

# THE IMPACT OF IMPLEMENTING AGRI-ENVIRONMENTAL-CLIMATE COMMITMENTS ON THE ECONOMIC SECURITY OF POLISH FARMERS FROM THE PODKARPACIE REGION

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**Abstract.** *The aim of the work was to assess the impact of the implementation of agri-environmental-climate commitments under the Rural Development Program for 2014-2020 on the economic security of farmers from the Podkarpacie region in Poland. The decisions of Podkarpacie farmers regarding the number of agri-environmental-climate commitments undertaken and the value of payments granted for the implementation of the following packages and variants were analyzed in detail. In 2015-2020, Podkarpacie farmers received a total of PLN 274 032 475.30 under the implementation of agri-environmental-climate programs, significantly affecting the economic security of their farms. Podkarpacie farmers implemented the largest number of agri-environmental-climate commitments in the Lubaczów and Mielec districts (25 packages/variants each). The least interest in implementing agri-environmental-climate commitments was shown by farmers living in the following poviats: Lesko (11 packages/variants) and Ropczyce-Sędziszów (12 packages/variants).*

**Keywords:** economic security, implementation of agri-environment-climate, Common Agricultural Policy, financial support.

## INTRODUCTION

Economic conditions of security concern primarily the structure of economic activity in rural areas. Currently, agriculture is still the dominant direction of activity in rural areas, although their multifunctional nature is increasingly noticed. Diversification of activities in rural areas, on the one hand, promotes their security, creates new opportunities, but on the other hand creates new, unknown conditions of functioning. The previous lifestyle, dependent on agriculture in rural areas, is currently impossible (Niedziółka 2018).

Agriculture, as one of the main human activities in rural areas, has a significant impact on the natural environment and on landscape shaping. Understanding this impact and implementing appropriate environmental protection programs are key to improving and preserving the condition of natural ecosystems and the quality of life in the countryside. Agriculture transforms natural ecosystems into areas used for agriculture, which leads to a change in the structure of the landscape. Traditional agricultural methods significantly support biodiversity, creating habitats for many plant and animal species. In response to the challenges related to environmental protection, the concept of multifunctional agriculture has become very important (Krzyżanowski 2015).

In recent years, significant changes have been taking place in the income structure of Polish farmers, which consists of growing income from professional and non-profit work and decreasing income from agricultural work. According to data from the Polish Central Statistical Office (2023), professional activity is the main source of income for 27% of rural residents, while self-employment, which in rural areas mainly involves work on a farm, is the main source of income for 10% of rural residents. Social benefits (pension, disability pension and allowance) are the main source of income for 25% of rural residents. Dependents account for 36% of rural residents (29% of urban residents). Practices aimed at protecting the natural environment, which include agri-environment-climatic activities, are becoming an important support for the economic security of farming families. They concern the preservation of essential natural resources for future generations through rational management without excessive exploitation, degradation and devastation. Such activities affect the maintenance of security in the cultural, social, economic and spatial areas (Niedziółka 2018).

The biological nature of agriculture makes it closely dependent on the state of the natural environment. Weather is one of the key factors influencing crop yields. Unfavorable weather conditions, such as winter extremes, rains during flowering or harvesting, droughts, hailstorms, and heavy rains, can lead to reduced or even complete loss of crops (Brodzińska 2008). In addition, agriculture is exposed to losses due to plant and animal diseases and pests. On the other hand, agricultural activity affects the natural environment in various ways. Machines and combustion engines used in production emit harmful chemicals into the atmosphere. Fertilizers and plant protection products used in agriculture can also have a negative impact on the environment, as can pollution from animal excrements. Heavy agricultural machinery can lead to soil compaction, which in turn negatively affects the conditions for plant growth. In view of these facts, it is important to ensure sustainable development of agriculture, taking into account social, economic, energy and ecological aspects (Szumski 2007, Kilar et al. 2024).

One of the key tools supporting the multifunctionality of agriculture are agri-environment-climate programs, which are an important element of agricultural policy. Effective implementation of agri-environment-climate programs can bring many benefits for improving the quality of the environment, increasing biodiversity, increasing the attractiveness of the landscape and increasing the ecological awareness of farmers thanks to their participation in such programs. (Świechowska 2004, Czudec 2009, Puślecki et al. 2010). Agriculture fulfills important functions in the economy and society, both productive and non-productive, market (commercial) and non-market (non-commercial). In particular, when we want to consider these non-market functions, we can distinguish the following functions (Van Huylenbroeck et al., 2010):

- Green - covers managing land resources to maintain its valuable properties, supporting conditions favourable to wildlife, protecting animal welfare, maintaining biodiversity and optimising the circulation of chemicals in agriculture.
- Blue - focuses on managing water resources, preventing floods, improving water quality and producing hydro and wind energy.

- Yellow - concerns maintaining the vitality and integrity of rural areas, nurturing and enriching cultural traditions and local identities.

- White - covers the production of healthy food and ensuring food security.

It should be added that non-market functions of agriculture are closely linked to its production functions. This phenomenon, referred to as the inseparability of these two types of functions, means that the implementation of non-commercial functions is dependent on the implementation of production functions. Therefore, in order for agriculture to provide numerous beneficial services, it must first of all exist and conduct production activities (Wilkin 2010, Chądzyński 2015).

In this regard, within the framework of the Common Agricultural Policy of the European Union (CAP), a shift can be observed from preferring the production aspects of agriculture towards maintaining non-production functions. More and more emphasis is placed on supporting rural areas and on the environmental and social roles of agriculture, which has a positive impact on the development of its multifunctionality, which in turn fits well into the ideas of sustainable development. (Bivona 2007, Gąsowski 2015). At the same time, this policy aims to equalize the prices of agricultural products to the world level by moving away from price support. As a result, the main support tool is becoming direct payments, which currently play mainly an income function in EU agriculture, but also a social function for smaller farms. In the future, the role of direct payments will increasingly evolve towards supporting the sustainable development of rural areas and rewarding agriculture for providing public goods that bring benefits to the entire society. This will be related to the need for farms to meet specific standards, taking into account the principles of sustainable production, animal welfare protection and care for the natural environment (Walkiewicz 2002, Kozłowska-Burdziak 2006, Czudec 2009, Grzelak 2010, Kilar 2022).

One of the objectives of the EU Common Agricultural Policy is to promote agricultural practices that are conducive to environmental protection. This objective is achieved, among other things, by implementing the Agri-Environment-Climate Measure in all EU Member States. It consists of the use of payments that compensate for additional costs incurred and lost income for farmers who voluntarily use production methods that are conducive to preserving biodiversity, landscape and environmental resources, primarily soil and water. (Niewęglowska 2003, Niewęglowska 2005, Kilar et al. 2023).

The essence of the agri-environmental-climate action is to promote agricultural practices that contribute to the protection of soil, water, climate, valuable natural habitats and endangered bird species, endangered genetic resources of crops and farm animals, as well as the protection of landscape diversity. (Petrosyan, Ślusarczyk 2019). The practices used within the framework of agro-environmental-climatic practices influence the diversity of biodiversity in the rural landscape, contribute to the increase in species diversity and the number of pollinating insects, as well as to the creation of habitats for many other animal species. (Szońska 2015). These activities create a financial incentive for farmers who voluntarily decide to conduct agricultural activities in accordance with the principles established therein. Under the Measure, beneficiaries fulfil obligations consisting in the implementation of detailed requirements that are favourable to various elements of the natural environment of rural areas. In most cases, these requirements lead to more extensive use, i.e. the use of agricultural practices that are environmentally friendly, which in effect involves incurring management costs and losing part of the profits. Agri-environment-climate payments constitute compensation for these lost incomes and additionally incurred costs (Przewodnik po działaniu rolno-środowiskowo-klimatycznym PROW 2014-2020)

## MATERIALS AND METHODS

The aim of the study was to assess the financial support for Polish farmers from the Podkarpacie region implementing agri-environmental-climate commitments under the Rural Development Programme in 2014-2020. A detailed analysis was made of the decisions of farmers regarding the number of agri-environmental-climate commitments undertaken and the value of payments granted for the implementation of the following packages and variants:

- Package 1. Sustainable agriculture;
- Package 2. Soil and water protection;
- Package 3. Preservation of orchards of traditional fruit tree varieties;
- Package 4. Valuable habitats and endangered bird species in Natura 2000 areas;

- Package 5. Valuable habitats outside Natura 2000 areas;
- Package 6. Preservation of endangered plant genetic resources in agriculture;
- Package 7. Preservation of endangered animal genetic resources in agriculture.

Data for the research were obtained from the register of the Podkarpackie Regional Branch of the Agency for Restructuring and Modernisation of Agriculture in Rzeszów, which concerned the implementation of agri-environmental-climatic commitments under the Rural Development Programme for 2014-2020 by Podkarpackie farmers. During the analysis, data from individual counties of the Podkarpackie province were compiled according to the Classification of Territorial Units for Statistical Purposes (NUTS 3):

- Krosno subregion: counties: Bieszczady, Brzozów, Jasielski, Krosno, Sanok, Leski, the city of Krosno;
- Przemyśl subregion: counties: Jarosław, Lubaczów, Przemyśl, Przeworsk, the city of Przemyśl;
- Tarnobrzeg subregion: counties: Dębica, Leżajsk, Mielec, Nisko, Stalowawola, Tarnobrzeg, the city of Tarnobrzeg;
- Rzeszów subregion: poviats: Kolbuszowaw, Łańcut, Ropczyce-Sędziszów, Rzeszów, Strzyżów, city of Rzeszów.

The collected numerical material was subjected to statistical analysis using the Statistica 13.3 package. It included generating frequency tables and scatterplots for both variables (the number of decisions issued and the amount of payment granted) in the system of all counties and in the system of four subregions. In addition, the nonparametric Kruskal-Wallis test for a single-factor system was used. This test aimed to examine the diversity of the number of decisions issued and the amount of payment granted - in total in the entire period under study - depending on the subregion. The decision to reject the null hypothesis was made based on the value of the test statistic  $H$  and the associated test probability value "p". Verification of all hypotheses was performed at the significance level of  $\alpha = 0.05$ . It was assumed that  $p \leq 0.05$  indicates a significant differentiation of the assessed indicator depending on the subregion.

## RESULTS

Podkarpacie is very rich in landscape values, and at the same time it is one of the most important agricultural regions in Poland, despite the very large fragmentation of farms. The area of the province, i.e. the south-eastern part of Poland, is characterized by very diverse terrain, sometimes the difference between the elevations and the lowest places is 1000 m, which is why this area is famous primarily for breeding dairy and beef cattle. For this reason, permanent grasslands in Podkarpacie constituted over 1/3 of agricultural land. Poor soils of IV, V, VI quality class prevail (brown, podsolic, formed from sand, silt, clay, in river valleys there are alluvial soils). The factor that reduces the quality of soils is their acidification.



**Figure 1.** Map of Poland with the Podkarpackie Voivodeship area marked

According to the 2020 General Agricultural Census, the total area of the Podkarpackie Province is 1,784.6 thousand ha. Of this area, 675.3 thousand ha, or 37.8%, were owned by farms, of which agricultural land occupied 573.1 thousand ha. Individual farms used 547.3 thousand ha, which constituted 95.5% of the area of agricultural land in the province, while farms belonging to legal persons and entities without legal personality owned 25.8 thousand ha of agricultural land. In 2020, 555.5 thousand ha, or 96.6% of the total area of agricultural land in farms, were in good agricultural condition. The remaining agricultural land occupied 17.6 thousand ha, or 3.1% of the total area of agricultural land. In the area of agricultural

land maintained in good condition, sown land on farms occupied 308.3 thousand ha, which constituted 55.5% of this area. In 2020, the area of fallow land amounted to 17.3 thousand ha, which constituted 3.1% of agricultural land. Permanent crops maintained in good agricultural condition, in accordance with standards on farms, occupied 14.1 thousand ha, i.e. 2.5% of agricultural land. Permanent grassland (including meadows and permanent pastures) occupied 212.0 thousand ha and constituted 38.2% of agricultural land in good condition and 37.0% of total agricultural land.

The structure of agricultural farms was dominated by farms with an area of agricultural land of 1–2 ha, which constituted 30.0%, and in the area of agricultural land of the voivodeship they had a share of 8.5%. A large group were farms with an area of 2–3 ha and 3–5 ha of agricultural land (24.2% and 22.7%, respectively). Farms with an area of 5–10 ha of agricultural land accounted for 13.8% and occupied 18.3% of agricultural land. The share of farms above 15 ha of agricultural land accounted for only 4.0% of all farms, but their share in the area of agricultural land was 36.7%. The average area of agricultural land of a farm in 2020 was 5.03 ha (nationally 11.35 ha) and increased by 0.59 ha compared to 2019 (nationally it increased by 0.90 ha). The total sown area in 2022 amounted to 363.5 thousand ha (which was 3.3% of the sown area in the country) and was higher than a year ago by 5.8%. In the structure of crops, total cereals (basic cereals with cereal mixtures, buckwheat, millet and other cereals, and corn for grain) occupied 231.1 thousand ha, i.e. 63.6% of total crops (in the country, cereal cultivation accounted for 65.6% of the total crop area).

Compared to 2021, the area of cereals decreased by 12.8 thousand ha (by 5.2%). In the structure of total cereal crops, similarly to the previous year, basic cereals with cereal mixtures clearly dominated - 75.3%, corn for grain accounted for 22.1%, and buckwheat, millet and other cereals - 2.6%. According to data from the Agency for Restructuring and Modernization of Agriculture, in 2024 there were 104,040 farms in the Podkarpackie Voivodeship.

Farmers who promote practices contributing to sustainable land management in their activities in order to protect valuable natural habitats, soils, climate, waters and endangered bird species, as well as landscape diversity and the protection of endangered genetic resources of crops and farm animals may apply for additional payments under the agri-environment-climate packages/variants they implement. (Pajewski 2014, Britchenko 2024).

The essence of the agri-environment-climate measure is to support agricultural practices that protect soil, water, climate, valuable natural habitats, endangered bird species and genetic resources of crops and farm animals. This measure also aims to preserve landscape diversity. Practices implemented under this measure increase biodiversity in rural areas, contribute to the increase in the number of species and the number of pollinating insects, and create habitats for various animal species. The measure creates a financial incentive for farmers who voluntarily decide to conduct agricultural activities in accordance with the principles established therein (Kania 2006, Kruszyński 2023).

Under the measure, beneficiaries undertake to meet detailed requirements that support various elements of the natural environment in rural areas. These requirements usually lead to more extensive use, which means using environmentally friendly agricultural practices. As a result, this involves additional management costs and the loss of some profits.

Agri-environment-climate payments compensate for this lost income and cover the additional costs incurred by farmers (Pawlak 2015, Janiszewska, Ossowska 2017). The beneficiary undertakes to produce in accordance with the requirements specified for the relevant package/variant for a period of 5 years. The commitment begins on 15 March of the year in which the beneficiary submits the first application for agri-environment-climate payments and lasts until 14 March of the fifth year of the commitment (Zajac 2011; Guide to the agri-environment-climate measure, 2019).

**Table 1.** Payments made to Podkarpackie farmers under agri-environmental-climate measures in 2015-2020 (PLN).

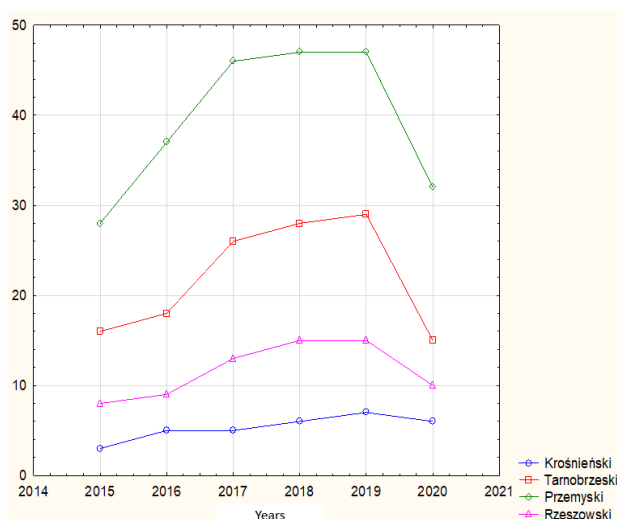
Years	The value of support under agri-environment-climate measures
2015	18 427 332.10
2016	28 905 319.62

2017	42 900 417.33
2018	56 400 359.40
2019	63 022 508.14
2020	64 376 538.72
Razem	274 032 475.30

Source: Own calculations based on data from the Agency for Restructuring and Modernisation of Agriculture

Based on the analysis of the data contained in Table 1, it should be stated that in the years 2015-2020 Polish farmers from the Podkarpackie region received a significant amount of PLN 274,032,475.30 as part of payments related to the implementation of agri-environmental-climate measures, which undoubtedly had a positive impact on improving the economic security of their families and farms. The largest financial support resulting from activities related to the broadly understood protection of nature and the natural environment was identified in 2020 and amounted to PLN 64,376,538.72, while the smallest support was recorded in 2015 and amounted to PLN 18,427,332.10.

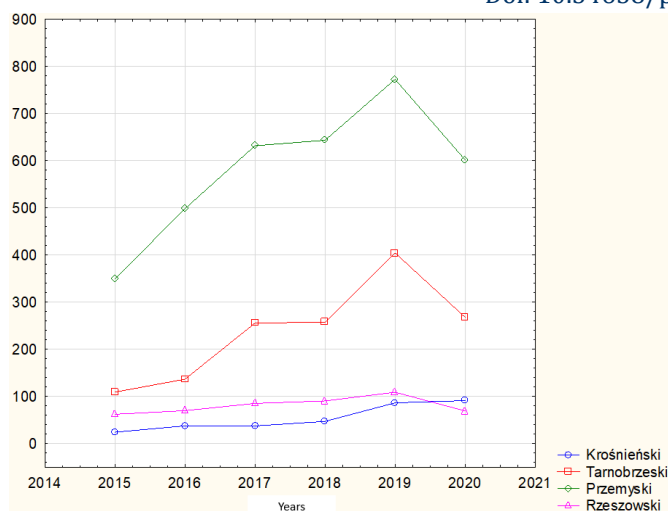
Figure 2 presents data on the number of agri-environmental-climate packages implemented in individual poviats of the Podkarpackie Voivodeship in 2015-2020 under Package 1. Sustainable agriculture.



**Figure 2.** Number of implemented agri-environment-climate packages in 2015-2020 according to the NUTS 3 administrative division in the Podkarpackie Voivodeship

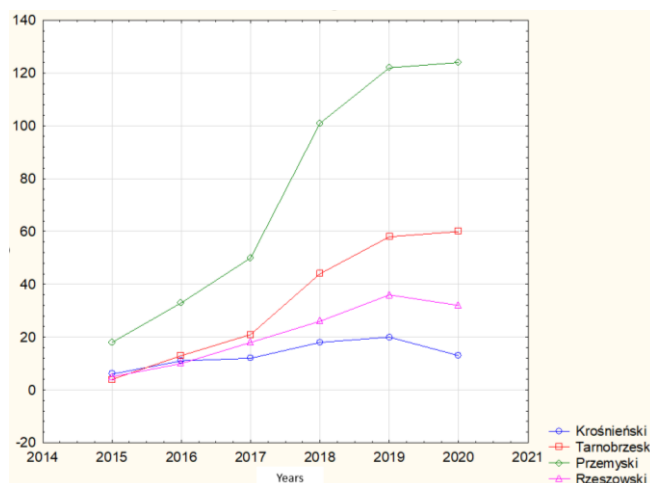
Source: Own calculations based on data from the Agency for Restructuring and Modernisation of Agriculture

As can be seen from the data in Figure 2, the largest number of agri-environmental-climate packages in the years 2015-2020 were implemented in NUTS 3 Tarnobrzeg and Przemyśl. In NUTS 3 Tarnobrzeg, the largest number of agri-environmental-climate commitments fell in 2019 (29), while the fewest commitments (15) were undertaken by farmers in 2020. In turn, in NUTS 3 Przemyśl, the largest number of agri-environmental-climate commitments fell in the years 2018-2019 (47 each), while the fewest were in 2015. The analysis shows that the smallest interest among farmers in undertaking agri-environmental-climate commitments occurred in NUTS 3 Krosno (from 3 to 7 commitments). Figure 3 presents the amounts of payments granted under Package 1 Sustainable agriculture according to the administrative division of NUTS 3.



**Figure 3.** Amount of payment granted under Package 1 Sustainable agriculture by NUTS 3 administrative division (PLN thousand)

Source: Own calculations based on data from the Agency for Restructuring and Modernisation of Agriculture

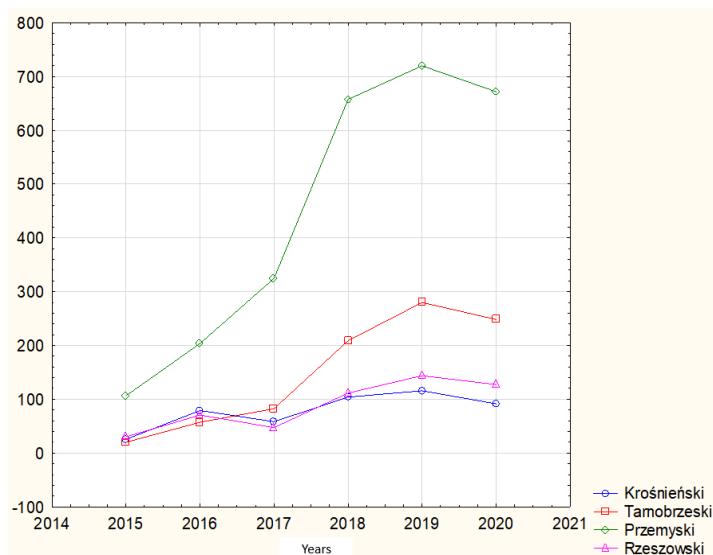


**Figure 4.** Number of agri-environment-climate packages implemented in 2015-2020 under Package 2. Soil and water protection according to the NUTS 3 administrative division in the Podkarpackie Voivodeship.

Source: Own calculations based on data from the Agency for Restructuring and Modernisation of Agriculture

Analyzing the data contained in Figure 4, it should be noted that the largest amount of financial resources under the obligations resulting from Package 1 was directed to farmers from NUTS 3 Przemyśl. In 2015, the total amount of financial resources transferred under the implementation of the obligations of Package 1 amounted to PLN 349.42 thousand, while in 2019 it was already PLN 773.11 thousand. In turn, the smallest financial resources were directed to NUTS 3 Krosno (from PLN 24.08 thousand to PLN 91.09 thousand) and to NUTS 3 Rzeszów (from PLN 61.99 thousand to PLN 108.96 thousand). Figure 4 presents data on the number of agri-environmental-climate packages implemented in individual counties of the Podkarpackie province in the years 2015-2020 under Package 2. Soil and water protection.

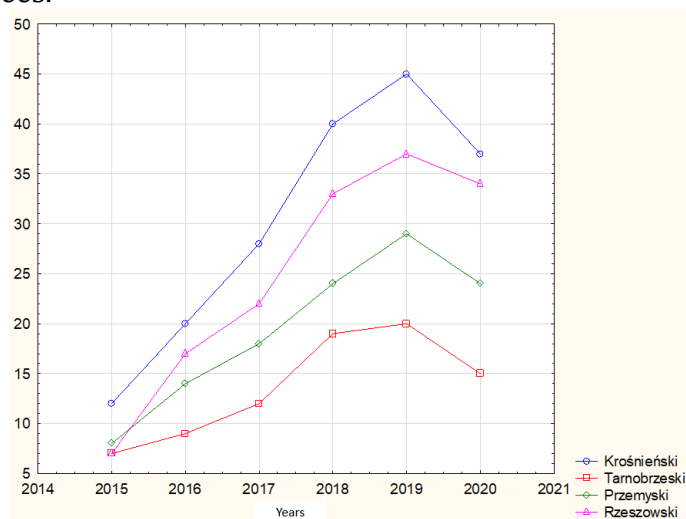
As can be seen from the data in Figure 4, the largest number of agri-environmental-climate packages in 2015-2020 were implemented in NUTS 3 Przemyśl and Tarnobrzeg. In NUTS 3 Przemyśl, the largest number of agri-environmental-climate commitments fell in 2020 (124), while the fewest commitments (18) were undertaken by farmers in 2015. In turn, in NUTS 3 Tarnobrzeg, the largest number of agri-environmental-climate commitments fell in 2020 (60), while the fewest were in 2015 (4). The analysis shows that the smallest interest among farmers in undertaking agri-environmental-climate commitments occurred in NUTS 3 Krosno (from 6 to 13 commitments). Figure 5 presents the amounts of payments granted under Package 2. Soil and water protection according to the administrative division of NUTS 3.



**Figure 5.** Amount of payment granted in 2015-2020 under Package 2 Protection of soil and water by administrative division NUTS 3. (PLN thousand)

Source: Own calculations based on data from the Agency for Restructuring and Modernisation of Agriculture

Analyzing the data contained in Figure 5, it should be noted that the largest amount of financial resources under the obligations resulting from Package 2 was directed to farmers from NUTS 3 Przemyśl. In 2015, the total amount of financial resources transferred under the implementation of the obligations of Package 2 amounted to PLN 106.35 thousand, while in 2019 it was already PLN 720.01 thousand. In turn, the smallest financial resources were directed to NUTS 3 Krosno (from PLN 25.35 thousand to PLN 91.46 thousand) and to NUTS 3 Rzeszów (from PLN 30.03 thousand to PLN 143.76 thousand). Figure 6 presents data on the number of agri-environmental-climate packages implemented in individual counties of the Podkarpackie province in the years 2015-2020 under Package 3. Preservation of orchards of traditional varieties of fruit trees.



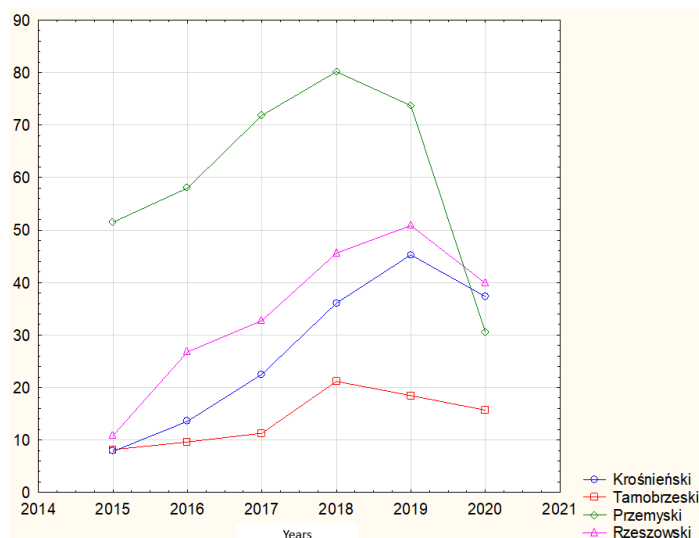
**Figure 6.** Number of agri-environmental-climate packages implemented in 2015-2020 under Package 3.

Preservation of orchards of traditional varieties of fruit trees according to the NUTS 3 administrative division in the Podkarpackie Voivodeship.

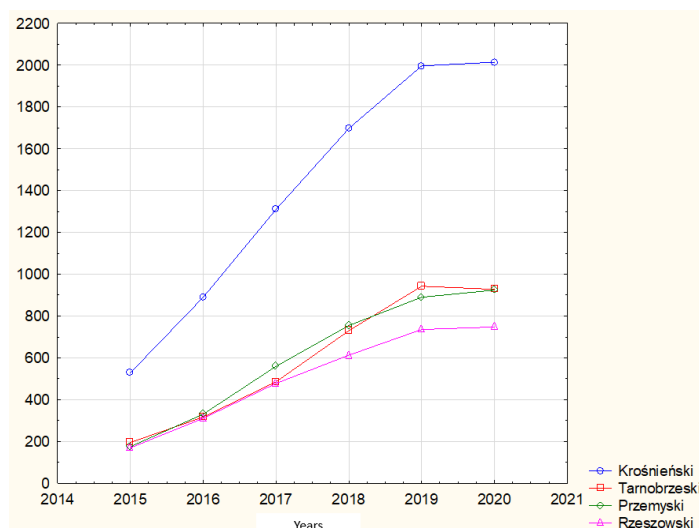
Source: Own calculations based on data from the Agency for Restructuring and Modernisation of Agriculture

As can be seen from the data in Figure 6, the largest number of agri-environmental-climate packages in 2015-2020 were implemented in NUTS 3 Krosno and Rzeszów. In NUTS 3 Krosno, the largest number of agri-environmental-climate commitments fell in 2019 (45), while the fewest commitments (12) were undertaken by farmers in 2015. In NUTS 3 Rzeszów, the largest number of agri-environmental-climate commitments also fell in 2019 (37), while the fewest were in 2015 (7). The analysis shows that the smallest interest among farmers in undertaking agri-environmental-climate commitments occurred in NUTS 3

Tarnobrzeg (from 7 to 20 commitments). Figure 7 presents the amounts of payments granted under Package 3 Preservation of orchards of traditional fruit tree varieties according to the NUTS 3 administrative division.



**Figure 7.** Amount of payment granted in 2015-2020 under Package 3 Preservation of orchards of traditional varieties of fruit trees according to the NUTS 3 administrative division. (PLN thousand)  
 Source: Own calculations based on data from the Agency for Restructuring and Modernisation of Agriculture



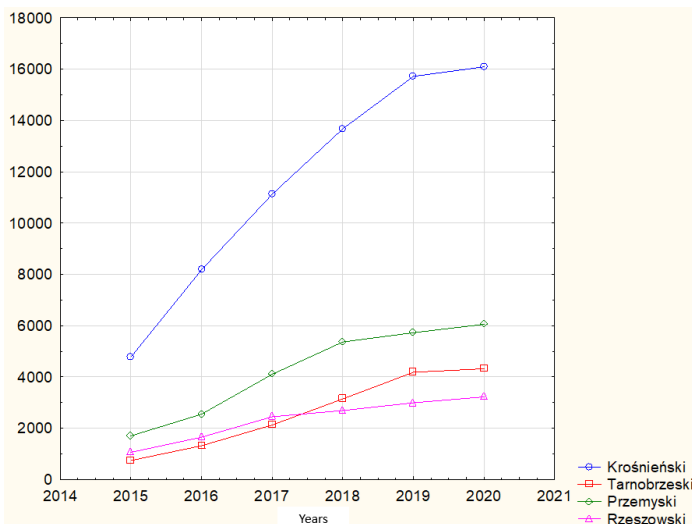
**Figure 8.** Number of agri-environment-climate packages implemented in 2015-2020 under Package 4. Valuable habitats and endangered bird species in Natura 2000 areas according to the NUTS 3 administrative division in the Podkarpackie Voivodeship.  
 Source: Own calculations based on data from the Agency for Restructuring and Modernisation of Agriculture

Analyzing the data contained in Figure 7, it should be noted that the largest amount of financial resources under the obligations resulting from Package 3 was directed to farmers from NUTS 3 Przemyśl. In 2015, the total amount of financial resources transferred under the implementation of the obligations of Package 3 amounted to PLN 51.49 thousand, while in 2018 it was already PLN 80.17 thousand. In turn, the smallest financial resources were directed to NUTS 3 Krosno (from PLN 7.83 thousand to PLN 45.28 thousand) and to NUTS 3 Tarnobrzeg (from PLN 8.15 thousand to PLN 21.16 thousand).

Figure 8 presents data on the number of agri-environmental-climate packages implemented in individual counties of the Podkarpackie province in the years 2015-2020 under Package 4. Valuable habitats and endangered bird species in Natura 2000 areas.

As can be seen from the data in Figure 8, the largest number of agri-environment-climate packages in 2015-2020 were implemented in NUTS 3 Krosno and Przemyśl. In NUTS 3 Krosno, the largest number of agri-environment-climate commitments fell in 2020 (2000), while the fewest commitments (529) were

undertaken by farmers in 2015. In turn, in NUTS 3 Przemyśl, the largest number of agri-environment-climate commitments also fell in 2020 (924), while the fewest were in 2015 (176). The analysis shows that the smallest interest among farmers in undertaking agri-environment-climate commitments occurred in NUTS 3 Rzeszów (from 170 to 748 commitments). Figure 9 presents the amounts of payments granted under Package 4. Valuable habitats and endangered bird species in Natura 2000 areas according to the NUTS 3 administrative division.

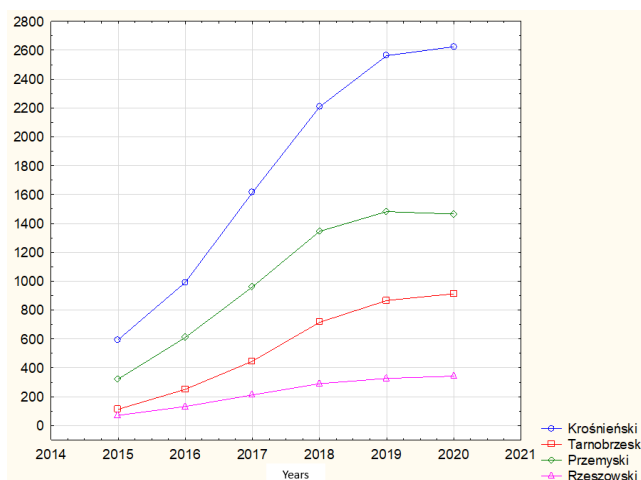


**Figure 9.** Amount of payment granted under Package 4. Valuable habitats and endangered bird species in Natura 2000 areas according to the NUTS 3 administrative division (PLN thousand)

*Source: Own calculations based on data from the Agency for Restructuring and Modernisation of Agriculture*

Analyzing the data contained in Figure 9, it should be noted that the largest amount of financial resources under the obligations resulting from Package 4 was directed to farmers from NUTS 3 Krosno. In 2015, the total amount of financial resources transferred under the implementation of the obligations of Package 4 amounted to PLN 4,779.03 thousand, while in 2020 it was already PLN 16,093.42 thousand. In turn, the smallest financial resources were directed to NUTS 3 Rzeszów (from PLN 1,060.76 thousand to PLN 3,223.99 thousand) and to NUTS 3 Tarnobrzeg (from PLN 742.29 thousand to PLN 4,321.70 thousand).

Figure 10 presents data on the number of agri-environmental-climate packages implemented in individual counties of the Podkarpackie Voivodeship in 2015-2020 under Package 5. Valuable habitats outside Natura 2000 areas.

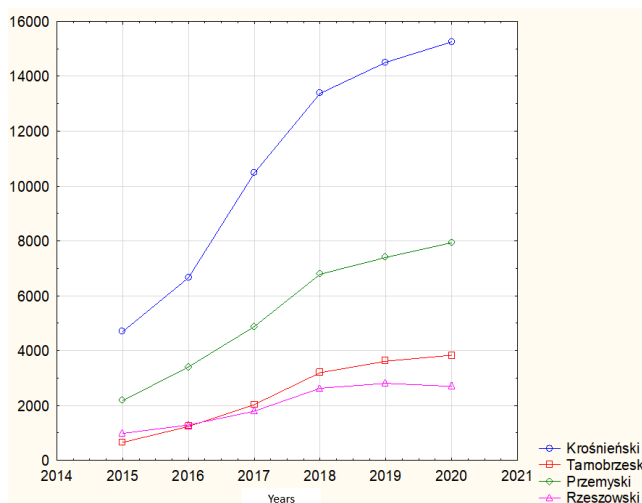


**Figure 10.** Number of agri-environmental-climate packages implemented in 2015-2020 under Package 5. Valuable habitats outside Natura 2000 areas according to the NUTS 3 administrative division in the Podkarpackie Voivodeship.

*Source: Own calculations based on data from the Agency for Restructuring and Modernisation of Agriculture*

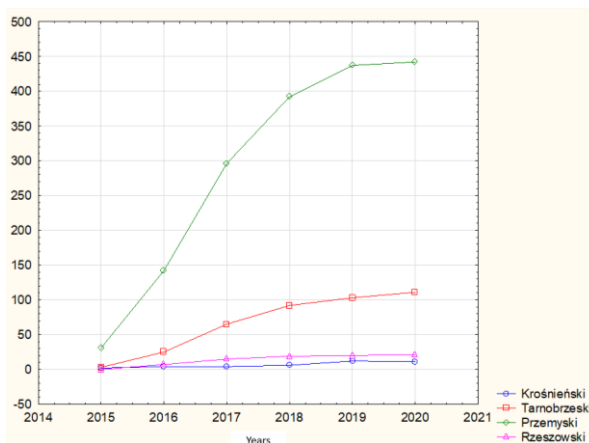
As can be seen from the data in Figure 10, the largest number of agri-environment-climate packages in 2015-2020 were implemented in NUTS 3 Krosno and Przemyśl. In NUTS 3 Krosno, the largest number of agri-environment-climate commitments fell in 2020 (2624), while the fewest commitments (595) were undertaken by farmers in 2015. In NUTS 3 Przemyśl, the largest number of agri-environment-climate commitments fell in 2019 (1482), while the fewest were in 2015 (322). The analysis shows that the smallest interest among farmers in undertaking agri-environment-climate commitments occurred in NUTS 3 Rzeszów (from 71 to 342 commitments).

Figure 11 presents the amounts of payments granted under Package 5. Valuable habitats outside Natura 2000 areas according to the NUTS 3 administrative division.



**Figure 11.** Amount of payment granted under Package 5. Valuable habitats outside Natura 2000 areas according to the NUTS 3 administrative division (PLN thousand)

Source: Own calculations based on data from the Agency for Restructuring and Modernisation of Agriculture



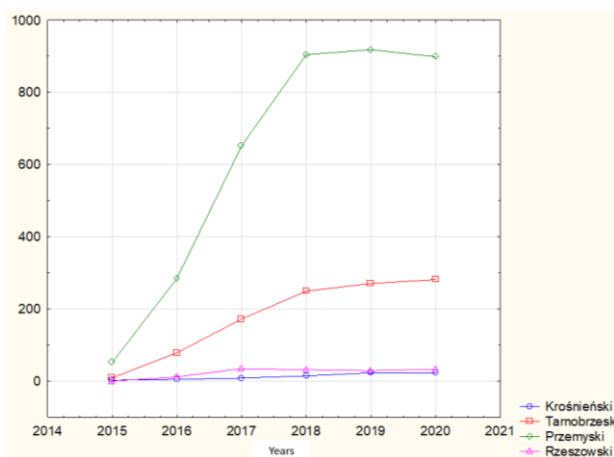
**Figure 12.** Number of agri-environment-climate packages implemented in 2015-2020 under Package 6. Preservation of endangered plant genetic resources in agriculture according to the NUTS 3 administrative division in the Podkarpackie Voivodeship.

Source: Own calculations based on data from the Agency for Restructuring and Modernisation of Agriculture

Analyzing the data contained in Figure 11, it should be noted that the largest amount of financial resources under the obligations resulting from Package 5 was directed to farmers from NUTS 3 Krosno. In 2015, the total amount of financial resources transferred under the implementation of the obligations of Package 5 amounted to PLN 4,692.52 thousand, while in 2020 it was already PLN 15,256.79 thousand. In turn, the smallest financial resources were directed to NUTS 3 Rzeszów (from PLN 987.37 thousand to PLN 2,809.08 thousand) and to NUTS 3 Tarnobrzeg (from PLN 656.90 thousand to PLN 3,835.33 thousand). Figure 12 presents data on the number of agri-environmental-climate packages implemented in individual

poviats of the Podkarpackie Voivodeship in 2015-2020 under Package 6. Preservation of endangered plant genetic resources in agriculture.

As can be seen from the data in Figure 12, the largest number of agri-environment-climate packages in 2015-2020 were implemented in NUTS 3 Przemyśl and Tarnobrzeg. In NUTS 3 Przemyśl, the largest number of agri-environment-climate commitments fell in 2020 (442), while the fewest commitments (31) were undertaken by farmers in 2015. In NUTS 3 Tarnobrzeg, the largest number of agri-environment-climate commitments also fell in 2020 (111), while the fewest were in 2015 (3). The analysis shows that the smallest interest among farmers in undertaking agri-environment-climate commitments occurred in NUTS 3 Krosno (from 2 to 11 commitments). Figure 13 presents the amounts of payments granted under Package 6. Preservation of endangered plant genetic resources in agriculture by NUTS 3 administrative division.

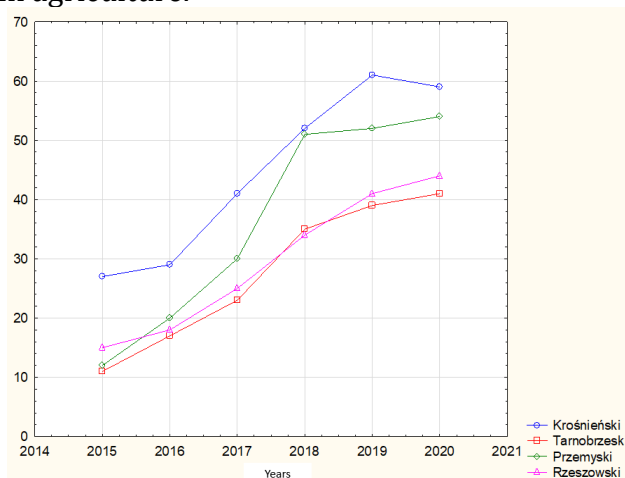


**Figure 13.** Amount of payment granted under Package 6. Preservation of endangered plant genetic resources in agriculture by NUTS 3 administrative division (PLN thousand)

Source: Own calculations based on data from the Agency for Restructuring and Modernisation of Agriculture

Analyzing the data contained in Figure 13, it should be noted that the largest amount of financial resources under the obligations resulting from Package 6 was directed to farmers from NUTS 3 Przemyśl. In 2015, the total amount of financial resources transferred under the implementation of the obligations of Package 6 amounted to PLN 52.02 thousand, while in 2019 it was already PLN 917.81 thousand. In turn, the smallest financial resources were directed to NUTS 3 Krosno (from PLN 2.40 thousand to PLN 23.29 thousand) and to NUTS 3 Rzeszów (from PLN 0.00 thousand to PLN 32.87 thousand).

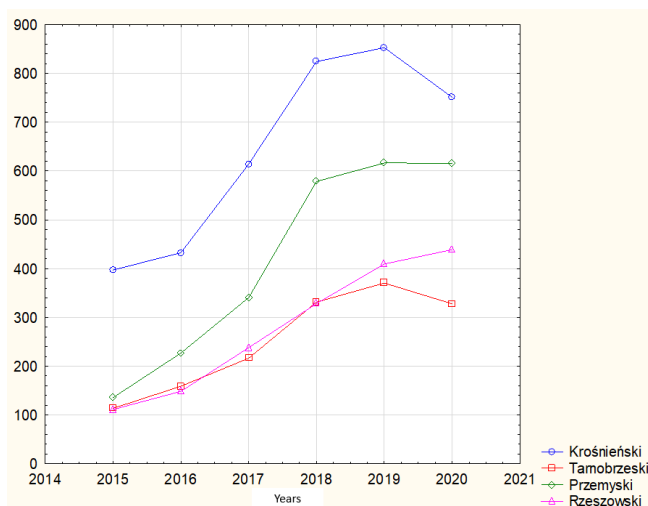
Figure 14 presents data on the number of agri-environmental-climate packages implemented in individual counties of the Podkarpackie province in the years 2015-2020 under Package 7. Preservation of endangered animal resources in agriculture.



**Figure 14.** Number of agri-environmental-climate packages implemented in 2015-2020 under Package 7. Preservation of endangered animal resources in agriculture according to the NUTS 3 administrative division in the Podkarpackie Voivodeship

Source: Own calculations based on data from the Agency for Restructuring and Modernisation of Agriculture

As can be seen from the data in Figure 14, the largest number of agri-environment-climate packages in 2015-2020 were implemented in the Krosno and Przemyśl NUTS 3. In the Krosno NUTS 3, the largest number of agri-environment-climate commitments fell in 2019 (61), while the fewest commitments (27) were undertaken by farmers in 2015. In the Przemyśl NUTS 3, the largest number of agri-environment-climate commitments fell in 2020 (54), while the fewest were in 2015 (12). The analysis shows that the smallest interest among farmers in undertaking agri-environment-climate commitments occurred in the Tarnobrzeg NUTS 3 (from 11 to 41 commitments). Figure 15 presents the amounts of payments granted under Package 7. Preservation of endangered animal resources in agriculture by NUTS 3 administrative division.



**Figure 15.** Amount of payment granted under Package 7. Preservation of endangered animal resources in agriculture by NUTS 3 administrative division (PLN thousand)

Source: Own calculations based on data from the Agency for Restructuring and Modernisation of Agriculture

Analyzing the data contained in Figure 15, it should be noted that the largest amount of financial resources under the obligations resulting from Package 7 was directed to farmers from NUTS 3 Krosno. In 2015, the total amount of financial resources transferred under the implementation of the obligations of Package 7 amounted to PLN 397.26 thousand, while in 2019 it was already PLN 852.71 thousand. In turn, the smallest financial resources were directed to NUTS 3 Tarnobrzeg (from PLN 113.64 thousand to PLN 370.44 thousand) and to NUTS 3 Rzeszów (from PLN 111.22 thousand to PLN 438.82 thousand). Table 2 presents an analysis using the Kruskal-Wallis test of the differences depending on the subregions regarding the number of decisions issued and the total amount of payments granted in the years 2015-2020.

**Table 2.** Analysis of variation by subregions regarding the number of decisions issued and the total amount of payments granted in 2015-2020.

Package	Number of decisions issued		Amount of payment granted	
	H	p	H	p
1	14,40	0,006	11,91	0,020
2	10,30	0,020	11,10	0,018
3	7,44	0,042	10,91	0,023
4	12,42	0,011	12,24	0,010
5	11,64	0,015	11,92	0,014
6	13,32	0,009	13,45	0,007
7	8,21	0,038	10,11	0,024

Source: Own calculations based on data from the Agency for Restructuring and Modernisation of Agriculture

Based on the analysis, it should be stated that all values of the test probability "p" are lower than the assumed significance level (0.05). This means that in relation to all packages in the entire period under review, both indicators were significantly different depending on the subregions.

## CONCLUSION

The Common Agricultural Policy (CAP) was subject to transformations under the influence of social and economic conditions concerning the European Union (EU) countries, as well as under the influence of international trends. One of the foundations of the Common Agricultural Policy was to ensure Community preferences and economic security within the mechanism of the single market. This is done using income redistribution instruments - primarily direct payments and other subsidies that should take into account the specificity of agriculture. Despite the evolution of the Common Agricultural Policy instrument basket, the imperative of developing a competitive agricultural sector, combined with care for the natural environment, remains basically unchanged. Political decision-makers jointly responsible for the shape of the CAP also notice the significant problem of farmers' economic security, the stability of agricultural income, which is becoming a complex issue of a socio-economic nature (Soliwoda 2014).

Agriculture, as one of the main human activities in rural areas, has a significant impact on maintaining safety in the area of the natural environment, shaping the landscape and, above all, the economic security of the farm and its family. Understanding this impact and implementing appropriate environmental protection programs is crucial to improving and preserving the state of natural ecosystems and the safety of the quality of life in the countryside. Farmers who promote practices that contribute to sustainable land management in order to protect valuable natural habitats, soils, climate, waters and endangered bird species, as well as landscape diversity and the protection of endangered genetic resources of crops and farm animals, can apply for additional payments under the agri-environment-climate variants/packages they implement, thereby obtaining additional income, ensuring economic security for their family and farm.

In 2015-2020, Podkarpacie farmers received a total of PLN 274,032,377.6 under the implementation of agri-environmental-climate programs, significantly affecting the economic security of their farms.

The largest number of agri-environmental-climate commitments were implemented by Polish farmers from the Podkarpacie region in the Lubaczów and Mielec counties (25 packages/variants each), as well as in the Jarosław, Przemyśl, Rzeszów and Tarnobrzeg counties (22 packages/variants each). The smallest interest in implementing agri-environmental-climate commitments was shown by farmers living in the following counties: Lesko (11 packages/variants), Ropczyce-Sędziszów (12 packages/variants) and Strzyżów (13 packages/variants).

The largest number of agri-environment-climate packages in 2015-2020 were implemented in NUTS 3 Tarnobrzeg and Przemyśl. In NUTS 3 Tarnobrzeg, the largest number of agri-environment-climate commitments fell in 2019 (29), while the fewest commitments (15) were undertaken by farmers in 2020. In NUTS 3 Przemyśl, the largest number of agri-environment-climate commitments fell in 2018-2019 (47 each), while the fewest were in 2015. The analysis shows that the smallest interest among farmers in undertaking agri-environment-climate commitments occurred in NUTS 3 Krosno (from 3 to 7 commitments).

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