Analysis of the Legislation on Soil Protection in the European Union and Romania

ABSTRACT

The earth's soil is one of the planet's most intricate natural systems, an integral part of the physical environment, and a dynamic biological complex that supports all of life on Earth's fundamental functions. Soil is also one of the most complex natural systems on the globe. As a result, the community should place a high priority on soil protection because the conservation of soil resources now more than ever calls for legal implementation. The main provisions of the Acquis Communautaire (directives, strategies, decisions, and orders of the relevant ministry, etc.), which come to ensure an interface between the current use of soils, agronomy, and their protection for future generations, are noted in this paper as we propose to analyze the protection of soils from the perspective of the legislation of the European Union and Romania. The scientific approach used only yielded the correlation between EU and national legislation, which was also shown graphically in the form of a blockchain with time order (a repeating bending process).

Keywords: Acquis Communautaire; sustainable agriculture; soil protection; legislation.

1. INTRODUCTION

Protecting Europe's land and soil resources is crucial for a sustainable future [1,2]. Soil, one of the fundamental elements of the land, is a tremendously complex and frequently undervalued material, full of life. Here is the European Community's most recent response to the soil. Naturally, all of the European Union's Member States support this goal, which is implicitly harmonized at the Acquis Communautaire level.

The earth that sustains us is our future, thus increasing demands on its fertile soil cannot result in its depletion. There should be no changes made to the function of soils in the natural nutrient cycle [3], the role of soils in climate change [4], or the function of soils in the community's sustainable development goals [5]. The category of non-renewable natural resources includes the soil resource, which is a country's most crucial natural resource and assures its independence and food security [6].

The conflict between soil functions and those of buildings, roads, and landfills can cause a loss of soil quality as a result of intensive agriculture, pollution, and the effects of climate change. Without the management of this resource, there would be little progress and less dependence on developing nations. As a result, the community should place a high priority on soil protection because the conservation of soil resources now more than ever calls for legal implementation. Therefore, we set out to analyze the protection of soils from the perspective of the laws of the European Union and Romania, noting in this paper the key provisions of the Acquis Communautaire (directives, strategies, decisions, and orders of the relevant ministry, etc.), which come to ensure a connection between the use of soils today and their preservation for future generations.

2. MATERIAL AND METHODS

This paper was outlined in consultation with the Acquis Communautaire (directives, strategies, decisions, and orders of the relevant ministry, laws and emergency ordinances, etc), which provides an interface between the current and correct use of soils, agronomy, and soil resources protection for future generations. Both the elements that constitute the legislative framework of the European Union in strict and direct relation to the protection of soil resources and the elements that constitute the existing harmonized legislative framework at the level of Romania were considered.

Moreover, to be able to follow closely and make a correlation between the European and national legislative framework, it was necessary to create and develop SmartArt graphics, which would support the guideline of the history of legislative concerns for the protection and judicious use of soil resources. Moreover, the correlation aimed to emphasize, where appropriate, the existence of a link between European soil protection directives and regulations and the corresponding national legislative framework, which emerged as a natural harmonization of the European one.

Because the follow-up of the correlation between the European and the national legislative framework was not well outlined in terms of research methodology (which involved the natural phase of documenting and consulting the sites of the main bodies with responsibilities and responsibilities in legislation), there were many problems in the approach taken. Most issues that have interfered with and altered the legislative correlation have been blamed on the lack of transparency or restriction of public access to information, the lack of direct correlation between European legislation and its national equivalent, or the fragmentation and alteration of the national legislative framework. The latter issue was most encountered on the websites of organizations that took the information in question from official websites and altered it by inadequate translation, inconsistency in the full takeover of the legislative text, or framing in another category than that stipulated by the parent law.

3. RESULTS AND DISCUSSION

2.1 European legislation on land use and soil resources protection

Following the provisions of article 174 of the Amsterdam Treaty, Member States are required to consider a high level of environmental protection [7], pursuing several important goals, including the preservation, protection, and improvement of the environment's quality, safeguarding human health, wise and rational use of natural resources, and last but not least, the international promotion of measures intended to address regional or global environmental problems. The legislative act upholds the core tenets of the original Community law and does not violate any of its provisions. It controls a unitary framework in the area of environmental protection.

To protect soil quality at the EU level, the European Commission prepared, in Brussels, 22.06.2006, the Communication entitled "Thematic Strategy for Soil Protection" (COM/2006/0231) [8] and the "Impact Assessment of the Strategy" (SEC/2006/0620) [9] that a framework directive in the field of soil protection should be adopted, given the important role of soil in addressing such as climate change, biodiversity loss, desertification, erosion, floods, and landslides, as well as ensuring safe and sufficient food production [1, 4].

Although the EU adopted a thematic strategy for soil preservation in 2006, there is still no legally enforceable general framework to specify the aims or parameters of a soil protection policy. Other laws' results on soil protection are generally the outcome of fulfilling

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environmental goals not specifically related to soil, such as lowering pollutants and offsetting greenhouse gas emissions.

Results should be succinctly and described. Results for various parameters should be broken down into individual paragraphs or subheadings. For easier interpretation, table or figure numbers should be placed in parentheses. The explanation should provide a thorough interpretation of the data rather than rehash the results. This ought to explain the relevance of the study's findings. The findings should be supported by citations. If necessary, the results and discussion section can also be referred to separately.

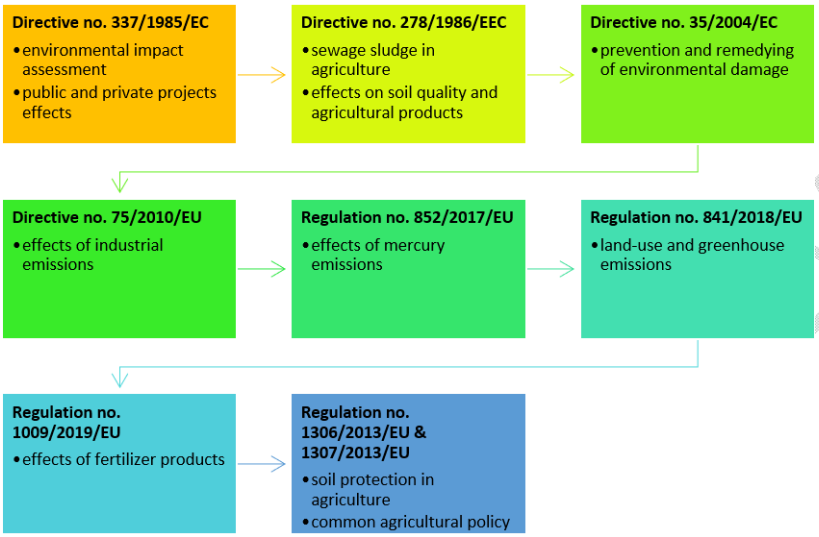

Fig. 1. The main legislation in the EU on soil protection and sustainable land use

Among the regulations that touch tangentially on the issue of soil protection, we present the most relevant ones below:

- Since its implementation in 1985, the EIA Directive (337/1985/EEC) has undergone three revisions in 1997, 2003, and 2009 [10]. The environmental impact assessment of all public and private initiatives that have the potential to have a major negative impact on the environment must comply with this directive. The environmental impact assessment will appropriately identify, describe, and evaluate the consequences of a project on the following variables: people, animals, plants, soil, water, air, climate, and landscape, as well as tangible commodities.

- Directive 97/11/EC brought the Directive in line with the UN ECE Espoo Convention on EIA in a Transboundary Context.

- To comply with the Aarhus Convention on public participation in decision-making and access to justice in environmental problems, Directive 2003/35/EC aimed to align its public participation measures with it.

- Directive 2009/31/EC amended Annexes I and II of the EIA Directive, by adding projects related to the transport, capture, and storage of CO2 [11].

- The sewage sludge directive (278/1986/EEC) [12] seeks to promote the use of sewage sludge in agriculture and to control it in a way that doesn't harm the land,

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plants, animals, or people. The usage of sewage sludge cannot compromise the quality of agricultural goods or soil. For this reason, it is forbidden to utilize untreated sludge on agricultural land unless it is injected or mixed into the soil. Sludge that has undergone biological, chemical, or thermal treatment, long-term storage, or any other acceptable technique to dramatically lessen fermentability and the health risks associated with its use, is referred to as treated sludge [11].

- A framework based on the polluter pays concept is established by Directive 35/2004/EC on environmental liability regarding the prevention and remedying of environmental harm [13]. It outlines the most appropriate steps to repair the harm to the land in addition to a standard framework for repairing damage to water or natural habitats.

- The principal tool for controlling the emissions of pollutants from industrial installations is Directive 75/2010/EU on industrial emissions [14]. By cutting back on dangerous industrial emissions throughout the EU, it seeks to achieve a high level of protection for both human health and the environment as a whole. It offers an integrated approach to waste management, energy efficiency, accident prevention, and the reduction of emissions to air, water, and soil. It also makes sure that the operation of a facility does not result in a decline in the quality of the soil and groundwater.

- Mercury is covered throughout its full life cycle by Regulation 852/2017/EU. It gives out regulations and guidelines for the use, storage, and commerce of mercury, its compounds, and mixes, as well as for the production, use, and trade of goods containing mercury [15]. The goal of the directive is to guarantee a high level of protection for the environment and human health from anthropogenic emissions as well as emissions of mercury and its compounds.

- Each Member State is legally obligated to make sure that emissions from land use are fully offset by an equivalent removal of CO_2 from the atmosphere under Regulation 841/2018/EU on the inclusion of greenhouse gas emissions and land use disposal, land-use change, and forestry in the climate and energy framework for 2030 [16].

- Regulation 1009/2019/EU defines "EU fertilizer products" and establishes guidelines on how to make them available on the market [17]. To reduce soil contamination, it specifies thresholds for the presence of pollutants in fertilizers, particularly cadmium.

- The Common Agricultural Policy (CAP) and four related laws (Regulation 1306/2013/EU [18] on the finance, management, and monitoring of the CAP, and Regulation 1307/2013/EU [19] on the guidelines for direct payments to farmers) specify how the main components operate. The execution of related policies and obligations by the Member States and land managers have the potential to improve soil conservation in agriculture and forestry and is a significant economic driver for agricultural decisions across the EU.

One of the fundamental materials for the development of agriculture and forestry is soil. It aims for the conservation and enhancement of soil quality through the pursuit of sustainable management of natural resources, climate action, and mitigation and adaptation to climate change. The European Commission released a policy paper in 2012 detailing the strategy's implementation and ongoing initiatives. The paper gives a summary of the steps the European Commission has taken to put the Strategy's four pillars—awareness-building,

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research, integration, and legislation—into practice. Additionally, it demonstrates worldwide and European trends in soil degradation as well as difficulties in ensuring protection.

The Commission established a group of experts mandated by the Member States to consider how soil quality issues could be addressed using a targeted, risk-based approach after the legislative proposal was withdrawn due to disagreement from a minority of Council members in 2015. There are many different policy instruments at the EU and Member State level that either explicitly addresses threats to soil or soil functions or by default provide some form of soil protection due to the cross-sectoral nature of soil issues and the diversity of environmental and socio-economic pressures and governance conditions across Europe.

In addition to these guidelines and regulations, the EU has unveiled a soil strategy [20]. The EU's new soil policy for 2030 lays out a framework and specific actions to safeguard soil conservation, restoration, and sustainable use. With specific steps by 2030, it lays out a vision and targets for developing healthy soils by 2050. The old Thematic Strategy for Soil Protection from 2006 has been replaced by the EU Soil Strategy for 2030. The approach outlines the primary dangers to EU soil, including salinization, pollution, erosion, flooding, landslides, loss of soil organic matter, and biodiversity loss.

2.2 Romanian legislation on land use and soil resources protection

As a subject of national importance for Romania, soil conservation necessitates the adoption of a suitable legal framework designed to ensure the unitary coordination of actions in these domains based on the most precise standards and rules. This legislative recommendation's main goal is to provide rules for knowledge, protection, improvement, and sustainable usage. This includes evaluating Romania's capacity for bioproduction and conducting routine soil quality checks.

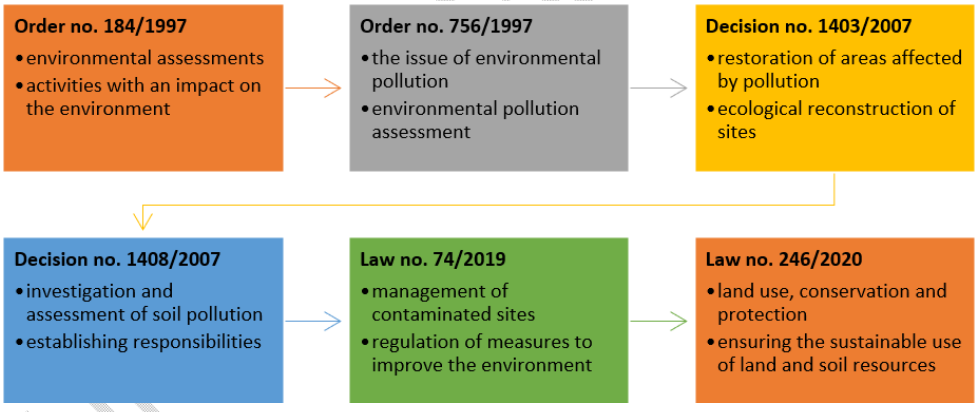

Fig. 2. The main legislation in Romania on soil protection and sustainable land use

Since 2007, when Romania became a full member of the European Union, the issue of soil has closely mirrored that which is currently being addressed at the national level, under the direction of the European Environment Agency. Thus, the soil is the core of terrestrial ecosystems and is regarded as the basic source of life [22]. It is a dynamic natural body made up of solid mineral and organic substances, water, air, and living organisms [21].

Given that the soil is a fundamental natural resource and that its proper use, conservation, and protection are essential elements of both feeding the populace and safeguarding natural

systems [2,5], we have compiled a list of the key legal provisions that support soil protection activities below, including:

- Order No. 184/1997 for the approval of the Environmental Assessment Procedure specifies the implementation process, the kinds, geographic scopes, and content of the environmental assessments necessary in the authorization process, as well as the change of owner, destination, or cessation of economic and social activities with environmental impact [23];

- Order no. 756/1997 for the approval of the Regulation on the assessment of environmental pollution also affects the issue of soil pollution [24];

- The legal framework for carrying out the activities of cleaning, remediation, and/or ecological reconstruction of the regions that have been impacted is established by Decision No. 1403/2007 on the restoration of places where the soil, subsoil, and terrestrial ecosystems have been harmed [25];

- Decision No. 1408/2007 on the Modalities of Investigation and Assessment of Soil and Subsoil Pollution governs the Modalities of Investigation and Assessment of Soil and Subsoil Pollution, identifies the damages caused, and establishes the Responsibilities for Environmental Restoration [26];

- To protect human health and the environment from the effects of soil contamination, Law No. 74/2019 on the Management of Potentially Contaminated and Contaminated Sites [27] regulates actions to improve the quality of environmental factors affected by the presence of pollutants at levels that pose a significant risk to human health and the environment.

- The activities related to the use, conservation, improvement, assessment of productive capacity, economic recovery, soil protection, and integrated soil quality monitoring are governed by Law No. 246/2020 on Land Use, Conservation, and Protection in the context of sectoral policies to ensure the sustainable use of this non-renewable resource [21].

4. CONCLUSION

As would be expected, the European Union has a wide range of laws, and the Acquis Communautaire is represented in an enduring scientific concern that has shaped current environmental policies and tactics. We discovered that European legislation still falls short in protecting soil resources because it is not as well protected as other environmental factors like water, air, and/or biodiversity, or the scientific literature, particularly the various regulations that are either directly or indirectly related to the protection of soil resources.

The Study Institute for Pedology-Agrochemistry, the County Offices of Pedology and Agrochemistry, and the profile universities are the only entities in Romania that deal with soil research and protection. The county offices use this scientific and practical knowledge in the region, and the first two are primarily responsible for researching to establish concepts and operational techniques. Since soil conservation is frequently linked to European biodiversity and natural resource preservation policies, soil protection law is obviously and inextricably connected to European rules.

As far as we are concerned, the gaps and inconsistencies in the harmonization of European law persist, and from the standpoint of practitioners and professionals, we wish to sound the

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alarm. The strategy for tackling the issues brought on by the pollution and degradation of soil resources still has flaws, at least at the national level. All of the legislative measures, as well as the methodological and good practice manuals, that have been published at the level of other European states, should be updated in favor of manuals that promptly address the issues at the root. It is also appropriate for the adoption, testing, and validation of interstate strategies and good practice standards to occur within a clearly stated timeframe in the legislative requirements. Additionally, we believe that the time is right to introduce new technologies - particularly IoT and high-precision agricultural methods - to the legislative stage for use in sampling, processing, analyzing, and monitoring soil resources (with the use of web and mobile applications, satellites, and drones).

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