Land Use Policy 99 (2020) 105071

Contents lists available at ScienceDirect

Land Use Policy

journal homepage: www.elsevier.com/locate/landusepol

The interrelations of land ownership, soil protection and privileges of capital in the aspect of land take

Petra Stankovics [a,b,*], Luca Montanarella [a], Piroska Kassai [c], Gergely Tóth [c,d], Zoltán Tóth [b]

[a] European Commission, Joint Research Centre, 21027 Ispra, Italy
[b] Department of Crop Production and Land Use, Szent István University, Georgikon Campus, 8360 Keszthely, Hungary
[c] Department of Soil Science and Environmental Informatics, Szent István University, Georgikon Campus, 8360 Keszthely, Hungary
[d] Institute for Soil Sciences and Agricultural Chemistry, Centre for Agricultural Research, 1022 Budapest, Hungary

ARTICLE INFO

Keywords:
Soil protection
Land take
Land ownership
Land use
Soil sealing
Privileges of capital
Access to land

ABSTRACT

The novelty of this study lies in the analyses of legislation concerning land use policies by examining the specific boundary between land ownership and land take. The basic motive was that the European Commission (EC) withdrew the Soil Framework Directive (SFD) in 2014 following the objections of certain Member States (MS) who countered that as most lands are privately owned, they should not fall under the remit of public governance. Since the withdrawal of the SFD land take is an issue receiving more attention. The legal content of ownership rights has been subjected to constant debate in the context of land-use policies and planning practices, which raises the questions of who decides how the land can be used and whether administrative authorities give priority to non-agricultural uses. Our study seeks to explore these issues through the lens of property law by comparing different legislations on access to land on three levels of policy implementation: the EU, the national, and the local levels. MS legislations are highlighted through the example of Hungary in two aspects: (1) regulation regarding Access to Land and Land Ownership Rights (ALOR), and (2) legislation and results of the LANDSUPPORT decision support system concerning Land Take Changes (LTC). We designed figures to demonstrate how policymakers can use the new LANDSUPPORT platform to show the gaps and inconsistencies among the above aspects. We found that the legislative regulations concerning private land use to achieve soil protection objectives remain the weakest link in the environmental protection legislation of the EU. Anxieties concerning built-in legal guarantees on each of the studied levels actualise our research. Currently, global land management is not on the political table although common European legislation might be able to preserve land for agricultural use.

1. Introduction

In May 2014 the European Commission (EC) withdrew the Soil Framework Directive, 2016 (SFD) (2006/0086/COD) after some debate and a long period of apathy which followed the objections of certain Member States (MS), who countered that soils were a strictly local issue, governed locally rather than by a central authority. Some argued that as most lands were privately owned, they should not fall under the remit of public governance (Montanarella, 2015). Our work presented in this study was based on the principle put forward in Article 5 of the Consolidated versions of the Treaty on European Union and the Treaty on the Functioning of the European Union - Protocol (No 2), according to which the reasons for concluding that a Union objective can be better achieved at Union level shall be substantiated by qualitative and, wherever possible, quantitative indicators. In our study we aspire to provide such indicators to establish that the objective of soil protection can be better achieved at Union level despite the argument of private land ownership in the EU MS.

Clearly, the issue of land ownership is fundamental in soil protection policies (Montanarella, 2016). In our time, as historically, the philosophical, practical and legal debate concerning private, public, and community lands continues. Their battle for space creates constant tensions in periodically rebalancing property relations (Jedidiah, 2005). In the light of the growing threats to food supply sustainability worldwide (FAO, 2011), as arable land is becoming a natural resource of the highest value in considerations of future life (FAO and ITPS, 2015), these

* Corresponding author at: European Commission, Joint Research Centre, 21027 Ispra, Italy.
E-mail address: stankovics.petra@gmail.com (P. Stankovics).

https://doi.org/10.1016/j.landusepol.2020.105071
Received 25 February 2020; Received in revised form 28 July 2020; Accepted 4 September 2020
Available online 29 September 2020

traditional aspects of land ownership seem increasingly insufficient (Glæsner et al., 2014; Tarlock, 2007). Land ownership has been most prominent in both popular and legal perception, as the sanctity of private property has been a basic cornerstone of the European economic system (Benra and Nahuelhual, 2019). The legal content of ownership rights, however, is subjected to constant debate in the context of land use policies and planning practices: the overlap between the 'general right to hold private property' and 'specific property titles' forming the center of argument (Moroni, 2018). A system of property rights is based on "the set of economic and social relations and norms defining the position of each individual with respect to the utilization of scarce resources", so can be formed by institutional decisions (Nichiforel et al., 2018). In the soil context, the term property rights (also rights of use or control) makes clear that the proprietor of land holds all rights relating to the land and is (in an extreme case: fully) at liberty to make any kind of decision on how it is used (Hansjürgens et al., 2018). Ownership expresses the fullest bundle of property rights (Arora et al., 2015). It is an ultimate and exclusive right conferred by a lawful claim or title, and subject to certain restrictions to enjoy, occupy, possess, rent, sell, use, give away, or even destroy an item of property. The ownership of land is upheld in three basic categories: Private or "modern", communal or customary, and public or state. Regardless of the type of ownership, making decisions concerning land use or land take is part of owners' rights (Creutzig, 2017). Ownership rights are deeply rooted and traditionally respected in Roman law based systems. More so than the relatively recent environmental protection principles, especially those of land and soil. It would seem that as far as control is concerned – owners' rights still enjoy precedence (Johann and Schaich, 2016; Owley, 2018). This means that when the two – land ownership and soil protection – are in conflict, legal security should be maintained so that the public interest will not be violated.

In our study, we scrutinize the gaps in the currently dominating property law towards land and soil protection in the (i) EU, and legislations illustrated through the example of Hungary on (ii) national and (iii) local level. The proposed SFD recognizes seven soil functions that are vulnerable to soil threats: 1. biomass production, including agriculture and forestry; 2. storing, filtering and transforming nutrients, substances and water; 3. biodiversity pool, such as habitats, species and genes; 4. physical and cultural environment for humans and human activities; 5. source of raw materials 6. acting as a carbon pool; 7. archive of geological and archaeological heritage. Soil sealing is the most intense form of soil degradation and is essentially an irreversible process, resulting in a total loss of soil functions for the area affected (Naumann et al., 2019). According to Panagos et al. (2016) soil loss occurs not because of any lack of knowledge on how to protect soils, but a lack in policy governance. One of the most important indicators of the effectiveness of soil protection policy is the extent of land take where not the misuse of farmers or natural soil degradation processes but the decisions of the public authority withdraw arable land from cultivation (agriculture or forestry), causing rapid loss of fertile soil, endangering food security (Gardi et al., 2015; Hurlbert et al., 2019). In this paper our aim is to examine the nexus between land take and land ownership as a decisive factor in land policy governance.

Since the withdrawal of SFD land take and soil sealing is an issue which has received more attention (Bouma et al., 2019). It has become an important issue in studies on global environmental changes in recent years (Gardi, 2017; Fan et al., 2017; EEA, 2019; IPBES, 2018; Cherlet et al., 2018). It is considered one of the primary factors affecting eco-systems services (Cegielska et al., 2018; Hartemink and Adhikari, 2015)) and it should be noted that in many cases the changes are adverse ones, such as the development of valuable natural areas or the setting aside of high-quality agricultural land (Mackiewicz and Karalus-Wiatr, 2017). Anxieties concerning built-in legal guarantees on each of the studied levels actualise our research. Therefore our article is intended to induce further scientific discussion on this topic. We introduce a question on each studied level offering possible answers. The key research questions, which guide the study, are:

- EU level: Whose authority is to legislate land ownership and land take: the EU's or the Member States'?
- National level: What is the link between land ownership and land take?
- Regional level: How can the landowner de jure seal the land?

2. Materials and methods

The two aspects ((1); (2)) in which the three levels of legislation (EU level: EU28; National level: Hungary; Regional level: Keszthely region, Hungary) are summarized, namely (1) regulation regarding Access to Land and Land Ownership Rights (ALOR), and (2) legislation and results of the LANDSUPPORT decision support system (Terribile et al., 2020) concerning Land Take Changes (LTC) were studied as follows:

The materials for legal research include the different types of legal acts on applicable real property law such as: EU Law (the acquis communautaire), i.e.: treaty provisions, regulations, directives, decisions, and precedents. Hungary has a civil law system and the courts directly interpret the words of the legislation. The sources of Hungarian law are the Acts of Parliament, governmental and ministerial decrees, which are effective only if published in the Official Gazette, and decrees of local governments (Antal, 2013). The sources were the official governmental websites, the official website containing EU laws (EUR-Lex), online international law information services (e.g., FAOLEX), and national legal experts' contributions (e.g., websites, articles, comments).

In our study under the term "land take" we use the definition of Prokop (2012) - according to which it represents an increase of artificial surfaces over time, usually at the expense of rural areas - from a legal perspective, where the forms of land take are the rezoning of the given property to commercial or industrial areas in the local zoning regulations of the municipality, and bring about the permanent withdrawal of the lands from agricultural use. Land take is the legal prerequisite of soil sealing, without land take, soil sealing is not possible where land registration exists. Soil sealing can be defined as the destruction or covering of soils by buildings, constructions and layers of completely or partly impermeable artificial material. A high ratio of land take — on average 51 % according to Prokop et al. (2011) is sealed. In our study we cited CORINE land cover change datasets based on which we calculated a 49 % ratio on EU level. Land take per year between 2006–2015 were estimated (CORINE Land cover change C.H.A. 2006-2012 and CHA 2012-2018, 2020) by calculating a weighted average. Then LANDSUPPORT soil sealing per year between 2006–2015 was compared to land take change. The annual land take in EU countries in the period between 2006–2012 was approximately 107,000 ha/year (Naumann et al., 2019). About 83.6 % of Hungary's 9.3 million hectares is suitable for agricultural use (production area) and of this 62.2 % is agricultural land, which is outstanding in Europe. These data show a favourable land supply, but as trend shows although the population of Hungary is declining, the usable agricultural area per capita is decreasing due to land take. In Hungary, the production area decreased by ~823 thousand hectares between 1990 and 2016, while the size of the area set aside from cultivation increased by this amount (Csipkés et al., 2017).

To target LTC we also used the LANDSUPPORT decision support system (aspect 2). The LANDSUPPORT project H2020 (https://www.landsupport.eu/) aims at building up a web-based smart geoSpatial Decision Support System (S-DSS) devoted to support the development and implementation of land use policies in Europe. It shall provide a set of operational tools including 'LANDSUPPORT land take model'. It takes into account the differences in the pixels between two records made by the Copernicus Imperviousness grids. All results refer to processing made between two dates (2006–2015) on the HRL Copernicus imperviousness layers (https://land.copernicus.eu/pan-european/high-resolution layers/imperviousness%20and%20metadata). The LTC represents surfaces (hectares) lost or recovered due to land take processes. Lost

surfaces are due to new urbanization, recovered surfaces to de-urbanization processes. Change in soil productivity represents the difference between two dates (performed over a Region of Interest (ROI)) of the loss in soil potential productivity due to land take processes. Loss of potential productivity is related to the loss of soil surfaces with biomass productivity functions (e.g. croplands, forests, etc.). Results refer to processing made on the productivity maps after Tóth et al. (2013a,b): Continental-scale assessment of provisioning soil functions in Europe (https://esdac.jrc.ec.europa.eu/content/soil-biomass-productivity-maps-grasslands-and-pasture-coplands-and-forest-areas-european#tabs-0-description=0). Project activities are carried out on different geographical and governance scales, from the European level to the national and regional/ local scale. The land take tool works at different geographic scales including EU MS, Hungary, and the Keszthely Region.

3. The EU level: whose authority is it to legislate ALOR and LTC, the EU's or the Member States'?

3.1. Regulation regarding ALOR

According to Article 3 of the Treaty on European Union, the EU shall establish a common internal market that works toward the sustainable development of Europe and is based on balanced economic growth and price stability, aiming at full employment and social progress, and a high level of protection and improvement of the quality of the environment. EU MS have transferred a substantial part of their power to establish the political and economic union of the new state formation laid down by the founding Treaties. In specific areas where the Treaties confer exclusive competence on the Union, only the Union may legislate and adopt legally binding acts, the MS being able to do so by themselves only if so empowered by the Union or for the implementation of Union acts. When the Treaties confer on the Union a competence shared with the MS in a specific area, both the Union and the MS may legislate and adopt legally binding acts in that area. The MS shall exercise their competence to the extent that the Union has not exercised it (Consolidated version of the Treaty on the Functioning of the European Union - PART ONE: PRINCIPLES - TITLE I: CATEGORIES AND AREAS OF UNION COMPETENCE - Article 2). In terms of the exercising of law this kind of „sovereignty transfer" in sharing competences leads to the question of what sovereignty range will remain on the national level. The issue in our focus is to find whose authority it is to legislate land ownership especially as regards to LTC.

Access to land and the possibility of ownership are essential rights established by the national law of each MS and it is essential for the realization of a number of human rights on EU level e.g. the Charter of Fundamental Rights of the European Union (2012/C 326/02) (2012). ALOR have recently gained higher profile on the political agenda but mainly in soft law documents (see Szilágyi, 2019; Szilágyi et al., 2017) such as the EU Guidelines to support land policy design and reform processes in developing countries (Communication from the Commission to the Council and the European Parliament COM(2004) 686, 2004); the Opinion of the European Economic and Social Committee on 'Land grabbing — a warning for Europe and a threat to family (2015/C 242/03); and the Report on the State of Play of Farmland Concentration in the EU (2016/2141(INI)). In this report, figures from 2010 show that in the 27-member EU 50 % of the land was controlled by a mere 3% of the farms. The report highlighted that the sale of land to non-agricultural investors and holding companies is an urgent problem throughout the Union, and following the expiry of the moratoriums on the sale of land to foreigners the new MS have faced particularly strong pressures to amend their legislation, as comparatively low land prices have accelerated the sale of farmland to large investors. There are several statements in the report concerning limited companies which are moving into farming at an alarming speed; these companies often operate across borders, and often have business models guided far more by interest in land speculation than in agricultural production (point AQ).

According to Szilágyi (2017a; 2017c); and Raisz (2017) land policy is located in the abiss of positive and negative integration. Although the MS are entitled to forming their property ownership regulations independently they cannot bar out the economic freedom provided by the EU. The concerning rules of the Treaty on the Functioning of the European Union (TFEU) are especially the free movement of persons and capital (Articles 49 and 63 of the TFEU) which thus become' negative integration rules' in this respect. The positive integration form means the creation of an earlier non-existent above-nations institution, a typical example of it is the creation of Common Agricultural Policy (CAP) an objective "to ensure a fair standard of living for the agricultural community (i.e. Article 39 (1) point b) of the TFEU' ('positive integration rules')). Unlike CAP regulation the ownership issues of arable land do not fall under shared competence. MS have maintained sovereignty over their natural resources - including their land. The acquis communautaire – the body of European Union law – places no restriction on the right of states to restrict or regulate ownership of land within their territories, as in Article 345 of the Treaty on the Functioning of the European Union (TFEU) (ex Article 222 TEC): "The Treaties shall in no way prejudice the rules in MS governing the system of property ownership". Although land ownership comes under the authority of the MS, it is subject to certain restrictions on the basis of the principle of free movement of capital enshrined in the Treaties. (Article 63 TFEU (ex Article 56 TEC): "Within the framework of the provisions set out in this Chapter, all restrictions on the movement of capital between MS and between MS and third countries shall be prohibited."(EU law restricts the margin of appreciation of the MS only in forming their land transfer law and regulation with regard to the MS or State Parties of the EU and the European Economic Area and any other state enjoying similar treatment under an international agreement, while there are no restrictions when they apply for citizens or legal persons of countries outside this area (Szilágyi, 2017a, 2018). When applying primary law sources for the ALOR MS have to rely on the jurisdiction of the Court of Justice of the European Union (CJEU). Settled case law administered by the CJEU attests to the practice that although national rules governing the acquisition or use of agricultural real estate do concern property rights, Article 345 TFEU does not preclude the fundamental freedoms or other basic Treaty principles from applying. It is important to note that the CJEU's ruling that agricultural land belongs under capital is reinforced by only a secondary law source, namely directive 88/361 EEC. In the CJEU jurisdiction the nomenclature of the movement of capital in Supplement 1 of the same directive include investments in real estate of nationals of another member state not living in the state as movement of capital. EU law on the regulation of land property severely restricts the freedom of MS to regulate their own land traffic conditions (Papik, 2017; Tanka, 2018b). The CJEU has interpreted the term restriction to mean all measures which limit investments or which are liable to hinder, deter or make them less attractive. When investment in farmland serves agricultural entrepreneurial activities, it may also be covered by the freedom of establishment: Article 49 TFEU prohibits all restrictions on the establishment of nationals (legal or physical persons) of a MS in the territory of another MS for the pursuit of a self-employed economic activity such as farming. Therefore, at the CJEU the member states cannot refer to Art. 345 TFEU in order to exonerate from the restrictions.

3.2. Legislation concerning LTC

As seen above, Article 345 TFEU preserves the competence of MS to take decisions concerning the system of property ownership, but subject to the requirements of the free movement of capital principles. The EU restricts the MS' exclusive, reserved powers to regulate their own land ownership markets by classifying their land as capital for the purposes of land transfer and requiring them to open an unlimited land market. In the case of soil protection, however, comprised in land ownership rights,

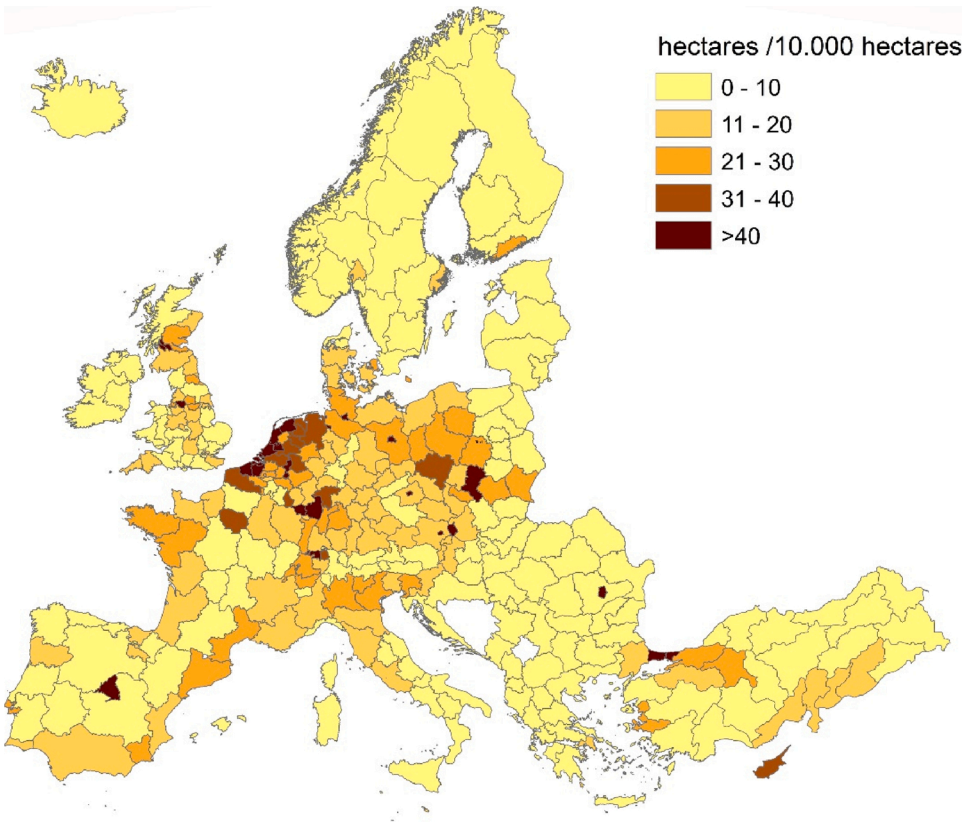

Fig. 1. Soil sealing in Europe between 2006-2015 at NUTS2 level expressed the sealed land in hectare/unit area (legend 1 ha per 10,000 ha).

the EU emphasizes undiminishable MS competence. The rejection of the SFD attests to its force. The SFD suggested restrictions in the area of LTC where gaps are more significant than in other areas of soil protection within the EU MS (Stankovics et al., 2018). There is no specific EU legislation on soil protection but the EU, directly and indirectly regulates it in the context of its environmental and agricultural policy (e.g. the Seventh Environment Action Program (2014–2020) or the agri-environment and cross-compliance measures of the Common Agricultural Policy (CAP) (see in-depth analyses in Tóth, 2017). Quantitative limits for annual land take exist in some EU member states, but overall, policies for limiting it are rather scarce and are usually not very effective (Fig. 1). There are only two high level policies, which directly address the issues of LTC: (i) the EU Roadmap to Resource Efficient Europe, which demands "no net land take until 2050" and (ii) the UN Sustainable Development Goal 15.3, which aims to "halt and reverse land degradation" until 2030 and which in 2017 introduced the concept of "Land Degradation Neutrality". Nevertheless land take has continued within the MS. Fig. 1 shows soil sealing, a major element of LTC in Europe between 2006–2015. Soil sealing is used as a proxy indicator to assess land take as, according to our calculations, land take is on average 49 % sealing (CORINE Land cover change C.H.A. 2006-2012 and CHA 2012-2018, 2020). In Fig. 1 it can be seen that soil sealing in the EU (between 2006–2015) was higher in those regions where the proportion of the built-in area was already high. It is obvious that this is related to the process of urbanization and attest to the present situation where sealing is not being addressed as a separate issue, nor is legally included within LTC regulation (which is non-existent), but is still being kept mainly incorporated into urban spatial planning

4. The national level: what is the link between ALOR and LTC?

4.1. Regulation regarding ALOR

Act V of Civil Code Hungary 2013, while giving full and exclusive power to the owner (thus the landowner too), also indicates that this power is not unconstrained because it may be limited by law or the rights of others. The first restriction on landownership is in the provisions of the Constitution of Hungary (Article P): regardless of who owns the land, it has to be protected with regard to the interests of future generations. This general obligation and limitation must be included in the terms of the owners' rights of usage and usufruct (temporary right to use and derive income or benefit from property short of the destruction or waste of its substance), as they should be mindful of the responsibility they have in preserving the regenerative qualities of the natural resource in their power. Are owners actually legally obliged to consider these aspects? For a better understanding of the de facto links between ALOR and LTC the mechanisms of legislation and administrative enforcement are scrutinized.

The regulation of the acquisition, ownership and use of agricultural land has been regulated by Act CXXII of 2013 on the market of agricultural and forestry land (Land Act). The Land Act contains numerous restrictions concerning the personal and quantitative scope of ownership or usufruct of agricultural land (for in-depth analyses see Szilágyi, 2016; Olajos, 2017; Raisz, 2017; Tanka, 2014, 2018a). Persons eligible to purchase agricultural land in Hungary are (1) domestic natural persons and EU citizens; (2) the state of Hungary; and certain non-farmer natural persons as (3) the established church or its internal ecclesiastical juridical person (4) mortgage banks (5) the local municipality competent according to the location of the land, for the purpose of public employment and urban development. "The legislator defines the term 'Farmer' as: any domestic natural person registered in Hungary or a citizen of a Member State or citizens of a country in the European

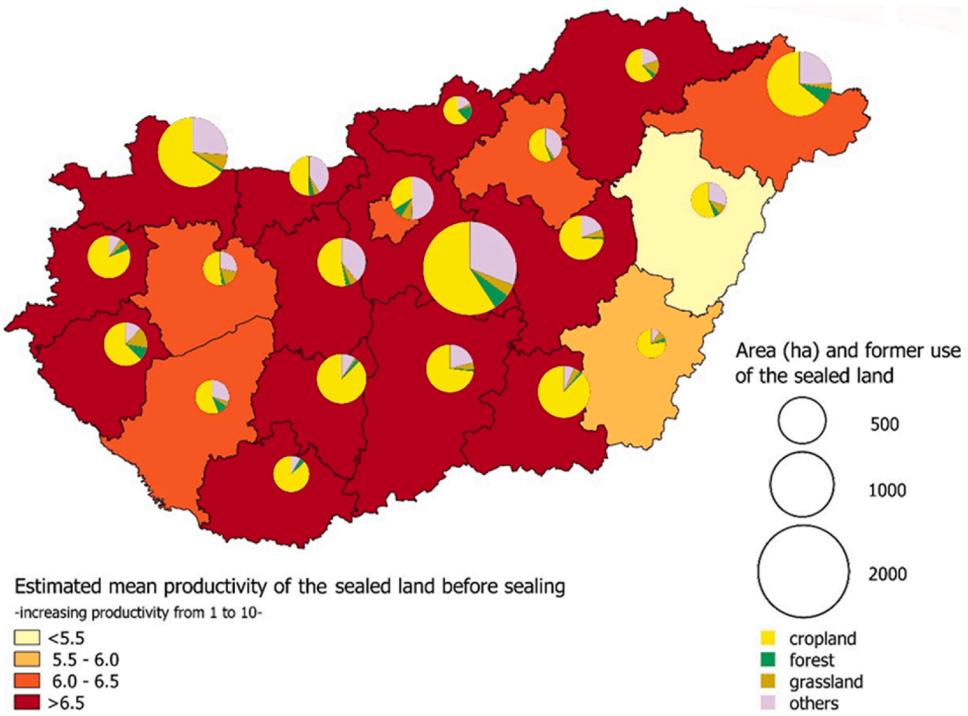

Fig. 2. Soil sealing in Hungary between 2006-2015 at NUTS3 level with the productivity of the sealed land. (Productivity is expressed in relative dimensionless indices 1 to 10).

Economic Area who has a degree in agricultural or forestry activities as provided for in the decree adopted for the implementation of the Land Act, or, in the absence thereof, who has been verifiably engaged in the pursuit of agricultural activities, and other secondary activities in his own name and at his own risk in Hungary continuously for at least three years. Furthermore, the owners of domestic or EU agricultural companies that own at least a quarter of the company's assets" (Land Act 5§ 7.). The acquisition of the right of ownership of land is precluded by (1) non-EU natural persons (2) any state other than the state of Hungary or one of its provinces, municipalities or other bodies (3) any legal person, other than those set out in the Land Market Act, as listed above. The Land Act applies three categories to the extent of land ownership. These are (i) the maximum of land acquisition, (ii) the maximum of the holding and (iii) the maximum of the preferred holding. Accordingly: (i) a farmer and certain non-farmer natural persons in a Member State and a national of a Member State may acquire ownership up to 300 ha (land acquisition maximum) adding the area of the land already owned to the new ownership. (ii) A maximum area of 1200 ha may be held by a farmer of a Member State (iii) The holding farm operator, the producer of the seed of arable and horticultural plant species may have a maximum holding of 1800 ha (preferential holding maximum). Other domestic natural persons or EU citizens also have the right of ownership of agricultural land but only up to one hectare. The Land Act has doubled the basic rate of land acquisition. Whereas previously a private individual could acquire up to 300 ha of land and the same number of ha in leases, the Land Act gives a land holding maximum of 1200 ha (or 1800 ha regarding the preferential holding maximum). 1200 ha is already a large-scale size (compare to the EU average farm size of 16.6 ha (Eurostat, 2018)). The acquisition and holding maximum is connected to persons, there is no obligation to sum up the personal holdings which means that the actual size of a farm can be unlimited by involving family members, relatives, any number of company members, shareholders, etc. with a possible 1800 ha each.

4.2. Legislation concerning LTC

The national government structures planning within a national framework by delegating tasks to regional State Chief Architects. The National Spatial Plan is enacted every seven years. It comprises general guidelines, strategic plans and small scale land-use plans. At present two spatial plans coexist, one for special regions and one cross-border. Regulations in effect include (i) Act XXI 1996 on Regional Development and Spatial Planning which outlines the roles of the different levels of government and their bodies for spatial development; (ii) Act XXVI 2003 on the National Spatial Plan which determines how the land-use planning system works and which defines the main land-use categories that must be used in zoning plans at national and county level; and (iii) Act LXXVIII 1997 on the Development and Protection of the Built Environment which contains the main elements of national building regulation. The general framework-type regulations of land and soil protection are contained in the Act LIII of 1995 on the General Rules of Environmental Protection (Environmental Protection Act) that provides protection for them as environmental elements (14. § (1)). It formulates the application of the principles of prevention and precaution as a general obligation (§ 6–8 of the Act), so the environmental user has a general obligation to avoid endangering and damaging the environment, to eliminate the environmental damage and to restore the damaged environment. Provisions relating to the quantitative and qualitative protection of land are governed by Act CXXIX of 2007 on the protection of arable land (Arable Land Protection Act). In real estate registration there are three different categories on the title deeds where a land parcel can lie: on the central inland area, on the outlying area and we also have a special category, the so-called limited-use parcels. The scope of the Arable Land Protection Act does not cover the protection of inland arable land (§ 1 (3)), thus giving a green light to the unimpeded, permanent withdrawal of inland land from cultivation. Its main concerns are the economic aspects of land which is seen primarily as a means of production and as a means of maintaining the productivity of the agricultural sector (Kurucz, 2015). 1. § (4) b) of the Arable Land Protection Act states outright that it does not consider land as an

Fig. 3. Local level soil sealing in the area of Keszthely (NUTS4) between 2006-2015.

environmental element. The provisions of this law are insufficient to protect arable land, given the low payment sums imposed in land protection fees. The extent of these is in the case of the withdrawal of a best quality (class I) land is HUF 184 thousand x GC (GC: Golden Crown: The gold crown value is a measurement unit of the quality of arable land in Hungary. Based on the 200 years old definition, the gold crown value of a certain land means the net income of that area; at that time it was proportional to wheat produced on the area reduced by the transportation expenses to Vienna), so for 20 GC (average value) land it is HUF 3680 thousand **(10** 07,888 **EUR/ha)**. In the case of the worst (class VIII) land, the multiplier of GC is only HUF 4,000, so subtracting one ha costs HUF 80,000 **(**2191 **EUR/ha)**. In case of destruction of the soil organic matter the investor in case of 1–2.5 % humus content it is charged only 150 HUF (041 **EUR)** x m3, in case of humus content over 2.5 % 250 HUF x m3 soil protection fee (21. § (paragraph 3. a)). Because of the preferential land prices in Hungary (on average 15–20 times lower than the EU land market prices), which in no way reflect actual or even market value, agricultural plots are seen as favourable investments. Furthermore, at present in the economic policy of Hungary increasing employment by way of attracting foreign investment enjoys precedence over land protection (in other MS see Szilágyi, 2017b).

The Land Act taken into account the acquisition of land by the investor, who is typically a legal person, can only be realized on condition that it is not classified as agricultural land. Reclassification of the cultivated area in Hungary may be done in two possible ways. (i) In course of the basic legal procedure it requires the amendment to the zoning regulations and the approval of the land registry office for the withdrawal from agricultural use (i.e. the permanent use of the land for other purposes). The reclassification of the land to 'investment area' or to another 'non-agricultural' category must also be registered by the land registry office. These procedures need approximately 6–8 months and require time and some financial efforts from the investor (Luodes, 2018). The use of land for other purposes means temporary or permanent use, which renders the land temporarily or permanently unsuitable for agricultural use; the final utilization of the land for other purposes means that the land becomes permanently unsuitable for agricultural use (Fig. 2.). Such use of land of higher quality than average may only be authorized for stationary use and limited to the minimum necessary to meet the justified need. It is also a basic requirement that even particularly inferior quality land may be used for other purposes only exceptionally. (ii) However, the reclassification of an agricultural land to 'investment area' or to 'investment target area' is also possible if it has been classified as such in a decree or resolution by the Hungarian Government. Literally, an 'investment area' can be established with governmental support in one step, with the avoidance of the soil protection procedure described above.

Fig. 2 shows soil sealing in Hungary at NUTS3 (county) level between 2006–2015 and the former use of the sealed land. The colour of region indicates the average quality of sealed soil. The size of pie chart means the total area of lost land and the colour of the chart indicates the former land use category of the sealed land. The highest soil sealing can be observed in the most dynamic counties (Pest, Győr-Moson-Sopron), where, unfortunately, high quality soils were taken over by development. Similarly to our calculation concerning Europesoil sealing per year between 2006–2015 was compared to land take change (CORINE Land cover change C.H.A. 2006-2012 and CHA 2012-2018, 2020). Results show that 45 % of the taken land were actually sealed in Hungary.

5. Regional and local level: how can the landowner de jure seal the land?

5.1. Regulation regarding ALOR

Municipal property is classified as national property by the Fundamental Law. Detailed regulation on municipal property is to be found in the Act CLXXXIX of 2011 on the local governments of Hungary (106−110§) (Local Government Act) and the Act CXCVI of 2011 on National Assets (National Asset Act). By declaring the purpose of the management and protection of national property, it not only defines the rights but also the obligations of the owner of such property (Article 38 (1) of the Fundamental Law). Resolutions concerning national property fall to Parliament. A two third majority in Parliament may decide in a pivotal law which matters require state and/or municipal ownership, and which assets are classified as exclusive state property in order to preserve them, thus excluding them from the market. Accordingly, property belonging to the municipality cannot be defined by regular private ownership. Thus, in the case of exclusive objects of state or municipal property, the non-marketability does not impose a public law

Table 1
The interrelations in EU, National, and Regional level of ALOR and LTC.

LEVEL	ALOR	LTC	LINK and RECOMMENDATION
EU	Free movement of capital (Art. 63 TFEU) Treaties shall in no way prejudice the rules in MS governing the system of property ownership (Art. 345 TFEU) Soft laws	EU Roadmap to Resource Efficient Europe ('no net land take until 2050′ 9; UN Sustainable Development Goal 15.3, 'Land Degradation Neutrality'	In jurisdiction the free movement of capital principle interferes with MS land ownership governance and renders national soil protection uncertain. **Community soil legislation** could help in creating a system of values leading to conceptual change concerning the relationship between the free movement of capital, land ownership and soil protection.
National	Constitution (Article P)	Act XXI 1996 on Regional Development and Spatial Planning	Regulation gaps decrease difficulties in land take: e.g.: low soil protection fees; property concentration gaps; reclassification to 'investment target area'.
	Civil Code of Hungary Land Act	Act LXXVIII 1997 on the Development and Protection of the Built Environment Arable Land Protection Act Environmental Protection Act	**Community soil legislation** could be referred to for legal remedy concerning soil protection
Local	Local Governments Act (106–110§); National Assets Act	Spatial Plans for Counties	The municipalities' ability to acquire land and, possibly to attract investment, change its classification to inland (urban) area should be limited by the principles of soil protection with the usage of binding and quantitative land take targets directed by **Community soil legislation**

burden, but completely excludes them from the scope of private law and private property. In these cases the concept of private ownership is not at all applicable.

5.2. Legislation concerning LTC

Every seven years counties prepare a spatial plan linking the National Spatial Plan and the local plan by detailing the regulations provided in the national plan. Spatial Plans for Counties are particularly relevant for development control, as they outline areas for future development and for nature and cultural heritage protection. Local governments enact Settlement Structural Plans - comprehensive plans that combine zoning with strategic planning and are binding for land owners - and related building regulations that complement the plans. Any other than agricultural use of the land shall be authorized in the context of a land protection procedure. Land protection procedure is an administrative procedure conducted by the real estate authority (district office, government office), as a decision-making authority or a specialized authority to enforce the quantitative protection of the land or to authorize the other use of the land. The reclassification procedure regulated nationally is carried out locally (e.g. in Keszthely region - red squares show the change (actual loss) during this period). Fig. 3: In Fig. 3 the most significant investments can be seen in Keszthely (Hungary) which resulted in soil sealing: a bypass was built between 2006–2015 and the expansion of hypermarkets can also be seen in the outer district of the city. Both affected arable lands surrounding Keszthely. As discussed on national level, the Land Act states that if the land is used for other purposes (investment purposes), the recipient is obliged to pay a contribution to the protection of land, which varies according to the quality of the land. It grows progressively with the quality of land to steer investments towards inferior quality but is inadequate due to the poor price conditions. If we consider land not only as a factor of production but also take into account the other functions described above, the contribution to the protection of the land would have to be increased significantly. Non-agricultural utilization can in principle be allowed on lower quality arable land, using as little arable land as possible, but the figure shows that the highest quality arable land is still a victim of incorporation. When the administrative authority gives priority to any other use of arable land (which has now become a decisive condition for life and threatens to maintain it), it allows the destruction and physical destruction of the soil, because it can no longer become arable land in the future.

6. Conclusion

Land ownership and soil protection are closely interrelated in several levels of legal regulation. Concerning these relations in this study we determined direct links which are condensed in Table 1 and further described as follows.

On EU level we find that although there is no exclusive or shared competence of the EU on land property rights, compatibility of EU legislation on the movement of agricultural real estate with MS' regulation can and must be based on the principle of non-discrimination, the right of establishment and the free movement of capital. However, there is no Community legislation on soil protection, although this should be part of environmental protection, which is clearly a shared competence. One of the arguments against a common soil legislation is that it would also affect property issues which fall within the competence of the MS. Thus free movement of capital takes priority over soil protection, meaning that even when regulations that prohibit legal persons from acquiring land for purposes other than agriculture are in force, if aspiring investors wish to, they can still get a given piece of land through the legal loopholes. These loopholes should be untangled as the EU (acting on the objective of sustainability) cannot let the destruction and depletion of soil continue in Europe. The specificity relating to the ownership of land - and therefore also of soil - that arises from the nature of the issue offers the opportunity of higher regulation and justifies far-reaching restrictions on the use and trade of land.

On national level, in view of the process of the rebalancing of interests introduced above, we need to point out the complexity of land ownership in the context of property regulation. Even the content of state ownership is not self-evident, and it may also be necessary to limit the power of the state to protect the interests of the community. The protection of land as a natural resource can refer to the environmental element and the production factor that can be interpreted within it, therefore enforceable public rights restrictions on land ownership and land use rights (e.g. binding and quantitative land take targets) can be built on it. There is a need for a radical change in land protection, which makes the prohibition of land take for non-food purposes the main rule, leaves the regional and zonal reclassification of land to a central administrative body directly responsible to parliament, and increases land protection contributions and fees to several times the market price of land, with the aim of driving speculative capital into saving land.

On regional and local levels municipal spatial planning is the most important instrument, but it should also be emphasized that municipalities have acquisition rights, are authoritative and are entitled to change the classification of land to urban area where development is permissible. That done, land changes into a marketable good, so an

economic and legal regulatory system must be developed that, as a general rule and with effective sanctions, prohibits the permanent abandonment of arable land and enforces this prohibition with the strict application of land protection practices. The municipalities' ability to acquire land should be limited to special-purpose assets to meet the land-use needs of its municipal community. The public's best interest could be served by maintaining land as public good for the community and ensure its use only for public purposes.

CRediT authorship contribution statement

Petra Stankovics: Investigation, Writing - original draft. **Luca Montanarella:** Conceptualization, Supervision, Resources. **Piroska Kassai:** Formal analysis, Software, Visualization. **Gergely Tóth:** Methodology, Validation. **Zoltán Tóth:** Data curation.

Acknowledgments

The research leading to these results has received funding from the European Union under Horizon-2020 Programme grant agreement No. 774234 (LANDSUPPORT project). The publication is supported by the EFOP-3.6.3-VEKOP-16-2017-00008 project. The project is co-financed by the European Union and the European Social Fund. The research leading to these results has received funding from the European Union under Horizon-2020-SFS-2015-2 Programme grant agreement No. 677407 (SOILCARE project, https://www.soilcare-project.eu/).

Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:https://doi.org/10.1016/j.landusepol.2020.105071.

References

Antal, Zs, 2013. Introduction to Hungarian Law Research, Globalex. https://www.nyulawglobal.org/globalex/Hungary1.html.

Arora, P., Bert, F., Podesta, G., Krantz, D.H., 2015. Ownership effect in the wild: Influence of land ownership on agribusiness goals and decisions in the Argentine Pampas. J. Behav. Exp. Econ. 58, 162–170. https://doi.org/10.1016/j.socec.2015.02.007.

Benra, F., Nahuelhual, L., 2019. A trilogy of inequalities: land ownership, forest cover and ecosystem services distribution. Land Use Policy 82, 247–257. https://doi.org/10.1016/j.landusepol.2018.12.020.

Bouma, J., Montanarella, L., Evanylo, G., 2019. The challenge for the soil science community to contribute to the implementation of the UN Sustainable Development Goals. Soil Use Manag. https://doi.org/10.1111/sum.12518.

Cegielska, K., Noszczyk, T., Kukulska, A., Szylar, M., Hernik, J., Dixon-Gough, R., et al., 2018. Land use and land cover changes in post-socialist countries: some observations from Hungary and Poland. Land Use Policy 78, 1–18. https://doi.org/10.1016/j.landusepol.2018.06.017.

Charter of Fundamental Rights of the European Union (2012/C 326/02) 2012 Available: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:12012P/TXT.

Cherlet, M., Hutchinson, C., Reynolds, J., Hill, J., Sommer, S., von Maltitz, G., 2018. World Atlas of Desertification. Available at (Accessed 16 June 2019). Publication Office of the European Union, Luxembourg. https://wad.jrc.ec.europa.eu/.

Communication from the Commission to the Council and the European Parliament COM (2004) 686, 2004. EU Guidelines to Support Land Policy Design and Reform Processes in Developing Countries [SEC (2004) 1289] /* COM/2004/0686. Available at: https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A52004DC0686.

CORINE Land cover change C.H.A. 2006-2012 and CHA 2012-2018. 2020 https://land.copernicus.eu/pan-european/corine-land-cover.

Creutzig, F., 2017. Govern land as a global commons. Nature 546 (7656), 28–29. https://doi.org/10.1038/546028a.

Csipkés, M., Nagy, L., Szabó, K., 2017. Analysis of Hungary's land use system change. Jelenkori társadalmi és gazdasági folyamatok 12 (1–2), 141–152.

EEA, 2019. The European Environment-State and Outlook 2015. Chapter 5 Land and Soil European. Environment Agency, Copenhagen.

Eurostat, 2018. Farms and Farmland in the European Union – Statistics. Available at: https://ec.europa.eu/eurostat/statisticsexplained/index.php/Farms_and_farmland_in_the_European_Union_-_statistics.

FAO, 2011. The State of the World's Land and Water Resources for Food and Agriculture (SOLAW) – Managing Systems at Risk. Food and Agriculture Organization of the United Nations, Rome and Earthscan, London.

FAO and ITPS, 2015. Status of the World's Soil Resources (SWSR) – Main Report. Food and Agriculture Organization of the United Nations and Intergovernmental Technical Panel on Soils, Rome, Italy.

Gardi, C. (Ed.), 2017. Urban Expansion, Land Cover and Soil Ecosystem Services. Routledge, London. https://doi.org/10.4324/9781315715674.

Gardi, C., Panagos, P., Liedekerke, M., Bosco, C., De Brogniez, D., 2015. Land take and food security: assessment of land take on the agricultural production in Europe. J. Environ. Plan. Manag. 58 (5), 898–912. https://doi.org/10.1080/09640568.2014.899490.

Glæsner, N., Helming, K., de Vries, W., 2014. Do current european policies prevent soil threats and support soil functions? Sustainability 2014 (6), 9538–9563. https://doi.org/10.3390/su6129538.

Hansjürgens, B., Lienkamp, A., Möckel, S., 2018. Justifying soil protection and sustainable soil management: creation-ethical, legal and economic considerations. Sustainability 10 (10), 3807. https://doi.org/10.3390/su10103807.

Hartemink, A., Adhikari, K., 2015. Linking soils to ecosystem services — a global review. Geoderma 262 (15 January), 101–111. https://doi.org/10.1016/j.geoderma.2015.08.009.

Hurlbert, M., Krishnaswamy, J., Davin, E., Johnson, F.X., Mena, C.F., Morton, J., Myeong, S., Viner, D., Warner, K., Wreford, A., Zakieldeen, S., Zommers, Z., 2019. Risk management and decision making in relation to sustainable development. In: Shukla, P.R., Skea, J., Calvo Buendia, E., Masson-Delmotte, V., Pörtner, H.-O., Roberts, D.C., Zhai, P., Slade, R., Connors, S., van Diemen, R., Ferrat, M., Haughey, E., Luz, S., Neogi, S., Pathak, M., Petzold, J., Portugal Pereira, J., Vyas, P., Huntley, E., Kissick, K., Belkacemi, M., Malley, J. (Eds.), Climate Change and Land: an IPCC Special Report on Climate Change, Desertification, Land Degradation, Sustainable Land Management, Food Security, and Greenhouse Gas Fluxes in Terrestrial Ecosystems. Available at: https://www.ipcc.ch/srccl/chapter/chapter-7/.

IPBES, 2018. The Assessment Report on Land Degradation and Restoration. Summary for Policymakers. Available at: https://www.ipbes.net/system/tdf/spm_3bi_ldr_digital.pdf?file=1&type=node&id=28335.

Jedidiah, Prudy, 2005. A freedom-promoting approach to property: a renewed tradition for new debates. Univ. Chicago Law Rev. 72, 1237–1298.

Johann, F., Schaich, H., 2016. Land ownership affects diversity and abundance of tree microhabitats in deciduous temperate forests. For. Ecol. Manage. 380, 70–81. https://doi.org/10.1016/j.foreco.2016.08.037.

Kurucz, M., 2015. Gondolatok a magyar földforgalmi törvény uniós feszültségpontjainak kérdéseiről. In: József, Szalma (Ed.), A Magyar Tudomány Napja a Délvidéken 2014. VMTT, Újvidék, pp. 120–173.

Luodes, N.M., 2018. Arvidsson RonaldMinLand: Mineral Resources in Sustainable Land-use Planning, pp 25. https://minland.eu/wp-content/uploads/MinLand_D3.2-Summary-Cases.pdf.

Montanarella, L., 2015. Agricultural policy: govern our soils. Nature 528 (7580), 32–33. https://doi.org/10.1038/528032a, 2015.

Montanarella, L., 2016. World's soils are under threat. SOIL 2, 79–82. https://doi.org/10.5194/soil-2-79-2016, 2016. www.soil-journal.net/2/79/2016/.

Moroni, S., 2018. Property as a human right and property as a special title. Rediscussing private ownership of land. Land Use Policy 70, 273–280. https://doi.org/10.1016/j.landusepol.2017.10.037.

Naumann, S., Larsen, A.F., Prokop, G., Ittner, S., Reed, M., Mills, J., Morari, F., Verzandvoort, S., Albrecht, S., Bjuréus, A., Siebielec, G., Miturski, T., 2019. Land take and soil sealing—drivers, trends and policy (legal) instruments: insights from European cities. In: Ginzky, H., Dooley, E., Heuser, I., Kasimbazi, E., Markus, T., Qin, T. (Eds.), International Yearbook of Soil Law and Policy 2018. International Yearbook of Soil Law and Policy, vol. 2018. Springer, pp. 83–112.

Nichiforel, L., Keary, K., Deuffic, P., Weiss, G., Thorsen, B.J., Winkel, G., et al., 2018. How private are Europe's private forests? A comparative property rights analysis. Land Use Policy 76, 535–552. https://doi.org/10.1016/j.landusepol.2018.02.034.

Olajos, I., 2017. The acquisition and the right of use of agricultural lands, in particular the developing Hungarian court practice. J. Agric. Environ. Law 23, 91–98. https://doi.org/10.21029/JAEL.2017.23.91.

Owley, J., 2018. The use of property law tools for soil protection. In: Ginzky, H., Dooley, E., Heuser, I., Kasimbazi, E., Markus, T., Qin, T. (Eds.), International Yearbook of Soil Law and Policy 2017. International Yearbook of Soil Law and Policy, vol. 2017. Springer, Cham.

Panagos, P., Imeson, A., Meusburger, K., Borrelli, P., Poesen, J., Alewell, C., 2016. Soil conservation in europe: wish or reality? Land Degrad. Dev. https://doi.org/10.1002/ldr.2538.

Papik, O., 2017. Trends and current issues regarding member state's room to maneuver of land trade" panel discussion. J. Agric. Environ. Law 22, 132–159. https://doi.org/10.21029/JAEL.2017.22.132.

Prokop, G., 2012. Land take and soil sealing: an overview of the EU situation. Soil Remediation and Soil Sealing Conference, Brussels, Organised by DG ENV, European Commission. Available at: https://ec.europa.eu/environment/archives/soil/pdf/may2012/11%20-%20Gundula%20Prokop%20-%20final.pdf (02.15.2020.

Prokop, G., Jobstmann, H., Schonbauer, A., 2011. Report on Best Practices for Limiting Soil Sealing and Mitigating Its Effects. European Commission, Brussels. https://doi.org/10.2779/15146.

Raisz, A., 2017. Topical issues of the Hungarian land-transfer law. CEDR J. Rural Law 3 (1), 68–74.

Soil Framework Directive, 2016. Commission of the European Communities Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL Establishing a Framework for the Protection of Soil and Amending Directive 2004/35/EC, Brussels, 22.9.2006 COM(2006) 232 Final 2006/0086 (COD). https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2006:0232:FIN:EN:PDF.

Stankovics, P., Tóth, G., Tóth, Z., 2018. Identifying gaps between the legislative tools of soil protection in the EU member states for a common European soil protection legislation. Sustainability 10, 2886.
Szilágyi, J.E., 2016. Acquisition of the ownership of agricultural lands in Hungary, taking the EU's and other countries' law into consideration. ZBORNIK RADOVA PRAVNI FAKULTET (NOVI SAD) 50 (4), 1437–1451. https://doi.org/10.5937/zrpfns50-12226. ISSN 0550-2179.
Szilágyi, J.E., 2017a. European legislation and Hungarian law regime of transfer of agricultural and forestry lands. J. Agric. Environ. Law 12 (23), 148–181. https://doi.org/10.21029/JAEL.2017.23.148.
Szilágyi, J.E., 2017b. General report of commission II. In. In: Norer, R. (Ed.), CAP Reform. Nomos, Baden-Baden, pp. 214–250.
Szilágyi, J.E., 2017c. The Acquisition of Ownership in the Hungarian Land Transaction Regime. Agrárjog. Miskolci Egyetemi Kiadó, Miskolc, pp. 74–95.
Szilágyi, J.E., 2018. The international investment treaties and the Hungarian land transfer law. J. Agric. Environ. Law 13 (24), 194–222. https://doi.org/10.21029/JAEL.2018.24.194.
Szilágyi, J.E., 2019. Agricultural land law: soft law in soft law. In: Szabó, M., Láncos, L. P., Varga, R. (Eds.), Hungarian Yearbook of International and European Law. Eleven, The Hague, pp. 189–211.
Szilágyi, J.E., Raisz, A., Kocsis, B.E., 2017. New dimensions of the Hungarian agricultural law in respect of food sovereignty. J. Agric. Environ. Law 12 (22), 160–201. https://doi.org/10.21029/JAEL.2017.22.160.
Tanka, E., 2014. A föld miért nem azé, aki megműveli? A magyar fold sorsa. Tanka E. Agroinform K. Bp, Szerk, pp. 37–99, 2014, o.
Tanka, E., 2018a. Mit tehet a hazai jog a fenntartható talaj – és földvédelem megalapozásáért? Gazdaság és Jog XXVI, 18–25 o.
Tanka, E., 2018b. Korunk Földkérdése, Létünk a Tét: Földrablások a világban és magyar földvédelem. 4 Pont Nyomda Kft, Eger, pp. 1–281 o.
Tarlock, A.D., 2007. Land use regulation: the weak link in environmental protection, 82Wash. L. Rev. 651 (2007). Available at: http://scholarship.kentlaw.iit.edu/fac_schol/777.
Terribile, et al., 2020. LANDSUPPORT SDSS Platform. https://app.landsupport.eu/.
Tóth, Zs, 2017. Soil protection in the EU: the most important soil-related EU policies and legal sources. J. Agric. Environ. Law 12 (22), 202–246. https://doi.org/10.21029/JAEL.2017.22.202.
Tóth, G., Gardi, C., Bódis, K., et al., 2013a. Ecol. Process. 2, 32. https://doi.org/10.1186/2192-1709-2-32.
Tóth, G., Gardi, C., Bódis, K., et al., 2013b. Continental-scale assessment of provisioning soil functions in Europe. Ecol. Process. 2, 32. https://doi.org/10.1186/2192-1709-2-32.