

CURRENT SITUATION OF LAND IMPROVEMENT ARRANGEMENTS IN TIMIS COUNTY, ROMANIA

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Abstract

The paper presents the current situation of the existing land improvements in Timis County, Romania. The research has focused on the current state of these land improvement arrangement, taking into account the importance of land improvement works on agricultural land. In recent years, the increased interest shown by landowners, small and large farmers, rehabilitation and maintenance of land improvement works raises both technical and legislative issues. The maintenance and operation of these facilities must comply with the applicable national legislation on environmental protection, water management, land improvement and land use. The possibility of financing these works can be done with state support from budget funds, through European funds or through private investments. The land improvement arrangement in Romanian are public patrimony and are managed by the National Land Improvement Agency, an authority that approves and manages the investments in the field.

Key words: drainage, irrigation, soil erosion combat, land improvement arrangements, environment protection, water management

INTRODUCTION

Land improvement facilities consist of agricultural and non-agricultural areas delimited by well-established perimeters in which land improvement works - channels, hydrotechnical constructions, pumping stations, operating cantons, drains, manholes, hydrogeological wells, exploitation roads, buried pipes for irrigation, hydrants, etc. - their operation, maintenance and repair, in the conditions of ensuring the resources, taking into account their technical characteristics applicable to the physical inventory of each arrangement.

First large-scale hydroameliorative massive works were executed in the Banat Plain during the period 1717-1756, following the rehabilitation of the swamps around Timisoara and the Barzavei basin, the embankment of Bega and Timis, as well as the arrangement of the Bega navigable canal.

The strongest dynamics of the drainage works occurred between 1950 and 1990 (Fig. 1).

After 1989, investments in this field have been drastically reduced due to several factors including the financial resources allocated, land fragmentation, the legislative framework and others.

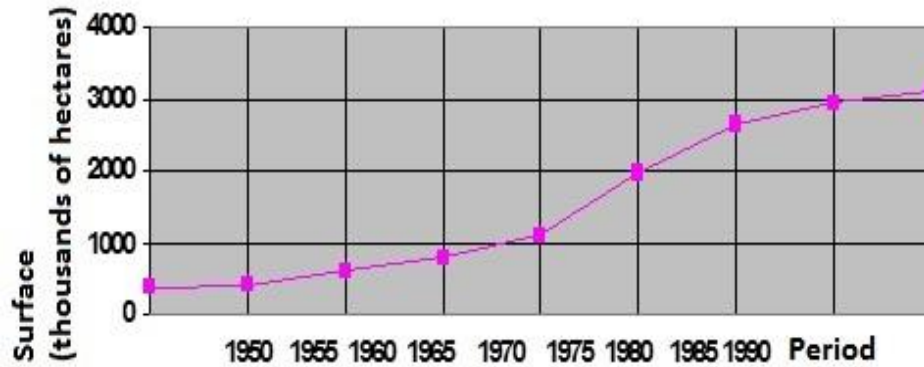


Fig. 1. Evolution of Drainage Facilities in Romania (1950-1990) (Man, 2015)

In recent years, in the context of European Union policies and directives aimed at market liberalization, it is imperative to implement programs to strengthen the agriculture sector, taking into account that development should not be at the expense of disturbing the quality of the environment.

MATERIAL AND METHOD

Land improvement arrangements - irrigation, drainage, soil erosion and flood defense - have as their main objectives:

- ensuring protection for land of any kind and of any classes of construction against floods, landslides and erosion, as well as the protection of accumulation lakes against clogging and the regulation of watercourses.
- ensuring an optimal level of soil moisture that allows or stimulates plant growth, including vines, fruit and vegetable crops;
- ensuring improvement for acidic soils, salty and sandy soils, and protection against pollution.

The large share of landscaping with land improvement works in the western part of Romania is the result of their execution for combating the effect of excess humidity, keeping it under control as well as adjusting it according to the water requirements from agricultural crops.

Figure 2 shows the existing land improvement arrangements in Timis County.

Drainage works are the main activity of the Timis county, which is 91.5% of the total surface area with hydroamelioration works (Table 1).

Surface area with hydroamelioration works in Timis County is structured in 42 arrangements (Man, 2014). The presentation of these arrangements is centralized in Table 2.

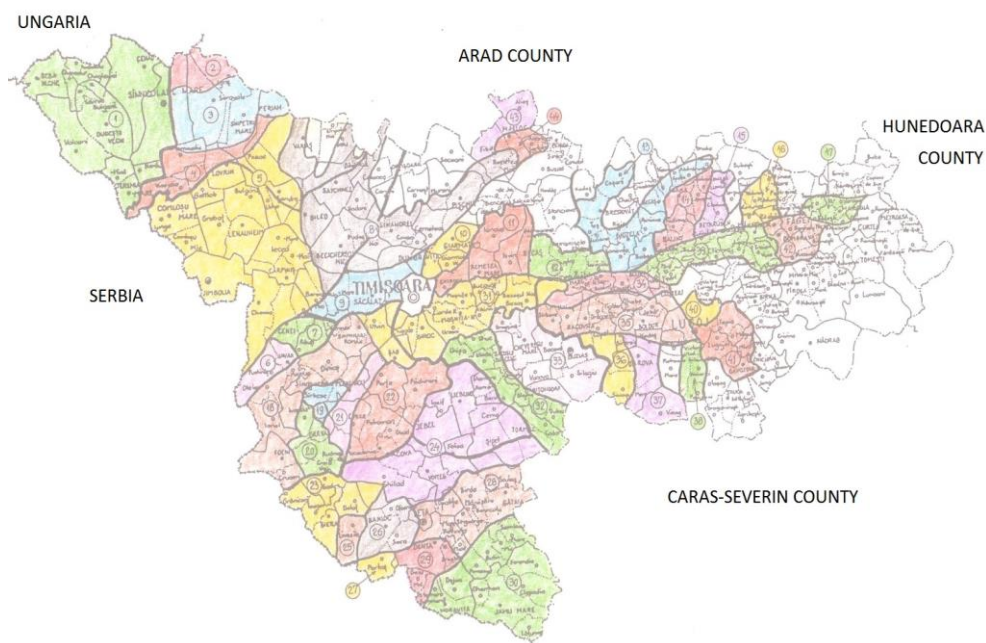


Fig. 2. Land improvement arrangements in Timis County (ANIF)

Table 1

Surface area with hydroamelioration works - Timis County (ANIF)

County	irrigations (ha)	drainage (ha)			CES (ha)
		total	gravitational	by pumping	
Timis	9258	438788	106746	332042	40913

Table 2

Land improvement arrangements in Timis County, Romania (ANIF)

No.	Name	Surface	
		by pumping	gravitational
1	SAG-TOPOLOVAT	27653	
2	BANLOC	8719	1477
3	BARZAVA MIJLOCIE	1297	12172
4	BOCIAR	4126	
5	CARACI	5503	
6	CERBABORA-TMISINA	5485	2825
7	CHERESTAU-DICSANI	357	
8	LIVEZILE	5462	
9	MORAVITA	5205	7495
10	NORD-LANCA-BIRDA	13468	18147
11	PARTOS-GLOGONI	2876	

12	POGONIS	6057	5012
13	RUDNA-GIULVAZ	5643	
14	ROIGA	785	6070
15	SERGANI-CERNABORA		182
16	SUD-LANCA-BIRDA	9984	
17	SURGANI	5700	2060
18	TEBA-TIMISAT	28063	
19	TIMISUL MORT	19692	
20	TIMISUL SUPERIOR	400	2699
21	CINCA		248
22	ARANCA	55582	
23	BEGA SUPERIOARA		364
24	BEGHEIUL VECHI VEST TIMIȘOARA	10500	
25	BEHELA		1662
26	BEREGSAU AMONTE		1513
27	BETHAUSEN OHABA		630
28	FIBIS ALIOS		1588
29	GALATCA	8280	
30	GIRODA RECAS		8879
31	HITIAS COSTEI		384
32	MANASTIUR BUNEA MARE		94
33	MINIS CHIZDIA	1562	3514
34	MURESAN	6040	
35	RAUTI SINMIHAIU G.	5128	
36	RECAS CHIZATAU		3500
37	RIU GLAVITA		8483
38	SINNICOLAU SARAVALE	19998	
39	TRAIAN VUIA DUMBRAVA		838
40	UIVAR PUSTINIS	5403	
41	CHECEA JIMBOLIA	54451	
42	VINGA BILED BEREGSĂU	8623	16907

The main land improvement works present in land improvement arrangements are in the inventory of the National Land Improvement Agency - Timis – Lower Mures Territorial Branch, being a part of the public patrimony of the Romanian State.

Table 3

Main land improvement works in Timis County, Romania (ANIF)

No.	Type	Masuring unit	Timis County
1	Channels	km	9236,9
2	Small bridges	piece	5951
3	Weirs	piece	84
4	Concrete drops	piece	811
5	Drains	km	874,8
6	Indoor dikes	km	50,9
7	Dams and polders	meters	3200
8	Pumping stations	piece	91

RESULTS AND DISCUSSION

Decreasing of agricultural areas and surfaces with land improvement works: irrigation, drainage, soil erosion in the period 1997-2016 was mainly due to urban development and the expansion of localities.

Table 4

Situation of land improvement landscapes in Timis county, Romania (INS)

No.	Type	Masuring unit	Timis County	
			1997	2016
1	Irrigation surface	ha	15.641	15.510
2	Drainage surface	ha	415.897	411.386
3	CES surface	ha	39.726	39.706

The degradation state in which land improvement works are currently underway accelerates in most areas the increase of groundwater, secondary salinisation, conquest and ultimately the severe, sometimes irreversible, degradation of agricultural land with negative consequences on the productive potential of agricultural land.

Agricultural land exploitation make it necessary to rehabilitate the primary land improvement infrastructure - pumping stations and the main channel network, but also the other components of the arrangement.

With available funding opportunities, the private sector of farmers - by setting up in organizations or associations and taking over the infrastructure, as well as ANIF as network administrator - should take steps to rehabilitate and maintain existing facilities.

There are currently three ways of funding / promoting irrigation facilities:

- from private funds of the owners / owners of the agricultural land, for the realization of new irrigation facilities;

- from the FEADR fund (FADR) through AFIR sub-measure 4.3 - "Investments for the development, modernization or adaptation of the agricultural and forestry infrastructure" - the component of the Agricultural Access Infrastructure (irrigation, agriculture, forestry) as a continuation of Measure 1.2.5 for OUAİ's;

- through the National Program for Rehabilitation of the Main Irrigation Infrastructure in Romania The National Program for Rehabilitation of the Main Irrigation Infrastructure in Romania - according to the Law no. 269 / 2016 and approved by Government Decision no. 793/2016 having the investment value of 1.015 billion euros for the next 5 years, started and managed by ANIF. In the framework of which will be rehabilitated objectives from an area of 2.006.941 ha, out of 86 viable irrigation facilities that include the following objectives: 110 base pumping stations, 137 pumping stations, 2.525 m discharge pipes, 1.997.481 m channels of adduction, 2.885.073 m of distribution channels and 4.995 hydrotechnical constructions. The first 40 projects, expertise and DALI, were auctioned this year 2017 (Cojocinescu et al., 2017).

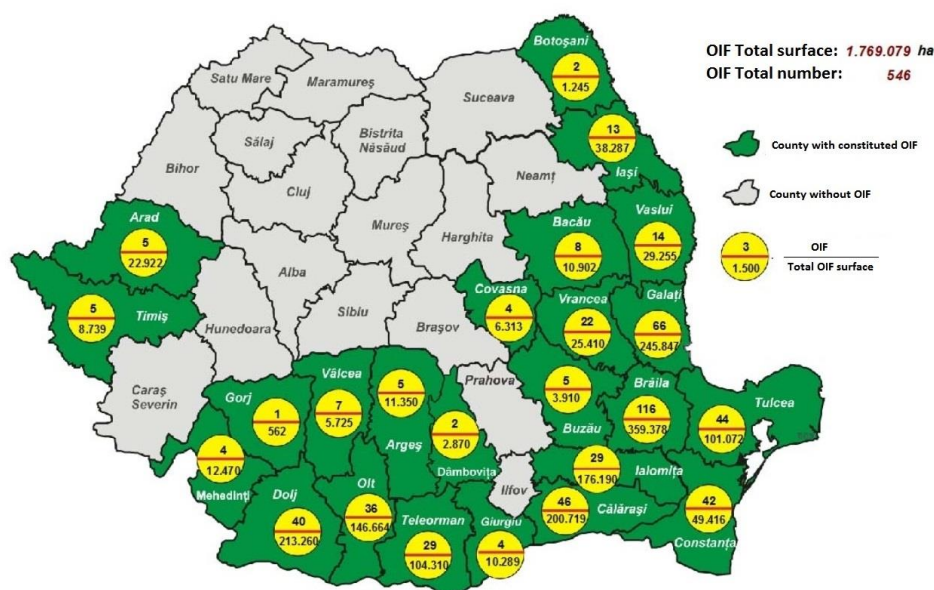


Fig. 3. Actual state of establishment for land reclamation organizations in Romania (ANIF)

Lately, in the Western Region of Romania, there is an increased interest in setting up local irrigation arrangements by farmers, either by setting up systems with direct feed from the source or by rehabilitating non-functional local amenities (Leucuta et al., 2016).

Research work has also been carried out on the study of water sources, the overlapping of local irrigation arrangements with existing drainage

arrangements, water quality for irrigation and the uniformity application of irrigations (Pelea et al., 2015; Pelea et al., 2016; Coccoceanu et al., 2017).

CONCLUSIONS

In order to ensure the functionality of existing land improvement arrangements, steps must be taken to preserve and rehabilitate the infrastructure. The various sources of funding allow funds to be used for this purpose by the state or by the private sector.

Maintenance and rehabilitation work requires compliance with the legal framework and environmental and water management rules, through careful observation by the Land Improvement Infrastructure Manager.

There is a revival of the irrigation facilities through ongoing funding, as well as the increasing interest of agricultural land owners, thus ensuring the development of the Romanian agriculture and obtaining of safe, higher and stable productions, independent of the climatic evolution.

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