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# The Administration of the Land Improvement Works in the West and North- West Areas of Romania

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**Abstract.** The paper presents the results of the research on the comparative situation (state and way of usage|) of the land improvement systems in the west and north- west of Romania, before and after 1989. Also, on the basis of the analysis performed, an attempt is made to decipher the mechanisms through which the management and logistics in this field can be improved, so that as large a part as possible of the land improvement systems in this part of Romania is recovered.

**Key words:** land improvements, irrigation, drainage, soil erosion, management

## INTRODUCTION

Irrigation, dewatering-drainage, fighting soil erosion and defence against flooding activities have as their main objective ensuring the protection of the lands and buildings of all kinds from flooding, landfall and erosion, as well as the protection of reservoirs against silting and regularising water streams.

Also, land improvement works are oriented to ensuring a proper level of humidity in the soil, which should allow and stimulate the growth of plants, including fruit tree and vine plantations, agricultural crops and forests (1, 2, 3, 7, 9).

Such works have been done on a large scale in most regions of Romania, especially in the last years of the Communist era.

After 1989, especially in consequence to the changing of the land ownership system of cultivated lands, land improvement works have been performed at a slow pace and on limited areas (4, 5, 6, 8, 10, 11, 12) .

## MEANS OF LAND IMPROVEMENT IN THE WEST AND NORTH -WEST OF ROMANIA

The research at the base of this paper intends an analysis of the way land improvements are administrated in the west and north-west of Romania by the National Administration for Land Improvements (NALI RA).

The means of land improvement under the adminstration of the branch offices of NALI in the analysed area are presented in table 1.

The data shows that the main activity in the branch offices of Timiş Mureş Inferior and Someş Criş is that of dewatering, while in the branch office of Tisa-Someş it is fighting soil erosion.

Irrigation in this area is limited, the irrigation works taking up only a surface of 50.122 hectares.

Tab. 1

Land improvement means in the west and north-west of Romania

| Nr. crt. | Branch office | Means (hectares) | | | |
|---|---|---|---|---|---|
| | | Defence gainst flooding | Irrigation | Dewaterings | Prevention of soil rosion (PSE) |
| 1. | Someş - Criş | 251.410 | 10.128 | 404.863 | 102.966 |
| 2. | Tisa - Someş | - | 5.880 | 48.971 | 312.281 |
| 3. | Timiş - Mureş Inferior | - | 34.114 | 693.520 | 95.141 |
| | Total | 251.410 | 50.122 | 1.147.354 | 510.388 |

(Source: NALI activity reports)

**NALI branch office Someş – Criş** has under administration 10.128 hectares set up with irrigation works, passed over from the public to the private domain of the state.

Considering the situation of the irrigation works in the Someş – Criş branch office, alongside the lack of interest for using them demonstrated by the land owners in the region, its management has decided the scraping of the system and removing it from the inventory of the office.

In what concerns the systems of dewatering and drainage, in the Someş – Criş branch office 404.863 ha. are set up with dewatering and drainage works, of which 221.630 ha dewatering by evacuation through pumping and 183.233 ha. dewatering by gravitational evacuation. To evacuate the waters from the 404.863 ha. set up with dewatering works, the Someş – Criş branch office administrates, maintains and repairs the following main works: water pumping and evacuation stations- 76, earth cannals -8.632 km, small bridges-4.403, dams-266, cannal drops-586.

Even though the branch office has benefited between 2002-2009 from modernising works to the pumping stations as well as to some hidro-technical facilities, it finds it impossible to perform the current maintenance, revision and repair works to the net of cannals and of the pumping stations, because of the insufficient funding alloted to these operations necessary to maintaining the system of land improvement works in a normal functional state.

Because the mainanence works can't be performed, difficulties are faced in draining the water from the dewatering systems.

If this state of things keeps, it will lead inevitably to the degradation of the farming land, by secondary salting and swamping.

***In what concerns the works for the prevention of soil erosion ,*** the Someş – Criş branch office has under administration 102.966 ha with the following main works: earth cannals-501 km, outlets-233 km, cannal drops and outlets-956, small bridges-783.

As a result of the analysis it has been remarkable that in the soil erosion fighting systems the surface works for the protection of the land (bench terraces, grass bands) given over to the farming units after the restitution of properties in consequence to the putting into practice of the laws of the funciary fund, have deteriorated over time, as a result of breaking down the lands and of not observing the level curves in farming the land.

***In what concerns the flooding defence works***, the Someş – Criş branch office has under administration works for flooding defence over a surface of 251.410 ha.

The main flooding defence works are: longitudinal earth dams- 427 km, hidro-technic stations -14, transversal earth dams-51.

Within the Someş – Criş branch office there has been set up a centre of intervention for flooding defence.

The centre has storage facilities for intervention materials and equipment, head quarters offices and resting facilities for the technical staff over the intervention period. The centre can be taken as a model for setting up such locations in other areas of the country.

**The Tisa branch office** - has in its inventory 5.880 ha set up for irrigation, of which in 2002, on a surface of 3.976 ha an Association of Irrigation Water Users was set up (IWUA) (Moldoveneşti - Mihai Viteazu Călăraşi), IWUA which has not been reorganised as an organisation. The organisation did not close any contracts for irrigation water supplies in 2009. The irrigation system given over to IWUA is not functional, the pumping stations and the network are deteriorated.

The irrigation facilities on the area for which the IWUA was not set up, of 1904 ha, are in conservation, the pumping stations are out of use and the pipe network is not functional. Only base pumping station Moldoveneşti is functional.

The 1904 ha area for which there are no beneficiaries and is out of use must be scraped and removed from the inventory of NALI.

Also, after an analysis of the Regulation office in the Ministry of Agriculture, Forests and Rural Development a clarification of the state of works given over to the IWUA must be made, as the aforementioned works are, at the time being, not functional.

***In what concerns the dewatering – drainage systems,*** the branch office has under administration 49.971 ha set up with dewatering – drainage works. They are enabled by the following facilities: pumping stations -2, earth cannals-1.989 km, drainage in dewatering-3.243 km, art works in dewatering-3.654.

Because the works of maintanance and repairs to the entire dewatering systems have not been performed, great difficulties are met in evacuating the water, especially because of grown vegetation and obturations in the cannal network.

***In what concerns fighting soil erosion,*** Someş – Criş branch office has under administration 312.281 ha set up with works to prevent soil erosion. The main means of fighting soil erosion are: cannals of PSE-3.837 km,outlets-741 km, structuring valleys and ravines- 397 km, anti-erosional drains- 5.038 km, drains in PSE-5.141 km, works of art in PSE-16.452, forced slopes- 2 km, anti- erosional plantations -1.159 ha.

Putting into practice the laws of the funciary fund on the old settlements with parceling from hilltop to valley has led to the distruction of the soil erosion works and to the worsening of erosion and the deforestation of the protective curtains.

The parceling of the lands has also led to an arbitrary organisation of the crops, which makes it impossible to correctly exploit economically and anti-erosionally the areas in question.

These drawbacks generated by the putting into practice of the laws of the funciary fund, alongside the chronical lack of funding for maintenance and repairs have led to the deterioration of the works and, implicitly, of the farm lands.

**The branch office Timiş – Mureş Inferior** – has under administration an area of 34.114 ha set up with irrigation works.

E demands for irrigation water in 2009 have only been for an area of 8.520 ha in Arad county, area for which contract of water delivery have been signed.

From the analysis results that there is no interest in irrigation for other areas, and the surfaces that must be considered for the rehabilitation of the Şag - Fântânele and Şemlac – Pereg systems represent a maximum of 50 % of the facilitated area.

The analyses point out that due to the small number of consumers, the base station functions either intermitently, or with the evacuation basin partially closed. This leads to suplimentary energy use and, implicitly, to an increase in the cost of water.

Taking into consideration the areas eligible for irrigation in the Sag – Fântânele system, it is necessary to reconsider the modernisation of the Fântânele station to only 50 % of its capacity in the first stage and only if the interest of the beneficiaries soars, modernising it to the current capacity. Also, the pumping station in Fântânele must be restructured, so that it can provide the water debits for small areas with cost efficiency.

In Timiş county, even though five Irrigation Water Users Associations have been set up on an area of 8.254 ha, at the time being there are no demands for water in the Şag – Topolovăţ irrigation facility, no irrigation contracts have been signed and no subsidising was applied for on account of the areas with irrigation facilities.

The areas on which the five IWUA from Timiş county were constituted are in two different bodies, as follows : 5.449 ha situated in close proximity to the city of Timişoara, area with intense real estate development (Moşniţa Nouă, Urseni); 3.123 ha situated in the area Topolovăţ – Recaş – Bazoş.

The water feed of the irrigation facilitated areas is done gravitationally, which is an advantage from the point of view of the water delivery costs.

The constitution of the irrigation water users' organisations SPP1 Bistra, SPP2 Urseni, SPP3 Urseni and SPP4 and 5 Giroc – Sag was not aimed at continuing the agricultural use of the land and, consequently, of the irrigation facilities, but at facilitating the necessary formalities for removing the land from the agricultural fund and for dismantling the irrigation facilities with a view to a real estate development of the area.

Timiş county also benefits from an irrigation facility fed by pumping from the river Mureş in the proximity of Periam village. The facility is spread over an area of 640 ha, initially aimed at the irrigation of the fruit tree farms belonging to the former State Agricultural Entreprise IAS Periam.

As a consequence to applying the laws of the funciary fund, at the time being only two societies still function as fruit tree farms, on an area of approximately 200 ha, the rest of the land is given over to natural persons and partially cleared.

There is only a reduced interest for applying the irrigatins on the land retreived by the original owners. The system is functional.

The area of 10.234 ha set up with irrigation works that has not been given over to OIWU in the counties of Timiş and Arad ins in conservation, without any requests for water from the land owners at the moment and in an advanced state of deterioration.

In Timiş county an interest in irrigation works is noticeable in Sânnicolau Mare – Dudeştii Vechi – Valcani area, the hidro-ameliorative system ARANCA IV, where native and foreign investers have maintained the irrigation facilities built before 1989 and started new investments or are planning to. The area that is going to be set up for irrigation eventually is of approximately 10.000 ha.

The water supply in the area is done through the Cenad station, reversible with an installed capacity of 3 mc/sec.

To provide the area with water the National Administration of Land Improvement must promote urgently an investment to increase the debit installed at Cenad pumping station and to provide the transportation of the water from the source to the beneficiaries, while properly administrating the water from the river Mureş.

***The dewatering works*** in the Timiş – Mureş Inferior branch office situated on the territory of the counties Timiş, Arad and to a smaller extent, Caraş-Severin, are essential for developing agriculture in the area.

Historically speaking, the lands in this part of the country, as well as those in Bihor and Satu Mare counties, have been transformed as a result of these dewatering works in

swamps and unproductive lands, that were periodically flooded and excessively humid, into lands favourable for agricultural activities with a great productive potential. The disappearance of these works from the entire western part of the country as a result of their lack of maintanence would, in fact, mean removing from agricultural production of approximately 1.100.000 ha situated in the Western Plains of Romania.

The Timiş – Mureş Inferior branch office administrates dewatering works on an area of 693.520 ha.

Tab. 2.

The main works that serve the 693.520 ha dewatering in Timiş – Mureş Inferior branch office

| | |
|---|---|
| Water pumping and evacuation stations | 160 items. / 527 aggregate |
| Dewatering cannals | 14.402,3 km |
| Small cannal bridges | 8.76 |
| Dams | 189 |
| Cannal drops | 510 |
| Dewatering drains | 1.055,6 km |

(Source: NALI Activity reports)

The works of maintenance and repairs for ensuring the functioning in the parametres required by the exploitation regulations are in a totally unfit proportion, considering the vegetation clearing 495 ha (approx. 500 km) and the desilting of the cannals 1.951.200 mc works performed between 2005 – 2009. The great majority of these works have been performed in the flooded area in 2005, as a result of the collapse of the dam on the river Timiş. It is estimated that the dewatering systems are ready only in proportion of up to 50 % for intervention in case of natural calamity.

***In what concerns the works for fighting soil erosion,*** the Timiş – Mureş Inferior branch office has under administration 95.141 hectares set up with works for fighting soil erosion.

Tab. 3

The main works for fighting soil erosion under the administration of NALI in Timiş – Mureş Inferior branch office PSE

| | |
|---|---|
| Earth cannals | 462,7 km |
| PSE evacuation holes | 439,4 km |
| PSE valleys | 135,9 km |
| Small bridges | 824 |
| PSE drops | 1.59 |
| PSE drainages | 411,5 km |

(Source: NALI Activity reports)

As a result of the research, it has become evident that these works require new investment in order to be put to use, not only for adapting them to the new way of land organisation, but also for developing and modernising them.

This situation has been created as a result of the process of putting into practice of the laws of the funciary fund, which has led to excessive fragmentation of the properties and of the agricultural exploitations from the areas set up with means of fighting soil erosion.

The infrastructure of land improvements that served the agricultural and forest systems was conceived for its most part in the time of planned agriculture and is no longer adapted to the new structures of exploitation. In the process of reform and restructuring, an important part of the existent infrastructure was either impossible to adapt, without any state funding and was abandoned, or it was abandoned and was left unused, as it was unadapted to the new structures and in many cases, it became deteriorated or was destroyed.

Maintaining some works of defence in the sector of land development, the way of operating them in case of flooding, using technical and working staff from the branch for defence actions can constitute a subject of analysis in favour of reunification of the land improvement sector with the water sector, whilst bringing strong arguments in favour of this reunification.

## CONCLUSIONS

In order to improve the state of things in the land improvement sector urgent legislative, administrative and financial measures must be taken. A sure resource of financing must be ensured, all these to maintain and repair the land improvement works.

The creation of a coherent legislative framework can ensure the development of an activity on partenership principles with the beneficiaries of the land improvement works.

It is necessary to improve the administrative organisation, through which beaurocracy is elliminated and a prompt decision can be taken, depending on the requests of the beneficiary, also corellating this with creating the organising framework necessary for providing the responsability for these decisions locally.

Another necessary measure is assuring the financial support for the needs to maintain the works functional, with the participation of the beneficiaries, by ensuring the necessary funding (fees for services) as well as by controlling their use.

The technical state of the land improvement systems must be assured, correlating it with the beneficiaries' interest to use the land improvement works and with the physical removal and the removal from inventory of those works that no longer correspond technically and are not wanted by the beneficiaries any longer.

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