

The Development of a Cadastral System from a Policy Reform Perspective: the Case of the Hellenic Cadastre

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ABSTRACT

In the mid-'90s, Greece initiated an ambitious national scale cadastral mapping program to establish the Hellenic Cadastre System (HCS), aiming to replace its predominant land registry system, the Registrations and Mortgages System (RMS). The paper explores the case of the development of the HCS to replace the RMS through the lens of public policy reform. The questions we ask are: "1. what were the idea and the initial design for the development of the HCS; and 2. how does the development of the HCS stand within Greece's existing land registry policy domain from a policy reform perspective". Public policy reforms are deliberate government efforts to effect change in a policy domain and deliver public goods to citizens. Three different orders of change can be distinguished in a reform process, according to (Tsoukas 2012). The *first order of change* involves adopting technical measures to improve current organizational practices that forestall a system from being effective. The *second order of change* commonly refers to an *organizational transformation* that alters an organization's "governing values" to improve a collective good's delivery. Last, the *third order of change* is the *policy reform* that alters a policy domain's foundational rules as part of a broader political endeavor to modernize a country's institutions. Ideally, the three types of change should be nested in ascending order, starting with the more localized and technical first-order changes before progressing to second and third-order changes.

The study is informed by in-depth open interviews with government officials and professionals from Greece's land registry policy domain. Secondary data used for analysis consist of legislative documents from 1834-1998, such as Laws and their Justificatory Reports, Presidential Decrees, Ministerial Decisions, Circulars, Public consultation notes, parliamentary minutes, press releases, newspaper articles, studies, and reports. Findings show a lack of an incremental approach in the long-established land registry policy domain in Greece: through the initiation of the HCS, a paradigmatic change was prioritized. The movement from one paradigm (deed and paper-based registry system) to another paradigm (property-based digital cadastral system) redefines the country's land registry policy domain. A paradigmatic policy change is often accumulated with anomalies (Hall, 1993), and it is uncertain whether it can be effective (Tsoukas 2012, Hall, 1993). The case of the HCS constitutes a rich setting and a promising context for the empirical study of large-scale change for the development of a new land registry system contributing to the relevant scholarly literature of land administration.

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1. INTRODUCTION

“Land Rights for all” (UN-Habitat, 2008) was the motto of a global sustainable development agenda, which since the 2000s’ strives to secure land *rights “for the 70% of the people worldwide who are aware that land rights related to their piece of land are not documented”* (Lemmen, 2018). International organizations, national governments, and civil society work consistently to achieve the goal of securing and providing land rights to all women and men (SDG 1.4.2) by 2030 since cadastral systems remain a challenge in many places. As an instrument to formalize and secure land tenure rights, the cadastral system has been studied extensively—in terms of technological, legal, organizational, sustainable development, and governance aspects (Zevenbergen et al., 2015, Williamson et al., 2010). A review of methodologies used in research on cadastral development showed that the critical questions are not so much the technical ones but rather the institutional, social, political, and economic ones (Dale & McLaughlin, 1999, Doebele, 1983, Silva & Stubkjær, 2002). Similarly, Zevenbergen et al. (2015:277) argue that *“land administration needs to scale up efforts and integrate with other domains, incorporate new axioms, and seek out new paradigms and research questions. Such research questions are mainly socio-technical and institutional in nature, creatively combining globally available technologies with a clear understanding of a legal, organizational, and governance context”*.

The development of a cadastral system can be seen as a policy reform to provide land tenure security to citizens and the State. From a public policy perspective, reforms are deliberate government efforts to effect change in a public policy domain to improve a current state of public affairs or deliver collective goods to citizens (Tsoukas, 2012). A systematic study of the development of a cadastral system within the broader context of public policy reforms is lacking. The current paper sheds light on Greece’s development of a fully digital cadastral system from a policy reform perspective. The purpose of the reform is the replacement of the existing Land Registry Systems (LRS), the Registrations and Mortgages System (RMS), and the Dodecanese Cadastre (DC), with the Hellenic Cadastre System (HCS). The aim is the security of a fundamental property right, the right to land. We examine this reform using concepts from Tsoukas’ (2012) enactive theory of reforms, enlightened with concepts about cadastre and land registry systems. Tsoukas theory has served as a lens to understand other policy reforms in southern Europe (Pina E Cunha & Tsoukas, 2015). In particular, we mobilize the concepts of three orders of change. The questions we ask are: *“1. what were the idea and the initial design for the development of the HCS?; and 2. how does the development of the HCS stand within Greece’s existing land registry policy domain from a policy reform perspective”*. The paper aims to contribute to land administration literature and practice within the broader context of policy reforms. Furthermore, it seeks to provide evidence on how a *“land*

administration system can be upgraded and incrementally improved over time,” (or not) (Enemark et al., 2016:IX).

This paper is structured as follows. Section 2 synthesizes literature about cadastral systems and policy reform to highlight the study's theoretical underpinning to address the questions we posed. Then, we present the data used for the analysis. In Section 3, we present the empirical case: the land registry policy domain in Greece and the state initiatives to alter it by developing a new land registry system. In Section 4, we discuss the findings of our analysis and their implications.

2. LITERATURE REVIEW AND DATA SOURCES

2.1. Cadastre, land registry and cadastral systems: concepts, evolution, and typology

Historically, there were two main driving forces for land records: the need for a private vendee to publicize the acquisition of a land parcel or to use it as collateral for a loan and the need of sovereign authority to “see” the territorial land liable for taxation (Larsson, 1996, Scott, 1998). To put it simply: security of rights or taxation. As “legal records,” the first served the private sector with the registration of ownership and encumbrances primarily, whereas the latter, known as “*fiscal records*,” established principally for the public sector to provide the basis for the exact and meticulous taxation of land.

In Europe, Napoleon I introduced land record systems for fiscal purposes in 1807 to create the French “cadastre,” a systematic classification and valuation of all lands under the French Empire's sovereignty. The Habsburg Empire initiated the first comprehensive cadastral mapping by Maria Theresa in 1763. Emperor Francis I continued it in 1817, who ordered the survey of all crownlands for levying land tax resulting in a more enhanced “cadastre” (Zevenbergen, 2002). The word “cadastre” comes from the Greek word *katástikhon* (κατάστιχον), a list or register, literally meaning “(organized) line by line” (Simpson, 1976). Cadastre thus, in continental Europe, had a specific connotation as a “*systematic classification and valuation of land, under the control of the central government, by means of maps of parcels drafted on the basis of topographical surveys and recorded according to parcels in a register*” (Henssen, 1971). This particular type of map-supported land records included not only the area and land use for each parcel but also land value and ownership data (Larsson, 1996).

On the other hand, the term “land registry” has long been used in the English-speaking world to label the legal records or legal registration of rights and deeds and the need for their publicity (Simpson, 1976). Besides, land cannot be transferred: thus, the call for publicity about land conveyance emerged primordially to assure vendors’ interests. Today, looking at modern states' national legislation, one finds two predominant systems of publicity of property rights: The *deed system* and the *title system*. The first one is rooted in Roman Law and evolved in countries under the influence of the specific legal tradition in Europe (France, Spain, Italy, Belgium, the Netherlands, Luxembourg). They also transplanted in other parts of the globe, which historically influenced by these cultures, such as in South America, parts of Asia, and Africa. The latter was born in Germany and diffused to countries' legislation under the Germanic Law's influence (Austria, Switzerland, Hungary, Czech Republic, Slovakia, Lithuania, and partly Poland). The most fundamental distinction between a deed and a title system is that “*deed registration is concerned with the registration of the legal fact itself and title registration with*

the legal consequence of that fact” (Henssen, 1995:8). In other words, in deeds registration, the deed is registered but is not proof of the property right described in the deed. In contrast, title registration is proof of ownership, and its correctness is usually guaranteed by the State (UN, 1973). Beyond the above fundamental difference, several others have been identified in the related literature, such as negative (deed) vs. positive (title), etc. (see further Zevenbergen, 2002).

In the mid-1970's the concept of “multipurpose cadastre” (McLaughlin, 1975) emerged and was further spread out supported by the rapid developments in information technologies in the 1980s and 1990s. The concept, as it implies, is related to a land information system, based on the cadastral parcel as the fundamental layer, with additional key components about data on land, which might be collected and managed by different agencies and for diverse purposes. In 1980, the US Committee on Geodesy the concept of the “multipurpose cadastre” was adopted and in 1983 by the US National Research Council (NRC, 1983). The international surveying community further embraced it. In 1992, the International Federation of Surveyors (FIG) established a Working Group to develop a “statement on the Cadastre.” Indeed in 1995, the statement was issued by FIG defining the Cadastre as “...*a parcel based and up-to-date land information system containing a record of interests in land (e.g., rights, restrictions, and responsibilities). It usually includes a geometric description of land parcels linked to other records describing the nature of the interests, and ownership or control of those interests, and often the value of the parcel and its improvements.*” (FIG, 1995:1). Thus, Cadastre's notion incorporated the two components of the land registry and Cadastre, serving the private and public sectors accordingly. Furthermore, it was acknowledged that the “*Cadastre...enables sustainable development and environmental protection*” (FIG, 1995).

In the same vein, the “Bogor Declaration on Cadastral Reform” (UN-FIG, 1996) recognized that a cadastral system records a wide range of complex rights, restrictions, and responsibilities of properties, including all state and private lands, in both urban and rural areas within a unified system. It further acknowledged that modern cadastral systems have a crucial role in property markets and long-term sustainable development. Nevertheless, their success is dependent on whether they provide efficient, simple, quick, secure, and low-cost services to the users. The UNECE Guidelines to assist countries in East and Central Europe transition recommended specific procedures for introducing a new cadastral system. The Guidelines highlighted that “*countries building new land information systems from scratch-or almost-will have the benefit of not being restricted by existing systems, and should therefore have the possibility to implement optimal solutions from the very beginning. This should include the application of computer technology, both for textual data and for the maps*” (UNECE, 1996:8). In the meantime, in 1994, Commission 7 of FIG initiated a study for the future cadastre systems 20 years ahead, which led to the publication of “Cadastre 2014”, a blueprint for the future development of cadastre systems according to six statements (Kaufmann and Steudler, 1998).

However, while the vision for technologically sound cadastral systems that meet society's growing needs and challenges was evolving, many authors disputed tedious and expensive endeavors to modernize existing paper-based systems. Thus, some of them proposed other ways of improving the deeds registration process (Dale & McLaughlin, 1988). Moreover, when the problem at stake was introducing a new cadastral system in a developing country, it was argued that the in toto transplantation from the developed world should be avoided. In this regard,

simpler solutions should be preferred: “*while the multipurpose concept is desirable, it is still an ideal. Many countries cannot even afford a most rudimentary deeds system without any base map, let alone a comprehensive land information system*” (Williamson, 1986:38). In the same direction, the concept of a “progressive” or “incremental” cadastral system was proposed (Doebele, 1983). This concept meant that the path from simple to more developed systems should be incremental and evolutionary. It should be based on the existing operational, administrative structure wherever possible so that progress shall not render earlier work useless. Moreover, it “*can be applied rapidly, and at low per-unit cost, but is designed so that it may be upgraded and improved to conventional standards as rapidly as resources and political support permit*” (Doebele, 1983:v). Besides, “*attempts to install fully articulated systems from the start have...tended to bog down into ineffectiveness when confronted with the magnitude of the problem and the high expense of processing each unit.*” (*ibid.*)

2.2. Policy reform concepts

Public policy reforms are deliberate government efforts to effect change in a policy domain and deliver public goods to citizens, such as education, healthcare, pension system, or a land registry system. Commonly, policy domains operate under laws enacted by governments to regulate the provision of collective goods. To be characterized as a reform, a change would result in a new system of providing an existing or a new collective good (Tsoukas, 2012). As a result, a new modus operandi emerges, and the change becomes institutionalized. Thus, reform entails changes to the formal “rules of the game” – including laws, regulations, and institutions – to address perceived problems, e.g., economic stagnation, environmental degradation, or land tenure insecurity. Insofar as it is meant to improve a current state of affairs, ‘reform’ has a positive value, and it is legitimated, in principle, on that basis. Because the current situation is considered unwelcome, dysfunctional, or below aspiration levels, reform is conceived and argued to improve it. In the past couple of decades, scholars have dedicated substantial attention to explaining partially successful or failed reforms (Kalyvas et al., 2012; Pritchett et al., 2013).

Policy reforms are classified according to several potential typologies (Kuipers et al., 2014). Bartunek & Moch (1987) identified different ‘orders’ of change: sub-system change (first-order), organization change (second-order), and sector change (third-order). Tsoukas (2012) proposed a conceptual framework that captures three levels of change involved in a policy domain reform process (one of which is policy reform). The *first level of change* refers to adopting technical or managerial measures to solve problems and improve current organizational practices that forestall a system from being effective. The *second order of change* commonly refers to an organizational transformation that usually encompasses “the modification of an organization’s underlying norms, policies, and objectives” (Argyris and Schon, 1978:2-3), which marks an organization’s alteration governing values to improve the delivery of a collective good. Pina e Cunha & Tsoukas (2015) argue that the new values are seemingly more aligned to modernity aspects, such as “*efficiency, performance management, accountability, transparency.*” Last, the *third-order change* is the policy reform, which typically involves the drastic alteration of a *policy domain's* constitutive rules and overall policy objectives. It does not include only an organizational transformation, but through it, “*it impacts the broader institutional field in which an organization is embedded*” (Pina E Cunha & Tsoukas, 2015). An institutional field, such as health or education, comprises various organizations that, taken together, constitute a known area of institutional life (Tsoukas, 2012).

A third-order change is frequently a part of a broader political endeavor to revamp a country's institutions. Thus, in reform, several change processes are set in motion at different levels: from a policy domain at large, through organizations, right down to how a collective good is delivered to users.

Table 1: The three orders of change according to Tsoukas (2012) (compiled by the authors)

Level	Scope	Changes
First-order change	Problem-solving	technical or managerial measures that hinder a system from being effective
Second-order change	Organizational transformation	organizational values and culture
Third-order change	Policy reform	changes in the constitutive rules of the policy domain

The transition from *first* (problem-solving) to *second* (organizational transformation) and through it to *third-order* change (policy reform) leads to higher levels of complexity, conflict, and recursivity (Tsoukas 2012). Complexity is related to the number of actors associated with and affected by the change process. Conflict increases as the intended changes give rise to the emergence of complications that are less technical and more context-dependent, value-laden, and political. Recursivity rises insofar as policy reform functions both as a medium to effect broader change in the country's institutional-political-cultural template and as an outcome of the change itself. Tsoukas (2012) argues that the less complex, conflicting, or recursive a change is, the higher the possibility to be adopted. Otherwise, the change process becomes more ambivalent, political, and open-ended, and the more recursive a change process is, the more likely it to induce vicious circles. Ideally, the three types of change should be nested within one another in ascending order, starting with the more localized, technical, and aligned with existing values and institutional-field systems (Tsoukas 2012) before progressing to radical second and third-order changes. The concepts of the policy domain and orders of change help the study of Greece's land registry policy domain, as it existed till 1994, and how the onset of the HCS stands from a policy reform perspective. Thus, it is helpful for our empirical case.

2.3. Data sources

The inquiry depends on data from two sources. Firstly, it is informed by primary data collected in the period between July 2019 and January 2021. The first author conducted in-depth open interviews with government officials and professionals from Greece's land registry policy domain. The interviews aimed to understand Greece's land registry policy domain, the HCS's main aim, and how it was institutionalized until 1998. For data validation purposes, we also used secondary data for the analysis. These consist of legislative documents from the period 1834-1998 such as Laws and their Justificatory Reports, Presidential Decrees, Ministerial Decisions, Circulars, Public consultation notes, parliamentary minutes, press releases, newspaper articles, studies, and reports.

3. DATA ANALYSIS

3.1. The Land Registry policy domain in Greece

In Greece, the most durable land registry institution has been the Registrations and Mortgages System (RMS), dating back to 1836. Following the Civil Law introduction in 1835 and the mortgage institution in 1836, the country developed a French-influenced person- and paper-based deed System (RMS). Every act (deeds, judicial decisions, lawsuits, inheritances) which create, modify or abolish '*rights in rem*' on a property, as well as all the encumbrances (mortgages, seizures, foreclosures, easements), on a property, should be registered in the so-called "Mortgage Offices" (MO). Two are the main principles that govern the RMS: *the principle of publicity*, meaning that public access for those who have a legitimate interest in the contents of the mortgage books should be ensured, and; *the principle of the temporal order of registrations*. The deeds are registered and maintained in the MOs' kept initially by the first instance court magistrates. In the years, the Hellenic State ceded partially and sequentially the Mortgage Offices' operation to Private Registrars and Notaries. As a result, three types of Mortgage Offices eventually operating in the country: the Public, the Privately-run, and the Notary-run Mortgage Offices, all of which fell under the Ministry of Justice auspices.

The Public MOs' are staffed with civil servants, and the State is responsible for their acts or omissions in their operation. The Notaries and the Private Registrars are deemed "non-salaried" public officials and operate the RMS based on remuneration as a percentage of the land transactions. Furthermore, they bear the responsibility for false registrations. The Registrar is not obliged to investigate the legality of the transactions which are requested to be registered. Nevertheless, the identity of the property should be explicitly described in the registrable deed. To this end, Law 651/1977 enforced the mandatory attachment of a topographic plan to the deed subject to registration, which describes the boundaries and the coordinates of the land plot at hand. These plans are usually not registered but are kept at the Notaries archive. Still, several deficiencies have been detected in the RMS: the paper and person-based organization and maintenance of the system; the incomplete registration of property rights (public property and usufruct not included); the lack of a cadastral map; the insufficient security of land transactions and the lack of additional information for properties to facilitate land policy, environmental protection and real property taxation. Over the years, many proposals have been made to improve the operation of the MOs'.

As the predominant land registration system, the RMS was expanded gradually throughout Greece, right after the gradual liberation of new territories from the Ottomans. However, this was not the case in a few islands of southern Greece: the Dodecanese Islands. During the Italian sovereignty (1912-1945), a cadastre system developed for the islands of Rhodes (1.400 Km²) and Kos (287 Km²) as well as part of Leros island (21 Km²). The effort to introduce the cadastre books began in 1922, following the so-called German family tradition, taking into account elements of the Torrens system, a diversified title system developed in Australia. The system continues to operate until today, according to a special Regulation issued in 1929, through the Cadastral Offices of Rhodes and Kos-Leros. The various scattered provisions were codified in a single text by Decree 132/1.9.1929 of the Italian Governor of the Dodecanese. Following World War II, Italy ceded the Dodecanese Islands to Greece. Thus, from 1947, the date of the annexation of the Dodecanese Islands to Greece, two Land Registration Systems were operating

in the country: the Registration and Mortgages System (RMS) and the Dodecanese Cadastre (DC). During the years, several problems accumulated in the operation of DC, mainly due to low maintenance of information and lack of staff and resources.

3.2. The Cadastre question in Greece: from the formation of the contemporary State to the re-establishment of Democracy

Even though the origin of the “cadastre” term is Greek, the Cadastre itself has become Greece's holy grail since its establishment in the 19th century. From the early steps of Greece's newly minted kingdom, the Cadastre was considered the panacea, either for the domestic political actors and state officials or the country's foreign lenders to register public and private property. The first attempt at cadastral mapping in Greece took place shortly after 1833, the year the young prince Otto of Wittelsbachs, from Bavaria, arrived in Greece with his regents as the first king of the newly minted kingdom. The regents, eager to exploit the public property for fiscal revenue for the fledgling State, created in 1834 the Office of Public Economy to carry out a cadastral survey to record the lands, plantations, and buildings of every town and village, to ascertain which belonged to the kingdom and which not. In 1836 the first act about the Cadastre was issued. However, the government quickly abandoned the ambitious plans due to several obstacles: lack of surveyors, inadequate budget, legal disputes about the proof of ownership, and political conflicts, and officially terminated by 1841 (McGrew, 1985).

Consecutive Greek governments undertook further efforts to emulate western cadastral mapping standards in the 20th century, with no long-lasting results. However, they were usually interrupted by political events such as wars, unstable political environment, change of leadership in the competent ministries (Gazis, 1992, TCG, 1978, Varvaressos, 1940). Therefore, political instability and political discontinuity in several periods disrupted the enactment or the implementation of sequential legislative attempts to establish the Cadastre.

Cadastre's quest restarted in the late 1970s, after the military's regime overthrow and the restitution of Democracy, as part of the country's institutional modernization. Then, the Cadastre issue was included in the agenda of all political parties in Greece and became an essential issue in the domestic political discourse gradually. It was the cause and the remedy for the country's contemptible aspects such as the encroachment of public lands, illegal residential development, deforestation. Its absence was the explanation for the country's regression, and its realization would seal the country's transition to modernity and in the club of the developed world countries. Besides, from July 1974, Greece was preparing intensively to accession in the European community. In 1978, the Technical Chamber of Greece (TCG) proposed a draft law to establish the “Hellenic Mapping and Cadastre Organization” (HEMCO). Nevertheless, it was no sooner than 1986 that the Greek government launched a public organization with that name to compile and maintain the unified, evidentiary Cadastre of Greece, the geodetic infrastructure and topographic mapping, and a register of all-natural assets of the country. However, lack of a clear vision of what a “*unified and evidentiary Cadastre*” would look like (Georgakopoulos, 1991), financial and organizational impediments at the onset of the HEMCO's operation, and the political instability at the end of the '80s (Mathaiou, 2015), delayed the start of the Hellenic Cadastre until mid-'90s.

3.3. The development of the Hellenic Cadastre System

In 1992, a research for the Cadastre establishment in Greece was held by an interdisciplinary research team at the Aristotle University of Thessaloniki. In April 1993, a private trip of the EC Commissioner for Regional Policy and Cohesion Bruce Millan to Thessaloniki and his (astonishing) finding of the lack of Cadastre in Greece, generated the idea about the onset of the Hellenic Cadastre Programme co-financed from the EU's structural funds, based on the results of the abovementioned research (Interviewee). In December 1993, the Greek government assigned to the Technical Chamber of Greece (TCG) to elaborate a Business Plan for the Hellenic Cadastre System (HCS) presented in April 1994. Soon after, the Greek authorities submitted to the European Commission a proposal to fund the HCS development based on the TCG's Business Plan. In July 1994, the European Commission approved the co-finance of the first cadastral survey projects, which were included in the "sub-program" "National Cadastre" of the Operational Programme "Environment" of the 2nd Community Support Programme (CSF). For the approval of Greece's request, a more comprehensive Business Plan was elaborated by the Technical Chamber of Greece and HEMCO in April 1994 and submitted to the European authorities.

The report starts with the statement that Greece is the only country in Europe without a Cadastre, which negatively impacts its development course and, consequently, the convergence of its economy with other European Union countries. It advocates specifically that the Cadastre would facilitate spatial planning, the implementation of public infrastructure works, environmental protection, taxation policy, the resolution of courts' cases related to private property disputes. Furthermore, it argued that specific phenomena are associated with the lack of Cadastre, such as land speculation, public land encroachment, deforestation, cumbersome procedures either in land transactions or in the expropriation procedures. The study lists the RMS's main disadvantages, focusing mainly on it being a person-based system and the lack of additional information for the land parcels, such as land values, land uses, and soil quality.

The study defines the HCS as *"a uniform, public, systematic and up-to-date Information System with the land parcels of the country, which includes the geometric description and the real rights on them, as well as additional information, necessary for the country's administrative, economic and technical activities and the exercise of land policy"* (TCG, 1994: 9). The HCS consists of the cadastral maps that depict land parcels' geometric description and the cadastral tables (at an intermediate stage). The cadastral books (at the final stage), containing the legal information about the property rights and the beneficiaries. The land parcels on the cadastral maps, the property rights, the beneficiaries, and any other additional information in the cadastral tables and cadastral books are interconnected through a 16 digit code identifier, the so-called "KAEK." Additional information is the land value and land use, or any other information which will enhance the developmental perspective of the HCS. In this regard, a Land Information System (LIS) will be developed based on the HCS, containing information from other public authorities and addressing users' needs.

The study delves into four specific aspects for the development of Cadastre in Greece: the legal, the technical, the financial, and the administrative. It acknowledges that the introduction of Cadastre is a large-scale endeavor, *"which must be carefully planned at every step, by creating appropriate specifications and developing strategies and tactics."* The new system should be

introduced and applied uniformly with the same specifications, in the 131.600 km². of the country's territory. From a legal perspective, the study proposed two legislative initiatives and described the legal provisions for a) draft legislation about the adjudication (cadastral surveying) procedure till the first registrations and b) draft legislation for the operation of the HCS after the compilation of the first registrations. The adjudication process stipulates that a) the property rights will be allocated to beneficiaries based on declarations that specific committees will examine, and b) the outcome of the adjudication procedure will lead to a provisional title, i.e., "first registrations," which after five years they will become indefinite, meaning that they could only be disputed to the courts.

HEMCO should execute the proposed administrative management of the HCS at three levels: the central, namely the HEMCO; the regional, to consist of 13 regional offices; and the local, comprised of 54 offices in the respective prefectures, which will have direct contact with the citizens and will carry out the usual operations of the Cadastre. Since the function of the HCS is deemed a public task that requires "public authority," the study recommends that the central organization be a public legal entity as its regional services. Furthermore, due to the cumbersome legal status of HEMCO (legal entity of public law), it is advised the establishment of a subsidiary company, to which HEMCO will assign the development of the HCS. Nevertheless, it is pointed out that the compilation of the HCS requires flexibility, and thus the cadastral mapping projects should be contracting out to the private sector. In the period that the HCS would be fully operational, it is advised to maintain a limited number of cadastral offices (e.g., in the 13 regions and some local), but they will be fully online. It was expected that there would be 15 years that the MOs and the Cadastral Surveying Offices would be operating in parallel. Nevertheless, after the compilation of the HCS, the 391 Mortgage Offices, their personnel (750 by that time), and their equipment could merge voluntarily, with the 54 Cadastral Surveying which, by that time, would be converted to Cadastral Offices. The mortgage books would be kept as a historical archive. The study quantified the benefits of Cadastre: 30 million euros (9,2 billion Drs) annually in land taxation, 3 million euros (1 billion Drs) from the revelation of public property (belonging to the Ministry of Finance and not taking into account state property belonging to other ministries) and 2.000 job positions.

In May 1995, the Greek government introduced the first law in the Parliament describing the adjudication procedure, according to the draft provisions they were included in the Business Plan. The Parliament voted Law 2308/1995 in June 1995: it spelled out the cadastral survey and administrative procedures. These ranged from citizens' property declarations to initial property registrations ("first registrations") and finally to a dispute resolution framework. The justificatory report of the law set the goal for completing the Hellenic Cadastre to 2009 and estimated its total cost at 250 billion Drachmas (~733.675 Euros). Also, the justificatory report foresaw the development of the HC in two phases: a) in the period 1995-1999, the cadastral survey would cover 40 million km² in 1700 municipalities, and b) in the period 2000-2009, the cadastral survey would cover the rest of the country—a country's total of 132.000 km². In October 1995, a more flexible public company, KTIMATOLOGIO SA (KT SA), was established to enable the contracting out of cadastral surveys to the private sector. The company functioned as the operational arm of HEMCO and had the status of a legal entity of private law. This status afforded the company operational flexibility, considered indispensable for completing a project of such ambition, and exemptions from the strict provisions for public sector organizations. The company started to hire personnel, some of the staff of the HEMCO

transferred to the KT SA and subsequently undertook from HEMCO the contract management and the procurement of the cadastral survey projects included in the 2nd CSF Programme. To this end, a Ministerial Decision of 1996 provided the assignment to the KT SA of specific competencies, most related to the cadastral survey projects' contract management.

In 1998, Law 2664/1998 introduced the institutional framework for the operation of the HCS. The Hellenic Cadastre is a system of legal, technical, and other additional information organized on a parcel-based basis for all real estate properties in the territory, governed by specific principles as described in the law (article 1 Law 2664/1998). Six principles form the basis of the Hellenic Cadastre (article 2): *the principle of the parcel-based organization of the cadastral information*, which requires the compilation, maintenance, and constant updating of cadastral maps. Each land parcel is characterized by a unique identifier and is depicted on the cadastral diagrams; *the principle of proof of legality* of titles and other supporting documents to ensure that is legally appropriate and sufficient for registration in the cadastral books; *the principle of ensuring the temporal order of cadastral records* according to the time of submission of the relevant application (principle of time priority); *the principle of the publicity of cadastral books*, to provide public access to the contents of the cadastral books; *the principle of ensuring public faith*, to protect any bona fide possessor, based on cadastral registrations that the data are correct and that they will not suffer any losses due to deficiencies or errors in those data; *the principle of the appropriateness* (or “*expandability*”) of the Cadastre, as a system of registration of additional information of the real estate properties at any time in the future (principle of the open Cadastre).

The property rights registered in the cadastral system are ownership, usufruct, habitation, mortgage, servitude, seizure, long-term leasing, time-sharing leasing, leasing, and mining. The above rights are established, transferred, or abolished through the transactions specified in the same Law 2664/98 (article 12). Additional information shall also be entered, which shall constitute a means of pursuing, mainly, the purposes of the country’s rational organization and development (article 1par.2 Law 2664/1998). After recording the “first registrations” and building the corresponding databases for a particular area, the cadastral system starts operating, and the provisions of Law 2664/98 about its contents and operations become effective. This system will be computer-based, although the law specifies that the cadastral data and transactions will be recorded into the cadastral books. For five (5) years, after recording the “first registrations,” their correctness can be “challenged” in the courts. After the lapse of that time, the non-challenged “first registrations” become “definite,” and only in certain circumstances may they be “challenged” in courts. Individuals who make transactions based on “definite” registrations are assured that the Hellenic State guarantees the rights resulting from those transactions.

4. DISCUSSION

The genesis of HCS was a response to the domestic academic and professional community's longstanding quest to “catch up” with the most influential cadastral concepts. Besides, national experts played a significant role in the policy transfer of foreign standards in the Greek public administration from the 19th century already (Voulgaris, 2019). Nevertheless, the opportunity for its initiation was the policy window (Kingdon, 2003) of the funding from the European Commission for the onset of the cadastral mapping projects, through the 2nd CSF: “*the*

government...interested in how to distribute the money quickly from the second Delor's program, which is intended for the mapping and compilation of cadastral diagrams" (Parliamentary Minutes Law 2308/1995, 1995:5857). The HCS was born at the convergence of the Cadastre and land registry concepts. It serves not only the need of publicity of property rights but the chronic pursuit of the Hellenic State, to register the public property: *"the system of registrations, in the Mortgage Offices of the country...mainly protects the individual property, without taking care of what we call...public property, which ends up with the rest that is constantly decreasing since the territory is treated...as a constantly occupied area, which is dwindling, and this must stop, must be reversed"* (Parliamentary Minutes Law 2308/1995, 1995:5769).

Furthermore, the HCS design followed the state of the art specification of that time: *"The plan provides for the development of a future Cadastre which is similar to the model of FIG Cadastre 2014. The FIG model will be implemented in practice!"*(Grant D., in HEMCO, 1997:62). Indeed, the core statements of "Cadastre 2014" are met to a very high degree (80%-100%) (Lolonis, 2014). The sixth principle of "open cadastre" is destined to serve the multipurpose architecture of the HCS, which was another persisting pursuit of the local elites from the mid-70s. In this regard, a reason for not advancing the Cadastre based on the cadastral mapping of the period 1970-1974 was the surveying experts' opposition as not being suitable for the "multipurpose cadastre." Within this context, it would include beyond the necessary geometric and legal components, *"the geological nature and the chemical synthesis of the soil, surface, and groundwater, land use, land value, buildings and their use, population, etc. Of course, such an ideal cadastre exceeded the needs and economic capabilities of the country"* (Gazis, 1992:1174).

As mentioned in section 2, technical or managerial measures are taken in existing systems to resolve the mismatch between key stakeholders' aspirations and existing organizational practices during *first-order change*. Dale and McLaughlin (1988) argued that there are many ways to improve a deeds registration process, among others: better records management; standardization of forms and procedures to facilitate the routine processing of documents; physical improvements to the record-keeping and how the documents are stored so that they can be more easily accessed; automation of the indexes to provide quicker document retrieval; and computerization of the abstracts of title to provide quick access to the critical pieces of information. The poor maintenance of the mortgage and registration books in the RMS was already identified not only at the onset of the development of the HCS but from the 1930s as well: *"if the current situation in the Athens Mortgage Office continues and no immediate and effective measures are taken, the Mortgage Books, as well as the Athens' Mortgage office, will not exist..."*(Thivaivos, n.d. as quoted in Varvaressos, 1940:130). The DC's poor maintenance was known at the onset of the HCS as well: *"a significant problem in the operation of the DC is the 60,000 pending transactions, creating a declining public confidence in the institution..."*(TCG, 1994:45). By 1994, several proposals have been made for the improvement of the RMS and DC, such as the integration of the main distinct books kept in the MOs into one (Gazis, 1992), the establishment of similar procedures such as the 1955's French reform of the analogous deed system and others. Furthermore, another first-order change in Greece's land registry policy domain could be digitizing the books kept in Mortgage Offices (Gazis, 1992), introducing uniform fees and procedures in all, Public and Private MOs, and electronic

payments of fees. In DC, a first-order change could constitute the update of the cadastral maps and pending transactions registration.

In reviewing the literature, we have found that old organizations are transformed into new ones during second-order change, involving changes in the governing values (e.g., the public to private). Indeed, such a legislative provision has existed since 1937. Within three months, the private MOs in cities with over forty thousand inhabitants could be transformed into public ones (Law 434/1937, article 9). A similar provision was incorporated in the 811/1971 law decree (article 3), which provided for abolishing Private Mortgage Offices and their transformation into Public ones, but was never put into force. In 1992, a prominent professor of Civil Law, previously involved in several attempts to initiate the Cadastre, had written: *“nothing can be done unless the [current] state of the MOs’ is reorganized. These (i.e., Private MOs’) should be merged into wider [geographic] regions and transformed into public ones, staffed by civil servants with the appropriate qualifications. It would benefit the State since the revenues would be more than the expenditures.”* (Gazis, 1992:1178).

However, instead of improving the RMS and DC incrementally from first order to second order, their replacement with a completely new system, the HCS, was prioritized. So building a new land information system from scratch would *“have the benefit of not being restricted by existing systems, and should therefore have the possibility to implement optimal solutions from the very beginning”* (UNECE, 1996:8). Besides, the existing RMS, a “passive” deed register without complete coverage (i.e., public property and usufruct rights), was not appropriate to convert it (Larsson, 1996). Thus, *“the natural solution would then be a systematic adjudication in the field combined with the opportunity to present claims and objections and make appeals later on”* (Larsson, 1996:105). Nevertheless, this option entails a *“radical transformation in land tenure”* (Georgakopoulos, 1991): *“all the property titles, all the land tenure of Greece is questioned again. From the moment this legal plan comes into force, then for what exists and does not exist as a property in Greece, it will be re-examined who its owner is”* (Parliamentary Minutes Law 2308/1995, 1995:5774). The onset of the HCS inevitably challenges the existing institutional-cultural -political context: *“to develop a Cadastre we must identify two issues: what will happen with the rebuttable assumption of ownership of the State...what is supposed to be deemed as public property? Are we going to go back to the previous century, and until when the State keeps this issue pending?...it is a major issue for which the National Parliament has to decide sometime, and it may require a constitutional amendment...”* (Parliamentary Minutes Law 2308/1995, 1995:5767).

The development of the HCS constitutes a third-order change to modernize the country’s land registry systems. Nevertheless, for a third-order change, beyond the political coalitions that are needed to back it up, reformers must create a cohesive and convincing macro-narrative of institutional change: *“The first question the citizen faces is, why...suffer all this inconvenience, even forbid me and seize my property, so that I can not sell and do anything if I do not have proof that I am involved in this process?...why to pay 100,000 drachmas to get the certificate? To frame it and show that I have complied with an administrative procedure that the State wants to do, to find what it has if it will find it.. to let the State know what the citizens have, what rights and which properties are frozen or free”* (Parliamentary Minutes Law 2308/1995, 1995:5794).

5. CONCLUSION

The paper aimed to examine 1. what were the idea and the initial design for the development of the HCS; 2. how does the development of the HCS stand within Greece's existing land registry policy domain from a policy reform perspective. Findings show that the HCS was influenced by the most advanced cadastral exemplar of its time, the Cadastre 2014 and the concept of the multipurpose cadastre, with the primary policy objective to reveal the public property: *“The strongest proof of the usefulness and necessity of the Cadastre, is the revelation and safeguarding of public property whose value amounts to a trillion (1,000,000,000,000) drachmas from the predatory disposition of the trespassers. A trillion of public real estate will be secured”* (Parliamentary Minutes, Law 2664/1998, 1998:356). Furthermore, we found a lack of an incremental approach in the long-established land registry policy domain in Greece: from first-order change, which would be problem-solving of the existing RMS (and DC) with the modification of existing procedures or adoption of technical measures to second-order change through organizational transformation of the Public, Private and Notary-run MOs': Instead, through the initiation of the HCS, a paradigmatic shift was prioritized, which from a policy reform perspective constitutes a third-order policy change. The movement from one paradigm (deed and paper-based registry system) to another paradigm (property-based electronic cadastral system) redefines the country's land registry policy domain's foundational rules: *“in 1994 we started the design of the HC from a blank page”* (Parliamentary Minutes, Law 2664/1998, 1998:355). A paradigmatic policy change is often accumulated with anomalies (Hall, 1993). It is uncertain whether it can be effective (Tsoukas 2012, Hall, 1993), neglecting the reform's embeddedness into the broader institutional field and leading to higher degrees of complexity, conflict, and recursivity. Also, a third-order change process is uncertain and open-ended: *“it is indicative the phrase of the competent Minister in the Permanent Committee: “We believe that we are starting a journey without a compass”* (Parliamentary Minutes Law 2308/1995, 1995:5786). Indeed, after 1998, the implementation of the cadastral policy reform has been navigated through the compounded tides of conflict, complexity, and recursivity, challenging thus its safe advent to the shore of the coveted holy grail.

REFERENCES

- Chourmouziadis, G. (1989). The Cadastre as a national scale project. *Local Administration and Cadastre*.
- Dale Peter, McLaughlin, J. (1988). *Land Information Management*. Clarindon Press.
- Dale Peter, McLaughlin, J. (1999). *Land Administration*. Oxford University Press.
- Doebele, W. A. (1983). *Why Cadastral Systems are Important for Less Developed Countries*.
- Enemark, S., McLaren, R., Lemmen, C., Antonio, D., Gitau, J., De Zeeuw, K., Dijkstra, P., Quinlan, V., & Freccia, S. (2016). *Fit-For-Purpose Land Administration. Guiding Principles for Country Implementation*.
- FIG. (1995). *The Statement on the Cadastre. FIG Publication No.11*.
- Gazis, A. (1992). The Cadastre and the Cadastre Books. *Nomiko Vima*, 40, 1170–1178.
- Georgakopoulos, A. (1991). The Cadastre Issue. *Nomiko Vima*, 39(8), 1169–1176.
- Hall, P. A. (1993). Policy Paradigms, Social Learning, and the State: The Case of Economic Policymaking in Britain. *Comparative Politics*, 25(3), 275–296.
- Parliamentary Minutes, Law 2664/1998, Session IE', November 5th, 1998, 782 (1998).
- HEMCO. (1997). *International Meeting for the Cadastre*. 141.
- Henssen, J. (1995). Basic Principles Of The Main Cadastral Systems In The World. *Proceedings of the One Day Seminar in Delft on May 16th, 1995*, 5–12.
- Henssen, J. L. G. (1971). The principles of publicity and speciality in connection with the liaison between cadastre and land records. *FIG Congress*.
- Kalyvas, S.; Pagoulatos, G.; Tsoukas, H. (eds. . (2012). *From Stagnation to Forced Adjustment: Reforms in Greece 1974-2010*. Hurst & Co.
- Kaufmann, J.; Steudler, D. (1998). *Cadastre 2014: A Vision for a Future Cadastral System*.
- Kingdon, J. W. (2003). *Agendas, Alternatives and Public Policies* (2nd ed.). Longman Classics.
- Kuipers, B., Higgs, et.al;. (2014). The management of change in public organizations: A literature review. *Public Administration*, 92(1), 1–20.
- Larsson, G. (1996). *Land Registration and Cadastral Systems : Tools for land information and management* (2nd ed.). Addison Wesley Longman Limited.
- Lemmen, C. (2018). Land Information Modelling. *Inaugural Speech as Incoming Professor of Land Information Modelling, ITC, Enschede, The Netherlands*.
- Lolonis, P. (2014). Benchmarking of the Hellenic Cadastre with respect to “ Cadastre 2014 ” and future prospects. *Permanent Committee on Cadastre Conference*.
- Mathaiou, P. (2015). *National Cadastre: Between the Public and the Private Law* (pp. 1–24).
- McGrew W. William. (1985). *Land and Revolution in Modern Greece, 1800-1881. The Transition in the Tenure and Exploitation of Land from Ottoman Rule to Independence*. Kent State University Press.
- McLaughlin, J. D. (1975). *The Nature, Design and Function of Multipurpose Cadastres*. The University of Wisconsin-Madison.
- National Research Council. (1983). *Procedures and Standards for a Multipurpose Cadastre*. National Academies Press.
- Parliamentary Minutes Law 2308/1995, (1995).
- Pina E Cunha, M., & Tsoukas, H. (2015). Reforming the state: Understanding the vicious circles of reform. *European Management Journal*, 33, 225–229.
- Pritchett, L., Woolcock, M., & Andrews, M. (2013). *Looking Like a State: Techniques of*

- Persistent Failure in State Capability for Implementation. *The Journal of Development Studies*, 49(1), 1–18.
- Scott, J. C. (1998). *Seeing Like a State*. Yale University Press.
- Silva, M. A., & Stubkjær, E. (2002). A review of methodologies used in research on cadastral development. *Computers, Environment and Urban Systems*, 26(5), 403–423.
- Simpson, S. R. (1976). *Land Law and Registration*. Cambridge University Press.
- Technical Chamber of Greece. (1994). *National Cadastre*.
- Technical Chamber of Greece (TCG). (1978). The Cadastre of Greece. The positions of TCG and HARSE. *Technika Chronica*, 7, 48–51.
- Tsoukas, H. (2012). Enactive Reforms: Towards an Enactive Theory. In S. Kalyvas, G. Pagoulatos, & H. Tsoukas (Eds.), *From Stagnation to Forced Adjustment* (pp. 67–89). Columbia University Press.
- UN-FIG. (1996). *The Bogor Declaration on Cadastral Reform*.
- UN-Habitat. (2008). Secure Land Rights for All. In *Global Land Tool Network*. UN-Habitat.
- UN. (1973). *Report of the Ad Hoc Group of Experts on Cadastral Surveying and Mapping*.
- UNECE. (1996). *Land Administration Guidelines*.
- Varvaressos, A. (1940). *Le Livres Fonciers et le moyen de leur introduction en Grece*. Ministere de l’Agriculture. Service des Etudes Agricoles et Economiques.
- Williamson, I., Enemark, S., Wallace, J., & Rajabifard, A. (2010). *Land Administration for Sustainable Development* (1st ed.). ESRI ACADEMIC PRESS.
- Williamson, I. P. (1986). Cadastral and land information systems in developing countries. *Australian Surveyor*, 33(1), 27–43.
- Voulgaris, V. (2019). *Greece: a country paradoxically modern* (1st ed.). Polis.
- Zevenbergen, J., De Vries, W., & Bennett, R. (2015). Advances in responsible land administration. In *Advances in Responsible Land Administration*.
- Zevenbergen, J. (2002). *Systems of Land Registration Aspects and Effects*.

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