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SUSTAINABLE IRRIGATION WATER MANAGEMENT – ROMANIAN LEGAL FRAMEWORK

ABSTRACT

In Romania, due to weather conditions, irrigation is of utmost importance for the normal development of crops. The infrastructure serving the irrigation systems, mostly designed in the period of command economy, has been adapted to the new land operation structure resulting from the process of land restitution to former owners in our country, which led to excessive fragmentation of agricultural and forestry holdings. The restructuring of the maintenance and utilization modality of the irrigation infrastructure is based on numerous and complex legal provisions, under continuous dynamics.

The implementation of legal provisions continues to be quite a difficult task, under the background of the lack of real support measures for farmers, for which irrigation represents an input ensuring optimum development conditions for crops, reliable and relatively stable yields over the years, as well as the increase of competitiveness on the produce market.

In this context, the paper intends to analyze the legislative framework that regulates the activity in the Romanian irrigation sector and highlights the main normative acts that lie at the basis of the new forms of irrigation system infrastructure management, as well as of the organization forms of water users. The analysis is made at sectoral level and is particularized for the irrigation system from Cazasu-Brăila Terrace.

Key words: management, water, irrigation, legislation.

JEL Classification: Q15.

1. INTRODUCTION

Floods, drought and other weather-related problems have a significant impact on the agricultural sector competitiveness and the national food security. In agriculture, drought, even on short term, has a negative impact upon crop growth, upon yields and their quality. Due to weather conditions, the irrigation of crops represents an important technological segment, absolutely necessary in order to complete the necessary rainfall water in soil and to reduce water deficit in soil. For farmers, irrigation is an input that ensures optimum conditions for crop development, reliable and relatively stable yields throughout the years, as well as increased competitiveness on the market.

At the same time, the investments in irrigation infrastructure have a favourable impact upon the environment through the diminution of drought risk, aridization control, diminution of water losses through infiltrations, with negative consequences upon ground water and soil, etc.

The restitution of agricultural and forest land to former owners in our country led to excessive fragmentation of land and agricultural and forestry holdings. The infrastructure that used to serve the agricultural and forestry systems (access road network, the land reclamation and irrigation systems, the flood prevention systems, etc.), mostly designed in the period of command economy, had to be adapted to the new operation structures that resulted from this process. In the restructuring and reform process, an important part of the existing infrastructure either could not be adapted and was abandoned, or it could not be used any longer as a result of non-adapting to the new structures and in many situations it was deteriorated or vandalized.

From the perspective of Romania's EU membership, the restructuring of the irrigation system infrastructure management and use takes place according to the EU normative acts transposed into the Romanian legislation. The adoption and application, as well as the modification and completion of the normative acts (numerous, complex and under a continuous dynamics), which regulate the activity of crop irrigation must be adapted to the needs and realities from agriculture.

2. STATE OF KNOWLEDGE

The optimum conditions for the mostly efficient use of the natural resources are ensured by a system of hydro-melioration engineering works for drainage-desiccation, for irrigations and soil erosion control.

The improvement of soil and hydrological conditions dates back for thousands of years (Mărăcineanu, 1988). Thus, the irrigation works were first mentioned in Mesopotamia and China in the year 5000 BC. The first provisions on the execution and maintenance of irrigation channels are mentioned in Hanmurabi's Code of Laws (1728–1686 BC). In the 15th century, the Spanish conquerors came across large areas equipped with irrigation facilities on the American continent, in the Aztec empire.

In Europe, with the development of the Greek civilization and its contact with the old civilizations from Mesopotamia and Egypt, technical and biological procedures emerged in order to use non-productive or poorly productive land areas for agricultural purposes, to create and maintain a favourable water/air ratio on land with moisture deficit or surplus, to prevent water and wind erosion of soil. The Roman Empire paid great attention to the development of such works through: the Pompeian marshes drainage, damming in the Pad and Tiber rivers, drainage of the Rhone marshes in France, channeling the Rhine in Netherlands, irrigations in the vicinity of ancient Rome, etc.

In Romania, the historical documents mention the first channels built up by the Teutonic Knights, who settled in Țara Bârsei area in the year 1211. These channels were operated more than 600 years. Another category of works that is mentioned is represented by the lakes and ponds from the 17th century Moldavia, used for irrigations and fisheries.

In the 18th and 19th centuries, when the damming in and drainage works developed a lot in Central and South-Eastern Europe, many Romanian scientists studied the processes resulting from the action of autochthonous natural factors and substantiated the economic importance of land melioration works.

Thus, the first irrigation facilities appeared in our country for the irrigation of land areas under vegetables around the populated centers, the first rice paddy in the vicinity of the town Timișoara, in the period 1718–1723 and the first development of the Bega-Timiș hydrotechnical system, in 1728. The hydrotechnical development works were extended to the whole Banat Plain, the Crișurilor river plain, the Someșului river plain, the Ierului Valley. In 1780 the Ipsilanti canal was built up for defending Bucharest against flooding, through the evacuation of the high waters of the Dâmbovița river in Ciorogârla. In 1910, a law was adopted for land reclamation in the flooding area of the Danube river, modified in 1914 and 1925, which provided for damming in the area with insubmersible dikes, an idea that was favoured by Anghel Saligny in opposition with Grigore Antipa, who was in favour of damming in a limited area of about 130,000 ha with submersible dykes, and the rest of the river valley was to remain under natural system (Mărăcineanu, 1988).

After 1949, the socialist transformation of agriculture reorganized and developed the land reclamation activity, increasing the land areas on which damming in and regularization of rivers were performed, where drainage and desiccation works were executed, where irrigations, development of land areas under slope, melioration of salt-affected soils and amendment of acid soils, leveling and shaping the agricultural land and clearing and cleaning up the land. As a result, non productive land areas were introduced into farm production, and certain natural phenomena could be prevented and controlled, which can negatively influence agricultural land productivity.

The land equipment with irrigation facilities (under large-scale systems or under local, low-sized systems) includes engineering works for water catchment, transport and controlled water distribution to crops. The first land areas equipped with irrigation facilities under large systems (1960–1965) did not exceed 10,000 ha (Călărași terrace, Roseți, Stoenеști-Vișina etc.). In the early '90s large-sized land areas equipped with irrigation facilities appeared, on hundreds thousands hectares (Carasu, Ialomița-Călmățui, North Brăila Terrace, Corabia Terrace, Calafat-Băilești, Izvoarele-Cujmir, Covurlui Terrace, etc.).

In the period 1970–1989, the land equipped with irrigation facilities totalled more than 3 million ha (Table 1) out of the 14.8 million ha agricultural land and 9.3 million ha arable land, located in the driest regions from the Romanian Plain, Dobrogea and Moldova Plateau (Figure 1).

Certain land areas at higher altitudes than the water source were also equipped with irrigation facilities (250–300 m), which were great energy consumers in

water pumping and thus economically inefficient. In the large systems, the network is equipped with numerous hydraulic constructions for regulating the water flows, levels and speeds, depending on the operation conditions. The inner network, in most cases, consists of buried pipelines and pressure release stations or mobile aggregates. In addition, the land areas equipped with irrigation facilities under large systems are also equipped with drainage and desiccation facilities, with constructions and installations necessary for a rational operation.

Table 1
Evolution of land areas equipped with irrigation facilities in Romania

Year	1938	1950	1955	1960	1965	1970	1975	1980	1985	1989
Equipped area – thousand ha	15.4	42.5	93.1	199.7	229.9	714.6	1437.3	2221.8	2873.9	3109.0

Source: Lup, A., *Îmbunătățirile funciare în agricultura României. Retrospectivă istorică și perspectivă*, “Economie agrară și dezvoltare rurală”, no. 1, Editura Academiei Române, București, 2010.

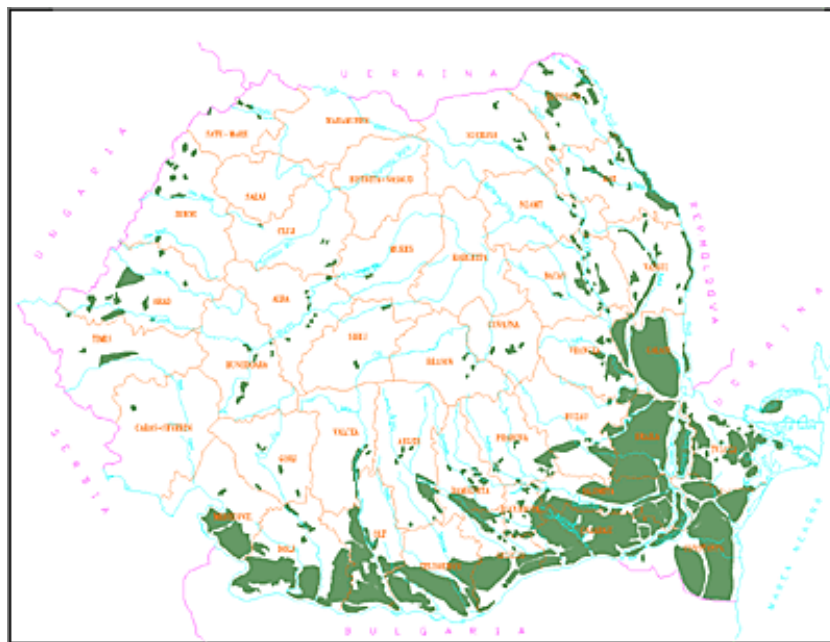


Figure 1. Land equipped with irrigation facilities in Romania.

The large irrigation systems are located along the Danube, in 10 counties, starting with Dolj county and ending up with Galați county and in Dobrogea. These systems have areas larger than 140 thousand ha, summing up about 80% of the whole land area equipped with irrigation facilities. The water source for 75% of the hydro-melioration works is the Danube river (Lup, 2010).

4. RESULTS AND DISCUSSIONS

4.1. Legal transposition of the *acquis communautaire* on sustainable management of irrigation water in Romania

The *acquis communautaire* is a compendium, under continuous evolution, which provides for all the common rights and obligations deriving from the EU Member State status. It is the accumulated legislation, treaties, decisions, regulations and other normative acts issued by the institutions for decision making of the European Union.

The *acquis communautaire* mainly consists of two great components: the treaties (starting from the Treaty of Rome – 1957) and the Community legislation (with many directives, regulations and decisions, representing the horizontal legislation and the sectoral legislation in different fields of activity). The horizontal legislation comprises those regulations that have in view the information transparency and circulation, facilitation of decision-making process, the development of the civil society activity and engagement. The sectoral legislation refers to those regulations that are the object of sectoral policy. All the normative acts are elaborated by the European Commission through its specific Directorates-General, being the only EU institution with legislative initiative right.

Romania's legislation getting in line with the EU legislation started after the Summit from Salonic in 2003, after Romania's accession to the European Union on January 1, 2007 was confirmed; this date was confirmed at Brussels on June 18, 2004. The report on Romania's progress since October 2004 confirmed, among others, that Romania made significant progress in order to transpose the *acquis communautaire* into the Romanian legislation.

In the field of irrigation water management, the *main normative acts of the European Community*, transposed into the Romanian legislation, regulate the framework of action, cooperation, coordination and implementation of common norms on sustainable water and soil use, as well as the framework for establishing the common norms for the state aid schemes in the agricultural sector (Table 2).

Table 2

The main EU normative acts transposed into the Romanian land improvement legislation

No.	EU normative acts	On:
1.	Directive of the European Parliament and Council no. 2000/60/EEC	Establishing a Community framework of action in the field of water policy
2.	Resolution no. 19/1972 of the Committee of Ministers	European Soil Charter
3.	Convention signed at Sofia on July 29, 1994	Cooperation for the protection and sustainable use of the Danube river
4.	(EC) Regulation no. 1080/2006 of the European Parliament and Council from July 5, 2006	Concerning the European Regional Development Fund and on repealing (EC) Regulation no. 1783/1999

5.	(EC) Regulation no. 1083/2006 of the Council from July, 11 2006	Establishing certain general dispositions with regard to the European Regional Development Fund, the European Social Fund and the Cohesion Fund and repealing (EC) Regulation no. 1260/1999
6.	(EC) Commission Regulation no. 1828/2006 of December 2006	Establishing the rules for the implementation of (EC) Council Regulation no. 1083/2006 that establish the general provisions concerning the European Regional Development Fund, the European Social Fund and the Cohesion Fund and for the implementation of (EC) Regulation no. 1080/2006 of the European Parliament and Council for the European Regional Development Fund
7.	(EC) Commission Regulation no. 885/2006 of June 21, 2006	Establishing the detailed Community norms for the application of Council regulation no. 1290/2005 on accrediting the payment agencies and other bodies and liquidation of EAGF and EAFRD

Source: Report on the study on environmental impact assessment – Irrigation system from North Brăila Terrace, <http://www.anif.ro/>.

Water Framework Directive – 2000/60 EEC represents a new approach in the field of water management, based on the basin principle and establishing strict terms for the program of measures. It establishes several integrating principles in the field of water management, including the public participation to water management and integrating the economic aspects. According to this Directive, the EU Member States should ensure the “good condition” of all surface waters by the year 2015.

4.2. National legal framework on the sustainable use of irrigation water

In Romania, the specific legislation regulating the irrigation activity mainly includes the following:

- Law no. 138/2004, on *land improvement* republished, with subsequent modifications and completions, published in Romania’s Official Journal no. 369 of April 28, 2004 and republished in the Official Journal no. 88 of February 13, 2009;
- Law no. 573 of October 22, 2001 on the approval of Government’s Emergency Ordinance no.147/1999 regarding the *irrigation water users’ associations*, published in the Official Journal no.14 of February 24, 1995 for the ratification of the *Convention on the cooperation for the protection and sustainable use of the Danube river* (Convention on the Danube river protection), signed in Sofia, on June 29, 1994, published in the Official Journal no. 41 of February 27, 1995;
- Government’s decision no. 1872/2005 on the approval of the *Methodological norms* for the application of the Land Improvement Law no. 138/2004, with subsequent modifications and completions, published in Romania’s Official Journal no. 109 of February 6, 2006;

– Government’s Emergency Ordinance no. 88/2011 on certain measures for *the organization of land improvement activity*, published in the Official Journal no. 694 of September 30, 2011;

– Government’s decision no. 1223/2011 on approving the set of rules for the organization and operation of the *Land Improvement National Agency*, published in the Official Journal no. 904 of December 20, 2011.

The basic legal instrument for irrigation development and operation is the **Land Improvement Law no. 138/2004**. Even in the first article of the law, it is mentioned that one of the land improvement objectives is to ensure a favourable soil moisture, which should stimulate crop growth and development, vine and fruit plantations and agricultural and forestry crops included. According to Art. 2, point b, the land equipped with irrigation facilities by which the controlled supply of water to soil and crops is ensured, facilitating the development of crops and increase of yields, comprise water catchment, pumping, transport, distribution and water discharge works, as well as soil levelling works, if necessary.

According to Art. 3, this law regulates the following:

a) the legal regime of ownership and use of land improvement infrastructure and of related land, as well as the mechanisms of ownership right acquirement and/or transmission, administration or use on this infrastructure;

b) designing the framework for the establishment and operation of the Land Improvement National Administration – LINA – (agency since December 2011), Romanian legal entity of public national interest in the land improvement sector;

c) establishment and operation of the of the *land improvement organizations* and of the *federations of land improvement organizations*;

d) establishment of services performed by LINA for the land improvement organizations and federations and their funding mechanisms;

e) establishment of the tasks and attributions of the central public authority, named *ministry* in the law (Ministry of Agriculture and Rural Development), which coordinates the design of the strategy and policies in the land improvement sector.

The land improvement law, promulgated in the year 2004, was republished, modified and completed several times (Table 3).

The Land Improvement Law no. 138/2004 modifies two ordinances (Government’s Emergency Ordinance no. 147/1999 on the irrigation water users’ associations and Government’s Emergency Ordinance on the establishment of the National Company “Land Improvement” – S.A. through the reorganization of the Autonomous Regie of Land Improvement) and a government’s decision (Government’s decision no. 409/2004 on the organization and operation of the Ministry of Agriculture, Forests and Rural Development (repealed by Government’s Decision no. 155/2005).

At the same time, the law refers to a series of laws, such as: Law no. 15/1968 Romania’s Penal Code; Law no. 213/1998 on public ownership and its legal regime; Law no. 573/2001 approving Government’s Emergency ordinance no. 147/1999 concerning the irrigation water users’ associations; Law no. 76/2002 on the

unemployment insurance system and labour employment stimulation; Law no. 180/2002 approving Government's Ordinance no. 2/2001 on the legal regime of contraventions; Law no. 53/2003 regarding the Labour Code, etc.

Table 3
Land improvement law no. 138 of April 27, 2004

Promulgated	D. no. 276/2004	
Published	Official Journal no. 369/28 Apr. 2004	
Republished	Official Journal no. 88/13 Feb. 2009	
Repeals	L. no.84/1996 Land Improvement Law	Except for the provisions from Art. 31 referring to establishing and penalizing the contraventions, which is repealed within 30 days from the date of enforcement of L. no. 138/2004.
	Government's Decision no. 611/1997 approving the set of rules for the application of Land Improvement Law no. 84/1996	
Modified by:	Government's ordinance no.94/2004 regulating certain financial measures	Modifies Art. 63 par. (2), Art. 87, Art. 94.
	L. no. 233/2005 for the modification and completion of L. no. 138/2004 and of Government's Emergency Ordinance no. 23/2000 on the establishment of the "Land Improvement" National Company S.A. through the reorganization of the Autonomous Regie of Land Improvement	It provides for the republication.
	L. no. 290/2006 on the modification and completion of Land Improvement Law no. 138/2004	Modifies Art. 41 par. (3) letter e) and par. (4) letter b), Art. 67 par. (2), Art. 73 letter o), Art. 77 par. (2) letter a) and b), Art. 84 par. (1), Art. 86, Art. 95; introduces par. (2) to Art. 40, letter. f), g) and h) to par. (3) of Art. 41; the term provided for in Art. 67 par. (2) is extended until July 31, 2006.
	Government's Emergency ordinance no. 39/2007 completing Art. 67 from L. no. 138/2004	Introduces par. (2 ¹) and (2 ²) to Art. 67.
	L. no. 167/2008 for the modification and completion of Land Improvement Law	Modifies and introduces many articles; it repeals Art. 70 par. (2), Art. 93 and Art. 94 It provides for republication.
	Government's Emergency Ordinance no. 39/2009 on certain measures to increase the land area contracted for irrigations	Introduces par. (4) to Art. 64, par. (4 ¹) to Art. 68.
	L. no. 281/2010 repealing certain regulations in the field of state aid for agriculture and for the completion of Government's Ordinance no. 14/2010 on certain financial measures regulating the state aids to farmers, beginning with the year 2010	Repeals Art. 9 par. (1) letter f), Art. 68, Art. 69.

Government's Emergency Ordinance no. 65/2011 on the modification of Land Improvement Law no. 138/2004	Modifies Art. 60, Art. 63 par. (2).
Government's Emergency Ordinance no. 82/2011 on certain measures for land reclamation activity organization	Modifies Art. 4 letter c), Art. 27 par. (5), Art. 28 par. (3), Art. 39 par. (1), Annex no. 2; it repeals Art. 30 par. (1), Art. 36–38, Art. 40–42, Art. 44–55, Art. 64, Art. 67, Art. 70, Art. 71, Art. 74 letter g), i), j), k), l) and n), Art. 76 letter e), Art. 83 par. (5) and (6), Art. 90; it replaces in the law the term “branch office” with “subsidiary company”, according to the case, and “Administration” by “Agency”, according to the case.
L. no. 3 of January 6, 2012 approving Government's Emergency Ordinance no. 65/2011 on the modification of Land Improvement Law no. 138/2004	

Source: http://www.cdep.ro/pls/legis/legis_pck.frame.

The methodological norms for the application of the Land Improvement Law no. 138/2004 were approved by **Government's Decision no. 1872/2005** and published in Romania's Official Journal no. 109 of February 6, 2006.

According to the criteria established by these norms (with subsequent modifications and completions by **Government's Emergency Ordinance no. 82/2011** and **Government's Decision no. 1223/2011**), the administration of the land improvement facilities from the public or private domain of the state, declared of public utility (water accumulations, main canals, pumping stations, etc.) is ensured by the *Land Improvement National Agency (LINA)*.

LINA is a public institution, legal entity, funded through its own revenues and subsidies from the state budget, under the subordination of the Ministry of Agriculture and Rural Development, which was established by the reorganization of the Land Improvement National Administration and took over part of the patrimonial assets of the National Company “Land Improvement” – S.A.

In the year 2011, LINA had 35 county branches non-legal entities into its structure and it managed the following: drainage facilities with water discharge by using pumps and/or by gravity; soil erosion control facilities; production and administrative buildings.

The 296 complex irrigation facilities administered by 12 county branches covered a total land area of 2,991,943 ha in the year 2011 (Table 5).

The land areas equipped with irrigation facilities in Romania are endowed with constructions (buried channels and pipelines, pumping stations, sluiceways, automatic hydraulic valves, culverts, mini waterfalls, chutes) ensuring irrigation water supply, transport and distribution, with an installed power of the pumping stations of 4,134 MW (Table 5).

Table 4
Land equipped with irrigation facilities in the year 2011

Total irrigated area	2,991,943 ha
out of which:	
- sprinkler irrigation	2,665,594 ha
- furrow irrigation	276,624 ha
- submersion irrigation	49,725 ha

Source: <http://www.anif.ro/>.

Table 5
Irrigation sector infrastructure in Romania

Main constructions on the land equipped with irrigation facilities:	
- water supply and distribution channels	10,630 km
- buried pipeline networks	26,700 km
- floating and fixed pumping stations	2,710 pieces
* basic floating stations	53 pieces
* basic fixed stations	171 pieces
* boosting stations	349 pieces
* pressure stations	2,137 pieces
- hydrotechnical constructions	
* sluiceways	4,856 pieces
* automatic hydraulic valves	480 pieces
* culverts	4,801 pieces
* chutes	2,781 pieces
* lateral spillways	466 pieces

Source: <http://www.anif.ro/>.

According to the current legislation, LINA supplies irrigation water on the demand of (beneficiary) farmers, on the basis of contracts for services deliveries with successive execution concluded on long term, named multi-annual contracts, as well as on the basis of irrigation water delivery contracts with outright execution, named seasonal contracts.

The multi-annual contracts are concluded for a period ranging from 3 to 5 years. These are paid at an annual rate and a rate for irrigation water delivery. The annual rate is calculated for each irrigation water delivery point to which LINA supplies water to its beneficiaries. This rate covers the estimated costs of irrigation infrastructure maintenance and repair from the public and private domain of the state, which is under LINA administration, and its value is established for each irrigation water delivery point, before the conclusion of the multi-annual contract.

The structure of irrigation water delivery rates and of the annual rate, the modality of their periodical adjustment, the date of beneficiaries' information about the value of these rates, the date of concluding the multi-annual contracts and the

due date of payment by the beneficiaries of the annual rate are established by the methodological norms regarding the calculation and payment of rates for the land reclamation services, which are approved by the Minister's Order, with the notification of the Minister of Public Finance.

The reform process in the agricultural and forestry sector also included restructuring measures in the management and use of intermediary and final land reclamation infrastructure, by transfer into the (*farmers*) *final users'* ownership and administration. These got organized according to **Government's Emergency Ordinance no. 147/1999**, approved with modifications and completions by **Law no. 573/2001**, into associative structures named organizations and federations of organizations in the field of land improvement, in order to carry out one or several of the following activities of public interest:

- a) irrigation water delivery, operation, maintenance and repair of an irrigation, drainage and desiccation system that serves several land owners;
- b) maintenance and repair of facilities for flooding and soil erosion control and development of other land reclamation activities that protect the soil on the land area of several land owners.

These organizations and federations are legal entities of public utility, without patrimonial purpose, which take over, for the land users' interest, both the ownership right and the right of use of the water users' association on the irrigation infrastructure into state ownership or of the administrative-territorial units, consisting of pumping stations, pressure stations, hydro-technical constructions, together with the related facilities and land, underground pipe lines, as well as other goods on the organization's territory and the correlative obligations. Depending on the facilities that are taken over, these associative structures received the following names: irrigation water users' organizations (IWUO); drainage and desiccation organizations (DDO); soil erosion control organizations (SECO); flood control organizations (FCO).

For the land equipped with irrigation facilities, the *irrigation water users' associations* established according to Government's Emergency Ordinance no. 147/1999, and reorganized by Law no. 573/2001 into Irrigation Water Users' Organizations (IWUO) and Federations of Irrigation Water Users' Organizations (FIWUO), have the following into ownership and administration: water intakes, pumping stations (the electric power network for supplying them with electrical power), water transport and distribution channels, underground pipe network, etc., as well as the drainage and desiccation, soil erosion control and flood control infrastructure.

467 land reclamation organizations (LRO) have been established so far, out of which 457 irrigation water users' organizations (IWUO) with a gross area of 1,102,721.7 ha and net area of 1,071,523 ha (Table 6).

Table 6
Establishment stage of the Land Reclamation Organizations (LRO)
and of the Federations of Land Reclamation Organizations (FLRO), by 6.02.2012

Organization form	Number	Area – ha	
		Gross	Net
LRO	467	1,158,567.0	1,125,634.0
IWUO	457	1,102,721.7	1,071,523.1
with PT	316	849,399.6	825,107.1
DDO	9	55,846.0	54,111.0
New LRO	320	677,781.6	569,821.0
Reorganized LRO	146	480,786.1	465,813.1
Irrigation plots	1152	1,097,645.7	1,070,552.1
with PT	710	804,302.6	785,182.1
FLRO	10	98,696.0	95,586.0

Note: DDO – drainage and desiccation organizations; SECO – soil erosion control organizations; FCO – flood control organizations; PT – protocol transfer on irrigation infrastructure.

Source: <http://www.maap.ro>.

The irrigation water users' association is established by a protocol with certified statute under legal conditions. The statute includes provisions referring to: name, main location, patrimony, object of activity and purpose, management and control bodies, conditions for joining the association and getting out of the association, association members' rights and obligations.

In order to facilitate the performing of irrigation services, the association members must permit the association to use any irrigation pipelines, channels, hydrants or any other hydro-technical equipment located on their land, as well as the access to the land administered by the association, for the purpose of irrigation networks operation and maintenance or repair in case of its breakdown.

At ministry level, by the Minister's Order, the *National Registry of Irrigation Water Users' Associations* was established, and under the Ministry of Agriculture, Food and Forests a distinct department was established, i.e. the *Regulating Office of Irrigation Water Users' Associations*, with the following main tasks:

- a) it provides specialized assistance and approves the establishment of water users' associations;
- b) keeps evidence and enters the association in the National Registry of Irrigation Water Users' Associations;
- c) asks the associations to provide information and documentation on the association operation and to maintain the infrastructure in place;
- d) other tasks that can be established by the Order of the Minister of Agriculture, Food and Forests.

The dissolution of association takes place under the conditions in which its objectives can no longer be fulfilled or if, out of other reasons, its existence is no longer necessary and this is specified in the associations registry from the court of law on whose territorial area the association central office is located. The distribution modality of the association social patrimony, when the liquidation process is

completed, is decided by the general meeting, through the majority vote of members, on the condition these have into ownership or use more than half of the association's territorial area. The decision of the general meeting of an association must also include the denomination of one or several liquidators.

The court makes public the decision to liquidate an association, on the basis of its own expenses, in order to permit creditors to register their claims on the assets into association's ownership. After the association liquidation, the Ministry of Agriculture, Food and Forests will approve the transmission of infrastructure into LINA administration.

In Romania, the main sources of irrigation water are the following:

- The Danube river, which supplies water to 85% of the total area equipped with irrigation facilities;
- inland rivers and storage lakes, which ensures the necessary water for 15% of the total area equipped with irrigations facilities.

Since old times, *the Danube river* has been a transport waterway linking the Riverain States, as well as a source for obtaining electrical power, for supplying drinking and industrial water to the harbour-towns, for supplying water to the irrigation systems, for fishing as well as for tourism. On Romania's territory, the Danube river crosses an area of 1,075 kilometers. The large irrigation systems are located along the Danube, on the territory of 10 counties: Dolj, Olt, Teleorman, Giurgiu, Călărași, Ialomița, Constanța, Tulcea, Brăila and Galați.

The rivers network has a radiary disposition due to relief configuration with rivers having a longitudinal profile characterized by steep slopes in the mountain areas, more gentle slopes in the hilly and piedmont areas and very gentle slopes in the plain. The main rivers in our country spring from the Carpathians and flow into the Danube (except for a few rivers from the region Dobrogea).

The protection and sustainable use of the Danube river is regulated by **Law no. 14 of February 24, 1995** for the ratification of Convention on the cooperation for the Danube protection and sustainable use, signed at Sofia, on June 29 1994, published in Romania's Official Journal no. 41 of February 27, 1995. The Convention was adopted by 11 states located in the Danube River Basin (Austria, Bulgaria, Croatia, the Czech Republic, Germany, Hungary, Moldova Republic, Romania, Slovakia, Slovenia and Ukraine), as well as by the European Commission. The Convention was also subsequently signed by Bosnia and Herzegovina, as well as by Serbia.

The main purpose of the Convention is to protect the river water and the ecological resources, as well as their sustainable use in the Danube hydrographic basin. This will be achieved by a sustainable and fair water management, including the conservation, improvement and rational use of surface and ground waters from the hydrographic basin, as far as this is feasible. At the same time, the contractual parts will make all the necessary efforts and will take all the adequate legal, administrative and technical steps for the control of hazards induced by accidents

with dangerous substances for waters, floods and frost along the Danube river. Furthermore, they will try to contribute to the diminution of pollution discharges in the Black Sea from sources located in the hydrographic basin.

The contracting parts will establish the adequate priorities and they will consolidate, harmonize and coordinate the adopted and planned measures to be taken at national and international level throughout the Danube basin, having as objective the sustainable development and protection of the Danube river environment. This objective particularly has in view the *sustainable use of water resources* for supplying drinking, industrial and *irrigation* water, as well as the conservation and reconstruction of ecosystems, also responding to other requirements in the field of public health.

The Polluter Pays principle and the Precaution Principle represents the basis of all measures for the protection of the Danube river and of the waters from its hydrographic basin. The cooperation in water management will focus on the sustainable water management, starting from the principles of adequate stable and ecological development, while also targeting: maintenance of the general quality of life; continuous access to natural resources; avoiding the long-lasting ecological damages and ensuring the ecosystem protection; preventive approach application.

The water quality in Romania is tracked down according to the structure and methodological principles of the Integrated Water Monitoring System from Romania (IWMSR), restructured in conformity with the requirements of EU Directives. The national water monitoring system includes two monitoring types, according to the requirements stipulated in *Law no. 310/2004* modifying and completing the **Water Law no. 107/1996**, which took over the provisions of the Water Framework Directive 60/2000/EEC and of other EU Directives. Thus, a *surveillance monitoring* is achieved, with the role to evaluate the situation of all water bodies from the hydrographic basins and an *operational monitoring* (integrated to the surveillance monitoring) for the water bodies under the risk of non-fulfillment the water protection objectives.

Water management activity in Romania complies with the requirements of Water Framework Directive 60/2000/EEC, as well as of the other EU Directives: Directive 75/440/EEC – concerning the quality required of surface water intended for the abstraction of drinking water; Directive 76/464/EEC – gradual removal of prioritarily dangerous substances, Directive 91/676/EEC – pollution by nitrates from agricultural sources, Directive 78/659/EEC – on the quality of fresh waters needing protection or improvement in order to support fish life, Directive 91/271/EEC on the treatment of the urban waste water, etc.

All the requirements of Directive 91/676/EEC are included in the Plan of Action for water protection against nitrate pollution from agricultural sources. The determination of irrigation water quality is regulated by STAS 9450/86, and the determination of water quantities for irrigating the agricultural crops is regulated by STAS 1342/4 – 86.

The strategy of land amelioration modernization and rehabilitation mainly targets the existing infrastructure rehabilitation, sparing the water resources and increasing the efficiency of the irrigation system. For this purpose, priority will be given to the rehabilitation and modernization of existing systems.

The land melioration public and/or private projects are based on the legislation regulating the elaboration of the *Evaluation study of the impact upon the environment* and obtaining the *Environmental permit* for the public and private projects.

The main legislative acts on the issuance of the environmental permit and the elaboration of the impact study are the following:

- Government’s Emergency Ordinance no. 195/2005 on environment protection, approved by the Environment Protection Law no. 265/2006, with subsequent modifications and completions;

- Government’s Decision no. 445/2009 on the assessment of environmental impact of certain public and private projects;

- Order of the Ministry of Environment and Forests no. 135/2010 approving the Application Methodology of environmental impact assessment for public and private projects;

- Order of the Ministry of Waters and Environment Protection no. 863/2002 approving the methodological guidelines applicable to the stages of the framework procedure for environmental impact assessment;

- Order of the Ministry of Waters and Environment Protection no. 864/2002 approving the environmental impact assessment procedure in cross-border context and public participation in decision-making.

The water management projects for agriculture, the irrigation and drainage projects included, are regulated by Annex I.2 under point 1 letter c from *Order no. 860/2002* of the Minister of Waters and Environment Protection for the approval of the environmental impact assessment procedure and issuance of the environmental permit.

5. CONCLUSIONS

In Romania, the irrigation water management is conform with the European Union requirements, which regulate the framework of action, cooperation, coordination and implementation of common standards concerning the sustainable use of water and soil. The administration and use of irrigation infrastructure is based on a legislation under continuous dynamics.

Land Improvement Law no. 138/2004 – republished, with subsequent modifications and completions – is the fundamental legal instrument regulating the irrigation activity in Romania.

The methodological norms for Land Improvement Law application were approved by *Government’s Decision no. 1872/2005*. According to the criteria established by these norms (subsequently modified and completed by *Government’s*

Emergency Ordinance no. 82/2011 and *Government's Decision no. 1223/2011*), the Regulation on the organization and operation of the *Land Improvement National Agency* is approved, as public institution, with legal entity status, funded from its own revenues and subsidies from the state budget; this Agency is under the subordination of the Ministry of Agriculture and Rural Development, which administers the irrigation facilities, declared of public utility (water accumulations, main channels, pumping stations, etc..

Government's Emergency Ordinance no. 147/1999, approved with modifications and completions by *Law no. 573/2001*, regulates the administration and utilization of the land improvement intermediary and final infrastructure, which were transferred to farmers. These got organized into associative structures named: irrigation water users' organizations (IWUO); drainage and desiccation organizations (DDO); soil erosion control organizations (SECO); flood control organizations (FCO). Within the Ministry of Agriculture, Food and Forests, the "Office regulating the irrigation water users' associations" was established and the "National Registry of irrigation water users' associations" was created.

Law no.14 of February 24, 1995 ratifies the Convention on cooperation for the protection and sustainable use of the Danube river, signed at Sofia, on June 29, 1994, providing for the sustainable and fair water management, including the conservation, improvement and rational use of surface and ground waters from the hydrographic basin, as far as this is feasible. The Danube supplies water to 85% of the total area equipped with irrigation facilities in our country. The inland rivers and storage lakes, supplying water to 15% of the total area equipped with irrigation facilities, cannot be fully used, due to the variable water regime. *The Polluter Pays Principle and the Precaution Principle* represent the basis of all measures for the protection of the Danube river and of the waters from its hydrographic basin.

Law 310/2004 modifying and completing the Water Law 107/1996 took over the provisions of the Water Framework Directive 60/2000/EEC and of other EU Directives, such as Directive 91/676/EEC, regulating the nitrate pollution from agricultural sources.

The irrigation systems rehabilitation projects are legally regulated by *Order no. 860/2002* of the Minister of Waters and Environment Protection concerning the environmental impact assessment and the issuance of the environmental permit.

The modernization and rehabilitation strategy of the land improvement infrastructure mainly targets the rehabilitation of existing infrastructure, sparing the water resources and irrigation system efficiency increase.

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