The Common Agricultural Policy of the European Union – the present and the future

EU Member States point of view

INSTITUTE OF AGRICULTURAL
AND FOOD ECONOMICS
NATIONAL RESEARCH INSTITUTE

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Proceedings of the International Scientific Conference
"The Common Agricultural Policy of the European Union – the present and the future"
Multi-Annual Programme 2015-2019
"The Polish and the EU agricultures 2020+. Challenges, chances, threats, proposals"
5-7 December 2017
Stare Jabłonki, Poland

MULTI-ANNUAL PROGRAMME 2015 - 2019

THE POLISH AND THE EU AGRICULTURES 2020+
CHALLENGES, CHANCES, THREATS, PROPOSALS

Warsaw 2018

This monograph was prepared under the Multi-Annual Programme 2015-2019
"The Polish and the EU agricultures 2020+. Challenges, chances, threats, proposals".
The publication is a collection of selected papers delivered at the 22th edition of the International Scientific Conference organized by the Institute of Agricultural and Food Economics - National Research Institute. The theme of the conference was "The Common Agricultural Policy of the European Union – the present and the future. The conference was placed on 5-7 December 2017 in Stary Jabłonki in Poland. Common Agricultural Policy was and still is one of the key pillars of European integration. Published in two volumes materials refer directly to the current and future of the CAP in EU and non EU member states, the strategic objectives and principles of agricultural policy for the agri-food sector and rural areas, address the issues of equilibrium between agriculture, forestry and land use, relate to the dilemmas for the EU budget and the CAP after 2020, CAP instruments and their adjustment, transformations of the rural economy and programming of the rural and agricultural policy, as well as productivity and production efficiency and tensions between sectoral action and between different models of territorial activities.

ISBN 978-83-7658-743-1

DOI: 10.30858/pw/9788376587431

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17. Afforestation of agricultural land financed from the RDP 2014-2020

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DOI: 10.30858/pw/9788376587431.17

Abstract

The paper highlights the role of afforestations as an important method for management of agricultural land with adverse natural farming conditions in Poland. In the first place, it assessed natural farming conditions in Poland in regional terms and their impact on the economic situation and the possibility of afforestation on farms. The next step was to assess the state of implementing existing afforestations financed from the RDP 2014-2020. Then, it estimated their contribution to carbon dioxide (CO_2) sequestration from the atmosphere in the Land Use, Land Use Change and Forestry (LULUCF) area. The paper used the data from the Agency for Restructuring and Modernisation of Agriculture (*Agencja Restrukturyzacji i Modernizacji Rolnictwa*, ARiMR), Institute of Soil Science and Plant Cultivation – State Research Institute (*Instytut Uprawy Nawożenia i Gleboznawstwa – Państwowy Instytut Naukowy*, IUNG) and the data from farms conducting accounting for the Polish Farm Accountancy Data Network (Polish FADN) in 2013-2015, as well as the literature data.

Keywords: afforestations, RDP 2014-2020, APAV index, LULUCF, CO_2

JEL codes: Q15, Q54, Q57

17.1. Introduction

In Poland, an important difficulty for farms wishing to conduct the effective agricultural production are often adverse natural farming conditions, as evidenced by the average agricultural production area valorisation (APAV) index amounting to 66.8 points (pts) per 120 achievable points [Jadczyszyn et al., 2013]. What is more, 32.9% of cadastral districts are characterised by the average APAV index lower than 52 pts[24]. This indicates that these areas have particularly difficult natural conditions to conduct agricultural production, resulting from, *inter alia*, low soil quality, unfavourable land relief and adverse climate. These lands, due to their low suitability for agriculture, may, therefore, be a potential area for afforestation in the first place.

[24] Data from the Institute of Soil Science and Plant Cultivation National Research Institute (IUNG) in Puławy.

In Poland, in 2004-2015 the forest cover increased from 28.7 to 29.5%, i.e. by about 0.8 percentage points (p.p.) [GUS, 2010, 2016a], of which 0.3 p.p. accounted for afforestations made as part of the RDP 2004-2006, 2007-2013, and 2014-2020. As part of the existing RDP, afforestations covered the area of 78.1 thousand ha of land, of which 91.1% are afforestations financed under the RDP 2014-2020[25 and 26]. This means that a large impact on the increased forest cover in Poland is exerted by afforestations supported under the EU' Common Agricultural Policy. This is particularly important both in the context of meeting the objectives of the National Programme for the Augmentation of Forest Cover (NPAFC), which assumes that by 2020 Poland should achieve the forest cover at the level of 30% and potential participation of the LULUCF[27] area in reducing the effort to limit the greenhouse gas emissions from the Effort Sharing Regulation (ESR) area after 2020[28 and 29].

This paper first assessed natural farming conditions in Poland in regional terms and their impact on the economic situation and the possibility of afforestation in farms. Then, it analysed the state of implementing the existing afforestations financed under the RDP 2014-2020. In addition, in view of the increasing importance of the LULUCF area, including afforestations within the objectives of the EU climate policy for 2021-2030, the paper estimated the contribution of existing afforestations financed from the RDP 2014-2020 to CO_2 sequestration from the atmosphere in the LULUCF area.

17.2. Natural farming conditions in Poland in regional terms

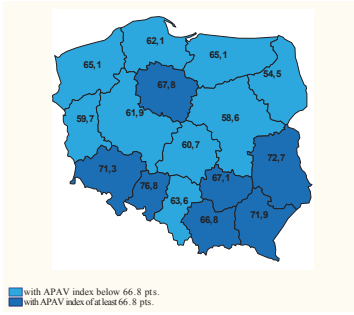
Among the factors having a significant impact on the economic situation of farms we should identify their natural farming conditions. In the paper, these conditions were described using the APAV index, whose value was determined by the IUNG for each commune and cadastral district in Poland. The structure of this index takes into account such components as: soil quality, agroclimate, hy-

[25] Status as of 31.12.2016.
[26] Afforestations financed under the RDP 2014-2020 apply to afforestations financed under new commitments, commitments from the RDP 2007-2013 (afforestation premium and/or maintenance premium) and commitments from the RDP 2004-2006 (afforestation premium).
[27] According to the methodology of the Intergovermental Panel on Climate Change (IPCC) in the LULUCF area we estimate the balance of CO_2 sequestration from the atmosphere in total from the sectors of forestry land, afforested, deforested, permanent grassland as well as arable, boggy and inhabited land.
[28] The ESR area covers greenhouse gas emissions from the following sectors: transport, waste, construction, fuel processing and transport, industrial processes not included in the ETS area and agriculture [Sytuacja emisyjna..., 2016].
[29] Proposal for a Regulation of the European Parliament and of the Council of 16 October 2017 on the inclusion of greenhouse gas emissions and removals from land use, land use change and forestry into the 2030 climate and energy framework and amending Regulation No 525/2013 of the European Parliament and the Council on a mechanism for monitoring and reporting greenhouse gas emissions and other information relevant to climate change – general approach [Proposal for a Regulation, 2017].

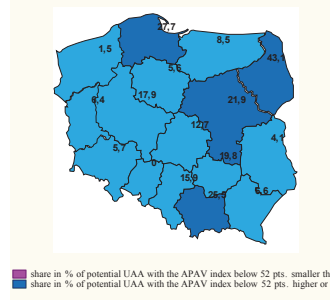
drographic conditions and land relief, and the importance of each of them is proportionate to its impact on the yield of crops [Krasowicz et al., 2011; Jadczyszyn et al., 2013][30].

As stressed in the introduction, in Poland the average APAV index is 66.8 points, although it is territorially diversified. In the voivodeships, it ranges from 54.5 points (Podlaskie Voivodeship) to 76.8 points (Opolskie Voivodeship) (Map 1). The largest share of potential UAA with the APAV index lower than 52 points[31] in the area of potential UAA[32] in total occurs in the Podlaskie Voivodeship (43.1%), Pomorskie Voivodeship (27.7%) and Małopolskie Voivodeship (25.5%), while the smallest in the Zachodniopomorskie Voivodeship (1.5%), Lubelskie Voivodeship (4.1%) and Kujawsko-Pomorskie Voivodeship (5.6%). There are no weak areas for the agricultural production in the Opolskie Voivodeship[33] (Map 2).

Map 1. APAVindex (points) in the voivodeships in Poland



Map 2. Share in % of potential UAA with the APAV index below 52 points in the area of potential UAA in total in the voivodeships in Poland

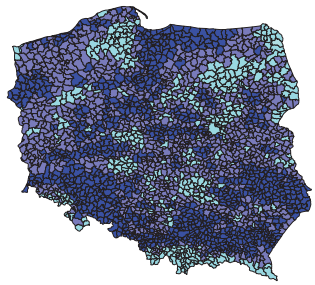


Source: own study based on the IUNG.

In the case of the communes, the average APAV index is contained between 0[34] and 108.3 (commune of Żórawina)[35]. In 58.6% of the communes, it is lower than the national average (66.8 points), of which in 18.2% of the communes it is lower than 52 points (Map 3). In the remaining 41.4% of the communes, their vast majority (80.9%) have the APAV index from 66.8 to 86.8 points.

[30] Soil quality is assigned 95 points at a maximum, agroclimate – 15 points and land relief and hydrographic conditions – 5 points each. The APAV index calculated as a total of these factors may have the maximum value of 120 pts.
[31] Applies to the potential area of UAA with the APAV index below 52 points according to the register and geodetic area of the country.
[32] Applies to the potential area of UAA in total according to the register and geodetic area of the country.
[33] Data from the IUNG database.
[34] This situation applies to seven urban communes in Poland [IUNG].
[35] Data of the IUNG in Puławy.

Map 3. APAV index (points) in the communes in Poland



APAV index below 52 points
APAV index of at least 52 and below 66.8 points
APAV index of at least 66.8 points

Source: as in Map 1 and 2.

17.3. The impact of natural farming conditions in Poland on the economic situation and the possibility of afforestation on farms

As determined in the previous subchapter, Poland is characterised by the spatial variability of natural farming conditions, with the large share of areas of low suitability for agriculture. One of the important possibilities to manage this type of land is afforestation. The more so that farms can now receive the aid to afforest their own land under the measure *Afforestation and creation of afforested areas* as part of the RDP 2014-2020. This aid takes a form of support due to the costs incurred for establishing and maintenance of forest stands (support for afforestation and maintenance premium) and lost income from agricultural activities (afforestation premium), but not only. Since 2015, it has been possible to receive additional direct payments to afforested land for the entire duration of the commitment [Przewodnik..., 2016]. According to the figures from Table 1, potential land for afforestation should be sought after on farms from the communes with the APAV index lower than 66.8 points, including primarily on farms specialising in field crops and with mixed production, where average income per 1 ha of UAA in 2013-2015 was lower than the afforestation premium rate (PLN 1215) plus the single area payment rate (PLN 453.7)[36]. This situation is understandable, since one of the important constraints for conducting the profitable agricultural production in the areas with lightweight soils with the low water holding capacity is the absence or scarcity of applying animal manure whose basic function on the farm is at least to maintain the resources of soil organic content.

[36] This paper also included an option for a farm to receive single area payment to afforested areas [Przewodnik..., 2016].

Table 1. Farm income per 1 ha of UAA (PLN thousand) on farms identified by type of farming and natural farming conditions (according to the APAV index) based on the data of the Polish FADN 2013-2015

Communes:	Farms with:					
	field crops	horticultural crops	permanent crops	grazing animals in total	granivores in total	mixed production
with the average APAV index below 66.8 points	1.6	11.0	3.8	2.9	3.7	1.5
with the average APAV index of at least 66.8 points	2.0	20.6	4.6	3.2	4.3	2.1

Source: own study based on the data from the IUNG and Polish FADN in 2013-2015.

17.4. Land afforestation financed from the RDP 2014-2020 in regional terms

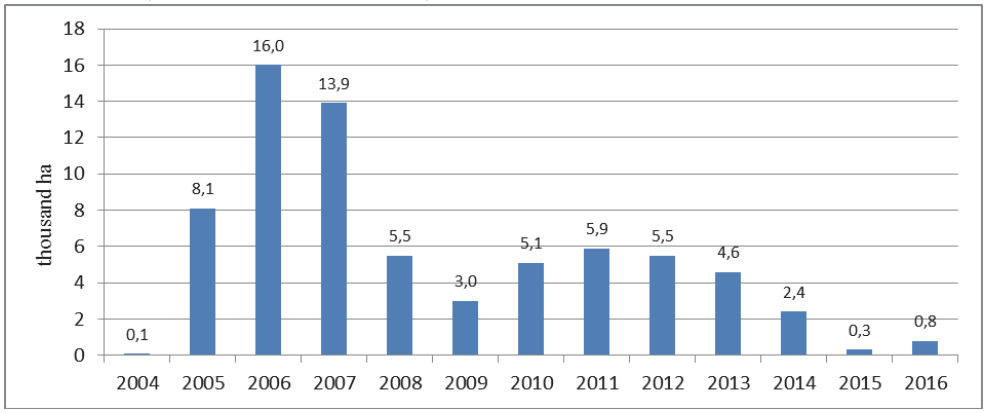
In 2004-2015 in Poland the area of potential UAA decreased by 2.7%, i.e. by 524.4 thousand ha, and of wasteland – by 5.3%, i.e. by 26.3 thousand ha [GUS 2007, 2016b]. The important reasons for this situation should be sought both in the increase in the area allocated for transport and housing purposes, as well as in the increased forestry land area. What is important, over the analysed period, the share of existing afforestations financed under the RDP 2014-2020[37] in the decrease in the area of potential agricultural land and wasteland in Poland amounted to 12.9%. This means that afforestations financed under the RDP 2014-2020 have a noticeable impact on the change in the land use type.

The RDP 2014-2020 has financed so far 71.2 thousand ha of afforested land[38], of which coniferous, deciduous and mixed forests amounted to, respectively; 17.7, 8.8 and 44.7 thousand ha of land. The largest area of land was afforested in 2006 and 2007, respectively, 16.0 and 13.9 thousand ha (Figure 1). However, in recent years, the process of reducing the area of afforestation is in progress. In 2015 and 2016, 0.3 and 0.8 ha of land were afforested, respectively.

So far, 72.9% of total afforestations supported under the RDP 2014-2020 were made in the voivodeships with the average APAV index below the national average. The largest area of land was afforested in the Warmińsko-Mazurskie (17.1 thousand ha), Mazowieckie (7.3) and Zachodniopomorskie (6.3) Voivodeships while the smallest in the Śląskie (0.9), Opolskie (0.5) and Małopolskie (0.5) Voivodeships (Map 4).

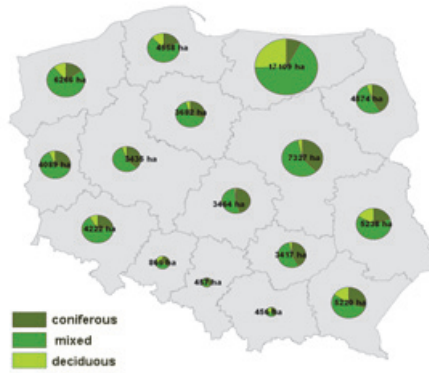
[37] Status as of 31.12.2016.
[38] Status as of 31.12.2016.

Figure 1. Area of afforestations made in 2004-2016 and financed under the RDP 2014-2020 (status as of 31.12.2016)



Source: own study based on the ARMA data.

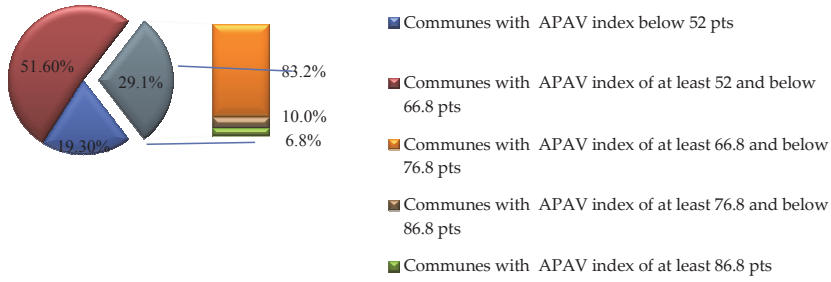
Map 4. Area of coniferous, deciduous and mixed afforestations (ha) financed under the RDP 2014-2020 by voivodeship in Poland (status as of 31.12.2016)



Source: own study based on the ARMiR and IUNG data.

In the case of the communes, the leading role was also played by afforestations in the communes with the average APAV index below the national average. In these types of communes, 70.9% of total afforestations supported under the RDP 2014-2020 were made, including 19.3% in the communes with the APAV index below 52 points (Figure 2). In turn, the remaining 29.1% of afforestations were made in the communes with the APAV index of at least 66.8 points, and were dominated by afforestations (83.2%) in the communes with the APAV index lower than 76.8 points. Definitely the lower share, accounting for, respectively, 10.0 and 6.8%, was that of afforestations made in the communes with the APAV index of at least 76.8 points.

Figure 2. Distribution (%) of afforestations financed under the RDP 2014-2020 by APAV index in the communes in Poland (state as of 31.12.2016)



Source: own study based on the ARMiR and IUNG data.

17.5. Importance of land afforestations financed under the RDP 2014-2020 in the EU climate policy for 2021-2030.

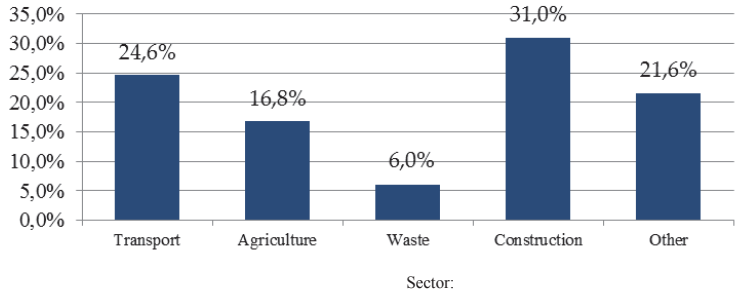
According to the Proposal for the Regulation of the European Parliament and of the Council of 16 October 2017, Poland should reduce greenhouse gas emissions within the ESR area in 2021-2030 by 7% when compared to the level of 2005 [Proposal for a Regulation, 2017]. Bearing in mind that according to the above, in the EU countries greenhouse gas emission reductions within the ESR area should cover all sectors, in this situation Poland will have to make efforts to reduce greenhouse gas emissions also in the agricultural sector, whose annual greenhouse gas emissions are at about 17% (in 2015 – 16.8%) of the total greenhouse gas emissions within the ESR[39] area (Figure 3).

It should be remembered that in the agricultural sector many contemporary greenhouse gas emission reduction practices can raise the production costs while not having any positive impact on its value[40]. In the light of the above, it is, therefore, appropriate to recognise two additional findings of the European Parliament and of the Council of 16 October 2017, which make it possible, in the selected EU countries (including Poland) to achieve more easily the objective of reducing greenhouse gas emissions within the ESR area in 2021-2030.

[39] The need to include the agriculture sector in reducing greenhouse emissions has also been included in the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions of 29 November 2017 on *The Future of Food and Farming*. European Commission, 29.11.2017.

[40] The potential of reducing greenhouse gas emissions in Polish agriculture taking into account the effects of the Common Agricultural Policy. National Research Institute of Animal Production, University of Life Sciences in Lublin, Institute of Technology and Life Sciences, WULS, IERiGŻ-PIB, expert opinion for the MRiRW, Warsaw 2015.

Figure 3. Structure (%) of greenhouse gas emissions within the ESR area in Poland in 2015



Source: own study based on KOBIZE [2017].

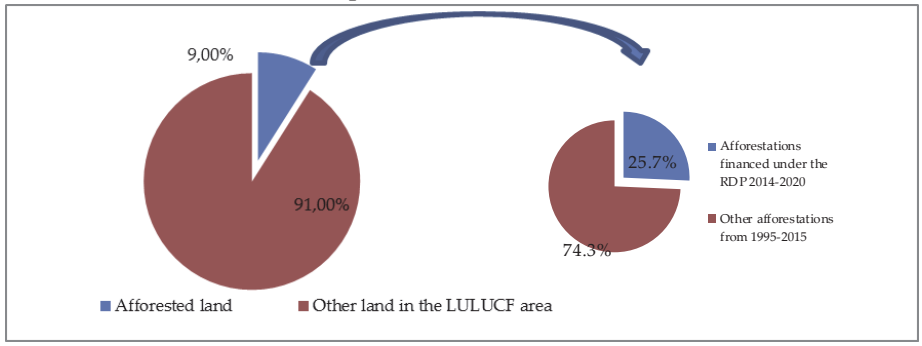
The first one applies to a possibility of using additional CO_2 equivalent units as part of the security reserve[41]. The other allows to include a certain contribution of the LULUCF area therein. In this case, the possibilities of CO_2 sequestration from the atmosphere in the LULUCF area likely to be used, to a certain extent, in limiting the effort to reduce greenhouse gas emissions from the ESR area in 2021-2030 should be sought, *inter alia*, in the afforestation sector. This is an advantage of this approach, as in this sector there are the possibilities of CO_2 sequestration from the atmosphere. Taking into account the data from the National Centre for Emissions Management (KOBiZE) in Poland in 2015, the LULUCF area absorbed 29.9 million tonnes of CO_2, including the afforested land sector – 2.7 million tonnes of CO_2[42]. Moreover, given that in 1995-2015 afforestations financed from the RDP 2014-2020 accounted for 25.7% in total afforestations, it can, therefore, be estimated that in 2015 those afforestations absorbed about 0.7 million tonnes of CO_2[43] (Figure 4). In this context, it is necessary to highlight the positive importance of afforestations financed from the RDP 2014-2020 in the EU climate policy for 2021-2030.

[41] The security reserve in the selected EU countries will aim at easier achievement of the target of reducing greenhouse gas emissions within the ESR area in 2021-2030. It will be 115 million tonnes of CO_2 eq. and it will be dedicated to the EU countries where, *inter alia*, GDP *per capita* is lower than the EU average and if their total emissions within the ESR area in 2013-2020 are below the established limits in 2013-2020 [Proposal for a Regulation, 2017].

[42] In Poland, the category of afforested land is the second largest source of CO_2 sequestration in the LULUCF sector (the first largest largest source of CO_2 sequestration in the LULUCF sector is the category of forestry land) [KOBIZE, 2017].

[43] According to the methodology of the Intergovermental Panel on Climate Change (IPCC), used by KOBiZE for the annual inventory of greenhouse gases in Poland, forestry land is treated as afforested land for 20 years from the moment of their afforestation. According to the GUS data, in Poland in 1995-2015, 276.7 ha of land were afforested [GUS, 2016a].

Figure 4. Share of afforested land, including afforestations financed under the RDP in 2014-2020 in total CO2 sequestration in the LULUCF area in Poland in 2015



Source: own study based on the data from the ARMiR, GUS and KOBIZE [2017].

17.6. Summary and conclusions

In the first place, the study took account of natural farming conditions in Poland in regional terms, and their impact on the economic situation and the possibility of afforestation on farms. Then, it estimated the state of implementing afforestations financed under the RDP 2014-2020 in regional terms and their contribution to CO_2 sequestration from the atmosphere in the LULUCF area.
Analysis showed that:

- In Poland, there is the large share of potential UAA with low suitability for agriculture. It should be noted that 32.8% of cadastral districts have the average APAV index lower than 52 points per 120 achievable points. Therefore, these are the areas with land having the particularly unfavourable physical structure of soils and frequently negligible organic matter content. The worst situation in terms of the share of such poor soils in the potential area of UAA in total is in Podlaskie, Pomorskie and Małopolskie Voivodeships. Given the above, it should be stated that one of the alternatives to manage this type of land is afforestation. The more that on farms characterised by the absence or scarcity of animal manure and operating in the areas with unfavourable natural farming conditions, afforestation of their weakest land is economically reasonable.
- Afforestations financed under the RDP 2014-2020 have a noticeable impact on the change in the land use type. In 2004-2015, their share in the decrease in the area of potential UAA and wasteland in Poland amounted to 12.9%. Moreover, so far, 72.9 and 70.9%, respectively, of all afforestations supported under the RDP 2014-2020 were made in the voivodeships and communes with the average APAV index below the national average

(66.8 pts). This means that existing afforestations are made mostly in the areas with the large share of poor soils with low suitability for agriculture.

- In recent years, there was a decrease in afforestations financed from the RDP 2014-2020. It should not be ruled out that the important reasons for this situation is the progressive process of increased specialisation and concentration of the agricultural production in Polish agriculture, which results in the increased production potential and economic power of farms and the possibility for potential beneficiaries to participate in other measures as part of the RDP 2014-2020, which strengthen their tendency to conduct the agricultural production. However, taking into account that in Poland there are still afforestation needs resulting from the large share of poor soils with low suitability for agriculture, it should be noted that farmers would still be willing to implement afforestations. Importantly, this tendency will probably be strengthened by the effects of climate change in a form of, *inter alia*, drought, currently escalating in Polish agriculture and resulting in the largest production losses on poorer soils.
- Taking into account the current findings of the European Parliament and of the Council on the EU climate policy for 2021-2030, it should be noted that afforestations financed under the RDP 2014-2020 will be able to contribute to limiting the effort to reduce greenhouse gas emissions from the ESR area, including agriculture after 2020. It is an important finding, as in the case of the agricultural sector the possibilities of further reducing greenhouse gas emissions without any loss to its economic effects are negligible.

References

1. Accounting data of farms from the Polish FADN database.
2. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions of 29 November 2017 on The Future of Food and Farming. European Commission, Brussels.
3. Data from the database of the Agency for Restructuring and Modernisation of Agriculture.
4. Data from the database of the Institute of Soil Science and Plant Cultivation State Research Institute (IUNG) in Puławy.
5. GUS (2007). Rocznik statystyczny rolnictwa i obszarów wiejskich. Warsaw.
6. GUS (2010). Leśnictwo 2010. Warsaw.
7. GUS (2016a). Leśnictwo 2016. Warsaw.
8. GUS (2016b). Rocznik Statystyczny Rolnictwa. Warsaw.

9. Jadczyszyn J., Kopiński J., Kuś J., Łopatka A., Madej A., Matyka M., Musiał W., Siebielec G. (2013). Rolnictwo na obszarach specyficznych. Agricultural Census 2010, GUS, Warsaw 2013
10. KOBiZE (2017). Poland's National Inventory Report 2017.
11. Krasowicz S., Oleszek W., Horabik J., Dębicki R., Jankowiak J., Stuczyński T., Jadczyszyn J. (2011). Racjonalne gospodarowanie środowiskiem glebowym Polski. Polish Journal of Agronomy, No 7.
12. Potencjał redukcji emisji gazów cieplarnianych w polskim rolnictwie z uwzględnieniem efektów Wspólnej Polityki Rolnej (2015). IZ – PIB, Uniwersytet Przyrodniczy w Lublinie, ITP, SGGW, IERiGŻ – PIB, ekspertyza wykonana dla MRiRW, Warszawa.
13. Proposal for a Regulation of the European Parliament and of the Council on the inclusion of greenhouse gas emissions and removals from land use, land use change and forestry into the 2030 climate and energy framework and amending Regulation No 525/2013 of the European Parliament and the Council on a mechanism for monitoring and reporting greenhouse gas emissions and other information relevant to climate change – general approach. Council of the European Union, Brussels.
14. Przewodnik po działaniu Zalesianie i tworzenie terenów zalesionych (2016). MRiRW, Warszawa.
15. Sytuacja emisyjna w sektorach non-ETS w perspektywie roku 2030 w odniesieniu do potencjalnego celu redukcyjnego dla Polski (2016). MŚ, Warszawa 2016.