



“CADASTRE ROLE IN INFORMATION SUPPORT OF THE INFRASTRUCTURE DEVELOPMENT NECESSARY FOR ENHANCEMENT ENERGY INDEPENDENCE AND MEETING ENVIRONMENTAL GOALS“

Compilation of responses to the questionnaire carried out in preparation for the Czech PCC Conference jointly organized with the CLRKEN of EuroGeographics on 22nd and 23rd November 2022 in Prague

The overall topic of the Joint PCC and CLRKEN Conference is about the **"Cadastre Role in Information Support of the Infrastructure Development Necessary for Enhancement Energy Independence and Meeting Environmental Goals"**, which is in line with the motto of the Czech Presidency of the Council of the EU in 2022 "Europe as a task".

In line with the European Green Deal and with the past French Presidency, the Czech Presidency of the Council of the European Union has set itself the objective to contribute to this task with a triple challenge: Rethink, Rebuild and Repower Europe.

In the context of the Czech PCC, this means that we will strive to think about possible contributions of the cadastre to meet this challenge. Europe is looking for energy savings and new resources to reduce the EU's energy dependency, while building at the same time the infrastructure required to deliver on the European Green Deal. How can the cadastre contribute to this?

The source of basic information about the territory is the real estate cadastre. To meet the information needs necessary for complex development projects, especially in urban areas, cooperation with many actors providing additional information about the specific area is crucial. The cadastral system plays a key role in building comprehensive information systems that include, in addition to cadastral information, reliable and up-to-date information on public law restrictions or information on the existence, spatial location and characteristics of technical and transport infrastructure. Therefore, the current requirements and new challenges that EU countries face, especially in the field of energy, are also challenges for European cadastral agencies and offices.

Customer services are getting more sophisticated and user-friendly, but in hand with a wider data scope provided goes the question of data security, personal data protection etc. What is more, the deteriorating security situation in Europe also increases the urgency of data security issues and raises the question of possible conflicts between information openness and security. Is the solution consistent with the electronic identity implementation? What solutions do cadastral services use or prepare in different European countries?

The current questionnaire was seeking input for the conference looking at these issues, structured in three parts:

- Part 1** – Innovations in the Field of Cadastre with regard to integration with utilities/technical infrastructure – change of energy resources
- Part 2** – Cadastral Data, its role in supporting environmental goals – enhancement of the cadastre content (public restrictions, mining areas, nature protection etc.)
- Part 3** – Cadastre openness and GDPR – digital identity of persons – obligation or right

Participating Countries: 26

Country Code	Country Organization	Name Email-address
AT	Austria BEV - Bundesamt für Eich- und Vermessungswesen	Ernst Julius <julius.ernst@bev.gv.at>
BE	Belgium SPF Finances Documentation patrimoniale	Jolien Neckebroeck (MINFIN) <jolien.neckebroeck@minfin.fed.be>
BG	Bulgaria Geodesy, Cartography and Cadastre Agency (GCCA)	Людмила Иванова <lvanova.L@cadastre.bg>
CH	Switzerland Federal Office of Topography swisstopo	Daniel Steudler <daniel.steudler@swisstopo.ch>
CY	Cyprus Department of Lands and Surveys	Andreas Hadjiraftis <ahadjiraftis@dls.moi.gov.cy>
CZ	Czech Republic Český úřad zeměměřický a katastrální	Svatava Dokoupilova <Svatava.Dokoupilova@cuzk.cz>
DE	Germany AdV-Geschäftsstelle (LDBV)	Marcus Wandinger <AdV.GS@ldbv.bayern.de>
DK	Denmark Geodatastyrelsen	Pia Åbo Østergaard <piaoe@gst.dk>
EE	Estonia Cadastre Development Department	Priit Kuus <Priit.Kuus@maaamet.ee>
ES	Spain Spanish Directorate General for Cadastre, Dirección General	Amalia Velasco <amalia.velasco@catastro.hacienda.gob.es>
FI	Finland National Land Survey	Halme Pekka <pekka.halme@maanmittauslaitos.fi>
FR	France DGFiP: Direction générale des Finances publiques	martine.caussanel <martine.caussanel@dgfip.finances.gouv.fr>
GR	Greece Ktimatologio	Stathakis Dimitrios <dstathak@ktimatologio.gr>
HR	Croatia Državna geodetska uprava	Zekušić Sanja <Sanja.Zekusic@dgu.hr>
IT	Italy Central Directorate for Cadastral, Cartographic and Land Registration Services	DC SERVIZI CATASTALI, CARTOGRAFICI E DI PUBBLICITA' IMMOBILIARE <dc.sccpi@agenziaentrate.it>
LT	Lithuania State Enterprise Centre of Registers	Bronislovas Mikūta <Bronislovas.Mikuta@registrucentras.lt>
LV	Latvia Valsts Zemes Dienests	Vents Priedoliņš, Valsts zemes dienests <pasts@vzd.gov.lv>
NL	The Netherlands Cadastre, Land Registry and Mapping Agency	Salzmann, Martin <Martin.Salzmann@kadaster.nl>
PL	Poland Head Office of Geodesy and Cartography (GUGIK)	Grudzień Marcin <Marcin.Grudzien@gugik.gov.pl>

PT	Portugal Cadastral Information Services, Direção-Geral do Território	Paulo Agostinho Torrinha <ptorrinha@dgterritorio.pt>
RO	Romania National Agency for Cadastre and Land Registration	adriana.poggi@ancpi.ro
SE	Sweden Lantmäteriet	Andersson Magdalena <Magdalena.Andersson@lm.se>
SI	Slovenia Surveying and Mapping Authority	Franc Ravnihar <Franc.Ravnihar@gov.si>
SK	Slovakia Úrad geodézie, kartografie a katastra	Jakubáč Róbert, JUDr. <robert.jakubac@skgeodesy.sk>
TR	Turkey General Directorate of Land Registry and Cadastre	Ümit Yıldız <uyildiz@tkgm.gov.tr>
UA	Ukraine State Service of Ukraine for Geodesy, Cartography and Cadastre	Maryna Zozul <marynkazozul@gmail.com>

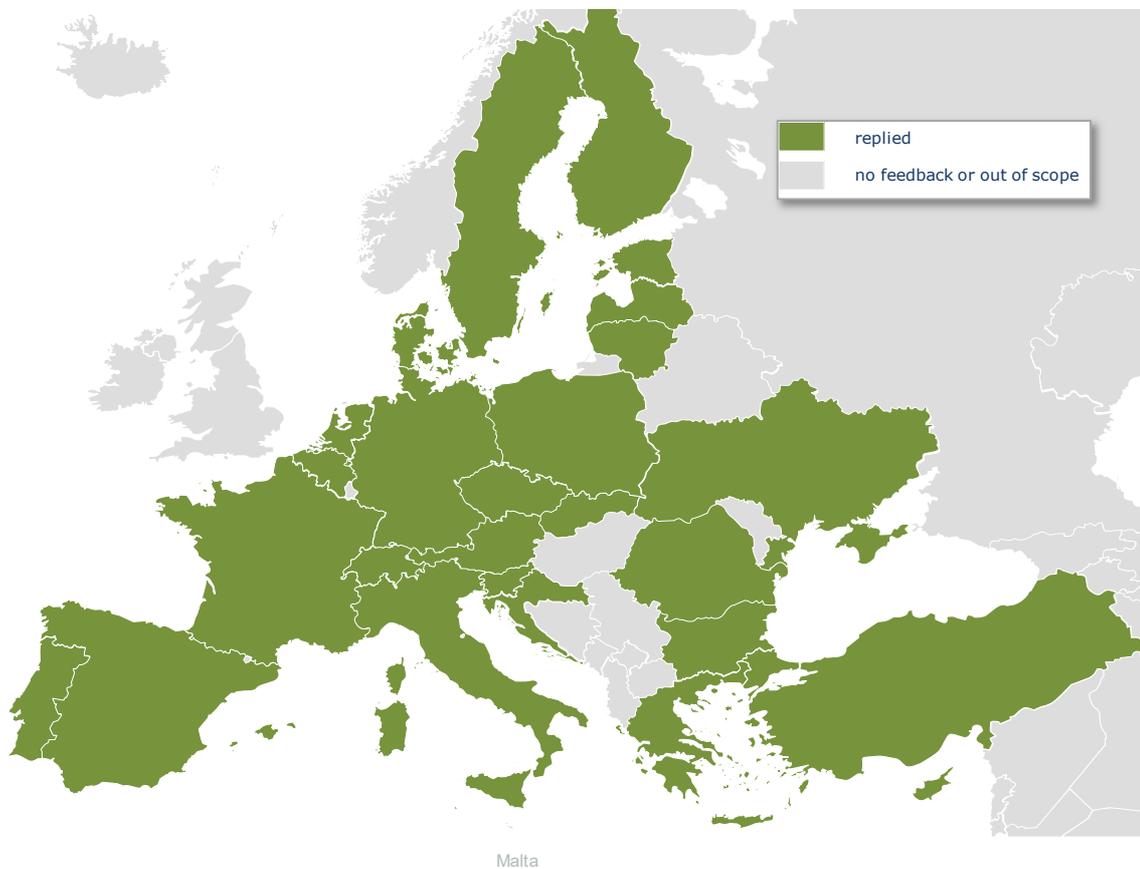


Figure 1: The 26 participating countries.

Q2)	Are there any other databases/systems, which administer the utilities/infrastructure data, based on the cadastre, e.g. transport, energy and utility networks? YC: Yes, based on the cadastre YnC: Yes, not based on cadastre No			If yes, describe them and specify the responsible administrator/stakeholder.
	YC	YnC	No	
FR	X	X		<p>The main actors are:</p> <ul style="list-style-type: none"> - local authorities (municipalities, public establishments of inter-municipal cooperation (EPCI) and Metropolis (Smart City)) in partnership with private actors (network managers, building companies, etc.) and public actors of the territory - and the National Institute of Geographic and Forest Information (IGN)
GR	X			Cadastral data are used in utility planning (e.g. planning of optical fiber lines capacity per area based on the number of property rights and size of lots.)
HR	X			<p>Public and private utility companies that are the owners or managers of the data maintain the utilities data.</p> <p>The State Geodetic Administration is responsible for the establishment, management and maintenance of the infrastructure cadastre based on the records that are required to be established and maintained by the owners or their managers for each type of infrastructure.</p>
IT		X		The providers of public services (electricity, gas, water, waste) use the cadastral data to acquire unique references of the real estate units, where services are supplied. This information may also be used by the providers, together with the address, to determine the spatial location of real estate units.
LT	X			The National Centre for Remote Sensing and Geoinformatics “GIS-Centras” administers the Information System of Topography and Engineering Infrastructure (TIIS). The topography data and the data of the engineering infrastructure objects, which are in the designing process or have been already built, are stored in this Information System. There are interfaces developed between the said Information System and the Real Property Cadastre for data exchange.
LV	X			Cadastre data is widely used in a variety of information systems, including those that manage infrastructure related to gas, electricity or water supply for example.
NL	X			<p>The ownership of infrastructures is registered in the cadastre. (Utility) networks can be cadastral (legal) objects and are registered as such. Additionally, we are investigating if we can establish a specific right of superficies for solar panels on buildings.</p> <p>We have a national information system for cables and pipelines (KLIC), which has been set up for preventing excavation damages, but which could also serve as a source of information on our physical infrastructure (and the source of location information of networks that are registered as cadastral objects).</p> <p>It is our experience that data on utilities and technical infrastructures are derived from a set of sources. Therefore, we see that bringing together of various public and (semi-)private partners is essential in providing an information base. In this set-up cadastral data are only (often a limited) part of the total information base.</p>
PL		X		In general, other databases/systems are maintained independently. However, in some cases, cadastre data is utilised to locate the

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	YC	YnC	No	If yes, describe them and specify the responsible administrator/stakeholder.
				utilities/infrastructure data. Institutions responsible for keeping utilities/infrastructure data maintain links/references to cadastre data, e.g. cadastral parcels.
PT	X			Fire Risk prevention
RO	X			The Inspire Geoportal, View Utility Networks, Local Institutions dealing with the topic https://geoportal.ancpi.ro/portal/apps/webappviewer/index.html?id=4d48e5418d5343adb81451319bfab558
SE	X			Other external authorities within the built society area e.g. municipalities, the Swedish Transport Administration, the National Heritage Board, the Maritime Administration.
SI	X	X		Surveying and Mapping Authority of the Republic of Slovenia maintains a summary cadaster of economic public infrastructure, which contains data on communal lines (electricity, water supply, sewerage, telecommunications) and data on road and railway infrastructure. This data is not directly related to the real estate cadaster data. Data on energy certificates from a special register of energy certificates are linked to data on buildings and parts of buildings that are kept in the real estate cadaster. The energy certificate is a public document with data on the energy efficiency of the building with recommendations for increasing energy efficiency. An essential part of the energy certificate is not only information on energy use, but also the proposed measures to increase energy efficiency, which are part of the energy certificate
SK			X	-
TR			X	The cadastre provides the main geographic data used for the planning of technical infrastructure facilities. The easements related to the utilities/infrastructure are kept in Turkish Land Registry and Cadastre. This information is kept for securing rights and responsibilities of the parties and it is not related with administration of infrastructure.
UA			X	-

Q3)	What is the territorial scope of utilities/infrastructure data?			
	State	Regional	Municipal	
AT	X	X	X	-
BE	X	X	X	State (most importantly the North Sea area) / Regional (almost all utilities/infrastructure data are a regional competence) / Municipal (only addresses)
BG			X	-
CH		X	X	-
CY	X	X	X	-

Q3)	What is the territorial scope of utilities/infrastructure data?			
	State	Regional	Municipal	
CZ	X			-
DE	X	X	X	-
DK	X		X	Denmark without Greenland and the Faroe Islands. The database is located in one government agency named SDFI (Agency for Data Supply and Infrastructure)
EE	X			-
ES	X	X	X	-
FI	X	X	X	-
FR	X	X	X	
GR			X	-
HR	X			-
IT			X	-
LT	X			-
LV	X			-
NL	X			-
PL			X	-
PT	X	X	X	-
RO		X		-
SE	X	X	X	-
SI	X			-
SK	X	X	X	-
TR			X	-
UA			X	-

Q4)	Are the above-mentioned utility/infrastructure data open access or are there restrictions to access?		
	OA	RA	Please, describe.
AT		X	Data from public administration is partly open data, the databases of the energy suppliers are company data and, in most cases, not publicly accessible
BE	X		All is open data except for fiscal and personal data (GDPR restrictions).
BG		X	-
CH	X		Open access, but only part of the data.
CY		X	Utility/infrastructure data have in general restricted access, although for government and semi-government needs there is a very good cooperation on exchanging data for specific purposes.
CZ		X	At present some of them are open, some are on request.

Q4)	Are the above-mentioned utility/infrastructure data open access or are there restrictions to access?		Please, describe.
	OA	RA	
DE		X	No free viewing but one can usually get network information on request.
DK	X		LER is a nationwide register of all the country's cable owners and their areas of interest. Everyone is free to use LER to search for wiring information and they pay per area they are asking about. To search for wiring information is it necessary to create a query in LER. Owners of the utilities then have 5 days to respond the request. Most of the information will be generated automatically, and be send the same day.
EE	X		Data is displayed openly but download is restricted.
ES	X	X	Some of them are open and some are restricted.
FI		X	Data on communication networks are available in the Traficom (The Finnish Transport and Communications Agency) website. Typically, a strong identification is required to access the information. You can only access a certain object/area and limited amount of data per day. Data on underground infrastructure is available from municipal information service and e.g., from the company Suomen Erillisverkot Oy. https://www.erillisverkot.fi/en/ .
FR	X	X	- from a web platform to distribute their public data - or from API (application programming interface) : partner, public, or internal API
GR		X	The lots (polygons and IDs) are open access, the number of rights per lot is restricted.
HR	X		The State Geodetic Administration is a unique information point that provides data on infrastructure and information on ongoing or planned construction works. Access to basic information on physical infrastructure and information on current or planned construction works is provided under proportionate, non-discriminatory and transparent conditions.
IT		X	Generally, the above-mentioned data are stored by the providers of public services, once citizens have declared them. They cannot be directly accessed by other users.
LT			To get data from the Information System of Topography and Engineering Infrastructure (TIIS), it is necessary to get identified in the electronic environment (by e-signature, through the e-banking system, with the user name and password).
LV		X	In most cases, such information systems contain sufficiently sensitive information so that their data is not available to everyone.
NL		X	Utility data are available under a restricted regime. Open access is warranted for parties that are involved in excavation activities, but they only receive integrated information for the area they work in. Some of the network information is provided by the utility companies, but this leaves the legal rules under the KLIC in place.
PL		X	Utility/infrastructure data is available for free via view services. To access the vector data, one has to pay.
PT	X		Spatial Data geometry and cadastre identifier. No personal data. National entities from public administration have access to this data, at national level,

Q4)	Are the above-mentioned utility/infrastructure data open access or are there restrictions to access? OA: open access data RA: restrictions to access data		
	OA	RA	Please, describe.
			regional level or municipality level. The access is with web services (WMS and/or WFS).
RO		X	Download is possible only with the approval of the data producer;
SE	X	X	Both open and restricted information, depending on type of information, the user or customer as well as security aspects.
SI	X		-
SK		X	-
TR		X	In metropolitan areas, data about the infrastructure facilities located in an area to be excavated is open to other utility organizations that wants to make the excavation in the same area. Only parties who approve their interests can access to easement information in land registry in Türkiye.
UA		X	Since February 24, 2022, during martial law in Ukraine, open access to data has been partially restricted, in particular, to the State Land Cadastre.

Q5)	In what way is the cadastral data on buildings (constructions) interconnected with the address system in the regional or state level (in case, it is not in one system)? Is the address system being operated on the state, regional or municipal level? St: State Rg: Regional Mu: Municipal			
	St	Rg	Mu	Please, describe
AT				In Austria, the address is part of the cadastre; each address has a coordinate for georeferencing and is linked directly to a parcel and the building on this parcel. The updating process is as follows: the municipality (local level) is responsible for assigning addresses, enters the data in a central register of residents (state level), which has a reference to the cadastre (geocoding tool to create the coordinates based on the cadastre; the data are then stored in the so-called "Building and apartment register" and in the "Address register" (state level)
BE		X	X	The addresses are managed by the municipalities within a regional system and all are accessible on federal level through integrated web services.
BG			X	Currently, the address system works at the municipal level, a draft law is being prepared and the subsequent development of an address register by the Geodesy, Cartography and Cadastre Agency.
CH	X	X		Nationally unique building identifiers allow the link of buildings and addresses. The addresses are defined and maintained by the municipalities, but the systems are managed by state and regional bodies.
CY		X	X	-

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	St	Rg	Mu
			Please, describe
CZ	X		Cadastral data is connected with the address system via unique identifier and is operated on the state level.
DE			X Municipalities are responsible for the address system. There is a unique key ("streetkey") that is used in the cadastre in combination with the building number (AX_LagebezeichnungMitHausnummer, AX_GeoreferenzierteGebaeudeadresse) as a part of the AAA-model.
DK			X Technical information about buildings (e.g. material, construction drawings) are registered in BBR (Register of buildings and habitations), which is also based on the cadastre. The municipalities are responsible for the information in BBR There are two address register. One consisting of address to all individual building units (ex each residential apartment in a building) and another register containing one unique location address to every property. There is a fixed connection between the two address registers and both refer to the cadastre's identification number of a property It is the municipalities that administer the addresses, including creating, changing and decommissioning road names and addresses in DAR (The Danish Address Register). The municipalities therefore ensure that all of Denmark's addresses are kept up-to-date in one place.
EE			The data connection is based on the identifier and using exchange layer (x-road https://e-estonia.com/solutions/interoperability-services/x-road/)
ES			The cadastre georeferences the postal addresses of the Spanish buildings. The municipalities are responsible to define a new address and when the data is incorporated into the cadastre, it get the georeference. Addresses are offered as georeferenced point objects, when it is possible, at the entrance to the building and in other cases the centroid of the cadastral parcel. The addresses georeferenced by cadastre are included in a national system used also for national transport network.
FI			X The municipalities are responsible for giving the addresses. This is typically done in the land use planning and building permit process. The municipalities are obliged to store the building addresses along with other building information in the Register on Buildings and Dwellings maintained by the DVV (the Digital and Population Data Services Agency). There is also a link to the real estate unit where the building or address is located. There are deficiencies concerning the updating of the register and the data itself like errors and missing information. This is planned to be improved when the new national address data system will be rolled out. In addition, addresses of other objects than buildings are not available centrally anywhere now. NLS provides calculated addresses. They are based on the information from the municipalities.
FR	X		X The National Address Base (NAB) is one of the nine databases of the public reference data service in France. It is the only address database officially recognized by the administration. It is a digital service of shared use and a base infrastructure on which many public policies are based. The NAB is part of the State's information

Q5)	In what way is the cadastral data on buildings (constructions) interconnected with the address system in the regional or state level (in case, it is not in one system)? Is the address system being operated on the state, regional or municipal level?			
	St: State			
	Rg: Regional			
	Mu: Municipal			
	St	Rg	Mu	Please, describe
				<p>and communication system and as such is placed under the responsibility of the Prime Minister.</p> <p>Under the co-piloting of the Interdepartmental Digital Directorate (DINUM : Direction Interministérielle du Numérique), National Agency for Territorial Cohesion (ANCT : Agence Nationale de la Cohésion des Territoires) and IGN, its construction is ensured thanks to many partners and foremost by:</p> <ul style="list-style-type: none"> - the municipalities which are the only competent authorities in terms of addressing; - and the DGFIP thanks to its “Fantoir street file”, which plays a major role in feeding NAB. <p>A project is being studied by the DGFIP in order to interface with the system of the NAB.</p>
GR	X			The cadastre and the address registry are separate systems. However, cadastral data is one of the information sources to build the address registry. The address registry is state in scope.
HR	X			The cadastre and the address registry are separate systems. Data on buildings and cadastral parcels are maintained in the Cadastre while address data is maintained in Address registry as a part of Spatial Unit Register. Services between those two systems have been established which ensures both systems have up to date data.
IT			X	The Municipalities are the public bodies responsible, by law, for the address data (thoroughfare name, as the street name, and address locator, as the house number). Currently the number of Italian municipalities is equal to 7,904. Revenue Agency and ISTAT are responsible, by law, for the creation the Addresses National Archive (ANNCSU), a central database of national reference, whose data must be entered and updated by the Municipalities. Revenue Agency manages the ANNCSU database and related services (differentiated according to the type of user) from an IT point of view. Considering that Revenue Agency also manages the cadastral database, a strong interconnection between the cadastral addresses and the ANNCSU addresses was established, in order to make the cadastral addresses compliant with those of ANNCSU. Currently most urban units registered in the cadastral database has an address certified by the municipalities in ANNCSU.
LT	X			The address data is processed in the Address Register of the Republic of Lithuania. The Address Register operates on the state level. There are interfaces developed between the Real Property Cadastre and the Address Register.
LV	X			Constructions (buildings and engineering structures) at the State level shall be administered as objects in the Cadastre. Addresses at the State level have their own information system, in which information is updated on the basis of local municipality decisions. Both these information systems shall be managed by the State Land Service of Latvia and the addresses shall be attached in the online mode to the cadastre objects to which they are assigned.

Q5) In what way is the cadastral data on buildings (constructions) interconnected with the address system in the regional or state level (in case, it is not in one system)? Is the address system being operated on the state, regional or municipal level? St: State Rg: Regional Mu: Municipal				
	St	Rg	Mu	Please, describe
NL	X			We do not have cadastral data on buildings, but on properties or limited rights (such as the right of superficies – often related to constructions or buildings) or apartments (condominiums). At the national level (in our system of key registers) addresses are formally related to residential, commercial or physical objects.
PL			X	The address system is independent of the cadastral system. The address system is maintained on the municipal level. In addition, municipalities are obliged to share address data with GUGiK and municipalities responsible for maintaining cadastre. GUGiK integrates address data received from municipalities and publishes it integrated for the territory of the state as Open Data. Municipalities responsible for maintaining cadastre integrate address data with cadastral data in their databases.
PT				Not connected.
RO	X			https://renns.ancpi.ro/renns-public/ The National Electronic Register of Street Nomenclature is operated nationwide.
SE			X	Address and building registers are integrated within the cadastre (they form part of the Real Property Register). The municipalities update information about addresses and buildings and receives remuneration from Lantmäteriet according to specific agreements.
SI	X			Cadastral data on buildings are kept in the real estate cadaster together with data on plots. Address information is in the address register. Both – real estate cadaster and address register operated on the state level. In the real estate cadaster, information about the address number from the address register and the house number is kept for the building and part of the building.
SK	X			The reference information system containing address data is the register of addresses, which does not use real estate cadastre data as a basis. Data in the register of addresses is primarily entered by the municipality when determining the inventory number of the building. Data from the register of addresses are not automatically transferred to the real estate cadastre information system. The administrator of the register of addresses is the Ministry of Interior of the Slovak Republic
TR	X			The National Spatial Address System of Türkiye is operated in the national level by the Ministry of Interior since 2012. The interconnection of address data with cadastral data is an ongoing project started in 2021. The purpose of the project is to integrate address data and land registry and cadastre records on the parcel and condominium unit levels. Detailed information can be given in the workshop if needed.
UA			X	To date, a pilot project is being launched in Ukraine under the auspices of the Ministry of Digital Transformation of Ukraine to create a Unified State Register of Addresses. Currently, the address system is being operated at the municipal level.

2 Cadastral data in support of environmental goals – enhancement with other supporting data

Other supporting data, such as for example public-law restrictions, mining areas, or nature protection areas, are usually managed in separate databases. In order to benefit from those databases, the supporting data need to be connected in one way or the other with cadastral data.

Q6)	How does your cadastral system handle the connection with other supporting data? Sp: through spatial overlay / geographic location DB: directly integrated in the cadastral database Lk: through a link (unique identifier)			Please, describe
	Sp	DB	Lk	
AT	X	X	X	<p>there are several ways of integrating the cadastre (DKM- Digital Cadastral Map) into the company data;</p> <p>All the Energy-supply-companies use the cadastre as a basic map to support the planning, operation and maintenance processes.</p> <p>They operate own systems to map the electricity, gas, telecom, water, sewage and district heating networks. The DKM is one of the map bases in the network information system (representation of the cable routes), the building and property addresses are also relevant.</p> <p>Further cadastral data such as fixed points and boundary points are required for staking out, e.g. when planning new line routes or measuring/staking out laid lines.</p> <p>Larger companies are property owners themselves. The "Property Management" department therefore also uses the DKM to manage our properties.</p> <p>Also, the property and owner situation is relevant for line operators. Public property and private land play a role in the planning of pipeline routes, among other things.</p> <p>Official documents and notifications are often related to properties, e.g. water rights notifications and easements in the land register (related to cable routing, underground or also pylons, ...). In the event of changes to water protection areas (in cooperation with the authorities, e.g. the federal province), all affected landowners must be informed, for example.</p> <p>Document management systems are used to manage this data; this data also contains, among other things, basic number and owner.</p>
BE	X			All spatial data can be interconnected through overlapping layers within both the federal and regional mapping systems.
BG	X			-
CH	X			-
CY	X			-
CZ			X	This data is collected in a separate database Registry of territorial identification, addresses and real estates (RÚIAN) interconnected with the cadastral database via a link.
DE	X	X	X	-
DK	X	X	X	Depend on the kind of public-law restrictions. Restricted areas along the coast and properties intended for either agricultural or forestry use are registered in the cadastre.
EE		X		Cadastral unit and restriction data are connected through spatial overlay in integrated service.
ES	X	X	X	the 3 of them are used

Q6)	How does your cadastral system handle the connection with other supporting data? Sp: through spatial overlay / geographic location DB: directly integrated in the cadastral database Lk: through a link (unique identifier)			
	Sp	DB	Lk	Please, describe
FI				None of the given options. The information provider sends over the data to the Cadastral registry i.e., the NLS or one of the 71 mandated municipalities which then registers the relevant attribute and location information in the Cadastre. Legislation allows the other data providing authorities to register their data directly but that is not implemented for the time being. Only National Enforcement Authority does this in the Land Register directly where the data is available also for cadastral activities. Plans are underway to enable also the other relevant authorities. In addition, connection to data in other than above mentioned databases is mostly done based on location.
FR		X		Depend on the kind of public-law restrictions. Restricted areas along the coast and properties intended for either agricultural or forestry use are registered in the cadastre.
GR		X		Mining rights are directly recorded in the cadastre. Natural protection areas and public law restrictions can be derived by overlay.
HR		X		-
IT	X			The Italian Cadastral Information System (SIT) is able to retrieve specific carto-graphic services, made available by other bodies, through Web Map Service (WMS) standard. At the same time, the Italian cadastral administration makes available (in the context of the European Directive INSPIRE - INfrastructure for SPatial InfoRmation in Europe) a free consultation service, based on the WMS 1.3.0 standard and usable through GIS (Geographic Information System) software or specific user applications, in order to allow integrated visualization with other spatial data.
LT		X		From 1 January 2023, the territories where special land use conditions (land use restrictions) apply will become the objects of the Real Property Register. The Real Property Register and the Real Property Cadastre is technically one system in Lithuania.
LV			X	There are information systems from which the Cadastre receives information via webservices, but the State Land Service also receives data in other ways for registering in the Cadastre.
NL	X	X		directly integrated in the cadastral database when it concerns public-law restrictions
PL	X		X	Connection is handled mainly by the spatial overlay. However, in the case of some supportive data registers, it is also done using the unique identifier of a cadastral parcel.
PT	X			Web services (National Agricultural Reserve (RAN), Land Use Regime Map (CRUS), National Ecological Reserve (REN))
RO		X		https://geoportal.ancpi.ro/inis_viewer/index.html?locale=ro
SE	X	X	X	Various ways of combining data, unique identifier is important, information on plans and regulations are also integrated in the cadastre (Real Property Register).
SI	X			Most of this data is currently linked via graphical cross-sections (e.g. data on actual land use). The Real Estate Cadaster Act and the information

Q6)	How does your cadastral system handle the connection with other supporting data? Sp: through spatial overlay / geographic location DB: directly integrated in the cadastral database Lk: through a link (unique identifier)			
	Sp	DB	Lk	Please, describe
				system for managing real estate cadaster data also allow for other ways of connecting: - Entry and management of location data of other records in the real estate cadaster (e.g. building plot) - Linking other records to the location data of the real estate cadaster (e.g. spatial plans of local communities) - Entry of the real estate identifier in other records (e.g. land register) - Entry of an identifier from another record into the real estate cadaster
SK	X			-
TR	X	X		Information about some of the public law restrictions (e.g. XXX) are already recorded to land registry and cadastre database. Moreover, some public restriction zones could be spatially overlapped with the cadastral data through web services.
UA		X		According to the Law of Ukraine on the State Land Cadastre, the objects of the State Land Cadastre are lands within the state border of Ukraine; lands within the territory of administrative-territorial units, lands within the territories of territorial communities; restrictions on the use of land; amelioration networks; components of land reclamation networks; land plots.

Q7)	Who is responsible for the quality and currency of the supporting data?		
AT	The Cadastral offices are responsible for the data management of the cadastre.		
BE	In Belgium we use a system named 'authentic source'. 'Authentic source' is the term used to refer to a set of data held by a body that has been appointed by a legal act to manage these data, which are authoritative in a particular area of competence. Each level, federal or regional, of authentic sources is responsible for its own data management.		
BG	The responsible administrator is the primary data controller.		
CH	Each organization/stakeholder is responsible for the quality of their data.		
CY	Each organization is responsible for their geospatial data, which are generally based on cadastral data, which have good accuracy. Accurate measurements are taken using new technology such as GPS.		
CZ	Supporting data is maintained by its providers in the reference database and the system is supervised by the CUZK.		
DE	The data collector is responsible for the quality of the data.		
DK	Each authority (municipalities and the state of Denmark) is responsible for the quality of its own data.		
EE	The data provider is responsible for the quality of the data.		
ES	Each organization is responsible for their data. Spanish Directorate is responsible for the description of public and private real estate (cadastral parcels and buildings)		
FI	Data provider		
FR	<u>Limitation of liability</u>		

Q7)	Who is responsible for the quality and currency of the supporting data?
	The user acknowledges and accepts, without any other guarantee, express or implied, that the cadastral data held by the DGFIP are provided as they are. The DGFIP cannot guarantee to the user the completeness of its data cannot be held responsible for any prejudice or damage of any kind suffered by the user.
GR	The Ministry of Environment and Climate Change is responsible for mining, nature protection and public-law restrictions whereas the Ministry of Digital Governance is responsible for the cadastre.
HR	The owners of the supporting data are responsible for the quality of the supporting data while the SGA (Cadastral offices) are responsible for the management of the cadastre data.
IT	The quality and currency of the supporting data are under the responsibility of the body which made them available. The Italian cadastral administration is the owner of the cadastral data, but it is not responsible for any kind of direct, indirect or accidental damage resulting from the use of the information collected through its services.
LT	Data about the territories where special land use conditions (land use restrictions) apply should be collected/updated after their change and submitted to the State Enterprise Centre of Registers by the entities managing engineering infrastructure, the persons interested in economic activities; also by the persons responsible for the protected nature territories or cultural heritage sites as well as other persons who are responsible for the objects that cause land use restrictions.
LV	The data holder (submitter) is responsible, but the State Land Service is responsible for the correct registration of the data in the Cadastre.
NL	These responsibilities are defined by law and differ per dataset.
PL	In general, this is the responsibility of the organisation that maintains the data set.
PT	DGT
RO	The responsibility is shared between the participating authorities: National Agency for Cadastre and Land Registration, The Ministry of Environment, the Romanian Waters.
SE	Lantmäteriet is responsible for the Real Property Register as a whole. Decision makers of the supporting data are responsible for the up-dating and correctness of data being up-dated.
SI	the source (parent) institutions are responsible for the supporting data
SK	The specific administrator of a special information system is responsible for the quality and currency of the supporting data.
TR	The owner of the data has the responsibility for the quality of the data. However, if the supplied data does not meet the cadastral standards in terms of quality, the land registry and cadastre agency has a right to ask for clarification and amendment.
UA	The developers of land management documentation are responsible for the quality, on the basis of which cadastral registrars enter data into the State Land Cadastre.

Q8)	Do users have the opportunity to make a complaint about data quality, data completeness etc.?
AT	As part of the BEV's quality management system, there is a clearly defined process for dealing with complaints; In the event of quality deficits, users contact the BEV and the problems are solved together if possible.
BE	Yes, the complaints systems are managed on both regional and federal level. It is possible to report errors and anomalies on the cadastral data through a federal portal.

Q8)	Do users have the opportunity to make a complaint about data quality, data completeness etc.?
BG	Yes.
CH	Yes, through web-based revision services.
CY	Yes, through web applications, electronic, and regular correspondence.
CZ	Yes, there is a web application, in which the users can send a message to the administrator of the database.
DE	If data is obviously wrong or incomplete, users can report it to the competent body.
DK	Normally yes. Users have the opportunity to contact the relevant authority. As an example, the users of the cadastral map can contact DGA through a portal.
EE	Cadastral services include the possibility for anyone to submit feedback regarding data quality. In addition, land surveyors are required to provide data errors during cadastral surveying.
ES	Yes
FI	Concerning an entry in the Cadastre the primary possibility to appeal is during the preceding process where the decision was taken like land use planning, expropriation permit process, or the cadastral expropriation survey. As to the entry itself there is no formal appeal procedure, but anyone can report about an error to the cadastral authority, which can, having investigated the case, correct the entry.
FR	<p>is established systems of exchange between producers and users for the improvement of the data and not of contestations or complaints. The users of cadastral data can indeed contact the cadastral authorities of the DGFIP to report cartographic or literal errors.</p> <p>The cadastral plan, although being a reference data, has no real legal value. In the event of a litigation between owners, it constitutes only a simple presumption. To rectify an error in the cadastral plan, the procedure requires:</p> <ul style="list-style-type: none"> - either the use of a survey document (DMPC) drawn by the expert surveyors in accordance with the decree of 30th April 1955. In practice, a notarial deed is added to the DMPC in order to avoid any hidden transfer; - or the establishment of a new plan by the cadastral authorities of the DGFIP.
GR	Complaints for quality and completeness are always welcome and facilitate the improvement of the services provided and to resolve individual or broader data issues. Each complaint is received, processed and answered in the best possible manner.
HR	There is a clearly defined process for dealing with complaints; In the event of the complaints regarding the quality of the data that are already into the cadastral databases users contact the cadastral offices and the problems, if possible, are solved in technical or administrative procedures. For new data recorded in the cadastre in the administrative procedure, the right to file an appeal or start an administrative dispute is regulated by the instruction on legal remedy, which is the content of the decision.
IT	Yes: with regard to cadastral data, users can send requests to a specific e-mail address, which has been provided for this purpose.
LT	Users can submit claims and complaints regarding the data quality to the persons who submitted that data about the territory where special land use conditions (land use restrictions) apply.
LV	Yes. The State Land Service shall verify the compliance of the data with the information received and shall inform the data provider accordingly if the information received is in contradiction with the information provided by the user.

Q8)	Do users have the opportunity to make a complaint about data quality, data completeness etc.?
NL	Yes, when it comes to authoritative data public bodies even have the obligation to report suspected errors. In the topographic domain (topography, buildings and addresses) this option is open to any person or party. Filing a complaint is always possible.
PL	In general, yes. One can always send complaints regarding data quality to the organization responsible for data maintenance.
PT	Yes. Not yet digital / dematerialized process.
RO	Yes, they have. They can email the complaints at the following email address: inspire@ancpi.ro
SE	Yes, there are both first- and second line support for users/ customers. A complain can also be lifted to the legal department. Lantmäteriet is responsible for technical issues within the cadastre.
SI	Users can make comments and suggestions on the entered data. These suggestions and comments are considered and resolved by the institutions responsible for the original data. The method of saving and correcting data depends on the legal basis for the individual type of data or records.
SK	Yes, the user can address a complaint to the administrator of a special information system.
TR	-
UA	Yes, users can submit a notice of technical error or a notice of detection by an individual or legal entity of an error in the State Land Cadastre data entered into it from other cadastres and information systems in the order of information interaction, using the Public cadastral map (part of the State Land Cadastre software, which provides access to the State Land Cadastre data).

3 Cadastre openness and GDPR – digital identity of persons – obligation or right

Q9)	If crowdsourcing for data collection and sharing is being supported – how is quality, reliability and currency of the data being ensured? Who is responsible for it?
AT	In the cadastre crowd sourcing in the classic sense is not possible in Austria, but data from other organisations is used, e.g. information about buildings; in this context, there are clearly defined rules and interfaces.
BE	Crowdsourcing can only be operated by authorised professionals, e.g. land surveyors. The federal cadastral systems ensure the quality of all demands.
BG	The Municipalities.
CH	Crowdsourcing is not being applied so far.
CY	N/A
CZ	The data provider of the particular data is responsible for it – CUZK is only the administrator of the system but not the guard of the data quality.
DE	The respondent is not aware that crowdsourcing is used in Germany.
DK	The data is shared by the Danish Datafordeler (Danish data provider). Every register has a register authority. These authorities ensure the data quality and reliability via continuous updating and validation.

Q9)	If crowdsourcing for data collection and sharing is being supported – how is quality, reliability and currency of the data being ensured? Who is responsible for it?
	The company, authority, person etc. that receives the data are responsible for the data and must ensure that the data is in accordance with the latest data at all times.
EE	The activities of each data session are logged and can be identified. The data provider is responsible for data quality.
ES	There is crowdsourcing as it is understood in general, but anyone is obligated by law to report errors and changes in the cadastre. There are regulated procedures for requests and error correction with the documentation that the interested person must present.
FI	Concerning information received by crowdsourcing or otherwise from a citizen the cadastral authority double-checks its accuracy and trustworthiness from different sources like aerial images and cadastral survey maps. When necessary, field measurements can be made.
FR	New information and communication technologies continue to offer more and more possibilities for information processing, but the question arises as to how to solve the problem of the quality of the information provided to the end user. Working groups are currently being set up in France to reflect on this subject. An example at the DGFIP: We have created attributes that qualify the accuracy of the cadastral map sheet during the "RPCU-process". At the request of the users, we would like to integrate them in the different formats of the map (EDIGéO, DXF, shp, etc).
GR	Crowdsourcing is supported in the form of collecting information from the citizens during the collection of property rights or via the property transactions that are performed on a daily basis. As with all big data there is no formal mechanism to check data quality. The quality however is satisfactory given that information is typically cross-checked by multiple users. A crowdsourcing example is the collection of postal addresses that are input by owners when declaring their property or the collection of place names (landmarks etc) as a by-product of the collection of property rights declarations.
HR	Crowdsourcing is supported in the form of collecting information from the citizens during cadastral resurvey. The owners of the data are responsible for those data. Usage of the personal data that includes PIN in cadastral offices is defined by the laws and protocols.
IT	At the moment, there are no specific experiences, to be reported, concerning cadastral data.
LT	The data of the Real Property Cadastre are measured and collected by the surveyors who have qualification certificates. Crowdsourcing method is not used for the collection of cadastral data in Lithuania.
LV	It is not to say that crowdsourcing is introduced in Latvia in its classical sense. But after the data opening an opportunity has been created to inform regarding the non-conformity of possibilities in the Cadastre data regarding any cadastre object. The State Land Service shall verify the compliance of the data with the documentation and other information systems at its disposal before the data is corrected if the information is received by this opportunity.
NL	Crowdsourcing is not applied in the cadastral domain. We, however, provide parties in the land transaction process the opportunity to define provisional boundaries. Updating and maintaining the cadastral registration is the responsibility of Kadaster.
PL	No. Crowdsourcing is not supported regarding cadastre data. The citizen has the right to apply for the changes in the cadastre. Such application triggers appropriate legal procedures. The head of the county (municipality) is responsible for ensuring the cadastre's quality, reliability and currency. Changes in the cadastre are included based on documents provided by other empowered organisations or/and citizens.

Q9)	If crowdsourcing for data collection and sharing is being supported – how is quality, reliability and currency of the data being ensured? Who is responsible for it?
	The citizen is obliged to report to the head of the county any changes related to the real estate the citizen owns.
PT	It is in study for future development and implementation, the requirements for tax, registry and geometry interoperability systems. Each entities have their own responsibility.
RO	The responsibility is held by the authority that produces and maintains the data; data can be accesses only after agreeing with The Terms and Conditions, which include also the GDPR provisions.
SE	Lantmäteriet is carrying out some activities in this field, e.g. a test with the Swedish Forest Agency and also internal testing of the technique in the form of an innovation activity.
SI	Responsibility for the quality, reliability and currency of the data rests with the originating institutions that are responsible for each type of data.
SK	<p>The Geodesy, Cartography and Cadastre Authority of the Slovak Republic is the administrator of the information system of geodesy, cartography and cadastre, which also includes the information system of real estate cadastre. The information system of real estate cadastre is decentralized. Entries into this information system are made by district offices as local state administration bodies based on submitted contracts, public and other documents. The information system of geodesy, cartography and cadastre is operated by two subordinate organizations of the Geodesy, Cartography and Cadastre Authority of the Slovak Republic</p> <p>Real estate cadastre data are reliable, and binding are reliable and binding until proven otherwise. The state, on whose behalf the Geodesy, Cartography and Cadastre Authority of the Slovak Republic acts in liability relations, is responsible for damage caused by errors in the administration of the information system of the real estate cadastre, if the damage occurred during the exercise of public authority.</p> <p>We assume that within 3 years the database will be centralized.</p>
TR	Crowdsourcing approaches are not in use in Türkiye.
UA	<p>In accordance with the Law of Ukraine on the State Land Cadastre, the maintenance and administration of the State Land Cadastre is ensured by the central executive body that implements the state policy in the field of land relations (i.e. the StateGeoCadastre). The administrator of the State Land Cadastre is a state enterprise that belongs to the sphere of management of the central executive body and carries out measures to create and maintain the software of the State Land Cadastre, is responsible for technical and technological support, preservation and protection of information contained in the State Land Cadastre, development and maintenance of software for monitoring land relations and information interaction with other state electronic information systems.</p> <p>State cadastral registrars - public servants who enter data into the State Land Cadastre on the basis of documents prepared by developers of land management documentation.</p>

Q10)	Up to what detail is the cadastral data open and what belongs to open data?
AT	<p>Cadastral data is in general public data and all information is available for any user. There are several ways to acquire data: data/information is provided free of charge or as a low-cost service:</p> <ol style="list-style-type: none"> 1. So-called reference date data, which are data sets that are at least 1 month old and are available for free download on the web; 2. Cadastre-service with free access to all cadastral date (no information about owners!) and with the possibility to be integrated into your own software environment, also free of charge

Q10)	Up to what detail is the cadastral data open and what belongs to open data?
	3. Information- service at low distribution costs with specially prepared information about the cadastre at the BEV Webshop
BE	All cadastral data except for fiscal and personal information are open data.
BG	There is a decree of the Council of Ministries, which states that the data must be open, and GCCA is preparing the functionalities of the information system to provide them in this form.
CH	Today, cadastral data are open in 19 out of 26 cantons. When the data are declared as open, it includes all data layers.
CY	Cadastral parcels and cadastral plans, including among others registered buildings, registered roads etc, are open through web applications for viewing, downloading and usage.
CZ	Czech cadastre is open to public, you can search the data from the cadastre based on the parcel number, location in the map, house number, address, but not according to the owner. All data is open except for the name of the owner – you can get it, but you must prove your identity.
DE	Open cadastral data in the sense of free of charge, depends on the Laender-policy. E.g., in Saarland and Bavaria, it is not free of charge; in Berlin, North Rhine-Westphalia it is. Open data in the sense of everyone can use it, is the cadastral map. The owner information is protected, one need to claim a legitimate interest. This applies for all Laender.
DK	The following data, registers and maps as well as visualizations of these are made freely available by the Geodata Agency to public authorities as well as companies and individuals: - The land registry card. - Historical, non-georeferenced cadastral maps. - Minorized parish maps (Raster parish maps). - Original 1 cadastral card. - Original 2 cadastral cards.
EE	The entire cadastral dataset is open data. https://avaandmed.eesti.ee/datasets/maakataster-katastriuksused-kogu-eesti
ES	1. Citizens have open, free-of-charge access to all data except those subject to Data Protection law (personal data of the owner and value data); 2. administrations and other public entities, after registering, have access to all levels of data, including protected data, but exclusively for the performance of their own competencies; 3. and cadastral owners and private persons with LEAGAL INTERES, identified via digital signature, can also access protected data.
FI	The cadastral information is public but not all of it is open and free. However, unit IDs and boundary information are free.
FR	The cadastral data open to date are those: - the cadastral map: parcels, map sheets, buildings and the details in topographic - the FANTOIR file of roads On the other hand, the files of properties and owners are not concerned.
GR	Lots and IDs are open data made available using the INSPIRE directive. Forest maps are also open data. Statistics, aggregated at the municipality level, regarding transactions, number of property rights etc are also open and free to download. Orthophoto maps covering the country in multiple dates are also open and free. Some

Q10)	Up to what detail is the cadastral data open and what belongs to open data?
	economic figures regarding the cadastral agency are also open and publicly available via the website.
HR	fully open (shape, area, land use, name (title), address of registered persons)
IT	Cadastral registers are public, by law.
LT	The State Enterprise Centre of Registers opened the most detailed cadastral data of real property taking into account the requests of potential users. Open cadastral data of real property include all anonymised cadastral data about real properties: land parcels, buildings, premises, engineering structures. Anonymised data means data according to which, after combining it with any other data, it is not possible to identify a natural person, i.e. if the data about buildings is opened, their address starts with the municipality and ends with the ward.
LV	In fact, all data are open to the extent allowed by the regulatory framework, including the GDPR. Information on the name, surname and personal identity number of individuals is <u>not available</u> to the public, but the name and registration number of the legal persons are <u>not available</u> to the public. As open data is the status of persons who indicate whether it is a private or legal person or whether it is a State or a municipality.
NL	The cadastral map is open data; all other data are open access data (which are available based on a fee and where conditions on purpose and re-use are implemented).
PL	Cadastre data is available for free via view services. For download following objects and attributes are open: - Cadastral parcel - attributes: boundary geometry, identifier - Buildings – attributes: boundary geometry, identifier, type of building
PT	Today's only geometry is open for certain public administration entities. Briefly, all users can access to geometry WMS service publish within the Inspire Directive. Not allowed geometry download, yet.
RO	https://geoportal.ancpi.ro/imobile.html : technical and legal information that can be downloaded by the licensed persons who are carrying specialised works, to the notaries public and bailiffs (judicial executors).
SE	There is on-going planning for open information on designation and addresses. However, there is yet to be taken decisions about this in Sweden.
SI	All cadastral data are publicly available. The real estate cadaster also contains information about the owners, which are taken from the land register. Information about owners who are natural persons in the real estate cadaster is not public available.
SK	Data of the real estate cadastre are not provided in the form of open data. The only exception is the provision of a vector cadastral map for cadastral territories.
TR	Anyone can access to cadastral geometry and descriptive attributes (e.g., property use type, surface area) of cadastral parcels through a freely accessed web portal (www.parselsorgu.tkgm.gov.tr). However, the original documents and exact corner point coordinates of the cadastral parcels can only be accessed by the parties who can approve their interests. These documents are not free of charge.
UA	According to the Law of Ukraine on the State Land Cadastre, cadastral data is open. However, after February 24, 2022 (the adoption of martial law in Ukraine), the Public Cadastral Map was closed to the public for data protection purposes.

Q11)	How is the identification via electronic identity being handled? Is there a system with a nationally accepted e-Identity in place or does your agency manage its own database of access rights?		
	Nat	Own	
			Nat: Nationally accepted system Own: Own database
AT	X	X	-
BE	X		-
BG		X	-
CH	X	X	e-Identity is not much in use so far.
CY	X		-
CZ	X		-
DE			To date, there is no possibility to identify oneself electronically in cadastral information systems. The Online Access Act is intended to make this possible. A link between the electronic ID and the owner's details in the cadastre / land register is not envisaged as of today.
DK	X	X	privileged users are created in a database with information about which information they have access to and which tasks they are allowed to perform
FR	X	X	-
EE	X		https://www.ria.ee/en/state-information-system/electronic-identity-eid.html
ES	X		-
FI	X		Government officials can use their office-related digital id card. In the national web service (Suomi.fi) customers can identify themselves with their bank id or mobile certificate. Concerning interface services professional customers use the username and password of their own database.
GR	X		The identification and access to cadastral digital services, for citizens and professionals, is primarily done via the username and password provided by the Ministry of Economy, to each citizen, for taxing purposes.
HR	X		-
IT	X		Nationally accepted system (Public Digital Identity System – SPID, Electronic Identity Card – CIE, National Service Card – CNS).
LT		X	Access to the services of the Real Property Cadastre is handled with the user name and password, also by using the service of the State Enterprise Centre of Registers “iPasas” (online identification service for the personal identification with a digital certificate and through e-banking).
LV	X		-
NL	X		-
PL	X		-
PT		X	We have a national unique identifier (NIP) and different databases. It is in development the interoperability within those databases using this NIP.

Q11)	How is the identification via electronic identity being handled? Is there a system with a nationally accepted e-Identity in place or does your agency manage its own database of access rights? Nat: Nationally accepted system Own: Own database		
	Nat	Own	
RO		X	-
SE	X		-
SI	X		-
SK	X	X	-
TR	X		The electronic identity of parties who access the information stored in land registry and cadastre databases is recorded through e-government infrastructure in Türkiye.
UA		X	-

Q14)	Do you have any other remarks or suggestions (to this questionnaire, to the topic in general, or for the planned conference)?		
FR	We appreciate your topic and questionnaire, but unfortunately, it does not belong to the missions of the French Cadastre. This challenge is the liability of the local authorities and the National Institute of Geographic and Forest Information.		
NL	I have found filling in the questionnaire quite difficult as many of the mentioned elements of the questions are interrelated and might be subject to multiple interpretations.		
PT	Yes, question Q11, need sobre additional clarification text.		
TR	Thank you for your efforts in this report. I generally agree with the comments of the Dutch respondent. I think the questions are subject to multiple interpretations and not convenient for precise responses.		

PCC Organizing team
on behalf of the CUZK
President
Karel Večeře

EuroGeographics CLRKEN Chair
Daniel Steudler