - where the Member States do not take due account of this provision, the Commission could reject their NSPs so as to induce them agreeing to it.

Last, regarding animal health, Regulation (EU)2021/2115 provides that the resources allocated to this area cannot be used to purchase animals except in cases where it is needed to protect them or the environment. However, it is not clear how the Commission will implement such condition as Member States are not required to demonstrate it in their National Strategic Plans. Hence, it might encourage or hinder EU climatic goals depending on the Member States' implementation choices.

The intervention "setting-up young farmers, new farmers and rural business start-up" provides support extendable up to a maximum of 100.000€ combinable with financial instruments. This is a step forward compared to the past, as the maximum contribution that could be granted in the 2014-2020 programming period was equal to 70.000€. In addition, apart from supporting the setting up of young farmers, Member States might grant support for: activities linked to agriculture, forestry, or diversification of agricultural income as well as non-agricultural activities as part rural areas' development strategies. However, even though the environmental and climate gains associated with this measure have been explained, it is worth recalling that the problems identified in the previous programming period were for the most related to the Member States' implementation choices. Hence, despite the increase in resources

allocated to it, its potential will depend to a large extent on the decisions that the EU Members will adopt, including the number of resources allocated to young farmers.

CAP 2023-2027 re-proposes the same architecture concerning risk management tools existing in the previous programming period (Omnibus Regulation). Member States might indeed grant support to risk management tools helping farmers to manage the production and market risks associated with their agricultural activities. In detail, it is associated to insurance premiums, mutual funds, and the administrative costs related to the creation of new activities. In line with the changes introduced by the Omnibus Regulation, the maximum support rate is equal to 70% of eligible costs and is guaranteed to cover losses exceeding 20% the average production (insurance) or income (mutual funds). Even though this intervention can encourage adaptation and mitigation to climate change, during the previous programming period measure M17 (risk management) has produced just timid results on adaptation and none on mitigation due to the small resources allocated to it, the presence of equivalent instruments at Member State level, and the existence of social barriers. To make matters worse, it has also been illustrated that its implementation risks encouraging maladaptation practices where peasants feel entitled to adopt them. For this reason, it has been proposed to include risk-based premiums as well as to make such a measure conditional upon the adoption of risk prevention measures to encourage farmers to change their agricultural practices and – in consequence - reduce their dangers. However, Regulation (EU) 2021/2115 does not provide dispositions about this and it is still up to the Member States to decide how to implement this intervention. As a result, it is hard to determine *a priori* what the environmental and climatic consequences of this intervention will be.

The intervention “Cooperation” - which represented an innovation in the 2014-2020 programming period - is borne out in the CAP 2023-2027. Member States can grant support in the development and implementation of the cooperation projects of the Operational Groups for the European Innovation Partnership (OGs), agricultural productivity and sustainability (EIP), participatory local development strategies (LEADER) - to which Member States must allocate at least 5% of their EAFRD resources - and to promote quality schemes, producer organizations, producer groups or other forms of cooperation. Support to cooperation is granted in the form of a global amount to cover the costs associated with cooperation projects involving at least two entities. Support is limited to a maximum period of seven years unless exceptions might be granted for actions to achieve environmental and climate objectives. In general, this area can encourage climate adaptation and mitigation through the sharing of knowledge and

sustainable agricultural practices. Place that no problems have been identified in the previous programming period (other than those related to implementation delays) and that no changes have been made to the nature of such intervention, it is probable that - as long as there is a high level of ambition on the part of the Member States - it will contribute to adaptation and mitigation in this programming period as well.

Last, regarding agricultural knowledge and innovation systems, the aim is to strengthen the information tools through the establishment of the “Agricultural Advisory System”. Such support covers actions to promote innovation, access to training, and exchange and dissemination of knowledge and information so as to pursue the EU’s climatic goals. In this case, the maximum support rate is equal to 75% of eligible costs, while a maximum amount of 200.000€ is designated for starting-up business consulting services. In turn - in order to strengthen counselling’s value and success as well as to provide up-to-date technological and scientific information - these must be integrated into the Agricultural Knowledge and Innovation System (AKIS). In particular, by promoting interaction among actors in research and education, such intervention can contribute pursuing the CAP and EU’s ambitions. However, as illustrated in sections 2.1.1.2, subordinating environmental goals to economic interests as well as delaying these measures’ implementation has caused such measure to be weakened. Concerning the point one, Article 78(1) Regulation (EU)2021/2115 states straight that: *“Member States may grant support for knowledge exchange and dissemination of information [...] specifically targeting the protection of nature, environment and climate, including environmental education and awareness actions and the development of rural businesses and communities”*. Hence, place that the triologue has filled the gap existing in the previous Regulation, it will be interesting to see whether the Member States’ implementation choices will produce better results than those obtained in the past.

To conclude - concerning delays – the analysis of the 2023-2027 CAP’s normative texts reveals an increased focus on ongoing monitoring of progress and achievement of agreed-upon goals. Indeed, the Commission is charged with reviewing all the reports submitted by the Member States and - where appropriate - will develop recommendations to improve their actions. However, despite the admirable commitments, the first delays were already seen at the time of the presentation of the National Strategic Plans since, on 31 December 2021, nine Member Countries were missing.

4.2.3 Conclusions

The previous sections aimed to illustrate whether there is coherence between Pillar I and Pillar II measures/interventions and the EU climate and environmental goals. In this respect, we observed that, although the measures/interventions are now better designed, these are still not enough to enable the Great Agro-Food Transformation to come true and the Green New Deal to be realised.

At EU level, even though the previous sections highlighted the existing gaps in the regulations governing the CAP 2014-2020, Regulation (EU)2021/2115 on CAP 2023-2027 does not address such weaknesses. Indeed, even though we illustrated that their non-binding nature has limited their potential and results, no changes have been made in this respect if not for the “Complementary Income Support for Young Farmers” measure that, however, has passed from being mandatory to voluntary, meaning that Member States can decide whether and how to implement it. Other problems (present also in the previous programming period) relate to the CAP management structure and administrative complexity (e.g., denial in implementing eco-schemes and agri-climate-environmental measures concerning the same agricultural practices) which sometimes caused Member States troubles while programming. Combine this with the reduction in resources allocated to Pillar II, one might assume that, although there has been progresses compared to the past, the changes made to the CAP post-2020 are not enough to *de facto* contribute in turning agriculture a flagship sector in the Green Transition

At Member States level, the evaluation of the National Strategic Plans and the comparison with the previous programming period demonstrates incoherence between what is contained in them and the EU’s environmental and climate objectives (e.g., turn at least 25% of EU agricultural lands organic). In this respect, it is worth recalling that numerous measures implemented in the previous programming period produced just poor results due to the chance left to the Member States on how much resources to allocate them. Nevertheless, the previous sections illustrated that the same problems are present (if not greater) also in the current CAP. In detail, the independence that characterises the compilation of the National Strategic Plans has caused Member States to include underfunded and/or unambitious measures/interventions. Moreover, the absence of NSPs containing quantitative environmental targets (e.g., maximum number of livestock or amount of chemicals that can be used in agriculture) risks maintaining the status quo and exacerbating the vicious cycle whereby the support granted to large-industrialized companies and traditional agricultural practices lead to increased emissions and/or the

maintenance of maladaptation practices. To top it all off, the same polluting sectors are not just supported, but traditional peasants have now the chance to expand their production, so incentivising unsustainable agricultural practices. In contrast, transition to virtuous agricultural practices should be rewarded and support to agriculture be granted just when its environmental gains are undeniable. Hence, it seems that Member States are still oriented to choose economically profitable but highly polluting agricultural practices and that, not being encouraged by Member States, farmers will not be able to convert themselves. The evaluation conducted by Birdlife Europe and the EEB (2021) substantiates this version as well as illustrates that most Member States did not include ambitious and adequate targets/measures able to contribute pursuing the Green New Deal's environmental and climate goals. On the other hand, the examination shows that even the Member States having introduced non-binding management systems fall short in achieving the EU's targets and are not able to halt GHG emissions and biodiversity loss.

Last - regarding delays - although the trilogue has tried to solve this issue, the first delays occurred when the deadline for submission of the National Strategic Plans expired. These delays undermine the likelihood of Member States' intentions and cast doubts on the Commission's approach assigning Managing Authorities the mandate to implement measures/interventions to achieve the Green Deal objectives.

Hence - in response to our goal – it should be admitted that there is incoherence among provisions regarding the CAP, how Pillar I and II measures/interventions are implemented and the goals of the Green New Deal. Indeed, the good changes introduced are not enough to compensate the gaps in the regulations and the Member States' absence of ambitions. In this context, it will be up to the Commission to guide Member Countries towards sustainable choices. However, place that the 2023-2027 CAP does not guarantee improvements compared to the past, it can just be described as a tragic missed chance.

4.3 THE POLITICAL ECONOMY OF THE 2023-2027 CAP

4.3.1 The 2021-2027 CAP Budget

Decisions on the EU's policies resources are among the most difficult in that EU leaders handle such negotiations with a *juste retour* approach, meaning that each Member State tries to uphold its own interests. The CAP budget has a central role in such negotiations in that its resources are still a major portion of the overall EU budget and because the amounts pre-assigned to the Member States condition their positions during the discussions. Hence, three years after the beginning of the talks, on 25 June 2021, the European institutions agreed that the 2021-2027 CAP budget would have amounted to 343.95€ billion (in 2018 constant prices) with 258.594€ billion allocated to Pillar I and 77.85€ billion destined to Pillar II, including the 7.5€ billion from the Next Generation EU. In parallel, the trilogue agreed the provisional agreement that should open the door to a “fairer and greener” Common Agricultural Policy. Hence, the next sections will assess whether the 2023-2027 CAP is ambitious enough to meet the socio-economic challenges the agricultural sector must address as well as to do its own part in the Great Agri-Food Transformation.

4.3.1.1 Internal Convergence

We have seen that, even though the 2013 reform has sought to reach a more equitable distribution of per hectare direct payments, between 2014 and 2020, just 20% of EU farms received about 80% of direct payments. In particular, section 2.2.1.1 (Internal Convergence) illustrated that capping and degressivity did not produce the expected results due to their non-binding nature and the chance left to the Member States to subtract the salaries paid to farmers, whereas the resources allocated under the Redistributive Payment Scheme could be higher than those *de facto* redistributed due to (here too) its non-binding nature and the impossibility to apply it on the entire holdings. Last, we have seen that the same logic underlying the direct payments regime is flawed since it can lead to circumstances in which those supported do not really need it. Hence, what did the European institutions agree to?

According to the European Parliament's Legislative Resolution of 23 November 2021 [P9_TA(2021)0456], Member States should attain greater convergence so as to continue moving away from historical values. More in detail, Article 24(4) states that: “*Where the value of payment entitlements [...] is not uniform within a Member State or within a group of*

territories [...] the Member State concerned shall ensure a convergence of the value of payment entitlements towards a uniform unit value by claim year 2026 at the latest". Then, according to Article 24(5) *"each Member State shall ensure that, for claim year 2026 at the latest, all payment entitlements have a value of at least 85% of the planned average unit amount [...] for the basic income support for claim year 2026, as laid down in its CAP Strategic Plan for the Member State [...]"*. Hence, an insight into the actions that Member States intend to undertake should be included in their National Strategic Plans.

In this regard, the mechanisms of degressivity and capping remain non-binding, meaning that EU Member States can choose whether to limit or not direct payments without there being any obligation on them. In detail, EU Countries can reduce direct payments up to 85% the part exceeding a maximum of 60.000€ and so on until up to 100% the part exceeding a maximum of 100.000€ per farm. This means that Member States might set specific reduction percentages for the tranches above 60.000€, provided that each tranche reduction is higher or at least equal to the previous one. Then, the resources in excess should be redistributed under the Redistributive Income Support Scheme or to the EAFRD if so provided by the Member States' National Strategic Plans. Furthermore, here again, Member States can subtract all the remunerations related to the agricultural activities (including taxes and social charges). Hence, even though the current programming period has reduced the maximum threshold from 150.000€ to 100.000€, the non-binding nature of such mechanisms and the chance left to the Member States to continue subtracting the salaries paid to farmers are nothing more than steps backwards compared to the Commission's original proposals. Place that are the Member States to have opposed the Commission's proposals and that it will be up to them to decide whether to implement or not such mechanisms, it stands to reason that EU small-size farms will have limited access to the resources that theoretically should be redistributed.

Moving on, also the Complementary Redistributive Income Support for Sustainability ("Redistributive Income Support") remains non-binding, meaning that Member States can choose how much to redistribute - between 10% and 30% of their national income support budget - depending on regions and territories and according to the differences existing in farm structure and extension. Furthermore, Article 39.3 [P9_TA(2021)045] states that *"Member States shall set [...] an amount per hectare or different amounts for different age brackets, as well as the maximum number of hectares per farmer for which income support is paid."* Here too, place that the biggest protests to the Commission's original proposals originated from the

Member States having the largest farms and receiving most of direct payments, it stands to reason that these will implement as little redistribution as possible. On the other hand, whether the Member States are to maintain 30 hectares as the maximum limit (or 50% of the area if greater than 30 hectares), there would be no step forward compared to the past. This implies that - as happened between 2014 and 2020 - the resources relocated through this mechanism will be less than those Member States could redistribute.

To conclude, section 2.2.1.1 suggested that more resources should be allocated to social assistance tools, tax credits, and Pillar II risk management measures (e.g., M5, M6, M17) in that more appropriate to *de facto* increase farmers' resilience. Even though Article 39(1) [P9_TA (2021)045] states that "*Member States can address the need to redistribute income support through other tools and interventions*", this goes on emphasising that these should be "*financed by the European Agricultural Guarantee Fund (EAGF)*". This means that Member States can redistribute resources through mechanisms and instruments other than those mentioned as long as these are within Pillar I, without mentioning Pillar II, its measures, or social assistance mechanisms.

Hence, place that the last CAP reform did not introduce substantial changes in the mechanisms of degressivity, capping and redistribution and that, even whether Member States choose to implement other instruments these would be sponsored by the EAGF, it is very likely that also in the 2021-2027 programming period Member States will not succeed in making the value of direct payments equal to at least 85% of the average unit amount. In other words, direct payments distribution will remain just as unequal, meaning that well-structured farms will continue to benefit from most of the resources at the expenses of the smaller ones and that it will be even more hard to small farmers to remain in the market and compete with the large companies that receive most of the funds provided by the CAP.

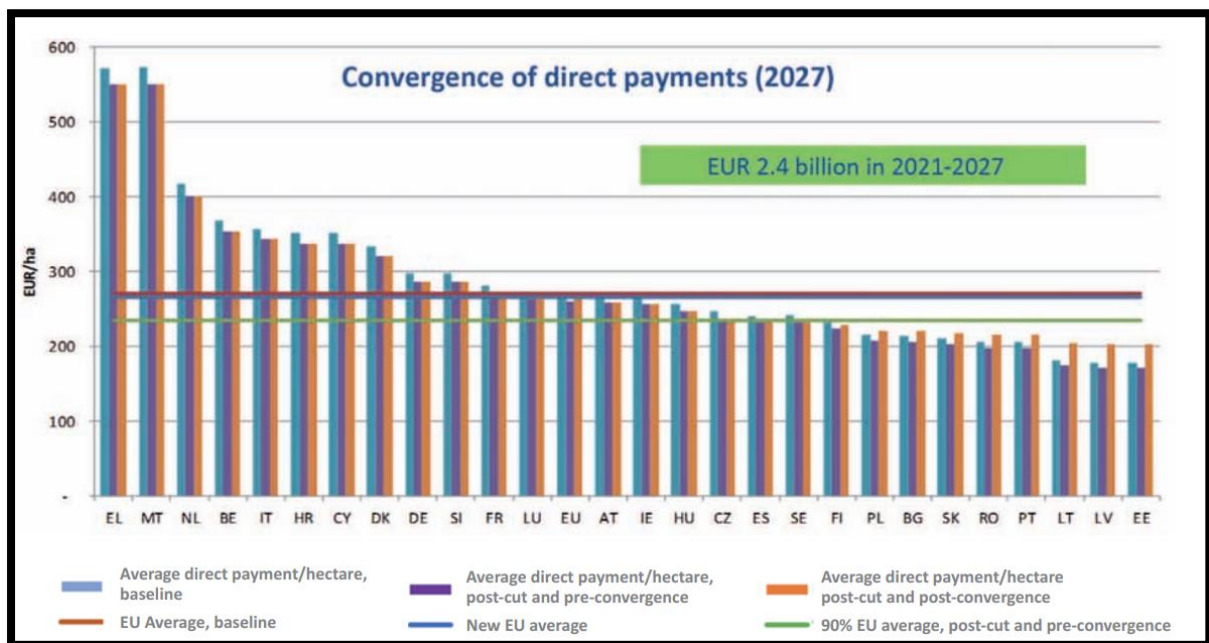
4.3.1.2 External Convergence

The External Convergence used to be high on the EU' political agenda. Even though the Ciolos reform has sought to reach a more equitable distribution of resources among EU Member States, significant disparities persisted. Hence - in response to the need to revise the CAP - on 1^o June 2018, the European Commission proposed to pursue full external convergence, agreed on 25 June 2021 by the European Council and the Parliament as well. In particular, the trilogue decided that Member States having direct payments below 90% EU

average had to fill this gap by at least 50% (not one third) over six years, with a minimal floor for direct payments set at 200€/ha in 2022 and 215€/h in 2027. To do this, all Member States, not just those with direct payments above the EU average, should contribute to full external convergence as the resources needed to increase direct payments below the EU average should be levied by a linear reduction in direct payments, equal across all the EU. The total amount of resources needed to reduce the gap between Member States is 2.4€ billion. Along these lines, even though what is illustrated in section 2.1.2.1 suggests that, compared to the 2014-2020 programming period, net beneficiaries will undergo the greater losses, in truth the burden resulting from the total convergence process - just because shared by all - will be much mitigated for them.

Figure 9 illustrates the European Commission’s predictions made in 2018 concerning the variation in the distribution of direct payments that should have occurred due to the CAP reform. These projections are based on proposed allocations per Member State and consider both budget cut and external convergence. Here too, Member State receiving sums above the EU average (left) would have experienced a reduction in the amounts of direct payments received (e.g., EL MT, NL, BE,), whereas the eight Member States receiving sums below the EU average (right) would see their national income support budget increased compared to that in the previous programming period (e.g., EE, LV, LT, PT, RO, SK, BG, PL).

Figure 9: Changes in the distribution of direct payments pre and post cut and convergence



Source: European Commission

Figure 9 shows that, apart from Sweden (SE), net beneficiaries of full external convergence coincide with those that – according to the European Council’s predictions (Figure 1 section 2.1.2.1) - should have been net beneficiaries during the 2014-2020 programming period. In detail, Table 7 illustrates that Member States not subject to a reduction in their national income support budget coincide with those indicated above as net beneficiaries, whereas Member Countries experiencing the biggest cuts (NL, BE, EL, IT) match with those laid on the left, even though not quite in the same order.²⁴ In all this, according to the European Commission, the Member States that should experience the greatest changes are Estonia, Latvia, and Lithuania, followed by Slovakia, Bulgaria, Poland, and Croatia. Last, even though the external convergence process has been introduced in that so requested by the Central and Eastern EU Member States, countries like Hungary, Slovenia, and the Czech Republic remain behind in these projections. (Coldiretti, 2018).

Table 7: Variations in EAGF allocations per individual Member State (current prices)

	TOTAL 2014-2020 A	TOTAL 2021-2027 (PROPOSAL) B	TOTAL 2021-2027 (ACTUAL) (C)	% CHANGE {[(B-A) /B]X100}	% CHANGE {[(C-A) /C]X100}
Belgium	3.695,9	3.399	3.467	-8%	-6.6%
Bulgaria	5.117,4	5.553	5.853	8.5%	12.56%
Czech Republic	6.113,9	5.872	6.034	-4.0%	-1.32%
Denmark	6.348,0	5.923	6.038	-6.7%	-5.13%
Germany	3.5763,0	33.762	34.706	-5.6%	-3%
Estonia	938,7	1.243	1.354	32.5%	30.67%
Ireland	8.491,9	8.148	8.304	-4.0%	-2.26%
Greece	15.432,2	14.256	14.970	-7.6%	-3.08%
Spain	34.719,9	33.481	37.422	-3.6%	7.22%
France	52.804,1	50.035	54.815	-5.2%	3.66%
Croatia	1.185,8	2.489	2.610	109.9%	54.56%
Italy	26.983,3	24.921	27.945	-7.6%	3.44%
Cyprus	351,5	327	366	-6.9%	3.96%
Latvia	1.560,5	2.219	2.409	42.4%	35.22%
Lithuania	3.108,1	3.771	4.058	21.3%	23.40%

²⁴ The sole flimsiness encountered concerns Croatia since, although it is placed on the left (Figure 9), Table 7 shows that its national income support budget should be subject to a 109.9% increase.

	TOTAL 2014-2020 A	TOTAL 2021-2027 (PROPOSAL) B	TOTAL 2021-2027 (ACTUAL) (C)	% CHANGE {[(B-A) /B]X100}	% CHANGE {[(C-A) /C]X100}
Luxemburg	235,3	225	229	-4.4%	-2.75%
Hungary	8.890,4	8.538	8.928	-4%	0.42%
Malta	35,5	31.6	32,3	-11%	-9.90%
Netherlands	5.376,8	4.927	5.023	-8.4%	-7.04%
Austria	4.845,5	4.645	4.845	-4%	-0.01%
Poland	21.025,4	21.239	21.682	1%	3%
Portugal	4.082,9	4.214	5.468	3.2%	25.33%
Romania	11.750,4	13.372	13.991	13.8%	16%
Slovenia	958,7	903	959	-5.8%	0.03%
Slovakia	2.686,9	2.753	2.847	2.5%	5.62%
Finland	3.662,9	3.567	3.636	-2.6%	-0.73%
Sweden	4.879,8	4.712	4.807	-3.4%	-1.51%

Source: own compilation

Even though full external convergence as projected by the Commission depended on the proposed national envelopes and not on the *de facto* agreed upon ones, the mechanism encapsulated in 2023-2027 CAP has not undergone significant changes. Hence, it essential to re-propose this calculation in order to understand whether the redistribution expected by the European Commission is possible in presence of the national allocations agreed upon for the current programming period.

To do this, the last numerical column is considered in that it illustrates the percentage changes between the actual national allocations for the period 2021-2027 and those in place between 2014 and 2020. What immediately stands out is that payments to Member States below the EU average are not the only to increase, meaning that the linear cut that should impact all the Member States has exceptions. According to what said, one could deduce that the allocations destined to those Member States "left behind" are increasing (e.g., Czech Republic Ceca, Hungary, and Slovenia). However, although there are increases in the payments destined to them (Hungary +0.42% and Slovenia +0.3%) these are so modest to be considered negligible. In contrast, payments destined to net beneficiaries like Italy, France and Cyprus not only do not undergo reductions, but are paradoxically subjects to increases (+3.44%, +3.66%, and +3.96% respectively). This implies that – following the application of an average 3.9% linear

cut in their allocations - these will remain more or less unchanged compared to the previous programming period.

Hence, it seems that the protests raised by some Member States (laid on the left) proved fruitful and that, even though their own have denounced the dangers in maintaining direct payments as the main source of income support, the vicious circle that sees high-income companies getting most of the resources will be further exacerbated, at least in these countries. Place that there are better instruments to consolidate farmers' position in the single market and that, in contrast, direct payments could cause trade distortions, if the Commission aimed to level out the resources distributed through a process of full external convergence, it is likely that between 2023 and 2027 this will not be possible and that, though to a lesser extent, disparities between Member States will persist. It will be interesting to examine in the future whether or not these predictions coincide with the truth.

4.3.1.3 Pillar II and Crisis Reserve in the 2021-2027 CAP budget

The reduction in the resources allocated to Pillar II in the current programming period can be considered a missed chance for the EU, its rural communities, and the environment as a whole. The total agricultural budget amounts to 343.95€ billion (in 2018 constant prices), with about three quarters (75%) allocated to Pillar I and less than a quarter (22%) attributed to Pillar II, to which 8€ billion must be added as provided under the Next Generation EU. In nominal terms and assuming an average inflation of 2% per annum for the period 2021-2027, the CAP budget remains more or less unchanged compared to the previous programming period. Instead, in 2018 constant prices, there is a 10.2% reduction in CAP resources (about 39€ billion), equal to the resources allocated to Pillar II in about one year.²⁵ In order to compensate such reduction, an increase in national co-financing rates proved essential so as to maintain public support to the EU rural areas at least close to the past one. In addition, as the EU Member States can still redistribute resources, these will continue to benefit from the chance to transfer up to 25% (not 15%) of their CAP appropriations between income support and rural development. On one hand, Member States can relocate resources up to 25% from Pillar I to Pillar II measures (no matter which), with the chance to increase them up to 15 percentage points so as to cover environmental actions and 2 percentage points to support

²⁵ About half of such reduction must be attributed to the Brexit in that the United Kingdom has been a net CAP contributor with around 2.7€ billion per year.

young farmers. On the other hand, transfers from Pillar II to Pillar I can be up to 25%, with a further chance for Member States receiving direct payments below 90% EU average to extend this percentage to 30% (condition satisfied by Estonia, Latvia, Lithuania, Portugal, Romania, Slovakia, Bulgaria, Poland, Finland, Sweden, and Spain). Hence, just like during the 2014-2020 period, transferring resources from Pillar II to Pillar I might be an appealing option for numerous Member States, thus making the ambition to the *de facto* support farmers' income unreachable, at least through the measures and tools identified as "appropriate" in Chapter 2.

However, not all is lost! The resources provided under the Next Generation EU (8€ billion) will in part replace those that the European institutions should have attributed to Pillar II. These will be crucial to support climate and cost-effective agricultural practices such as organic and precision farming as well as to connect the agricultural sector with the processing industries for organic farm products. In other words, even though the Next Generation EU package is time-limited, it could support farmers in building a more resilient agricultural sector.

Moving on, even though the 2021-2027 CAP has executed none of the proposals listed in section 2.2.1.3 (e.g., co-financing Pillar I, excluding large farms from the direct payment regime and supporting them through Pillar II, replacing Pillar I greening measures with Pillar II measures that pursue similar goals), it introduced alternative mechanisms to support farmers during a crisis, among which is the Agricultural Crisis Reserve.

Introduced in 2013 and designed to support agriculture in times of crisis, it can be used to finance exceptional measures aimed to counter market disruptions affecting production and distribution. However, Member States never used it since - being made up of resources subtracted from direct payments - its activation would have entailed corresponding cuts in Pillar I resources.

In consequence, European Institutions decided to decouple the new reserve from CAP direct payments as well as to make it permanent (no longer *ad hoc*) in the post-2020 CAP. With an annual budget of 450€ million (at current prices) - extendable up to a maximum of 1.5€ billion - this should help farmers to cope with price unstableness. Then, in case it is not enough, the "financial discipline" mechanism should be activated, but just as a last resort. This is a tool that reduces direct payments excluding the first 2.000€. Last, the new crisis reserve would allow greater automatism in its activation, so making itself available to farmers in case of a sharp drop in agricultural income above a threshold set by the Commission.

In “Experiences of rural areas with European Union’s COVID-19 response measures” published by the EU Committee of the Regions on 21 January 2021, Alan Matthews and Rossella Soldi pointed out that *“An effective agricultural crisis reserve is clearly an essential part of the tool kit to respond to any future pandemic emergency, and it needs to be properly financed on a sustainable footing”*. Hence, such budget-neutral crisis reserve should support the agricultural sector in dealing with unexpected market returns due to crises and emergencies.

To conclude, even though we demonstrated that Pillar II measures are more appropriate to support farmers’ income and increase their resilience when in presence of unstable market returns, most of the CAP resources are still earmarked to Pillar I, thus triggering further specialization and agricultural intensification to the detriment of the climate and the EU social fabric. However, wanting to look at the glass as half full, if the European institutions have not succeeded (or did not want) in solving the problems underlying farmers' weaknesses – namely low yields and low incomes – the EU farmers and rural communities will at least be able to benefit from a budget-neutral crisis reserve to counter the crises that, also because of the new CAP, will occur in the future.

4.3.2 The 2021-2027 CAP Influence on Labour and Land Markets

Even though the 2013 Ciolos reform has attempted to redistribute resources to the benefit of the small-size farms, between 2014 and 2020, land acquisition has speeded so fast that – to date – those without a farming tradition meet serious problems in entering the profession. This has in turn resulted in job losses, degradation of agricultural land and agri-food products as well as increase in intensive crops and livestock farming. In the words of the Commissioner-designate Janusz Wojciechowski (October 1^o, 2019)

[...] during one decade, from 2005 to 2015, we lost four million farms in the European Union. The number of farms was almost 15 million, and after a decade there were fewer than 11 million farms. If we lose four million per decade, it is 400.000 per year. More than 30 000 per month. More than 1.000 per day. Our debate is scheduled to last three hours, which means that during this debate more than 100 European farmers will probably lose their farm and their job. For many of them it will be a tragic, shocking situation because it not so easy to be a farmer today and then tomorrow to do something different – to be a taxi driver, for example. In many cases, this is a dramatic situation for European farmers.

As mentioned in section “Assessing CAP Influence on EU Labour and Land Markets” (2.1.2), place that direct payments are hectares based, these encouraged land acquisition to the point

that – to date - EU farms are getting bigger and bigger whereas the smaller ones are forced to close or be absorbed by large companies. Solutions to this could be to provide better support to small and young farmers that produce public goods rather than to large and industrialised companies as well as to introduce “social conditionalities”.

On one hand, even though the 2021-2027 CAP provides that EU Member States should redistribute at least 10% of their national income support budget to small and medium-size farms and that at least 3% should be allocated to young farmers (up to 40 years old), Pillar I remain the main source of income support and the budget destined to Pillar II has been further reduced. In particular, place that 68% of EU farms have an economic size less than 8.000€ (European Coordination Via Campesina, 2021), to redistribute just 10% of Member States’ budget, whose application still depends on Member States’ willingness, is not enough to *de facto* support the smaller and more efficient units. The same applies to the Complementary Income Support for Young Farmers in that its non-binding nature does not even concede the hope that there will be significant changes in the future. In this respect, it is worth recalling that, even though the binding Young Farmer Scheme provided that Member States should redistribute up to 2% of their total national income support budget, between 2014 and 2018, just 0.79% has been allocated to young farmers. Hence, it stands to reason that a non-binding mechanism will not produce better results. In contrast, not allowing access to land, it is likely that the 2023-2027 CAP will make it even more difficult for young people to settle. In general, including mechanisms to redistribute direct payments without reforming the logic on which these are based will not result in significant changes in the long run. For instance, if a doctor suggests to an overweight patient to increase daily calories (Pillar I resources) leaving him to decide whether or not to exercise (redistribution), it is likely that within one year our patient’s health condition will have remained unchanged if not worsened. As consequence, one might assume that EU agricultural companies will become fewer and larger to the detriment of the smaller ones.

On the other hand, while the European institutions have not succeeded in reversing land and income accumulation processes, these might nonetheless strengthen workers position in the EU agricultural sector. More in depth, although in the most acute phase of the Covid-19 pandemic the EU institutions and national governments recognised agricultural labourers as “essential”, most of them continue to live in precarious conditions where deprivation and human rights violations are commonplace. To date, more than 11 million people work in the

EU agricultural sector, most as part-time or seasonal labourers, often forced to accept black labour, poor wages, gruelling work schedules, and substandard housing, to the point that critics labelled such conditions as “modern enslavement”. Hence, in the attempt to stop exploitation and boost labour standards, the European institutions agreed the CAP “social dimension”, a mechanism aimed at subordinating the allocation of Pillar I resources to compliance with minimum labour standards so as to ensure agricultural workers at least decent working conditions, protection and health as well as to sanction those who do not ensure working conditions in line with the ILO conventions and the EU/national legislation concerned.

More in depth, “social conditionality” concerns equal treatment, gender fairness, social security, remuneration, working time, health, and safety. In other words, it aims at ensuring equal working conditions for all the labourers employed in the agricultural sector, including migrant workers. Although this is a first, small step towards a more just and fairer agriculture in Europe, the process for his approval has been long and tortuous. Not being part of the Commission’s original proposals, the European Parliament presented it for the first-time during negotiations held following the Commission's 2018 proposals, for then being approved three years later on 23 November 2021. The length of this process is due to – apart from the subordination of the social dimension to the approval of the CAP itself - Member States’ resistance, persuaded that labour law was not within the EU competences, that this provision did not fall within the scope of the CAP and that the inclusion of social conditionalities would have exacerbated the bureaucratic burdens that European agricultural companies already face. However, its inclusion in the 2023-2027 CAP represents a Parliament’s success as well as an historic step for the EU as a whole. In the words of Paolo De Castro: *“From now on, the CAP will no longer fund farmers who do not respect the rights of their employees, ending unfair competition with the vast majority of farmers who take care of their workers.”* (Fortuna, 2021).

However, the social dimension of the CAP will be implemented only by the EU Member States that will be ready by 1 January 2023 (voluntary application) and then apply definitively from 1 January 2025 (mandatory application), year in which all national labour inspectors' agencies will be linked to the EU structures providing CAP contributions. The idea behind this timespan is to permit Member States the time necessary to understand the changes introduced and to organise the connections needed among all the involved agencies. In all this, the real game-changer consists in the “rendez-vous” clause introduced by the Parliament and the Council. This will be central to build the CAP’s social pillar, whereas the Commission will be in charge

to monitor the adopted measures' potential with regard to workers' conditions as well as to propose improvements where appropriate. In particular, the monitoring action conducted from the initial stages will make it possible to assess the success of the social conditionality mechanism and – once proved its impact - consolidate its action so as to broaden its scope and/or the range of areas under its competence. For instance, the Commission could introduce the social conditionality principle into Regulation 492/2011 concerning the circulation of workers within the EU, so dramatically impacting seasonal agricultural workers.

To conclude, while there is no doubt that the post-2020 CAP has made progress concerning agriculture's social dimension, it will not stop neither settle the disappearance of thousands of farms, the loss of farmers' incomes, the ageing of the agricultural population, the depopulation of rural areas, the impact of industrial agriculture on the environment, the intensification of production patterns as well as land concentration. Indeed, no significant change has been introduced that would guarantee *de facto* support to small and young farmers and it is not clear how - under such conditions - a fairer CAP can be accomplished. Incorporating cross-compliance aimed at improving the working conditions of agricultural labourers, without considering that it is just productivism (on which direct payments are based) that has led to such disaster, will not bring significant changes in the long run. Besides, place that the biggest protests against cross-compliance rose up from the Member States and that it will be up to them to decide whether or not to turn it operational in 2023, it stands to reason that it will be applied just in 2025, thus endangering the future of thousands of agricultural labourers. Whether the European Institutions want to turn the CAP fairer and more sustainable, these should make redistribution binding and push Member States to make the social dimension operational as early as 2023.

4.3.3 Market and trade effects of the 2023-2027 CAP

Following a long period of deregulation, the Common Market Organization (CMO) rebounded again. The 2023-2027 CAP concerns numerous sides of the world and European agricultural markets, ranging from quality schemes to the provisions related to the crisis reserve and - above all – it aims to increase the competitiveness of the EU agricultural sector while stabilising farmers' position in the agri-food value chain. In particular, the measures agreed on 25 June 2021 are a continuation of the Omnibus Regulation and should help better prevent and

manage agricultural crises through an intentional reduction in production and the monitoring by the European observers before the crisis spreads. In addition, the chance to collectively manage production, at present limited to certain products under protected designation of origin (PDO), will be extended to all products with PDO or PGI (protected geographical indication) status. Last, place that the 2014-2020 promotion policy has been scarce in supporting the sector during the transition and in pushing consumption towards sustainable choices or healthy diets, the 2023-2027 CAP aims *inter alia* to increase its contribution in the promotion of sustainable production and consumption, in line with diets evolution as well as maintaining or even increasing the policy's potential in supporting the competitiveness of the agribusiness sector (Matthews, 2021 B).

Hence, place that the 2023-2027 CAP will assign legislative responsibilities to the EU Member States, one cannot be sure about what will be the new CMO regulations' consequences, at least until the National Strategic Plans are agreed by the Commission. Any changes in the CAP could turn the EU an essential market to the developing countries or – as an alternative - a major competitor able to swamp local markets with cheap and subsidised products. This will depend on what the Member States decide to do. Nevertheless, this section aims to understand how the 2023-2027 CAP could change trade with developing countries as well as their agricultural production and local markets.

To begin with, the evaluation conducted by Lukas Kornher and Joachim von Braum (2020) illustrates that a greater redistribution of direct payments, a higher premium for first hectares, and a lower CAP will not have significant impact on trade in agricultural products with Africa. More in detail, the simulation in which Pillar I support has been reduced by 50% shows just minor alterations in total EU agri-food production and trade with African countries. However, there is a major decline in EU meat, cereals, and oilseeds exports, for most compensated by other countries' exports and - even if to a lesser extent - from increased local production. It follows that if a 50% cut in direct payments is not associated with major changes in agribusiness trade, one cannot expect overall improvements in developing countries' economies through the 2023-2027 CAP or new CMO regulations since these do not alter the nature or amount of Pillar I resources. On the other hand, allocating more resources to small and medium-sized EU companies could have reduced EU exports and thereby created more trade opportunities for developing countries.

Moving on, the quality schemes (e.g., PDO and PGI), established under the 1958 Lisbon Agreement, aim to protect product names as well as to promote the characteristics associated to their geographical origin. In addition, these are used to ensure the protection of intellectual property rights as well as to increase the economic value of the products associated with them (knowing the origins of the products, consumers are willing to pay a higher price to obtain it). These have an important role in the current CAP, the European Green Deal and its initiative on corporates' due diligence and accountability. Hence, the EU promotes their use and recognition, not just among European companies, but also in third countries. Indeed, EU and non-EU quality schemes can be mutually recognised, provide a higher degree of visibility for third countries' agri-food products and, most important, strengthen the position of producer groups in the global value chain. However, even though the quality schemes are intended to create benefits for their owners, some legal loopholes risk weakening their effectiveness.

In this regard, the evaluation conducted by Melina A. Campos (2021) on the consequences of quality schemes on Central American coffee producers shows that these can prevent producer groups from receiving the expected commercial benefits. More in detail, the assessment reveals that 10.5% of total EU coffee imports come from Central America, where about 87% of the coffee-producing farms are family-run and smaller than 10 hectares. Among them, numerous groups use the PDO scheme in that it should allow them to obtain higher revenues, equal to approximately 45.19€ more per bag than world market prices. However, since the coffee business in Central America lacks economic profitability, the expenses required to maintain the PDO standards cause producer groups extra losses or - in the best case - what these earn is just enough to cover the expenses. Overall, the increase in bag value resulting from farmers' compliance with PDO standards has as sole result to ensure the continuation of the quality scheme itself.

Along these lines, another obstacle to the improvement of the Central American small producers' economic conditions concerns recognition of the nature of the exported good itself. Indeed, the coffee produced in Central America is imported as a raw material and not as a processed product. This implies that once PDO coffee is combined with other blends or undergoes a roasting process, its PDO certified characteristics become invisible to consumers. In consequence, not realising the product's origins, EU consumers are unwilling to pay a higher price, thus maintaining producers in a disadvantageous commercial position (colonial-type relationship). In addition, the absence of an institutionalised monitoring system aimed at

monitoring the enforcement of intellectual property rights within the EU has meant that an adequate exchange of intellectual property rights between third country producers and EU importers has been non-existent. Last, even though the EU multinationals (e.g., Tchibo) have on several occasions used the name of Central American coffee producers (e.g., Marcala) without consent, EU and national institutions did not allow producers to claim their rights through arbitration or conciliation procedures. In other words, EU directives and regulations are not enough to turn the rights associated with quality systems operational and do not provide adequate mechanisms to protect the rights of third country producers as well as those of their own consumers.

To conclude, concerning the EU objective to turn agri-food production more sustainable, there is still indecision among the experts as to what its impact might be on agri-food production and trade. Indeed, although on one hand it is expected that more stringent environmental conditions will be applied, on the other hand it remains up to the Member States to decide the environmental and climate standards to which farmers will be required to adhere. For instance, the experts agree that greater freedom in implementation choices will cause Member States to make greater use of the Voluntary Coupled Support, which (as illustrated) risks hindering EU's environmental and climate goals. In addition, this would lead to an increase in production and exports, with subsequent consequences for global and developing countries' prices. However, should "green architecture" be *de facto* implemented, EU agri-food production would still be supported through agri-environmental and climate measures, so further exacerbating the gap between the EU and developing countries.

In this regard, the assessment conducted by Hans Wetzels (2021) regarding the possible consequences of precision agriculture on developing African States is of particular interest. Indeed, precision agriculture is spreading fast in the Continent since its use ensures good economic returns and better management of natural resources. However, it threatens to exacerbate the gap between large and small farmers who - due to the expenditures associated with it - cannot access it. But what role does the EU have in this context? The agreement on the 2023-2027 CAP and in particular the inclusion of precision agriculture in the list of eligible practices within the eco-schemes opens numerous doors to developing countries in that the technologies developed in the EU could be exported there. This could cover the initial costs associated with precision agriculture in countries where small farmers cannot access such resources, thus enabling the gaps which separate these from the large producers to be reduced.

On the other hand, the development of precision agriculture through subsidies could further strengthen the position of the large partner companies partnering with European giants, to the detriment of small farmers excluded from such collaboration. In addition, the report published by the European Parliament's Research Service points out that data collection by large agricultural companies menace leading to anti-competitive practices including price discrimination and speculation in commodity markets that – in turn - would worsen farmers' conditions in developing countries and food security in the areas most at-risk. In this context, policymakers need to concentrate on the real needs of farmers and the environment.

Hence, place that the criticisms highlighted in this section could interest all raw materials' producers (e.g., palm oil, soybeans, cocoa, bananas, cotton, etc...), whether the EU really wants to improve and/or consolidate farmers' conditions not just in the EU but also in the developing countries, it is essential that the Commission: introduce monitoring mechanisms so as to ensure that producers' intellectual and economic rights are respected; make the declaration of the agricultural products' PDO characteristics obligatory; integrate quality schemes in transnational associations of producer organisations under the CMO; streamline and normalise procedures for the application and mutual recognition of third countries' producer groups' rights within the EU market. In general, the Commission should seek closer cooperation with third-country authorities and find synergies so that quality schemes are correctly applied and produce the desired results. In addition, it should align its trade policies with development policy objectives.

To sum up, despite the EU's rhetoric, the 2023-2027 CAP does not guarantee means aimed at consolidating farmers' position and agri-food production in developing countries. In particular, the persistence of Voluntary Coupled Support, combined with the use of the above-mentioned instruments, does not seem to be consistent with the EU development policy. Hence, it is essential to introduce trade policies aimed at supporting *de facto* agri-food production in developing countries or – at least - an ex-ante evaluation of CAP strategic plans, in line with the European Green Deal's ambitions, initiatives and goals.

4.3.4 Conclusions

The previous sections aimed to assess whether the 2023-2027 CAP is ambitious enough to meet the socio-economic challenges the agricultural sector must address as well as to do its own part in the Great Agri-Food Transformation.

Concerning Internal and External convergence, even though the European Commission has tried to turn the redistribution of direct payments between and within Member States fairer compared to the previous programming period – as illustrated – the mechanisms of degressivity, capping and redistribution remain non-binding, meaning that Member States can decide whether and how to implement them. However, place that the biggest protests to the Commission's proposed changes rose up from the Member States, it is very likely that these will attempt to reduce their potential and limit their performances. Hence - just as happened in the 2014-2020 programming period - it is plausible that even between 2021 and 2027 Member States will redistribute less resources than what they could and that will not succeed in turning the direct payments value more homogeneous. In other words, the vicious cycle whereby high-income farms get most of the resources will be further exacerbated.

Moving on, this paper illustrated that in the attempt to improve the agricultural labourers working conditions the European Institutions introduced the PAC “social dimension”, a mechanism meant to subordinate the allocation of direct payments to compliance with minimum work standards. However, place that the budget allocated to Pillar II has been further reduced and that Pillar I remains the main income support tool, direct payments cannot *de facto* support small farms which – as widely illustrated - are more inclined to hire extra workers. Hence, even though it is true that the post-2020 CAP has been socially improved, this will not prevent the disappearance of thousands of farms and hundreds of jobs as well as the concentration of land in the hands of a few.

Then, we illustrated that, by not altering the nature and amount of Pillar I resources, the new CMO regulations are not associated with major changes in trade in agri-food products or general improvements in developing countries' economies through the 2023-2027 CAP. In particular, the extension of the quality schemes as well as innovative agricultural techniques (e.g., precision agriculture) menace causing developing countries' farmers to miss out on gains or incur in extra losses. Indeed, whether the green architecture is to be implemented, the EU production would be supported through agri-environmental and climate measures, so risking to further exacerbate the gap between the EU and developing countries. To top it all off, by not

guaranteeing farmers accessible tools to claim their rights, the EU threaten to maintain them in a subordinated commercial position or - in other words – in a colonial-type commercial relation.

Hence, based on what has been mentioned so far, while there is no doubt that progresses have been made concerning labourers' protection, what agreed by the European institutions will not be enough to meet the socio-economic problems the agricultural sector must address and – in general – to contribute to the Greet Agri-Food Transformation.

4.4 GENERAL CONCLUSIONS

The post-2020 CAP was supposed to lead to fairer and sustainable agriculture, better allocation and distribution of financial resources and greater environmental protection. But a “fairer” and “more sustainable” CAP can mean numerous things, from a fairer distribution of Pillar I direct payments within and between the Member States to a CAP that respects socio-economic, gender, and environmental conditions inside and outside the European Union.

However, the present thesis illustrates that the EU agriculture ministers decided not to threaten the interests of major beneficiaries such as large landowners and not to introduce radical changes to the EU agricultural sector. Therefore, by exonerating themselves with the usual rhetoric of productivism and exceptionalism, the EU Member States threat obstruct the European Green Deal and the Paris goals.

Likewise, the European Institutions are also responsible in that, by giving the Member States the chance to decide how and which instruments to implement - justifying this choice with administrative, environmental, and social concerns - these are also attributing them the chance to decide the extent to which the Common Agricultural Policy will contribute to the Great Agri-Food Social and Environmental Transformation and risk watering down the projects these have promoted. Apart from the fact that giving this power to the Member States undermines internal EU coherence, an agricultural policy focused on "flexibility" and "subsidiarity" could just produce results in case Member States include ambitious environmental, climate, and redistribution goals in their National Strategic Plans which, as illustrated, is not happening.

To achieve a more equitable, sustainable, and - above all - common agricultural policy, the EU Member States and the European Institutions should broaden their vision and make

commitments that are more concrete and ambitious at the same time. To do this, natural and economic resources should be better saved, protected, and redistributed, which implies that EU agriculture ministers should better design how the CAP measures are implemented, and resources spent within the EU. In addition, these should strike the right balance between communion and separation, in line with the environmental and socio-economic needs of the territories where the measures apply.

Nevertheless, it is fair to admit that certain European bodies are more responsible than others. In this sense, it remains unclear how the Council can claim to respect the Commission's powers, given that it systematically obstructed its proposals and prevented it from - *inter alia* - introducing concrete obligations for the Member States. While streamlining the CAP is needed, the EU should stand firm in its position to make the agricultural sector *de facto* fairer and more sustainable, reducing inequalities within and outside the European Union and subordinating the big, industrialised companies economic interests to all the citizens' environmental and social needs.

Indeed – considering what has been abovementioned - the question is: what political stance has the EU adopted to solve problems such as climate change, the loss of biodiversity, the deterioration of ecosystems, the disappearance of farmers, the concentration of land, and low generational renewal? Even though the European Union has tried to steer its Member States in the right direction, numerous people might be disappointed to note that the 2023-2027 CAP may repeat (when not exacerbate) the same pattern as its predecessor in the sense that all the changes concerning the CAP are an evolution rather than a revolution.

In conclusion, to produce commendable results, the European Agricultural Policy should allow its socio-economic and environmental dimensions to blend in that a better distribution of financial resources could strengthen the European social fabric and advantage the environment as well. In addition, the bulk of the CAP budget should be directed to measures that bring concrete results in social, economic, and environmental terms or, as an alternative, to those territories with the most pressing environmental problems (soil erosion, water pollution and depletion, decline in biodiversity, extreme weather events). In practice, this implies that – together with political changes - the competent authorities and the CAP should invest in environment-sustainable technologies and farming practices; in farmers' knowledge; in training the administrations to make the distribution of payments “fairer”. Last, talking about fairness

and sustainability is talking about inclusion and solidarity - both within and outside the EU - in relation to which there is still a long way to go.

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EXECUTIVE SUMMARY

The present thesis aims to assess whether the Common Agricultural Policy can contribute to the Great Agri-Food Transformation. The health and the environmental crises - together with the precarious working conditions of the EU and developing countries' agricultural labourers – urge a change in how the authorities shaping the agricultural sector and the people operating within it act. The idea to orient this thesis towards such issue stems from the awareness that the European agricultural sector - despite the numerous changes it has undergone - maintains a central role in the EU political landscape as well as in our lives. We all - though we might not realise it - interact with agriculture every day. Furthermore, at a time when climate change is at the centre of the global attention, the dual nature of such sector, able to influence and be influenced in turn by the surrounding environment, acquires greater importance. Hence, the present thesis aims to understand how the EU agricultural sector can be boosted or amended in the next programming periods.

More in detail, Chapter 1 (On the Road to the Great Agri-Food Transformation) aims to put the 2014-2020 CAP in a broader context, presenting an examination of the main changes that affected agriculture since its inception. Then, it concentrates on the Paris Agreement, the process that led to its approval, its core elements and – last - its consequences for agriculture. The Chapter concludes with a focus on the European Union, illustrating the agreements and the policies associated to the agricultural sector.

In particular, the Chapter opens with a historical overview, meant to delineate the drivers along which the Common Agricultural Policy has been built as well as to understand the root causes of its exceptionalism. In this regard, a first turning point occurs during the industrialisation, when the need to increase agricultural productivity and profitability led thousands of farmers to specialise, thus permitting to increase the agricultural yields and to export the products in excess. A second turning point coincides with the end of the Second World War as the need to be self-sufficient urged numerous decision makers to stimulate and subsidise production. The word "productivism" expresses the ethos of that time in that attention was oriented to growth, production, optimisation, and maximisation. In consequence, it forced thousands of farmers to abandon their lands when unable to keep up with these changes. The word “exceptionalism” is as much as important in that it indicates the privileged treatment reserved to the agricultural

sector since - at a time when liberalisation was rebounded after years of protectionism – no politician was willing to stop stimulating production and open domestic agricultural markets to external competitors. Then, the third turning point occurs in 1964, when the GATT negotiations opened. It was just then that liberalising agricultural markets has been seriously considered and the attention of the policy makers turns from quantity to quality, from productivity to sustainability. Last, the fourth turning point coincides with the approval of the Paris Agreement in that it marked a change in the way the EU managing authorities shape and design the Common Agricultural Policy.

Moving on, the Chapter concentrates on the latest turning point - the Paris Agreement - the process that led to its approval, its main elements, and its impact on agriculture. This agreement came at the end of a process lasted more than 20 years (1992-2015) since the impossibility to reach a compromise made impossible to go ahead. In particular, the clash did not concern so much the goals but rather the way the Member States should reach them. Hence, the “principle of differentiation” made it possible to go forward, permitting States Parties to open a new historical course. In detail, the final document addresses all the aspects for the adoption and implementation of the Paris Agreement, including the principle of common but differentiated responsibility, where its core elements concern the means of implementation, adaptation, and mitigation. In this context, the Paris Agreement identified agriculture as a critical sector in that, in order to reach the 2°C global target, also the agricultural sector must contribute. However, since the immediate aftermath of its approval, it was clear that more decisive steps would be needed and that, in the absence of significant changes in the way the agricultural sector was managed, it would remain on the side-lines and not contribute to the 2°C target. As a result, the European Union agreed to reduce its overall greenhouse gas emissions by at least 40% and to reduce agricultural emissions by 30% by 2030.

Along these lines, the Chapter concludes by reviewing the main EU initiatives and projects supporting the Paris Agreement, such as the European Agricultural Fund for Rural Development, the EU 2030 Climate and Energy Framework, the Renewable Energy Directive, the Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy, Climate Adaptation Strategy, EU Food 2030, each of which impacted the 2014-2020 CAP.

Moving on, Chapter 2 (On the 2014-2020 CAP) aims to examine the 2014-2020 CAP and to present political recommendations to improve it. In particular, it presents a quantitative

and qualitative, environmental and socio-economic assessment, demonstrating that - despite the CAP is not useless - there is still much room to turn the EU agricultural sector more able to contribute to the Great Agri-Food Transformation.

It opens by assessing whether there is coherence between CAP goals related to climate action and the actual environmental needs at the state and farm levels. In this regard, the evaluation conducted by Alliance Environnement (2018) demonstrates that, although with some exceptions, the CAP shares the same farmers' and foresters' climatic ambitions. Then, it continues illustrating the 2014-2020 CAP's strengths and weaknesses concerning adaptation and mitigation to climate change. In this case, the unjust allocation of resources between Pillars, the absence of mechanisms to monitor their use, and the failures in implementing CAP measures (absence, tardiness, or undemanding implementation choices) undermined CAP potential concerning adaptation and mitigation and sometimes triggered maladaptation practices. This is because, between 2014 and 2020, Member States' greater concern was to minimise the impact of the 2013 CAP reform concerning farmers' income support and to maintain, when not increase, agricultural production. In other words, Member Countries subordinated mitigation and adaptation to economic interests, sometimes even sustaining maladaptation practices. Hence, even though the Member States and the EU committed themselves to pursuing the 2°C global target and the SDGs, the 2014-2020 CAP appears to be not able to *de facto* contribute to their achievement.

Then, the Chapter concentrates on the most significant issues introduced in 2013 or emerged during the 2014-2020 period related to the CAP budget. In particular, it focuses on the internal and external convergence processes, the weight of Pillar II in the total CAP budget, the Pillar I impact on the labour and land markets and, last, the relationship existing between EU imports/exports and emerging countries' price and production levels. Concerning the internal convergence process, even though the 2013 reform attempted to provide *de facto* income support to small and medium-size farms through redistribution of direct payments among and within the EU Member States, the chance given to the Member States on how to implement the mechanisms of degressivity, capping, and redistribution compromised their effectiveness. Along similar lines, the external convergence process, through which resources among states should be better distributed, not produce the expected results but rather could paradoxically exacerbate disparities among farmers and lead to distortions in the functioning of the single market. Then, concerning CAP's impact on the labour and land markets, the present research

detected a direct relationship between the amounts of CAP resources and the prices of agricultural lands, whereas an inverse relationship between the amounts of direct payments allocated to large farms and the number of agricultural jobs. The Chapter continues to illustrate the relationship existing between CAP measures, imports/exports of agricultural products, and emerging countries' price and production levels. In detail, it reveals the absence of a direct relation between direct payments, EU imports, EU exports, and production in that it varies according to numerous factors such as the nature and the share of the products brought and sold, the presence of other actors, and the policies adopted by the importing states. However, what emerges is that – on the one hand - the EU has a tight grip on developing countries and that such relation is sometimes close to a colonial one, whereas - on the other hand - EU exports tend to hinder structural changes as well to distort international trade. Last, concerning Pillar II, the lower resources allocated to it and the chance left to the Member States on how to implement its measures limited their potential. Overall, the 2014-2020 CAP does not seem to address the challenges the EU agricultural sector should cope with.

Then, Chapter 3 (The CAP Under Restructuring) outlines the framework within which the 2023-2027 CAP is encapsulated. In particular, the 2019-2020 biennium has brought so many changes that exploration is needed to understand the structure and strategic orientation of the new Common Agricultural Policy.

The 2019 EU elections led to the establishment of a new Parliament and Commission which – in agreement with the Council - are responsible for shaping the structure and the strategic orientation of the Common Agricultural Policy. In particular, the new Commission President Ursula von der Leyen and Commissioner-designate for Agriculture Janusz Wojciechowski are the main ones responsible for such orientation. In this respect, our assessment revealed that, although among their main goals there was that to turn the CAP more sustainable, other actors can render this ambition hard to accomplish. For instance, place that about 50% of the AGRI Committee members are interested in maintaining the allocation of CAP resources as such, the strategic orientation proposed risked being mitigated. Hence, the importance of exploring the composition of the main EU bodies responsible for shaping the Common Agricultural Policy.

The Chapter continues examining the European Green New Deal and reviewing its main sub-strategies associated with agriculture such as the From Farm to Fork initiative, the European Climate Law, the EU Biodiversity Strategy 2030, the Circular Economy Action Plan, the Zero Pollution Action Plan. These set unprecedented quantitative and qualitative targets such as (to

mention a few) making the EU a carbon-neutral continent by 2050, turning at least 25% of EU lands organic, reducing the use of pesticides and fertilisers by at least 50% and 20%. Hence, in order to make the achievement of these objectives possible, the Common Agricultural Policy must be designed and shaped according to these guidelines.

However, the eruption of the Covid-19 crisis which paralysed the world as whole caused a reduction in GHG emissions and an improvement in our ecosystems' conditions, thus encouraging (at least in the short period) the achievement of the EU environmental and climate goals. Hence, the Chapter proceeds with an examination of the correlation between the Covid-19 crisis and the Paris, the EU, and the CAP's climate objectives. In this regard, the assessments conducted by Saadat et al. (2020) and the International Energy Agency (2020) reveal that the health crisis led to a general improvement in the world's environmental conditions. However, as far as the Paris targets are concerned, even though the Covid-19 pandemic has caused a short-term drop in the global GHG emissions, its long-term climate results will depend on governments' plans and the commitments made to meet the Paris targets. Whereas, concerning the EU targets, the evaluation conducted by Tensay Hadush Meles, Lisa Ryan e Joe Wheatley reveals that, even though the pandemic led to a short-term decrease in GHG emissions, existing climate measures will not be enough to pursue climate neutrality by 2050. Last, concerning agriculture, given that agri-food demand is in general less elastic than demand for other goods, the Covid-19 pandemic caused just modest changes in agri-food consumption, production, and their associated GHG emissions.

The Chapter concludes examining how the Covid-19 crisis has impacted the process of approval of the 2021-2027 EU Multiannual Financial Framework and, in consequence, the resources designated for the European Green New Deal and the CAP. Indeed, the Member States' national appropriations have been altered and new means of support (such as the Next Generation EU) introduced to ensure a rapid and, above all, sustainable economic recovery. However, this paper shows that what is presented as a major transformation is rather a gentle approach to climate change as the *ad hoc* measures designed to affect the economic sector aim to return as soon as possible to pre-pandemic "normality", where the transition to more equitable and low-carbon societies seems to be a secondary objective.

To conclude, the last Chapter (The CAP Post-2020: "All Change Is Evolution Not Revolution) examines the 2023-2027 CAP from environmental and socio-economic perspectives. In detail, it compares the previous and the current Common Agricultural Policies

and analyses - whenever possible - the national strategic plans submitted to the Commission by the EU Member States so as to comprehend whether the new CAP is able to contribute to the Great Agri-Food Transformation.

The Chapter opens by providing an overview of the 2021-2022 CAP transition period, the process that led to its approval and its main elements, thus showing that, although the transitional regulation will allow farmers to continue receiving the support these need for their activities as well as provide the Member States with the time to develop their CAP Strategic Plans, a delay of two years in the new CAP implementation is disappointing when it represents an improvement compared to the previous one.

Then, the Chapter concentrates on illustrating whether there is coherence between the new CAP measures and the EU climate and environmental goals, revealing that the 2023-2027 CAP does not address all the weaknesses traced in its predecessors but – rather - has sometimes led to their further deterioration. Even though the present research illustrated that their non-binding nature had limited their potential and results, no changes have been made in this respect if not for the “Complementary Income Support for Young Farmers” measure that, however, has passed from being mandatory to voluntary. In addition, the reduction in the resources destined to Pillar II, together with its administrative complexity, is another matter of concern in that hindered the CAP to *de facto* contribute to turning agriculture a flagship sector in the Green Transition. Then, the evaluation of the National Strategic Plans and the comparison with the previous programming period demonstrates incoherence between what is contained in them and the EU’s environmental and climate objectives (e.g., turn at least 25% of EU agricultural lands organic). Just as happened between 2014 and 2020, the chance given to the Member States concerning what to include in their National Strategic Plans has caused them to implement underfunded and/or unambitious measures/interventions. To top it all off, the CAP 2023-2027 permits peasant-farmers to expand their production, thus emitting extra GHG emissions. It seems that the Member States are still oriented to subordinate environmental objectives to economic interests. Hence, we observed that, although the measures/interventions are now better designed, these are still not enough to enable the Great Agri-Food Transformation to come true and the Green New Deal to be realised.

The Chapter concludes assessing whether the internal and external convergence processes are better designed compared to the past, illustrating the new weight of Pillar II in the total CAP budget, ascertaining the CAP impact on the labour and land markets, and investigating the new

relationships between EU imports/exports and emerging countries' price and production levels. Concerning the formers, even though the European Commission has tried to turn the redistribution of direct payments between and within the members more equitable, the absence of substantial changes is likely to produce insignificant results. In other words, just as happened between 2014 and 2020, it is probable that the Member States will redistribute less resources compared to what these could. Moving on, the Chapter concentrates on the new PAC "social dimension", a mechanism meant to subordinate the allocation of direct payments to compliance with minimum work standards. In this regard, although it is doubtless that its introduction represents a historic step, by not increasing the resources destined to Pillar II, the social pillar will be a lame one as it aims to mitigate the consequences of a problem without attempting to solve it directly. Last, the present thesis illustrates that the new CMO regulations threaten to worsen the conditions of developing countries' agricultural labourers and that the changes introduced (the extension of the quality schemes as well as innovative agricultural techniques) are susceptible to improving the EU agricultural workers conditions alone rather than all the others' ones.

Hence - according to what has been illustrated - it can be asserted that, although there is no doubt that the EU institutions introduced changes susceptible to enhance the Common Agricultural Policy from an environmental and socio-economic perspective, these are still not enough to allow it to *de facto* contribute realising the European Green New Deal objectives. In this context, it is probable that EU ecosystems and the working conditions of thousands of workers will continue deteriorating and that, based on this, the Great Agri-Food Transformation will not happen soon. However, all is not lost! It will be up to us to steer our choices towards a more sustainable and equitable future so as to turn the EU agricultural sector a cornerstone of a new green era.