

University of Zagreb Faculty of Geodesy

Land Governance Monitoring

Proposal for pilot implementation in Croatia

Final report

Deliverable 4

7 June 2016

Contents

Executive summary	4
1 Introduction	5
2 Methodology.....	6
3 Administrative data availability.....	8
3.1 Relevant Warehouses	8
3.1.1 Real Property Registration and Cadastre Joint Information System (JIS)	8
3.1.2 ARKOD - System for Registration of Agricultural Parcels	10
3.1.3 Registry of Concessions.....	11
3.1.4 Tax Administration Information System	11
3.1.5 eSpis - System for Court Case Monitoring.....	12
3.1.6 ISPU - Physical Planning Information System	13
3.1.7 Information system for the disposal of state agricultural land.....	14
3.1.8 Registry of Expropriations	15
3.1.9 Transaction evidence	15
3.1.10 Statistical data and budget	15
3.1.11 Other potential warehouses.....	16
4 Sample data	18
4.1 Real Property Registration and Cadastre Joint Information system (JIS).....	18
4.1.1 Data formats	18
4.1.2 Relevant identifiers.....	18
4.1.3 Variables	19
4.1.4 Time profile	19
4.1.5 Other relevant information	19
4.2 ARKOD - System for Registration of Agricultural Parcels	20
4.2.1 Data formats	20
4.2.2 Relevant identifiers.....	20
4.2.3 Variables	20
4.2.4 Time profile	21
4.2.5 Other relevant information	21
4.3 Registry of Concessions.....	21
4.3.1 Data formats	21
4.3.2 Relevant identifiers.....	22
4.3.3 Variables	22
4.3.4 Time profile	22
4.3.5 Other relevant information	22
4.4 Tax Administration Information System	22
4.4.1 Data formats	23
4.4.2 Relevant identifiers.....	23
4.4.3 Variables	23
4.4.4 Time profile	23
4.4.5 Other relevant information	23
4.5 eSpis - System for Court Case Monitoring.....	24
4.5.1 Data formats	24

4.5.2	Relevant identifiers.....	24
4.5.3	Variables.....	24
4.5.4	Time profile.....	24
4.5.5	Other relevant information.....	24
4.6	ISPU - Physical Planning Information System.....	25
4.6.1	Data formats.....	25
4.6.2	Relevant identifiers.....	25
4.6.3	Variables.....	25
4.6.4	Time profile.....	26
4.6.5	Other relevant information.....	26
4.7	Information system for the disposal of state agricultural land.....	26
4.8	Registry of Expropriations.....	27
4.9	Transaction evidence.....	27
4.10	Statistical data and budget.....	27
4.11	Other potentially useful data.....	27
5	Key Land Governance Monitoring indicators.....	28
5.1	Policy relevance.....	51
5.1.1	Dialogue and policy feedbacks loops.....	51
6	Proposal for Land Governance Monitoring.....	52
6.1	Automated analysis and reporting feasibility.....	52
6.2	Administrative data collection/supply.....	52
6.3	Reporting.....	53
7	Concluding remarks.....	55
	References.....	56
	Annexes.....	57
	Annex 1. Warehouses and responsible institutions.....	57
	Annex 2. Considered indicators without administrative data.....	58
	Annex 3. Policy matrix and relevant indicators.....	63
	Annex 4. Responsible institutions and warehouses for the LGM data.....	73
	Annex 5. Data for LGM.....	78

Executive summary

In parallel with the ongoing implementation of the Land Governance Assessment Framework (LGAF) in the Republic of Croatia, in 2015 the World Bank proposed the development of the Land Governance Monitoring (LGM) system, the main purpose of which is helping to track improvements of specific issues relevant to Land Governance in Croatia in a transparent and accountable way. Analysis has shown that current monitoring of land related issues is insufficient so the establishment of LGM will enable better formulation of land policies.

The LGM implementation project kicked off in March 2015, lasting until Jun 2016. During this period great effort was invested in identifying all the administrative data which can be used to establish indicators for monitoring Land Governance in Croatia. Thorough analysis of an inventory of available administrative data sets as well as systems in place for collecting, analysing and reporting has been carried out. Relevant institutions were involved and requested for sample data and metadata from warehouses under their jurisdiction; their cooperation provided valuable information that is essential for a successful conclusion to the LGM pilot implementation in Croatia.

A final list of key LGM indicators has been proposed for which the monitoring is sustainable and all required data for their calculation is available. For these indicators it is possible to establish automatic reporting. It can be developed as an on-line web service based on linked warehouses but also other possibilities of off-line collection of data are allowed in the subsequent period till certain warehouses/registers are restructured, which is currently taking place. Specifically, it is proposed that LGM should be implemented as an additional module in the Real Property Registration and Cadastre Joint Information System (JIS), which would be used for publishing the indicators on the web. JIS is a system responsible for the fundamental land data and many different indicators related to other institutions rely on this data, confirming its significance and justifying the proposal.

1 Introduction

From March 2015 to April 2016, with technical and financial support from the World Bank, Croatia implemented the Land Governance Assessment Framework (LGAF). While this assessment has produced comprehensive diagnostics of all dimensions of Land Governance in Croatia, it was also a good opportunity to combine this assessment with the establishment of a Land Governance Monitoring (LGM) system. It was therefore agreed to initiate the pilot implementation of LGM in Croatia in parallel with the ongoing LGAF project.

Such a monitoring system helps to track the progress of improvements to the Land Governance and identifies needs for adjustment, adds transparency and keeps authorities accountable for implementing good governance principals in area of land resources and real estate. It also provides data for more detailed policy advice in land and related sectors. The system includes a set of key LGM indicators organised in the following topics:

- Land and property tenure types, registration and transactions, with characteristics of land holders (disaggregation by gender, region)
- Land use
- Cadastral mapping
- Expropriation, privatisation, compensation
- Land prices and land values
- Land disputes
- Land tax and fees

After finishing the implementation of LGAF and the completion of thorough analysis, the LGM pilot implementation project in Croatia is now also finished and its results are included in this document.

In the first part the focus is on describing the methodology but also providing and describing sample data, metadata and data files used for LGAF assessment and LGM findings. Sample data is obtained mainly through communication with responsible institutions providing the excerpts of data model diagrams, feature catalogues or just plain data. This data provided an insight into the condition and the availability of administrative data kept in land related warehouses and maintained in land related official registers. Official data constituted an important input for assessing land indicators and dimensions in LGAF in a way that is low cost and can be updated on a regular basis, which ensures the LGM system is sustainable.

The second part deals more with providing and describing key LGM indicators emerging from LGAF, policy relevance and automated analysis, and reporting feasibility. Key LGM indicators were discovered in the analysis of data provided through cooperation with responsible institutions. The insight into the data formats, relevant identifiers, variables, time profile of the data and other relevant information has helped to get a general overview of the data used for composing and calculating LGM indicators. The majority of this data is or will be included in the Real Property Registration and Cadastre Joint Information System (JIS). Therefore, significant efforts have been made to influence the final stage of the development of JIS applications and integrate a separate module for LGM. In the previous course of work on the LGAF implementation project some policy issues emerged; thus, LGM is focused on those indicators that will assist in overcoming these issues. The project has been undertaken by experts from the Faculty of Geodesy, University of Zagreb, who were also involved in the implementation of the LGAF project.

2 Methodology

For the purpose of LGAF implementation, most of the required data has been recognised and associated questionnaires about specific data has been sent to responsible institutions. This data is also mainly part of LGM, the indicators of which are sometimes actual data but sometimes more than one data must be used to be able to determine a specific indicator. Furthermore, one piece of data may be required for more than one indicator. For such specific situations with many-to-many relationships, the best solution is to organise and keep all necessary data in the database and use the database to provide appropriate analysis. Therefore, we have been using the RDBMS (Relational database management system) to complete this task.

The implementation was modelled in a way (Figure 1) to be able to hold the data about LGM indicators previously proposed in other countries in addition to other new Croatian country specific indicators that we have determined during this implementation, warehouses in which required data for those indicators are stored and institutions responsible for them. Data relating to LGAF indicators and LGAF required data has also been included. Consequently, all the information about LGM and LGAF was in one place, allowing us to conduct a joint analysis and support the LGAF implementation with the results from the LGM pilot implementation.

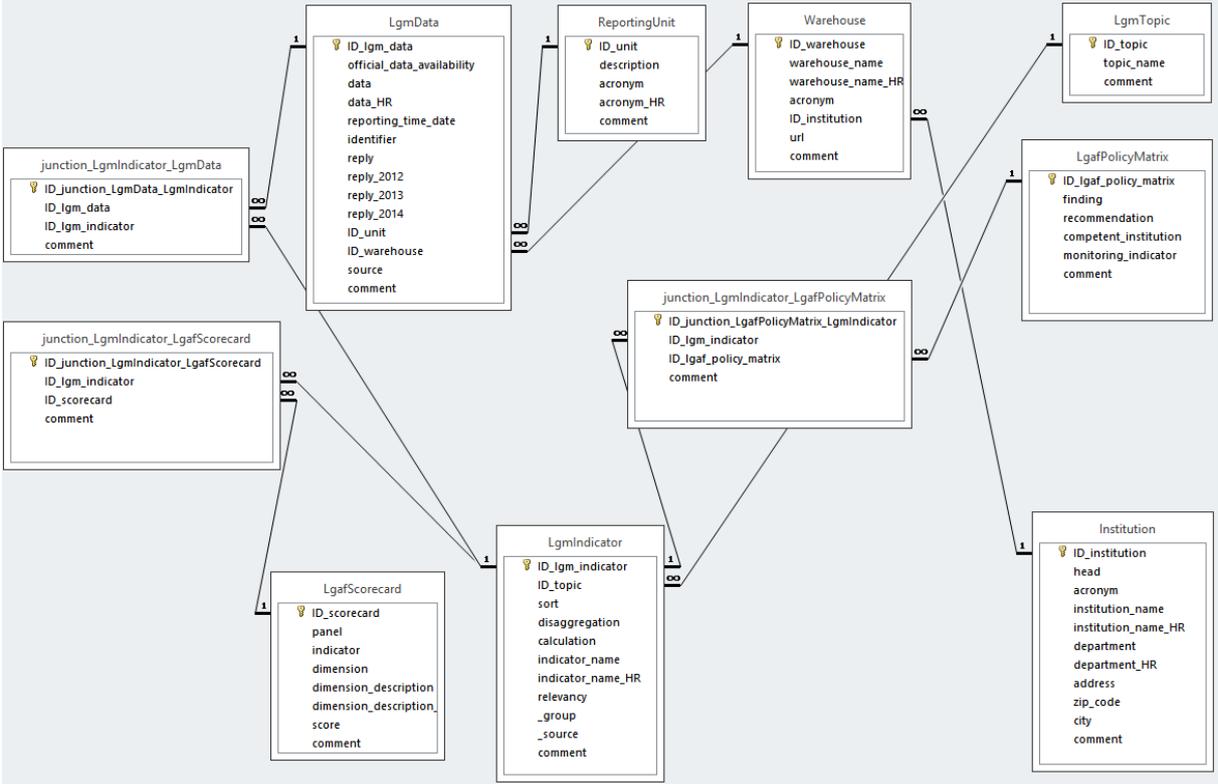


Figure 1. Relationships in database

First, we matched LGAF indicators and LGAF required data to determine for which LGAF indicators we have already asked institutions to deliver required data. On the other hand, we matched the initial set of LGM indicators to LGAF indicators via one junction table, which enabled us to do two things: determine whether there were any other country specific indicators that we could add to those from available former pilot reports, and see what additional data we have to collect which hasn't already been included as LGAF required data.

At the beginning of the project it was necessary to identify all administrative data sources for land and property tenure types, registration and transactions, including characteristics of land holders (disaggregation by gender, region), land use, Cadastral mapping, expropriation, privatisation, compensation, land prices and land values, land disputes, land tax and fees.

The next step included generation of the “meta data”: data formats available at various local government levels with samples of data collection formats (picture/screenshots) or real data for each source, relevant identifiers (parcel/person/administrative unit id) that can be used to link data, the nature of variables and the way in which they are geo-referenced (parcel level polygons or centroids, levels of aggregation), time profiles and responsible institutions, data access procedures (clearances to be obtained) and contact persons.

According to the result of previous works we have requested administrative data for 2014 in accordance with LGAF data requirements and made it available to expert investigators. Following the implementation of LGAF in the Republic of Croatia, we have taken all the policy relevant findings and for the purpose of the LGM project again analysed all the land indicators emerged during the implementation of LGAF. In this final stage of the LGM project, we have tested methodologies for automated analysis and prepared specific algorithms for calculating key land indicators and assessing the implications for data requirements. Based on the analysis, proposals for the development of a key land indicator monitoring system and institutional arrangements for its sustainability have been developed.

3 Administrative data availability

The aim of this section is to prepare and analyse an inventory of available administrative data sets (including meta data) as well as systems in place for collecting, analysing and reporting topics which concern land information systems (tenure types, characteristics of land holders, transactions etc.), land use categories (records, maps), taxation and valuation, expropriation and compensation, disputes and land related courts cases, as well as other issues analysed in LGAF. We have identified the relevant warehouses and collected the metadata and administrative data stored in those warehouses.

3.1 Relevant Warehouses

During the LGAF and LGM project implementation, we have analysed official registers in the Republic of Croatia and determined relevant data warehouses. Below is the inventory of those warehouses and a more detailed overview with a list of responsible institutions, acronyms and URLs to publicly available data can be found in Annex 1.

- Real Property Registration and Cadastre Joint Information System
- System for Registration of Agricultural Parcels
- Registry of Concessions
- Tax Administration Information System
- System for Court Case Monitoring
- Physical Planning Information System
- Information system for the disposal of state agricultural land
- Registry of Expropriations
- Transaction evidence
- Statistical data
- Budget

3.1.1 Real Property Registration and Cadastre Joint Information System (JIS)

The Real Property Registration and Cadastre Joint Information System (JIS) is a unified database and application for keeping and maintaining the Land Book and Cadastre data (Figure 2). It enables citizens to see the ownership structure of a real property and its location in space as well as numerous other functionalities in one place. The expected benefits of the JIS are:

- acceleration of real property registration in both the Cadastral system as well as the land registration system
- raising the level of legal security of real property transactions
- rationalising both systems and simplifying business processes
- ensuring that the harmonised data of these two systems no longer mismatch
- improving customer relationships and the speed and quality of service provision

This system is, therefore, one of the key instruments in the development of e-Croatia and entrepreneurship as well as securing public trust in respect of the registers. Jurisdiction over JIS is divided between two institutions (the State Geodetic Administration and the Ministry of Justice) through a Steering Committee that includes members from both institutions.

PREGLED KATASTARSKOG OPERATA **PREGLED ČESTICA** **PREGLED STATUSA PREDMETA**

Pretraživanje po podacima o čestici

Katastarski ured*:

Katastarska općina*:

Broj kat. čestice*: /

Pretraživanje po podacima o posjedovnom listu

Broj posjedovnog lista:

GRAFIKA Pregledaj PL/BZP Pregledaj ZKU/BZP

Zgr	Broj k.č.	Katastarska općina	Broj PL	Broj D.L.	Adresa katastarske čestice/ Način uporabe katastarske čestice/ Način uporabe zgrade, naziv zgrade, kućni broj zgrade	Površina/...	Pravo građenja

Broj ZK UL	Broj PL	Posebni pravni režimi	Broj zadnje promjene	Oznaka zadnjeg elaborata	Klasa zadnjeg upravnog rješenja	Plombe/Oznake

©2014 Ministarstvo pravosuđa i Državna geodetska uprava. Sva prava pridržana

Figure 2. One of the JIS online forms

Data that can be found in this warehouse is required for the following LGM topics:

- Land and property tenure types, registration and transactions, with characteristics of land holders (disaggregation by gender, region)
- Land use
- Cadastral mapping
- Expropriation, privatisation, compensation
- Land disputes

Examples of indicators that can be compiled using this warehouse's data are:

- Share of number of cadastral parcels for which the abolition of social ownership is not carried out in Land Book
- Share of number of persons registered in the Cadastre with Personal identification number

JIS is not yet complete, i.e. it doesn't hold the data for the whole territory of the Republic of Croatia, but it will be completed in September 2016 since the data migration to JIS is one of the priorities of the state.

3.1.2 ARKOD - System for Registration of Agricultural Parcels

ARKOD (Figure 3) is the national system for identification of agricultural parcels, i.e. registration of the agricultural land use in Croatia. The main goal of ARKOD is to provide farmers with an easier way for applying for different forms of support as well as ensuring their transparent use. The ARKOD system is an integral part of the Integrated Administration and Control System (IACS) by which the Member States of the European Union allocate, monitor and control direct payments to farmers. Registration in ARKOD is free for farmers and is performed in the regional offices of the Paying Agency for Agriculture, Fisheries and Rural Development.

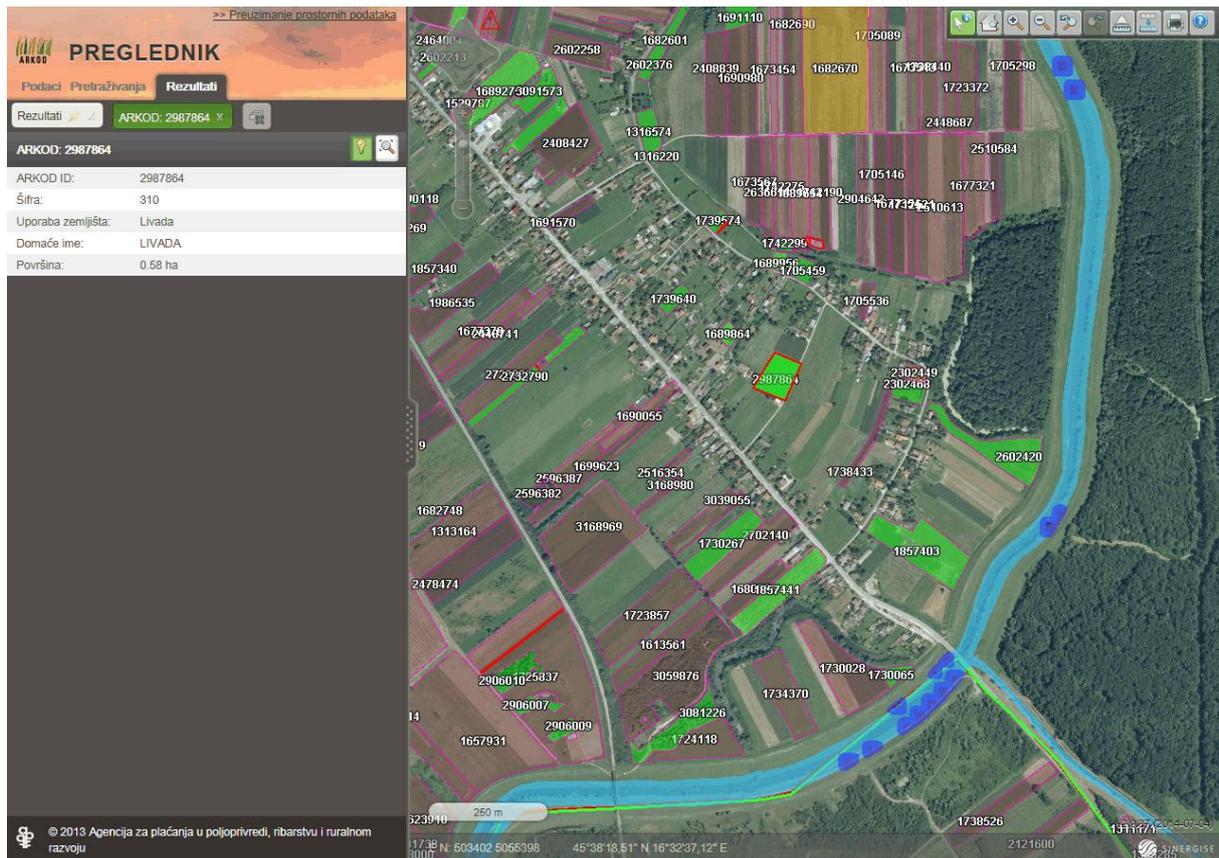


Figure 3. ARKOD web interface

Data from this warehouse is required for the following LGM topic:

- Land use

Examples of indicators that can be compiled out of this warehouse's data are:

- Share of area of arable land in commercial use
- Share of number of pastures in commercial use

3.1.3 Registry of Concessions

The Registry of Concessions (Figure 4) provides data related to all concession contracts regarding Croatian territory. It is maintained by the Financial Agency.

The screenshot shows the 'Pregled javnih podataka' (Public Data Overview) interface for the 'REGISTAR KONCESIJA' (Concession Register) in the Republic of Croatia. The header includes the logo of the Republic of Croatia and the Ministry of Finance. The main title is 'Pregled javnih podataka' and the version is 'v1.1.8'. The interface is in Croatian and includes a search form with the following fields:

- OIB davatelja
- Naziv davatelja
- OIB koncesionara
- Naziv koncesionara
- Vrsta koncesije (Dropdown menu: Koncesija djelatnosti premještanja i uklanjanja nepropisno)
- Administrativna jedinica (Dropdown menu: REPUBLIKA HRVATSKA)
- Datum početka koncesije (Date field: dd.mm.gggg)

Below the search criteria, there is a 'Kontrolni broj:' field with a logo and a 'Unesite kontrolni broj:' field. At the bottom, there are two buttons: 'Traži' (Search) and 'Poništi' (Reset).

Figure 4. Form for the publicly accessible information on concessions

Data that can be found in this warehouse is required for following LGM topic:

- Land tax and fees

Examples of indicators that can be compiled out of this warehouse's data are:

- Share of amount of collected payments from the concession transactions of public land
- Share of number of collected concession transactions of public land

This is a new warehouse so the data may be incomplete at present.

3.1.4 Tax Administration Information System

Through its information system (Figure 5), the Tax Administration performs assessment and collection of taxes, mandatory contributions and other public charges and for all of these elements it maintains different records through a broad range of applications that are grouped into several major groups: basic and auxiliary records, tax assessment, tax accounting, records of the results of monitoring and statistical reviews. These records are part of a more complex Tax Administration Information System.

The tax authority is obligated to keep all information that taxpayers provide during the tax procedure secret, so the majority of this data is not publicly available with the exception of whether a person is or is not a taxpayer in the VAT system.

REPUBLIKA HRVATSKA | **MINISTARSTVO FINACIJA** | Porezna uprava

INFORMACIJSKI SUSTAV POREZNE UPRAVE

Provjera obveznika u sustavu PDV-a

UNOS UVJETA PRETRAGE

OIB: _____ Obveznik PDV-a na dan: _____

Unesite sigurnosnu zaporku:  _____

Traži Početna stranica

Figure 5. Verification of taxpayers in the VAT system

Data that can be found in this warehouse is required for the following LGM topics:

- Land prices and land values
- Land tax and fees

Example of indicators that can be compiled out of this warehouse's data is:

- Assessed taxes on Real property transactions are collected
- Share of number of Real property transfer tax exemptions

3.1.5 eSpis - System for Court Case Monitoring

eSpis (Figure 6) is a system for court case monitoring that allows free and public access to basic information about court cases including all parties, attorneys and other involved persons participating in court proceedings through its web service e-Predmet. It provides information on the progress and dynamics of resolving the case in the regular procedure and the proceedings under legal remedies. It is maintained by the Ministry of Justice.



Figure 6. Main web interface of e-Predmet

Data that can be found in this warehouse is required for the following LGM topics:

- Land and property tenure types, registration and transactions, with characteristics of land holders (disaggregation by gender, region)
- Expropriation, privatisation, compensation
- Land disputes

Examples of indicators that can be compiled out of this warehouse's data are:

- Share of number of land disputes in the total court cases
- Share of number of long-standing (more than 5 years) land disputes in the total pending land dispute court cases

3.1.6 ISPU - Physical Planning Information System

Physical Planning Information System (Figure 7) is a framework for administrating spatial information related to physical planning. This information includes the original data generated in the physical planning system as well as other data retrieved from other systems which is required for the purpose of physical planning.

The system is maintained by local self-government. Its main purpose is to support the planning process and protection of space and to monitor the implementation of physical planning documents.

It keeps information on:

- the actual use of land
- the primary purpose of a space / area
- conditions and limitations of the use of space
- public, communal and other infrastructure
- legislation adopted for the implementation of physical planning documents
- plans and programs for protection of the space

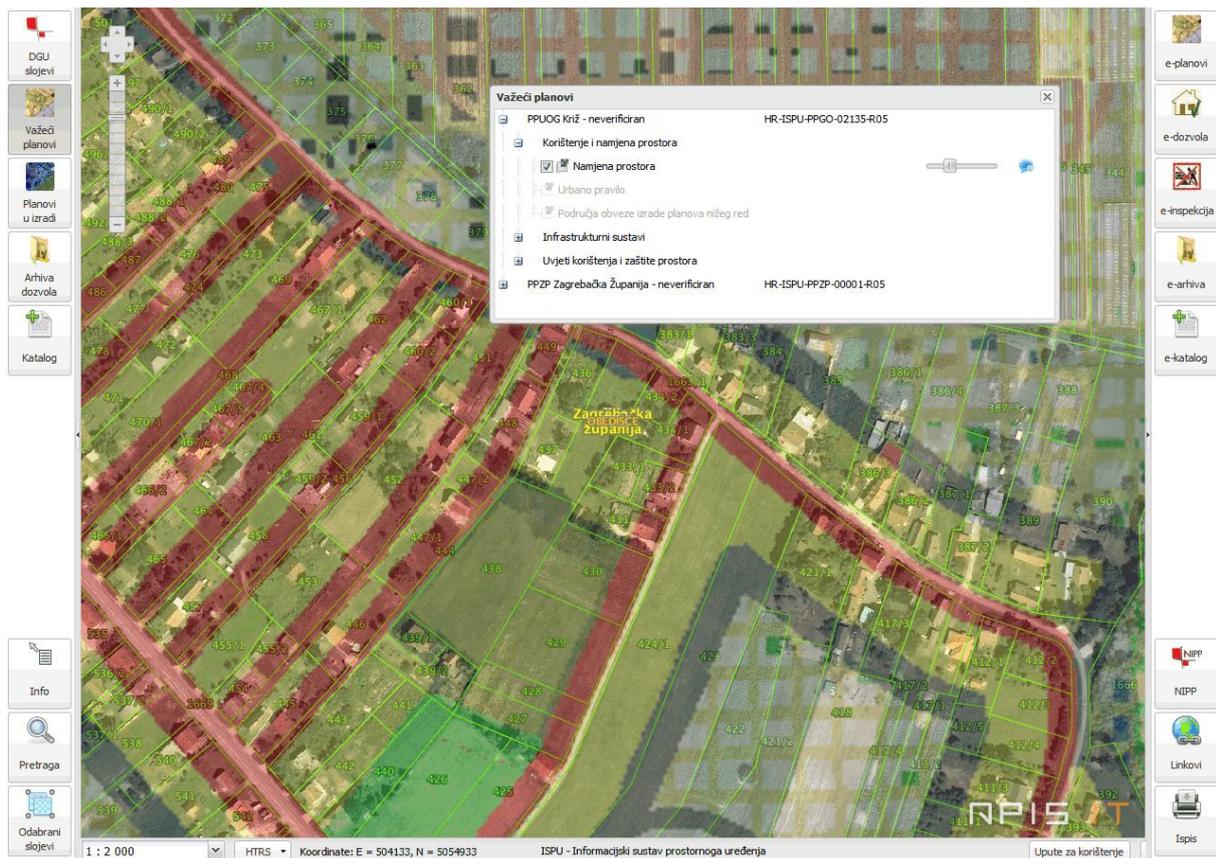


Figure 7. ISPU web interface

Data that can be found in this warehouse is required for monitoring the development of urban and rural areas and can be used for the following LGM topic:

- Land use

Examples of indicators that can be compiled out of this warehouse's data are:

- Share of area of unbuilt urbanized areas

3.1.7 Information system for the disposal of state agricultural land

The information system for disposal of state agricultural land is maintained by the Agricultural Land Agency; the main goal of the Agency is to ensure efficient management and use of agricultural land as a valuable national resource. This warehouse is currently not publicly available but can provide some valuable data for the LGM project.

Data that can be found in this warehouse is required for the following LGM topics:

- Expropriation, privatisation, compensation
- Land tax and fees

Examples of indicators that can be compiled out of this warehouse's data are:

- Share of area of the leased state agricultural land
- Share of amount of collected payments from the lease transactions of state agricultural land

3.1.8 Registry of Expropriations

Recently (in February 2016), the Regulation on the content and method of managing the data of the Registry of Expropriations has been enacted. The registry itself is not yet established and fully functioning, however once available it will provide necessary data related to expropriation cases. According to the Regulation, it is under the jurisdiction of the Ministry of Justice.

Data that can be found in this warehouse is required for the following LGM topic:

- Expropriation, privatisation, compensation

Examples of indicators that can be compiled out of this warehouse's data are:

- Area of expropriated cadastral parcels
- Number of expropriated cadastral parcels

3.1.9 Transaction evidence

Transaction evidence is a warehouse maintained by the Financial Agency (FINA), which is the leading Croatian company in the field of financial mediation. It is state-owned but operates exclusively on the market principle. It keeps records about financial transactions, however this data is not publicly available.

Data from this warehouse is required for the following LGM topic:

- Land tax and fees

Examples of indicators that can be compiled out of this warehouse's data are:

- Assessed taxes on Real property transactions are collected

3.1.10 Statistical data and budget

Statistical data and budget are not warehouses in a true sense but rather in a broader meaning of that word. Statistical data (Figure 8) is calculated from census data collected by the Croatian Bureau of Statistics and can be used to show some Land Governance trends in the country. The budget (Figure 9) is enacted by Parliament and gives an insight into the structure of finance distribution.

Figure 8. Statistical data

Figure 9. Budget data

Data that can be found in these warehouses is required for following LGM topics:

- Land and property tenure types, registration and transactions, with characteristics of land holders (disaggregation by gender, region)
- Cadastral mapping

Examples of indicators that can be compiled out of this warehouse's data are:

- Parcel / population ratio

3.1.11 Other potential warehouses

Environmental Information System

The Environmental Information System of the Republic of Croatia represents a series of interconnected electronic databases and sources of information on the state and burdens of individual components of the environment, physical characteristics and other information important for environmental monitoring at the national level (Figure 10). Administration, development, coordination and maintenance of the Environmental Information System is the responsibility of the Croatian Environment Agency.



Figure 10. Databases included in the Environmental Information System

Data from this warehouse can be used to monitor land pollution.

Register of Cultural Property

The register of Croatian cultural properties is a public list of cultural goods maintained by the Ministry of Culture. It contains data about protected cultural monuments, cultural properties of national significance and preventively protected goods. Data is available online through a web search engine (Figure 11).

PRETRAŽIVANJE KULTURNIH DOBARA

Opći podaci o kulturnom dobru		Smještaj kulturnog dobra	
Naziv:	<input type="text"/>	Mjesto:	<input type="text"/>
Pravni status:	- <input type="button" value="v"/>	Općina/grad:	<input type="text"/>
Vrsta:	- <input type="button" value="v"/>	Županija:	<input type="text"/>
Klasifikacija:	- <input type="button" value="v"/>	Katastarska općina:	<input type="text"/>
UNESCO zaštita:	- <input type="button" value="v"/>	Katastarska čestica:	<input type="text"/>

Slobodna pretraga:

Figure 11. Search form of the Register of Cultural property

Data that can be found in this warehouse can be used for identification of restrictions on land.

Nature Protection Information System

The State Institute for Nature Protection is the central institution which carries out expert nature protection tasks in Croatia. The basic activities of the State Institute for Nature Protection are aimed at organising and coordinating the inventurisation and monitoring of the state of biodiversity; within this framework, the Institute collects, processes and compiles data on the state of nature, drafts reports, keeps databases and prepares expert bases for the protection of individual components of biological and landscape diversity. In order to ensure that the resultant data serves as a joint foundation for the creation, organisation and planning of nature conservation tasks, the State Institute for Nature Protection has established a single nature protection information system and has taken over the regular maintenance of certain databases owned by the Ministry of Environmental and Nature Protection (GIS databases: Protected Areas in Croatia and the Map of Habitats in Croatia); it has also coordinated the creation of several thematic databases pertaining to nature protection (Figure 12).

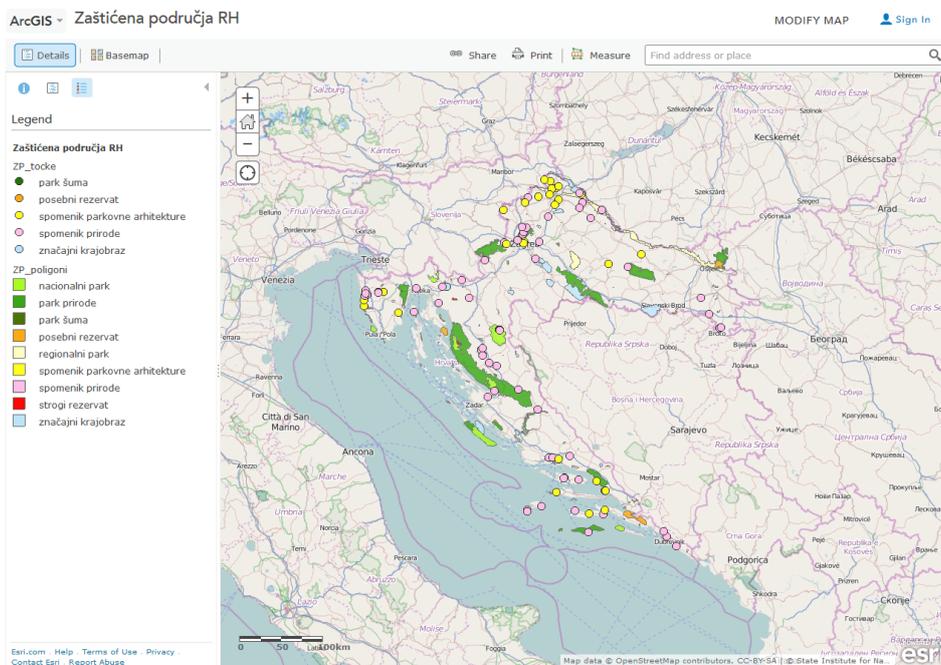


Figure 12. Web GIS of protected areas in the Republic of Croatia

Data that can be found in this warehouse can be used to identify restrictions on land.

4 Sample data

As a part of the LGAF project, all relevant institutions were contacted and asked to provide the sample data stored and maintained by them together with a set of specific information required for LGAF assessment. The sample data provided by the responsible institutions as needed for LGM is described below.

4.1 Real Property Registration and Cadastre Joint Information system (JIS)

The Real Property Registration and Cadastre Joint Information System (JIS) represents the unified warehouse and application (Figure 13) for keeping and maintaining the Cadastre and Land Book data. Data provided from this warehouse refers to the spatial characteristics of Cadastral parcels, land use, data about ownership and other real property rights and other real property related administrative information.

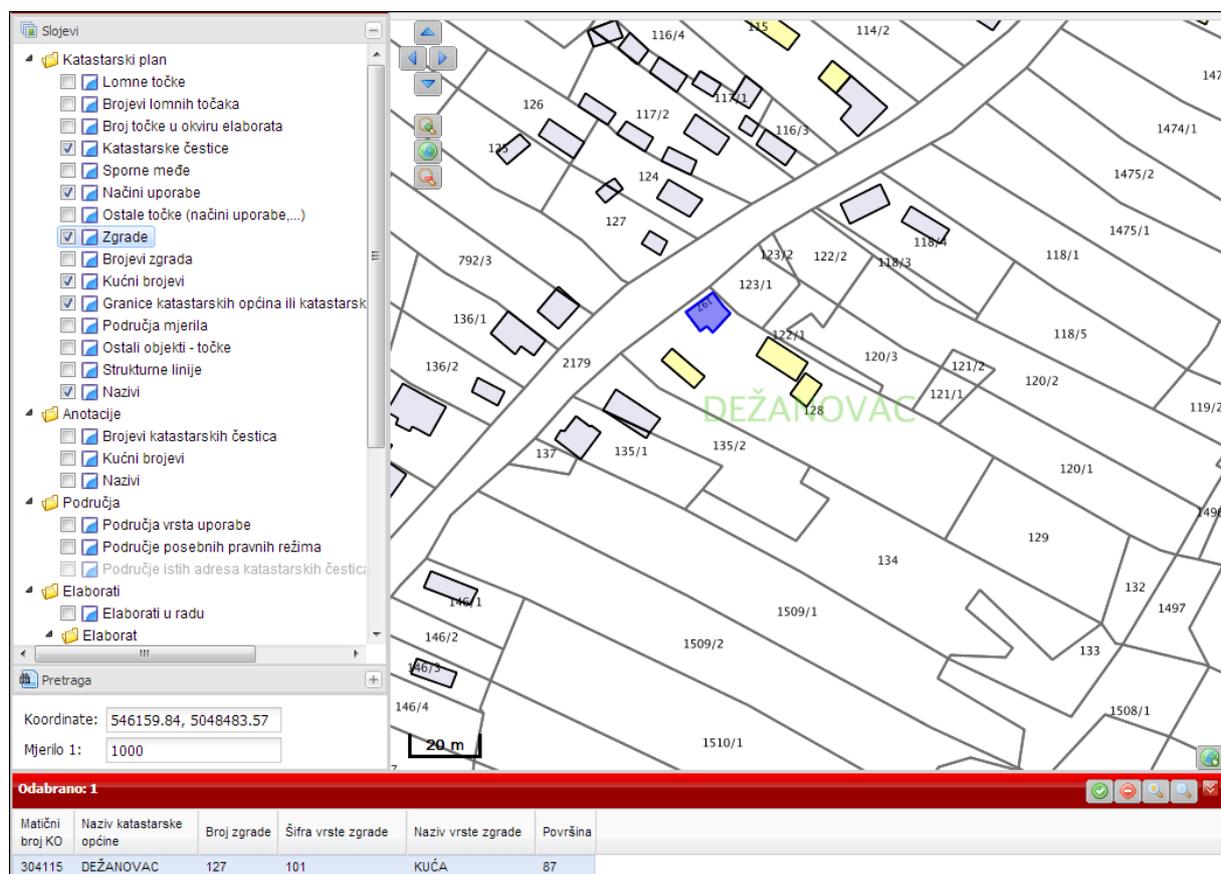


Figure 13. Application screen snapshot showing Cadastral map with data layers

4.1.1 Data formats

JIS includes both spatial and non-spatial data managed through the Oracle database management system; this warehouse is unified (it holds both Cadastral and Land Book data) and is maintained by a client web application from authorised offices.

4.1.2 Relevant identifiers

Since this is joint system of Cadastre and Land Book there are two important identifiers. The Cadastral part concerns the spatial representation of Cadastral parcels and their characteristics; therefore, the Cadastral parcel identification number is relevant in this part. The Land Book takes care of ownership and other real property rights for that parcel and

therefore the personal identification number of a registered person is also relevant in this part. More than one Cadastral parcel can be combined as one Land Book body, which represents one administrative unit during real property transactions.

4.1.3 Variables

Cadastral parcel polygons are georeferenced in a unique projection reference system entitled HTRS96/TM. This provides a good basis for aggregation and combination with other data. The rights are registered for the Cadastral parcels / Land Book units so those can also be spatially analysed.

4.1.4 Time profile

Registration in JIS is continuous and performed on a daily basis. Once the registration procedure is completed, the data becomes official.

4.1.5 Other relevant information

Because the Cadastre and Land Book are actually administrated by two separate institutions (the State Geodetic Administration and the Ministry of Justice), a joint steering committee with members from both organisations has been established and is dealing with the activities of the Real Property Registration and Cadastre Joint Information System.

Contact person who provided the data for the Cadastral part of the system:

Sanja Mimica
State Geodetic Administration
Gruška 20
10000 Zagreb
Sanja.Mimica@dgu.hr

Contact person who provided the data for the Land Book part of the system:

Ivica Anaković
Ministry of Justice
Ulica grada Vukovara 49
10000 Zagreb
ivica.anakovic@pravosudje.hr

4.2 ARKOD - System for Registration of Agricultural Parcels

According to the sample data and feature catalogue provided by the Paying Agency for Agriculture, Fisheries and Rural Development, data that can be retrieved from this warehouse refers to unique identification of agricultural parcels, unique identification of farmers, types of land used by farmers (Figure 14), area, slope, average height of the terrain and some additional administrative data.

Feature attribute	
Name:	Land use
Definition:	Land use codes
Code:	land_use_id
Value Data Type:	Number(22)
Value Measurement Unit:	N/A
Value Domain Type:	1 = 'enumerated'
Value Domain:	<u>Code - Description</u>
	200 - Arable land
	210 - Greenhouse
	300 - Permanent grassland
	310 - Meadow
	320 - Pasture
	321 - Karstic pasture
	400 - Permanent crops
	410 - Vineyard
	420 - Orchards
	421 - Olive groves
	422 - Fruit groves
	423 - Citrus
	424 - Nut
	490 - Mixed permanent crops
	500 - Mixed usage of land
	900 - Other agricultural land
LPIS_discussion	
LPIS_reference	
LPIS_example	200
LPIS_comment	Codes 300, 400, 420 and 500 can be only assigned to initial blocks which are not claimed by any farmer. Reason is uncertainty of land usage during initial digitization. These are generalized codes. When farmer claims land he has to define true land use (more specific codes).

Figure 14. Excerpt from the ARKOD feature catalogue - land use types

4.2.1 Data formats

ARKOD includes both spatial and non-spatial data.

4.2.2 Relevant identifiers

The main object of registration in ARKOD is an agricultural parcel identified by ARKOD ID.

4.2.3 Variables

Agricultural parcels are polygons georeferenced according to the official digital orthophoto map. One agricultural parcel can be spatially equal to one Cadastral parcel, but more commonly one agricultural parcel will be overlapping two or more Cadastral parcels or specific parts of those parcels or there are two or more agricultural parcels included in one Cadastral parcel.

4.2.4 Time profile

Registration in ARKOD is continuous but the referent date for data collection is 15th of May. By this date each year farmers must register their agricultural parcel in ARKOD to be able to apply for support from EU funds.

4.2.5 Other relevant information

The responsible institution for maintenance of ARKOD is the Paying Agency for Agriculture, Fisheries and Rural Development.

Contact person who provided the data:

Dario Perešin
Paying Agency for Agriculture, Fisheries and Rural Development
Ulica grada Vukovara 269d
10000 Zagreb
dario.peresin@aprrr.hr

4.3 Registry of Concessions

Data that can be retrieved from this warehouse (Figure 15) refers to the name and personal identification number of the provider of the concession and the concession holder, together with the type of concession, the administrative unit and the period in which the concession is valid.

REPUBLICA HRVATSKA
MINISTARSTVO FINANCIJA
REGISTAR KONCESIJA
Pregled javnih podataka
Korisnička uputa v1.1.8

<input type="checkbox"/> OIB davatelja	
<input type="checkbox"/> Naziv davatelja	
<input type="checkbox"/> OIB koncesionara	
<input type="checkbox"/> Naziv koncesionara	
<input type="checkbox"/> Vrsta koncesije	Koncesija djelatnosti premještanja i uklanjanja nepropisno
<input type="checkbox"/> Administrativna jedinica	Koncesija djelatnosti premještanja i uklanjanja nepropisno parkiranih i napuštenih vozila
<input type="checkbox"/> Datum početka koncesije	Koncesija građevinskog zemljišta radi gradnje i uređenja športsko rekreativnog centra

Kontrolni broj: Koncesija na javnim cestama
Unesite kontrolni broj: Koncesija na kulturnom dobru
Koncesija na pomorskom dobru
Koncesija na pomorskom dobru u svrhu uzgoja morske ribe i školjkaša
Koncesija na pomorskom dobru u svrhu uzgoja riblje mladci i morskih beskralježaka
Koncesija na vodama i javnom vodnom dobru
Koncesija o zakupu lokacija za postavljanje oglasnih panoa
Koncesija pomorskog dobra u svrhu gospodarskog korištenja luke
Koncesija pomorskog dobra u svrhu izgradnje i gospodarskog korištenja
Koncesija pomorskog dobra u svrhu izgradnje i gospodarskog korištenja luke posebne namjene
Koncesija pomorskog dobra za posebnu upotrebu u svrhu gradnje kabelaške veze
Koncesija radi financiranja, gradnje, upravljanja i održavanja auto-ceste
Koncesija skupljanja i odvoza komunalnog otpada
Koncesija u javnim telekomunikacijama i za uporabu radijskih frekvencija
Koncesija za crpljenje mineralnih i termalnih voda
Koncesija za crpljenje mineralnih voda
Koncesija za crpljenje termalne vode u svrhu športa i rekreacije
Koncesija za crpljenje termalnih voda

Figure 15. Publicly available search engine showing all types of concessions

4.3.1 Data formats

The Registry of Concessions includes only non-spatial data.

4.4.1 Data formats

The Tax Administration Information System includes only non-spatial data managed through a relational database management system.

4.4.2 Relevant identifiers

The relevant identifier in this system is the personal identification number (“OIB”) of a person paying the real property transaction tax; this number is originally issued by the Tax Administration for all natural and non-natural persons including foreigners. For each registered transaction, Cadastral parcels and co-ownership shares from the Land Book body are recorded. The real property transaction tax is calculated according to the contract.

4.4.3 Variables

Georeferencing is possible using spatial units (Cadastre municipalities). From this the spatial distribution can be determined.

4.4.4 Time profile

The data is registered continuously and it becomes official after the decision on the determination of real property transaction tax becomes legally effective.

4.4.5 Other relevant information

The responsible institution for maintenance of the tax related data is the Tax Administration, which is under the Ministry of Finance.

Contact person who provided the data:

Marijana Vuraić Kudeljan
Tax Administration
Boškovićeve 5
10000 Zagreb
marijana.vuraic@porezna-uprava.hr

4.5 eSpis - System for Court Case Monitoring

eSpis is a system for court case monitoring that provides information on the progress and dynamics of resolving the court cases (Figure 17).

The screenshot displays the eSpis system interface with several sections:

- Stranke:** A table with columns for 'Tužitelj' (V.G.) and 'Tuženik' (D.G.).
- Vrsta predmeta:** A dropdown menu showing 'Obiteljasko - bračna stečevina'.
- Tijek postupka:** A table with columns for event name and date.

Datum pokretanja postupka	26.06.1997.
Datum posljednje dodjele	24.10.2006. - sudac/sudkinja Pavica Gulišija Brečević
Datum donošenja odluke	31.03.2015.
Datum otpreme	-
Datum arhiviranja	-
Rok čuvanja spisa	-
- Podaci o odluci:** A table with columns for event name and date.

Vrsta donesene odluke	Prijepis predmeta - Zakon o područjima i sjedištima sudova NN 128/2014
Datum pravomoćnosti odluke	31.03.2015.
Datum ovršnosti odluke	-
- Dodatne informacije:** A table with columns for event name and value.

Dodatni status predmeta	NE
Izjavljena žalba	NE
Spis na višem sudu	DA - Datum otpreme: 30.01.2014.
Predmeti izvan eSpis-a	-
- Sudske radnje:** A table with columns for event name, date, location, and status.

1. ročište	02.02.2009. 08:45	Lokacija:	Određeno
2. ročište	09.03.2009. 08:45	Lokacija:	Određeno
Ročište za glavnu raspravu	02.12.2013.		Održano
Ročište za glavnu raspravu	19.01.2015.		Održano
Ročište za glavnu raspravu	09.04.2015. 12:00	Lokacija:	Određeno
- Vežani spisi:** A table with columns for event name and value.

P 08-1/2015 - prenesen	
------------------------	--

Figure 17. Data available through eSpis

4.5.1 Data formats

The System for Court Case Monitoring includes only non-spatial data.

4.5.2 Relevant identifiers

The relevant identifier in this system is court case designation, which comprises the case type code, sequence number and year in which the case began.

4.5.3 Variables

The main object of registration in this system is the court case. Court cases are aggregated by type of court (Municipal Court, Commercial Court, Supreme Court or County Court) and type of case.

4.5.4 Time profile

Data about cases is continuously registered in the system. The number of cases and also the time needed for them to be resolved depends on the overall activities of the Courts.

4.5.5 Other relevant information

The institution responsible for maintaining this data is the Ministry of Justice.

Contact person who provided aggregated data:

Ivica Anaković
Ministry of Justice
Ulica grada Vukovara 49
10000 Zagreb
ivica.anakovic@pravosudje.hr

4.6 ISPU - Physical Planning Information System

The Physical Planning Information System is based on a database which contains metadata relating to both physical plans in preparation and the one in force (Figure 18), delivered from all available sources (information from the developer, data from the report on the situation in the space at all levels, websites of the counties or local self-government units, etc.).

The screenshot shows the 'PLANOVİ' application window. At the top, there are input fields for 'ID Plana' (5677), 'Vrsta' (PPUJ), 'RB plana', and 'Grad/Općina' (RADOBOL). Below this, there are fields for 'Naziv plana' (Radoboj), 'Izradivač' (Urban Design d.o.o.), and 'Površina na kopnu'. The 'Izrada' section includes 'Udruka o izradi', 'Plan dorešen' (28.9.2005.), 'Plan objavljen' (30.11.2005.), and 'Faza izrade ID'. A table below the form lists planning documents:

Glasnik	BF	GO	Napomena	Revizija	Izradivač ID	SPU
Službeni glasnik Krapinsko-zagorske županije	015	2005		R01	Urban Design d.o.o.	
Službeni glasnik Krapinsko-zagorske županije	009	2006	ispravak		Urban Design d.o.o.	
Službeni glasnik Krapinsko-zagorske županije	011	2007	ispravak		Urban Design d.o.o.	
Službeni glasnik Krapinsko-zagorske županije	022	2008	I ID	R02	APE d.o.o.	
Službeni glasnik Krapinsko-zagorske županije	035	2010	II ID	R03	APE d.o.o.	
Službeni glasnik Krapinsko-zagorske županije	009	2014	III ID (cijljane)	R04	APE d.o.o.	

Figure 18. The form for entering data relating to the physical plan

4.6.1 Data formats

The Physical Planning Information System includes only non-spatial data and is managed through a relational database management system in .mdb format. Metadata stored in this way is complemented by spatial data, which is available through a web service, and spatial data includes raster data about zoning regulations, infrastructure and other rules. Data can be overlaid with Cadastral data and orthophoto data, but it is currently not shared via a standardised web service.

4.6.2 Relevant identifiers

Important identifiers are the zoning regulations, described in physical planning documents and defined as polygons georeferenced in a unique projection reference system. Each physical planning document has its spatial boundary determined, which makes it possible to clarify all of the conditions and rules which are applicable in some areas taking into account all types of physical planning documents, including those in the process of preparation/adoption.

4.6.3 Variables

The main object of registration in this system is the physical plan identified by its designation. Other relevant variables are the name and type of the physical planning document, dates of adoption and publication, labels of ongoing changes and amendments and consent of the competent Physical Planning Office.

4.6.4 Time profile

Physical planning is a continuous process which involves the creation, adoption and amendment of existing physical planning documents. The speed of adoption and the need for amendments depends on many factors, however the primary issue is economic activity in the given region.

4.6.5 Other relevant information

The responsible institution for maintenance of data is the Croatian Institute for Spatial Development, which is a subsidiary of the Ministry of Construction and Physical Planning.

Contact person who provided the data:

Sunčana Habrun
Croatian Institute for Spatial Development
Ulica Republike Austrije 20
10000 Zagreb
Suncana.Habrun@mgiptu.hr

4.7 Information system for the disposal of state agricultural land

As this information system is still in the process of development, no real sample data was obtained. However, some facts relating to the data have been established. The information system includes non-spatial data about the way agricultural land is used, Cadastral parcel identifiers of state agricultural land, area and the person it was disposed to. This data can be used to assess the current agricultural situation regarding the total area of state agricultural land, the number and area of Cadastral parcels of leased state agricultural land, state agricultural land disposed through or without open tender, the amount of contracted and collected payments from leased state agricultural land, etc. As announced by the Agricultural Land Agency, the system will be available to the public by the end of 2016.

Contact person for data related to this warehouse:

Leonardo Patalen
Agricultural Land Agency
Ulica grada Vukovara 78
10000 Zagreb
leonardo.patalen@mps.hr

4.8 Registry of Expropriations

As this registry is not yet established and fully functioning there was also no sample data obtained. According to the Regulation on the content and method of managing the data of the Registry of Expropriations, data maintained in this warehouse will become publicly available in the future. These records will include data about expropriated Cadastral parcels, first letters of the name and surname of the expropriation beneficiary and the former owner, purpose and type of expropriation, and type and amount of compensation.

4.9 Transaction evidence

The Financial Agency maintains transaction evidence in relation to financial transactions regarding taxes collected on real property transactions. This data is crucial for determining the real amount of collected taxes and calculating the charged-collected taxes ratio.

4.10 Statistical data and budget

One special set of data is statistical and budget data. These areas are required to help assess some important LG indicators. Statistical data represents permanent data (i.e. total state area) or the data which varies but is not collected over a longer period of time (i.e. census). The budget is adopted for one year and in general can be considered as permanent data within that year but can also change (i.e. the amount of resources granted to some public authorities). Statistical data can be obtained from Statistical Chronicles and budget data from Parliament reports.

4.11 Other potentially useful data

Other additional warehouses exist (some of them were mentioned in Section 3) that hold data about land and which were originally out of the scope of LGAF but may be included in LGM in the future.

5 Key Land Governance Monitoring indicators

Thorough analysis of data, data formats, data models, metadata and other relevant information significant for Land Governance has allowed us to establish a list of key Land Governance Monitoring indicators relevant for the Republic of Croatia for which the monitoring is sustainable (Table 1). The following table holds the information only about those Land Governance Monitoring indicators for which, to be able to calculate them, all the necessary data is either available or currently unavailable but registered and can become available relatively easy (after extending the applications for retrieving the data from warehouses and the implementation of additional functionalities for specific data calculations). The table shows LGM indicators, LGM data, LGM identifiers, equations for calculation of LGM indicators, required reporting units, time profile of data reporting and data warehouses. The table is organised by the following seven topics:

1. Land and property tenure types, registration and transactions, with characteristics of land holders (disaggregation by gender, region)
2. Land use
3. Cadastral mapping
4. Expropriation, privatisation, compensation
5. Land prices and land values
6. Land disputes
7. Land tax and fees

Table 1. Key LGM indicators for which the monitoring is sustainable

LGM indicator ID	LGM indicator description	LGM data ID	LGM data description	LGM identifier	LGM indicator calculation	Reporting unit	Reporting time profile	Warehouse
1. Land and property tenure types, registration and transactions, with characteristics of land holders (disaggregation by gender, region)								
75	Share of number of Real properties in women's name for the single owner property	228	Number of cadastral parcels registered in the Land Book	Parcel	181/228*100	Num.	Date	JIS
		181	Number of Real properties registered in woman's name for the single owner property	Person		Num.	Date	JIS

LGM indicator ID	LGM indicator description	LGM data ID	LGM data description	LGM identifier	LGM indicator calculation	Reporting unit	Reporting time profile	Warehouse
73	Share of area of Real properties registered in women's name for the single owner property	230	Area of cadastral parcels registered in the Land Book	Parcel	178/230*100	ha	Date	JIS
		178	Area of Real properties registered in woman's name for the single owner property	Person		ha	Date	JIS
79	Share of number of Real properties in men's name for the single owner property	228	Number of cadastral parcels registered in the Land Book	Parcel	185/228*100	Num.	Date	JIS
		185	Number of Real properties registered in man's name for the single owner property	Person		Num.	Date	JIS
77	Share of area of Real properties registered in men's name for the single owner property	230	Area of cadastral parcels registered in the Land Book	Parcel	183/230*100	ha	Date	JIS
		183	Area of Real properties registered in man's name for the single owner property	Person		ha	Date	JIS
83	Share of number of Real properties in non-natural persons's name for the single owner property	228	Number of cadastral parcels registered in the Land Book	Parcel	189/228*100	Num.	Date	JIS
		189	Number of Real properties registered in non-natural person's name for the single owner property	Person		Num.	Date	JIS

LGM indicator ID	LGM indicator description	LGM data ID	LGM data description	LGM identifier	LGM indicator calculation	Reporting unit	Reporting time profile	Warehouse
81	Share of area of Real properties registered in non-natural persons's name for the single owner property	230	Area of cadastral parcels registered in the Land Book	Parcel	187/230*100	ha	Date	JIS
		187	Area of Real properties registered in non-natural person's name for the single owner property	Person		ha	Date	JIS
181	Share of number of Real properties registered with mixed ownership	228	Number of cadastral parcels registered in the Land Book	Parcel	272/228*100	Num.	Date	JIS
		272	Number of Real properties with mixed ownership	Person		Num.	Date	JIS
180	Share of area of Real properties registered with mixed ownership	230	Area of cadastral parcels registered in the Land Book	Parcel	273/230*100	ha	Date	JIS
		273	Area of Real properties with mixed ownership	Person		ha	Date	JIS
176	Individualization of ownership on the Real property units	92	Number of Land Book information - Land Book sub-files	Parcel	92	Num.	Date	JIS
183	Number of registered right types - concessions	276	Number of registered right types - concessions	Contract	276	Num.	Date	JIS
184	Number of registered right types - servitudes	277	Number of registered right types - servitudes	Parcel	277	Num.	Date	JIS

LGM indicator ID	LGM indicator description	LGM data ID	LGM data description	LGM identifier	LGM indicator calculation	Reporting unit	Reporting time profile	Warehouse
185	Number of registered right types - mortgages	278	Number of registered right types - mortgages	Parcel	278	Num.	Date	JIS
186	Number of registered right types - construction rights	279	Number of registered right types - construction rights	Parcel	279	Num.	Date	JIS
111	Number of registered parcels of maritime good	50	Number of registered parcels of maritime good	Parcel	50	Num.	Date	JIS
142	All relevant encumbrances are recorded	234	Number of encumbrances	Parcel	234	Num.	Date	JIS
133	Transformation from Land Book to EOP Land Book	93	Number of Land Book information - cadastral parcels	Parcel	222/93*100	Num.	Date	JIS
		222	Number of Land Book information (EOP) - cadastral parcels	Parcel		Num.	Date	JIS
141	Number of State institutional users of Joint Information System	233	Number of State institutional users of Joint Information System	Person	233	Num.	Date	JIS

LGM indicator ID	LGM indicator description	LGM data ID	LGM data description	LGM identifier	LGM indicator calculation	Reporting unit	Reporting time profile	Warehouse
135	Share of number of persons registered in the Land Book with Personal identification number	226	Number of persons registered in the Land Book with Personal identification number	Person	$226/(225+226)*100$	Num.	Date	JIS
		225	Number of persons registered in the Land Book without Personal identification number	Person		Num.	Date	JIS
190	Share of number of pending cases in cadastre in relation to number of resolved cases in whole year	283	Number of pending cases in cadastre	Case	$283/284*100$	Num.	Date	eSpis
		284	Number of resolved cases in cadastre	Case		Num.	Year	eSpis
191	Share of number of pending cases in land book in relation to number of resolved cases in whole year	285	Number of pending cases in land book	Case	$285/286*100$	Num.	Date	eSpis
		286	Number of resolved cases in land book	Case		Num.	Year	eSpis
178	Annual ratio of Land Book revenues and expenses	271	Annual expenses of operating costs in Land Book	Amount	$269/271$	HRK	Year	JIS
		269	Annual revenues from the collection of the fees in Land Book	Amount		HRK	Year	JIS

LGM indicator ID	LGM indicator description	LGM data ID	LGM data description	LGM identifier	LGM indicator calculation	Reporting unit	Reporting time profile	Warehouse
125	Annual ratio of land registries revenues and expenses	59	Annual expenses of operating costs in the Joint Information System (Land Book + Cadastre)	Amount	58/59	HRK	Year	JIS
		58	Annual revenues from the collection of the fees in Joint Information System (Land Book + Cadastre)	Amount		HRK	Year	JIS
200	Number of institutions responsible for land registers	297	Number of institutions responsible for land registers	Person	297	Num.	Permanent	BDG
2. Land use								
188	Share of number of cadastral parcels with registered legal regime	56	Number of cadastral parcels in the written part of cadastral documentation	Parcel	281/56*100	Num.	Date	JIS
		281	Number of cadastral parcels with registered legal regime	Parcel		Num.	Date	JIS
189	Share of area of cadastral parcels with registered legal regime	237	Area of cadastral parcels in the written part of cadastral documentation	Parcel	282/237*100	ha	Date	JIS
		282	Area of cadastral parcels with registered legal regime	Parcel		ha	Date	JIS

LGM indicator ID	LGM indicator description	LGM data ID	LGM data description	LGM identifier	LGM indicator calculation	Reporting unit	Reporting time profile	Warehouse
182	Share of area of unbuilt urbanized areas	275	Area of built urbanized areas	Administrative unit	$(274-275)/274*100$	ha	Date	ISPU
		274	Area of urbanized areas	Administrative unit		ha	Date	ISPU
158	Share of number of arable land in commercial use	1	Number of agricultural parcels - arable land registered in ARKOD system	Parcel	$1/246*100$	Num.	Date	ARKOD
		246	Number of arable land registered in the Cadastre	Parcel		Num.	Date	JIS
146	Share of area of arable land in commercial use	13	Area of agricultural parcels - arable land registered in ARKOD system	Parcel	$13/109*100$	ha	Date	ARKOD
		109	Area of arable land registered in the Cadastre	Parcel		ha	Date	JIS
159	Share of number of meadows in commercial use	3	Number of agricultural parcels - meadows registered in ARKOD system	Parcel	$3/250*100$	Num.	Date	ARKOD
		250	Number of meadows registered in the Cadastre	Parcel		Num.	Date	JIS

LGM indicator ID	LGM indicator description	LGM data ID	LGM data description	LGM identifier	LGM indicator calculation	Reporting unit	Reporting time profile	Warehouse
147	Share of area of meadows in commercial use	15	Area of agricultural parcels - meadows registered in ARKOD system	Parcel	15/114*100	ha	Date	ARKOD
		114	Area of meadows registered in the Cadastre	Parcel		ha	Date	JIS
160	Share of number of pastures in commercial use	4	Number of agricultural parcels - pastures registered in ARKOD system	Parcel	4/251*100	Num.	Date	ARKOD
		251	Number of pastures registered in the Cadastre	Parcel		Num.	Date	JIS
148	Share of area of pastures in commercial use	16	Area of agricultural parcels - pastures registered in ARKOD system	Parcel	16/115*100	ha	Date	ARKOD
		115	Area of pastures registered in the Cadastre	Parcel		ha	Date	JIS
161	Share of number of vineyards in commercial use	6	Number of agricultural parcels - vineyards registered in ARKOD system	Parcel	6/249*100	Num.	Date	ARKOD
		249	Number of vineyards registered in the Cadastre	Parcel		Num.	Date	JIS

LGM indicator ID	LGM indicator description	LGM data ID	LGM data description	LGM identifier	LGM indicator calculation	Reporting unit	Reporting time profile	Warehouse
149	Share of area of vineyards in commercial use	18	Area of agricultural parcels - vineyards registered in ARKOD system	Parcel	18/113*100	ha	Date	ARKOD
		113	Area of vineyards registered in the Cadastre	Parcel		ha	Date	JIS
162	Share of number of olive groves in commercial use	7	Number of agricultural parcels - olive groves registered in ARKOD system	Parcel	7/254*100	Num.	Date	ARKOD
		254	Number of olive groves registered in the Cadastre	Parcel		Num.	Date	JIS
150	Share of area of olive groves in commercial use	19	Area of agricultural parcels - olive groves registered in ARKOD system	Parcel	19/118*100	ha	Date	ARKOD
		118	Area of olive groves registered in the Cadastre	Parcel		ha	Date	JIS
163	Share of number of orchards in commercial use	8	Number of agricultural parcels - fruit groves registered in ARKOD system	Parcel	8/248*100	Num.	Date	ARKOD
		248	Number of orchards registered in the Cadastre	Parcel		Num.	Date	JIS

LGM indicator ID	LGM indicator description	LGM data ID	LGM data description	LGM identifier	LGM indicator calculation	Reporting unit	Reporting time profile	Warehouse
151	Share of area of orchards in commercial use	20	Area of agricultural parcels - fruit groves registered in ARKOD system	Parcel	20/112*100	ha	Date	ARKOD
		112	Area of orchards registered in the Cadastre	Parcel		ha	Date	JIS
164	Share of number of greenhouses on arable land in commercial use	2	Number of agricultural parcels - greenhouse on arable land registered in ARKOD system	Parcel	2/255*100	Num.	Date	ARKOD
		255	Number of greenhouses on arable land registered in the Cadastre	Parcel		Num.	Date	JIS
152	Share of area of greenhouses on arable land in commercial use	14	Area of agricultural parcels - greenhouse on arable land registered in ARKOD system	Parcel	14/119*100	ha	Date	ARKOD
		119	Area of greenhouses on arable land registered in the Cadastre	Parcel		ha	Date	JIS

LGM indicator ID	LGM indicator description	LGM data ID	LGM data description	LGM identifier	LGM indicator calculation	Reporting unit	Reporting time profile	Warehouse
165	Share of number of karstic pastures in commercial use	5	Number of agricultural parcels - karstic pastures registered in ARKOD system	Parcel	5/256*100	Num.	Date	ARKOD
		256	Number of karstic pastures registered in the Cadastre	Parcel		Num.	Date	JIS
153	Share of area of karstic pastures in commercial use	17	Area of agricultural parcels - karstic pastures registered in ARKOD system	Parcel	17/120*100	ha	Date	ARKOD
		120	Area of karstic pastures registered in the Cadastre	Parcel		ha	Date	JIS
166	Share of number of nurseries in commercial use	10	Number of agricultural parcels - nurseries registered in ARKOD system	Parcel	10/259*100	Num.	Date	ARKOD
		259	Number of nurseries registered in the Cadastre	Parcel		Num.	Date	JIS

LGM indicator ID	LGM indicator description	LGM data ID	LGM data description	LGM identifier	LGM indicator calculation	Reporting unit	Reporting time profile	Warehouse
154	Share of area of nurseries in commercial use	22	Area of agricultural parcels - nurseries registered in ARKOD system	Parcel	22/123*100	ha	Date	ARKOD
		123	Area of nurseries registered in the Cadastre	Parcel		ha	Date	JIS
167	Share of number of short rotation crops in commercial use	9	Number of agricultural parcels - short rotation crops registered in ARKOD system	Parcel	9/258*100	Num.	Date	ARKOD
		258	Number of short rotation crops registered in the Cadastre	Parcel		Num.	Date	JIS
155	Share of area of short rotation crops in commercial use	21	Area of agricultural parcels - short rotation crops registered in ARKOD system	Parcel	21/122*100	ha	Date	ARKOD
		122	Area of short rotation crops registered in the Cadastre	Parcel		ha	Date	JIS

LGM indicator ID	LGM indicator description	LGM data ID	LGM data description	LGM identifier	LGM indicator calculation	Reporting unit	Reporting time profile	Warehouse
168	Share of number of mixed permanent crops in commercial use	11	Number of agricultural parcels - mixed permanent crops registered in ARKOD system	Parcel	11/260*100	Num.	Date	ARKOD
		260	Number of mixed permanent crops registered in the Cadastre	Parcel		Num.	Date	JIS
156	Share of area of mixed permanent crops in commercial use	23	Area of agricultural parcels - mixed permanent crops registered in ARKOD system	Parcel	23/124*100	ha	Date	ARKOD
		124	Area of mixed permanent crops registered in the Cadastre	Parcel		ha	Date	JIS
169	Share of number of other agricultural land in commercial use	261	Number of other agricultural land registered in the Cadastre	Parcel	12/261*100	Num.	Date	JIS
		12	Number of other agricultural parcels registered in ARKOD system	Parcel		Num.	Date	ARKOD

LGM indicator ID	LGM indicator description	LGM data ID	LGM data description	LGM identifier	LGM indicator calculation	Reporting unit	Reporting time profile	Warehouse
157	Share of area of other agricultural land in commercial use	125	Area of other agricultural land registered in the Cadastre	Parcel	24/125*100	ha	Date	JIS
		24	Area of other agricultural parcels registered in ARKOD system	Parcel		ha	Date	ARKOD
3. Cadastral mapping								
136	Share of number of cadastral parcels registered in the written part of Cadastral documentation which are not mapped	56	Number of cadastral parcels in the written part of cadastral documentation	Parcel	287/56*100	Num.	Date	JIS
		287	Number of cadastral parcels in the written part of cadastral documentation which are not mapped	Parcel		Num.	Date	JIS
138	Share of area of cadastral parcels registered in the written part of Cadastral documentation which are not mapped	237	Area of cadastral parcels in the written part of cadastral documentation	Parcel	291/237*100	ha	Date	JIS
		291	Area of cadastral parcels in the written part of cadastral documentation which are not mapped	Parcel		ha	Date	JIS

LGM indicator ID	LGM indicator description	LGM data ID	LGM data description	LGM identifier	LGM indicator calculation	Reporting unit	Reporting time profile	Warehouse
192	Share of number of cadastral parcels which are mapped but are not registered in the written part of Cadastral documentation	52	Number of cadastral parcels mapped	Parcel	288/52*100	Num.	Date	JIS
		288	Number of cadastral parcels which are mapped but are not registered in the written part of Cadastral documentation	Parcel		Num.	Date	JIS
194	Share of area of cadastral parcels which are mapped but are not registered in the written part of Cadastral documentation	53	Area of cadastral parcels mapped	Parcel	292/53*100	ha	Date	JIS
		292	Area of cadastral parcels which are mapped but are not registered in the written part of Cadastral documentation	Parcel		ha	Date	JIS
137	Share of number of cadastral parcels registered in the Land Book which are not mapped	228	Number of cadastral parcels registered in the Land Book	Parcel	289/228*100	Num.	Date	JIS
		289	Number of cadastral parcels registered in the Land Book which are not mapped	Parcel		Num.	Date	JIS

LGM indicator ID	LGM indicator description	LGM data ID	LGM data description	LGM identifier	LGM indicator calculation	Reporting unit	Reporting time profile	Warehouse
139	Share of area of cadastral parcels registered in the Land Book which are not mapped	230	Area of cadastral parcels registered in the Land Book	Parcel	293/230*100	ha	Date	JIS
		293	Area of cadastral parcels registered in the Land Book which are not mapped	Parcel		ha	Date	JIS
193	Share of number of cadastral parcels which are mapped but are not registered in the Land Book	52	Number of cadastral parcels mapped	Parcel	290/52*100	Num.	Date	JIS
		290	Number of cadastral parcels which are mapped but are not registered in the Land Book	Parcel		Num.	Date	JIS
195	Share of area of cadastral parcels which are mapped but are not registered in the Land Book	53	Area of cadastral parcels mapped	Parcel	294/53*100	ha	Date	JIS
		294	Area of cadastral parcels which are mapped but are not registered in the Land Book	Parcel		ha	Date	JIS

LGM indicator ID	LGM indicator description	LGM data ID	LGM data description	LGM identifier	LGM indicator calculation	Reporting unit	Reporting time profile	Warehouse
132	Transformation from Land Cadastre to Real Property Cadastre	56	Number of cadastral parcels in the written part of cadastral documentation	Parcel	88/56*100	Num.	Date	JIS
		88	Number of cadastral parcels transformed into Real Property Cadastre (KN)	Parcel		Num.	Date	JIS
177	Annual ratio of Cadastre revenues and expenses	270	Annual expenses of operating costs in Cadastre	Amount	268/270	HRK	Year	JIS
		268	Annual revenues from the collection of the fees in Cadastre	Amount		HRK	Year	JIS
179	Parcel / population ratio	56	Number of cadastral parcels in the written part of cadastral documentation	Parcel	56/108	Num.	Date	JIS
		108	Population	Person		Num.	Permanent	STAT
134	Share of number of persons registered in the Cadastre with Personal identification number	224	Number of persons registered in the Cadastre with Personal identification number	Person	224/((223+224)*100)	Num.	Date	JIS
		223	Number of persons registered in the Cadastre without Personal identification number	Person		Num.	Date	JIS

LGM indicator ID	LGM indicator description	LGM data ID	LGM data description	LGM identifier	LGM indicator calculation	Reporting unit	Reporting time profile	Warehouse
144	Share of area of mapped parcels of maritime good	206	Area of maritime good	Parcel	51/206*100	ha	Permanent	STAT
		51	Area of registered parcels of maritime good	Parcel		ha	Date	JIS
4. Expropriation, privatisation, compensation								
145	Share of number of cadastral parcels for which the abolition of social ownership is not carried out in Land Book	245	Number of cadastral parcels registered as social ownership	Parcel	245/228*100	Num.	Date	JIS
		228	Number of cadastral parcels registered in the Land Book	Parcel		Num.	Date	JIS
175	Share of area of cadastral parcels for which the abolition of social ownership is not carried out in Land Book	244	Area of cadastral parcels registered as social ownership	Parcel	244/230*100	ha	Date	JIS
		230	Area of cadastral parcels registered in the Land Book	Parcel		ha	Date	JIS
198	Number of expropriated cadastral parcels	66	Number of expropriated cadastral parcels	Case	66	Num.	Year	REGEXP
199	Area of expropriated cadastral parcels	67	Area of expropriated cadastral parcels	Parcel	67	ha	Year	REGEXP

LGM indicator ID	LGM indicator description	LGM data ID	LGM data description	LGM identifier	LGM indicator calculation	Reporting unit	Reporting time profile	Warehouse
117	Share of number of resolved complaints about expropriation	76	Number of complaints about expropriation	Case	77/76*100	Num.	Year	eSpis
		77	Number of resolved complaints about expropriation	Case		Num.	Year	eSpis
118	Share of number of disposed public land through open tender	26	Number of cadastral parcels of leased state agricultural land	Contract	27/26*100	Num.	Year	ISDSAL
		27	Number of cadastral parcels of leased state agricultural land disposed through open tender	Contract		Num.	Year	ISDSAL
170	Share of area of disposed public land through open tender	25	Area of leased state agricultural land	Contract	28/25*100	ha	Year	ISDSAL
		28	Area of leased state agricultural land disposed through open tender	Contract		ha	Year	ISDSAL

LGM indicator ID	LGM indicator description	LGM data ID	LGM data description	LGM identifier	LGM indicator calculation	Reporting unit	Reporting time profile	Warehouse
171	Share of number of disposed public land without open tender	26	Number of cadastral parcels of leased state agricultural land	Contract	262/26*100	Num.	Year	ISDSAL
		262	Number of cadastral parcels of leased state agricultural land disposed without open tender	Contract		Num.	Year	ISDSAL
172	Share of area of disposed public land without open tender	25	Area of leased state agricultural land	Contract	263/25*100	ha	Year	ISDSAL
		263	Area of leased state agricultural land disposed without open tender	Contract		ha	Year	ISDSAL
196	Share of number of the leased state agricultural land	26	Number of cadastral parcels of leased state agricultural land	Contract	26/296*100	Num.	Year	ISDSAL
		296	Number of cadastral parcels of state agricultural land	Parcel		Num.	Year	ISDSAL
197	Share of area of the leased state agricultural land	25	Area of leased state agricultural land	Contract	25/295*100	ha	Year	ISDSAL
		295	Area of state agricultural land	Parcel		ha	Year	ISDSAL

LGM indicator ID	LGM indicator description	LGM data ID	LGM data description	LGM identifier	LGM indicator calculation	Reporting unit	Reporting time profile	Warehouse
5. Land prices and land values								
130	Share of number of complaints on Real property valuation	195	Number of complaints to the estimated value of the Real property tax	Case	195/217*100	Num.	Year	TAXIS
		217	Number of decisions on Real property transfer tax	Case		Num.	Year	TAXIS
6. Land disputes								
127	Share of number of land disputes in the total court cases	104	Number of disputes	Case	105/104*100	Num.	Year	eSpis
		105	Number of land disputes	Case		Num.	Year	eSpis
129	Share of number of long-standing (more than 5 years) land disputes in the total pending land dispute court cases	216	Number of land disputes that are ongoing for more than 5 years	Case	216/215*100	Num.	Year	eSpis
		215	Number of pending land dispute court cases	Case		Num.	Year	eSpis
140	Number of second-instance complaints in Cadastre	232	Number of second-instance complaints in Cadastre	Case	232	Num.	Year	JIS
187	Number of individual land book correction procedures	280	Number of individual land book correction procedures	Case	280	Num.	Year	eSpis
143	Number of claims for adverse possession	235	Number of claims for adverse possession	Case	235	Num.	Year	eSpis

LGM indicator ID	LGM indicator description	LGM data ID	LGM data description	LGM identifier	LGM indicator calculation	Reporting unit	Reporting time profile	Warehouse
7. Land tax and fees								
119	Share of number of collected lease transactions of state agricultural land	265	Number of collected lease transactions of state agricultural land	Contract	265/264*100	Num.	Year	ISDSAL
		264	Number of contracted lease transactions of state agricultural land	Contract		Num.	Year	ISDSAL
120	Share of amount of collected payments from the lease transactions of state agricultural land	31	Amount of collected payments from leased state agricultural land	Amount	31/209*100	HRK	Year	ISDSAL
		209	Amount of contracted payments from leased state agricultural land	Amount		HRK	Year	ISDSAL
173	Share of number of collected concession transactions of public land	30	Number of collected concession transactions of public land	Contract	30/29*100	Num.	Year	REGCON
		29	Number of contracted concession transactions of public land	Contract		Num.	Year	REGCON

LGM indicator ID	LGM indicator description	LGM data ID	LGM data description	LGM identifier	LGM indicator calculation	Reporting unit	Reporting time profile	Warehouse
174	Share of amount of collected payments from the concession transactions of public land	267	Amount of collected payments from public land by concession	Amount	267/266*100	HRK	Year	REGCON
		266	Amount of contracted payments from public land by concession	Amount		HRK	Year	REGCON
131	Share of number of Real property transfer tax exemptions	217	Number of decisions on Real property transfer tax	Case	218/217*100	Num.	Year	TAXIS
		218	Number of exemptions from payment of tax on Real property transfers	Case		Num.	Year	TAXIS
91	Assessed taxes on Real property transactions are collected	198	Charged taxes on Real property transactions	Amount	199/198*100	HRK	Year	TAXIS
		199	Collected taxes on Real property transactions	Amount		HRK	Year	TE

Unlike the indicators in the table above, there are other Land Governance Monitoring indicators that were also considered during the analysis; however, those indicators currently cannot be calculated because some (or all) data required for them to be calculated is either not registered or the calculation necessary would be too demanding even with the extension of applications for retrieving the data from warehouses and the implementation of additional functionalities (these indicators can be found in Annex 2).

5.1 Policy relevance

Through the previous course of work on LGAF implementation in Croatia, some policy issues have emerged. LGM is focused on those indicators that will assist in overcoming these issues. In general, monitoring of land related issues is insufficient and the establishment of LGM will enable better formulation of land policies. The policy matrix and relevant indicators are shown in Annex 3.

One of the most important conclusions of assessing policy issues is that all land is registered but in many cases doesn't represent the actual situation in the field. One recommendation regarding this issue is to enable faster registration of actual situations using land registry procedures instead of court proceedings and introduce the possibility of individual updating (individual implementation and individual re-design). Furthermore, introducing the obligation to register every transaction in the Land Book and obliging competent institutions to update their public land entries could be beneficial in terms of solving this issue.

5.1.1 Dialogue and policy feedbacks loops

As a part of the LGAF implementation a country-level technical validation workshop was held in April 2016. It was organised to allow for a detailed presentation of the LGAF findings, a shared understanding of the inter-linkages between the various themes and a discussion of the results of the LGAF process to: i) assure consistency in the results; ii) promote integration of the results through interaction between the different LGAF content areas; iii) discuss and prioritise areas for policy reform; and iv) propose the next steps to provide sustainability within the LGAF process. This workshop was quickly followed by another one organised for discussion about land policies.

Priorities identified during these two workshops can be summarised as the needs to:

- Update the state of registration of land and rights in registers (Cadastre / Land Book, etc.),
- Join institutions and adjust regulations,
- Ensure monitoring of the spatial indicators for all sectors,
- Develop a comprehensive land sector strategy,
- Improve the management of land resources by enabling their usage.

All panels in the LGAF implementation highlighted following finding: "All land is entered in the Cadastre / Land Book, but the status often does not correspond to the actual situation". Therefore, in the LGM implementation a set of indicators for monitoring the harmonisation of data registered in the Cadastre and Land Book with the real field situation is proposed. Moreover, the significant under-utilisation of public and private land is emphasised. To monitor the land utilisation, special indicators were established.

6 Proposal for Land Governance Monitoring

Based on the implementation of the LGAF project in the Republic of Croatia and policy dialogue findings, the establishment of Land Governance Monitoring with indicators shown in the previous section of this report is proposed. Discussion about providing the data that will enable such monitoring has been carried out with all government agencies involved. The extensive analysis included around 200 indicators. Considering the current possibilities of data collection and reporting, this proposal includes 86 of them.

6.1 Automated analysis and reporting feasibility

Most of the data required for calculation of Land Governance Monitoring indicators is Cadastral and Land Book data. Current drawbacks regarding these two institutions include the fact that data is not yet complete in JIS; some of those data is still in Cadastral and Land Book offices but migration to JIS is currently ongoing. After the completion of data migration better possibilities for LGM will be enabled. In that sense, necessary measures were undertaken to influence the final stage of the development of JIS applications to integrate all analytical functionality required for LGM. Algorithms for calculation are provided through this report and the responsible parties for JIS development have already expressed their readiness to implement an additional LGM module into JIS. Unfortunately, because of slight delays in data migration, no formal agreements have been made at this stage. In our opinion this kind of approach, in the form of an additional module, is the most sustainable solution for LGM.

There is important data outside the JIS for which the process of automated retrieving will also have to be established. A complete list of LGM data arranged according to responsible institutions and warehouses is shown in Annex 4. This table is in fact a prototype of the data sheet that will be used for data collection.

6.2 Administrative data collection/supply

During the LGM implementation project we have sent requests (in a form of questionnaires) for official data several times and have tested the possibility of obtaining this data from the relevant institutions. A complete list of the required data is shown in Annex 5. Some of required data was not obtained because it was not available (not registered or calculation over a short period of time was too demanding). Some data will be available after the completion of restructuring of certain warehouses/registers, which is currently in progress.

For all proposed indicators it is possible to establish automatic reporting. Other indicators that were considered but not included in this proposal may be included later when the requirements for automatic reporting will be fulfilled. For future data collection, our proposal advocates on-line data collection enabled by establishing links between the warehouses where possible. The rest of the data can, for now, be collected through off-line forms and manually integrated with the automatically collected data.

The procedure for administrative data collection must support disaggregation of indicators by gender and spatial units (by state, NUTS, county, town/municipality and Cadastral municipality).

6.3 Reporting

Based on the collected LGM data and the defined algorithms, indicators can be calculated. A few examples of land indicator calculation showing some trends in the domain of Land Governance are detailed below.

LGM indicator example 1: Share of number of Real property transfer tax exemptions (Figure 19).

LGM data for 2012, 2013, 2014:

- A. Number of exemptions from payment of tax on Real property transfers: 138198, 141212, 126021
- B. Number of decisions on Real property transfer tax: 222130, 228344, 216253

Calculation: $A / B * 100$



Figure 19. Share of number of real property transfer tax exemptions

LGM indicator example 2: Assessed taxes on Real property transactions are collected (Figure 20).

LGM data for 2012, 2013, 2014:

- A. Collected taxes on Real property transactions: 977806754 HRK, 1139862873 HRK, 950792410 HRK
- B. Charged taxes on Real property transactions: 1029089557 HRK, 1222301790 HRK, 945872856 HRK

Calculation: $A / B * 100$



Figure 20. Assessed taxes on real property transactions are collected

7 Concluding remarks

Although the implementation of Land Governance Monitoring in Croatia is possible, as concluded in the LGAF project it is necessary to significantly improve cooperation and information exchange between institutions and data warehouses. Information systems are managing large amount of data about land but these systems have insufficient analytical capabilities for obtaining aggregated information. Public authorities don't have sufficient capacity to obtain aggregated information from information systems for which they are responsible. Therefore, to be able to obtain this information they have to address the companies that have developed an information system, which is a limiting factor.

Information on the type of registered persons (by gender or status: natural / non-natural) is not currently part of the Cadastre / Land Book data and our proposal is to include these data too by establishing a link to the Tax Administration Information System, where this information already exists. This would allow for disaggregation according to gender and status.

One of the difficulties in the Land Governance sector is a substantial inconsistency in the Cadastre and Land Book, so we propose several indicators which will enable the improvement in the consistency of registered data to be monitored. It will at the same time support the monitoring of the Land Cadastre to Real Property Cadastre and Land Book to EOP Land Book transformation, which is required by law.

Based on discussions and considering all the stakeholders, it was concluded that it is the most appropriate for LGM to be implemented as an additional module in the Real Property Registration and Cadastre Joint Information System (JIS); this would consequently be used for publishing the data on the web. This is supported by the announcement that by September 2016, all the data of the Cadastre and Land Book will be migrated to JIS.

Given the large number of institutions that maintain data about the land, for the full implementation of this proposal it will be necessary to expand the responsible Steering Committee for JIS by introducing representatives of other institutions. As proposed by LGAF and strongly encouraged by the Ministry of Construction and Physical Planning, merging the Cadastre and Land Book into one institution ("Real Estate Agency") will facilitate the implementation of LGM. After its founding, the Agency will be able take full responsibility for LGM.

The development of LGM during the entire period of the LGAF implementation has proven to be beneficial. The primary data collection for LGAF was subsequently supplemented by the specific issues relevant to Land Governance in Croatia identified by the LGAF implementation.

References

FAO (2012): Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security. Rome.

Mađer, M., Matijević, H., Roić, M. (2015): Analysis of possibilities for linking Land Registers and Other Official Registers in the Republic of Croatia based on LADM. Land use policy (ISSN: 0264-8377), 49, 606-616, DOI: 10.1016/j.landusepol.2014.10.025

Official Gazette: Law on State Survey and Real Property Cadastre (OG 16/07, 124/10).

Official Gazette: Act on the Expropriation and Determination of Compensation (OG 74/14).

Official Gazette: Agricultural Land Redistribution Act (51/15).

Official Gazette: Agriculture Act (OG 30/15).

Official Gazette: Real Property Valuation Act (OG 78/15).

Official Gazette: Physical Planning Act (OG 153/13).

Official Gazette: Administrative Fees Act (OG 8/96, 80/13).

Official Gazette: Administrative Disputes Act (OG 20/10, 143/12, 152/14).

Official Gazette: Law on Ownership and Other Real Rights (OG 91/96, 68/98, 137/99, 22/00, 73/00, 129/00, 114/01, 79/06, 141/06, 146/08, 38/09, 153/09, 143/12, 152/14).

Official Gazette: Ordinance on the Contents and Required Spatial Indicators in Reports on the Spatial Status (OG 48/14 and 19/15).

Official Gazette: Ordinance on the Register of Territorial Units (OG 37/08).

Roić, M. (2016): Implementation of the Land Governance Assessment Framework (LGAF) in the Republic of Croatia. Final report, April 2016.

State Bureau of Statistics (2014): Statistical Yearbook of the Republic of Croatia.

The World Bank (2013): Land Governance Assessment Framework. Implementation Manual, October 2013.

Annexes

Annex 1. Warehouses and responsible institutions

Following table shows a list of warehouses, acronyms used in this document, institutions which are responsible for their administration and maintenance and, if available, URL to publicly available data.

N°	Warehouse	Acronym	Responsible institution	URL to publicly available data
1	Real Property Registration and Cadastre Joint Information System	JIS	Steering Committee for JIS with members from State Geodetic Administration and Ministry of Justice	http://oss.uredjenazemlja.hr
2	System for Registration of Agricultural Parcels	ARKOD	Paying Agency for Agriculture, Fisheries and Rural Development	http://preglednik.arkod.hr/ARKOD-Web
3	Registry of Concessions	REGCON	Financial Agency	http://servisi.fina.hr/regkonc
4	Tax Administration Information System	TAXIS	Ministry of Finance	http://pdv-reg.porezna-uprava.hr/RpoProvjeriObveznikaPdvWeb/upit
5	System for Court Case Monitoring	eSpis	Ministry of Justice	http://e-predmet.pravosudje.hr
6	Physical Planning Information System	ISPU	Ministry of Construction and Physical Planning	https://ispu.mgipu.hr
7	Information system for the disposal of state agricultural land	ISDSAL	Agricultural Land Agency	N/A
8	Registry of Expropriations	REGEXP	Ministry of Justice	N/A
9	Transaction evidence	TE	Financial Agency	N/A
10	Statistical data	STAT	Croatian Bureau of Statistics	http://www.dzs.hr/Eng/system/stat_databases.htm
11	Budget	BDG	Croatian Parliament	http://www.mfin.hr/hr/proracun
12	Environmental Information System	EIS	Croatian Environment Agency	http://iszo.azo.hr/Pretraga_TS.aspx
13	Register of Cultural Property	REGCULT	Ministry of Culture	http://www.min-kulture.hr/default.aspx?id=6212
14	Nature Protection Information System	NPIS	State institute for nature protection	http://www.dzpp.hr/informacijski-sustav-zastite-prirode/baze-podataka-web-karte-i-servisi-170.html

Annex 2. Considered indicators without administrative data

Following table shows list of LGM indicators that were also considered but currently cannot be calculated.

LGM indicator ID	LGM indicator description	LGM data ID	LGM data description	LGM identifier	Reporting unit	Reporting time profile	Warehouse
1. Land and property tenure types, registration and transactions, with characteristics of land holders (disaggregation by gender, region)							
94	Share of number of cadastral parcels registered to private persons in rural areas	34	Number of cadastral parcels in rural areas (municipalities)	Administrative unit	Num.	Date	JIS
		32	Number of cadastral parcels registered to private persons in rural areas (municipalities)	Person	Num.	Date	JIS
96	Share of number of unregistered cadastral parcels in rural areas	34	Number of cadastral parcels in rural areas (municipalities)	Administrative unit	Num.	Date	JIS
		78	Number of unregistered cadastral parcels in rural areas	Administrative unit	Num.	Date	N/A
97	Share of area of cadastral parcels registered to private persons in rural areas	35	Area of cadastral parcels in rural areas (municipalities)	Administrative unit	ha	Date	JIS
		33	Area of cadastral parcels registered to private persons in rural areas (municipalities)	Person	ha	Date	JIS
99	Share of area of unregistered cadastral parcels in rural areas	35	Area of cadastral parcels in rural areas (municipalities)	Administrative unit	ha	Date	JIS
		81	Area of unregistered cadastral parcels in rural areas	Administrative unit	ha	Date	N/A
100	Share of number of cadastral parcels registered to private persons in urban areas	42	Number of cadastral parcels in urban areas (cities)	Administrative unit	Num.	Date	JIS
		38	Number of cadastral parcels registered to private persons in urban areas (cities)	Administrative unit	Num.	Date	JIS

LGM indicator ID	LGM indicator description	LGM data ID	LGM data description	LGM identifier	Reporting unit	Reporting time profile	Warehouse
102	Share of number of unregistered cadastral parcels in urban areas	42	Number of cadastral parcels in urban areas (cities)	Administrative unit	Num.	Date	JIS
		86	Number of unregistered cadastral parcels in urban areas	Administrative unit	Num.	Date	N/A
103	Share of area of cadastral parcels registered to private persons in urban areas	39	Area of cadastral parcels in urban areas (cities)	Administrative unit	ha	Date	JIS
		83	Area of cadastral parcels registered to private persons in urban areas (cities)	Administrative unit	ha	Date	JIS
105	Share of area of unregistered cadastral parcels in urban areas	39	Area of cadastral parcels in urban areas (cities)	Administrative unit	ha	Date	JIS
		87	Area of unregistered cadastral parcels in urban areas	Administrative unit	ha	Date	N/A
106	Share of number of illegal Real property sales	200	Number of resolved cancellation lawsuit	Case	Num.	Year	eSpis
		63	Number of taxpayers on Real property transactions	Person	Num.	Year	TAXIS
2. Land use							
107	Share of number of illegal lease transactions of state agricultural land	264	Number of contracted lease transactions of state agricultural land	Contract	Num.	Year	ISDSAL
		201	Number of contracted lease transactions of state agricultural land declared null and void	Contract	Num.	Year	ISDSAL
108	Share of number of common pastures under lease	202	Number of common pastures under lease	Contract	Num.	Date	ISDSAL
		47	Number of registered common pastures	Parcel	Num.	Date	JIS
109	Share of area of common pastures under lease	203	Area of common pastures under lease	Contract	ha	Date	ISDSAL
		48	Area of registered common pastures	Parcel	ha	Date	JIS

LGM indicator ID	LGM indicator description	LGM data ID	LGM data description	LGM identifier	Reporting unit	Reporting time profile	Warehouse
110	Share of number of implemented land use changes (regarding the implementation of spatial plans)	205	Number of implemented urban land use changes	Administrative unit	Num.	Year	ISPU
		204	Number of urban land use changes	Administrative unit	Num.	Year	ISPU
3. Cadastral mapping							
95	Share of number of unsurveyed cadastral parcels in rural areas	34	Number of cadastral parcels in rural areas (municipalities)	Administrative unit	Num.	Date	JIS
		36	Number of unsurveyed cadastral parcels in rural areas	Administrative unit	Num.	Date	JIS
98	Share of area of unsurveyed cadastral parcels in rural areas	35	Area of cadastral parcels in rural areas (municipalities)	Administrative unit	ha	Date	JIS
		37	Area of unsurveyed cadastral parcels in rural areas	Administrative unit	ha	Date	JIS
101	Share of number of unsurveyed cadastral parcels in urban areas	42	Number of cadastral parcels in urban areas (cities)	Administrative unit	Num.	Date	JIS
		40	Number of unsurveyed cadastral parcels in urban areas	Administrative unit	Num.	Date	JIS
104	Share of area of unsurveyed cadastral parcels in urban areas	39	Area of cadastral parcels in urban areas (cities)	Administrative unit	ha	Date	JIS
		41	Area of unsurveyed cadastral parcels in urban areas	Administrative unit	ha	Date	JIS
121	Share of number of cadastral parcels mapped	52	Number of cadastral parcels mapped	Parcel	Num.	Date	JIS
		54	Number of land parcels not mapped	Parcel	Num.	Date	JIS

LGM indicator ID	LGM indicator description	LGM data ID	LGM data description	LGM identifier	Reporting unit	Reporting time profile	Warehouse
122	Share of area of cadastral parcels mapped	53	Area of cadastral parcels mapped	Parcel	ha	Date	JIS
		55	Area of land parcels not mapped	Parcel	ha	Date	JIS
92	Share of area of rural land registered in the Cadastre	35	Area of cadastral parcels in rural areas (municipalities)	Administrative unit	ha	Date	JIS
		53	Area of cadastral parcels mapped	Parcel	ha	Date	JIS
93	Share of area of urban land registered in the Cadastre	39	Area of cadastral parcels in urban areas (cities)	Administrative unit	ha	Date	JIS
		53	Area of cadastral parcels mapped	Parcel	ha	Date	JIS
4. Expropriation, privatisation, compensation							
112	Share of number of expropriated land for private interests	66	Number of expropriated cadastral parcels	Case	Num.	Year	REGEXP
		68	Number of expropriated land for private interests	Case	Num.	Year	REGEXP
113	Share of area of expropriated land for private interests	67	Area of expropriated cadastral parcels	Parcel	ha	Year	REGEXP
		69	Area of expropriated land for private interests	Parcel	ha	Year	REGEXP
114	Share of number of expropriated land that is transferred to its destined use	72	Number of expropriated land that is not transferred to its destined use	Case	Num.	Year	REGEXP
		70	Number of expropriated land that is transferred to its destined use	Case	Num.	Year	REGEXP
115	Share of area of expropriated land that is transferred to its destined use	73	Area of expropriated land that is not transferred to its destined use	Parcel	ha	Year	REGEXP
		71	Area of expropriated land that is transferred to its destined use	Parcel	ha	Year	REGEXP

LGM indicator ID	LGM indicator description	LGM data ID	LGM data description	LGM identifier	Reporting unit	Reporting time profile	Warehouse
116	Share of number of expropriated land owners who receive compensation in timely manner	74	Number of owners of expropriated land	Person	Num.	Year	REGEXP
		75	Number of owners of expropriated land that got compensated within 1 year	Person	Num.	Year	REGEXP
6. Land disputes							
128	Speed of dispute resolution in the court system	105	Number of land disputes	Case	Num.	Year	eSpis
		106	Number of land disputes with decision reached in the first instance court	Case	Num.	Year	eSpis
7. Land tax and fees							
90	All property holders liable to pay taxes on Real property transactions are listed on the tax roll	61	Number of registered taxpayers	Person	Num.	Date	TAXIS
		63	Number of taxpayers on Real property transactions	Person	Num.	Year	TAXIS
89	Ratio of revenues and expenses of collection of taxes on Real property transactions	197	Costs of collection of taxes on Real property transactions	Amount	HRK	Year	TAXIS
		195	Number of complaints to the estimated value of the Real property tax	Case	Num.	Year	TAXIS

Annex 3. Policy matrix and relevant indicators

Following table shows list of Policy matrix findings with LGM indicators.

Policy matrix ID	Policy matrix finding	LGM indicator ID	LGM indicator description
1	Land regulations are overly fragmented, the existing legislation has been written for books, forms and the analogue format	73	Share of area of Real properties registered in women's name for the single owner property
		75	Share of number of Real properties in women's name for the single owner property
		77	Share of area of Real properties registered in men's name for the single owner property
		79	Share of number of Real properties in men's name for the single owner property
		81	Share of area of Real properties registered in non-natural persons's name for the single owner property
		83	Share of number of Real properties in non-natural persons's name for the single owner property
		132	Transformation from Land Cadastre to Real Property Cadastre
		133	Transformation from Land Book to EOP Land Book
		180	Share of area of Real properties registered with mixed ownership
		181	Share of number of Real properties registered with mixed ownership
2	Slow entry of transformed social ownership	145	Share of number of cadastral parcels for which the abolition of social ownership is not carried out in Land Book
		175	Share of area of cadastral parcels for which the abolition of social ownership is not carried out in Land Book
3	There are too many legal restrictions of ownership rights (legal regimes) which sometimes serve no public goal, while the overlaps slow down the decision making process due to the involvement of numerous institutions The justification for the number and surface area of protected areas is questionable	188	Share of number of cadastral parcels with registered legal regime
		189	Share of area of cadastral parcels with registered legal regime

Policy matrix ID	Policy matrix finding	LGM indicator ID	LGM indicator description
4	Difficulties in identifying land types in regulations and in practice, overlapping of agricultural and forest	146	Share of area of arable land in commercial use
		147	Share of area of meadows in commercial use
		148	Share of area of pastures in commercial use
		149	Share of area of vineyards in commercial use
		150	Share of area of olive groves in commercial use
		151	Share of area of orchards in commercial use
		152	Share of area of greenhouses on arable land in commercial use
		153	Share of area of karstic pastures in commercial use
		154	Share of area of nurseries in commercial use
		155	Share of area of short rotation crops in commercial use
		156	Share of area of mixed permanent crops in commercial use
		157	Share of area of other agricultural land in commercial use
		158	Share of number of arable land in commercial use
		159	Share of number of meadows in commercial use
		160	Share of number of pastures in commercial use
		161	Share of number of vineyards in commercial use
		162	Share of number of olive groves in commercial use
		163	Share of number of orchards in commercial use
		164	Share of number of greenhouses on arable land in commercial use
		165	Share of number of karstic pastures in commercial use
166	Share of number of nurseries in commercial use		
167	Share of number of short rotation crops in commercial use		
168	Share of number of mixed permanent crops in commercial use		
169	Share of number of other agricultural land in commercial use		

Policy matrix ID	Policy matrix finding	LGM indicator ID	LGM indicator description
6	The lack of a national strategy regarding rural development, the same for both agriculture and forestry	146	Share of area of arable land in commercial use
		147	Share of area of meadows in commercial use
		148	Share of area of pastures in commercial use
		149	Share of area of vineyards in commercial use
		150	Share of area of olive groves in commercial use
		151	Share of area of orchards in commercial use
		152	Share of area of greenhouses on arable land in commercial use
		153	Share of area of karstic pastures in commercial use
		154	Share of area of nurseries in commercial use
		155	Share of area of short rotation crops in commercial use
		156	Share of area of mixed permanent crops in commercial use
		157	Share of area of other agricultural land in commercial use
		158	Share of number of arable land in commercial use
		159	Share of number of meadows in commercial use
		160	Share of number of pastures in commercial use
		161	Share of number of vineyards in commercial use
		162	Share of number of olive groves in commercial use
		163	Share of number of orchards in commercial use
		164	Share of number of greenhouses on arable land in commercial use
165	Share of number of karstic pastures in commercial use		
166	Share of number of nurseries in commercial use		
167	Share of number of short rotation crops in commercial use		
168	Share of number of mixed permanent crops in commercial use		
169	Share of number of other agricultural land in commercial use		

Policy matrix ID	Policy matrix finding	LGM indicator ID	LGM indicator description
7	Monitoring of the land situation is inadequate, real relevant economic and demographic data for spatial planning is lacking. Insufficient standardization of terminology and data between land governance sectors	132	Transformation from Land Cadastre to Real Property Cadastre
		133	Transformation from Land Book to EOP Land Book
		176	Individualization of ownership on the Real property units
		179	Parcel / population ratio
8	Unjustified expansion of building areas, slow re-zoning of land	182	Share of area of unbuilt urbanized areas
9	Frequent fundamental changes of the spatial regulation and construction system cause problems in the implementation and non-transparency in the procedure. Poor communication between different stakeholders (formal and professional) in the procedures of the drafting of land use plans and over-regulation of expert operations	182	Share of area of unbuilt urbanized areas
10	Underutilization of public land, agricultural, urban and maritime domain	111	Number of registered parcels of maritime good
		144	Share of area of mapped parcels of maritime good
		146	Share of area of arable land in commercial use
		147	Share of area of meadows in commercial use
		148	Share of area of pastures in commercial use
		149	Share of area of vineyards in commercial use
		150	Share of area of olive groves in commercial use
		151	Share of area of orchards in commercial use
		152	Share of area of greenhouses on arable land in commercial use
		153	Share of area of karstic pastures in commercial use
		154	Share of area of nurseries in commercial use
		155	Share of area of short rotation crops in commercial use

Policy matrix ID	Policy matrix finding	LGM indicator ID	LGM indicator description
		156	Share of area of mixed permanent crops in commercial use
		157	Share of area of other agricultural land in commercial use
		158	Share of number of arable land in commercial use
		159	Share of number of meadows in commercial use
		160	Share of number of pastures in commercial use
		161	Share of number of vineyards in commercial use
		162	Share of number of olive groves in commercial use
		163	Share of number of orchards in commercial use
		164	Share of number of greenhouses on arable land in commercial use
		165	Share of number of karstic pastures in commercial use
		166	Share of number of nurseries in commercial use
		167	Share of number of short rotation crops in commercial use
		168	Share of number of mixed permanent crops in commercial use
		169	Share of number of other agricultural land in commercial use
11	Data on expropriated land is neither public nor transparent	198	Number of expropriated cadastral parcels
		199	Area of expropriated cadastral parcels
12	Inadequate efficacy of institutions' capacities	200	Number of institutions responsible for land registers
13	There are no (sufficient) large tracts of land	146	Share of area of arable land in commercial use
		147	Share of area of meadows in commercial use
		148	Share of area of pastures in commercial use
		149	Share of area of vineyards in commercial use
		150	Share of area of olive groves in commercial use
		151	Share of area of orchards in commercial use
		152	Share of area of greenhouses on arable land in commercial use
		153	Share of area of karstic pastures in commercial use
		154	Share of area of nurseries in commercial use

Policy matrix ID	Policy matrix finding	LGM indicator ID	LGM indicator description
		155	Share of area of short rotation crops in commercial use
		156	Share of area of mixed permanent crops in commercial use
		157	Share of area of other agricultural land in commercial use
		158	Share of number of arable land in commercial use
		159	Share of number of meadows in commercial use
		160	Share of number of pastures in commercial use
		161	Share of number of vineyards in commercial use
		162	Share of number of olive groves in commercial use
		163	Share of number of orchards in commercial use
		164	Share of number of greenhouses on arable land in commercial use
		165	Share of number of karstic pastures in commercial use
		166	Share of number of nurseries in commercial use
		167	Share of number of short rotation crops in commercial use
		168	Share of number of mixed permanent crops in commercial use
		169	Share of number of other agricultural land in commercial use
14	Procedures for the allocation of public land are complex	118	Share of number of disposed public land through open tender
		119	Share of number of collected lease transactions of state agricultural land
		120	Share of amount of collected payments from the lease transactions of state agricultural land
		170	Share of area of disposed public land through open tender
		171	Share of number of disposed public land without open tender
		172	Share of area of disposed public land without open tender
		173	Share of number of collected concession transactions of public land
		174	Share of amount of collected payments from the concession transactions of public land
		196	Share of number of the leased state agricultural land
		197	Share of area of the leased state agricultural land

Policy matrix ID	Policy matrix finding	LGM indicator ID	LGM indicator description
15	Data on allocated public land has been partially published, and the monitoring of the collection of payments for the use of public land is inadequate	118	Share of number of disposed public land through open tender
		119	Share of number of collected lease transactions of state agricultural land
		120	Share of amount of collected payments from the lease transactions of state agricultural land
		170	Share of area of disposed public land through open tender
		171	Share of number of disposed public land without open tender
		172	Share of area of disposed public land without open tender
		173	Share of number of collected concession transactions of public land
		174	Share of amount of collected payments from the concession transactions of public land
		196	Share of number of the leased state agricultural land
		197	Share of area of the leased state agricultural land
16	All land is entered in the cadastre/land register, but the status often does not correspond to the actual situation	132	Transformation from Land Cadastre to Real Property Cadastre
		133	Transformation from Land Book to EOP Land Book
		136	Share of number of cadastral parcels registered in the written part of Cadastral documentation which are not mapped
		137	Share of number of cadastral parcels registered in the Land Book which are not mapped
		138	Share of area of cadastral parcels registered in the written part of Cadastral documentation which are not mapped
		139	Share of area of cadastral parcels registered in the Land Book which are not mapped
		142	All relevant encumbrances are recorded
		143	Number of claims for adverse possession
		187	Number of individual land book correction procedures
		188	Share of number of cadastral parcels with registered legal regime
		189	Share of area of cadastral parcels with registered legal regime
		192	Share of number of cadastral parcels which are mapped but are not registered in the written part of Cadastral documentation

Policy matrix ID	Policy matrix finding	LGM indicator ID	LGM indicator description
		193	Share of number of cadastral parcels which are mapped but are not registered in the Land Book
		194	Share of area of cadastral parcels which are mapped but are not registered in the written part of Cadastral documentation
		195	Share of area of cadastral parcels which are mapped but are not registered in the Land Book
17	Cadastral/land register institutional organization is inadequate	125	Annual ratio of land registries revenues and expenses
		177	Annual ratio of Cadastre revenues and expenses
		178	Annual ratio of Land Book revenues and expenses
18	The situation of interests on the land registered with the cadastre and the land register is incomplete	142	All relevant encumbrances are recorded
		144	Share of area of mapped parcels of maritime good
		183	Number of registered right types - concessions
		184	Number of registered right types - servitudes
		185	Number of registered right types - mortgages
		186	Number of registered right types - construction rights
		188	Share of number of cadastral parcels with registered legal regime
		189	Share of area of cadastral parcels with registered legal regime
19	Lack of harmonization between cadastre, land register and administrative organisation	132	Transformation from Land Cadastre to Real Property Cadastre
		133	Transformation from Land Book to EOP Land Book
20	Taxation is sectoral and unsystematic, value lists are usually not published	91	Assessed taxes on Real property transactions are collected
		131	Share of number of Real property transfer tax exemptions
21	Available land data is insufficient for valuation	130	Share of number of complaints on Real property valuation
22	Insufficiently trained human resources and insufficient training offer	130	Share of number of complaints on Real property valuation

Policy matrix ID	Policy matrix finding	LGM indicator ID	LGM indicator description
23	A significant share of proprietary cases in the legal system	117	Share of number of resolved complaints about expropriation
		127	Share of number of land disputes in the total court cases
		129	Share of number of long-standing (more than 5 years) land disputes in the total pending land dispute court cases
		130	Share of number of complaints on Real property valuation
		140	Number of second-instance complaints in Cadastre
		143	Number of claims for adverse possession
		187	Number of individual land book correction procedures
		190	Share of number of pending cases in cadastre in relation to number of resolved cases in whole year
		191	Share of number of pending cases in land book in relation to number of resolved cases in whole year
24	State of play with regards to dispute resolution differs from one Croatian region to another	117	Share of number of resolved complaints about expropriation
		127	Share of number of land disputes in the total court cases
		129	Share of number of long-standing (more than 5 years) land disputes in the total pending land dispute court cases
		140	Number of second-instance complaints in Cadastre
		143	Number of claims for adverse possession
		190	Share of number of pending cases in cadastre in relation to number of resolved cases in whole year
		191	Share of number of pending cases in land book in relation to number of resolved cases in whole year
25	Land governance is spread across the sectors, there are too many institutions involved. There is no comprehensive strategy or policy	200	Number of institutions responsible for land registers
26	Almost every public administration body maintains its own land/real property database, which are mostly not linked to the cadastre/land register	134	Share of number of persons registered in the Cadastre with Personal identification number
		135	Share of number of persons registered in the Land Book with Personal identification number

Policy matrix ID	Policy matrix finding	LGM indicator ID	LGM indicator description
27	A lack of adequately standardized data concerning marine areas and the fishing industry	111	Number of registered parcels of maritime good
		144	Share of area of mapped parcels of maritime good
28	A lack of development programs based on sustainable development as the basis for the development of maritime spatial planning	111	Number of registered parcels of maritime good
		144	Share of area of mapped parcels of maritime good
29	Insufficient coordination between competent institutions, jurisdictions usually start/end at coastlines	141	Number of State institutional users of Joint Information System

Annex 4. Responsible institutions and warehouses for the LGM data

Following table is showing LGM data arranged according to responsible institutions and warehouses.

Institution	Warehouse	LGM data
Agricultural Land Agency	ISDSAL	Amount of collected payments from leased state agricultural land
		Amount of contracted payments from leased state agricultural land
		Area of leased state agricultural land
		Area of leased state agricultural land disposed through open tender
		Area of leased state agricultural land disposed without open tender
		Area of state agricultural land
		Number of cadastral parcels of leased state agricultural land
		Number of cadastral parcels of leased state agricultural land disposed through open tender
		Number of cadastral parcels of leased state agricultural land disposed without open tender
		Number of cadastral parcels of state agricultural land
		Number of collected lease transactions of state agricultural land
		Number of contracted lease transactions of state agricultural land
Croatian Bureau of Statistics	STAT	Area of maritime good
		Population
Croatian Parliament	BDG	Number of institutions responsible for land registers
Financial Agency	REGCON	Amount of collected payments from public land by concession
		Amount of contracted payments from public land by concession
		Number of collected concession transactions of public land
		Number of contracted concession transactions of public land
	TE	Collected taxes on Real property transactions
Ministry of Construction and Physical Planning	ISPU	Area of built urbanized areas
		Area of urbanized areas
Ministry of Finance	TAXIS	Charged taxes on Real property transactions
		Number of complaints to the estimated value of the Real property tax
		Number of decisions on Real property transfer tax
		Number of exemptions from payment of tax on Real property transfers
Ministry of Justice	eSpis	Number of claims for adverse possession
		Number of complaints about expropriation
		Number of disputes
		Number of individual land book correction procedures
		Number of land disputes

Institution	Warehouse	LGM data
		Number of land disputes that are ongoing for more than 5 years
		Number of pending cases in cadastre
		Number of pending cases in land book
		Number of pending land dispute court cases
		Number of resolved cases in cadastre
		Number of resolved cases in land book
		Number of resolved complaints about expropriation
	REGEXP	Area of expropriated cadastral parcels
		Number of expropriated cadastral parcels
Paying Agency for Agriculture, Fisheries and Rural Development	ARKOD	Area of agricultural parcels - arable land registered in ARKOD system
		Area of agricultural parcels - fruit groves registered in ARKOD system
		Area of agricultural parcels - greenhouse on arable land registered in ARKOD system
		Area of agricultural parcels - karstic pastures registered in ARKOD system
		Area of agricultural parcels - meadows registered in ARKOD system
		Area of agricultural parcels - mixed permanent crops registered in ARKOD system
		Area of agricultural parcels - nurseries registered in ARKOD system
		Area of agricultural parcels - olive groves registered in ARKOD system
		Area of agricultural parcels - pastures registered in ARKOD system
		Area of agricultural parcels - short rotation crops registered in ARKOD system
		Area of agricultural parcels - vineyards registered in ARKOD system
		Area of other agricultural parcels registered in ARKOD system
		Number of agricultural parcels - arable land registered in ARKOD system
		Number of agricultural parcels - fruit groves registered in ARKOD system
		Number of agricultural parcels - greenhouse on arable land registered in ARKOD system
		Number of agricultural parcels - karstic pastures registered in ARKOD system
		Number of agricultural parcels - meadows registered in ARKOD system
		Number of agricultural parcels - mixed permanent crops registered in ARKOD system
		Number of agricultural parcels - nurseries registered in ARKOD system
		Number of agricultural parcels - olive groves registered in ARKOD system
Number of agricultural parcels - pastures registered in ARKOD system		
Number of agricultural parcels - short rotation crops registered in ARKOD system		
Number of agricultural parcels - vineyards registered in ARKOD system		
Number of other agricultural parcels registered in ARKOD system		

Institution	Warehouse	LGM data
Steering Committee for JIS with members from State Geodetic Administration and Ministry of Justice	JIS	Annual expenses of operating costs in Cadastre
		Annual expenses of operating costs in Land Book
		Annual expenses of operating costs in the Joint Information System (Land Book + Cadastre)
		Annual revenues from the collection of the fees in Cadastre
		Annual revenues from the collection of the fees in Joint Information System (Land Book + Cadastre)
		Annual revenues from the collection of the fees in Land Book
		Area of arable land registered in the Cadastre
		Area of cadastral parcels in the written part of cadastral documentation
		Area of cadastral parcels in the written part of cadastral documentation which are not mapped
		Area of cadastral parcels mapped
		Area of cadastral parcels registered as social ownership
		Area of cadastral parcels registered in the Land Book
		Area of cadastral parcels registered in the Land Book which are not mapped
		Area of cadastral parcels which are mapped but are not registered in the Land Book
		Area of cadastral parcels which are mapped but are not registered in the written part of Cadastral documentation
		Area of cadastral parcels with registered legal regime
		Area of greenhouses on arable land registered in the Cadastre
		Area of karstic pastures registered in the Cadastre
		Area of meadows registered in the Cadastre
		Area of mixed permanent crops registered in the Cadastre
		Area of nurseries registered in the Cadastre
		Area of olive groves registered in the Cadastre
		Area of orchards registered in the Cadastre
		Area of other agricultural land registered in the Cadastre
		Area of pastures registered in the Cadastre
		Area of Real properties registered in man's name for the single owner property
		Area of Real properties registered in non-natural person's name for the single owner property
		Area of Real properties registered in woman's name for the single owner property
		Area of Real properties with mixed ownership
		Area of registered parcels of maritime good
		Area of short rotation crops registered in the Cadastre
		Area of vineyards registered in the Cadastre
		Number of arable land registered in the Cadastre
Number of cadastral parcels in the written part of cadastral documentation		

Institution	Warehouse	LGM data
		Number of cadastral parcels in the written part of cadastral documentation which are not mapped
		Number of cadastral parcels mapped
		Number of cadastral parcels registered as social ownership
		Number of cadastral parcels registered in the Land Book
		Number of cadastral parcels registered in the Land Book which are not mapped
		Number of cadastral parcels transformed into Real Property Cadastre (KN)
		Number of cadastral parcels which are mapped but are not registered in the Land Book
		Number of cadastral parcels which are mapped but are not registered in the written part of Cadastral documentation
		Number of cadastral parcels with registered legal regime
		Number of encumbrances
		Number of greenhouses on arable land registered in the Cadastre
		Number of karstic pastures registered in the Cadastre
		Number of Land Book information - cadastral parcels
		Number of Land Book information - Land Book sub-files
		Number of Land Book information (EOP) - cadastral parcels
		Number of meadows registered in the Cadastre
		Number of mixed permanent crops registered in the Cadastre
		Number of nurseries registered in the Cadastre
		Number of olive groves registered in the Cadastre
		Number of orchards registered in the Cadastre
		Number of other agricultural land registered in the Cadastre
		Number of pastures registered in the Cadastre
		Number of persons registered in the Cadastre with Personal identification number
		Number of persons registered in the Cadastre without Personal identification number
		Number of persons registered in the Land Book with Personal identification number
		Number of persons registered in the Land Book without Personal identification number
		Number of Real properties registered in man's name for the single owner property
		Number of Real properties registered in non-natural person's name for the single owner property
		Number of Real properties registered in woman's name for the single owner property
		Number of Real properties with mixed ownership
		Number of registered parcels of maritime good
		Number of registered right types - concessions
		Number of registered right types - construction rights
		Number of registered right types - mortgages
		Number of registered right types - servitudes

Institution	Warehouse	LGM data
		Number of second-instance complaints in Cadastre
		Number of short rotation crops registered in the Cadastre
		Number of State institutional users of Joint Information System
		Number of vineyards registered in the Cadastre

Annex 5. Data for LGM

Following table is showing replies obtained during the implementation of LGAF and LGM projects.

Warehouse	Data	LGAF reply	LGM reply for 2012	LGM reply for 2013	LGM reply for 2014	Reporting unit
ARKOD	Area of agricultural parcels - arable land registered in ARKOD system	820193.71			821383.27	ha
ARKOD	Area of agricultural parcels - fruit groves registered in ARKOD system	28217.63			20262.27	ha
ARKOD	Area of agricultural parcels - greenhouse on arable land registered in ARKOD system	527.66			548.99	ha
ARKOD	Area of agricultural parcels - karstic pastures registered in ARKOD system	30690.71			29572.33	ha
ARKOD	Area of agricultural parcels - meadows registered in ARKOD system	83657.57			83576.29	ha
ARKOD	Area of agricultural parcels - mixed permanent crops registered in ARKOD system	2019.44			2087.09	ha
ARKOD	Area of agricultural parcels - nurseries registered in ARKOD system	118.47			272.08	ha
ARKOD	Area of agricultural parcels - olive groves registered in ARKOD system	17253.33			17598.46	ha
ARKOD	Area of agricultural parcels - pastures registered in ARKOD system	14881.88			16058.77	ha
ARKOD	Area of agricultural parcels - short rotation crops registered in ARKOD system	10.56			127.22	ha
ARKOD	Area of agricultural parcels - vineyards registered in ARKOD system	20854.15			21073.06	ha

Warehouse	Data	LGAF reply	LGM reply for 2012	LGM reply for 2013	LGM reply for 2014	Reporting unit
ARKOD	Area of other agricultural parcels registered in ARKOD system	2755.72			2468.07	ha
ARKOD	Number of agricultural parcels - arable land registered in ARKOD system	755244			781722	Num.
ARKOD	Number of agricultural parcels - fruit groves registered in ARKOD system	66681			62072	Num.
ARKOD	Number of agricultural parcels - greenhouse on arable land registered in ARKOD system	5517			5816	Num.
ARKOD	Number of agricultural parcels - karstic pastures registered in ARKOD system	34259			34142	Num.
ARKOD	Number of agricultural parcels - meadows registered in ARKOD system	210956			222286	Num.
ARKOD	Number of agricultural parcels - mixed permanent crops registered in ARKOD system	8832			10001	Num.
ARKOD	Number of agricultural parcels - nurseries registered in ARKOD system	51			194	Num.
ARKOD	Number of agricultural parcels - olive groves registered in ARKOD system	67698			85167	Num.
ARKOD	Number of agricultural parcels - pastures registered in ARKOD system	12616			15170	Num.
ARKOD	Number of agricultural parcels - short rotation crops registered in ARKOD system	31			77	Num.
ARKOD	Number of agricultural parcels - vineyards registered in ARKOD system	82644			83371	Num.

Warehouse	Data	LGAF reply	LGM reply for 2012	LGM reply for 2013	LGM reply for 2014	Reporting unit
ARKOD	Number of other agricultural parcels registered in ARKOD system	3659			4001	Num.
eSpis	Number of complaints about expropriation	1560				Num.
eSpis	Number of disputes	Complaints: 2183; appeals: 458 (from 1.11.2014. to 1.4.2015.)				Num.
eSpis	Number of land disputes	Complaints: 2183; appeals: 458 (from 1.11.2014. to 1.4.2015.)				Num.
eSpis	Number of land disputes with decision reached in the first instance court					Num.
eSpis	Number of resolved complaints about expropriation	712				Num.
ISDSAL	Amount of collected payments from leased state agricultural land	205700958.12		159000000	180000000	HRK
ISDSAL	Amount of contracted payments from leased state agricultural land		120000000	247000000	95000000	HRK
ISDSAL	Area of leased state agricultural land	318352.0634		263307.24	16318.02	ha
ISDSAL	Area of leased state agricultural land disposed through open tender	5173.1044			14088.67	ha
ISDSAL	Area of leased state agricultural land disposed without open tender			53074.74	2221.07	ha
ISDSAL	Number of cadastral parcels of leased state agricultural land	42.5%				Num.

Warehouse	Data	LGAF reply	LGM reply for 2012	LGM reply for 2013	LGM reply for 2014	Reporting unit
ISDSAL	Number of cadastral parcels of leased state agricultural land disposed through open tender	174 production and technological units				Num.
ISDSAL	Number of contracted lease transactions of state agricultural land		563	2666	333	Num.
ISPU	Percentage of implemented land use changes (in relation to the percentage of realization of physical plans)					Num.
ISPU	Percentage of implemented land use changes (in relation to the percentage of realization of physical plans, but according to geodetic technical reports)					Num.
JIS	Annual expenses of operating costs in the Joint Information System (Land Book + Cadastre)					HRK
JIS	Annual revenues from the collection of the fees in Joint Information System (Land Book + Cadastre)	estimation: 80004316.00				HRK
JIS	Area of cadastral parcels in rural areas (municipalities)	3481525				ha
JIS	Area of cadastral parcels in urban areas (cities)	2174623				ha
JIS	Area of cadastral parcels mapped	5655169				ha
JIS	Area of cadastral parcels registered to private persons in rural areas (municipalities)					ha
JIS	Area of cadastral parcels registered to private persons in urban areas (cities)					ha
JIS	Area of land parcels not mapped	979.9809				ha
JIS	Area of registered common pastures					ha
JIS	Area of registered parcels of maritime good					ha
JIS	Area of unsurveyed cadastral parcels in rural areas	0				ha

Warehouse	Data	LGAF reply	LGM reply for 2012	LGM reply for 2013	LGM reply for 2014	Reporting unit
JIS	Area of unsurveyed cadastral parcels in urban areas	0				ha
JIS	Number of cadastral parcels in rural areas (municipalities)					Num.
JIS	Number of cadastral parcels in the written part of cadastral documentation	14536732				Num.
JIS	Number of cadastral parcels in urban areas (cities)					Num.
JIS	Number of cadastral parcels mapped					Num.
JIS	Number of cadastral parcels registered in non-natural person's name					Num.
JIS	Number of cadastral parcels registered to natural persons - men					Num.
JIS	Number of cadastral parcels registered to natural persons - women					Num.
JIS	Number of cadastral parcels registered to private persons in rural areas (municipalities)					Num.
JIS	Number of cadastral parcels registered to private persons in urban areas (cities)					Num.
JIS	Number of Land Book information - cadastral parcels					Num.
JIS	Number of Land Book information - Land Book files	3816487				Num.
JIS	Number of Land Book information - Land Book sub-files	282926				Num.
JIS	Number of land parcels not mapped	1 cadastral municipality				Num.
JIS	Number of registered common pastures					Num.
JIS	Number of registered parcels of maritime good					Num.

Warehouse	Data	LGAF reply	LGM reply for 2012	LGM reply for 2013	LGM reply for 2014	Reporting unit
JIS	Number of unsurveyed cadastral parcels in rural areas	0				Num.
JIS	Number of unsurveyed cadastral parcels in urban areas	0				Num.
N/A	Area of unregistered cadastral parcels in rural areas					ha
N/A	Area of unregistered cadastral parcels in urban areas					ha
N/A	Number of cadastral parcels which are up-to-date and reflects ground reality	estimation: 40-60%				Num.
N/A	Number of Land Book information - cadastral parcels which are up-to-date and reflects ground reality					Num.
N/A	Number of Land Book information - Land Book files which are up-to-date and reflects ground reality					Num.
N/A	Number of Land Book information - Land Book sub-files which are up-to-date and reflects ground reality					Num.
N/A	Number of taxpayers paying municipal fees	-				Num.
N/A	Number of unregistered cadastral parcels in rural areas					Num.
N/A	Number of unregistered cadastral parcels in urban areas					Num.
N/A	Number of unregistered transfer of Real properties	-				Num.
REGCON	Number of collected concession transactions of public land					Num.
REGCON	Number of contracted concession transactions of public land	255567.1634 ha (comment: not an adequate reply!)				Num.
REGEXP	Area of expropriated cadastral parcels					ha
REGEXP	Area of expropriated land for private interests					ha

Warehouse	Data	LGAF reply	LGM reply for 2012	LGM reply for 2013	LGM reply for 2014	Reporting unit
REGEXP	Area of expropriated land that is not transferred to its destined use					ha
REGEXP	Area of expropriated land that is transferred to its destined use					ha
REGEXP	Number of expropriated cadastral parcels					Num.
REGEXP	Number of expropriated land for private interests					Num.
REGEXP	Number of expropriated land that is not transferred to its destined use					Num.
REGEXP	Number of expropriated land that is transferred to its destined use					Num.
REGEXP	Number of owners of expropriated land					Num.
REGEXP	Number of owners of expropriated land that got compensated within 1 year					Num.
STAT	Land area (mainland, islands, sea)	8807300				ha
STAT	Population	4284889				Num.
TAXIS	Charged taxes on Real property transactions		1029089557	1222301790	945872856	HRK
TAXIS	Number of decisions on Real property transfer tax		222130	228344	216253	Num.
TAXIS	Number of exemptions from payment of tax on Real property transfers		138198	141212	126021	Num.
TAXIS	Number of registered taxpayers	4007695				Num.
TAXIS	Number of taxpayers on Real property transactions	219158	224710	231583	220644	Num.
TAXIS	Number of transactions of agricultural land		47644	45184	39364	Num.
TAXIS	Number of transactions of apartments		35844	33276	31923	Num.

Warehouse	Data	LGAF reply	LGM reply for 2012	LGM reply for 2013	LGM reply for 2014	Reporting unit
TAXIS	Number of transactions of construction land		27383	24367	20878	Num.
TAXIS	Number of transactions of forest land		3	3	21	Num.
TAXIS	Number of transactions of garages and parking spaces		2856	2781	2919	Num.
TAXIS	Number of transactions of houses		22349	19401	15032	Num.
TAXIS	Number of transactions of offices		2071	2053	1947	Num.
TAXIS	Number of transactions of other rural Real properties		2	0	8	Num.
TAXIS	Number of transactions of other urban Real properties		86558	104518	108530	Num.
TE	Collected taxes on Real property transactions	950692559.59	977806754	1139862873	950792410	HRK

Below are comments provided by State geodetic Administration describing the lack of specific answers in more detail.

- Regarding the registration by gender: “In the central repository of cadastral data kept in SGA only one standard query by the name and surname is enabled and it is impossible to reply to the answers from the questionnaire regarding the registration by gender. There is only partially recorded an “old” personal identification number out of which one can determine if it is man, woman or non-natural person registered. “New” personal identification number which is in process of implementation doesn’t hold the gender or natural/non-natural person information.”
- Regarding the data aggregated by counties or other administrative units different from cadastral municipality: “This kind of data is not possible to get by default. Currently, it would only be possible to export cadastral data into some GIS tool and conduct a spatial intersection with Register of spatial units in order to aggregate the data in such a way.”
- Regarding the data about registration of the maritime good: “Certain queries can be obtained from applications used by cadastral offices as additional queries on databases of the companies (non-standard queries) for which is necessary to ensure financial resources.”