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The integrated challenges of sustainable agricultural systems in relation to climate change

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Abstract. In the face of climate change challenges, the study empirically explores general challenges closely related to the productivity responses of sustainable agricultural systems. Addressing the effects of climate change at different stages felt by agricultural systems implies the adaptation of a new vision of the Common Agricultural Policy closely related to the adaptation mode and constitutes an important volume of information related to eco-conditionality. Also, the study underlines the closely related relationship between reporting to the forestry management of forest areas in terms of protecting agricultural and forestry crops from climate variables. The evolution of forestry systems and the conversion of the forest surface into another type of land use is very important to analyze because deforestation generates a large amount of GHG emissions, an analysis of the forest fund captures the current state from this perspective. The information was collected from the Agridata and Eurostat databases, being the basis of the research through the prism of common agricultural policies. The ability of the methodologies to support the advancement of agricultural adaptation to climate conditions involves research and development in all processes related to the purpose of adaptation.
Keywords: *climate change, sustainable, agricultural,biodiversity.*

Introduction

The depletion of natural resources, the increase in pollution and the intensification of climate change lead us to reassess the effects of integrating sustainable models of biodiversity protection and increase the need for adaptation. Carbon storage in the soil, the intensification of the efforts of the common agricultural policy adapted to the climate and re-technology are levers to reach ambitious production systems in terms of emissions, but what are these costs. Existing natural environments, climate, and agricultural practices worldwide as well as there is an acute need to maintain these areas soils, plants forming a circle in which pesticides have their role. The relevance of this study is based on the importance of the elements of good practice in the management of forest areas and forest curtains for the protection of the natural habitat at the foot of the development areas in Romania.

Another important point in the scientific literature on emissions from land use change is their correlation with deforestation. The conversion of forest area to another type of land use is very important to analyze because it generates a large amount of GHG emissions. Land use emissions are

the second largest contribution to greenhouse gas emissions, after emissions from fossil fuels. Their causes are multiple, but among the causes are also due to deforestation.

Also, some studies present estimations of emissions generated by the land conversions which indicate for example a minimum of 591 tonne CO_2/ha when conversing tropical forest into arable land and a minimum emissions of 260 tonne CO_2/ha when conversing temperate forest into arable land (Overmars et al., (2011).[8] Here is that although in competition in demanding environmental conditions through the PAC vision these deforestations are divided but common, the responsibilities regarding biodiversity cannot be addressed individually, therefore when we talk about pollution what affects others sooner or later affects you as Popescu reveals. (2021). [19] Furthermore, Acemoglu et al. (2012) show that technical progress towards a clean intermediate sector is optimal in terms of long-term growth in the presence of optimal environmental regulation according to Hemous, (2016). [2 - 3]

In addition to the capacity to capture carbon from the soil, there are several other important considerations in assessing agricultural systems for their potential and feasibility to mitigate climate change.

While carbon dioxide is the main driver of climate and anthropogenic change and has been the main focus of mitigation efforts, there are other greenhouse gases (GHGs) that make significant contributions to climate change. The presentation's main goal is to highlight the external obstacles that encumber the agricultural system in forest regions.

The inventory of methods used in agricultural systems does not necessarily reflect a standard of zonal development, but as a form of conservation instinct, nature reserves the right to prove its usefulness, the forests leaving room for meadows. The role of these meadows is vital for farmers, and there is a subsidy plan that stimulates the maintenance of meadows.

It is true that climate change also entails new innovative production models precisely to find new sources that are sustainable, meant to reduce costs for sustainability. This new approach is of particular interest to farmers alike and to researchers, the interference between needs and standards shows that the existence of an ongoing debate on how best to adapt agricultural practices to climate change is still relevant today.

Against the background of these debates, the whole world is facing higher levels of vulnerability. Our goal is to provide a visual representation of the dangers of a sustainable agricultural economy in the context of climate change's demands, as well as its worldwide repercussions. From this viewpoint, we emphasize why it is vital to prioritize vulnerabilities in the agricultural sector, the link between costs and subsidies, and the use of agricultural management in mountainous and hilly areas to prioritize the protection of forest areas and meadows.

2. Literature Review

Innovation Forest management is a primary concern in forest management, having ecologically focused technical, organizational, and economic content. During the research period, artificial regenerations accounted for a smaller percentage of total regenerated area than natural regenerations and soil, providing care for immature crops and helping natural regeneration. As claimed by Leal et al., 2019), agricultural land would represent one of the sources of atmospheric greenhouse gas emissions (GHG) in the context in which the not inconsiderable forest biodiversity could reduce this gap by capturing forest C. [5,9,10,11] The designation of indicators from agricultural systems is still an area to be explored for research to generate new solutions in the contribution of forestry to global climate change. Romanian forests offer tremendous potential for multifunctional land use, functioning as a source of social amenities as well as environmental preservation, in addition to their economic relevance. Davis et al. (2014) considers that it is not enough to know the amount of land use emissions, but also requires the allocation of these emissions to activities and products and that this correlation can be achieved by distributing land use emissions in space and time taking into account

the production and proxy area, permanence policies, space and time of consumption of products and their impact on other countries.[4] Some studies provide estimates of emissions from land conversions which indicate, for example, a minimum of 591 tonnes of CO_2 / ha for the conversion of tropical forests to arable land and a minimum of 260 tonnes of CO_2 / ha for the transformation of temperate forest into arable land (Overmars et al., (2011). [8]

At the same time, specialist research (Aznar-Sánchez et al., 2019 indicates that carbon absorbers are as important as reducing emissions. contributing to the increase in efforts to protect biodiversity, and the large-scale adaptation of conservation measures through the use and the management of the forest area facilitates an increase in the success in the local areas in terms of reducing emissions. [1,15] More over half of Romania's forests (52%) are designated as having specific protection functions (soil, water, climate, wildlife conservation, and leisure), while the remaining forests serve both production and protection purposes. Many observations on land usage demonstrate that agricultural management approaches, such as boosting soil performance using fertilizers, can help to offset large ecological imbalances.

Romania has a significant biological variety, with natural and seminatural habitats accounting for about half of the country's surface area. The forests have a total area of 3,0043,946 hectares, accounting for 96.7 percent of the state-owned forest fund's entire area. Table 1 shows Forest land in Romania from 2015 to 2020, the forest background with primary trees, which is mostly found on the hill mountain plain. The forest land in Romania has registered a slight increase over the observed period. In 2021, the area of forests was 6.427 million hectares, with resinous species covering 1.915 million hectares (respectively 29.8%), and deciduous species 4.512 million hectares (respectively 70.2%), with a tendency to increase the woody mass. harvested, in the period 2013 - 2020, according to Table 1.

Table 1 The evolution of harvested wood mass, in the period 2013 - 2020

year	2013	2014	2015	2016	2017	2018	2019	2020
'- % -	103.1	95.6	96.9	91.9	97.9	104	101.1	105.1
Harvested woody mass	19282	17889	18133	17198	18316	19462	18904	19652

Source Eurostat (2020)

From conserving and increasing biological diversity by reducing negative impacts and rebuilding ecosystems and damaged habitats to banning the use of nonselective pesticides and rebuilding ecosystems degraded by over exploitation, each regional development area is addressed separately. Structure of harvested wood volume, in 2018, harvested wood volume percent, coniferous trees 36,6%, oak trees 10,5% beech trees 33,8%, various strong species 11,3%, various soft species 7,8%.

Some of the delicate concerns that cause the management plan to be adjusted according to the local geographical location include restoring shrubs and establishing protective curtains, as well as preventing the loss of biological variety.

Alternative agricultural approaches for reducing greenhouse gas emissions, biodiversity loss, deforestation, and soil erosion have become increasingly important.

They include legal requirements for management, good agricultural practices of the land, and maintenance duties, all of which are in conformity with the regulations on cross compliance.

Permanent grassland areas at the zonal level are indicators in the following categories:

Permanent grassland areas at the zonal level are indicators in the following categories:

- environment, climate change, and healthy agricultural land conditions;
- public health, animal health, and plant health;
- animal welfare.

Cross-compliance rules are mandatory for farmers requesting direct payments, transitional national aid, beneficiaries of support, measures for afforestation and creation of forested areas, agri -

environment and climate payments, support for conversion to organic farming, support for maintaining organic farming practices, payments for areas facing natural or other specific constraints, payments for forestry commitments. [7]

The degradation of the environment, manifested in the last decades by radical modifications of the geosystems on large spaces, with the installation of some chronic ecological imbalances, requires the taking of urgent ecological reconstruction measures. [16] The distribution of the National Forest Fund in development regions and counties is uneven, depending on the physical-geographical conditions and the economic-social development of the area. Artificial regeneration 9071 ha in 2018 compared to 12508 in 2014, in plantations in number of 9008 softwoods were 5467 ha, and deciduous 3541ha, decreasing compared to 2014 , 5328 ha and 7127 ha while direct sowings were 63 ha in deciduous and softwood in equal proportion. During the analyzed period, apart from the planting of 19.4 million forest saplings, 11,240 hectares of state forest fund were regenerated, of which 7,537 hectares through natural regeneration and 3,703 hectares through artificial regeneration, as well as afforestation works, including 90 hectares forest curtains, the year 2022, as a consequence the applied forestry management gave growth results, by carrying out regeneration works on 14,057 hectares, of which 9,354 hectares through natural regeneration and 4,703 hectares through afforestation works. The degradation of the environment, manifested in the last decades by radical modifications of the geosystems in large spaces, with the installation of some chronic ecological imbalances, requires the taking of urgent ecological reconstruction measures.

An important environmental factor that can be directly influenced and that effectively contributes to preventing and combating environmental degradation is forest vegetation. The forest vegetation is a real biological barrier both against pollutants of any kind and against harmful climatic factors.

By creating forest protection curtains, the climatic, economic, and aesthetic sanitary improvement of the land is achieved. Of the total areas subject to the regeneration process, 17972 hectares (66.5%) were natural regeneration, 676 hectares more than in 2017, while 9071 hectares (33.5%) were represented by artificial regeneration, with 1665 hectares less than the previous year. By its legal nature, the forest fund includes, as shown in Table 2, the way in which the forest fund is represented depending on the form of ownership. In 2018, public property accounted for 64.3% of the total area of the National forest Fund, being managed mainly by the National Forests Authority - Romsilva, and private property accounted for 35.7%, being managed mostly by the private forestry structures. The distribution of the National Forest fund to development regions and counties is uneven,

Table 2 Artificially regenerated surfaces, by types of artificial regeneration (2011 – 2020)

Types of artificial regenerations	2015	2016	2017	2018	2019	2020
Artificial regenerations – total	11846	11615	10736	9071	8443	8027
plantation	11790	11578	10709	9008	8418	8009
from deciduous species	5632	5398	4613	3541	3937	3592
– from resinous species	6158	6180	6096	5467	4481	4417
Direct sowing with forest seeds	56	37	27	63	25	18
from deciduous species	31	30	6	32	10	18
–- from resinous species	25	7	21	31	15	-

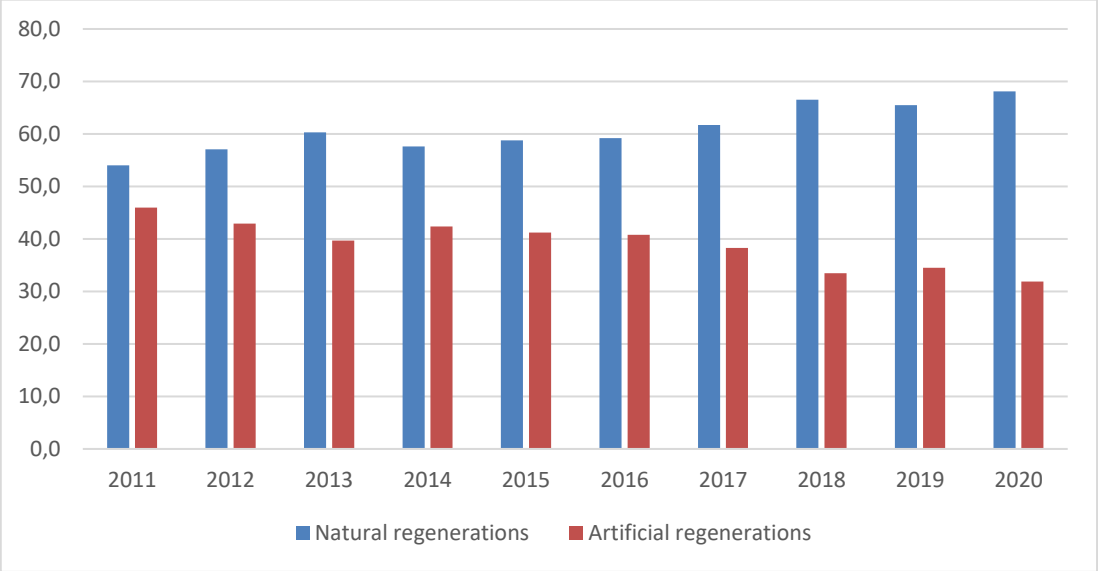
Source Data from the European Environment Agency

In the last five years, 72,892 acres of state-owned forest have been restored (47,335 acres by natural regrowth and 25,557 acres through clearing operations), with 141.37 million new forest-related trees planted. In terms of forest species, softwoods account for 42.0 percent of the total harvested volume of woody biomass, followed by beech at 31.1 percent, oak at 9.6 percent, various hardy species (alcacia, paltin, ash, walnut, etc.) at 10.7 percent, and various soft species (linden, willow, poplar, etc.) at 6.6 percent. Work on regenerating the forests on 25.189 hectares was completed in 2020, an increase of 189 hectares from the previous year 17162 hectares, or 68.1% of the total

suprafețe subject to the regeneration process, were natural regeneration, 1146 hectares more than in the previous year, while 8027 hectares, or 31.9 percent, were artificial regeneration. The importance of achieving a correct management of the forest fund implies, first of the importance of forest protection curtains - which represent formations of forest vegetation located at a certain distance from each other or with an objective to protect it against the effects of harmful factors and / or for the climatic, economic and aesthetic sanitary improvement of the lands. In the methodology we highlighted technical modalities for relaying the management of these forest curtains through their role in climatic zones that favor more or less the vulnerabilities of the neighboring agricultural ecosystems.

An important environmental factor that can be directly influenced and that effectively contributes to preventing and combating environmental degradation is forest vegetation.

Figure 1. The evolution of regenerated surfaces, by types of regeneration (2011–2020)



Sources: Eurostat data extracted 12 july 2022

The forest vegetation has multiple roles working as a filter and represents a real biological barrier on the one hand against harmful climatic factors, but also against pollutants of any kind. The National forest Fund on December 31, 2019, registered an increase of 9165 ha. This increase is mainly due to the redevelopment of forested pastures and the introduction into the forest fund of degraded lands and nonforested lands, established under law1

According to our analysis, different agricultural management approaches can be used depending on how the cyclical ecosystem yield process affects biodiversity, the resilience of natural capital, and, on the other hand, the sustainability of agricultural ecosystems. Thus, a fair study of production practices reflects the advantages of agri-environmental policies and subsidies.

3. Methods

The statistical studies cited in the article, which are in accordance with the Forestry Code and the Council Resolution of December 15, 1998 on the EU Forestry Strategy, are from national forest funds or organizations that provide forestry services. [18-22] The spatial analysis of the progression of data stolen from Eurostat based on the forest fund, as indicated in the most current OECD studies on the topic, was used to assess the modeling of the forest fund evolution in all systems affected by climate change and calamities (2021) .[13]

In the most succinct statistics, the reforestation efforts of the mountain pastures are in the first phase associated as a factor of the evolutionary progression of the forest fund growth, but they are also a result of the introduction of those more degraded and undegraded lands into the forest fund. -forested lands, which the applied methodological plan included into the afforested plan. From a methodological point of view, the amount of removals from the forest area was deduced directly from the databases reported by EUROSTAT, when they were available, or otherwise from the data reported by FAOSTAT. It is unclear how irreparable damages, such as logging residues and other losses from natural disruption, have been determined. We will briefly discuss a few methodological provisions from the National Statistics Institute and Eurostat in order to correctly interpret data, analyses and conclusions.

4. **Results**

Establishing and assessing the causes of injuries is an important aspect of determining the health of forest ecosystems, as well as a prerogative in determining the symptoms caused by distinct groups of hazardous agents. The management of regeneration operations in line with the provisions of forest management or specialized studies for carbon sequestration is highlighted by the soil carbon inventory, notably the form in which it is stored, capacity, persistence and bulk density, and soil textural class.

The agriculture and rural development sector remains traditional and dominant in the Romanian economy in terms of land use and population. Over 15% of total GHG emissions are attributable to agriculture, which is also very vulnerable. Annually, the net absorption of CO_2 from the atmosphere by the forestry sector offsets about 20% of the emissions of other sectors at national level. As the main CO_2 absorber, the forestry sector offers a wide range of mitigation measures such as preserving and increasing existing C deposits, improving the rate of atmospheric CO_2 uptake and optimizing the quality of the absorber and the tangible and intangible benefits of land use they would be given other destinations. Romania's forestry sector is an important carbon and CO_2-absorbing deposit, with the potential to play a significant role in reducing the impact of SC. Carbon sequestration contributes to the overall goal of lowering greenhouse gas concentrations in the atmosphere. The incorporation of the vegetal mass in the soil on the agricultural lands where green crops are established, contributes to the sequestration of carbon.

The result of this objective will be quantified by monitoring the areas on which green crops have been established, as well as by quantifying the amount of plant biomass resulting from afforestation. Romania has the largest intact area of natural and naturally regenerated forests in Europe. The forests of Romania cover an area of 6.539 million ha. In recent years, the forestry sector, including the wood processing industry, has contributed between 2.2% and 4.5% of gross domestic product to GDP, source Abrudan et al, 2009, FAO, 2012, FAO 2014.[14] The conversion of forest area to another type of land use is very important to analyze because deforestation generates a large amount of GHG emissions.

Another important point in the scientific literature on land-based emissions - change of use is its correlation with biofuels, which means that the negative effects of land use change must be overcome by using land in a sustainable way, even if many years of now they have to move on to really see the benefits of using biofuels (Lewandrowski, J. et al., 2014).[25] Moreover, it is necessary to determine how to manage with risks and uncertainties for a proper management of the land. Plevin et al. (2013) showed that policies where risks are associated with uncertainty have better results in reducing GHG emissions from land use. [9]

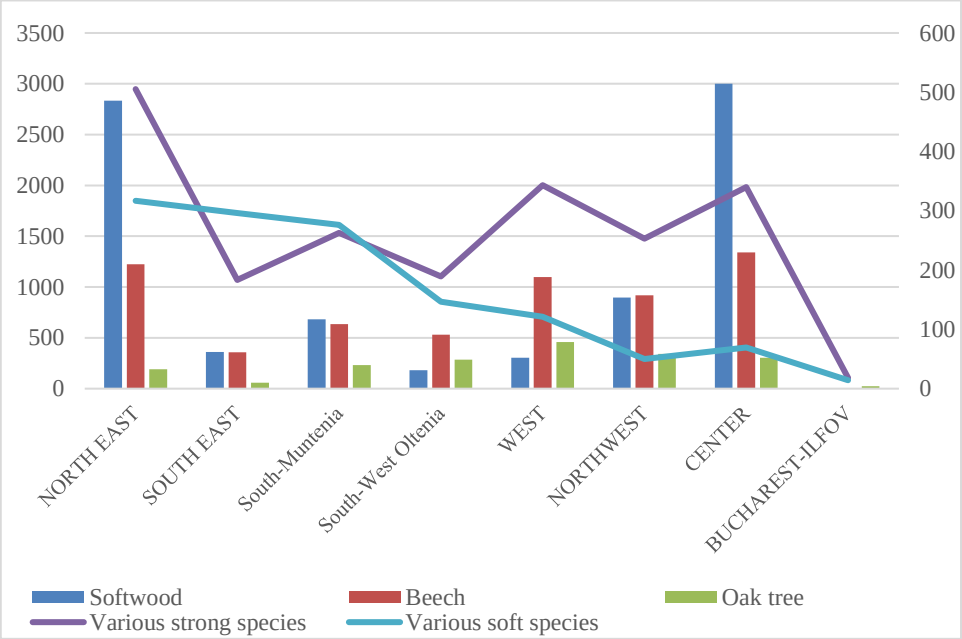


Figure 2. The structure of harvested wood mass species, by development regions, in 2020
Source Owner recherché from data Eurostat (2015-2019)

The importance of involvement in proper forest fund management is highlighted in the geographical ensemble of Romania by regions of forest fund development through the interdependence represented by the role of forests in the agricultural ecosystem, regenerations by development regions. The attribution of a direct relationship between the area of the forest fund, by categories of use, in the period 2013 - 2018, thousand hectares presented in Figure 3 reveals similarities shown next to each other in the structure of the value of agricultural production by development regions.

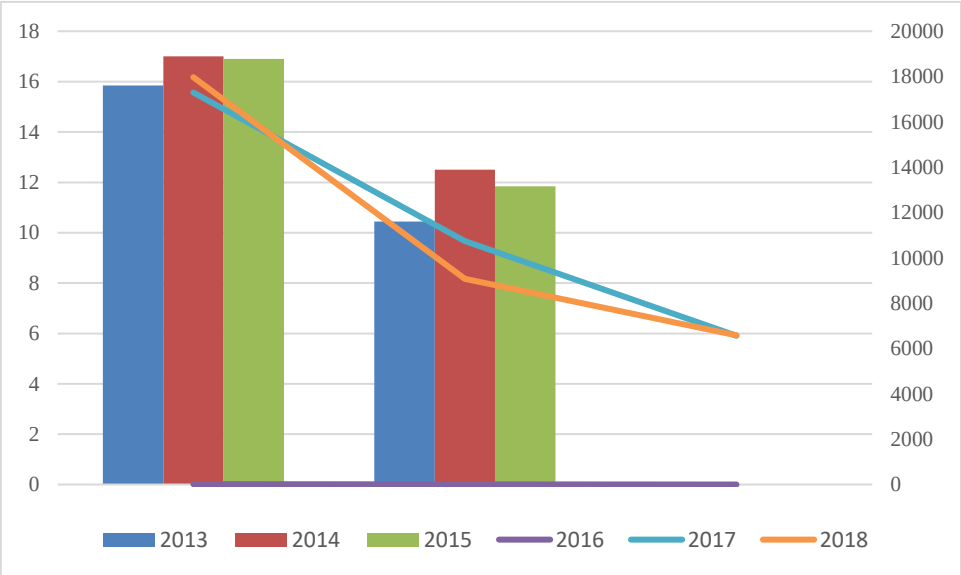
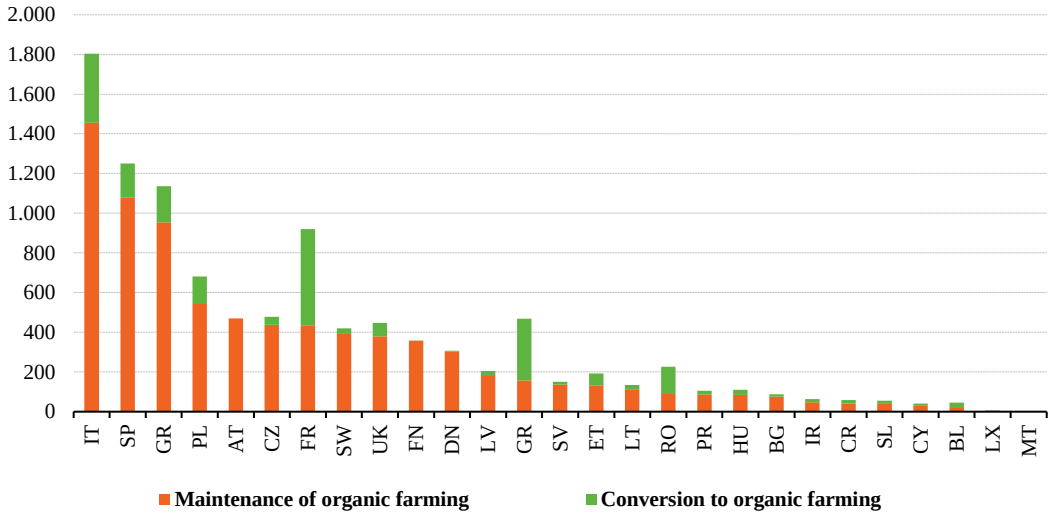


Figure 3 The area of the forest fund, in the period 2013 - 2018 thousand hectares (Romania)
Source OECD statistical databases.

As the agricultural economy grows, there is a very real risk that GHG emissions from agriculture may rise once more. This is especially likely to happen if animal populations rise and/or crop production intensifies once more. The highest concentrations of carbon are found in agricultural ecosystems, and these ecosystems have the potential to store even more carbon through a variety of localized practices like cultivating old pastures, continuing extensive agricultural practices, and avoiding applying pesticides and fertilizers to pastures with high natural value. These grasslands are crucial for the storage of carbon, the upkeep of systems that provide crucial environmental services, and the support of millions of small-scale farmers. Therefore, it's not out of the question that a regional assessment of carbon emission reductions in forest regions will be more effective than the agricultural production indices shown in Figure 4 as a typical forest growth process.



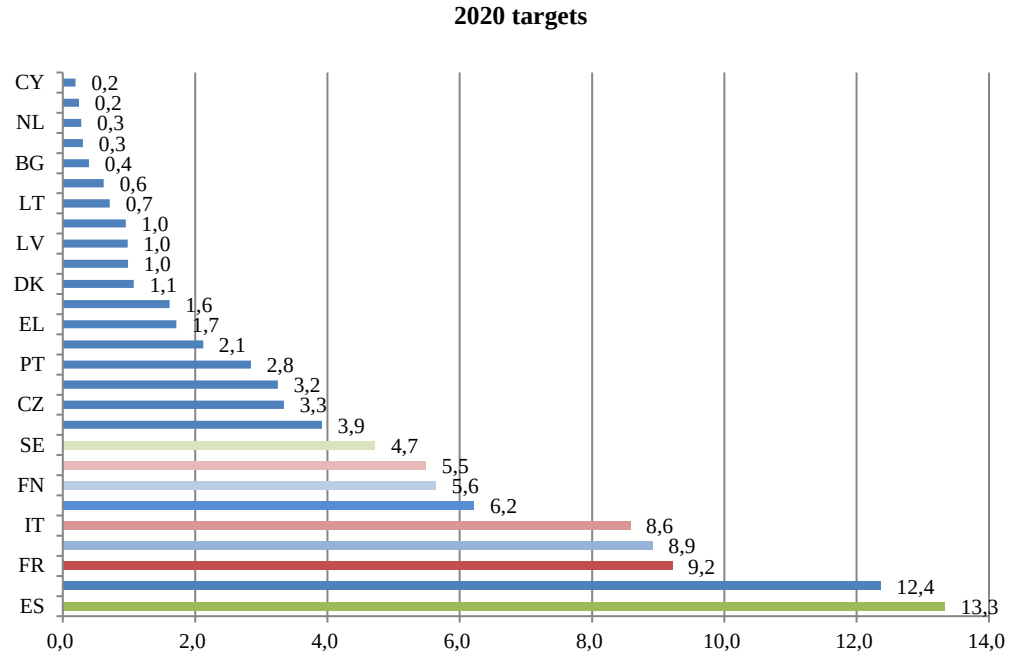
Source DG Agriculture and Rural Development (RDIS2, 12 June 2017)

Figure 4 Share of area under maintenance of and conversion to organic farming commitments, targets for 2020

Analytical causes can include assessing the health of forest ecosystems and the right to assess the symptoms brought on by groups of agents that have the potential to degrade the ecosystem. The assessment of the symptoms brought on by groups of agents that contribute to the degradation of the forest system can be one such analytical cause. By listing the factors that contribute to greenhouse gas emissions from agriculture, particularly production areas, agricultural farms, and livestock in areas of development, production, and coverage geographical areas indicating connections with environmental indices, the analysis of the convergence of the agricultural economy to the achievement of environmental conditions was approached holistically.

As a result, it can be claimed that some causes, like the consequences of climate change, can be managed using different techniques provided by nature. A fundamental requirement of sustainable forest management, in accordance with the terms of management plans recognized by law, in the case of protected natural areas, is to make the national forest fund more accessible.

As shown in Figure 5, payments for forest and climate commitments are an objective to increase the area occupied by forests at the national level by promoting afforestation of agricultural and non-agricultural areas, helping to support carbon sequestration, adapting to the effects of climate change, reducing erosion, restoring the biodiversity capacity of water retention, as well as restoring and conserving local biodiversity.



Source: DG Agriculture and Rural Development

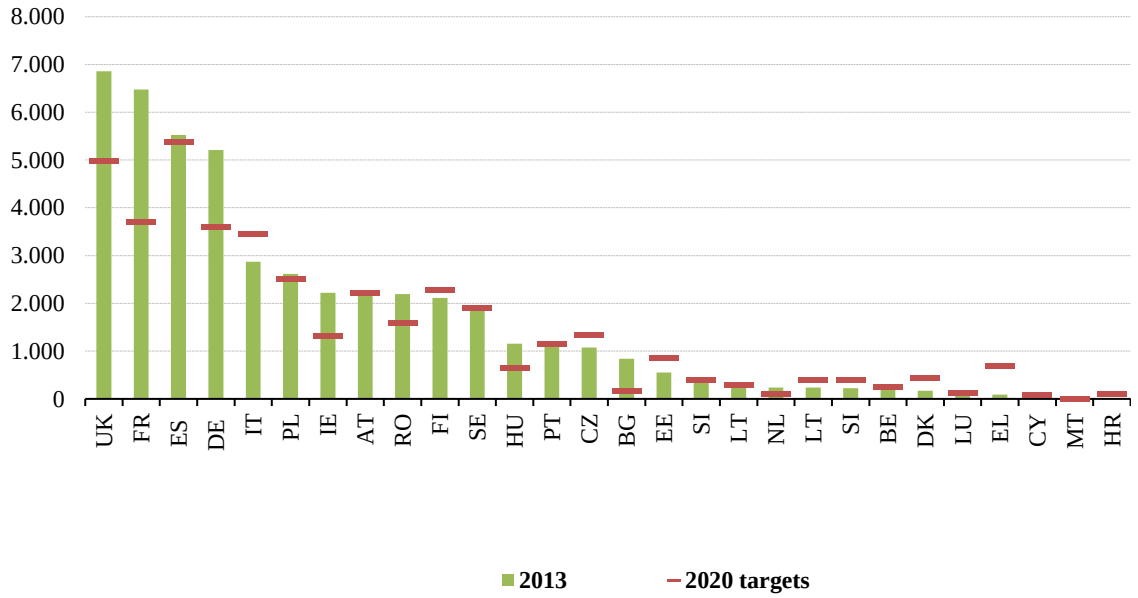
Figure 5: Member States' share of EU-28 total agricultural land under agri-environmental measures; targets for 2020

In addition, as illustrated in Figure 5, qualified beneficiaries of Member States' share of EU-28 total agricultural land under agri-environmental measures, targets for 2020, as defined by the Common Agricultural Policy's goal. [7] Among other purposes, the European Commission is attempting to give tailored methods to the EU's worldwide resilience to climate change, and is prepared to actively aid sustainable rural development (EC, 2021).[17] Figure 5 shows that in ES, FN, FR, IT, and UK, all climate and average measures of rural development spending were above average, with various nations highlighted in each measure with figures representative.

Romanian agriculture has low productivity, and rural areas are disproportionately poor. An important factor in low productivity is the large share of small agricultural holdings. The sector needs to consider adapting to a changing and less favorable climate going forward, as well as mitigating Gree House Gas (GHG) emissions. The stress factor of the plant, which represents a form of causality of the main determinants, a factor that cannot be excluded, represents a margin of error in adapting the techniques and practices used in production, and it is related to the pollution factor even through fertilizers not adapted to the climate, is also noted as an interdependence between the fertilizing aid adapter factors acts in response to the climate-ground-water.

In Romania, especially in the Romanian Plain, the southern development area is analyzed the climatic changes made by large commercial agricultural holdings being different from those of subsistence, of very small dimensions. Climate change is expected to affect farmers in the south and south-east region of Romania in general and individually. Given that large farms have highly specialized products, such as seeds and oilseeds, they are particularly vulnerable to the impact of frequent and long-term droughts,

Additionally beneficial to the property and the neighborhood is the inclusion of soil modifications, which can also help enhance soil structure, pH balance, and, in some situations, help bind toxins and limit exposure. A farm that employs effective soil management techniques can contribute to environmental enhancement, stormwater management, greenhouse gas emission reduction, and increased access to wholesome, regional food. An image of agricultural holdings and cultivated area, by categories of agricultural area use is presented in Figure 6.



Source: DG Agriculture and Rural Development[16]
Figure 6 Agricultural land under agri-environmental measures, 2013 and targets for 2020

Due to the general framework of the CAP, in which objectives are found in the support for rural development, including for activities in the food and non-food sector and in forestry, which contribute to the achievement of the objectives of favoring the competitiveness of agriculture, ensuring the sustainable management of natural resources and combating changes climatic conditions are indicators that have favored a slight increase in agricultural holdings and cultivated area, compared to 2017 by approximately 14% by category of agricultural area use. Intelligent land management for carbon sequestration is highlighted by the soil carbon inventory, in particular by the form in which it is stored, the capacity, persistence and bulk density, the textural class of the soil. In some areas, especially on soils with a thin substrate of limestone, there is an imminent danger of groundwater pollution. Depending on the local specificity, this danger should always be taken into account when applying organic fertilizers in such risky areas.

Activities to improve woodlands also have an impact on climate, such as clearing out competing vegetation, pre-commercial thinning to change the stand's density, composition, and structure, cutting treatments to lessen the need for stair fuel, lessen the impact of pathogens (like white pine blister rust), and improve the quality of future wood products, and fertilization treatments to maintain and increase soil productivity. As a result of bettering the timber stand, forests will be healthier and more productive, hazardous fuels will be reduced, forests will be better able to withstand the effects of drought, insects, and disease, and animal habitat will be more diverse.

The study found that using a management strategy based on the interdependence between soil quality and production, carbon absorption, and liquid or solid fertilizers has a synergistic effect on climate change, with climate being a significant impact. Land use changes also contribute to variations in soil carbon. Schmidt,M. (2011) [23]

Programs for planting trees and creating curtains can be evaluated in terms of carbon sequestration and other environmental advantages, but a more thorough evaluation of the advantages is required. As they provide essential ecosystem services, such as the production of lumber, non-timber forest products, and the hydrological regularization of river basins, whose values are typically under appreciated, forests play a significant role in enhancing society's adaptation to climate change. Therefore, preserving forests with protective functions that encourage the sustainable use of resources can increase their flexibility, aiding in the preservation of biodiversity and lowering greenhouse gas emissions at the same time.

5. **Conclusions**

The foundation of new visions of conservation, protection and improvement of environmental quality, including the conservation of natural habitats and species of wild fauna and flora, has constantly evolved contributing to the achievement of essential community objectives and of general interest, from environmental perspectives. Thus a evolution of scientific and technical knowledge is very important considering the evolution of environmental change that has direct effects on natural biodiversity, consequently, supporting scientific research work is an important resource. [20-21] The strategy outlined in this study is based on the fusion of already existing data sources at the national statistical institute level that are connected to data taken from Eurostat databases. Because there is a dearth of data on the forestry industry in Romania, particularly economic data, estimates of how much emissions will be reduced as a result of key forestry sector initiatives cannot be presented. From this angle, the study offers details on the management of the forest area and its current state. possibility of lowering greenhouse gas emissions.

A zero priority is the vision of new agricultural systems ready to respond to more severe climate change that make effective use of resources and natural capital, boost soil carbon levels, and increase biodiversity and agriculture's resilience to climate change. With one exception, it is possible to regulate carbon reserves in agricultural soils by changing specific agricultural practices. Carbon shock absorbers, according to research, are equally crucial to lowering emissions.

According to Westhoek H et al., avoiding exploitation damages of trees that have been harmed or destroyed during the technical exploitation process could result in the loss of the forest fund, causing certain inequalities in the affected area (2014). [28] Without strategic consideration of the need for effective management, in order to maintain and streamline that natural balance over time, forestry and forests should not be seen as a source of income for logging. Instead, the forest economy should be shown to be a productive means between the ecological role of the forest and costs, as well as solutions that add value in balancing the interests of the natural ecosystem for long-term gain.

The stated goals can be helped by agricultural systems that are more predictable as a result of integrated management. Nancu et al. (2022) [24] Furthermore, we have demonstrated that maintaining forest curtain conservation criteria through the application of real world ecorurality solutions is one of the factors enhancing C sequestration in the soil. In order to achieve the goal of lowering greenhouse gas emissions from agriculture, this vision also guided us in reaching the standards outlined in the Common Agricultural Policy.[25] In conclusion, it is critical to promote the use of innovative, environmentally friendly agricultural production techniques that preserve the environment, conserve biodiversity, and enhance the quality of water, soil and natural landscapes in order to conserve and improve natural resources and habitats. We require a clean environment based on the sensible use of natural resources in the fields of rural development, agricultural economy, and economic environment. We also need to increase competitiveness by establishing industry best practices. Additionally, the requirement to manage the results of fertilizer and soil treatments used in agriculture can assist in comprehending the economic and financial implications of storing a portion of carbon dioxide on the farm.(Popescu L. 2021) [27]

In this perspective, different agricultural management approaches can be used to address the risks that influence biodiversity, the resilience of natural capital, and, on the other hand, the sustainability of agricultural ecosystems, depending on the strategy for preserving ecosystem yield.

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