

ANALYSIS OF THE EVOLUTION OF THE AGRICULTURAL MACHINERY AND EQUIPMENT PARK IN THE CONTEXT OF NRDP 2014-2020 AT THE LEVEL OF THE NORTH-WEST REGION, ROMANIA

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RESEARCH ARTICLE

Abstract

The contemporary agriculture requires an extensive use of technology and equipment as they are need for better performance. They are also highly expensive and one solution for their financing may be the use of European funds. For that purpose the NRDP 2014 – 2020 proved to be an intensive source of financing. One of the most successful regions from that aspects seems to be the North-West region. According to national statistics, it ranks 2nd nationally in the absorption of funds allocated to sub-measure 4.1 Investments in agricultural holdings, which is also evident from the increase in the number of agricultural machinery in the main categories.

Keywords: (max. 5) agricultural machines, NRDP 2014-2020, submeasure 4.1, North West Region

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INTRODUCTION

Romania, as a member state of the European Union starting with January 2007, benefited from non-reimbursable European funds within the Common Agricultural Policy (CAP). The Common Agricultural Policy (CAP) is structured on two pillars: Pillar 1 that of the common market organizations and Pillar 2 that of rural development that presents the measures to be taken in regard with the development of rural areas. (Brinaru & Dona, 2015) In terms of financial and intervention tools, the Common Agricultural Policy remains to be the most significant EU policy that affects. (Oprea, I.A. and Gheorghe, E., 2023)

Romania benefited from non-reimbursable funds in the period 2007-2013 and 2014-2020 in the total amount of 16.14 billion euros in order to improve the living conditions in the rural area, respectively the development of the agricultural and non-agricultural activity sectors (Sebestien et al., 2023). Each time the financial allocations for cohesion policy and CAP came with a series of so-called “conditionalities” meant to guarantee the proper use of the EU funds. (Chereji et al, 2020). Therefore, Romania implements the PAC in compliance with all conditions.

NRDP 2014-2020 was adopted by the European Commission on May 26, 2015. It lays the foundations for the implementation of our country's priorities in terms of the use of 12.7 billion Euros, over a period of 9 years (2014-2020, plus the extension of 2 years, until 2022). (Chereji A, Chiurciu I, 2022)

The most requested funds in Romania were for the modernization of agricultural holdings through the purchase of high-performance machines and equipment. This support has brought significant changes to the national agricultural machinery fleet.

The modernization of agricultural farms has always been an important objective of the CAP, as modernization helps farmers to be economically competitive and use environmentally sustainable technologies. (Colf et al, 2023)

Regarding the financing of agricultural holdings in the period 2014-2020, they were financed under Measure 4 Investments in physical assets, submeasure 4.1 Investments in agricultural holdings. The final goal is to improve the overall performance of the agricultural holdings, increasing their competitiveness and added value of agricultural products by on-farm processing of products and their direct marketing in view to create and

promote integrated short chains. (Felici et al, 2018).

The North- West region has in its composition the following counties: Bihor; Bistrita-Nasaud; Cluj; Maramures Satu Mare and Sălaj. The North-West region has an area of 34,160 km², which represents 14.3% of the total territory of Romania, occupying the 4th place nationally. (Soare et el, 2020). Of the total area of the region, about 60% was used in agriculture.

The purpose of the paper was to analyse the evolution of the agricultural machinery and equipment park in the North-West region during 2014-2020, analysis carried out in conjunction with the funds allocated to measure 4 Investments in fixed assets, respectively sub-measure 4.1 Investments in agricultural holdings. Measure 4 was the measure with the largest allocation in the 2014-2020 PNDR framework with a nominal value of 3.6 billion euros.

MATERIAL AND METHOD

For the purposes of this paper we have extensively used the quantitative method. Also the desktop research method was used as we have proceeded to the analysis of specialized literature - field of interest in the use of funds from Pillar II of the Rural Development PAC

We used the Tempo Online database of the National Institute of Statistics to analyse the evolution of the park of agricultural machinery and equipment at the national level, respectively at the level of the North West Region, the region that is the subject of this study.

At the same time, we analysed the annual progress reports of the 2014-2020 NRDP implementation to highlight the use of the funds allocated for the modernization of agricultural holdings through the purchase of high-performance agricultural machinery and equipment.

RESULTS AND DISCUSSIONS

Technical equipment of agriculture is one of the essential elements in capitalizing on the potential existing in this sector, implicitly, in ensuring the food security of the country's population. The level of the factors of production represents the decisive element in the development of the production processes in agriculture. (Bădan et al, 2017)

In terms of the highest inflows, most of the money in the period 2014-2020, for submeasure 4.1, was attracted by the South-East Development Region with approximately 227 million euros attracted, followed by the North-West Development Region with 169 million euros attracted. (Curea, I.C. and Fîntîneru, G..2021).

The purpose of the investments supported under sub-measure 4.1 related to NRDP 2014-2020, respectively the transition period, is to support investments to increase the competitiveness of agricultural holdings by equipping them with high-performance machinery and equipment in relation to the current agricultural structure. (AFIR)

Of the 3,416,046 ha representing the total area of the North West Region, approximately 2,079,500 ha (60.8%) were in 2014 intended for agriculture (arable land; pastures and hayfields; fruit growing and viticulture). According to the Development Plan of the North-West Region 2021-2027, the counties that have the largest share of the agricultural area used in the total area are:

- ✓ Satu Mare (71,9),
- ✓ Cluj (64,9%) și
- ✓ Bihor (64,6%), while
- ✓ Maramureș (48,5%) and
- ✓ Bistrița Năsăud (55,6%) have lower ratios.)

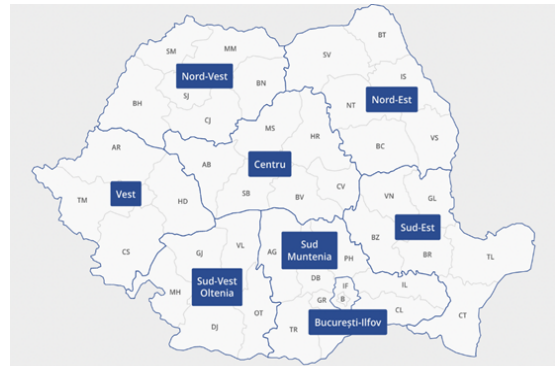


Figure 1 Map of Romania - Development Regions
Source: The-8-agencies-for-regional-development-in-Romania-have-become-management-authorities-for-regional-operational-programs

Starting from the fact that in the North West region, 50% of its surface is used in agriculture, we considered it appropriate to highlight the situation of the agricultural machinery and equipment park. It is known that any applicant, when submitting a financing request for approval, has as a main condition the sizing of the agricultural holding and the

purchase of agricultural machinery to be carried out in relation to this very important sizing. So, once the agricultural holding has been correctly dimensioned and placed in a certain category of farm (small, medium, large), the justification of the purchase of equipment is requested in relation to the area owned, the crop plan as well as the economic size of the farm.

It can be seen from table no. 1 that there are substantial increases in a certain category of agricultural equipment and machinery, but also decreases in their number in 2022 compared to the reference number 2014. We extracted and processed this data precisely to observe what changes the agricultural machinery park has undergone.

Thus, in 2022, at the national level there was an increase in the number of physical agricultural tractors by 51,675 heads, and at the level of the North West region, this increase was represented by 15,911 heads per tractor, the increase at the level of the North West region being 21.25% of the total growth at the national level. We can thus conclude that there was a very high demand for the purchase of tractors, as a necessity for carrying out the activity at the farm level.

A numerical increase was also registered by plows for tractors, where in 2022 there were 162,000 pieces, compared to 156,964 in 2014. The increase in the number of plows by 5,036 pieces also represents the increase in interest in completing the equipment parks and agricultural equipment at farm level in order to carry out agricultural works on time. Out of the total of 5,036 tractor plows as a difference in 2022 compared to 2014, the Northwest Region owns 4,010 trailed plows, which represents a very high percentage, about 80%.

In 2022, the number of hay balers increased to 19,966 from 10,871 in 2014, which represents an increase of 9,045 pieces of equipment. At the level of the North West region, this increase was highlighted by a number of 2,884 pieces at the level of 2022 in addition compared to the year 2014.

In addition to the increasing trend recorded by machines such as agricultural tractors, tractor plows, balers for straw and hay, there were also significant decreases in the number of mechanical seeders, mechanical cultivators both nationally and regionally Northwest. For a single category of agricultural equipment, at the level of the North West Region for the year 2022, compared to the year 2014, there was a decrease of 853 pieces of self-

propelled combines for grain harvesting, even if at the level of the country their number had a numerical increase of 724 pieces of equipment.

Where there are numerical decreases, they can be attributed to the scrapping of the respective equipment or the appearance of other equipment that can take over the agricultural work carried out by them.

At the regional level, there was a particular interest in accessing non-reimbursable European funds within the PNDR 2014-2020. Farmers showed a special interest in the development of the equipment park, which was highlighted by the large number of projects financed at the level of the North West region. A special interest was shown by the large farmers, they purchased equipment and machinery that would lead to an increase in productivity at the farm level, by carrying out agricultural works at the right times.

At the same time, the purchase of high-performance equipment for agricultural holdings was a necessity for them, precisely to cope with the technical progress that this type of equipment has undergone.

It is important to underline the fact that, at the level of submeasure 4.1 which financed the purchase of agricultural equipment and machinery, the support for this type of investment was broken down by the other types of investments, which was achieved towards the end of the programming period precisely because of the very strong interest shown by the potential beneficiaries.

Thus in accordance with the Applicant's Guide related to priority P 4.1.1 - Simple purchases of agricultural machinery, at the farm level (vegetable) - the applicant to receive financing must follow the Extension and/or modernization of vegetable and mixed farms (for all vegetable crops, including forage related to the farm livestock) through the purchase of agricultural machinery. (The Applicant's Guide, 2024).

Thus, for the last session of receiving projects related to the funds allocated to the financial period 2014-2020, session held in 2024, those projects that provide for the purchase of agricultural machinery that contribute to the fulfilment of the environmental and climate conditions applicable to farmers in the context of PS PAC 2023-2027 are financed (no tillage, minimum/low tillage, strip tillage machines).

Conservative farming practices in terms of tillage (no tillage, strip tillage or minimum tillage) are based on the following elements:

- ✓ Sown without prior soil preparation (no tillage);
- ✓ Sown in prepared strips without intervention on the interval between the rows (strip tillage);
- ✓ Sown after a superficial preparation of the soil, without turning the furrow (minimum tillage).
- ✓ A new criterion in scoring investments was given to projects that exclusively provide

for the purchase of equipment/machinery specific to no till/minim/low/strip till technology that are directly related to land preparation, such as seeders, disc harrows, discs, cultivators, scarifiers, shredders of plant residues and others, as well as the projects in which the purchase of a tractor is foreseen together with at least one technology-specific equipment/equipment. (The Applicant's Guide, 2024)

Table 1

The park of tractors and main agricultural machines in agriculture at the level of the country and the North West region

Categories of tractors and agricultural machines	Total/North West Region	Years									2022-2014
		Year 2014	Year 2015	Year 2016	Year 2017	Year 2018	Year 2019	Year 2020	Year 2021	Year 2022	
		UM: Number									
		Number	Number	Number	Number	Number	Number	Number	Number	Number	Number
Physical agricultural tractors	TOTAL	193120	199284	207901	212730	215980	221677	232654	237273	244795	51675
-	NORTH-WEST region	36117	38658	39455	42914	43972	44343	46192	49165	52028	15911
Tractor plows	TOTAL	156964	159334	168617	169647	169964	163547	160338	159266	162000	5.036
-	NORTH-WEST region	30027	30539	30798	33046	33472	31664	31643	31932	34037	4010
Mechanical cultivators	TOTAL	29562	30355	30632	29648	29337	28545	33753	26872	25072	-4490
-	NORTH-WEST region	3140	3217	3234	3388	3669	3201	3201	3349	2693	-447
Mechanical seed drills	TOTAL	76301	77560	81255	80038	78612	74221	73981	69746	69706	-6595
-	NORTH-WEST region	9435	9576	9565	10079	10436	9383	9778	9900	9133	-302
Spraying and dusting machines with mechanical traction	TOTAL	5315	5607	5327	5494	5709	5990	5048	5026	4759	-556
-	NORTH-WEST region	506	539	538	509	572	592	563	590	415	-91
Self-propelled combines for grain harvesting	TOTAL	25694	27485	26923	26690	27464	27632	26802	26657	26418	724
-	NORTH-WEST region	4461	4591	4100	4047	4200	4015	4116	4356	3608	-853
Self-propelled combines for	TOTAL	868	891	985	1069	1104	1018	1050	1200	1143	275

harvesting fodder											
-	NORTH-WEST region	175	166	169	197	231	175	187	236	136	-39
Combines and machines for harvesting potatoes	TOTAL	5122	5403	5629	5924	6108	5856	6177	6183	5392	270
-	NORTH-WEST region	250	483	595	683	898	954	1011	1096	893	643
Presses for baling straw and hay	TOTAL	10871	11966	13840	14166	14697	15483	16671	19041	19916	9045
-	NORTH-WEST region	1735	1798	2209	2793	3102	3420	3813	4481	4619	2884
Windrowers for fodder	TOTAL	1217	1254	1327	1375	1399	1356	1268	1265	1210	-7
-	NORTH-WEST region	96	95	99	114	142	157	135	133	113	17

Source: TempoOnline's own processing

Table 2 Stage of Implementation of submeasure 4.1 on 25.04.2024

Submeasure	NRDP public allocation 2014-2020 v.17.0 euro	Funding applications submitted		Selected funding applications		% Requests selected from submitted requests	% Value of selected projects from the submitted value
		No.	Euro value	No.	Euro value	%	%
<i>Submeasure 4.1 "Investments in agricultural holdings"</i>	1.599.574.056	6.147	3.329.637.201	3.265	1.811.675.642	53	54

Source: Own processing according to the Status of projects submitted on April 25, 2024 - NRDP 2014-2020

Regarding the situation of the projects submitted for financing under sub-measure 4.1 Investments in agricultural holdings, for the financial allocation related to the period 2014-2020, it can be seen from table 2 that the value allocated was approximately 1.6 billion euros in order to modernize and establish the holdings agricultural. The interest was particularly high, so that a number of 6,147 funding applications were submitted, of which 3,265 funding applications were selected for funding, which represents 53% of the total funding applications submitted. Following the analysis of the value of the selected funding requests, it is observed that it is higher than the one allocated according to version 17 of the PNDR 2014-2020, a fact that highlights that the allocated funds were supplemented for those projects that were

scored with the same score - so that they all had to be financed.

The North West region, according to national statistics, ranks 2nd nationally in the absorption of funds allocated to sub-measure 4.1 Investments in agricultural holdings, which is also evident from the increase in the number of agricultural machinery in the main categories.

CONCLUSIONS

The above mentioned data have shown a series of important results. Among them are issues such:

- ✓ The financing of purchasing of agricultural equipment matters as it is costly.
- ✓ There is an increase interest amidst the ranks of farmers for such purchases.

- ✓ There are differences among regions in regards to this topic.

Within the NRDP 2014-2020, through sub-measure 4.1 Investments in agricultural holdings, a number of 3/265 of the funding requests were selected for financing, which implies that at national level either farms were modernized or established farms that currently have agricultural machines and state-of-the-art equipment, equipment that meets the current needs of farmers but also from the point of view of protecting the environment.

The North West region has a park of agricultural machinery that underwent changes during the analyzed period, so that the increases on certain types of agricultural equipment, respective machinery are in accordance with those at the national level. The agricultural area of the region is generous, so the North West Region ranks second nationally in terms of the absorption of funds from the NRDP 2014-2020 for investments in agricultural holdings.

It is of interest to follow the evolution of the agricultural machinery park during the current financing period of the Strategic Plan PAC 2023-2027 both at the national and regional level.

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