

Questionnaire for the development of ISO 19152:2012 LADM Valuation Module

The ISO 19152:2012 Land Administration Domain Model (LADM) presents a conceptual schema for the specification of property units and their legal and geometric characteristics recorded at cadastre and land register, and relates these datasets with other property related datasets (e.g. addresses, utility networks, building (units), valuation, taxation, land use, land cover) recorded at external registrations.

A recently initiated collaborative research aims at developing a LADM based international information model for one of these external registrations, namely in terms of a Valuation Module for the ISO 19152:2012 LADM. The purpose of this research is to define the semantics of valuation information maintained by public authorities especially for recurrent taxes on immovable property¹, and to extend the scope of LADM from a fiscal perspective to provide an information model that could be used to construct information systems for immovable property valuation. The preliminary results of this research were documented at the 11th 3D Geoinfo Conference².

This questionnaire is prepared as a part of methodology applied for the above-mentioned research which is also supported by FIG Presidency and Chair of FIG Commission 9 Valuation and the Management of Real Estate. The purpose of the questionnaire is to create a world-wide inventory that reveals commonalities and differences among valuation systems used for recurrently levied immovable property taxes. The result of the questionnaire is expected to provide an understanding of the situation of valuation systems, and will be used as source data for the elaboration of the LADM Valuation Extension Module.

Please reply the following questions, and contact us if you have any comments and suggestions:

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¹ Recurrent taxes on immovable property covers taxes levied regularly in respect of the use or ownership of immovable property. These taxes are levied on land and buildings, in the form of a percentage of an assessed property value based on a national rental income, sales price, or capitalised yield; or in terms of other characteristics of real property (e.g., size or location) from which a presumed rent or capital value can be derived. They can be levied on proprietors, tenants, or both; they can also be paid by one level of government to another level of government in respect of property under the jurisdiction of the latter (The OECD classification and interpretative guide 2015, <http://www.oecd.org/tax/tax-policy/oecd-classification-taxes-interpretative-guide.pdf>)

² For more information, see: <http://www.isprs-ann-photogramm-remote-sens-spatial-inf-sci.net/IV-2-W1/145/2016/>

Section A. General questions for property valuation systems in Spain

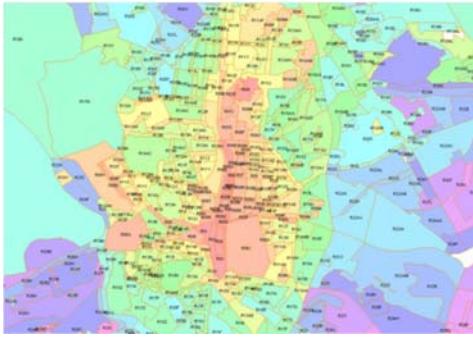
Questions	Responses
1. Please indicate the organizations responsible for valuation of properties for property taxation purposes through name in national language and English translation.	Dirección General del Catastro. Spanish Directorate General for Cadastre
2. What are the types of objects of valuation for property taxation (e.g. unimproved parcel, building)? Name and date of the ordinance to be listed.	Real estate: soil +constructions Real Estate Cadastre Law (Royal Decree 1/2004 of March 5) Regulation of the Cadastre (Royal Decree 417/2006 of 7 April), develops the Real Estate Cadastre Law). Technical rules to determine the cadastral value of the urban real estate (RD 1.020/93, of 25 June). Ministerial Order of 14 October 1998, with the approval of the market reference rate (MR) . Ministerial Order 1213/2005, of 26 April, approving the module M for the determination of the values of land and construction of urban real estate in cadastral valuations. Technical rules to determine the cadastral value of the real estate with special features (Royal Decree 1464/2007, of November 2). Regulating Local Taxes Law (Royal Legislative Decree 2/2004 of 5 March)
3. Please mention value type (e.g. market value, tax value, capital value) used by the responsible organization for property taxation?	Cadastral value. The cadastral value is set by reference to the market value, but in no case could be higher than this.
4. Please mention the public registry datasets (e.g. cadastre, land registry, building registry) which are used in valuation procedures, and their mutual functions?	Cadastre
5. Which methods are applied for collecting market data needed for valuation?	In order to achieve the challenge of analyzing the market was created within the Cadastre the Cadastral Observatory of Real Estate Market (OCMI). The OCMI is an information system that allows the analysis and treatment of market information, and obtaining market studies that can serve as support for all

	<p>mass valuations that can be made in the territory, as support for fiscal and administrative uses.</p> <p>General - analysis of the market environment, press articles and reports published by market valuation companies. They provide basic information but they are not useful for massive valuation.</p> <p>Specific - market information for direct use.</p> <p>Main source of a market study: The transmissions supplied by notaries and registrars: Values declared, second transmissions (Property Transfer Tax) and new constructions subject to VAT. Disadvantage: there are no samples throughout the territory, the declared values are not always good and not all the transmissions are open market operations.</p> <p>Internet offer - press, obtained for free, but these values are not sales made.</p> <p>Market Studies from the value Reports, for areas and different products, obtaining them it is expensive and they do not cover the whole territory.</p> <p>Valuations, are balanced values, but in many cases are estimated values.</p> <p>Tested values (made by Regional Governments), they are officinal values and cover all the areas and uses, are adjusted to Transfer Tax or indexed to the cadastral value.</p> <p>Sectorial studies: analysis of new construction, commercial and office uses. They allow obtaining costs of construction and covering other values in sectors where the market is very difficult to define.</p>
<p>6. Is there any special valuation database for storing datasets <i>used in</i> (e.g. property characteristics) or <i>produced with</i> (e.g. sales statistics) valuation procedures? If yes, please give the name of database, indicate responsible authority, and describe its content.</p>	<p>Cadastre</p>
<p>7. Is there a web-based dissemination of valuation information? If yes, please indicate which data (e.g. sales statistics) is open to the public.</p>	<p>the Cadastral Observatory of Real Estate Market (OCMI). is an information</p>

	<p>system open to public.</p> <p>The cadastre value for each property is open to the owner, public administration and legally interested persons.</p>
8. How frequently are general revaluations made?	<p>The law says that when there are changesbut no more than 10 years.</p> <p>We are trying now to have "reference values" updated every year.</p>
9. Is there a system of indexation affecting property value between regular revaluations?	Yes. The years without revaluation in a municipality we apply index.
10. Do taxpayers have a right to appeal against the appraised values? If yes, please indicate how disputes are resolved.	Yes. The new values are notified and there are first appeal to cadastre, second to administrative court and the superior court.

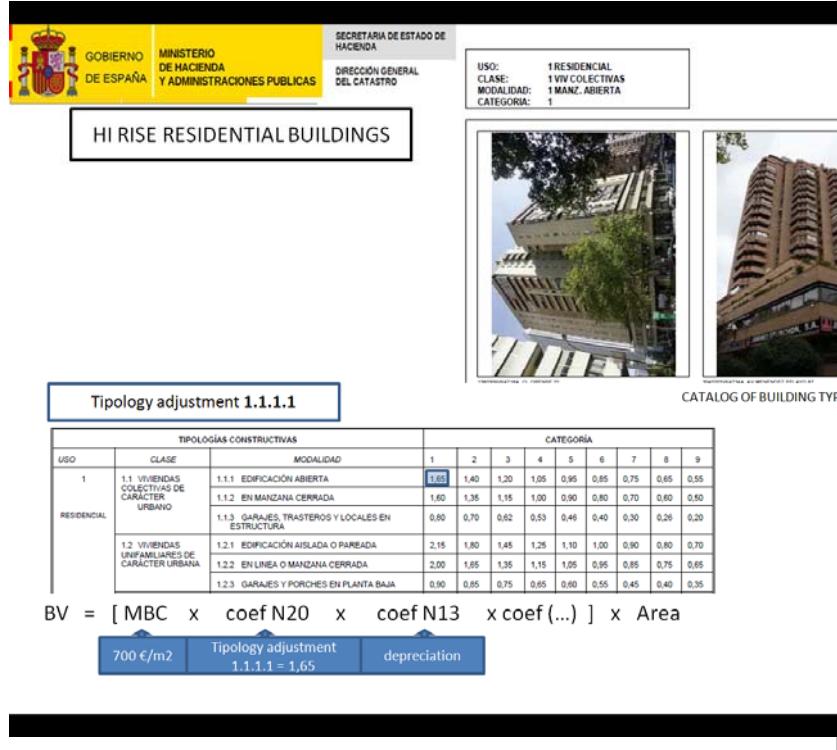
Please continue with Section B, if mass appraisal procedures are applied in your country for immovable property taxation. If single property appraisal methods are used -even if as complementary part of mass appraisal, please answer questions given in Section C.

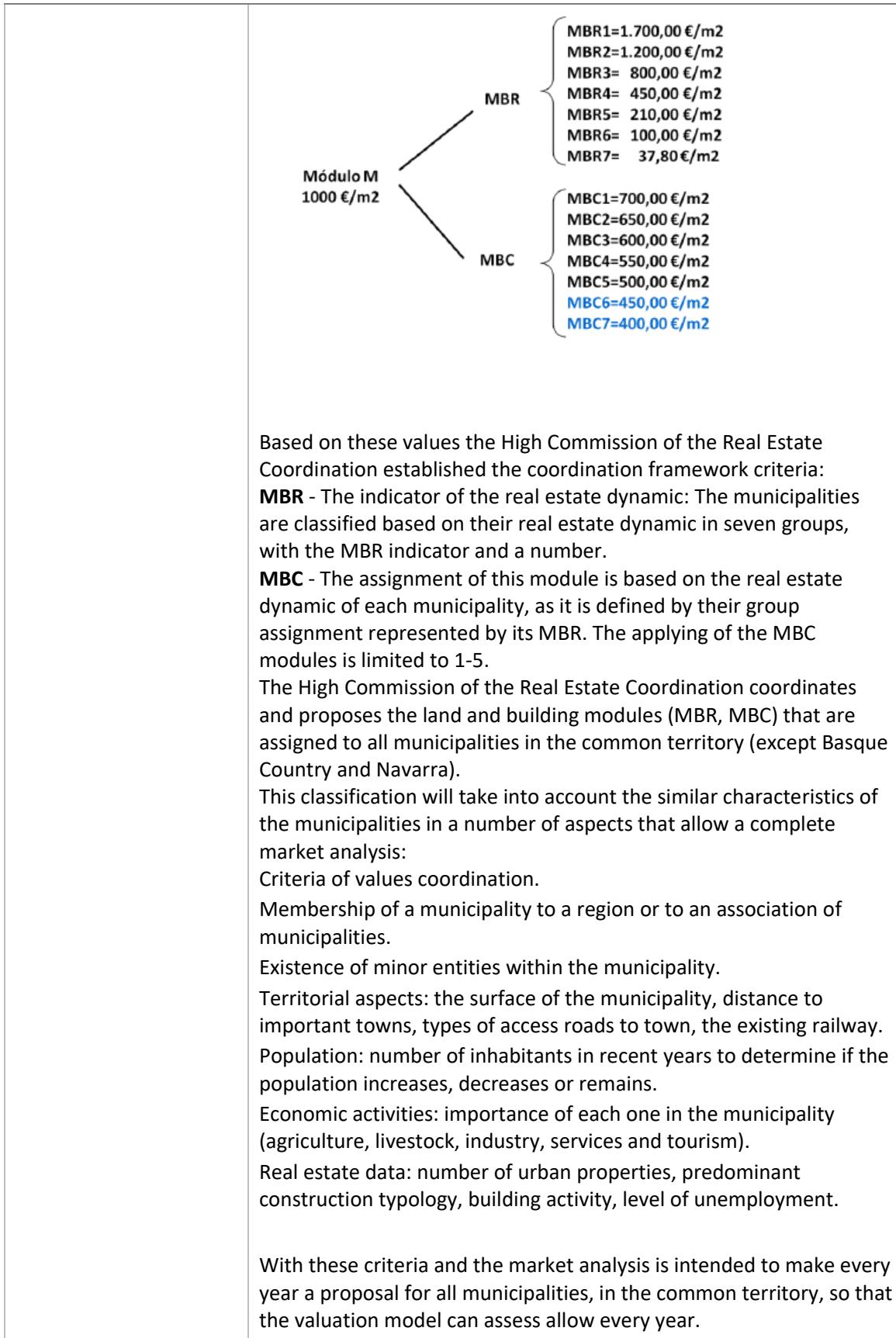
Section B - Questions for mass appraisal procedures in Spain

Questions	Responses
1. Do you have a (computer aided) mass appraisal system in your country? If yes, please indicate also responsible authorities.	Yes. Cadastre
2. Is there any other use of the mass appraisal system than property taxation?	No, it is tailor made for this use.
3. Which CAD/GIS/CAMA (Computer-aided design / Geographic information system / Computer Assisted Mass Appraisal) software packages are used in mass appraisal?	Own developed integrate with our GIS
4. Which geographical or spatial datasets are used in mass appraisal? Please describe the source of these datasets.	We integrate cadastral database (graphical and literal) with value zones obtain by market studies and urban development data 
5. Which geographic or spatial analysis methods (e.g. visibility analysis, proximity analysis) are applied in mass appraisal?	For urban areas see question before. For rural areas we are developing now new system with analysis of proximity to road, slope, and other geographical characteristics
6. Is three-dimensional (3D) data used in mass	For valuation we don't use 3D data but we value real estate that can be composed, for example, by a flat + a % of common areas (stairs,

<p>appraisal? Please describe source of 3D data (e.g. floor plans). Does Valuation objects include condominium, strata title, freehold flats or other 3D units.</p>	<p>garden, pool etc) + a garage + ancillary room. Real estate can be very complex with different geographic units</p>
<p>7. Is there any relationship between the CAMA system and other public registers (e.g. cadastre, land registry, building registry, ...)?</p>	<p>See previous questions</p>
<p>8. Please describe the statistical models (e.g. additive, multiplicative) applied in mass appraisal according to type or functions of properties?</p>	<p>The cadastral value for each property is determined objectively from the data in the Real Estate Cadastre and consists of the value of land and the value of buildings. It is corrected taking into account the particular characteristics of the property. For determining the cadastral value will be taken into account the following criteria:</p> <ul style="list-style-type: none"> a) The location of the property, the urban planning that affect the soil and its ability for production. b) The construction budget of the building, the production benefits, the professional fees and taxes on the building, the use, the quality and the age of the building, and also the historic-artistic or other conditions of the buildings. c) Production costs and benefits of business promotion, or another factor that could be applied in cases of lack of promotion d) Some circumstances and the market values. e) Any other relevant factor determined by regulation. <p>It is calculated using a regulatory procedure established. (see question 2)</p> <p>The Cadastral Value of the urban real estates is obtained from the market value that include the value of the land, the value of the construction, a coefficient that evaluates the expenses and benefits of the promotion (generally 1,4) and a localization factor:</p> <p>$VV = 1,4 \cdot [VR + VC] \cdot FL$</p> <p>VV = market value €/m² of construction VR = repercuion value of land €/m² of construction VC = construction value €/m² of construction FL = Localization factor And as we said before the theoretical market value obtained, using the procedures described in the law, is multiplied by a market reference coefficient (RM), currently set at</p>

	<p>0.50. $V_{\text{Cadastral}} = 1'4 [VR + VC] \cdot FL \cdot RM$</p> <p>The valuation process is described in the following picture</p> <p>LAND VALUE: • Location and parameters of urban planning</p> <p>BUILDING VALUE:</p> <ul style="list-style-type: none"> • Construction budget of the building. • Production benefits. • Professional fees and taxes on the building. • Use. • Quality of the building. • Age / state of maintenance. <p>COSTS AND BENEFITS:</p> <ul style="list-style-type: none"> • Business promotion <p>MARKET REFERENCE: Ministerial Order. (0,50)</p>
9. Please indicate statistical analysis methods (e.g. multiple regression analysis, artificial neural network) applied in mass appraisal?	Statistical analysis for the basic values of soil and constructions.
10. Which land use characteristics (e.g. land use zones) are used as variables in mass appraisal models? Please describe the source(s) of these characteristics.	In urban :Land use and location and building parameters of urban planing In rural: land use, crops (but we are changing the methodology) Cadastre, municipality urban planning regional planning
11. Which environmental and locational characteristics (e.g. location nuisance, distance to points of interest / POIs, environmental risks) are used as variables in mass appraisal models?	They are included in the municipality planning

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<p>In cadastre we define for every unit of construction a typology, a category, a year (for depreciation), a status (good, bad, ruin...)</p> <p>12. Which building or improvement characteristics (e.g. number of unit, construction type and material) are used as variables in mass appraisal models? Please describe the source(s) of these characteristics.</p>	<p></p> <p>Tipology adjustment 1.1.1.1</p> <table border="1" data-bbox="572 804 1253 994"> <thead> <tr> <th colspan="3">TIPOLOGÍAS CONSTRUCTIVAS</th> <th colspan="9">CATEGORÍA</th> </tr> <tr> <th>USO</th> <th>CLASE</th> <th>MODALIDAD</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> <th>6</th> <th>7</th> <th>8</th> <th>9</th> </tr> </thead> <tbody> <tr> <td rowspan="2">RESIDENCIAL</td> <td rowspan="3">1.1 VIVIENDAS COLECTIVAS DE CARÁCTER URBANO</td> <td>1.1.1 EDIFICACIÓN ABIERTA</td> <td>1,65</td> <td>1,40</td> <td>1,20</td> <td>1,05</td> <td>0,95</td> <td>0,85</td> <td>0,75</td> <td>0,65</td> <td>0,55</td> </tr> <tr> <td>1.1.2 EN MANZANA CERRADA</td> <td>1,60</td> <td>1,35</td> <td>1,15</td> <td>1,00</td> <td>0,90</td> <td>0,80</td> <td>0,70</td> <td>0,60</td> <td>0,50</td> </tr> <tr> <td rowspan="3">1.2 VIVIENDAS UNIFAMILIARES DE CARÁCTER URBANO</td> <td>1.1.3 GARAJES, TRASTEROS Y LOCALES EN ESTRUCTURA</td> <td>0,60</td> <td>0,70</td> <td>0,62</td> <td>0,53</td> <td>0,46</td> <td>0,40</td> <td>0,30</td> <td>0,26</td> <td>0,20</td> </tr> <tr> <td>1.2.1 EDIFICACIÓN AISLADA O PAREADA</td> <td>2,15</td> <td>1,80</td> <td>1,45</td> <td>1,25</td> <td>1,10</td> <td>1,00</td> <td>0,90</td> <td>0,80</td> <td>0,70</td> </tr> <tr> <td>1.2.2 EN LÍNEA O MANZANA CERRADA</td> <td>2,00</td> <td>1,65</td> <td>1,35</td> <td>1,15</td> <td>1,05</td> <td>0,95</td> <td>0,85</td> <td>0,75</td> <td>0,65</td> </tr> <tr> <td rowspan="3">1.3 GARAJES Y PORCHES EN PLANTA BAJA</td> <td>1.2.3 GARAJES Y PORCHES EN PLANTA BAJA</td> <td>0,90</td> <td>0,85</td> <td>0,75</td> <td>0,65</td> <td>0,60</td> <td>0,55</td> <td>0,45</td> <td>0,40</td> <td>0,35</td> </tr> </tbody> </table> <p>$BV = [MBC \times \text{coef N20} \times \text{coef N13} \times \text{coef (...) }] \times \text{Area}$</p> <p>700 €/m² Tipology adjustment 1.1.1.1 = 1,65 depreciation</p>	TIPOLOGÍAS CONSTRUCTIVAS			CATEGORÍA									USO	CLASE	MODALIDAD	1	2	3	4	5	6	7	8	9	RESIDENCIAL	1.1 VIVIENDAS COLECTIVAS DE CARÁCTER URBANO	1.1.1 EDIFICACIÓN ABIERTA	1,65	1,40	1,20	1,05	0,95	0,85	0,75	0,65	0,55	1.1.2 EN MANZANA CERRADA	1,60	1,35	1,15	1,00	0,90	0,80	0,70	0,60	0,50	1.2 VIVIENDAS UNIFAMILIARES DE CARÁCTER URBANO	1.1.3 GARAJES, TRASTEROS Y LOCALES EN ESTRUCTURA	0,60	0,70	0,62	0,53	0,46	0,40	0,30	0,26	0,20	1.2.1 EDIFICACIÓN AISLADA O PAREADA	2,15	1,80	1,45	1,25	1,10	1,00	0,90	0,80	0,70	1.2.2 EN LÍNEA O MANZANA CERRADA	2,00	1,65	1,35	1,15	1,05	0,95	0,85	0,75	0,65	1.3 GARAJES Y PORCHES EN PLANTA BAJA	1.2.3 GARAJES Y PORCHES EN PLANTA BAJA	0,90	0,85	0,75	0,65	0,60	0,55	0,45	0,40	0,35
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	<p>13. Does valuation legislation prescribe an investigation into the general quality or performance analysis (e.g. 'ratio study') of the mass appraisal system? If yes, please describe the indicators used in the performance analysis.</p>	<p>There are continuous studies comparing the values with the real markets values.</p> <p>We change the basic modules every year to adapt to the market.</p> <p>National coordination</p> <p>First of all it is necessary to define, as established by the valuation rules, a value module, M; it is the basis of land and building values that are used in calculating the cadastral value. The module M is approved by the Ministry of Finance and Public Administration, from market studies at country level. The current value of this module is 1000 € / m².</p> <p>From this module the land value modules are determined, Basic Module of Repercussion (MBR) and the building modules, Basic Module for Construction (MBC). They are applied to the different homogeneous economic zones of the territory.</p>																																																																																							



14. Please indicate whether single property appraisal is applied for improving accuracy of mass appraisal estimations.	As you see in previous questions, the system is different

Section C. Questions for single property valuation procedures in XX country

Questions	Responses
1. Which valuation methods are used for single property appraisal for property taxation? Please relate valuation methods with the type of valuation objects (e.g. sales comparison approach for unimproved parcels).	
2. Which geographical or spatial datasets are used for single property appraisal? Please describe the source(s) of these datasets.	
3. Which legal property characteristics (e.g. property rights) are taken into account for single property appraisal? Please describe also the source of these characteristics.	
4. Which land use characteristics (e.g. land use zones) are taken into account for single property appraisal? Please describe also the source(s) of these characteristics.	
5. Which environmental and locational characteristics (e.g. location nuisance, distance to POIs, environmental risks) are taken into account for single property appraisal? Please describe the source(s) of these characteristics.	
6. Which building or improvement characteristics (e.g. number of unit, construction type and material) are taken into account for single property appraisal? Please describe the source(s) of these characteristics.	
7. If there is a special valuation database, please indicate which sales comparison method related data (e.g. comparable property identifiers, monetary adjustment for time, physical differences) are kept in this database.	
8. If there is a special valuation database, please indicate which cost method related data (e.g. type and source of cost price, chronological age, depreciations) are kept in this database.	
9. If there is a special valuation database, please indicate which income valuation method related (e.g. gross income, net income, capitalization rate, discount rate) are kept in this database.	

Section D. Information concerning respondent(s)

Questions have been answered by	Respondent
1. Name	Amalia Velasco
2. Affiliation / position	International Affairs Coordinator of Spanish Directorate General for Cadastre
3. Country	Spain
4. E-mail	Amalia.velasco@catastro.mnhafp.es
5. Comments	

Questions Z..A have been answered by	Respondent
1. Name	
2. Affiliation / position	
3. Country	
4. E-mail	
5. Comments	