

STUDIES ON THE REHABILITATION, DEVELOPMENT AND MODERNIZATION OF IRRIGATION INFRASTRUCTURE

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Abstract

The establishment of irrigation systems falls within the provisions of Article 73 and Article 74 of Regulation (EU) 2021/2115 of the European Parliament and contributes to achieving the objective of promoting sustainable development and efficient management of natural resources, such as water, soil, and air, including by reducing chemical dependence. The study focuses exclusively on the modernization of secondary irrigation infrastructure outside the farm. Investments in the modernization of irrigation infrastructure are necessary to improve efficiency by reducing water loss, enhancing energy efficiency, reducing agriculture's dependency on weather conditions, increasing farmers' competitiveness, and helping the sector face long-term challenges posed by climate change. The modernization, rehabilitation, and development of irrigation infrastructure through the national strategic plan encompasses all operations aimed at improving the operational parameters of irrigation infrastructure through the use of new and modern technologies, equipment, components, and materials to enhance the performance of this infrastructure. This ensures the efficient use of water for irrigation and reduces environmental impact on existing sites without altering their original purpose or functionality. In justified situations, through technical expertise and techno-economic arguments, elements of the infrastructure may be relocated without affecting the functionality of the entire system, for example: relocation of pressurizing pumping stations, changing the routes of buried pipes, etc.

Keywords: modernization, strategic plan, water, equipment

INTRODUCTION

Irrigation optimization programs and water-saving irrigation technologies must be developed to reduce irrigation water use and maintain the grain production potential for each region. The national strategic plan PAC 2023 - 2027, AFIR launched this year in Romania a call for funding DR-25 "Modernization of the irrigation infrastructure" which is

addressed to the beneficiaries of the organizations of water users for irrigation. The main selection principles were: the surface modernized by the project thus imposing a minimum surface of 300 hectares, the surface served by the main elements of the infrastructure, the surface that benefited from financing, the principle of complementarity with the modernized upstream irrigation infrastructure, the

principle of potential irrigated in which the investment and the principle of water economy are realized. The National Administration "Romanian Waters" (ANAR) manages all water sources, including the water table, and authorizes ANIF, the Federations of Irrigation Water User Organizations, Irrigation Water User Organizations and farmers who are not members of irrigation organizations (see Figure 1) to take water from the source. ANIF takes water from the source and delivers it to FOUAI, OUAI or farmers who are not members of OUAI. Federations can be established on the entire territory of a development or only on certain sections. If they have taken over the entire territory and the entire main infrastructure, then the Federation takes the water from the source and delivers it to OUAI members or non-members as well as to unorganized users; if s-has only partially taken over the main infrastructure, then the water is still delivered by ANIF. OWUI-they take water from ANIF or directly from the source if there is no main network belonging to ANIF to the delivery points in the field. Water is delivered further to farmers who are members or not, in the territory where OUAI is established.

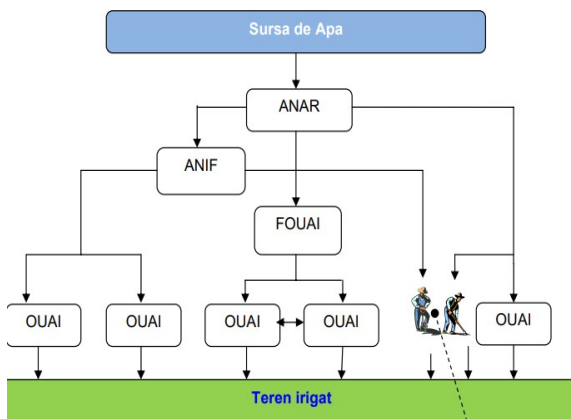


Figure 1 – The institutional flow of water delivery

MATERIALS AND METHODS

The purpose of this work is to highlight the projects financed as well as those not

financed by the call DR-25 "Modernization of irrigation infrastructure" within the National Strategic Plan PAC 2023-2024, in all regions of Romania and the SW Oltenia region is analyzed in detail.

The objectives pursued are the support of investments in irrigation systems where farmers show a high potential for the use and maintenance of the systems, taking into account periods of drought, as well as the modernization of the irrigation infrastructure to reduce water loss and energy consumption.

In this program, the financing of non-refundable public support was 100% of the total eligible expenses and did not exceed 1,500,000 euros/beneficiary.

RESULTS AND DISCUSSIONS

For this year's session, the financial allocation was 400,000,000 euros for DR-25. From the moment the session was launched on March 15 and until July 15, 2024, they submitted online, on www.afir.ro, 375 funding requests in the total amount of 557,549,806 euros, the degree of submission for the modernization of the irrigation infrastructure (DR-25) being over 139%, which denotes a special interest from the Organizations of Water Users for Irrigation (OUAIs).



Figure 2- Irrigation system

Table 1

The numerical situation of the selected projects at the national level

No.	Year	Region							TOTAL
		1. NO	2. SE	3. MS	4. SV O	5. V	6. NW	7. C	
1	2024	0	42	24	11	0	0	0	77
TOTAL		0	42	24	11	0	0	0	77

Source: Processing of data obtained from the RIFA database

Table 2

Value situation of selected projects at national level (Euro)

No.	Year	Region							TOTAL
		1. NO	2. SE	3. MS	4. SV O	5. V	6. NW	7. C	
1	2024	0	64,180,239	34,416,618	16,459.85	0	0	0	115,056,707
TOTAL		0	64,180,239	34,416,618	16,459.85	0	0	0	115,056,707

Source: Processing of data obtained from the RIFA database

At the national level, in 2024, through the DR-25 measure "Modernization of irrigation infrastructure" from the 2023-2027 PAC, 77 projects with a value of 115,056,707 euros were selected for financing. Most of the financed projects are in the South-East Development Region with 42 projects selected for financing in a total value of 64,180,239 euros

On the 2nd place a was the South-Muntenia development region with 24 projects selected for financing in value total of 34,416,618 euros and the last place in the ranking is the South-West Oltenia Development Region with only 11 projects selected for financing in total amount of 16,459.85 euros. In all other development regions, no projects were selected for financing.

Table 3

Numerical situation of selected projects in Oltenia

No.	Year	COUNTY					TOTAL
		DOLJ	GORGE	MEHEDINTS	OLT	WALTZ	
1	2024	3	0	1	7	0	11
TOTAL		3	0	1	7	0	11

Source: Processing of data obtained from the RIFA database

Table 4

Value of selected projects in Oltenia (Euro)

No.	Year	COUNTY					Total
		Dolj	Gorge	Mehedinti	Olt	Waltz	
1	2024	4,493,834	0	1,500,000	10,466,016	0	16,495,850
TOTAL		4,493,834	0	1,500,000	10,466,016	0	16,495,850

Source: Processing of data obtained from the RIFA database

In Oltenia, in 2024 DR-25 "Modernization of irrigation infrastructure" from the 2023-2027 PAC, were selected for financing 11 projects, most of them in Olt county, with 7 projects selected for financing, Dolj county with 3 projects selected for financing, Mehedinți county with 1 project selected for financing and in Valcea and Gorj counties no project was selected for financing this year.

The highest eligible value invested in the modernization of the irrigation infrastructure is in Olt county, the amount of 10,466,016 euros, followed by Dolj county, the amount of 4,493,834 euros, and Mehedinți county, the amount of 1,500,000 euros. At the national level, 2 projects were rejected for non-compliance with a total public value of 2,999,880 euros and 9 ineligible projects with a total public value of 23,828,310 euros.

CONCLUSIONS

The agricultural sector remains vulnerable to climate change (alternation of drought with frequent floods), with significant economic effects on the economic viability of farms. Against the background of a land improvement infrastructure (irrigation, desiccation, drainage) that is outdated in Romania in terms of the efficiency of resource use, the National Strategic Plan 2023-2027 provides a support tool for the modernization of the irrigation infrastructure.

Within the intervention, projects were prioritized that sought to serve as large an irrigated area as possible, to carry out projects in areas where the upstream infrastructure has been modernized, which present an increased irrigable potential and which aim to achieve the greatest possible water savings.

Recent studies carried out within the Food and Agriculture Organization (FAO) find that more than 50% of increases in agricultural production are mainly due to the application of irrigation. Therefore the

rehabilitation and modernization works of the irrigation systems are of increasing interest, along with the increase of the developed surfaces and the moral and physical wear and tear of the facilities. The reduction in the efficiency of the arrangements can be due to both technical factors and economic, social and institutional factors.

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