



HELM

Harmonised European Land Monitoring

# Panorama of European Land Monitoring

Deliverable 1.1

Version: 1

January 2012



The activities leading to these results have received funding from the European Union Seventh Framework Programme (FP7/2007-2013) under grant agreement n° 261562.

Lead contractors for this deliverable: European Forest Institute and European Topic Centre on Spatial Information Analysis

Autors: Núria Blanes (section 1 and 2) and Tim Green (section 1 and 3)

Contributors: This document contains contributions by the entire HELM Consortium and by some members of the HELM Extended Consortium.

Contact: Núria Blanes Guàrdia  
European Topic Centre on Spatial Information and Analysis  
(ETC-SIA)

[nuria.blanes@uab.cat](mailto:nuria.blanes@uab.cat)

Tim Green  
European Forest Institute (EFI)

[tim.green@efi.int](mailto:tim.green@efi.int)

Coordinator: Herbert Haubold  
Environment Agency Austria  
Herbert.haubold

[herbert.haubold@umweltbundesamt.at](mailto:herbert.haubold@umweltbundesamt.at)

This report and the other outcomes of HELM can be downloaded at the project website [www.FP7HELM.eu](http://www.FP7HELM.eu)

## Table of Contents

1. Introduction .....	5
2. Collect and Interpret Previous Work .....	7
2.1. Introduction.....	7
2.2. Objectives .....	7
2.3. The EU Land Monitoring Programme Storyline .....	8
2.4. Analysis of the discourses.....	16
2.4.1. Concepts .....	16
2.4.2. Methodology.....	16
2.4.3. Implementation of the study .....	17
2.4.4. Results .....	21
2.4.5. Conclusions of the method applied .....	23
2.5. Stakeholders analysis .....	23
2.6. Conclusions.....	25
3. Document Land Monitoring Activities at the Member State Level .....	26
3.1. Aims.....	26
3.2. Methods .....	26
3.3. European and International Land Monitoring.....	32
3.4. National Organisations and Initiatives – HELM .....	47
3.4.1. Austria .....	47
3.4.2. Belgium .....	54
3.4.3. Bosnia and Herzegovina.....	59
3.4.4. Bulgaria .....	68
3.4.5. Czech Republic.....	78
3.4.6. Finland.....	89
3.4.7. France .....	98
3.4.8. Germany .....	104
3.4.9. Hungary .....	107
3.4.10. Iceland.....	115
3.4.11. Ireland .....	120
3.4.12. Italy .....	124
3.4.13. Luxembourg.....	132
3.4.14. The Netherlands .....	138

3.4.15.	Norway.....	144
3.4.16.	Portugal.....	150
3.4.17.	Romania.....	161
3.4.18.	Serbia.....	168
3.4.19.	Spain.....	172
3.4.20.	Switzerland.....	182
3.4.21.	United Kingdom.....	191
3.5.	National Organisations and Initiatives – Non-HELM.....	197
3.5.1.	Croatia.....	197
3.5.2.	Denmark.....	198
3.5.3.	Estonia.....	200
3.5.4.	Greece.....	201
3.5.5.	Latvia.....	202
3.5.6.	Liechtenstein.....	203
3.5.7.	Lithuania.....	204
3.5.8.	Malta.....	206
3.5.9.	Montenegro.....	207
3.5.10.	Poland.....	208
3.5.11.	Slovakia.....	210
3.5.12.	Slovenia.....	211
3.5.13.	Sweden.....	212

# 1. Introduction

The current deliverable is a compilation of two highly dependent tasks: one task analysed the previous work done concerning the land monitoring development at EU level by looking at the evolution of concepts and technologies together with the ongoing workshops and projects taking place in parallel; the other task was focused on the documentation of the land monitoring activities developed at Member States and also at sub-national level in order to be able to map a who-is-who directory of the land monitoring stakeholder community at national and sub-national level and produce a summary table to facilitate the assessment and interpretation of the different cases in the various member states.

The aim of both activities is to provide a general understanding of the evolution and current panorama of the land monitoring programme at different administrative levels, in order to provide the basis for the HELM Consortium to build upon what has been already achieved and at the same time, to have a clear overview of the current situation and the improvements that can be proposed.

Concerning the first task, its main objective was to reach a common overview for all the project partners of what has been already achieved at EU level on land monitoring, trying to avoid repetitive work in this project. All the relevant and existing documentation used for this exercise has been made available to the HELM Consortium, and the discourses have been analysed applying a text mining analysis to obtain frequencies of words, paragraphs or categories pre-established and applying visualisation tools such as dendograms (to see words' clusters and related frequencies) or maps of words (to see proximity or distance between the different words analysed) to facilitate the comparison of the documents. Analysis of the stakeholders participating in the process has also been undertaken in this task.

The description of the method can be found in section 2.4.2 and the results are described in section 2.4.4 of this document; the complete set of fact sheets per document and groups of documents are included in Annex 2 and Annex 3 respectively.

However, the need to contextualise this analysis in a broader framework have been identified by the HELM Consortium, and for that reason, the main critical items in the development of the European land monitoring programme from the agreement to produce Corine Land Cover in 1985 until nowadays, and the influence that the different discussion groups and projects have had in this overall process, have been described in the section *The EU Land Monitoring Programme Storyline*, which can be found in section 2.3.

Concerning the second task, the main objective was the documentation of the main current and existing land monitoring activities at EU, Member State, sub-national and also global level. For that purpose, a fact sheet was developed to describe: (i) the important organisations responsible for land monitoring in each country, and (ii) the main land monitoring initiatives in that country. Where sub-national organisations or initiatives are a significant contribution to the land monitoring set-up for a particular country, the respondents were asked to also describe those organisations and initiatives. The fact sheet was distributed to the HELM participants (general and extended consortium). The response was part of the required project work for the general consortium and a voluntary contribution for the extended consortium; the responses

were compiled into the directory that makes up section 3 of this document. In addition, results from the joint Eurostat/EEA Land use / land cover area frame survey land<sup>1</sup> were used to provide information about the land monitoring organizations and/or initiatives where there was no information from the questionnaire distributed to HELM partners. For organisations operating at the European/global levels and for initiatives implemented at the European/global levels the fact sheets were completed based on the knowledge contained within the HELM consortium and research of information available on the Web.

During the definition of the Objects of Consideration for the HELM project, it was decided to focus on spatially explicit polygon mapping approaches (such as used in CLC, where each polygon represents a landscape unit), and to exclude sampling and statistics based land monitoring approaches (e.g., forest inventories) which usually do not result in maps. Therefore the focus of the task was on such approaches. However, the national representatives within HELM were given the option to include the organisations and initiatives that they considered provide the necessary background to provide an overview of the land monitoring situation in their country.

---

<sup>1</sup> Spendingwimmer, F. LUCAS 2009/2010 Land Use / Cover Area Frame Survey. Eurostat. European Environment Agency.

## **2. Collect and Interpret Previous Work**

### ***2.1. Introduction***

This document aims to provide an overview of the evolution of the European land monitoring programme in the past 25 years, in order to achieve a common understanding between all the stakeholders that are participating in the HELM project.

The section „The EU Land Monitoring Programme Storyline“ summarizes the main critical items in the development of the European land monitoring programme from the agreement to produce Corine Land Cover in 1985 until now, and the influence that the different discussion groups and projects have had in the overall process described.

The section „Analysis of the discourses“ and subsequent sections, analyse the collected documentation in this regard, in order to analyse the discourses, and to have a comprehensive understanding of pertinent previous workshops and results already achieved to avoid repetitive work. This analysis has been performed in a very systematic way, analysing word frequencies and different mind maps concerning categories of different words or phrases. It aims to provide an overview of what has been discussed in the different forums (an analysis of the groups of documents has also been performed) but it does not provide a storyline, reason why the previous section has been also incorporated to the task.

### ***2.2. Objectives***

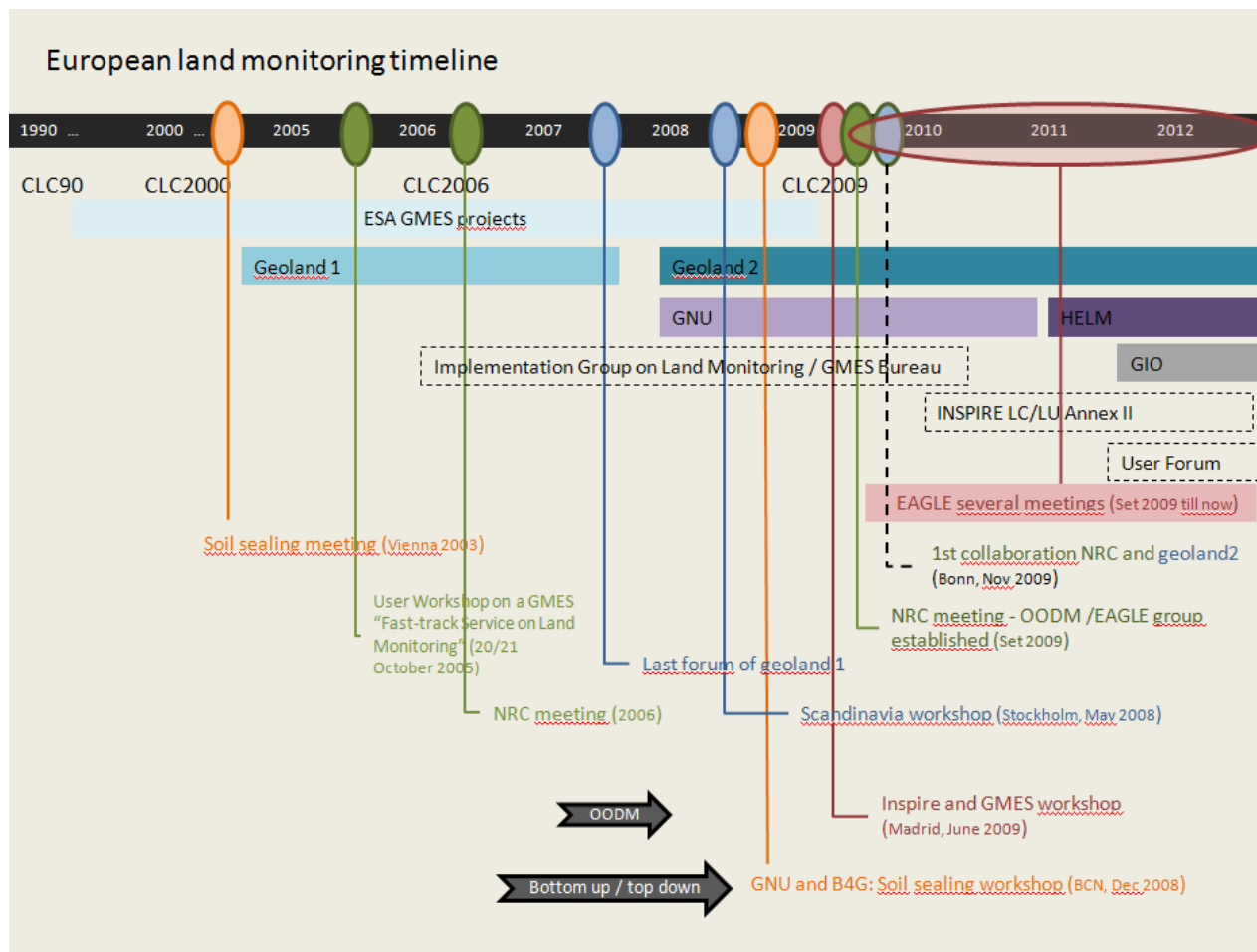
The main objectives of this work package are to describe the storyline of the evolution of the European land monitoring programme in the last 25 years, and based on this description, to achieve a comprehensive understanding of the pertinent previous workshop and project results achieved during the past years.

In order to fulfil the second objective, two analyses have been undertaken;

1. Analysis of the relevant documentation agreed during the proposal phase of the project, adding the most recent documentation relevant for the activity. These documents have been provided by the HELM Consortium and /or found in the different webpages of the corresponding projects or discussion groups.
2. Analysis of the stakeholders that have been involved in the different meetings.

## 2.3. The EU Land Monitoring Programme Storyline

Figure 1. Timeline schema of the European land monitoring programme



Coordination of Information on the Environment (CORINE) was initiated in 1985 by the European Commission in order to collect information relating to the environment. Data for most topics (such as air, water or soil) were merged from national maps and databases in the member states. The exception was *Land cover* where national data was found to be too meager and diversified for such an approach. The response was the initiation of CORINE Land Cover (CLC) as a centralised, remote sensing based land cover mapping effort resulting in the CLC-1990 land cover dataset. Since 1994, the European Environment Agency (EEA) integrated CORINE in its work program. The centralised approach to land cover monitoring gradually gave way to increased involvement by the member states, resulting in two more campaigns producing the CLC-2000 and CLC-2006 pan-European land cover datasets. These products maintained the centralised specification and standardisation of the CLC end product, making CLC the *de facto* standard for a pan-European land monitoring system.

The GMES Initial List of Priority Themes (Annex to GMES Action Plan, COM(2001) 609) contains the environmental topics of (a) Land Cover Change in Europe, (b) Environmental Stress in Europe, (c) Global Vegetation Monitoring, (d) Global Ocean Monitoring, (e) Global Atmosphere Monitoring. This list was revised and discussed by the GMES Steering Committee on July 17<sup>th</sup>, 2002, in Paris. As a result, topic A focused on nature protection sites, urban areas, and coastal zones; and topic B focused on oil spills, forest fires, floods, coastal erosion and desertification. All of this was linked to the 6<sup>th</sup> Environmental Action Programme of the EC (2002-2012).

At the Earth Observation Programme Board 14/15 May 2002 in Paris, the Austrian Delegation raised the issue that GMES services are overall too centralised and national observation programmes should be involved to achieve better networking across the jurisdictional levels and utilise a wider range of expertise. Land monitoring was discussed in depth at several meetings. Already at its first meeting in 14/15 July 2002 for land monitoring, a “priority of action” was defined: More involvement of a wider range of stakeholders (including the public) in data gathering (using Internet techniques) and the routine inclusion of census and other socioeconomic data in GMES land monitoring was envisaged. The GMES Forum Thematic Session on Environmental Stress and Land Management emphasised that *“Land is a finite, non-renewable resource and its conservation is a key objective of environmental policies. The use of land influences the quality of the other environmental resources: water, nature and air. Spatial planning policies determine the uses of land and can be a powerful tool towards sustainable development. ...”*

The GMES Advisory Council (GAC) has covered the topic land monitoring especially at its 5<sup>th</sup> and 6<sup>th</sup> meetings on 14 November 2005 and 31 May 2006, respectively. Specifically, at the fifth meeting, the centralised vs. decentralised production was covered<sup>2</sup>. As a continuation to that, at the sixth meeting of the GAC, the chairs of the

---

<sup>2</sup> Quote from the minutes, concerning the Land Monitoring Service:

- “The proposed service is perceived as too centralised, especially regarding the data and product quality, which requires an in-depth knowledge based on national reference centres.
- The organisation of the service, including the expected role of Member States, should be clarified: an implementation work plan from now until 2008 should be established.
- The service specifications included in the background document should be still reviewed and consolidated, especially by the Member States, before adoption. “

Implementation Groups reported on their activities. Dietmar Grünreich, IG land, stated “*The Fast Track core service would offer the opportunity to integrate national data sets with remote sensing data, and would contribute significantly to a uniform harmonised dataset in line with INSPIRE goals.*” Interestingly, the integration of national data sets at this moment is exclusively related to national in-situ data sets but not to national remote sensing based land information systems. (The definition that in-situ equals non-satellite from the GMES point of view appear later, at that moment GMES considered in-situ data to be real in-situ data).

In parallel to that, from mid-1990s until nowadays, the European Space Agency and afterwards the European Commission funded several EU projects under the GMES programme (Global Monitoring for Environment and Security). All those projects have its basis on developing services for an unspecified set of end users based on Earth Observation satellite data combined in some cases with “in situ data” (defined as non-satellite, but not necessarily obtained in-situ e.g. aerial images), in order to facilitate the accomplishment of reporting obligations of several European Directives and Programmes.

In the specific case of the land monitoring, several projects have been finalised (the most relevant ones are: GSE AquaSoilSAGE, GSE Forest Monitoring, GSE Urban Atlas, GSE Land, geoland1 and GNU (GMES Network of Users which covered the cross-cutting issues of GMES, thus, among other topics land) and others are still ongoing (geoland2, MS Monina, EUFODOS, and, not least, HELM) with the aim to provide accurate and cross-border harmonised geo-information at global to local scales. Within European Directives there is no legal obligation to derive land cover products, although for many directives this kind of information is nevertheless urgently needed as background information.

This work has been developed in parallel to the work initiated and handled at national level to build national land monitoring programmes, and in parallel to the CORINE Land Cover program described above. One of the main problems arises with the lack of comparability and difficulties in harmonise the different products being developed at different scales and by different administration bodies (considering as well, the different aims that each product should accomplish).

The GMES programme tackled European land monitoring with a proposal to conduct automated classification of remote sensing images to produce land cover and land use information at a better resolution (1ha). The first proposal (2005) implied providing 21 classes, a considerable reduction from the 44 classes used in the CORINE Land Cover programme. Several Member States had also developed their own land monitoring programmes fulfilling their specific national needs, but without ensuring compatibility with any of the products being developed at EU level or in other countries. The GMES proposal was met with considerable opposition in Eionet NRC meetings in 2005 and 2006. Partly, the proposal was criticised for abolishing the established timeline represented by the previous CLC campaigns. Partly, many member states reacted against the attempt (whether imaginary or real) to replace well-tried national systems adjusted to national needs with a top-down approach disregarding the specific needs and efforts in each country and on the other side being incompatible with established time series on European level. The result was an informal “movement” where several countries started to explore the potential of a bottom-up approach to pan-European land monitoring through harmonisation and merging of data from national systems.

The discussions also emphasised the lack of use of European products by the Member States (the ones developed by the CLC programme and by the GMES Land programme). Up until 2010, European institutions had stated that the Member States were the beneficiaries of the European land monitoring programme. Member States, on the other hand, held that the beneficiaries were the European institutions themselves. A combination of a bottom-up and a top-down approach in this context would be crucial to make the best use of products at both national and at European level. A bottom-up approach of aggregating national data would extract more added value from the national products being already developed at country level. A top-down supply of standardised pan-European information on basic land cover and land use parameters would be useful as a tool to achieve harmonisation and comparability of the aggregated data across Europe.

From the European institutions side, it is important to highlight the two main roles they play in all the process: (1) they are the institutions providing the funding to develop European research programmes and projects; and (2) they determine the requirements or specifications of the products to be developed and of the validation of those products. Therefore, although some of the discourses are based on the development of a bottom-up approach and on the fulfillment of national needs, the reality is that European institutions impose their needs and the operational products being developed are mainly focused on demands from those institutions. Member States have, however, also expressed that the need for information at the pan-European level is both reasonable and acceptable as long as it is clearly expressed.

It is known that, for the moment, neither CLC nor the land products developed by GMES projects are applicable at national level for those countries highly advanced in producing cartographic and land cover/land use data. The amount of more detailed information at national level (in-situ information such as orthophoto images, cadastral information, etc.) lead to a lack of interest from the countries point of view for using the EU products in their own monitoring programmes.

Therefore, developing the European products following a bottom-up approach would implicitly include the interests of the MS as they will be the ones developing part of the products and harmonising them at EU scale, and from the other side the requirements of EU institutions would also be fulfilled. Member States have demonstrated that the approach is workable in the simple case of producing CLC from national databases. Similar results for the more detailed CLC-changes have, however, not been demonstrated and Member States have not yet proven that general harmonisation between the different products, methods and production dates could be reached.

Based on all these discussions and in order to fulfill the demands of the EU institutions, GMES Land programme changed the primary objectives of a semi-automated classification of 21 land cover classes into the production of 5 High Resolution Layers (imperviousness, forest, grasslands, water bodies and wetlands) that could be used in the analysis of the content of the CLC classes and compare those between countries, for example. These HRL are nowadays being verified by a technical team within the geoland2 project, and countries should validate them (on a voluntary basis). So it is important to combine all the initiatives to have at the end an improved product and a good data model for land monitoring at EU level serving as well some of the needs expressed by MS.

The last initiative has been the GMES User Forum, which started its operations with a preparatory workshop on the land component of GMES on 9 March 2011 in Brussels. The workshop covered the state of the land component and concluded that land monitoring is a very broad issue and of interest to many users, so a systematic consultation process is still needed. In this regard the EIONET should play an important role. At national level, the MS should create links among their relevant user communities and conduct a detailed collection of user requirements and then report this to the Commission.

The GMES programme is now entering the operations phase in GIO (GMES Initial Operations) which runs from 2011 until the end of 2013. Until now most of the GMES land monitoring projects have not produced wall-to-wall products (with the exception of the Imperviousness high resolution layer and the urban atlas). In GIO the aim is to produce wall-to-wall coverage of the 5 high resolution layers for Europe. Prior to publication of the GIO tender, EEA asked EIONET NRCs conducted a survey of which MS were interested/had the capacity to contribute.

This is the reason why the issue of centralised-decentralised production within GIO (GMES Initial Operations) is covered: a centralised production by commercial service providers of image post processing and production of High Resolution Layers (HRLs) combined with a decentralised verification and enhancement by Member States. However, the Corine Land Cover update by EEA Member States and associated countries should be produced in an entirely decentralised way, involving production of high-resolution layers and validation.

At its first official meeting, 17 May 2011 in Brussels, the GMES User Forum discussed the role of harmonised land cover data and considered the importance of INSPIRE in this regard. The need for free, open and interoperable land products, in line with GEO (Group on Earth Observations) data sharing principles, was stressed. Several delegations were concerned that the High Resolution Layers were still not sufficiently clearly defined.

It is clear that the process described would not have been the same, or it will not be at the same point of development, if several working groups had not played a specific role, while all the discussions at project level and at institutional level were ongoing. Some of the most important ones are shown in the following table (Table 1), highlighting the role that can be associated to each group and which are the main achievements (or foreseen achievements) of each of them.

## Panorama of European Land Monitoring

**Table 1. List and role of the working groups participating in the EU land monitoring programme discussion**

Working group	Period	Role	Achievements / Main objectives
GMES Implementation Group on Land Monitoring / GMES Bureau	2006 - 2010	<p>Terms of Reference :</p> <p>supervising and validating the implementation of the “<b>fast track</b>” services (FTS or FTSP),</p> <p>reporting about their progress to the GMES management structure</p> <p>organise regular progress reviews during the development period</p> <p>propose the service validation</p>	<p>GMES / LMCS architecture and governance:</p> <ul style="list-style-type: none"> <li>• identification of service elements based on user requirements</li> <li>• proposals of scenario for the LMCS governance taking into account the existing capacities and due consideration to subsidiarity</li> <li>• LMCS requirements               <ul style="list-style-type: none"> <li>○ Basic reference data (incl. in-situ data)</li> <li>○ Biophysical parameters</li> <li>○ LU / LC mapping (based on CLC, including HR layers, local hot spot mapping)</li> <li>○ specific thematic LULCC information</li> </ul> </li> </ul>
Eionet NRC Land Cover (EEA network)	continuous	<p>Nationally funded institutions /organisations which may be nominated by member countries to play a role in technical coordination within their countries and cooperate with the EEA and the European Topic Centres established to cover various topics</p>	<ol style="list-style-type: none"> <li>1. <i>User Workshop on a GMES “Fast-track Service on Land Monitoring”, 20/21 October 05 (Brussels)</i></li> <li>2. NRC meeting in 2006: geoland proposal for Land Monitoring Precursor (16 classes, MMU: 1 and 5 ha) withdrawn by NRCs land cover (in a later stage renamed to Fast Track Service Precursor)</li> <li>3. NRC meeting in September 2009: it arises the need to create a working group with the most active MS in order to work on a proposal for a future land monitoring programme at EU level, involving all the initiatives being developed at country level as well as at European level.</li> <li>4. Letter NRCs to NFPs/LM Group in 2009</li> </ol>

## Panorama of European Land Monitoring

EAGLE	2009 - 2012	<p>Firstly, the group was initiated in 4/2009 named OODM (Object oriented data model) and changed into EAGLE (European Action Group on Land monitoring in Europe). The main aim of the group is to support the discussion at EU level for the development of a new European land monitoring programme and it is composed by the Eionet NRC Spatial Analysis willing to participate in this group, although it is open to additions.</p> <p>First request for creation of an Eionet IG already in 2006 – not implemented by EEA.</p>	<p>Achievements to be reached:</p> <ul style="list-style-type: none"> <li>- Evaluate how the GMES initiative and the GMES Land products (nowadays 5 High Resolution Layers) fit into already existing national land monitoring programmes</li> <li>- Development of a data model that fulfills the European needs and is able to gather comparable data from member countries (generalisation at EU level)</li> </ul> <p>Agreement on the first draft of the data model has been reached; testing phase has just started to evaluate the feasibility of the proposal.</p>
INSPIRE thematic working groups	2010 - 2012	<p>Development of INSPIRE data specifications: description of how data can be organised as a basis for technical interoperability but not addressing any challenge linked to different resolution, accuracy, definitions or nomenclature.</p>	<p>Draft specifications sent to all interested stakeholders.</p> <p>Final version will be produced by April 2012 and then, JRC will have the task to finalise the specifications for all data included in the INSPIRE Directive and publish it.</p>
GMES User Forum	2011 - ...	<p>The GMES User Forum has been established by the Commission to involve user representatives in the GMES governance. The User forum, other than the GMES committee, has only an advisory role and cannot influence decisions by the Commission. The Forum is chaired by the Commission.</p>	<p>Established in May 2011 (first official meeting), the purpose of the User Forum is to advise the Commission with regard to the definition and validation of user requirements, and to the coordination of the GMES programme with its public sector users.</p>

As has been described, a lot of effort has been put into establishing a dialog between the different institutions involved in this complex process, but the exercise is yet to be completed and the following steps to take the land monitoring programme forward at EU level should be established.

There are still several discussion points that should be handled, tackled or decided in the near future such as:

- EO data acquisition process & EO data acquisition timing
- Access to the EO data: should MS or EU institutions pay for this data and should it be distributed for free or restricted to those paying for the data?
- What is the real market of the GMES products at EU level if no other stakeholders are interested in purchasing them?
- Funding of all the parallel activities is still an open issue, as well as the cost-benefit analysis of the products provided.
- Still ongoing discussion on in situ data, while there is a clear demand from the side of the service providers and EU institutions, from the side of the MS there is still reluctance to provide this information provided the current situation on data availability. Somebody should take the compromise to provide this data, and the consequence for that is to reserve also some budget at EU level to obtain this data. Most importantly, it has not yet been clarified what the incentive there would be for organisations in the MS to contribute their in situ data to GMES services. In order to fill this gap, and as a continuation of the ISOWG (In Situ Observations Working Group), the GISC project (which stands for coordination of access to in-situ data) was launched as a pre-defined beneficiary action of the FP7 space programme, with the European Environment Agency being the beneficiary. The GISC project will run until the end of 2012.

Nowadays, and provided all the discussions and proposals concerning how to develop a better land monitoring programme at EU scale with the involvement of the member states; the proposal that is currently being evaluated and tested is the one that focuses on 5 HRL and how these layers can provide more information to the existing CLC polygons. However, and on practical terms MS are developing their own products, CLC is still handled by the EEA fulfilling the previous premises and GMES is developing a set of products useful at EU scale that should provide content to the CLC polygons, but yet to be seen the final results. Increased interest for GMES products in Member States requires a serious user uptake effort where member states are actively and profoundly involved in the actual development, testing and administrative logistics of integrating these products in national production lines.

Therefore, it can be concluded that a real communication and coordination, together with the willingness to develop a useful structure to develop the land monitoring programme at EU level is a must. However, how to do it is still an open question and there is still room for improvements, as all the past attempts have not yet been 100% successful.

## **2.4. Analysis of the discourses**

### **2.4.1. Concepts**

Provided the huge amount of information to be analysed, it has been decided that the best approach for obtaining meaningful results was to apply text mining analysis and visualisation tools<sup>3</sup>.

Text mining refers to the process of deriving high-quality information from text. It usually involves the process of structuring the input text, deriving patterns within the structured data, and finally evaluation and interpretation of the output. Typical text mining tasks include text categorisation, text clustering, concept / entity extraction, document summarisation, etc.

### **2.4.2. Methodology**

#### **2.4.2.1. Selection of the documentation that will be analysed**

A set of 34 documents was selected to be part of the analysis from a longer list of documents suggested by participants in the HELM project.

The criteria for the selection of the documents being analysed have been:

- Publication date: documentation previous to 2007 has not been included (due to the evolution of the field in the last 2-3 years, and considering as well, the limited amount of resources for the development of the activity)
- Technical documentation has not been included in the analysis, because the purpose of the task was the analysis of the discourses mainly presented in meetings or in discussion documents.
- Relevance of the document: priority was given to:
  - o Discussion groups such as:
    - GAC (GMES Advisory Council) documentation
    - EAGLE documentation and minutes
    - Interest Group on Land Monitoring Core Service
  - o GMES projects such as:
    - Geoland 1 and Geoland 2
    - GNU (GMES Network of Users)
  - o Policy documents such as the ones issued by:
    - The GMES Bureau concerning the constitution of a GMES User Forum or the establishment of a roadmap for the GMES political development

---

<sup>3</sup> From the literature review: "Text mining is a semi-automated process of extracting knowledge from a large amount of unstructured data". *Seeding the survey and analysis of research literature with text mining*. Dursun Delen, Martin D. Crossland. *Expert Systems with Applications* 34 (2008) 1707–1720.

All the documentation have been organised by groups of documents and stored in the HELM platform for sharing documentation, in order to make it available for the whole Consortium, as one of the activities to be accomplished under this task.

Link to the documentation: <https://fp7helm.basecamphq.com/projects/5735406-helm/files/cat/69154700>

Annex 1 contains a table showing the selected documents. [The Annexes are available as a zip file available with this document on the HELM web-page <http://www.fp7helm.eu/>].

### **2.4.2.2. Selection of the softwares used for the evaluation**

A software package combining WordStat, QDA Miner and Simstat was chosen for the analysis, as it contains the main tools that were applied in the described analysis. The package was chosen because it was considered to be the most appropriate for the task – i.e. to analyse the documentation through a text mining exercise, in order to determine the main items highlighted in the document by a frequency analysis and its visualisation through a mind map of the document.

The HELM Consortium also proposed other possible software, mainly Open Source, but they were not considered appropriate for the task due to the complexity of their application on the one side, and on the other side, because none of the other considered software offered the complete analytical package desired for this task.

In order to analyse the number and types of stakeholders that have been involved in the discussions being studied, names, institutions, roles and countries of the participants were manually extracted and compiled into an excel spreadsheet (for all those documents for which this information is available). From this compilation, statistics on involvement/degree of participation of the different countries, taking into account the different roles, etc. has been extracted.

### **2.4.3. Implementation of the study**

This study was divided into the analysis of words, phrases and categories. Different graphical tools have been used such as maps and dendogrames to better understand and explain the results. This analysis was done for every document individually and for each group of documents (Annex 2, Annex 3). [The Annexes are available as a zip file available with this document on the HELM web-page <http://www.fp7helm.eu/>].

#### **2.4.3.1. Frequency analysis**

The Frequency tab is used to display a frequency table of words or content category. This can be used to perform a univariate frequency analysis on words or categories and also to modify any of the active dictionaries or word lists. All lists can be sorted alphabetically or by frequency in descending or ascending order. We executed this analysis tool for words, phrases (in this case, analysis per phrases returns all combinations of words that occur with a predetermined minimum frequency) and categories.

#### **2.4.3.2. Dendrogram of words and phrases**

WordStat uses an average-linkage hierarchical clustering method to create clusters from a similarity matrix. The result is presented in the form of a dendrogram, also known as a tree graph. In such a graph, the vertical axis is made up of the items and the horizontal axis represents the clusters formed at each step of the clustering procedure. Words or categories that tend to appear together are combined at an early stage while those that are independent from one another or those that do not appear together tend to be combined at the end of the agglomeration process. WordStat allows one to further develop categorisation by providing various graphic tools to assist the identification of related words or categories. Those tools are obtained by the application of hierarchical cluster analysis and multidimensional scaling on all included words or categories and are displayed in the form of dendrograms and concept maps. Cases or documents may also be clustered based on their content similarity using the same statistical and graphic tools.

#### **2.4.3.3. Map of words, phrases and categories**

Word maps are graphic representations of the proximity values computed on all included keywords using multidimensional scaling. In those maps, a point represents an item (keyword or content category) and the distances between pairs of items indicate how likely those items tend to appear together. In other words, items that appear close together on the plot usually tend to occur together, while words or categories that are independent from one other or that don't appear together are located on the chart far from each other. Colors are used to represent membership of specific items to different partitions created using hierarchical clustering. Lines represent relationships between data points of the multidimensional scaling plot.

Entries in the categorisation dictionary can consist of individual words or multiword expressions. We have built a dictionary of categories that describes and classifies the contents of the documents. This dictionary is compared against the documents that have been loaded into WordStat. The results show the importance of each category of the dictionary in every document or group of documents. To create the dictionary we analysed the frequencies of words present in the 34 documents studied. After compiling a list of most frequent words, the words were grouped into the categories (

Table 2).

**Table 2. Categories established to create a categorisation dictionary to analyse all the documentation**

<b>CATEGORIES</b>	<b>WORDS</b>
Directives / Programmes	GMES, INSPIRE, Policy, Data, Regulation, GIO, Programme
LandCover / LandUse	Attributes, CORINE, Elements, Land cover, Land monitoring, Land use, Classes
Needs	Requirements, Specifications, In situ data, Satellite data, Earth Observation, Satellite instruments, Space component, Reference data Time series, Remote sensing, Spatial resolution, Temporal resolution, Horizontal resolution, Vertical resolution, Data access
Stakeholders	Country, Europe, Member states, National, Regional, Space agencies, GMES Bureau, EEA, European Commission, Steering committee.
Techniques / Methodology	Aggregation, Generalisation, Harmonisation, Bottom-up, Top-down, Coordination, Change detection, Calibration, Validation, Local component
Tools	Data model, OODM, Parameterisation, Population, Object Oriented Data Model
Roles	User forum, User, Partners board, Service providers.
Results	GMES services, Core Services, Global, Land service, HRL, Downstream services, DS, CS, High resolution
Funding	Annual cost implication, resources, cost expenditures, cost benefit analysis, Budget

Table 3 contains an example of the result obtained. The most important category of the document analysed is LandCover / LandUse with 65 words belonging to it.

**Table 3. Outcome of the analysis per categories (example).**

	<b>FREQUENCY</b>
<b>LANDCOVER/LANDUSE</b>	65
<b>DIRECTIVES/PROGRAMMES</b>	33
<b>STAKEHOLDERS</b>	22
<b>RESULTS</b>	21
<b>ROLES</b>	10
<b>NEEDS</b>	9
<b>TOOLS</b>	7
<b>TECHNIQUES/METHODOLOGY</b>	4
<b>FUNDING</b>	3

## **2.4.4. Results**

### **2.4.4.1. Single documentation**

A fact sheet was written for each document analysed.

The fact sheet contains the analysis of:

- single words: frequency analysis of words appearing more than 10 times (this number can vary depending on the length of the document, but this is the average value taken). Dendogram analysis to show word clusters and the related frequency and map of words showing the proximity / distance of the different words related with its relative importance
- phrases: the analysis done is just the frequency of the same phrases appearing in the document
- categories (described in section 4.3.3): frequency analysis of the categories with no limit and the map of categories to show main relations between them.

The analysis per each document provides an overview of the main contents of that document and the maps of categories provide the opportunity to compare the different documents in a systematic way. All the fact sheets have been compiled in Annex 2. So, with this approach it is possible to know the main items dealt with in a specific meeting although it is difficult to extract specific sentences or conclusions reached in those documents.

### **2.4.4.2. Grouped documentation**

The 34 documents were also grouped into 4 main groups (see also Annex 1), following the criteria of “assuming” content similarity, similar participation (institutions or person) or similar objectives:

1. EAGLE and Eionet NRC meetings
2. GAC (GMES Advisory Council) and IGLMCS (Implementation Group on Land Monitoring)
3. GMES
4. UFO (User Forum) and GNU

A fact sheet per group of documents has also been produced, containing the following items:

- Frequency analysis of words, phrases and categories
- Map and dendogram of the categories (the maps and dendograms for words and for phrases did not provide more information than the frequency analysis that is already provided for both aspects).
- Statistical comparison about the contents of the documents per each of the groups, to detect similarities and disparities between the documents selected in the same group.

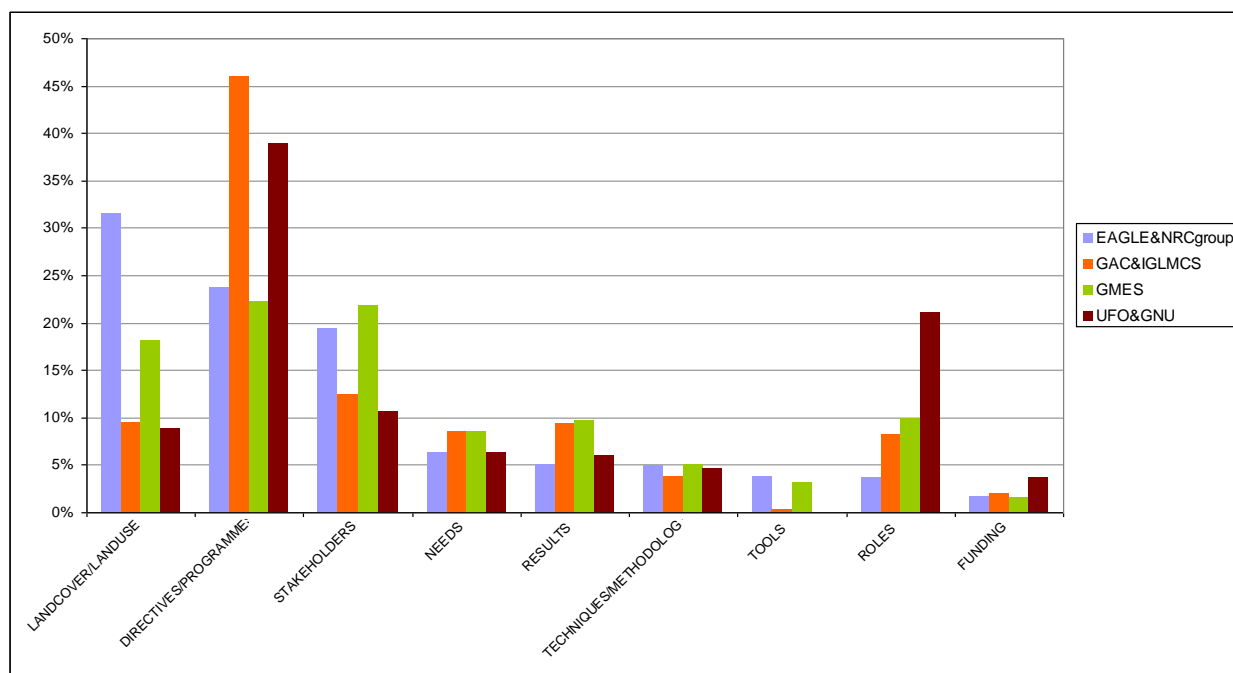
The analysis per groups of documents enables the statistical comparison of the contents of the different documents and the comparison as well between the different groups by using the maps of categories. The four fact sheets are presented in Annex 3.

As can be seen in the fact sheets, if we analyse the similarities between the groups, it can be recognised that 3 out of the first 10 words appearing in the frequency analysis are present in all the groups (Europe, land and data), and 5 out of the first 10 words are present in 3 out of 4 of the groups studied (cover, information, national/Member States, user and GMES). It is clear that the discussions in all the documents highlighted very similar aspects, although it should be noted that it is necessary to check the document itself, to confirm the the context.

Looking at the phrases analysis, “land cover” shows the highest percentage in 3 of the groups – an expected result considering that the selection of the documents was already focused on analysing the evolution of the discourses and discussions around the land monitoring programme at EU scale.

Finally, evaluating the frequency analysis throughout the categories specified in section 4.3.3, the resulting comparison between the different groups of documents can be observed in Figure 2.

**Figure 2. Comparison between groups of documents of the results of the frequency analysis by categories**



The results shown in this table can be biased considering the words that have been selected to belong to one or another category, although it provides a very good comparison of the 4 groups of documents.

Finally, a complete overview of the statistical comparison of the contents of all the documents by chronological order is provided in Annex 4.

### 2.4.5. Conclusions of the method applied

It can be concluded that, for analysing huge amount of documentation, text mining and the software selected to develop the analysis can be considered as very useful for comparison purposes of the different documentation analysed.

This method is also useful to provide a picture about the main discussion points and / or items tackled during the discussions and being summarised in the documents analysed. However, it is difficult from the outcomes obtained, to extract main messages and conclusions, which was one of the objectives of this exercise.

Several explanations can justify this difficulty, it could be due to the structure of the documents or due to the method selected (not sufficient for the desired results), but if the person who analyses this outcomes has not been involved or participating into the meetings, the difficulties to understand the outcomes, results and extract some conclusions it is even higher or impossible.

Another objective of the task was the analysis of the meeting structure and its influence on the conclusions, but there is not useful information in the documentation that could be extracted concerning this item.

## 2.5. Stakeholders analysis

To finalise the analysis, and also linked to section 3 where details about the different stakeholders and their role into the overall process have been explained, the frequency of involvement of the different stakeholders in the different meetings was investigated.

It should be mentioned that there some some gaps in the documentation - e.g. some documents do not list participants.

The presence of EU institutions at the different meeting groups (divided into the same groups of documents as made for section 4) is shown in Table 4.

**Table 4. Percentage of EU institutions participating in the meetings analysed.**

European institutions	Groups of meetings			
	EAGLE	Geoland meetings	GNU	IGLMCS
GMES Bureau	50	0	0	67
EC	17	0	100	100
EEA	67	50	100	100
ESA	17	25	50	33
ETC	100	100	100	100 (*)
EFI	0	50	50	0

## Panorama of European Land Monitoring

Table 5 shows the participation of the Eionet NRC into the different meetings included in the evaluation.

**Table 5. Overview of the participation of NRC representatives into the meetings evaluated**

NRC		EAGLE meetings				TOTAL	geoland meetings			TOTAL	GNU	TOTAL	IG LMCS			TOTAL
NRC Albania	AL			1	1	2			1	1		0			0	
NRC Austria	AT	1	1		1	4	1	1	1	3		0			0	
NRC Austria	AT				1	1				0	1			1	0	
NRC Bosnia Hercegovina	Bosnia	1				2				0		0			0	
NRC Switzerland	CH			1	1	3			1	1		0			0	
NRC Switzerland	CH				1	1				0		0			0	
NRC Croatia	Croatia				1	1				0		0			0	
NRC Czech Republic (shared)	CZ	1	1	1	1	6		1	1	3		0			0	
NRC Czech Republic (shared)	CZ				1	2				0		0			0	
NRC Germany	DE	1			1	2		1		1		0			0	
NRC Germany	DE	1	1		1	3		1		1		0			0	
NRC Germany	DE		1	1	1	4			1	1		0			0	
NRC Germany	DE					0				0		0	1	1	3	
NRC Germany	DE					0				0		0		1	1	
NRC Estonia	EE				1	1				0		0			0	
NRC Spain	ES	1	1	1	1	5		1		1		0			0	
NRC Spain	ES	1				1				0		0			0	
NRC Spain	ES	1		1	1	5			1	1		0			0	
NRC Spain	ES	1		1	1	4		1		2		0			0	
NRC Finland	FI	1			1	2			1	1		0			0	
NRC Finland	FI				1	1				0		0			0	
NRC France	FR	1	1		1	3		1		1		0			0	
NRC Hungary	HU	1	1	1	1	6			1	1		0			0	
NRC Hungary	HU		1	1	1	4		1		2		0	1	1	3	
NRC Ireland	IE	1			1	2				0		0			0	
NRC Ireland	IE				1	1				0		0			0	
NRC Iceland	IS	1		1		3				0		0			0	
NRC Italy	IT	1			1	3			1	1		0			0	
NRC Italy	IT					0		1		1		0			0	
NRC Italy	IT					0				0	1		1		0	
NRC Italy	IT					0				0	1		1		0	
NRC Kosovo	Kosovo				1	1				0		0			0	
NRC Macedonia	MK			1		2				0		0			0	
NRC The Netherlands	NL	1	1	1	1	5		1		1		0			0	
NRC Norway	NO		1	1	1	5			1	1		0			0	
NRC Poland	PL		1	1	1	3				0		0			0	
NRC Portugal	PT	1			1	2		1		1		0			0	
NRC Portugal	PT		1			1				0		0			0	
NRC Portugal	PT		1			1				0		0			0	
NRC Romania	RO	1			1	2		1		1		0			0	
NRC Sweden	SE				1	1				0		0			0	
NRC Slovenia	SI	1	1	1	1	5			1	1		0			0	
SME, previously NRC UK due	UK	1	1	1	1	5		1	1	2		0			0	
NRC Austria (Forest)	AT					0		1		1		0			0	

Table 6 provides a list of the meetings that were taken into account under each group analysed (each column where the attendance is specified corresponds to one of the meetings below, following the same order):

**Table 6. List of the meetings by group.**

EAGLE	GMES\geoland1\Forum4_2007
<p>EAGLE_2ndMeeting_Madrid</p> <p>EAGLE_3rdMeeting_Lisbon</p> <p>EAGLE_4rdMeeting_Copenhagen_EAGLE_Minutes_101220</p> <p>EAGLE_5thMeeting_Frankfurt_March2011_Minutes</p> <p>EAGLE_1stMeeting_Copenhagen</p> <p>draft_minutes_eionet_ws_gmes_land_15-16_nov10.1</p>	<p>Minutes_UW_ETCLUSI_070316</p> <p>MIN-g2-EAGLE_20091124_v1_Bonn</p> <p>g2-MIN-Euroland_230309_ForumDay0-V1 0</p> <p>g2_EAGLE_MS.MONINA_Minutes_Summary_Final</p>
GNU	IG LMCS
<p>GNU International Stakeholder Group 1st Meeting_Minutes SL 30 04 09</p> <p>minutes GNU 2nd International Stakeholders Workshop_v1</p>	<p>LMCS_Strategic_Implementation_Plan_Final.pdf</p> <p>LMCS-IG-17Mtg_MinDraft_18-03-10_v1.doc</p> <p>LMCS-IG-18Mtg_MinDraft_03-06-10_v2.doc</p>

## 2.6. Conclusions

Provided the results obtained from the systematic analysis and text mining of all the documentation that have been selected by the HELM Consortium (and already in the project proposal) to be evaluated, it has been decided to add an on-side activity to the task in order to be able to detail the storyline of the EU land monitoring programme, developed since the 1980s until now.

The results of the text mining exercise provided a good overview and comparison about the different discussion documents, although it did not show the main conclusions neither the agreed ideas between all the stakeholders participating into the process. That is why, the link of both sections of the document (section 3 and 4) should provide the expected overview that was foreseen with the accomplishment of this task and should establish the basis for a common understanding and knowledge among the participants of HELM concerning what has happened in the past and which are the issues that the project should focus on.

## **3. Document Land Monitoring Activities at the Member State Level**

### **3.1. Aims**

The main aim of task 1.2 is to use the expert knowledge present within the HELM consortium to capture the important and authoritative land monitoring initiatives at the international, national and sub-national levels. The results will feed into subsequent tasks within the project.

This section contains a directory of the land monitoring stakeholder community and the initiatives at the different spatial levels.

### **3.2. Methods**

The national experts that constitute the HELM consortium were asked to document the most important organisations responsible for land monitoring (and with which it will be important to coordinate actions), and the land monitoring initiatives that could potentially make a major contribution for each country to a bottom-up European land monitoring. The survey was part of the required work for members of the Core and General Consortium of HELM, and voluntary for the extended consortium. There were two sections to the survey: (i) information about the organisations involved in land monitoring; and (ii) information about the land monitoring initiatives themselves. A description of the national contribution to Corine Land Cover was asked to be one of the initiatives described. Where sub-national organisations or initiatives are a significant contribution to the land monitoring set-up for a particular country, the respondents were asked to also describe those organisations and initiatives.

For the countries where no HELM expert was available, the main organisations and initiatives were highlighted from the survey of joint Eurostat/EEA Land use / cover area frame survey 2009/2010.<sup>4</sup> For this report in some cases the organisations only were described, and in some cases only the initiatives per country were described - depending on the information available from the Eurostat/EEA survey. In a few cases HELM partners indicated additional initiatives for neighbouring countries that were not part of the HELM consortium; these initiatives have also been included.

In addition information about the land monitoring organisations and initiatives at the European and international levels was compiled. The information was compiled by the author of this section based on information available on the web and through discussions in the HELM meetings.

Tables 7 and 8 contain lists of the Member State organisations and initiatives respectively.

---

<sup>4</sup> Spendlingwimmer Eurostat 2009. LUCAS 2009/2010 Land Use / Cover Area Frame Survey. Eurostat. European Environment Agency.

**Table 7. List of organisations involved in land monitoring at the Member State (and in some cases sub-national) level.**

HELM countries		
Country	Organisation title	page
Austria	Environmental Agency Austria	46
	Federal Office for Meteorology and Surveying	46
	Administration of provincial government in Tyrol; Department spatial planning and statistics	47
	Administration of provincial government in Salzburg; spatial research and transnational spatial planning	47
Belgium	Flemish Geographical Information Agency (FGIA)	53
	National Geographical Institute (NGI)	53
Bosnia and Herzegovina	Federal Ministry of Environment and Tourism	58
	Ministry for spatial planning, civil engineering and ecology of Republika Srpska	58
	Government of Brčko District BiH, Department of Urban Planning and Real Estate Affairs, Section for Spatial Planning, Urbanism and Environmental Protection	59
	Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina, Sector for Agriculture, Food, Forestry and Rural Development	60
	University of Sarajevo, Faculty of Agriculture and Food Sciences	61
	Federal Institute of Agropedology	61
	Agricultural Institute of Republic of Srpska	62
Bulgaria	EXECUTIVE AGENCY "Electronic Communication Networks and Information Systems"	67
	Agency for Sustainable Development and Eurointegration - Ecoregions /ASDE/	67
	Remote Sensing Application Center (ReSAC)	68
	Executive Environment Agency (ExEA) at the Ministry of environment and waters	68
	Ministry of Agriculture and Food of Republic of Bulgaria	69
Czech Republic	CENIA, Czech ENvironmental Information Agency	76
	The Agency for Nature Conservation and Landscape Protection of the Czech Republic	77
	The Forest Management Institute	78
	Czech Office For Surveying, Mapping And Cadastre (COSMC)	79
	Czech Statistical Office	80
Finland	Finnish Environment Institute, SYKE	87
	Finnish Forest Research Institute, METLA	87
	National Land Survey Finland, NLS-F	88
	Agency for Rural Affairs	88
France	National Geographical Institute	96
	Observation and statistics service	96
	Provence-Alpes-Cote d'Azur regional center for geographic information system	97
	Geographic information system in Languedoc-Roussillon	97
Germany	Federal Agency for Cartography and Geodesy	102
	Federal Environment Agency	102
Hungary	Institute of Geodesy, Cartography and Remote Sensing	105
	Institute of Ecology and Botany, Hungarian Academy of Sciences	105
	Central Agricultural Office - Forest Directorate	106
Iceland	Icelandic Institute of Natural History (IINH)	113
	National Land Survey of Iceland (NLSI og LMI)	113
	Agricultural University of Iceland (AUI)	114

## Panorama of European Land Monitoring

Ireland	Environmental Protection Agency	118
	Teagasc [Agriculture and Food Development Authority]	118
	National Parks and Wildlife Service	121
	Ordnance Survey Ireland	121
	Heritage Council	121
Italy	Italian National Institute for Environmental Protection and Research	122
	AGEA-SIN agency for agricultural payments (CAP)- National information System for agriculture	123
	Emilia-Romagna Region	123
	Lombardy Region	124
	Autonomous Region of Sardinia	124
Luxembourg	Ministry for sustainable development and infrastructures - Department of Environment	130
	Ministry for sustainable development and infrastructures - Department of spatial planning	130
	STATIC - National statistical institute	131
	Technical services of the agricultural administration	131
Netherlands	Alterra - Wageningen University and Research Centre	136
	Central Office of Statistics	133
	Topographical Institute and Cadastre	137
Norway	Norwegian Forest and Landscape Institute	142
	Statistics Norway	142
Portugal	Portuguese Geographic Institute	147
	Regional Directorate for Geographic Information and Land Planning [Madeira]	147
	Regional Directorate for the Environment (ex-Regional Directorate for Land Planning and Water Resources [Azores])	148
Romania	Danube Delta national Institute for Research & Development	158
	National Statistical Institute	158
	Romania Space Agency	159
	National Agency for Cadastre and Land Registration	159
	Forest Research and Management Institute	169
Serbia	Republic Geodetic Authority	165
	Evrogeomatika Ltd.	165
Spain	National Geographic Institute of Spain	169
	Natural Environment and Forest Policy Directorate of the Ministry of Environment, Rural and Marine	169
	Agricultural Resources Directorate of the Ministry of Environment, Rural and Marine	170
	Spanish Agrarian Guarantee Fund	170
	Department of Rural Development and Environment of the Government of Navarra	171
	Agriculture, Fishing, Food and Natural Resources Department of the Government of Cataluña (Spanish region)	171
Switzerland	Federal Office for the Environment FOEN	179
	Swiss Federal Statistical Office (SFSO)	179
	Federal Office of Topography swisstopo	180
	Swiss Federal Institute for Forest, Snow and Landscape Research WSL	180
	Research Station Agroscope Reckenholz-Tänikon ART	181
United Kingdom	Centre for Ecology and Hydrology (CEH)	188
	Forestry Commission	188
	Countryside Commission for Wales	189

## Panorama of European Land Monitoring

Non-HELM countries		
Country	Organisation title	page
Croatia	Croatian Environmental Agency	194
Greece	Hellenic Mapping and Cadastral Organisation	198
Latvia	Central Statistical Bureau of Latvia (CSB of Latvia)	199
	Latvian Environment, Geology and Meteorology Centre	199
Liechtenstein	Amt für Wald, Natur und Landschaft	200
Lithuania	National Land Service under the Ministry of Agriculture	202
Malta	Malta Environment & Planning Authority (MEPA)	203
Montenegro	Geological Survey of Montenegro	204
Poland	Head Office of Geodesy and Cartography, Department of Geodesy and GIS	205
	Institute of Geodesy and Cartography	205
Slovakia	Slovak Environmental Agency	207
Slovenia	Statistical Office of the Republic of Slovenia	208
Sweden	Lantmäteriet	209
	Inst för skoglig resurshushållning, Swedish University of Agricultural Sciences	210

**Table 8. List of land monitoring initiatives at the Member State (and in some cases sub-national) level.**

HELM countries		
Country	Initiative title	page
Austria	LISA - Land Information System Austria	48
	Digitales Landschaftsmodell (DLM) - Objektbereich Bodenbedeckung und Gebietsnutzung	49
	Automated land use classification Tyrol	50
	Land cover classification in Salzburg	51
	Land Use/cover categories in cadastre	52
Belgium	Regional Land Cover and Land use map of Flanders	54
	Large Scale Reference Database Flanders	55
	CORINE Land cover	56
	Vegetation Map Flanders 2009	59
Bosnia and Herzegovina	CORINE Land Cover	63
	Establishment of the System of sampling/survey developed for a rapid availability of reliable baseline data for agricultural statistics	64
	“Support to the development of Agricultural Market Information and Land Parcel Identification System” IPA 2009 project	65
	Inventory of the situation and land cover database of Sarajevo Canton	66
Bulgaria	Land cover – Reference layer	70
	Land Cover of the 27 regional cities in Bulgaria	71
	CORINE Land Cover	72
	Specialised maps and registers of the forests and land within the forestry fund to reflect such information into the digital models in the Restored Property Map (RPM), in cadastral maps and registers and in the Land Parcel Identification System (LPIS)	73
	Land Parcel Identification System /LPIS/	74
	Land cover maps on 10km strip along the Transeuropean transport corridors, passing through Bulgaria	75
Czech Republic	Corine Land Cover	81
	Register of objects Central List of Nature Protection	82

## Panorama of European Land Monitoring

	FMI_Forest_map	83
	Fundamental Base of Geographic Data Czech Republic, ZABAGED	84
	The basic settlement unit	85
	Czech LPIS	86
Finland	Corine Land Cover, 25m	89
	Corine Land Cover	90
	National forest inventory, NFI	91
	SLICES, Separated landuse element of Finland	92
	Land parcel identification system, LPIS	93
	CLC2000-2006 - Changes, MMU 0,5-1 ha	94
	CLC2000-2006 - Changes, MMU 5 ha	95
France	Large Scale Referential	98
	CORINE Land Cover	99
	Land cover database on the Region Provence-Alpes-Cote d'Azur (OCSOL PACA)	100
	Land Cover database for the Région Languedoc-Roussillon (OCSOL LR)	101
Germany	Digital Land Cover Model for Germany DLM-DE	103
	CORINE Land Cover	104
Hungary	CORINE Land Cover	107
	CLC50	108
	Hungarian Land Parcel Identification System (LPIS-Hu)	109
	The Hungarian National Vineyard GIS Register (VINGIS)	110
	MÉTA Programme - Landscape Ecological Vegetation Database & Habitat Map of Hungary	111
	National Forest Database	112
Iceland	Vegetation and habitat type mapping of Iceland	115
	CORINE Land Cover	116
	Icelandic Land Use Database (IGLUD)	117
Ireland	The national Teagasc Landcover Map 1995	120
	Irish Forestry Inventory	121
Italy	CORINE Land Cover	125
	Land Parcel Identification System - land cover/use refresh of the entire nation	126
	Land Use database [Emilia-Romagna Region]	127
	Land Use map [Lombardy Region]	128
	Land use map scale 1:25.000 - 2008 [Autonomous Region of Sardinia]	129
Luxembourg	National land cover map of the Grand Duchy of Luxembourg	132
	Natura 2000 - Sites Habitats Directive & Birds Directive	133
	CORINE Land Cover	134
	LPIS / IACS - Integrated agricultural control system	135
Netherlands	Land use/cover database of the Netherlands	138
	Land use database	139
	Topographical database of the Netherlands	140
	CORINE Land Cover	141
Norway	Land resource survey	143
	Area frame survey of land cover and outfield land resources (AR18X18)	144
	CORINE Land Cover	145
	Norwegian Land Use Statistics	146

## Panorama of European Land Monitoring

Portugal	CORINE Land Cover (CLC) for Continental Portugal	149
	CLC-Changes for Continental Portugal	150
	CLC RAM - CORINE Land Cover for the Autonomous Region of Madeira	151
	CLC-Changes for the Autonomous Region of Madeira	152
	COS2007 - Land Use and Land Cover Map of Continental Portugal for 2007	153
	COSRAM - Land Cover Map of the Autonomous Region of Madeira	154
	COSAçores - Land Cover Map of the Autonomous Region of Azores	155
	SIGN II – Spatial Data Infrastructure (SDI) for the rural territory of Galicia and North of Portugal	156
	OTALEX – Alentejo-Extremadura Territorial Observatory	157
Romania	Land use/cover database of the Romania	161
	Land Cover TOPRO5	162
	National Forest Inventory	163
	Natura 2000	164
Serbia	CORINE Land Cover (CLC)	166
	Land Cover map of Serbia	167
	Natural habitat map	168
Spain	Corine land Cover	172
	Spanish Land cover/Land use Information System	173
	Land Parcel Geographic Information System	174
	Spanish Forestry Map	175
	Crops and Land Use Map	176
	Crops and Land Use Map of Navarra	177
	Land Cover Map of Cataluña	178
Switzerland	Swiss Land Use Statistics	182
	CORINE Land Cover	183
	Swiss National Forest Inventory NFI	184
	Topographic Landscape Model (TLM)	185
	Landscape Observation Programme (LABES)	186
	NABO: Swiss Soil Monitoring Network	187
UK	Land Cover Map 2007	190
	CORINE Land Cover 2006 UK	191
	National Forest Inventory	192
	Habitat Inventory of Wales	193

Non-HELM countries		
Country	Initiative title	page
Denmark	SINKS KP34	195
	Kort10	196
Estonia	Estonian Basic Map	197
Lithuania	Regional Land Stock Inventory Data Base of the Republic of Lithuania (ŽInv DB50LT)	201
	Land Parcel Identification System and Block Database KZS_DB10LT	202
Poland	Database of topographical objects, cadastre	206
Slovenia	Statistical land cover GIS 2005	208
Sweden	GSD-Land Cover	209
	National Inventory of Landscapes in Sweden (NILS)	210

## 3.3. *European and International Land Monitoring*

### 3.3.1. Organisations

Organisation description	
Organisation title	European Environment Agency – EEA
URL	<a href="http://www.eea.europa.eu/">http://www.eea.europa.eu/</a>
Description	<p>The European Environment Agency (EEA) is an agency of the European Union. Its task is to provide sound, independent information on the environment. EEA is a major information source for those involved in developing, adopting, implementing and evaluating environmental policy, and also the general public. With respect to land use, the main objective of EEA is to inform policy-makers, practitioners and the public on how the growing intensity of space and land-based resource use is leading to conflicts and potential irreversible changes via an analytical platform for spatial analysis, targeted land use modelling, integration of socio-economic statistics and high resolution land information and planning services to examine the processes of urbanisation and land use.</p> <p>EEA aims to achieve its objective by:</p> <ul style="list-style-type: none"> <li>• integrating all relevant geo-spatial data sets and information at the European level via SEIS (Shared Environmental Information System), Inspire, and the Land Use Data Centre</li> <li>• working with Eurostat, the UN and national statistical offices to ensure that EEA-led land, water and ecosystem accounts will become a global standard within the UN-Environmental Accounting framework;</li> <li>• fully exploiting the completed 2006 Corine land cover inventory and related data bases, in particular the high-resolution soil sealing information;</li> <li>• supporting the development of the GMES Land services and Global Observing Systems</li> </ul>
Key competences (add keywords)	
Point of Contact	Ana Sousa Ribeiro Chris Steenmans
Email	Ana.Sousa@eea.europa.eu Chris.Steenmans@eea.europa.eu
Telephone	

Organisation description	
Organisation title	European Topic Centre for Spatial Information and Analysis ETC/SIA
URL	<a href="http://sia.eionet.europa.eu/">http://sia.eionet.europa.eu/</a>
Description	<p>ETC/SIA, is supporting the European Environment Agency (EEA) in developing seamless European wide spatial reference data. ETC/SIA's main working area is the analysis of Land use and land cover. This includes monitoring temporal changes of land use and land cover in addition to analysing the environmental consequences. The work is structured in five working areas: data (e.g. Corine, LUCAS, etc.); data processing; reference systems; regional and policy assessments; global and emerging assessments. ETC/SIA builds on the work of predecessor ETCs – ETC/LUSI (Land Use and Spatial Information) and ETC/TE (Terrestrial Ecosystems).</p>
Key competences (add keywords)	
Point of Contact	Andreas Littkopf
Email	Andreas.Littkopf@uma.es

## Panorama of European Land Monitoring

Organisation description	
Organisation title	Eurostat
URL	<a href="http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/">http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/</a>
Description	<p>Eurostat is the statistical office of the European Union situated in Luxembourg. Its task is to provide the European Union with statistics at European level that enable comparisons between countries and regions. Eurostat does not collect data. This is done in Member States by their statistical authorities. The national statistical authorities verify and analyse national data and send them to Eurostat. Eurostat's role is to consolidate the data and ensure they are comparable, using harmonised methodology. Eurostat is actually the only provider of statistics at European level and the data we issue are harmonised as far as possible.</p> <p>Eurostat is responsible for implementing the LUCAS survey (Land Use and Cover Area Frame Survey) (see initiatives).</p>
Key competences (add keywords)	
Point of Contact (person responsible for land monitoring)	Marjo Kasanko
Email	Marjo.KASANKO@ec.europa.eu
Telephone	

Organisation description	
Organisation title	European Forum for GeoStatistics - EFGS
URL	<a href="http://www.efgs.info/">http://www.efgs.info/</a>
Description	<p>EFGS started as a voluntary cooperation between National Statistical Institutions (NSIs) in the Nordic countries in 1998, on use of geographic information systems (GIS) and statistics. EFGS has national contact persons from 32 European states and territories (2011). EFGS activities are mainly concentrated on the development of the best practices in the production of geostatistics in Europe. These include the development of the grid approach to spatial data harmonisation, analysis and visualisation.</p>
Key competences (add keywords)	
Point of Contact (person responsible for land monitoring)	Bloch, Vilni Verner Holst (president steering committee)
Email	vvh@ssb.no
Telephone	

## Panorama of European Land Monitoring

Organisation description	
Organisation title	Global Environment Monitoring Unit (GEM), Institute for Environment and Sustainability (IES), Joint Research Centre (JRC)
URL	<a href="http://bioval.jrc.ec.europa.eu/">http://bioval.jrc.ec.europa.eu/</a> [ <a href="http://ies.jrc.ec.europa.eu/the-institute/units/global-environment-monitoring.html">http://ies.jrc.ec.europa.eu/the-institute/units/global-environment-monitoring.html</a> description]
Description	<p>The Global Environment Monitoring Unit (GEM) is one of seven scientific units that make up the Institute for Environment and Sustainability (IES) at the European Commission's Joint Research Centre (JRC). IES provides scientific and technical support to the European Union's policies for the protection and sustainable development of the European and global environment; the GEM Unit delivers products and services derived from the analysis of satellite remote sensing data.</p> <p>The GEM unit serves as the primary point of contact and coordinator within the IES for the Global Monitoring for Environment and Security (GMES), a joint initiative of the European Commission and the European Space Agency.</p> <p>Action 24004 - SOLO (Systematic Observations of Land and Ocean) conducts cutting edge R&amp;D, develops standards and benchmarks for the assessment of existing products and proposes solutions for high quality products and services in the perspective of environmental monitoring and management.</p> <p>Action 42003 - TREES-3 (Global Forest Resource Monitoring) provides quantitative measurements and mapping of changes in forest resources for the EU policies related to global environmental and forestry issues, with a focus on Eurasian boreal forests and tropical forests, including the Caribbean and Pacific regions.</p>
Key competences (add keywords)	
Point of Contact (person responsible for land monitoring)	Alan Belward (unit head)
email	alan.belward@jrc.ec.europa.eu
Telephone	

Organisation description	
Organisation title	Land Management Natural Hazards Unit , Institute for Environment and Sustainability (IES), Joint Research Centre
URL	<a href="http://forest.jrc.ec.europa.eu/">http://forest.jrc.ec.europa.eu/</a>
Description	<p>The unit provides scientific and technical support for the conception, implementation, monitoring and evaluation of EU policies relating to natural hazards and to the spatial characterisation of European territory. The work of the unit is carried out in four actions: Forest, Soil, Desert, Water Quantity Management.</p> <p>The Action FOREST is responsible for establishing the European Forest Data Centre (EFDAC) as the central point for forest information at European level in support to relevant EU policies, and as the basis of the European Forest Monitoring System proposed in the EU Forest Action Plan. The implementation of EFDAC will contribute to enhancing data harmonisation and streamlining data collection, which will improve the reporting to international commitments such as the Ministerial Conference of the Protection of Forest in Europe (MCPFE), the FAO Global Forest Resources Assessment (GFRA) and the UN Convention on Biological Diversity (CBD).</p> <p>A key achievement of the Action will be the further development and implementation of the European Forest Data Centre (EFDAC) as a focal point for forestry information in Europe. EFDAC will build on existing systems as the European Forest Fire Information System (EFFIS), the Forest Focus database, and the European Forest Information and Communication Platform (EFICP), and will contribute to enhancing data harmonisation and to streamlining data collection and reporting.</p> <p>The Action FOREST has produced three forest cover maps for 1990, 2000 and 2006 based on satellite imagery (see initiatives section).</p>
Key competences (add keywords)	forests; remote sensing
Point of Contact	Jesus San-Miguel-Ayaz
Email	jesus.san-miguel@jrc.ec.europa.eu
Telephone	

## Panorama of European Land Monitoring

Organisation description	
Organisation title	Global Observation of Forest and Land Cover Dynamics (GOFC-GOLD)
URL	<a href="http://www.fao.org/gtos/gofc-gold/index.html">http://www.fao.org/gtos/gofc-gold/index.html</a>
Description	<p>GOFC-GOLD is a coordinated international effort working to provide ongoing space-based and in-situ observations of forests and other vegetation cover, for the sustainable management of terrestrial resources and to obtain an accurate, reliable, quantitative understanding of the terrestrial carbon budget. Originally developed as a pilot project by the Committee on Earth Observation Satellites (CEOS) as part of their Integrated Global Observing Strategy, GOFC-GOLD is now a panel of the Global Terrestrial Observing System (GTOS).</p> <p>GOFC-GOLD has proposed a systematic program for coarse resolution (250 – 1000 m) land cover mapping on a five-year cycle, combined with periodic mapping and monitoring of forested areas at fine resolution (~25 m). Activities of the land cover program include:</p> <ul style="list-style-type: none"> <li>• Availability of observations</li> <li>• Harmonisation, interoperability and synergy</li> <li>• Validation</li> <li>• Adequacy and advocacy of products</li> <li>• Regional networks and capacity building</li> <li>• Shared data, information and knowledge</li> <li>• Land change assessment</li> </ul>
Key competences (add keywords)	land cover; forests; forest resources assessment
Point of Contact (person responsible for land monitoring)	Martin Herold Christiane Schmullius
Email	<a href="mailto:martin.herold@wur.nl">martin.herold@wur.nl</a> <a href="mailto:c.schmullius@uni-jena.de">c.schmullius@uni-jena.de</a>

Organisation description	
Organisation title	Global Climate Observing System
URL	<a href="http://www.wmo.int/pages/prog/gcos/index.php">http://www.wmo.int/pages/prog/gcos/index.php</a>
Description	<p>GCOS is a joint undertaking of the World Meteorological Organisation (WMO), the Intergovernmental Oceanographic Commission (IOC) of the United Nations Educational Scientific and Cultural Organisation (UNESCO), the United Nations Environment Programme (UNEP) and the International Council for Science (ICSU). Its goal is to provide comprehensive information on the total climate system, involving a multidisciplinary range of physical, chemical and biological properties, and atmospheric, oceanic, hydrological, cryospheric and terrestrial processes. It is built on the WMO Integrated Global Observing System (WIGOS), the IOC-WMO-UNEP-ICSU Global Ocean Observing System (GOOS), the FAO-UNEP-UNESCO-ICSU Global Terrestrial Observing System (GTOS), and a number of other domain-based and cross-domain research and operational observing systems. It includes both in situ and remote sensing components, with its space based components coordinated by the Committee on Earth Observation Satellites (CEOS) and the Coordination Group for Meteorological Satellites (CGMS). GCOS is intended to meet the full range of national and international requirements for climate and climate-related observations. As a system of climate-relevant observing systems, it constitutes, in aggregate, the climate observing component of the Global Earth Observation System of Systems (GEOSS).</p> <p>GCOS is intended to be a long-term, user-driven operational system capable of providing the comprehensive observations required for:</p> <ul style="list-style-type: none"> <li>• Monitoring the climate system,</li> <li>• Detecting and attributing climate change,</li> <li>• Assessing impacts of, and supporting adaptation to, climate variability and change,</li> <li>• Application to national economic development,</li> <li>• Research to improve understanding, modelling and prediction of the climate system.</li> </ul>
Key competences (add keywords)	Climate; essential climate variables; land cover
Point of Contact (person responsible for land monitoring)	Carolin Richter (Director)
email	<a href="mailto:crichter@wmo.int">crichter@wmo.int</a>

## Panorama of European Land Monitoring

Organisation description	
Organisation title	Land-Cover and Land-Use Change Program (LCLUC) – NASA
URL	<a href="http://lcluc.umd.edu/index.php">http://lcluc.umd.edu/index.php</a>
Description	The NASA Land-Cover and Land-Use Change (LCLUC) Program is an interdisciplinary science program in the Earth Science Division of the Science Mission Directorate of NASA. LCLUC is part of the Carbon Cycle and Ecosystems Focus Area with links to some programs in other Focus Areas. One of the priority regions for the LCLUC program is Russia and the former Soviet Union.
Key competences (add keywords)	
Point of Contact (person responsible for land monitoring)	Garik Gutman (LCLUC program manager)
email	ggutman@nasa.gov

Organisation description	
Organisation title	Global Land Cover Facility
URL	<a href="http://www.landcover.org/">http://www.landcover.org/</a>
Description	The Global Land Cover Facility (GLCF) is a research center focusing on the investigation of land cover dynamics and the development and distribution of products that explain aspects of land cover and land cover change. In particular, the GLCF develops and distributes remotely sensed satellite data and products that explain land cover from the local to global scales. GLCF research focuses on determining land cover and land cover change around the world. GLCF is a member of the Research, Education, and Applications Solutions Network (REASoN) and as such is sponsored by the NASA Earth Science Enterprise. GLCF is hosted at the Geography Department of the University of Maryland.
Key competences (add keywords)	
Point of Contact (person responsible for land monitoring)	John Townshend
Email	glcf@umd.edu
Telephone	

Organisation description	
Organisation title	Global Land Project
URL	<a href="http://www.globallandproject.org/">http://www.globallandproject.org/</a>
Description	The Global Land Project is a joint research project for land systems for the International Geosphere-Biosphere Programme (IGBP) and the International Human Dimensions Programme (IHDP). The Global Land Project Science Plan represents the research framework for the near future for land systems. This development of a research strategy is designed to better integrate the understanding of the coupled human-environment system. These integrated science perspectives reflect the recognition of the fundamental nature of how human activities on land are affecting feedbacks to the earth system and the response of the human-environment system to global change. The Global Land Project Science Plan has been defined by scientists sponsored by the IGBP and the IHDP.
Key competences (add keywords)	
Point of Contact (person responsible for land monitoring)	Giovana Espindola (executive officer) Camille Nolasco (project officer)
Email	giovana@dpi.inpe.br camille.nolasco@inpe.br
Telephone	

## Panorama of European Land Monitoring

### 3.3.2. Initiatives

Initiative description				
Initiative Title	CORINE Land Cover			
URL	<a href="http://www.eea.europa.eu/data-and-maps/data/ds_resolveuid/SH04UZP80M">http://www.eea.europa.eu/data-and-maps/data/ds_resolveuid/SH04UZP80M</a> (CLC 2006 raster data – latest published version) <a href="http://www.eea.europa.eu/data-and-maps/data/ds_resolveuid/T6PRZCBBN2">http://www.eea.europa.eu/data-and-maps/data/ds_resolveuid/T6PRZCBBN2</a> (CLC 2006 seamless vector data – latest published version) <a href="http://www.eea.europa.eu/data-and-maps/data/ds_resolveuid/M7OWTVWMMI">http://www.eea.europa.eu/data-and-maps/data/ds_resolveuid/M7OWTVWMMI</a> (CLC 2000 raster data – latest published version) <a href="http://www.eea.europa.eu/data-and-maps/data/ds_resolveuid/89364B1A-548D-4CE1-84A4-D6C5AD4712C0">http://www.eea.europa.eu/data-and-maps/data/ds_resolveuid/89364B1A-548D-4CE1-84A4-D6C5AD4712C0</a> (CLC 2000 seamless vector data – latest published version)			
Description	<ul style="list-style-type: none"> <li>• Based on classification of Landsat, IRS &amp; SPOT data</li> <li>• Other background data: ortho-photos, topographic maps</li> <li>• 25 ha minimum mapping unit; minimum width 100m</li> <li>• Thematic accuracy <math>\geq 85\%</math> (validated for year 2000 dataset)</li> <li>• Geometric accuracy <math>&lt;100\text{m}</math></li> </ul> <p>The implementation of CLC2006 focused mainly on the identification and mapping of land cover changes between 2000 and 2006. All land cover changes bigger than 5 ha have been mapped, regardless of location. As in previous years, the work was a shared approach between EEA and EEA member countries. While the image production was centrally organised, the land cover mapping was done in the EEA member states to benefit from local knowledge.</p> <p>CLC2006 has been implemented as part of the European wall-to-wall land cover / land use component of the GMES Land Monitoring Core Service.</p>			
geographic extent (coverage)	Europe – EEA countries EU,			
Data source	<input checked="" type="checkbox"/> satellite      name of satellite(s) Landsate, SPOT, IRS <input checked="" type="checkbox"/> aerial photographs <input checked="" type="checkbox"/> topographic maps <input checked="" type="checkbox"/> in-situ data <input type="checkbox"/> field survey <input type="checkbox"/> other      Other, please specify:			
Nomenclature	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Name Corine</td> <td style="width: 33%;">Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical</td> <td style="width: 33%;">No. of classes 44</td> </tr> </table>	Name Corine	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes 44
Name Corine	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes 44		
Scale / resolution	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Minimum mapping unit 25 ha; 5 ha</td> <td style="width: 33%;">Scale</td> <td style="width: 33%;">Pixel size</td> </tr> </table>	Minimum mapping unit 25 ha; 5 ha	Scale	Pixel size
Minimum mapping unit 25 ha; 5 ha	Scale	Pixel size		
Reference date	1990, 2000, 2006			
Update frequency	irregular      Comment:			
Initiative status	operational program      Other, please specify:			
Funding agency	EC			
Responsible Organisation	European Environment Agency			
Point of Contact (person)	Chris Steenmans			
Email	Chris.Steenmans@eea.europa.eu			
Telephone				

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	GMES Initial Operations - Land Monitoring Services 2011-2013		
URL	n/a		
Description (English)	<p>The Land monitoring service of the Global Monitoring of Environment and Security (GMES) led by DG ENTR2 of the European Commission, has entered its Initial Operation (GIO) phase following the entry into application of Regulation (EU) n°911/2010 of 22 September 2010 of the European Parliament and the Council on the European Earth monitoring programme (GMES) and its initial operations (2011 to 2013). The initial operations (2011-2013) of the Land Monitoring service focus on the priority for multi-purpose information common to a large community of users, i.e. land cover/land cover change at various scale and periodicity, bio-geophysical variables for dynamic land monitoring, improved access to reference data. The Land monitoring service will begin with the pan-European land cover component which encompasses (i) the continuity of Corine Land Cover (CLC) with a new exercise for the reference year 2012, (ii) the production of 5 additional pan-European High Resolution Layers (HRL) with specific land cover characteristics, and (iii) support to harmonisation efforts of countries in order to improve synergies between pan-European and national land cover activities and in support to the implementation of INSPIRE7 Annex II &amp; III geospatial data specifications.</p> <p>The production of the HRLs shall benefit from a series of initial operations, such as the production of biophysical variables (NDVI and possibly other variables such as fAPAR, LAI).</p> <p>In 2011 a call for tenders was announced for production of the HRL land monitoring services. The successful consortia started work at the end of 2011 and the projects will continue until 2013.</p>		
geographic (coverage) extent	Europe		
Data source	<input checked="" type="checkbox"/> satellite  <input type="checkbox"/> aerial photographs <input type="checkbox"/> topographic maps <input checked="" type="checkbox"/> in-situ data <input type="checkbox"/> field survey <input type="checkbox"/> other	name of satellite(s) IRSP6/ Resourcesat and RapidEye	
Nomenclature	5 HR layers impervious areas, forests, grassland, wetlands and small water bodies	Type <input type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes
Scale / resolution	Minimum mapping unit 1 ha (0.5 ha - the service should support a forest cover map to be produced with an MMU of 0.5 ha)	Scale	Pixel size 20 m 100 m
Reference date	2012(-1 year)		
Update frequency	tbd	Comment: funding for the next phase of the GMES operations is under discussion	
Initiative status	ongoing project	Other, please specify: started at end of 2011	
Funding agency	European Commission		
Responsible organisation			
Point of Contact (person)			
Email			
Telephone			

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	geoland2		
URL	<a href="http://www.gmes-geoland.info/">http://www.gmes-geoland.info/</a> (project information); <a href="http://www.geoland2.eu/">http://www.geoland2.eu/</a> (geoland2 data portal)		
Description (English)	<p>geoland2 is carried out in the context of GMES, a joint initiative of the European Commission and the European Space Agency, which aims to build up a European capacity for Global Monitoring of Environment and Security. The ambition of the geoland consortium is to develop and demonstrate a range of reliable, affordable and cost efficient European geo-information services, supporting the implementation of European directives and their national implementation, as well as European and International policies. It is a pre-operational phase of GMES. The architecture of geoland2 is made up of two layers: (i) the Core Mapping Services (CMS) provide land cover, land use and land cover change, as well as a range of bio-physical parameters as an input to more elaborated products, while (ii) the Core Information Services (CIS) offer specific information for European Environmental Policies and international treaties on Climate Change, food security and the sustainable development of Africa. Among the services developed within the CMS Land Cover and Land Use Monitoring (EUROLAND) high resolution thematic parameters addressing five different themes: impervious areas, forests, grassland, wetlands and small water bodies. The imperviousness high resolution layer has been provided have been provided for The parameters are addressed for test sites across Europe.</p>		
geographic extent (coverage)	Europe (wall-to-wall; imperviousness) Europe (test sites; forest, grasslands, wetlands, small water bodies)		
Data source	<input checked="" type="checkbox"/> satellite <input type="checkbox"/> aerial photographs <input type="checkbox"/> topographic maps <input checked="" type="checkbox"/> in-situ data <input type="checkbox"/> field survey <input type="checkbox"/> other		
	name of satellite(s)       Other, please specify:		
	Additional comments:		
Nomenclature	5 HR layers impervious areas, forests, grassland, wetlands and small water bodies	Type <input type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes
Scale / resolution	Minimum mapping unit 1 ha (0.5 ha – upon user request the forest products for some test sites were produced with MMU of 0.5 ha)	Scale	Pixel size 20 m 100 m
Reference date			
Update frequency	n/a	Comment: geoland2 is a pre-operational phase of GMES. The initial operations will start with the GIO Land Monitoring Services (see previous initiative description)	
Initiative status	ongoing project	project will end in 2012	
Funding agency	European Commission		
Responsible organisation	Astrium		
Point of Contact	Markus Jochum		
Email	markus.jochum@astrium.eads.net		
Telephone	+49 7545 8 2086		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	GMES Urban Atlas		
URL	<a href="http://sia.eionet.europa.eu/Land%20Monitoring%20Core%20Service/Urban%20Atlas">http://sia.eionet.europa.eu/Land%20Monitoring%20Core%20Service/Urban%20Atlas</a> (description) <a href="http://www.eea.europa.eu/data-and-maps/data/urban-atlas">http://www.eea.europa.eu/data-and-maps/data/urban-atlas</a> (data / metadata download) <a href="http://discomap.eea.europa.eu/map/UrbanAtlas/">http://discomap.eea.europa.eu/map/UrbanAtlas/</a> (map viewer)		
Description (English)	<p>The Urban Atlas provides pan-European comparable land use and land cover data for Large Urban Zones with more than 100 000 inhabitants as defined by the Urban Audit (305 cities). The cities were mapped using very high resolution (2.5 m) EO data (Spot 5, Formosat-2, Kompsat-2 and ALOS data) for the reference year 2006 ± 1 year. The Urban Atlas cities are mapped at a nominal scale of approximately 1:10 000, using in total 20 classes of which the 17 urban classes have a minimum mapping unit (MMU) of 0.25ha and the 3 non-urban classes a MMU of 1ha. The urban fabric (CLC classes 1.1.1 and 1.1.2) are differentiated by their degree of imperviousness which is integrated from the LMCS high resolution soil sealing layer. The GIS data can be downloaded together with a map for each urban area covered and a report with the metadata.</p>		
geographic extent (coverage)	Europe (305 cities in EU27 countries)		
Data source	<input checked="" type="checkbox"/> satellite <input type="checkbox"/> aerial photographs <input type="checkbox"/> topographic maps <input checked="" type="checkbox"/> in-situ data <input type="checkbox"/> field survey <input type="checkbox"/> other		
	name of satellite(s)		Spot 5, Formosat-2, Kompsat-2 and ALOS
Nomenclature	total 20 classes, 17 urban classes	Type <input type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes
Scale / resolution	Minimum mapping unit 0.25 ha (urban classes) 1 ha (non-urban classes)	Scale 1:10.000	Pixel size 20 m 100 m
Reference date	2006 ± 1 year		
Update frequency	3-5 years	Comment:	
Initiative status	ongoing project		
Funding agency	European Commission; DG Enterprise and Industry		
Responsible organisation	EEA		
Point of Contact			
Email			
Telephone			

## Panorama of European Land Monitoring

Initiative description			
Initiative Title	Global Land Cover 2000		
URL	<a href="http://bioval.jrc.ec.europa.eu/products/glc2000/glc2000.php">http://bioval.jrc.ec.europa.eu/products/glc2000/glc2000.php</a> <a href="http://www.eea.europa.eu/data-and-maps/data/ds_resolveuid/786DB8A5-70F2-4591-B705-E27F5A397994">[http://www.eea.europa.eu/data-and-maps/data/ds_resolveuid/786DB8A5-70F2-4591-B705-E27F5A397994]</a>		
Description	<p>The GLC2000 project uses the FAO Land Cover Classification System (LCCS). This is a hierarchical classification, which allowed each regional partner to describe the landcover classes at the thematic detail best suited to the landcover in their region of expertise, whilst following a standardised classification approach. Furthermore, the LCCS allowed the regionally defined legends to be translated into more generalised global landcover classes for the GLC2000 global product. These global classes describe the type of vegetation and the density of the cover, independent of geo-climatic zone, such as temperate or tropical forests. The mosaicking of 21 regional products, and the translation to a standardised global legend, made it possible to create a consistent global landcover classification based on regional expert knowledge.</p> <p>GLC 2000 makes use of the VEGA 2000 dataset: a dataset of 14 months of pre-processed daily global data acquired by the VEGETATION instrument on board the SPOT 4 satellite, made available through a sponsorship from members of the VEGETATION programme, including JRC.</p> <p>The GLC2000 land cover database has been chosen as a core dataset for the Millennium Ecosystems Assessment. This means in particular that the Global land cover 2000 dataset is a main input dataset to define the boundaries between ecosystems such as forest, grassland, and cultivated systems.</p>		
geographic (coverage)	extent	Global; regional	
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) SPOT, MODIS (75-80°), AVHRR	
	<input checked="" type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input checked="" type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
Additional comments:			
Nomenclature	Land Cover Classification Scheme (LCCS)	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes 22 (at the top level)
Nomenclature			
Scale / resolution	Minimum mapping unit [1 km]	Scale [1:100000]	Pixel size 0.009° x 0.009° (~1km at Equator)
Reference date			
Update frequency	Comment:		
Initiative status	operational program	Other, please specify:	
Funding agency			
Responsible Organisation	Global Environment Monitoring Unit, IES - JRC		
Point of Contact (person)	Etienne Bartholomé		
Email	etienne.bartholome@jrc.ec.europa.eu		
Telephone			

## Panorama of European Land Monitoring

Initiative description			
Initiative Title	GlobCover 2005 and 2009		
URL	<a href="http://ionial.esrin.esa.int/">http://ionial.esrin.esa.int/</a>		
Description	<p>The objective of the original ESA-GlobCover project was the generation of a global land cover map using an automated processing chain from the 300m MERIS time series. The project was carried out by an international consortium starting in April 2005. GlobCover products were produced again for the year 2009</p> <ul style="list-style-type: none"> <li>• based on ENVISAT MERIS data</li> <li>• spectro-temporal classification of satellite data</li> <li>• regional tuning of classification parameters → accounting for regional characteristics</li> <li>• (stratification into 22 world regions)</li> <li>• reference data: regional land cover datasets (for Europe: Corine land cover)</li> <li>• validation via experts network and &gt;2000 reference points derived from high-resolution data or maps)</li> <li>• overall thematic accuracy of ca. 60%</li> </ul> <p>Three global products are available:</p> <ul style="list-style-type: none"> <li>• Bi-monthly MERIS full resolution (FR) surface reflectance mosaics (10 products from December 2004 to June 2006; 6 products 2009)</li> <li>• Annual MERIS FR mosaic</li> <li>• [Global] GlobCover Land Cover map (December 2004-June 2006; 2009). LCCS 22 classes</li> </ul> <p>In addition regional maps are available [2005]</p> <ul style="list-style-type: none"> <li>• Regional GlobCover maps (11 products) (December 2004-June 2006). LCCS up to 51 classes.</li> </ul>		
geographic (coverage)	extent	Global; Regional	
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) ENVISAT MERIS	
	<input type="checkbox"/> aerial photographs		
	<input type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
Nomenclature	Land Cover Classification Scheme (LCCS)	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes 22 (top level); up to 51 second level classes for regional products
Scale / resolution	Minimum mapping unit	Scale	Pixel size 300x300 m
Reference date	2005, 2009		
Update frequency		Comment:	
Initiative status	completed project	Other, please specify:	
Funding agency	ESA		
Responsible Organisation	European Space Agency; in collaboration with FAO, UNEP, JRC, GOF-C-GOLD, IGBP; MEDIAS-France; UC Louvain		
Point of Contact	ESA Data User Element		
Email	due@esa.int		
Telephone			

## Panorama of European Land Monitoring

Initiative description			
Initiative Title	GlobCorine		
URL	<a href="http://ionial.esrin.esa.int/globcorine/">http://ionial.esrin.esa.int/globcorine/</a>		
Description	<ul style="list-style-type: none"> <li>based on ENVISAT MERIS data</li> <li>automatic and regionally-tuned classification of a time series</li> <li>validation against GlobCover reference datasets – 78-89%</li> </ul>		
geographic (coverage) extent	Pan-European		
Data source	X satellite	name of satellite(s) ENVISAT MERIS	
	<input type="checkbox"/> aerial photographs		
	<input type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments:		
Nomenclature	Corine	Type <input type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes 14 classes compatible with CLC and LCCS
Scale / resolution	Minimum mapping unit	Scale	Pixel size 300x300 m
Reference date	2005, 2009		
Update frequency	Not known	Comment:	
Initiative status	completed project	Other, please specify:	
Funding agency	ESA		
Responsible Organisation	ESA; Université Catholique de Louvain - UCL		
Point of Contact (person)			
Email			
Telephone			

## Panorama of European Land Monitoring

Initiative description						
Initiative Title	Forest cover maps for Europe; Forest type maps for Europe					
URL	<a href="http://forest.jrc.ec.europa.eu/forest-mapping/forest-cover-map">http://forest.jrc.ec.europa.eu/forest-mapping/forest-cover-map</a> <a href="http://forest.jrc.ec.europa.eu/forest-mapping/forest-type-map">http://forest.jrc.ec.europa.eu/forest-mapping/forest-type-map</a>					
Description	<p>Forest / non-forest map for 1990, 2000, 2006</p> <ul style="list-style-type: none"> <li>• based on Landsat, IRS &amp; SPOT satellite data</li> <li>• ancillary data: Corine Land Cover classification, SRTM digital elevation model</li> <li>• segmentation &amp; clustering of satellite data, supervised classification</li> </ul> <p>Forest type map 2006</p> <p>Forest cover in the forest / non-forest map for 2006 was further classified as broadleaved, coniferous, mixed forest. A fully automatic image processing methodology was developed and applied. In order to avoid problems linked to phenological differences between images and related problems such as equalising the radiometric content of all images, the processing was based on a scene by scene approach. A new method was developed for 2006 to deal with new types of input image (LISS-III and SPOT) and to classify forest types.</p>					
geographic (coverage)	extent	<p>Europe</p> <p>1990 – EU-25 plus Bosnia&amp;Herzegovina, Bulgaria, Croatia, Macedonia</p> <p>2000 – EU-25 plus Bosnia&amp;Herzegovina, Bulgaria, Croatia, Macedonia</p> <p>2006 – EU-27 plus Balkan countries, EFTA4, Turkey</p>				
Data source	<input checked="" type="checkbox"/> satellite <table border="1" style="float: right; margin-left: 20px;"> <tr> <td>1990 Landsat TM</td> </tr> <tr> <td>2000 Landsat ETM+;</td> </tr> <tr> <td>2006 IRS-P6 LISS-III, SPOT4 (HRVIR) and SPOT5 HRG)</td> </tr> </table>			1990 Landsat TM	2000 Landsat ETM+;	2006 IRS-P6 LISS-III, SPOT4 (HRVIR) and SPOT5 HRG)
1990 Landsat TM						
2000 Landsat ETM+;						
2006 IRS-P6 LISS-III, SPOT4 (HRVIR) and SPOT5 HRG)						
	<input type="checkbox"/> aerial photographs					
	<input type="checkbox"/> topographic maps					
	<input type="checkbox"/> in-situ data					
	<input type="checkbox"/> field survey					
	Corine LC 1990 and 2000; SRTM digital elevation model					
Nomenclature	forest / non-forest forest types	Type <input type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes			
Nomenclature – list the classes in the highest level of the hierarchy	Forest types: Broadleaved Coniferous Mixed forest					
Scale / resolution	Minimum mapping unit	Scale	Pixel size 2006 25x25m			
Reference date	1984-1995; 1999-2000; 2006					
Update frequency	irregular	Comment:				
Initiative status	operational program	Other, please specify:				
Funding agency						
Responsible Organisation	Land Management and Natural Hazards Unit, Institute for Environment and Sustainability, JRC					
Point of Contact (person)	Pieter Kempeneers					
Email	pieter.kempeneers@jrc.ec.europa.eu forestmap@jrc.ec.europa.eu					
Telephone						

## Panorama of European Land Monitoring

Initiative description			
Initiative Title	Higher Resolution Global Land Cover Mapping		
URL	<a href="http://www.globallandcover.com/">http://www.globallandcover.com/</a>		
Description	The overall project objectives are to develop a new land cover classification system that is more applicable to earth system simulation and global environmental change studies, to produce more accurate global land cover data products for 2000 and 2010, and to apply these products in change detection and earth system modeling efforts over typical regions in the world. Primary data sources will include Landsat data and MODIS data acquired around year 2000, and Landsat-class data primarily acquired around year 2010 with China's own satellites including HJ and Beijing-1 satellites in combination with MODIS data and Chinese weather satellite data. While the minimum mapping unit is 30 m, the final products will include aggregated land cover types and cover proportion at a 250 m spatial scale.		
geographic (coverage) extent	Global		
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) HJ, Beijing-1, Landsat, MODIS	
	<input type="checkbox"/> aerial photographs		
	<input type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
Nomenclature	To be defined, but experimental hierarchical classification	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes
Nomenclature – list the classes in the highest level of the hierarchy	Experimental classification: Water, Urban, Cropland, Bareland, Forest, Shrub and Grass		
Scale / resolution	Minimum mapping unit	Scale	Pixel size 30 m / 250 m
Reference date	2010		
Update frequency		Comment:	
Initiative status	ongoing project	Other, please specify:	
Funding agency	Ministry of Science and Technology, China		
Responsible Organisation	National Geomatics Center of China		
Point of Contact (person)			
Email	<a href="mailto:glc@nsdi.gov.cn">glc@nsdi.gov.cn</a>		
Telephone	+86-10-63881207		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title	TerraNorte Information System		
URL	<a href="http://terranorte.iki.rssi.ru/">http://terranorte.iki.rssi.ru/</a>		
Description	<p>TerraNorte contains a number of advanced datasets and products derived from Earth Observation techniques, regarding land cover dynamics, natural and human induced ecosystem disturbances and agricultural activity. The TerraNorte's harmonised and unique database provides an important input for studying the interconnected processes of terrestrial ecosystems dynamics and global climate change, modelling of biogeochemical and water cycles, along with information support of international conventions on climate and environment, and natural resources management.</p> <p>Data products includes:</p> <ul style="list-style-type: none"> <li>• Seasonal SPOT-Vegetation Mosaics (1998-2004)</li> <li>• Land Cover of Northern Eurasia (2000)</li> <li>• Land Cover of Russia (2000)</li> <li>• Russia's Forests (2000)</li> <li>• Burnt Areas (2000-2004)</li> <li>• Logging (1989-2002)</li> <li>• Agriculture (2001-2009)</li> </ul> <p>The information system is developed with Russian Fund of Fundamental Research support (<a href="http://www.rfbr.ru/">http://www.rfbr.ru/</a>), RFBR grant 04-07-90263 "Development of the information system to support the monitoring of the Northern Eurasia's terrestrial ecosystems status and dynamic using Earth Observation". The information products included have been developed within a number of projects financially supported by the Russian Academy of Sciences, by scientific programmes of a number of ministries and authorities in Russian Federation and by international organisation including: INTAS programme, Joint Research Center of the European Commission, European Space Agency (ESA), BEAR programme and NASA Land Cover Land Use Change Program</p>		
geographic extent	Russia; Northern Eurasia; boreal		
Data source	<input checked="" type="checkbox"/> satellite  <input type="checkbox"/> aerial photographs <input type="checkbox"/> topographic maps <input type="checkbox"/> in-situ data <input type="checkbox"/> field survey	name of satellite(s) SPOT; Landsat-TM/ETM+; Terra-Aster; METEOR-3M/MSU-E; Terra/Aqua-MODIS; Envisat-MERIS	
Nomenclature	depends on the dataset/product. e.g. the Land cover of Northern Eurasia is hierarchical with 25 classes	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes 25
Nomenclature – list the classes in the highest level of the hierarchy	Forests; shrublands; other vegetation types and complexes; wetlands; grasslands; non-vegetated land cover		
Scale / resolution	Minimum mapping unit – depends on product 1 km Land Cover of N. Eurasia	Scale	Pixel size
Reference date	see description for reference dates for different products		
Update frequency	Irregular		
Initiative status	operational program		
Funding agency	Russian Academy of Sciences; Ministry of Natural Resources; Ministry of Agriculture; Ministry of Science and Education; European Commission; European Space Agency;		
Responsible Organisation	RAS Space Research Institute; RAS Center for Forest Ecology and Productivity; Joint Research Center of the European Commission		
Point of Contact (person)	Dr. Sergey Bartalev (Head of the Boreal Ecosystems Monitoring Laboratory)		
Email	<a href="mailto:bartalev@d902.iki.rssi.ru">bartalev@d902.iki.rssi.ru</a>		
Telephone	+7 095 3331077		

### 3.4. National Organisations and Initiatives – HELM

#### 3.4.1. Austria

##### 3.4.1.1. Organisations

Organisation description	
Organisation title (original language)	Umweltbundesamt GmbH
Organisation title (English)	Environmental Agency Austria
URL	<a href="http://www.umweltbundesamt.at/">http://www.umweltbundesamt.at/</a>
Description (English)	Environmental control in Austria
Key competences	environmental monitoring, measuring, reporting, consultation for national and international customers
Role(s)	<input checked="" type="checkbox"/> mandated authority <input type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Gebhard Banko (Deputy head biological diversity)
Email	gebhard.banko@umweltbundesamt.at
Telephone	+43-1-31304-3330

Organisation description	
Organisation title (original language)	Bundesamt für Eich- und Vermessungswesen
Organisation title (English)	Federal Office for Meteorology and Surveying
URL	<a href="http://www.bev.gv.at/">http://www.bev.gv.at/</a>
Description (English)	national mapping agency
Key competences	mapping, Austrian coordinate system, geometry of cadastral parcels
Role(s)	<input checked="" type="checkbox"/> mandated authority <input type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Michael Franzen
Email	Michael.Franzen@bev.gv.at
Telephone	+43 1 21110-2160

## Panorama of European Land Monitoring

Organisation description	
Organisation title (original language)	Amt der Tiroler Landesregierung Abteilung Raumordnung - Statistik
Organisation title (English)	administration of provincial government in tyrol department spatial planning and statistics
URL	<a href="http://www.tirol.gv.at/buerger/landesentwicklung/raumordnung/">http://www.tirol.gv.at/buerger/landesentwicklung/raumordnung/</a>
Description (English)	administration of province tyrol
Key competences	TIRIS - interactive atlas tyrol,
Role(s)	<input checked="" type="checkbox"/> mandated authority <input type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	DI Manfred Riedl
Email	manfred.riedl@tirol.gv.at
Telephone	+43 (0)512 508 3650

Organisation description	
Organisation title (original language)	Amt der Salzburger Landesregierung Abteilung 7 Raumordnung Raumforschung u.grenzüberschr.RP (20702)
Organisation title (English)	administration of provincial government in salzburg spatial research and transnational spatial planning
URL	<a href="http://www.salzburg.gv.at/themen/bw/raumplanung/207/20702.htm">http://www.salzburg.gv.at/themen/bw/raumplanung/207/20702.htm</a>
Description (English)	
Key competences	spatial reasearch, spatial assessment report, contribution to development programmes, european spatial development, ...
Role(s)	<input checked="" type="checkbox"/> mandated authority <input type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Franz Dollinger
Email	franz.dollinger@salzburg.gv.at
Telephone	+43 662 8042 4650

## Panorama of European Land Monitoring

### 3.4.1.2. Initiatives

Initiative description	
Initiative Title (original language)	LISA - Land Information System Austria
Initiative Title (English)	LISA - Land Information System Austria
URL	<a href="http://www.landinformationsystem.at/">http://www.landinformationsystem.at/</a>
Description (English)	Concept (with test areas already mapped) for an Austrian-wide land monitoring system based on airborne images combined with Laser scanning data and satellite images. Data model two-fold: land cover and land use model separated. For the land use model a row of sectoral input data is necessary (spatial planning, agriculture, traffic, etc.)
geographic extent (coverage)	national Austria
Data source	<input checked="" type="checkbox"/> satellite <input checked="" type="checkbox"/> aerial photographs <input type="checkbox"/> topographic maps <input type="checkbox"/> in-situ data <input type="checkbox"/> field survey <input checked="" type="checkbox"/> other name of satellite(s) IMAGE 2006, AWIFS Other, please specify: laser scanning data
	Additional comments: for land use data model additional geoinformation is needed: cadastral parcels, IACS-data, spatial planning data, nature conservation inventories
Nomenclature	Name object oriented Type <input type="checkbox"/> hierarchical <input checked="" type="checkbox"/> non-hierarchical No. of classes land cover: 15 classes+12 attributes Land use: 25 classes + 72 attributes:
Scale / resolution	Minimum mapping unit 25 m2 Scale 1:10.000 Pixel size 0,5 m
Reference date	
Update frequency	t.b.d (3-5 years, not all classes, 10 years all classes) Comment:
Initiative status	ongoing project Other, please specify: concept phase, roll out phase foreseen > 2014
Funding agency	ASAP 6+7, FFG, Ministry for traffic, innovation and technology
Responsible Organisation	Umweltbundesamt + GeoVille
Point of Contact (person)	Gebhard Banko Anreas Walli
Email	gebhard.banko@umweltbundesamt.at andreas.walli@geoville.com
Telephone	+43-1-31304-3330 ++43-(0)512-562021-10

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	Digitales Landschaftsmodell (DLM) - Objektbereich Bodenbedeckung und Gebietsnutzung		
Initiative Title (English)	digital landscape model (DLM)- objects: land cover and land use		
URL	<a href="http://www.bev.gv.at/pls/portal/docs/PAGE/BEV_PORTAL_CONTENT_ALLGEMEIN/0200_PRODUKT_E/PDF/DLM_FOLDER_EB.PDF">http://www.bev.gv.at/pls/portal/docs/PAGE/BEV_PORTAL_CONTENT_ALLGEMEIN/0200_PRODUKT_E/PDF/DLM_FOLDER_EB.PDF</a>		
Description (English)	The digital landscape model is a geometrical correct representation of nature used to produce the national topographic maps and to update them. According to different object types (traffic, settlement, land use, water, land cover, terrain and names) , the geometric accuracy differs, but is below +/- 3m. Some object areas are ready, some are still in a conceptual phase (e.g. land cover & land use)		
geographic (coverage) extent	national		
Data source	<input type="checkbox"/> satellite	name of satellite(s)	
	<input checked="" type="checkbox"/> aerial photographs		
	<input type="checkbox"/> topographic maps		
	<input checked="" type="checkbox"/> in-situ data		
	<input checked="" type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments:		
Nomenclature	Name BEV - 7 object areas	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes
Scale / resolution	Minimum mapping unit	Scale 1:2000	Pixel size
Reference date			
Update frequency	7 years + ad-hoc event update	Comment: main update - traffic	
Initiative status	operational program		Other, please specify:
Funding agency	BEV - Bundesamt für Eich- und Vermessungswesen		
Responsible Organisation	BEV - Bundesamt für Eich- und Vermessungswesen		
Point of Contact (person)	Michael Franzen, Christine Ressler		
Email	kundenservice@bev.gv.at christine.ressl@bev.gv.at		
Telephone	+ 43 - (0) 1 - 21110 - 2160		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	automatisierte Landnutzungskartierung Tirol		
Initiative Title (English)	automated land use classification Tyrol		
URL	<a href="http://www.tirol.gv.at/fileadmin/www.tirol.gv.at/raumordnung/downloads/roinfo33.pdf">http://www.tirol.gv.at/fileadmin/www.tirol.gv.at/raumordnung/downloads/roinfo33.pdf</a>		
Description (English)	For three districts in the federal province of tyrol land cover has been derived from semi-automated classification of aerial images to derive the non-built up areas that are devoted for building land		
geographic extent (coverage)	sub-national	Tyrol	
Data source	<input type="checkbox"/> satellite	name of satellite(s)	
	<input checked="" type="checkbox"/> aerial photographs		
	<input type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
	<input checked="" type="checkbox"/> other	Other, please specify: cadastral parcels	
	Additional comments:		
Nomenclature	Name	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes 6
	Scale / resolution	Minimum mapping unit	Pixel size
Reference date			
Update frequency	5 years	Comment:	
Initiative status	ongoing project	Other, please specify:	
Funding agency	public administration Tyrol		
Responsible Organisation	Amt der Tiroler Landesregierung Abteilung Raumordnung - Statistik		
Point of Contact (person)	Manfred Riedl		
Email	manfred.riedl@tirol.gv.at		
Telephone			

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	Landnutzungskartierung Land Salzburg		
Initiative Title (English)	land cover classification in salzburg		
URL			
Description (English)	semi automatic land cover classification for the permanent settleable area in the federal province of salzburg		
geographic extent (coverage)	sub-national	Salzburg	
Data source	<input type="checkbox"/> satellite	name of satellite(s)	
	<input checked="" type="checkbox"/> aerial photographs		
	<input type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments:		
Nomenclature	Name	Type	No. of classes
		<input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	6
Scale / resolution	Minimum mapping unit	Scale	Pixel size
	25m2	1:5.000	
Reference date			
Update frequency	5 years	Comment: 2009 first inventory	
Initiative status	ongoing project	Other, please specify:	
Funding agency	Amt der Salzburger Landesregierung		
Responsible Organisation	Amt der Salzburger Landesregierung		
Point of Contact (person)	Franz Dollinger		
Email	franz.dollinger@salzburg.gv.at		
Telephone			

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	Benützungskarten Kataster		
Initiative Title (English)	Land Use/cover categories in cadastre		
URL	<a href="http://www.bev.gv.at/portal/page?_dad=portal&amp;_pageid=713.1603867&amp;_schema=PORTAL">http://www.bev.gv.at/portal/page?_dad=portal&amp;_pageid=713.1603867&amp;_schema=PORTAL</a> <a href="http://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&amp;Gesetzesnummer=20006750&amp;ShowPrintPreview=True">http://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&amp;Gesetzesnummer=20006750&amp;ShowPrintPreview=True</a>		
Description (English)	The land cover categories are part of the cadastral map and the property inventory. They have to be made available according to the Annex in the surveying law (Vermessungsgesetz). They have to be geometrically accurate on a parcel level. They are the base for other institutions like financial administration, forestry agencies, vineyard cadastre, etc.		
geographic extent (coverage)	national		
Data source	<input type="checkbox"/> satellite <input checked="" type="checkbox"/> aerial photographs <input type="checkbox"/> topographic maps <input checked="" type="checkbox"/> in-situ data <input type="checkbox"/> field survey <input type="checkbox"/> other	name of satellite(s)      Other, please specify:	
	Additional comments: some categories have very low accuracies and the parcels are not updated in regular intervals, but mainly based on single regional projects.		
Nomenclature	Name Benützungskarten/Nutzungen	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes 8 main classes, 36 subclasses until 2011, 26 classes from 2012 onwards
Scale / resolution	Minimum mapping unit cadastral parcel	Scale 1:1000	Pixel size
Reference date			
Update frequency	irregular	Comment: updates mainly based on larger regional projects, some classes have not been updated since decades (e.g. forest in alpine environment)	
Initiative status	operational program	Other, please specify:	
Funding agency	Bundesamt für Eich- und Vermessungswesen		
Responsible Organisation	Bundesamt für Eich- und Vermessungswesen		
Point of Contact (person)	Julius Ernst		
Email	kundenservice@bev.gv.at		
Telephone			

### 3.4.2. Belgium

#### 3.4.2.1. Organisations

Organisation description	
Organisation title (original language)	Agentschap voor Geografische Informatie Vlaanderen (AGIV)
Organisation title (English)	Flemish Geographical Information Agency (FGIA)
URL	<a href="http://www.agiv.be">http://www.agiv.be</a>
Description (English)	Flemish governmental agency - The mission of the FGIA consists of enabling an optimal application of geographical information
Key competences	INSPIRE, large scale database, image processing, aerial images, geographical datasets
Role(s)	<input checked="" type="checkbox"/> mandated authority <input checked="" type="checkbox"/> service provider <input checked="" type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Jo Van Valckenborgh Stijn Van der Linden
email	jo.vanvalckenborgh@agiv.be stijn.vanderlinden@agiv.be
Telephone	+32 9 261 52 26

Organisation description	
Organisation title (original language)	Nationaal Geografisch Instituut (NGI)
Organisation title (English)	National Geographical Institute (NGI)
URL	<a href="http://www.ngi.be">http://www.ngi.be</a>
Description (English)	Federal governmental agency - National mapping agency
Key competences	Topographical maps, Belgian Coordinate system, aerial images
Role(s)	<input checked="" type="checkbox"/> mandated authority <input checked="" type="checkbox"/> service provider <input checked="" type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Hugues Bruynseels
Email	hbr@ngi.be
Telephone	+32 2 629 82 82

## Panorama of European Land Monitoring

### 3.4.2.2. Initiatives

Initiative description			
Initiative Title (original language)	Bodembedekking- en gebruikskaat van Vlaanderen		
Initiative Title (English)	Regional Land Cover and Land use map of Flanders		
URL	<a href="http://www.agiv.be/gis/diensten/geo-vlaanderen/?catid=91">http://www.agiv.be/gis/diensten/geo-vlaanderen/?catid=91</a>		
Description (English)			
geographic extent (coverage)	sub-national	Flanders and Brussels	
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) Landsat ETM+	
	<input type="checkbox"/> aerial photographs		
	<input type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
	<input checked="" type="checkbox"/> other	Other, please specify: CORINE land use maps, Road maps, Soil maps	
	Additional comments:		
Nomenclature	Name object oriented nomenclature	Type	No. of classes Land Cover: 9 Land Use: 19
		<input type="checkbox"/> hierarchical <input checked="" type="checkbox"/> non-hierarchical	
Scale / resolution	Minimum mapping unit	Scale	Pixel size 18 m
Reference date			
Update frequency	infrequent	Comment: This project is completed but we are currently working on a land cover map based on aerial images (only Flanders).	
Initiative status	completed project	Other, please specify:	
Funding agency	FGIA		
Responsible Organisation	FGIA		
Point of Contact (person)	Stijn Van der Linden Jo Van Valckenborgh		
Email	jo.vanvalckenborg@agiv.be stijn.vanderlinden@agiv.be		
Telephone	+32 9 261 52 26		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	Grootschalig Referentie Bestand Vlaanderen		
Initiative Title (English)	Large Scale Reference Database Flanders		
URL	<a href="http://agiv.be/gis/organisatie/?artid=982">http://agiv.be/gis/organisatie/?artid=982</a>		
Description (English)	Large scale reference database concerning buildings, roads, water, administrative parcels,...		
geographic extent (coverage)	sub-national	Flanders	
Data source	<input type="checkbox"/> satellite	name of satellite(s)	
	<input checked="" type="checkbox"/> aerial photographs		
	<input type="checkbox"/> topographic maps		
	<input checked="" type="checkbox"/> in-situ data		
	<input checked="" type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
Additional comments: The database is constructed per municipality. In 2015 the database will be covering the whole of the Flemish Region.			
Nomenclature	Name consists of polygons, lines and points	Type	No. of classes
		<input type="checkbox"/> hierarchical <input checked="" type="checkbox"/> non-hierarchical	25 entities
Scale / resolution	Minimum mapping unit	Scale 1:250 - 1:2500	Pixel size
Reference date			
Update frequency	Continuously	Comment: GRB making process started in 2002, all municipalities that are ready are now up to date 2010/2011.	
Initiative status	ongoing project	Other, please specify:	
Funding agency	Flemish Government and Utility Services		
Responsible Organisation	AGIV		
Point of Contact (person)	AGIV		
Email	+32 9 261 52 00		
Telephone	+32 9 261 52 00		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	CORINE Land Cover		
Initiative Title (English)	CORINE Land cover		
URL	<a href="http://www.ngi.be/NL/NL1-5-4.shtm">http://www.ngi.be/NL/NL1-5-4.shtm</a>		
Description (English)	This is the Belgium part of the European CORINE Land Cover.		
geographic extent (coverage)	European Union		
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) Landsat TM + SPOT XS	
	<input checked="" type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
	<input checked="" type="checkbox"/> other	Other, please specify: vegetation, soil, ... maps	
	Additional comments:		
Nomenclature	Name	Type	No. of classes
	European CLC nomenclature	<input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	44
Scale / resolution	Minimum mapping unit	Scale	Pixel size
		1:100000	
Reference date			
Update frequency	infrequent	Comment: 1990, 2000	
Initiative status	completed project	Other, please specify:	
Funding agency	EEA		
Responsible Organisation	NGI		
Point of Contact (person)	NGI		
Email	<a href="http://www.ngi.be/mailtoNGI/NL/NL5-4-1.jsp?Type=divers_info">http://www.ngi.be/mailtoNGI/NL/NL5-4-1.jsp?Type=divers_info</a>		
Telephone	+32 2 629 82 82		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	Vegetatiekaart Vlaanderen 2009		
Initiative Title (English)	Vegetation Map Flanders 2009		
URL	None		
Description (English)	This is a vegetation map based on aerial images made to update the forest reference map of Flanders and the urban green map of Flanders.		
geographic extent (coverage)	sub-national	Flanders	
Data source	<input type="checkbox"/> satellite	name of satellite(s)	
	<input checked="" type="checkbox"/> aerial photographs		
	<input type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
	<input checked="" type="checkbox"/> other	Other, please specify: Agriculture use maps, Urban Mask,...	
Additional comments: The aerial photographs have a resolution of 40 cm and have a 60%/30% overlap. In this way they can be used to calculate a DSM of 1m resolution.			
Nomenclature	Name	Type	No. of classes
	VKV	<input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	7 relevant classes and 3 grouping classes (subject to change)
Scale / resolution	Minimum mapping unit	Scale	Pixel size
			1 m
Reference date			
Update frequency	/		Comment: 2009
Initiative status	ongoing project		Other, please specify:
Funding agency	Flemish Agency for Nature and Forest, (federal) Agency for Innovation by Science and Technology		
Responsible Organisation	AGIV		
Point of Contact (person)	Stijn Van der Linden		
Email	stijn.vanderlinden@agiv.be		
Telephone	+32 9 261 7218		

### 3.4.3. Bosnia and Herzegovina

#### 3.4.3.1. Organisations

Organisation description	
Organisation title (original language)	Federalno Ministarstvo okoliša i turizma
Organisation title (English)	Federal Ministry of Environment and Tourism
URL	<a href="http://www.fmoit.gov.ba">http://www.fmoit.gov.ba</a>
Description (English)	
Key competences	Federal Ministry of Environment and Tourism performs administrative, professional and other activities under the jurisdiction of the Federation of Bosnia and Herzegovina related to: environmental protection of air, water and soil; strategy and environmental policy development, quality standards for air, water and soil, environmental monitoring and control of the air, water and soil; strategy and policy development for the tourism and hospitality development; monitoring of tourist flows on domestic and foreign markets; directing long-term development of tourism in the whole economic system and other tasks defined by law.
Role(s)	<input checked="" type="checkbox"/> mandated authority <input type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Mehmed Cero
email	mehmed.cero@fmpuio.gov.ba
Telephone	+387 33 215529

Organisation description	
Organisation title (original language)	Ministarstvo za prostorno uređenje, građevinarstvo i ekologiju Republike Srpske
Organisation title (English)	Ministry for spatial planning, civil engineering and ecology of Republika Srpska
URL	<a href="http://www.vladars.net/sr-SP-Cyrl/Vlada/Ministarstva/mgr">http://www.vladars.net/sr-SP-Cyrl/Vlada/Ministarstva/mgr</a>
Description (English)	The Ministry performs the tasks of government administration that is related to the improvement work in the field of spatial Planning, Civil Engineering and Ecology through the preparation and work in the commissions for drafting the of laws and other regulations of departmental jurisdiction. Within the scope of the Ministry prepares and proposes questions and materials and coordinates activities in the field of Spatial Planning, Civil Engineering and Ecology, to discuss the Commission and other bodies of the Government and the Council of Ministers relevant for this area.
Key competences	
Role(s)	<input checked="" type="checkbox"/> mandated authority <input type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	
email	mgr@mgr.vladars.net
Telephone	+387 51 303112; +387 51 313287

## Panorama of European Land Monitoring

Organisation description	
Organisation title (original language)	Vlada Brčko Distrikta BiH, Odjeljenje za prostorno planiranje i imovinsko pravne odnose, Pododjeljenje za prostorno planiranje, urbanizam i zaštitu okoline
Organisation title (English)	Government of Brčko District BiH, Department of Urban Planning and Real Estate Affairs, Section for Spatial Planning, Urbanism and Environmental Protection
URL	
Description (English)	Section for Spatial Planning, Urbanism and Environmental Protection, performs tasks in the following areas: urbanism, spatial planning, the legalisation of illegally constructed objects, protection of cultural and historic objects and environmental protection within the territory of Brcko District.
Key competences	
Role(s)	<input checked="" type="checkbox"/> mandated authority <input type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Svjetlana Čivčić
Email	svjetlanacivcic@bdcentral.net
Telephone	

## Panorama of European Land Monitoring

Organisation description	
Organisation title (original language)	Ministarstvo vanjske trgovine i ekonomskih odnosa Bosne i Hercegovine, Sektor poljoprivrede, prehrane, šumarstva i ruralnog razvoja
Organisation title (English)	Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina, Sector for Agriculture, Food, Forestry and Rural Development
URL	<a href="http://www.mvteo.gov.ba">http://www.mvteo.gov.ba</a>
Description (English)	<p>The Ministry of Foreign Trade and Economic Relations is competent for the following:</p> <ul style="list-style-type: none"> <li>• Foreign trade policy and customs tariff policy of BiH;</li> <li>• Development of contracts, agreements and other documents in the field of economic relations and trade with other countries;</li> <li>• Development of bilateral and multilateral agreements and other documents in regard to reconstruction of BiH;</li> <li>• Relations with international organisations and institutions in the field of foreign trade and economic relations;</li> <li>• Designing and drafting strategic documents on macroeconomic relations in the field of economic relations;</li> <li>• Business environment, single economic space;</li> <li>• Development and promotion of entrepreneurship;</li> <li>• Control of turnover with goods and services under a special regime in the field of export and import;</li> <li>• Consumer protection;</li> <li>• Competition;</li> <li>• Co-ordination of international economic assistance to BiH, except from the part regarding the EU assistance;</li> <li>• Veterinary medicine;</li> </ul> <p>The Ministry is also responsible for tasks and duties falling within the jurisdiction of the State of BiH including defining policies and basic principles, coordinating activities and consolidating entity plans with those of international institutions in the following areas: agriculture, energy, protection of environment and use of natural resources, Tourism.</p>
Key competences	
Role(s)	<input checked="" type="checkbox"/> mandated authority <input type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Dušan Nešković, Assistant Minister, responsible for the Sector for Agriculture, Food, Forestry and Rural Development
email	dusan.neskovic@mvteo.gov.ba
Telephone	+387 33 953500

## Panorama of European Land Monitoring

Organisation description	
Organisation title (original language)	Poljoprivredno-prehrambeni fakultet Univerziteta u Sarajevo
Organisation title (English)	University of Sarajevo, Faculty of Agriculture and Food Sciences
URL	<a href="http://ppf.unsa.ba">http://ppf.unsa.ba</a>
Description (English)	Faculty of Agriculture and Food Sciences was established in 1940, which makes it the oldest higher educational institution in Bosnia and Herzegovina. Research activities are conducted through eight existing Institutes. They are organised in accordance with scientific and research fields.
Key competences (add keywords)	The Faculty has implemented numerous internationally funded projects including TEMPUS, CARDS, PHARE, FP6, FP7 and FAO projects.
Role(s)	<input checked="" type="checkbox"/> mandated authority <input type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Hamid Čustović
email	custovic.hamid@gmail.com
Telephone	+387 33 225727

Organisation description	
Organisation title (original language)	Federalni zavod za agropedologiju
Organisation title (English)	Federal Institute of Agropedology
URL	
Description (English)	The main activity of the Institute is a systematic research and expert treatment of all relevant data on land in the territory of the Federation BiH and beyond, and planning appropriate measures to preserve and enhance the quality and the fertility of the land and environmental protection.
Key competences (add keywords)	<p>The Institute carries out professional and other tasks within the competence of the Federation of Bosnia and Herzegovina, and relate to:</p> <ul style="list-style-type: none"> <li>• Mapping and determining agricultural land capability;</li> <li>• Control the fertility of agricultural land;</li> <li>• Malioration of agricultural lands;</li> <li>• Monitoring the contamination of soil pollutants;</li> <li>• Agricultural land zoning and its rational use;</li> <li>• Soil monitoring</li> <li>• Soil Information System of agricultural land and keeping records on agricultural land;</li> <li>• Providing guidelines for the management of agricultural land resources;</li> <li>• Approval of use of agricultural land and the issuing of opinions and certificates</li> <li>• Participation and giving expert opinions on the regulations prepared by other bodies, related to land</li> <li>• Other tasks and duties prescribed by the Agricultural Land Act and other laws.</li> </ul>
Role(s)	<input checked="" type="checkbox"/> mandated authority <input type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Esad Bukalo
email	zapsa@pkasa.com.ba
Telephone	+387 33 268262

## Panorama of European Land Monitoring

Organisation description	
Organisation title (original language)	Poljoprivredni institut Republike Srpske
Organisation title (English)	Agricultural Institute of Republic of Srpska
URL	<a href="http://www.poljinstrs.org">http://www.poljinstrs.org</a>
Description (English)	<p>Agricultural Institute of Republic of Srpska is a respectable scientific institution with the long experience in academic research in the Republic of Srpska and Bosnia and Herzegovina.</p> <p>The Institute carries out basic, applied and development research in the field of agriculture that are of general interest, or of strategic importance for the Republic of Srpska.</p> <p>Thanks to FAO Project "Inventory of Post War Situation of Land Resources in Bosnia and Herzegovina" that has been implemented in several phases since the year of 2000, the staff of the Department has been trained in application of international methodologies for assessment and interpretation of data on land resources. Afterward, in addition to project implementation, staff participated several training sessions for application of new technologies in land use planning technologies (training for satellite images interpretation, GIS training in BiH and Italy, SOTER database training, climate database software training, agroecological zoning). By application of acquired knowledge, technical equipment and actual problems, the Department established a GIS Unit in 2004, and thus become one of the first BIH institutions that started using GIS in agriculture.</p>
Key competences (add keywords)	
Role(s)	<input checked="" type="checkbox"/> mandated authority <input type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Mihajlo Marković; Petra Nikic Nauth
email	mmarkovic@blic.net
Telephone	+387 51 303112; +387 51 313287

## Panorama of European Land Monitoring

### 3.4.3.2. Initiatives

Initiative description				
Initiative Title (original language)	CORINE zemljišni pokrivač			
Initiative Title (English)	CORINE Land Cover			
URL	<a href="http://www.eea.europa.eu/data-and-maps/figures/corine-land-cover-2006-by-country/bosnia-herzegovina">http://www.eea.europa.eu/data-and-maps/figures/corine-land-cover-2006-by-country/bosnia-herzegovina</a>			
Description (English)	The main objective of the CORINE Land Cover project in Bosnia and Herzegovina was to provide the land cover map for year 2000 and the information on land cover changes during 2000-2006 period.			
geographic extent (coverage)	national			
Data source	<input checked="" type="checkbox"/> satellite name of satellite(s) LANDSAT, SPOT-4, SPOT-5, IRS P6			
	<input checked="" type="checkbox"/> aerial photographs			
	<input checked="" type="checkbox"/> topographic maps			
	<input type="checkbox"/> in-situ data			
	<input checked="" type="checkbox"/> field survey			
	<input type="checkbox"/> other Other, please specify:			
	Additional comments:			
Nomenclature	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Name Standard European</td> <td style="width: 33%;">Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical</td> <td style="width: 33%;">No. of classes 44 (33 in BiH)</td> </tr> </table>	Name Standard European	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes 44 (33 in BiH)
Name Standard European	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes 44 (33 in BiH)		
Nomenclature – list the classes in the highest level of the hierarchy	Artificial surfaces Agriculture areas Forests and seminatural areas Wetlands Water			
Scale / resolution	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Minimum mapping unit 25 ha</td> <td style="width: 33%;">Scale 1:100.000</td> <td style="width: 33%;">Pixel size 20-30 m</td> </tr> </table>	Minimum mapping unit 25 ha	Scale 1:100.000	Pixel size 20-30 m
Minimum mapping unit 25 ha	Scale 1:100.000	Pixel size 20-30 m		
Reference date				
Update frequency	6 years Comment: 2000,2006			
Initiative status	completed project Other, please specify:			
Funding agency	EEA; JRC			
Responsible Organisation	Institute of geodesy (CLC 2000); Faculty of Agriculture and Food Science (CLC 2006)			
Point of Contact (person)	Hamid Čustović			
Email	custovic.hamid@gmail.com			
Telephone	+387 33 225 727			

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	Uspostava Sistema prostornog odabira uzorka i prikupljanja podataka za potrebe poljoprivredne statistike		
Initiative Title (English)	Establishment of the System of sampling/survey developed for a rapid availability of reliable baseline data for agricultural statistics		
URL	<a href="http://www.bihais.com">http://www.bihais.com</a>		
Description (English)			
geographic extent (coverage)	national		
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) SPOT	
	<input checked="" type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input checked="" type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments: This system/pilot activities are currently being implemented within IPA project "Strengthening and harmonisation of the BiH agriculture and rural sectors Information System". Responsible key expert for this component is Gregor Počivavšek (gregor.pocivavsek@giss.si). The Government is taking actions for establishing such system in the entire country. According to the project proposal, the work should be completed by September 2012.		
Nomenclature	Name LUCAS	Type <input type="checkbox"/> hierarchical <input checked="" type="checkbox"/> non-hierarchical	No. of classes
Scale / resolution	Minimum mapping unit	Scale	Pixel size
Reference date			
Update frequency	every three years	Comment:	
Initiative status	ongoing project	Other, please specify:	
Funding agency	EU for pilot activities, WB loans for establishing the system in BiH		
Responsible Organisation	Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina, Sector for Agriculture, Food, Forestry and Rural Development and entities Ministries of Agriculture		
Point of Contact (person)	Dušan Nešković		
Email	dusan.neskovic@mvteo.gov.ba		
Telephone	+387 33 953 500		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	"Podrška razvoju Tržišnog informacionog servisa i Sistema identifikacije zemljišnih parcela" projekat IPA 2009		
Initiative Title (English)	"Support to the development of Agricultural Market Information and Land Parcel Identification System" IPA 2009 project		
URL			
Description (English)			
geographic extent (coverage)	national		
Data source	<input type="checkbox"/> satellite		name of satellite(s)
	<input checked="" type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input checked="" type="checkbox"/> field survey		
	<input type="checkbox"/> other		Other, please specify:
	Additional comments:		
Nomenclature	Name	Type <input type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes
	Scale / resolution	Minimum mapping unit	Scale Pixel size
Reference date			
Update frequency	Comment:		
Initiative status	other		Other, please specify: This project is in the initial phase. The pilot LPIS will start with its implementation in September 2012 latest.
Funding agency	EU		
Responsible Organisation	Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina, Sector for Agriculture, Food, Forestry and Rural Development and entities Ministries of Agriculture		
Point of Contact (person)	Dušan Nešković		
Email	dusan.neskovic@mvteo.gov.ba		
Telephone	+387 33 953 500		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	Inventarizacija stanja i izrada baze podataka pokrivenosti zemljišta Kantona Sarajevo		
Initiative Title (English)	Inventory of the situation and land cover database of Sarajevo Canton		
URL			
Description (English)	Land cover database of Canton Sarajevo for the purpose of spatial planning based on CORINE nomenclature. May also be considered as a pilot project to develop national level 4 CORINE nomenclature.		
geographic extent (coverage)	sub-national		
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s)	
	<input checked="" type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input checked="" type="checkbox"/> in-situ data		
	<input checked="" type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments:		
Nomenclature	Name	Type	No. of classes
	Extended CORINE	<input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	64, level 4
Scale / resolution	Minimum mapping unit 1 ha	Scale 1:5.000	Pixel size
Nomenclature – list the classes in the highest level of the hierarchy	Artificial surfaces Agriculture areas Forests and seminatural areas Wetlands Water		
Reference date			
Update frequency	Comment:		
Initiative status	completed project	Other, please specify:	
Funding agency	WB through Ministry of Spatial Planning and Environmental Protection of Canton Sarajevo		
Responsible Organisation	Faculty of Agriculture and Food Sciences		
Point of Contact (person)	Hamid Čustović		
Email	custovic.hamid@gmail.com		
Telephone	+387 33 225727		

### 3.4.4. Bulgaria

#### 3.4.4.1. Organisations

Organisation description	
Organisation title (original language)	ИЗПЪЛНИТЕЛНА АГЕНЦИЯ "Електронни съобщителни мрежи и информационни системи"
Organisation title (English)	EXECUTIVE AGENCY "Electronic Communication Networks and Information Systems"
URL	<a href="http://www.esmis.government.bg/">http://www.esmis.government.bg/</a>
Description (English)	Executive Agency "ESMIS" is a legal entity funded from the Ministry of Transport and Communications, secondary manager with budget credits, with headquarters in Sofia. Executive Agency "ESMIS" develops, maintains and operates an electronic communications network / ECN / for national security, and the central executive authorities, local authorities and local government, provides electronic messaging for disaster management.
Key competences (add keywords)	Agency develops and operates data centers, automated information and control systems, when such centers were built in implementation of projects and programs in the field of information society and to manage the necessary transmission capacity. The Agency is responsible for SDI harmonisation under Directive 02/2007/EU and development of the national geo-portal. Provides links to monitoring models and information systems in the field of risk management
Role(s)	<input checked="" type="checkbox"/> mandated authority <input type="checkbox"/> service provider <input checked="" type="checkbox"/> user <input type="checkbox"/> other
Point of contact (responsible for land monitoring)	Lilyana Turnalieva
Email	lturnalieva@esmis.government.bg
Telephone	+359 2 9492805

Organisation description	
Organisation title (original language)	Агенция за Устойчиво Развитие и Евроинтеграция - Екорегииони /АУРЕ/
Organisation title (English)	Agency for Sustainable Development and Eurointegration - Ecoregions /ASDE/
URL	<a href="http://www.asde-bg.org">http://www.asde-bg.org</a>
Description (English)	The Agency for Sustainable Development and Eurointegration - Ecoregions /ASDE/ is a non-governmental Organisation. It is a legal entity for public purposes. All activities of ASDE are realised with governmental, municipal and public support with the aim to foster the sustainable development of Bulgaria and the successful integration in the European Union. These activities are in correlation with the national economical, environmental and social interest and with the priorities of the Europe 2020, the sustainable development strategies of UN and EU, EU programs and directives. ASDE is partner in an European network on sustainable urban management - URBAN-NET. ASDE has signed distribution agreements with e-GEOS, EUISI, Spot Image for distribution of Satellite images for the territory of the Republic of Bulgaria.
Key competences (add keywords)	Development, upgrading and implementation of thematic Unified national spatial database portal; takes part in the development of risk management models, information systems and management practices, related also to integrated management of territory, population and resources, as a base for the sustainable development and the strategic forecasting. ASDE is a member of the European network for sustainable urban management. ASDE develops and supports the establishment of a Reference land cover database as a general SD set for data accuracy(DA) and harmonisation with other thematic data layers (cadastre, nature, etc). Data accuracy; permanent monitoring land cover/land use; Data Mining;
Role(s)	<input type="checkbox"/> mandated authority <input checked="" type="checkbox"/> service provider <input checked="" type="checkbox"/> user <input type="checkbox"/> other
Point of contact (responsible for land monitoring)	Ivan Philipov
Email	ivan.philipov@asde-bg.org
Telephone	+359 2 470 90 75



## Panorama of European Land Monitoring

Organisation description	
Organisation title (original language)	Център за приложение на спътникови изображения - РЕСАК)
Organisation title (English)	Remote Sensing Application Center (ReSAC)
URL	<a href="http://resac-bg.org">http://resac-bg.org</a>
Description (English)	<p>The establishment of the Remote Sensing Applications Center (ReSAC) was supported by the Food and Agriculture Organisation (FAO) of the United Nations (UN) in 1998 (project TCP/BUL/8922) and at the end of 2005 is registered as a non-profit Organisation.</p> <p>The general goal of ReSAC as a private research center is to facilitate local, national and international authorities, as well as private enterprises, to introduce RS&amp;GIS products into agricultural and environmental management, land cover/land use, soil and forest inventory, water resources, environmental hazards, disaster management and urban planning.</p>
Key competences (add keywords)	Research & Development of methodologies, innovations; Distribution of Satellite Data; Consultancy; Education and Trainings; Image Processing; GIS Data Services; Photogrammetric Services; Fast Track Services
Role(s)	<input type="checkbox"/> mandated authority <input checked="" type="checkbox"/> service provider <input checked="" type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Radko Radkov
email	radko.radkov@resac-bg.org
Telephone	+359 2 9800731

Organisation description	
Organisation title (original language)	Изпълнителна Агенция по Околна Среда към Министерство на околната среда и водите
Organisation title (English)	Executive Environment Agency (ExEA) at the Ministry of environment and waters
URL	<a href="http://eea.government.bg">http://eea.government.bg</a>
Description (English)	<p>Executive Environment Agency (ExEA) is an administration at the Ministry of Environment and Water to carry out management, coordination and information functions as regards the control and environmental protection in Bulgaria.</p> <p>The Agency is a National Reference Centre within the European Environment Agency (EEA). The Agency is a Member of EPA Network.</p>
Key competences (add keywords)	ExEA designs and manages the National Environmental Monitoring System for Environmental Monitoring and information on the state of environmental components and factors on the complete territory of the country.
Role(s)	<input checked="" type="checkbox"/> mandated authority <input checked="" type="checkbox"/> service provider <input checked="" type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Borislava Borisova
email	borissova@eea.government.bg
Telephone	+359 2 9406418

## Panorama of European Land Monitoring

Organisation description	
Organisation title (original language)	Министерство на земеделието и храните
Organisation title (English)	Ministry of Agriculture and Food of Republic of Bulgaria
URL	<a href="http://www.mzh.government.bg">http://www.mzh.government.bg</a>
Description (English)	The Ministry Agriculture and Food is responsible for maintaining LPIS plans and forest inventory plans
Key competences (add keywords)	Organises, controls and reports activities related to agriculture, hunting management, forestry management, stock-taking and assessment of the forestry fund, as well as any changes in it; organises a management and control system for protected areas and the maintenance of a favourable conservation status of individual types of habitats and species habitats within the national environmental network "Natura 2000"; organises and manages the provision of information about specialised maps and registers of the forests and land within the forestry fund to reflect such information into the digital models in the Restored Property Map (RPM), in cadastral maps and registers and in the Land Parcel Identification System (LPIS).
Role(s)	<input checked="" type="checkbox"/> mandated authority <input checked="" type="checkbox"/> service provider <input checked="" type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Liuba Ilieva
email	LAilieva@mzh.government.bg
Telephone	+359 2 98511443

## Panorama of European Land Monitoring

### 3.4.4.2. Initiatives

Initiative description				
Initiative Title (original language)	Земно покритие - Референтен слой			
Initiative Title (English)	Land cover – Reference layer			
URL	<a href="http://bsdi.asde-bg.org/lccs_en.php">http://bsdi.asde-bg.org/lccs_en.php</a>			
Description (English)	<p>The Bulgarian initiative for development of a national land cover database, using the methodology of Food and Agriculture Organisation – Land Cover Classification System (FAO-LCCS) is an example for applying best international practices in support of decision making at local (national) level. The reference database – land cover layer of the territory of Republic of Bulgaria is entirely developed by experts from the Agency for Sustainable Development and Eurointegration – Ecoregions (ASDE) and the Remote Sensing Application Center – ReSAC.</p> <p>The reference land cover layer is developed, based on satellite images from Landsat satellite (USA) from 2009 with spatial resolution 30 m. Towards every land cover spatial object, information about altitude and slope is provided. A check of reliability of interpreted data has been done and thematic accuracy of 85% has been achieved.</p> <p>The reference land cover layer will be used in accordance with the implementation of Directive 2/2007/EC, Directive 60/2007/EC, as well as other Directives and European Union programs. The reference layer includes updated information on relief (from SRTM v4, from DG JRC) and main land cover types, as in that way an appropriate product for planning and management of the territory is created.</p>			
geographic extent (coverage)	national same land cover mapping (based on LCCS) in Romania; possibility for transborder use and applications			
Data source	<input checked="" type="checkbox"/> satellite name of satellite(s) Landsat 5  <input type="checkbox"/> aerial photographs <input checked="" type="checkbox"/> topographic maps <input type="checkbox"/> in-situ data <input checked="" type="checkbox"/> field survey <input type="checkbox"/> other Other, please specify:			
Nomenclature	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Name FAO-LCCS</td> <td style="width: 33%;">Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical</td> <td style="width: 33%;">No. of classes 9</td> </tr> </table>	Name FAO-LCCS	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes 9
Name FAO-LCCS	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes 9		
Nomenclature – list the classes in the highest level of the hierarchy	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Urban Areas Agriculture Land Mixed Vegetation Forest Mountain grassland</td> <td style="width: 50%;">Bare Rock Quarries Water no data (clouds)</td> </tr> </table>	Urban Areas Agriculture Land Mixed Vegetation Forest Mountain grassland	Bare Rock Quarries Water no data (clouds)	
Urban Areas Agriculture Land Mixed Vegetation Forest Mountain grassland	Bare Rock Quarries Water no data (clouds)			
Scale / resolution	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Minimum mapping unit 1 ha</td> <td style="width: 33%;">Scale 1:50 000</td> <td style="width: 33%;">Pixel size 30m</td> </tr> </table>	Minimum mapping unit 1 ha	Scale 1:50 000	Pixel size 30m
Minimum mapping unit 1 ha	Scale 1:50 000	Pixel size 30m		
Reference date				
Update frequency	3 years Comment:			
Initiative status	completed project Other, please specify:			
Funding agency	former State Agency for Information Technologies and Communications(SAITS) , transformed into - EXECUTIVE AGENCY "Electronic Communication Networks and Information Systems" to the Ministry of transport, information technologies and communications,			
Responsible Organisation	The Agency for Sustainable Development and Eurointegration - Ecoregions /ASDE/			
Point of Contact (person)	Kristian Milenov			
Email	ASDE@online.bg			
Telephone	+359 2 470 90 75			

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	Земно покритие на 27 областни града в България		
Initiative Title (English)	Land Cover of the 27 regional cities in Bulgaria		
URL	<a href="http://bsdi.asde-bg.org/lccs_en.php">http://bsdi.asde-bg.org/lccs_en.php</a>		
Description (English)	<p>In partnership with the State administration, municipalities, civil groups, research Organisations, universities and research institutes of the Bulgarian Academy of Sciences, ASDE participate in the progressive development of operational capacity to implement the requirements of the Directive 2007/02/EO and the Programme Global Monitoring for Environment and security (GMES). Digitalised maps and databases are available to the beneficiary - Ministry of Regional Development and Public Works – Department "Technical rules and regulations." The maps are developed in coordination with the Executive Agency "Electronic communications networks and information systems", which develops and builds an information system of the harmonisation of the spatial data and risk management.</p> <p>All this activity is in compliance with the Directive 2007/02/EO (also known as Directive INSPIRE), which requires the harmonisation of spatial data in Bulgaria, and the next priority - spatial data in border areas, especially where there are bilateral and international infrastructure projects. The Directive is in force and obligatory for Bulgaria from 04.2007.</p>		
geographic extent (coverage)	national		
Data source	<input checked="" type="checkbox"/> satellite <input type="checkbox"/> aerial photographs <input checked="" type="checkbox"/> topographic maps <input type="checkbox"/> in-situ data <input checked="" type="checkbox"/> field survey <input checked="" type="checkbox"/> other	name of satellite(s) Ikonos, Quickbird and Eros  Other, please specify: Statistical data	
Nomenclature	Name FAO-LCCS	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes 42
Nomenclature – list the classes in the highest level of the hierarchy	Artificial Waterbodies Built Up Areas Consolidated Bare Areas Forest Natural Waterbodies Non Built Up Areas		Graminoid Crops Shrubland Grasslands Non-Graminoid Crops Managed Lands
Scale / resolution	Minimum mapping unit 0.01 ha	Scale 1:5 000	Pixel size 0.5 - 1.0 m
Reference date			
Update frequency	infrequent	Comment:	
Initiative status	completed project	Other, please specify:	
Funding agency	Ministry of Regional Development and Public Works – Department "Technical rules and regulations"		
Responsible Organisation	Remote Sensing Application Center (ReSAC) Agency for Sustainable Development and Eurointegration – ECOREGIONS (ASDE)		
Point of Contact (person)	Radko Radkov		
Email	radko.radkov@resac-bg.org		
Telephone	+359 2 9800731		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	КОРИНЕ Земно Покритие		
Initiative Title (English)	CORINE Land Cover		
URL	<a href="http://eea.government.bg/bul/NSMOS/Soil/KZP2006/index.html">http://eea.government.bg/bul/NSMOS/Soil/KZP2006/index.html</a>		
Description (English)	CORINE Land Cover for Bulgaria;1990, 2000 and 2006		
geographic extent (coverage)	national		
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) Landsat 7, SPOT 4, SPOT 5 and IRS P6	
	<input type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input checked="" type="checkbox"/> field survey		
	<input checked="" type="checkbox"/> other	Other, please specify: Statistical data	
	Additional comments:		
Nomenclature	Name standard European	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes 44 (36 in Bulgaria)
	Nomenclature – list the classes in the highest level of the hierarchy Artificial surfaces Arable land Forest and seminatural areas Wetlands Water bodies		
Scale / resolution	Minimum mapping unit 25ha	Scale 1:100 000	Pixel size
Reference date			
Update frequency	6 -10 years	Comment: 1990, 2000, 2006	
Initiative status	completed project	Other, please specify:	
Funding agency	European Environment Agency and the Ministry of environment and waters - Bulgaria		
Responsible Organisation	Executive Environment Agency (ExEA)		
Point of Contact (person)	Borislava Borisova		
Email	borissova@eea.government.bg		
Telephone	+359 2 9406418		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	Специализирани карти и регистри за горите и земите от горския фонд за отразяването им в цифровите модели в Картата на възстановената собственост (КВС), в кадастралните карти и регистри и в Системата за идентификация на земеделските парцели (СИЗП)		
Initiative Title (English)	Specialised maps and registers of the forests and land within the forestry fund to reflect such information into the digital models in the Restored Property Map (RPM), in cadastral maps and registers and in the Land Parcel Identification System (LPIS)		
URL	<a href="http://www.nug.bg/struct/lang/2/iag">http://www.nug.bg/struct/lang/2/iag</a>		
Description (English)	Inventory plans for updating of forest database		
geographic extent (coverage)	national		
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) IRS	
	<input type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input checked="" type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments:		
Nomenclature	Name local	Type <input type="checkbox"/> hierarchical <input checked="" type="checkbox"/> non-hierarchical	No. of classes 276
	Nomenclature – list the classes in the highest level of the hierarchy n/a		
Scale / resolution	Minimum mapping unit n/a	Scale 1:10 000	Pixel size n/a
Reference date			
Update frequency	10 years	Comment:	
Initiative status	operational program	Other, please specify:	
Funding agency	Executive Forests Agency at the Ministry of Agriculture and Food; Government budget		
Responsible Organisation	Executive Forests Agency at the Ministry of Agriculture and Food		
Point of Contact (person)	Iliya Anguelov		
Email	uli@iag.bg		
Telephone	+359 2 98511529		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	Система за идентификация на земеделските площи /СИЗП/		
Initiative Title (English)	Land Parcel Identification System /LPIS/		
URL	<a href="http://www.mzh.government.bg">http://www.mzh.government.bg</a>		
Description (English)	Maintenance and updating of Land Parcel Identification System (LPIS) referred to Land Use		
geographic extent (coverage)	national		
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) Ikonos; Quickbird	
	<input checked="" type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input checked="" type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments:		
Nomenclature	Name n/a	Type <input type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes 43
	Nomenclature – list the classes in the highest level of the hierarchy		
Scale / resolution	Minimum mapping unit 0.1 ha	Scale 1:10 000	Pixel size 0.5 m
Reference date			
Update frequency	2 - 5 years	Comment:	
Initiative status	operational program	Other, please specify:	
Funding agency	Ministry of Agriculture and Food; EU		
Responsible Organisation	State Fund Agriculture at the Ministry of Agriculture and Food		
Point of Contact (person)	Liuba Ilieva		
Email	LAilieva@mzh.government.bg		
Telephone	+359 2 98511443		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	Земно покритие на 10 км ивица по протежение на Европейски транспортни коридори, преминаващи през България		
Initiative Title (English)	Land cover maps on 10km strip along the Transeuropean transport corridors, passing through Bulgaria		
URL			
Description (English)	Land cover maps on 10km strip along the Transeuropean transport corridors, passing through Bulgaria		
geographic extent (coverage)	national		
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) Landsat 5; SPOT 5	
	<input type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input checked="" type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
Nomenclature	Name FAO-LCCS	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes 14
Nomenclature – list the classes in the highest level of the hierarchy	Agricultural land Beaches, dunes and sand plains Broad Complex cultivation patterns Coniferous forest Fruit trees Grassland		Industrial, commercial and transport Mixed forest Mixed vegetation Open space with no vegetation Urban area Vineyards Wetlands
Scale / resolution	Minimum mapping unit 1.0 ha	Scale 1:25 000 / 1 :50 000	Pixel size 5 m / 30 m
Reference date			
Update frequency	infrequent	Comment:	
Initiative status	completed project	Other, please specify:	
Funding agency	former State Agency for Information Technologies and Communications(SAITS) , transformed into - EXECUTIVE AGENCY "Electronic Communication Networks and Information Systems" to the Ministry of transport, information technologies and communications		
Responsible Organisation	Agency for Sustainable Development and Eurointegration - Ecoregions /ASDE/ Remote Sensing Application Center (ReSAC)		
Point of Contact (person)	Kristian Milenov		
Email	ASDE@online.bg		
Telephone	+359 2 9818216		

### 3.4.5. Czech Republic

#### 3.4.5.1. Organisations

Organisation description	
Organisation title (original language)	CENIA, česká informační agentura životního prostředí
Organisation title (English)	CENIA, Czech ENvironmental Information Agency
URL	<a href="http://www.cenia.cz">http://www.cenia.cz</a>
Description (English)	<p>The main focus of CENIA is to provide granted access into information concerning the environment. Further it provides conditions for aggregated and statistical information about the environment, sectors and socio-economic aspects of sustainable development; smooth exchange of information; a central reporting office; streamlined reporting as well as for assessment and interpretation of information regarding the environment and its components; environmental economics. CENIA is responsible for coordination of the European programme GMES in the Czech Republic.</p> <p>Activities are in line with Act No. 123/1998 Coll., on the Right to Environmental Information, and Act No. 106/1999 Coll., on Free Access to Information; INSPIRE implementation; Support for REACH, EMAS, IPPC, BAT, EIA, EPER/ePRTR and waste management, GMES Regulation No 911/2010.</p> <p>EEA (Environmental Education and Awareness), MA21 (Local Agenda 21) and publishing information as the main channel of communication with citizens, businesses and foreign countries.</p>
Key competences	<p>INSPIRE implementation;  REACH, EMAS, IPPC, BAT, EIA, EPER/ePRTR and waste management.  EEA (Environmental Education and Awareness)  MA21 (Local Agenda 21)  Report on the Environment of the Czech Republic  GEOPORTAL  GMES Regulation No 911/2010</p>
Role(s)	<input checked="" type="checkbox"/> mandated authority <input type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Jana Petruchová
email	jana.petruchova@cenia.cz
Telephone	+420267225332

## Panorama of European Land Monitoring

Organisation description	
Organisation title (original language)	AOPK, Agentura ochrany přírody a krajiny ČR
Organisation title (English)	The Agency for Nature Conservation and Landscape Protection of the Czech Republic
URL	<a href="http://www.ochranaprirody.cz">http://www.ochranaprirody.cz</a>
Description (English)	<p>The Agency for Nature Conservation and Landscape Protection of the Czech Republic (AOPK) is a governmental body established by the Ministry of the Environment. It was established on March 1st 1995 as a successor of the former Czech Institute for Nature Conservation.</p> <p>The main aim of AOPK is to protect and conserve nature and landscape on the whole territory of the Czech Republic. A whole range of acts, regulations and decrees regulates activity of the Agency for Nature Conservation and Landscape Protection of the Czech Republic (and their regional offices - Administrations of Protected Landscape Areas - which are state administration bodies). Very important is especially: Act. No. 114/1992 Gazette on the nature and landscape protection; Act No. 114/1992 Gazette, on the Nature and Landscape Protection (Act No. 114/1992 Coll. on Nature and Landscape Protection); Act No. 115/2000 Gazette, on providing compensation of damages caused by selected specially protected animals; Act No. 100/2004 Gazette, on the protection of species of wild fauna and flora by regulating trade therein and on further measures for protection of these species and on amendment of several acts (Act on trade in endangered species CITES); Act No. 500/2004 Gazette, Code of Administrative Procedure; Act No. 200/1990 Gazette, on offences; Act No. 106/1999 Gazette, on free access to information; Act No. 123/1998 Gazette, on access to environmental information.</p>
Key competences	<ul style="list-style-type: none"> <li>- protect and conserve nature and landscape</li> <li>- protected areas</li> <li>- Administrations of Protected Landscape Areas - state administration bodies</li> <li>- compensation of damages caused by selected specially protected animals</li> <li>- NATURA 2000</li> <li>- Digital Register of the NCCR(Nature Conservancy Central Register)</li> </ul>
Role(s)	<input checked="" type="checkbox"/> mandated authority <input type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Jan Votrubec
email	jan.votrubec@nature.cz
Telephone	+420 283 069 121

## Panorama of European Land Monitoring

Organisation description	
Organisation title (original language)	ÚHUL, Ústav pro hospodářskou úpravu lesů
Organisation title (English)	The Forest Management Institute
URL	<a href="http://www.uhul.cz">http://www.uhul.cz</a>
Description (English)	<p>The Forest Management Institute (UHUL) is a government Organisation established by the Ministry of Agriculture of the Czech Republic. The main role of UHUL is forest management, but UHUL is a notable participant in the technological development of the field and is also active in the generation and evolution of forest policies and support.</p> <p>Activities are based on Act No. 166/1960 Coll. Forests and forestry (Forest Act) and in accordance with Act No. 219/2000 Coll. and include mainly: Forest inventory in the Czech Republic; The compilation and administration of Regional Plans of Forest Development (RPF) data including the execution of uniform forest typologic system in the Czech Republic; Information and Data Centre (IDC) for forest and game management sector of the Czech Republic; Providing information services within forest certification of the Czech Republic.</p>
Key competences	<ul style="list-style-type: none"> <li>- Forests and forestry</li> <li>- Forest inventory</li> <li>- compilation and administration of Regional Plans of Forest Development (RPF) data</li> <li>- uniform forest typologic system</li> <li>- Information and Data Centre (IDC) for forest</li> <li>- information services within forest certification</li> </ul>
Role(s)	<input checked="" type="checkbox"/> mandated authority <input type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Josef Fryml
email	Fryml.Josef@uhul.cz
Telephone	+420 322 319 876

## Panorama of European Land Monitoring

Organisation description	
Organisation title (original language)	ČÚZK, Český úřad zeměměřický a katastrální
Organisation title (English)	Czech Office For Surveying, Mapping And Cadastre (COSMC)
URL	<a href="http://www.cuzk.cz/">http://www.cuzk.cz/</a>
Description (English)	<p>The Czech Office for Surveying, Mapping and Cadastre is an autonomous supreme body of the state administration of surveying, mapping and cadastre in the Czech Republic.</p> <ul style="list-style-type: none"> <li>• Complete administration of the Cadastre (including legal relations to real estate property),</li> <li>• Maintenance and modernisation of horizontal, vertical and gravity control in the Czech Republic,</li> <li>• Large-scale mapping (cadastral maps, derived 1:5.000 State map),</li> <li>• Medium-scale mapping (Base map of the Czech Republic 1:10 000, 1:25 000, 1:50 000, 1:100 000, 1:200 000),</li> <li>• Small-scale mapping of the Czech Republic (1:500 000, 1:1 000 000),</li> <li>• Creation of the Fundamental Base of Geographic Data (ZABAGED),</li> <li>• Geodetic surveys and documentation of state boundaries,</li> <li>• Development and maintenance of the Information System of Surveying, Mapping and Cadastre in the Czech Republic,</li> <li>• Standardisation of geographical names,</li> <li>• Coordination of research and international cooperation in geodesy, cartography and cadastre.</li> </ul>
Key competences	cadastral mapping large scale mapping Fundamental Base of Geographic Data Information System of Surveying, Mapping and Cadastre geographic names
Role(s)	<input checked="" type="checkbox"/> mandated authority <input type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Petr Dvořáček
email	petr.dvoracek@cuzk.cz
Telephone	+420 284 041 601

## Panorama of European Land Monitoring

Organisation description	
Organisation title (original language)	Český statistický úřad
Organisation title (English)	Czech Statistical Office
URL	<a href="http://www.czso.cz">http://www.czso.cz</a>
Description (English)	<p>Czech Statistical Office (CZSO) is the central Administration Authority of Czech Republic. It was established on 8 January 1969 by law No. 2 / 1969 Sb. on the establishment of ministries and other central bodies of state administration. In accordance with the law the position of CZSO, its main tasks, Organisation, management and public relations, to other bodies of state administration and local self-government regulates the Statute of the Czech Statistical Office.</p> <p>CZSO acquires and processes data for statistical purposes and provides statistical information to government, local government, public and abroad. It also ensures comparability of statistical information at national and international scale</p>
Key competences	<ul style="list-style-type: none"> <li>- acquires and processes data for statistical purposes</li> <li>- provides statistical information</li> <li>- ensures comparability of statistical information at national and international scale</li> <li>- Inflation rate</li> <li>- Macroeconomic Indicators</li> <li>- Population</li> <li>- Results of Elections</li> <li>- Yearbooks</li> </ul>
Role(s)	<input checked="" type="checkbox"/> mandated authority <input type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Zdeňka Udržalová
email	zdenka.udrzalova@czso.cz
Telephone	+420 466 613 244

## Panorama of European Land Monitoring

### 3.4.5.2. Initiatives

Initiative description			
Initiative Title (original language)	CLC		
Initiative Title (English)	CLC		
URL	<a href="http://geoportal.gov.cz/web/guest/map">http://geoportal.gov.cz/web/guest/map</a>		
Description (English)	This data are made by the European methodology.		
geographic extent (coverage)	Europe		
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) SPOT, IRZ	
	<input checked="" type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input checked="" type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments:		
Nomenclature	Name	Type	No. of classes
	European CLC	<input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	44
Scale / resolution	Minimum mapping unit	Scale	Pixel size
	25 ha	1:100 000	25
Reference date			
Update frequency	1990,2000,2006,2012	Comment:	
Initiative status	operational program	Other, please specify:	
Funding agency	EEA, Ministry of the Environment		
Responsible Organisation	Ministry of the Environment, CENIA		
Point of Contact (person)	Přemysl Řezníček, Jana Petruchová		
Email	Premysl.Reznicek@mzp.cz, jana.petruchova@cenia.cz		
Telephone	+420267122152, +420 267 225 332		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	Registr objektů Ústřední seznam ochrany přírody (ÚSOP)		
Initiative Title (English)	Register of objects Central List of Nature Protection		
URL	<a href="http://drusop.nature.cz/">http://drusop.nature.cz/</a>		
Description (English)	The register contains: <ul style="list-style-type: none"> <li>• Specially Protected Areas - large, small areas</li> <li>• Special Protection Areas - Birds directive</li> <li>• Sites of Community Importance, SCIs, and Special Areas of Conservation, SACs - Habitats Directive</li> <li>• Contractually Protected Areas</li> <li>• Heritage trees</li> </ul>		
geographic extent (coverage)	national		
Data source	<input type="checkbox"/> satellite		name of satellite(s)
	<input checked="" type="checkbox"/> aerial photographs		
	<input type="checkbox"/> topographic maps		
	<input checked="" type="checkbox"/> in-situ data		
	<input checked="" type="checkbox"/> field survey		
	<input type="checkbox"/> other		Other, please specify:
	Additional comments:		
Nomenclature	Name	Type	No. of classes
	NATURA 2000, national law 114/1992 Sb.	<input type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	
Scale / resolution	Minimum mapping unit	Scale 1:5 000 - 1:10 000	Pixel size
Reference date			
Update frequency	continuously	Comment:	
Initiative status	operational program	Other, please specify:	
Funding agency			
Responsible Organisation	AOPK		
Point of Contact (person)	Jan Votrubec		
Email	jan.votrubec@nature.cz		
Telephone	+420 283 069 206		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	TM_UHUL_mapa_lesa		
Initiative Title (English)	FMI_Forest_map		
URL			
Description (English)	The second forest map called TM_UHUL_2006 was derived by FMI from the pre-processed LANDSAT 5 images using an object-based image classification approach. The image classification was controlled by a rule-base describing the class features (characteristics) in the form of fuzzy membership functions.		
geographic extent (coverage)	national		
Data source	<input type="checkbox"/> satellite	name of satellite(s)	
	<input checked="" type="checkbox"/> aerial photographs		
	<input type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments:		
Nomenclature	Name nomenclature of forest vegetation zones (FVZ)	Type <input type="checkbox"/> hierarchical <input checked="" type="checkbox"/> non-hierarchical	No. of classes 10
Scale / resolution	Minimum mapping unit	Scale	Pixel size
Reference date			
Update frequency	10 years cycle, last one 2001-2004, it might become permanent monitoring in future	Comment:	
Initiative status	operational program	Other, please specify:	
Funding agency	Ministry of the Agriculture		
Responsible Organisation	ÚHUL		
Point of Contact (person)	Miloš Kučera		
Email	kucera.milos@uhul.cz		
Telephone	+420 322 319 840, +420 607 991 341		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	Základní báze geografických dat České republiky, ZABAGED		
Initiative Title (English)	Fundamental Base of Geographic Data Czech Republic, ZABAGED		
URL			
Description (English)	<p>Fundamental Base of Geographic Data of the Czech Republic (ZABAGED ®) is a digital model of the geographic territory of the Czech Republic (CR) at the level of details of the 1:10 000 maps CR (ZM 10). ZABAGED ® is part of the information system of surveying and include public information systems. It runs as a seamless database for the entire territory of the Republic, in a centralised information system administered by the Land Survey Office.</p> <p>ZABAGED - topography                      ZABAGED - altimetry 3D                      ZABAGED - altimetry grid -10m x10m</p>		
geographic (coverage)	extent	national	
Data source	<input type="checkbox"/> satellite	name of satellite(s)	
	<input checked="" type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input checked="" type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments:		
Nomenclature	Name	Type <input type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes
Scale / resolution	Minimum mapping unit	Scale 1:10 000	Pixel size
Reference date			
Update frequency	3 year cycle, continuously for some objects, updated versions are published monthly	Comment:	
Initiative status	operational program	Other, please specify:	
Funding agency	state		
Responsible Organisation	COSMC		
Point of Contact (person)	Petr Dvořáček		
Email	petr.dvoracek@cuzk.cz		
Telephone	+420 284 041 601		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	Základní sídelní jednotka		
Initiative Title (English)	The basic settlement unit		
URL	<a href="http://www.czso.cz/csu/rso.nsf/i/zsj_rso">http://www.czso.cz/csu/rso.nsf/i/zsj_rso</a>		
Description (English)	<p>The basic settlement unit means the unit representing a part of the municipality with a clear technical and urban land-use conditions or the catchment areas of groups of living facilities or recreational character. Basic residential unit is part of the syntactical structure of the settlement and is intended for the spatial identification and monitoring of socio-economic and land-technical phenomena directly linked to the population, especially the census results and housing.</p> <p>The whole territory of the municipality is completely covered by a set of basic administrative units. The selected cities are called planning districts (UO) and their definition follows the earlier breakdown of cities according to the prevailing urban character and land-use technical terms, expressed in the past characteristic UO O - living space, N - detached residential area, P - area of industrial complexes, D - areas of transport facilities, V - The area of the facility amenities, R - recreation areas and X - reserve areas Z - farmland, L - forest areas for - other targeted areas. The other is called the settlement location (SL) and the catchment areas of focus are building a continuous and bounded first cadastral boundaries, both dividing lines within the registry.</p>		
geographic extent (coverage)	national		
Data source	<input type="checkbox"/> satellite <input type="checkbox"/> aerial photographs <input checked="" type="checkbox"/> topographic maps <input type="checkbox"/> in-situ data <input type="checkbox"/> field survey <input type="checkbox"/> other		name of satellite(s)       Other, please specify:
Additional comments:			
Nomenclature	Name	Type <input type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes
Scale / resolution	Minimum mapping unit	Scale 1:10 000	Pixel size
Reference date			
Update frequency	Comment:		
Initiative status	operational program		Other, please specify:
Funding agency			
Responsible Organisation	CZSO		
Point of Contact (person)	Zdeňka Udržalová		
Email	zdenka.udrzalova@czso.cz		
Telephone	+420 466 613 244		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	Český LPIS		
Initiative Title (English)	Czech LPIS		
URL	<a href="http://www.lpis.cz/index_en.html">http://www.lpis.cz/index_en.html</a>		
Description (English)	<p>The Czech LPIS project represents a the solution based on a geographic information system for agricultural parcel identification operated by the Czech Ministry of Agriculture. Its basic objective is to provide quality data about the agricultural land used in the Czech Republic, allowing for a trouble-free administration and control of agricultural aid applications. Czech LPIS is based on a single integrated central database in the Oracle Spatial environment, updated on-line in real time over a virtual private network. Czech LPIS is an independent reference register that serves farmers as a quick source of information about the land they use. Based on the information, they can not only complete their aid applications correctly, but also find out which limitations apply to their farming.</p>		
geographic extent (coverage)	national		
Data source	<input type="checkbox"/> satellite <input checked="" type="checkbox"/> aerial photographs <input checked="" type="checkbox"/> topographic maps <input checked="" type="checkbox"/> in-situ data <input type="checkbox"/> field survey <input type="checkbox"/> other	name of satellite(s)  Other, please specify:	
	Additional comments:		
Nomenclature	Name Agriculture crops codes (Číselník kultur)	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes 8 (18)
Scale / resolution	Minimum mapping unit	Scale ~1:5 000 (updates based om 25cm ortho)	Pixel size
Reference date	From 2004 continual (1/3 of area reference image update per year)-		
Update frequency	continual	Comment:	
Initiative status	operational program	Other, please specify:	
Funding agency	MZe		
Responsible organisation	MZe		
Point of Contact (person)	ing. Jiří Bukovský odbor centrální pracoviště registrů		
Email	Jiri.Bukovsky@mze.cz		
Telephone	(+420) 221 812 710, (+420) 724 335 077		

### 3.4.6. Finland

#### 3.4.6.1. Organisations

Organisation description	
Organisation title (original language)	Suomen ympäristökeskus, SYKE
Organisation title (English)	Finnish Environment Institute, SYKE
URL	<a href="http://www.environment.fi">http://www.environment.fi</a>
Description (English)	<p>The Finnish Environment Institute SYKE was established in 1995 as a centre for research and development in the environmental field. SYKE forms part of Finland's national environmental administration, and mainly operates under the auspices of the Ministry of the Environment, although the Institute's work related to water resources is supervised by the Ministry of Agriculture and Forestry.</p> <p>The activities of SYKE take place in seven centres: the Freshwater, Marine Research, Natural Environment, Consumption and Production, Environmental Policy, and Data and Information centres, and the Laboratories. The main tasks of these centres are research, development and production of various services, including land monitoring data.</p> <p>SYKE is the national contact point for EEA and EIONET</p>
Key competences	Environmental research and monitoring, hydrological modelling and forecasts, environmental SDI
Role(s)	<input checked="" type="checkbox"/> mandated authority <input checked="" type="checkbox"/> service provider <input checked="" type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Pekka Härnä
email	pekka.harna@ymparisto.fi
Telephone	+358 400148738

Organisation description	
Organisation title (original language)	Metsäntutkimuslaitos, METLA
Organisation title (English)	Finnish Forest Research Institute, METLA
URL	<a href="http://www.metla.fi/index-en.html">http://www.metla.fi/index-en.html</a>
Description (English)	The Finnish Forest Research Institute (Metla) is an independent research organisation operating under the supervision of the Ministry of Agriculture and Forestry. Metla's duties are defined by the law and statute to promote, through research, the economical, ecological, and socially sustainable management and use of forests.
Key competences	National forest inventory, forest related research
Role(s)	<input checked="" type="checkbox"/> mandated authority <input checked="" type="checkbox"/> service provider <input checked="" type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Kari T Korhonen
email	kari.t.korhonen@metla.fi
Telephone	+35810 211 3030

## Panorama of European Land Monitoring

Organisation description	
Organisation title (original language)	Maanmittauslaitos, MML
Organisation title (English)	National Land Survey Finland, NLS-F
URL	<a href="http://www.maanmittauslaitos.fi/en">http://www.maanmittauslaitos.fi/en</a>
Description (English)	<p>National Land Survey of Finland (NLS) produces and provides information on and services in real estate, topography and the environment for the needs of citizens, other customers and the community at large. The National Land Survey is responsible for Finland's cadastral system and general mapping assignments. It also promotes the shared use of geographic information.</p> <p>The NLS consists of 12 District Survey Offices, six national operational units and the small central administration. The NLS has staff of 2000, of whom over 80 % are employed in the District Survey Offices. The NLS is a governmental agency subordinate to the Ministry of Agriculture and Forestry.</p>
Key competences	Legal cadastral surveys, Land Information System, Registers, Topographic mapping, Aerial photography and Laser scanning.
Role(s)	<input type="checkbox"/> mandated authority <input checked="" type="checkbox"/> service provider <input checked="" type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Aaro Mikkola
email	aaro.mikkola@nls.fi
Telephone	+358 408240680

Organisation description	
Organisation title (original language)	Maaseutuvirasto, MAVI
Organisation title (English)	Agency for Rural Affairs
URL	<a href="http://www.mavi.fi/en/index.html">http://www.mavi.fi/en/index.html</a>
Description (English)	The Agency for Rural Affairs serves farm enterprises, farmers, rural microenterprises, and rural development actors from village associations to universities. The Agency manages the implementation of support payments to farmers, financial and development aid in rural areas and market support. However, the contacts with farmers in matters relating to support payments will continue to be managed at the Centres for Economic Development, Transport and the Environment and municipal rural business authorities.
Key competences	land parcel register, management of the farmer subsidiary programme
Role(s)	<input checked="" type="checkbox"/> mandated authority <input checked="" type="checkbox"/> service provider <input checked="" type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Åke Möller
email	ake.moller@mavi.fi
Telephone	+358407783969

## Panorama of European Land Monitoring

### 3.4.6.2. Initiatives

Initiative description				
Initiative Title (original language)	Corine Land Cover, 25 m			
Initiative Title (English)	Corine Land Cover, 25m			
URL	<a href="http://www.environment.fi/syke/clc2006">http://www.environment.fi/syke/clc2006</a>			
Description (English)	A satellite image mosaic, raster and vector land cover databases and land cover change databases of Finland were produced by Finnish Environment Institute (SYKE) as part of the European CORINE2006 Land Cover (CLC2006) and IMAGE2006 projects. The national version of CORINE2006 classification of Finland is based on automated interpretation of satellite images and data integration with existing digital map data.			
geographic extent (coverage)	national			
Data source	<input checked="" type="checkbox"/> satellite name of satellite(s) Landsat, IRS, SPOT			
	<input checked="" type="checkbox"/> aerial photographs			
	<input checked="" type="checkbox"/> topographic maps			
	<input checked="" type="checkbox"/> in-situ data			
	<input checked="" type="checkbox"/> field survey			
	<input checked="" type="checkbox"/> other Other, please specify: building register, road database, land parcel data (LPIS), national forest inventory, habitat maps, environmental registers			
	Additional comments:			
Nomenclature	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Name CLC compatible, including 4<sup>th</sup> level classes</td> <td style="width: 33%;">Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical</td> <td style="width: 33%;">No. of classes 49 (level 4)</td> </tr> </table>	Name CLC compatible, including 4 <sup>th</sup> level classes	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes 49 (level 4)
Name CLC compatible, including 4 <sup>th</sup> level classes	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes 49 (level 4)		
Scale / resolution	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Minimum mapping unit</td> <td style="width: 33%;">Scale</td> <td style="width: 33%;">Pixel size 25 meters</td> </tr> </table>	Minimum mapping unit	Scale	Pixel size 25 meters
Minimum mapping unit	Scale	Pixel size 25 meters		
Reference date				
Update frequency	Update frequency depends on CLC	Comment:		
Initiative status	operational program	Other, please specify:		
Funding agency	SYKE, EEA, Ministry of Environment, Ministry of Agriculture and Forestry			
Responsible Organisation	SYKE			
Point of Contact (person)	Pekka Härmä			
Email	pekka.harma@ymparisto.fi			
Telephone	+358 400148738			

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	Corine Land Cover		
Initiative Title (English)	Corine Land Cover		
URL	<a href="http://www.environment.fi/syke/clc2006">http://www.environment.fi/syke/clc2006</a>		
Description (English)	A satellite image mosaic, raster and vector land cover databases and land cover change databases of Finland were produced by Finnish Environment Institute (SYKE) as part of the European CORINE2006 Land Cover (CLC2006) and IMAGE2006 projects. The European Union version of Finnish CORINE2006 is based on generalisation of the national CORINE2006 classification.		
geographic extent (coverage)	national		
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) Landsat, IRS, SPOT	
	<input type="checkbox"/> aerial photographs		
	<input type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
	<input checked="" type="checkbox"/> other	Other, please specify: Corine Land Cover, 25m	
	Additional comments:		
Nomenclature	Name CLC	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes 32 (level 3)
	Scale / resolution Minimum mapping unit 25 hectares	Scale	Pixel size
Reference date			
Update frequency	Update frequency depends on CLC	Comment:	
Initiative status	operational program	Other, please specify:	
Funding agency	SYKE, EEA, Ministry of Environment, Ministry of Agriculture and Forestry		
Responsible Organisation	SYKE		
Point of Contact (person)	Pekka Härmä		
Email	pekka.harma@ymparisto.fi		
Telephone	+358 400148738		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	Valtion metsien inventointi, VMI		
Initiative Title (English)	National forest inventory, NFI		
URL	<a href="http://www.metla.fi/ohjelma/vmi/info-en.htm">http://www.metla.fi/ohjelma/vmi/info-en.htm</a>		
Description (English)	<p>The National Forest Inventory is a monitoring system that produces information concerning national and regional</p> <ul style="list-style-type: none"> <li>• forest resources - volume, growth and quality of growing stock,</li> <li>• land use structure and forest ownership,</li> <li>• forest health,</li> <li>• biodiversity of forests and</li> <li>• forest carbon stocks and their changes.</li> </ul>		
geographic extent (coverage)	national		
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) Landsat, IRS, SPOT	
	<input type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input checked="" type="checkbox"/> in-situ data		
	<input checked="" type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments:		
Nomenclature	Name conventional forest variables (i.e. tree height), soil, site, ground vegetation, dead wood, key biotopes and human impact variables	Type <input type="checkbox"/> hierarchical <input checked="" type="checkbox"/> non-hierarchical	No. of classes
Scale / resolution	Minimum mapping unit	Scale	Pixel size 25 meter
Reference date			
Update frequency	5 years cycle	Comment:	
Initiative status	operational program	Other, please specify:	
Funding agency	Ministry of Forestry and Agriculture		
Responsible Organisation	METLA		
Point of Contact (person)	Kari T Korhonen		
Email	kari.t.korhonen@metla.fi		
Telephone	+35810 211 3030		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	SLICES		
Initiative Title (English)	SLICES, Separated landuse element of Finland		
URL	<a href="http://www.paikkatietoikkuna.fi/web/fi/paikkatietohaku;jsessionid=07C61D68A3302E58D0237EB0C9569279">http://www.paikkatietoikkuna.fi/web/fi/paikkatietohaku;jsessionid=07C61D68A3302E58D0237EB0C9569279</a> (metadata directory, finnish language)		
Description (English)	SLICES is a land use element covering the whole country and produced in cooperation with five Finnish authorities. These organisations are providing different kind of LU source datas from which NLS-F is producing the final product by automated GIS processes (ArcInfo). The main idea is not to have any separate data capture but combine the existing digital LU databases (different themes e.g. buildings, road network, waters, agriculture, ..). Data processing is based on raster data operations (10 m pixel size) but source datas can be lines, points and areas as well.		
geographic (coverage)	extent	national	
Data source	<input type="checkbox"/> satellite <input type="checkbox"/> aerial photographs <input checked="" type="checkbox"/> topographic maps <input type="checkbox"/> in-situ data <input type="checkbox"/> field survey <input checked="" type="checkbox"/> other	name of satellite(s)      Other, please specify: building register, National Forest Inventory data (classified satellite images), land parcel data (LPIS)	
Additional comments:			
Nomenclature	Name SLICES nomenclature, compatible with clc	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes 48
Scale / resolution	Minimum mapping unit 0.25 ha	Scale 1:25 000	Pixel size 10 m and 25 m (+ vector)
Reference date			
Update frequency	every 5 years	Comment: last update 2010	
Initiative status	operational program	Other, please specify:	
Funding agency	Ministry of Agriculture and Forestry		
Responsible Organisation	National Land Survey of Finland		
Point of Contact (person)	Aaro Mikkola		
Email	aaro.mikkola@nls.fi		
Telephone	+358408240680		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	Peltolohkorekisteri		
Initiative Title (English)	Land parcel identification system, LPIS		
URL	<a href="http://www.mavi.fi/en/index.html">http://www.mavi.fi/en/index.html</a>		
Description (English)	Information of agricultural land use for EU agricultural subsidies		
geographic extent (coverage)	national		
Data source	<input type="checkbox"/> satellite	name of satellite(s)	
	<input checked="" type="checkbox"/> aerial photographs		
	<input type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
	<input checked="" type="checkbox"/> other	Other, please specify: information collected from farmers	
	Additional comments:		
Nomenclature	Name	Type	No. of classes
	LPIS nomenclature	<input type="checkbox"/> hierarchical <input checked="" type="checkbox"/> non-hierarchical	
Scale / resolution	Minimum mapping unit	Scale	Pixel size
	0,01 ha	1:5000-1:10000	0,5
Reference date			
Update frequency	annual update	Comment:	
Initiative status	operational program	Other, please specify:	
Funding agency	Ministry of Agriculture and Forestry		
Responsible Organisation	MAVI		
Point of Contact (person)	Åke Möller		
Email	ake.moller@mavi.fi		
Telephone	+358407783969		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	CLC2000-2006 - Maanpeitemuutokset (0,5-1 ha)		
Initiative Title (English)	CLC2000-2006 - Changes, MMU 0,5-1 ha		
URL	<a href="http://www.environment.fi/syke/clc2006">http://www.environment.fi/syke/clc2006</a>		
Description (English)	Land Cover Changes between CLC2000 25m data and CLC2006 25m data.		
geographic extent (coverage)	national		
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) Landsat, IRS, SPOT	
	<input type="checkbox"/> aerial photographs		
	<input type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
	<input checked="" type="checkbox"/> other	Other, please specify: CLC2000 25m, CLC2006 25m	
	Additional comments:		
Nomenclature	Name CLC compatible, including 4th level classes	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes 37
	Scale / resolution Minimum mapping unit 0,5-1 ha	Scale	Pixel size 25 m
Reference date			
Update frequency	Update frequency depends on CLC	Comment:	
Initiative status	operational program	Other, please specify:	
Funding agency	SYKE, EEA, Ministry of Environment, Ministry of Agriculture and Forestry		
Responsible Organisation	SYKE		
Point of Contact (person)	Pekka Härmä		
Email	pekka.harma@ymparisto.fi		
Telephone	+358 400148738		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	CLC2000-2006 - Maanpeitemuutokset (5 ha)		
Initiative Title (English)	CLC2000-2006 - Changes, MMU 5 ha		
URL	<a href="http://www.environment.fi/syke/clc2006">http://www.environment.fi/syke/clc2006</a>		
Description (English)	Land Cover Changes between CLC2000 25 ha data and CLC2006 25 ha data.		
geographic extent (coverage)	national		
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) Landsat, IRS, SPOT	
	<input type="checkbox"/> aerial photographs		
	<input type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
	<input checked="" type="checkbox"/> other	Other, please specify: CLC2000 25 ha, CLC2006 25 ha	
	Additional comments:		
Nomenclature	Name CLC	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes 32 (level 3)
	Scale / resolution Minimum mapping unit 5 hectares	Scale	Pixel size
Reference date			
Update frequency	Update frequency depends on CLC	Comment:	
Initiative status	operational program	Other, please specify:	
Funding agency	SYKE, EEA, Ministry of Environment, Ministry of Agriculture and Forestry		
Responsible Organisation	SYKE		
Point of Contact (person)	Pekka Härmä		
Email	pekka.harma@ymparisto.fi		
Telephone	+358 400148738		

### 3.4.7. France

#### 3.4.7.1. Organisations

Organisation description	
Organisation title (original language)	Institut Géographique National (IGN)
Organisation title (English)	National Geographical Institute
URL	<a href="http://www.ign.fr/changeLangue.do?lang=en&amp;cty=UK">http://www.ign.fr/changeLangue.do?lang=en&amp;cty=UK</a>
Description (English)	IGN operates under the auspices of the French Ministry of Sustainable Development. IGN's key missions are to produce, maintain and disseminate reference geographic information in France. Heir to a long line of cartographers, IGN has been involved in all cartography-related operations in France and its territories, since 1940.
Key competences (add keywords)	implementing large scale referential : producing and maintaining geodetic and levelling networks, digital databases, aerial and satellite views, maps. Distributing data. Advising and sharing expertise. Research fields : image processing, spatial geodesy, cartographic generalisation.
Role(s)	<input checked="" type="checkbox"/> mandated authority <input checked="" type="checkbox"/> service provider <input checked="" type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	François Chirié, Clotilde Mohsen
email	francois.chirie@ign.fr, clotilde.mohsen@ign.fr
Telephone	+33 1 43 98 82 25, +33 1 43 98 80 00 (ext 7158)

Organisation description	
Organisation title (original language)	Service de l'Observation et des Statistiques (SOeS)
Organisation title (English)	Observation and statistics service
URL	<a href="http://www.statistiques.developpement-durable.gouv.fr">http://www.statistiques.developpement-durable.gouv.fr</a>
Description (English)	SOeS belongs to the French Ministry of Sustainable Development. It collects, develops and distributes statistics with regard to the Ministry's domain.
Key competences (add keywords)	statistics on energy, housing and construction, transports, ecology and sustainable development.
Role(s)	<input checked="" type="checkbox"/> mandated authority <input checked="" type="checkbox"/> service provider <input checked="" type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Frédérique Janvier
email	frederique.janvier@developpement-durable.gouv.fr
Telephone	

## Panorama of European Land Monitoring

Organisation description	
Organisation title (original language)	Centre Régional de l'Information Géographique de Provence-Alpes-Cote d'Azur (CRIGE PACA)
Organisation title (English)	Provence-Alpes-Cote d'Azur regional center for geographic information system
URL	<a href="http://www.crige-paca.org/index.php?id=1">http://www.crige-paca.org/index.php?id=1</a>
Description (English)	Since its setting up in 2002 by the State and the Region, the main purpose of CRIGE PACA is to develop the use, production and sharing of geographic information between public services.
Key competences (add keywords)	Distributing data, advising and sharing expertise with producers and users of geographic information.
Role(s)	<input checked="" type="checkbox"/> mandated authority <input checked="" type="checkbox"/> service provider <input checked="" type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Claire Ajouc
email	claire.ajouc@crige-paca.org
Telephone	

Organisation description	
Organisation title (original language)	Systèmes d'Informations Géographiques en Languedoc-Roussillon (SIG LR)
Organisation title (English)	Geographic information system in Languedoc-Roussillon
URL	<a href="http://www.siglr.org/">http://www.siglr.org/</a>
Description (English)	SIG LR is an Organisation set up in 1994. It is composed of various members including the Region Languedoc-Roussillon.
Key competences (add keywords)	Collecting, distributing and promoting geographic information, sharing expertise.
Role(s)	<input checked="" type="checkbox"/> mandated authority <input checked="" type="checkbox"/> service provider <input checked="" type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Silvan Coste
email	silvan.coste@teledetection.fr
Telephone	+33 4 67 54 87 74

## Panorama of European Land Monitoring

### 3.4.7.2. Initiatives

Initiative description				
Initiative Title (original language)	Référentiel Grande Echelle (RGE)			
Initiative Title (English)	Large Scale Referential			
URL	<a href="http://www.ign.fr/institut/22/activities/rge-and-production.htm">http://www.ign.fr/institut/22/activities/rge-and-production.htm</a>			
Description (English)	<p>The Large Scale Referential is a national geographic reference database. It brings together a set of four databases : BD ORTHO, BD TOPO, BD PARCELLAIRE and BD ADRESSE.</p> <p>The orthophotographic component (BD ORTHO) is a mosaic of rectified aerial photographs.</p> <p>The topographic component (BD TOPO) contains vector data.</p> <p>The cadastral survey component (BD PARCELLAIRE) identifies the cadastral boundaries.</p> <p>The address component (BD ADRESSE) provides the addresses.</p>			
geographic extent (coverage)	national			
Data source	<input type="checkbox"/> satellite <span style="float: right;">name of satellite(s)</span> <input checked="" type="checkbox"/> aerial photographs <input checked="" type="checkbox"/> topographic maps <input type="checkbox"/> in-situ data <input checked="" type="checkbox"/> field survey <input checked="" type="checkbox"/> other <span style="float: right;">Other, please specify: partnerships</span>			
	Additional comments:			
Nomenclature	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Name</td> <td style="width: 33%;">Type <input type="checkbox"/> hierarchical <input checked="" type="checkbox"/> non-hierarchical</td> <td style="width: 33%;">No. of classes around 50 for the 4 components</td> </tr> </table>	Name	Type <input type="checkbox"/> hierarchical <input checked="" type="checkbox"/> non-hierarchical	No. of classes around 50 for the 4 components
Name	Type <input type="checkbox"/> hierarchical <input checked="" type="checkbox"/> non-hierarchical	No. of classes around 50 for the 4 components		
Nomenclature – list the classes in the highest level of the hierarchy	<p>BD ORTHO : aerial photographs.</p> <p>BD TOPO : roadway, railway and hydrographical networks; vegetation; constructions; toponyms (placenames); altimetry, administrative boundaries.</p> <p>BD ADRESSE : names of roadway, position of the address.</p> <p>BD PARCELLAIRE : cadastral parcels, buildings and administrative boundary.</p>			
Scale / resolution	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Minimum mapping unit</td> <td style="width: 33%;">Scale</td> <td style="width: 33%;">Pixel size 50 cm</td> </tr> </table>	Minimum mapping unit	Scale	Pixel size 50 cm
Minimum mapping unit	Scale	Pixel size 50 cm		
Reference date				
Update frequency	<p>BD ORTHO : 4 or 5 years</p> <p>BD TOPO &amp; BD ADRESSE : continuous</p> <p>BD PARCELLAIRE : varioust</p> <p style="text-align: right;">Comment: it depends on the sources of the classes.</p>			
Initiative status	operational program <span style="float: right;">Other, please specify:</span>			
Funding agency	French Ministry of Sustainable Development			
Responsible Organisation	IGN			
Point of Contact (person)	Clotilde Mohsen			
Email	clotilde.mohsen@ign.fr			
Telephone	+33 1 43 98 80 00 (+ 71 58)			

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	CORINE Land Cover		
Initiative Title (English)	CORINE Land Cover		
URL	<a href="http://sd1878-2.sivit.org/">http://sd1878-2.sivit.org/</a>		
Description (English)	CORINE Land Cover France (1990, 2000, 2006)		
geographic extent (coverage)	national		
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) SPOT (XS), LANDSAT (MSS)	
	<input type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input checked="" type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments:		
Nomenclature	Name CLC	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes 44 (+6 for overseas)
	Nomenclature – list the classes in the highest level of the hierarchy		
Scale / resolution	Minimum mapping unit 25 ha	Scale 1:100 000	Pixel size
Reference date			
Update frequency	Comment:		
Initiative status	operational program	Other, please specify:	
Funding agency	EEA, Ministry of Sustainable Development		
Responsible Organisation	SOeS		
Point of Contact (person)	Philippe Dorelon		
Email	philippe.dorelon@developpement-durable.gouv.fr		
Telephone			

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	OCSOL PACA		
Initiative Title (English)	Land cover database on the Region Provence-Alpes-Cote d'Azur		
URL	<a href="http://www.crige-paca.org/geoportail.html">http://www.crige-paca.org/geoportail.html</a>		
Description (English)	The Region PACA was the first French Region to produce a regional land cover database in 1999 and distribute it for free. The regional database OCSOL 2006 is online since 2008. The region is now working on a large scale land cover database (OCSOLGEu) for urban aeras.		
geographic (coverage) extent	sub-national		
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) Landsat 7	
	<input checked="" type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input checked="" type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
Additional comments: aerial photographs are used in towns			
Nomenclature	Name	Type	No. of classes
	OCSOL PACA	<input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	47 (62 in urban aeras)
Nomenclature – list the classes in the highest level of the hierarchy	OCSOL : close to CLC 3 <sup>rd</sup> level (same 1 <sup>st</sup> and 2 <sup>nd</sup> level) OCSOLGEu (urban areas) : CLC 3 <sup>rd</sup> level + a 4 <sup>th</sup> level added		
Scale / resolution	Minimum mapping unit	Scale	Pixel size
	2.5 ha (0.25 ha in urban aeras)	1:25 000 (1:5 000 in urban aeras)	
Reference date			
Update frequency	various	Comment: 1999, 2006	
Initiative status	operational program	Other, please specify:	
Funding agency	Region Provence-Alpes-Cote d'Azur, State, UE (FEDER)		
Responsible Organisation	CRIGE PACA		
Point of Contact (person)	Claire Ajouc		
Email	cliare.ajouc@crige-paca.org		
Telephone			

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	OCSOL LR		
Initiative Title (English)	Land Cover database for the Région Languedoc-Roussillon		
URL	<a href="http://81.252.232.178/veremap.siglr/index.phtml?mode=connect&amp;login=visiteur&amp;password=visiteur">http://81.252.232.178/veremap.siglr/index.phtml?mode=connect&amp;login=visiteur&amp;password=visiteur</a>		
Description (English)	Ocsol started in 2005 in response to a strong need of a vector land cover database. This project is lead by SIG LR in partnership with CRIGE PACA : sharing expertise and continuity for a Mediterranean land cover		
geographic extent (coverage)	sub-national		
Data source	<input checked="" type="checkbox"/> satellite		name of satellite(s) Landsat 7
	<input type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input checked="" type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
	<input type="checkbox"/> other		Other, please specify:
	Additional comments:		
Nomenclature	Name OCSOL 2006 V1_1	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes 42
	Nomenclature – list the classes in the highest level of the hierarchy very close to CLC 3 <sup>rd</sup> level (same 1 <sup>st</sup> and 2 <sup>nd</sup> level)		
Scale / resolution	Minimum mapping unit	Scale 1:50 000 - 1:100 000	Pixel size 15 m
Reference date			
Update frequency	various	Comment: 1999, 2006	
Initiative status	operational program	Other, please specify:	
Funding agency	Region Languedoc-Roussillon, State, UE (FEDER)		
Responsible Organisation	SIG LR		
Point of Contact (person)	Sivan Coste		
Email	silvan.coste@teledetection.fr		
Telephone	+33 4 67 54 87 74		

### 3.4.8. Germany

#### 3.4.8.1. Organisations

Organisation description	
Organisation title (original language)	Bundesamt für Kartographie und Geodäsie (BKG)
Organisation title (English)	Federal Agency for Cartography and Geodesy
URL	<a href="http://www.bkg.bund.de/">http://www.bkg.bund.de/</a>
Description (English)	- Germany's governmental competence centre for Geodesy, Cartography, Geoinformation and Spatial Data Infrastructure
Key competences (add keywords)	- Collecting geospatial reference data from the federal states' surveying authorities (Länder) - Provision of basic spatial data for the needs of the Federal Government - Maintenance of a GeoDataCentre offering web services and online delivery - Contribution to the establishment of a European and global Geodata Infrastructure
Role(s)	<input checked="" type="checkbox"/> mandated authority <input checked="" type="checkbox"/> service provider <input checked="" type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Stephan Arnold (Sub-department for Photogrammetry and Remote Sensing)
email	stephan.arnold@bkg.bund.de
Telephone	+49 (0) 69/6333-443

Organisation description	
Organisation title (original language)	Umweltbundesamt (UBA)
Organisation title (English)	Federal Environment Agency
URL	<a href="http://www.umweltbundesamt.de/">http://www.umweltbundesamt.de/</a>
Description (English)	Germany's central federal authority on environmental matters
Key competences (add keywords)	- To provide scientific support to the Federal Government (e.g. the Federal Ministries for Environment; Health; Research; Transport, Building and Urban Affairs); - Implementation of environmental laws (e.g. emissions trading, authorisation of chemicals, pharmaceuticals, and plant protection agents); - Information of the public about environmental protection.
Role(s)	<input checked="" type="checkbox"/> mandated authority <input checked="" type="checkbox"/> service provider <input checked="" type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Stefan Feigenspan
email	stefan.feigenspan@uba.de
Telephone	+49 (0) 340 2103 2089

## Panorama of European Land Monitoring

### 3.4.8.2. Initiatives

Initiative description			
Initiative Title (original language)	Digitales Landbedeckungsmodell für Deutschland DLM-DE		
Initiative Title (English)	Digital Land Cover Model for Germany DLM-DE		
URL			
Description (English)	New approach by the BKG in cooperation with the German Environmental Agency (UBA) using CLC-relevant area feature types of the multipurpose ATKIS Basis-DLM (authoritative topographic reference data) as input vector data. First update and verification of the DLM-DE due to the CLC-nomenclature based on multitemporal imagery of 2009 (1 coverage of RapidEye: 5m, 5 bands, 91% of 2009, 9% of 2010; 2 coverages of DMC: 32 m, 3 bands) with a MMU of 1 ha. DLM-DE2009 was completed by the end of 2010. Project management by BKG. Next phase in 2012 will be source for CLC-derivation through generalisation processes.		
geographic extent (coverage)	national		
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) RapidEye (primary satellite image source, cf. above); DMC 2009 (secondary satellite image source); Auxiliary data: IMAGE2006 (SPOT, IRS)	
	<input checked="" type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments:		
Nomenclature	Name ATKIS OK, CORINE LC	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes 37 LC classes (CORINE)
Nomenclature – list the classes in the highest level of the hierarchy	Artificial surfaces Agriculture areas Forests and seminatural areas Wetlands Water Bodies		
Scale / resolution	Minimum mapping unit 1 ha	Scale 1:25.000	Pixel size 5 m
Reference date			
Update frequency	t.b.d (3-5 years)	Comment:	
Initiative status	ongoing project	Other, please specify:	
Funding agency	BKG (DLM-DE2009)		
Responsible Organisation	BKG / UBA		
Point of Contact (person)	Stephan Arnold		
Email	stephan.arnold@bkg.bund.de		
Telephone	+40 (0) 69/6333-443		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	CORINE Land Cover		
Initiative Title (English)	CORINE Land Cover		
URL	<a href="http://www.corine.dfd.dlr.de/intro_en.html">http://www.corine.dfd.dlr.de/intro_en.html</a> <a href="http://www.umweltbundesamt.de/boden-und-altlasten/boden/daten/corine.htm">http://www.umweltbundesamt.de/boden-und-altlasten/boden/daten/corine.htm</a>		
Description (English)	pan-European standardised Land Cover and Land Use Data Model; so far produced for three dates: 1990, 2000 and 2006		
geographic extent (coverage)	national		
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) Landsat TM (CLC1990 and 2000), SPOT and IRS (CLC2006)	
	<input checked="" type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments:		
Nomenclature	Name	Type	No. of classes
	standard European	<input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	44 in EU (37 in Germany)
Nomenclature – list the classes in the highest level of the hierarchy	Artificial surfaces Agriculture areas Forests and seminatural areas Wetlands Water Bodies		
Scale / resolution	Minimum mapping unit 25 ha; 5 ha change	Scale 1:100.000	Pixel size 20 / 30m
Reference date			
Update frequency	10 - 6 years	Comment: 1990, 2000, 2006, 2012 (planned)	
Initiative status	completed project	Other, please specify:	
Funding agency	EEA; Federal Environment Agency (UBA)		
Responsible Organisation	Contact Point to EEA: UBA Project Coordination: German Remote Sensing Data Center (DFD) of the German Aerospace Center (DLR)		
Point of Contact (person)	Birgit Mohaupt-Jahr ( till 2000); Stefan Feigenspan (2006)		
Email	stefan.feigenspan@uba.de		
Telephone	+49 (0) 340 2103 2089		

### 3.4.9. Hungary

#### 3.4.9.1. Organisations

Organisation description	
Organisation title (original language)	Földmérési és Távérzékelési Intézet (FÖMI)
Organisation title (English)	Institute of Geodesy, Cartography and Remote Sensing
URL	<a href="http://www.fomi.hu">http://www.fomi.hu</a>
Description (English)	Institute of Geodesy, Cartography and Remote Sensing (FÖMI) is a public institute founded in 1967 with central, national mandates. Its supervision authority is the Department of Land Administration and Geoinformation in the Ministry of Rural Development. FÖMI has a qualified staff of 187 persons (2011). In addition to operational tasks as national mapping agency, FÖMI acts as a central R&D institute for satellite geodesy, GIS and remote sensing..
Key competences (add keywords)	Remote Sensing Centre only: image processing, agricultural applications, environmental applications, CORINE Land Cover, high-resolution layers, verification, validation
Role(s)	<input checked="" type="checkbox"/> mandated authority <input type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	dr Mikus Gábor
email	Mikus.Gabor@fomi.hu
Telephone	+36 1 460 4229

Organisation description	
Organisation title (original language)	MTA Ökológiai és Botanikai Kutatóintézet
Organisation title (English)	Institute of Ecology and Botany, Hungarian Academy of Sciences
URL	<a href="http://www.obki.hu">http://www.obki.hu</a>
Description (English)	The scope of activities of IEB-HAS includes theoretical, basic and applied research in the fields of terrestrial ecology, vegetation science, landscape ecology and nature conservation. Main topics are supra-individual Organisation and long-term dynamics of plant communities, habitat mapping and biodiversity monitoring on different spatial scales, experimental research on the effects of climate change.
Key competences (add keywords)	landscape ecology, land use, vegetation, ecosystem, Pannonian biogeographical region, habitat, biodiversity, nature conservation
Role(s)	<input type="checkbox"/> mandated authority <input type="checkbox"/> service provider <input type="checkbox"/> user <input checked="" type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Ferenc Horváth
email	horvfe@botanika.hu
Telephone	+36 28 360122 ext. 157

## Panorama of European Land Monitoring

Organisation description	
Organisation title (original language)	Mezőgazdasági Szakigazgatási Hivatal, Erdészeti Igazgatóság
Organisation title (English)	Central Agricultural Office - Forest Directorate
URL	<a href="http://www.mgszh.gov.hu/szakteruletek/szakteruletek/erdeszeti_igazgatosag">http://www.mgszh.gov.hu/szakteruletek/szakteruletek/erdeszeti_igazgatosag</a>
Description (English)	Responsible for the supervision of forest management, preparing inventory of forests and management plans
Key competences (add keywords)	Forest authority, forest planning, supervision of forest management, forest inventory, forest monitoring
Role(s)	<input checked="" type="checkbox"/> mandated authority <input type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Tamás Ali
email	ali.tamas@aeszh.hu
Telephone	+36 1 3743-241

## Panorama of European Land Monitoring

### 3.4.9.2. Initiatives

Initiative description			
Initiative Title (original language)	CORINE Felszínborítás		
Initiative Title (English)	CORINE Land Cover		
URL	<a href="http://www.fomi.hu/portal/index.php/termekeink/corine">http://www.fomi.hu/portal/index.php/termekeink/corine</a>		
Description (English)	Standard CORINE Land Cover for Hungary; three dates: 1990, 2000 and 2006		
geographic extent (coverage)	national		
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) Landsat TM (CLC1990 and 2000), SPOT and IRS (CLC2006)	
	<input checked="" type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input checked="" type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments: field survey only in CLC1990; CLC2000 was generalised from higher resolution national database (CLC50)		
Nomenclature	Name standard European	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes 44 (28 in Hungary)
	Nomenclature – list the classes in the highest level of the hierarchy Artificial surfaces Agriculture areas Forests and seminatural areas Wetlands Water		
Scale / resolution	Minimum mapping unit 25 ha	Scale 1:250.000	Pixel size
Reference date			
Update frequency	6(-10) years	Comment: 1990, 2000, 2006, 2012	
Initiative status	completed project	Other, please specify:	
Funding agency	EEA, Ministry of Environment and Water (CLC2006)		
Responsible Organisation	Institute of Geodesy, Cartography and Remote Sensing (FÖMI)		
Point of Contact (person)	Maucha Gergely (CLC2006)		
Email	Maucha.Gergely@fomi.hu		
Telephone	+36 1 460 4176		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	Nemzeti felszínborítási adatbázis, CLC50		
Initiative Title (English)	CLC50		
URL	<a href="http://www.fomi.hu/portal_en/index.php/product/national-land-cover-database-clc50">http://www.fomi.hu/portal_en/index.php/product/national-land-cover-database-clc50</a>		
Description (English)	Hungarian National land cover database: As part of Hungary's preparation to join the European Union, a CLC mapping programme at scale 1:50,000 was implemented. The standard (level-3) CLC nomenclature was enhanced to include 79 level-4/5 classes. Orthorectified SPOT-4 satellite images taken in 1998-99 and visual photointerpretation on computer screen have been applied to provide high positional accuracy. The 4 ha minimum mapping unit (1 ha for water) provided enhanced geometric detail. Internal and external quality control procedures were other key elements to yield a high quality database.		
geographic extent (coverage)	national		
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) SPOT-4 XI and Pan	
	<input checked="" type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input checked="" type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments:		
Nomenclature	Name extended CLC	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes 79
Nomenclature – list the classes in the highest level of the hierarchy	Artificial surfaces Agriculture areas Forests and seminatural areas Wetlands Water		
Scale / resolution	Minimum mapping unit 4 ha, 1ha for water	Scale 1:125.000	Pixel size
Reference date			
Update frequency	no update so far	Comment:	
Initiative status	operational program	Other, please specify:	
Funding agency	Ministry of Agriculture, Ministry of Environment		
Responsible Organisation	Institute of Geodesy, Cartography and Remote Sensing (FÖMI)		
Point of Contact (person)	Büttner György		
Email	Buttner.Gyorgy@fomi.hu		
Telephone	+361 460 4177		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	MePAR felszínborítási adatbázis		
Initiative Title (English)	Hungarian Land Parcel Identification System (LPIS-Hu)		
URL	<a href="http://www.mepar.hu/">http://www.mepar.hu/</a>		
Description (English)	The LPIS-Hu is an important component of the Integrated Administration and Control System as it forms the basis of all area-based subsidies since 2004. It is a physical block-based GIS database covering the entire territory of Hungary. To date, the database consists of appr. 375 000 blocks defined by natural boundaries and encompasses all land cover categories. Regularly updated ortophotos and HR satellite imagery backs up the vector data. The products and services of the LPIS-Hu are available to more than 200 000 users in agriculture and are routinely used by officials of several institutes contributing to the payment and control processes. Quality control is assured by Commission Regulation (EC) No 1122/2004 via an annual reporting process on seven prime quality elements.		
geographic extent (coverage)	national		
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) IRS-LISS, SPOT, Landsat TM	
	<input checked="" type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input checked="" type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments:		
Nomenclature	Name national	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes 43
Nomenclature – list the classes in the highest level of the hierarchy	arable land grassland permanent crop kitchen garden SAPS non-eligible area natural habitat		
Scale / resolution	Minimum mapping unit 0.1 ha / 2 m wide linear element	Scale 1:10 000	Pixel size 0.5 m
Reference date			
Update frequency	4-5 years	Comment: 2005, 2007, 2009, 2010	
Initiative status	operational program	Other, please specify:	
Funding agency	Ministry Rural Development / Agricultural Intervention Paying Agency		
Responsible Organisation	Institute of Geodesy, Cartography and Remote Sensing (FÖMI)		
Point of Contact (person)	dr. Mikus Gábor		
Email	Mikus.Gabor@fomi.hu		
Telephone	+36 1 460 4229		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	Szőlőültetvények Országos Térinformatikai Nyilvántartása (VINGIS)		
Initiative Title (English)	The Hungarian National Vineyard GIS Register (VINGIS)		
URL	<a href="http://www.fomi.hu">http://www.fomi.hu</a> <a href="http://www.vingis.hu">http://www.vingis.hu</a>		
Description (English)	<p>VINGIS is the GIS background of the vineyard registration and serves as a basis to manage and control the vineyard uprooting, planting and restructuring payments as well as allocating the subsidy paid on vineyard-basis.</p> <p>The goals of the VINGIS system are the following: to serve the fulfilment of the CAP to be able to manage the vineyard-based payments; to utilise the subsidies of the sector for establishing an integrated nation-wide GIS supported register; to facilitate the discernment and decision-making in the ministry and wine-viticulture sector's institutions and leaders; to improve the quality production and market competitiveness; to assure the protection of the designated origin and take action against adulteration of wine.</p>		
geographic extent (coverage)	national		
Data source	<input type="checkbox"/> satellite <input checked="" type="checkbox"/> aerial photographs <input checked="" type="checkbox"/> topographic maps <input checked="" type="checkbox"/> in-situ data <input checked="" type="checkbox"/> field survey <input checked="" type="checkbox"/> other	name of satellite(s)  Other, please specify: cadastral maps	
	Additional comments:		
Nomenclature	Name	Type <input type="checkbox"/> hierarchical <input checked="" type="checkbox"/> non-hierarchical	No. of classes
Nomenclature – list the classes in the highest level of the hierarchy			
Scale / resolution	Minimum mapping unit	Scale 1:1000	Pixel size
Reference date			
Update frequency			Comment: updated continuously
Initiative status	operational program		Other, please specify:
Funding agency	Ministry of Rural Development		
Responsible Organisation	Institute of Geodesy, Cartography and Remote Sensing		
Point of Contact (person)	dr. Martinovich László		
Email	martinovich.laszlo@fomi.hu		
Telephone	36-1-460-4199		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	MÉTA Program - Magyarország Élőhelyeinek Térképi Adatbázisa		
Initiative Title (English)	MÉTA Programme - Landscape Ecological Vegetation Database & Habitat Map of Hungary		
URL	<a href="http://www.novenyzetiterkep.hu">http://www.novenyzetiterkep.hu</a>		
Description (English)	<p>The main goals of the MÉTA Programme are the whole country survey and recognition of the actual state of natural &amp; semi-natural vegetation (habitats) of Hungary, and sound evaluation of our natural vegetation heritage. Further aims are</p> <ul style="list-style-type: none"> <li>• to develop, manage and to apply MÉTA database (Landscape Ecological Vegetation Database &amp; Map of Hungary)</li> <li>• to drive and help collaboration of botanists, ecologist, nature scientists, civil groups and conservationists</li> <li>• to develop knowledge and approach of landscape ecology</li> <li>• to help nature conservation and environmental education &amp; awareness.</li> </ul> <p>During the MÉTA Programme the whole territory of the country (93,000 hectares) was surveyed. Such a huge project has never been performed in botany in Hungary before. About 200 mappers including vegetation scientists, botanists, teachers, nature conservationists and students contributed to this enormous work. We've spent more than 7,000 days in the field and we fill in more than 100.000 datasheets. We've used satellite images with superimposed GIS layers, topographic maps and forest management data to support the field surveys</p>		
geographic extent	national		
Data source	<input checked="" type="checkbox"/> satellite <input type="checkbox"/> aerial photographs <input checked="" type="checkbox"/> topographic maps <input type="checkbox"/> in-situ data <input checked="" type="checkbox"/> field survey <input checked="" type="checkbox"/> other		name of satellite(s) SPOT  Other, please specify: forest management map
Nomenclature	Name Á-NÉR - General National Habitat Classification System	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes 86
Nomenclature – list the classes in the highest level of the hierarchy	Euhydrophyte habitats Marshes Flushes, transition mires and raised bogs Rich fens, eu- and mesotrophic meadows and tall herb communities Halophytic habitats Dry open grasslands Dry and semi-dry closed grasslands	Non-ruderal pioneer habitats Other non-woody habitats Bush vegetation and woodland margins Mesic deciduous woodlands Dry deciduous woodlands Rock woodlands Mixed coniferous woodlands Other woody habitats	
Scale / resolution	Minimum mapping unit approximately 0.1 hectares	Scale	Pixel size 35 hectares
Reference date			
Update frequency	irregular	Comment:	
Initiative status	completed project	Other, please specify:	
Funding agency	National Research Funds (Széchenyi Plan and Jedlik Ányos Program)		
Responsible Organisation	Institute of Ecology and Botany, Hungarian Academy of Sciences		
Point of Contact (person)	Zsolt Molnár		
Email	molnar@botanika.hu		
Telephone	+36 28 360122 ext. 160		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	Országos Erdőállomány Adattár		
Initiative Title (English)	National Forest Database		
URL	not available		
Description (English)	Includes inventory data, management planning and accomplishment data. The main item is forest subcompartment which has geometry and descriptive data		
geographic extent (coverage)	national		
Data source	<input type="checkbox"/> satellite	name of satellite(s)	
	<input checked="" type="checkbox"/> aerial photographs		
	<input type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input checked="" type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments:		
Nomenclature	Name	Type	No. of classes
	Forestry database	<input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	2
Nomenclature – list the classes in the highest level of the hierarchy	forest compartment / forest subcompartment (descriptive data attached to subcompartments)		
Scale / resolution	Minimum mapping unit	Scale	Pixel size
		1:10000	
Reference date			
Update frequency	10 years period / irregular in between due to management activity	Comment:	
Initiative status	other	Other, please specify: task mandated by law	
Funding agency	state budget		
Responsible Organisation	Central Agricultural Office - Forest Directorate		
Point of Contact (person)	Tamás Ali		
Email	ali.tamas@aesz.hu		
Telephone	+36 1 3743-241		

### 3.4.10. Iceland

#### 3.4.10.1. Organisations

Organisation description	
Organisation title (original language)	Náttúrufræðistofnun Íslands,
Organisation title (English)	Icelandic Institute of Natural History (IINH)
URL	<a href="http://www.ni.is">http://www.ni.is</a>
Description (English)	Public institution under the aegis of the Ministry for the Environment. The Institute conducts basic and applied research on the nature of Iceland, with a focus on botany, ecology, taxonomy, geology and zoology. It maintains scientific specimen collections and databases, assembles literature on the natural history of Iceland. The IINH participates in environmental consultancy work on sustainable use of natural resources and land development in Iceland and assesses the conservation status of species, habitats and ecosystems.
Key competences (add keywords)	Mapping of vegetation and habitat types, species distribution and status, geological research, environmental monitoring and data collection, consultation for national customers and government
Role(s)	<input checked="" type="checkbox"/> mandated authority <input type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Guðmundur Guðjónsson, (hd. of vegetation mapping)
email	gudm@ni.is
Telephone	+ 354 5900500

Organisation description	
Organisation title (original language)	Landmælingar Íslands
Organisation title (English)	National Land Survey of Iceland (NLSI og LMI)
URL	<a href="http://www.lmi.is">http://www.lmi.is</a>
Description (English)	The National Land Survey (NLSI) of Iceland has a leading role and supports cooperation in order to secure availability and access to reliable spatial information about Iceland. It promotes its use in diverse and efficient ways, not least as regards environmental matters. NLSI operates in accordance with law on land surveying and base map production. The objective of the operation is to ensure that accessible and reliable topographical and geographical background information about Iceland will always be available.
Key competences (add keywords)	Development and maintenance of geodetic and vertical reference systems for Iceland. Creation, maintenance and dissemination of digital land information layers on a scale of 1: 50.000. Processing, dissemination and archiving of remote sensing data. Registration and dissemination of information on spatial data in Iceland. Preparation of standards in the field of spatial information.
Role(s)	<input checked="" type="checkbox"/> mandated authority <input type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Kolbeinn Arnason
email	kolbeinn@lmi.is
Telephone	+354 4309000

## Panorama of European Land Monitoring

Organisation description	
Organisation title (original language)	Landbúnaðarháskóli Íslands
Organisation title (English)	Agricultural University of Iceland (AUI)
URL	<a href="http://www.lbhi.is">http://www.lbhi.is</a>
Description (English)	The Agricultural University of Iceland (AUI) is an educational and research institution in the field of agriculture and environmental sciences. The main focus is on the conservation and sustainable use of land and animal resources, including traditional agriculture, horticulture and forestry, environmental planning, restoration sciences, rural development and sustainable development.
Key competences (add keywords)	Estimates of emissions and removals from Land Use, Land-Use Change and Forestry (LULUCF) Icelandic Geographical Land use Database (IGLUD)
Role(s)	<input checked="" type="checkbox"/> mandated authority <input type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Jón Guðmundsson
email	jong@lbhi.is
Telephone	+ 354 4335000

## Panorama of European Land Monitoring

### 3.4.10.2. Initiatives

Initiative description			
Initiative Title (original language)	Gróður- og vistgerðakortlagning Íslands		
Initiative Title (English)	Vegetation and habitat type mapping of Iceland		
URL	<a href="http://www.ni.is">http://www.ni.is</a>		
Description (English)	Vegetation mapping (starting in 1955) and associated habitat type mapping (starting in 2000) of Iceland, based on aerial photographs and satellite images. Field-work in vegetation mapping has been completed in 65% of the country, habitat type mapping in the central highlands which cover 40% of the country.		
geographic extent (coverage)	national		
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) Spot 5, Landsat	
	<input checked="" type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input checked="" type="checkbox"/> in-situ data		
	<input checked="" type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments:		
Nomenclature	Name Botanical and ecological	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes Vegetation: 100 classes Habitat types: 24 in highland + lowlands undefined.
	Nomenclature – list the classes in the highest level of the hierarchy		
	Vegetation classes: Moss heath Heathland Wood- and shrubland Grassland and forb meadows Cultivated land Wetland Sparsely and non vegetated land	Habitat types: Barren land Moss heaths Heathlands Poor wetlands Rich wetlands Other Base map	
Scale / resolution	Minimum mapping unit 625 m <sup>2</sup>	Scale 1:25.000 - 50.000	Pixel size 0,5 - 2,5 m
Reference date			
Update frequency	Variable - from ca. 10 - 50 years	Comment:	
Initiative status	ongoing project	Other, please specify:	
Funding agency	Ministry of Environment, public and private institutions and companies		
Responsible Organisation	Icelandic Institute of Natural History (IINH)		
Point of Contact (person)	Guðmundur Guðjónsson		
Email	gudm@ni.is		
Telephone	+ 354 5900500		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	CORINE flokkunarverkefnið		
Initiative Title (English)	CORINE Land Cover		
URL	<a href="http://www.lmi.is/maelingar-og-landuppl/corine/">http://www.lmi.is/maelingar-og-landuppl/corine/</a>		
Description (English)	Standard CORINE Land Cover for Iceland 2000 and 2006		
geographic extent (coverage)	national		
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) Landsat-TM for CLC2000, SPOT-4 and -5 for CLC2006	
	<input checked="" type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input checked="" type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments:		
Nomenclature	Name	Type	No. of classes
	Standard European	<input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	44 (32 in Iceland)
Nomenclature – list the classes in the highest level of the hierarchy	Artificial surfaces Agricultural areas Forests and seminatural areas Wetlands Water		
Scale / resolution	Minimum mapping unit 25 ha, 5 ha change	Scale 1: 100.000	Pixel size
Reference date			
Update frequency	6 years	Comment: 2000, 2006 , 2012 (planned)	
Initiative status	completed project	Other, please specify:	
Funding agency	EEA, Ministry for the Environment		
Responsible Organisation	National Land Survey of Iceland (NSLI or LMI)		
Point of Contact (person)	Kolbeinn Arnason		
Email	kolbeinn@lmi.is		
Telephone	+354 4309000		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	Landnýtingargrunnur		
Initiative Title (English)	Icelandic Land Use Database (IGLUD)		
URL	<a href="http://www.lbhi.is/vefjsa">http://www.lbhi.is/vefjsa</a>		
Description (English)	The objective of the Icelandic Geographic Land Use Database (IGLUD) is to compile information on land use and land use changes compliant to requirements of the 2006 IPCC Guidelines for National Greenhouse Gas Inventory (IPCC 2006). The categorisation of land use also needs to be, as much as possible, based on existing information and adapted to Icelandic land use practices. Important criteria are that the land use practices most affecting the emission or removal of greenhouse gasses and changes in the extent of these practises are recognised by the database. The defined land use classes need to be as much as possible recognisable both through remote sensing and on ground. This applies especially to those categories not otherwise systematically mapped.		
geographic extent (coverage)	national		
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) Spot 5, Landsat	
	<input checked="" type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input checked="" type="checkbox"/> in-situ data		
	<input checked="" type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments:		
Nomenclature	Name Land use, national	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes Land use categories: 6 classes Sub-divisions: 41
Nomenclature – list the classes in the highest level of the hierarchy	Settlement, Forest land, Cropland, Wetland, Grassland and Other land		
Scale / resolution	Minimum mapping unit 0.196 ha	Scale 1:30.000 - 50.000	Pixel size 0,5 - 2,5 m
Reference date			
Update frequency	1 year	Comment:	
Initiative status	ongoing project	Other, please specify:	
Funding agency	The Ministry of Fisheries and Agriculture		
Responsible Organisation	Agricultural University of Iceland (AUI)		
Point of Contact (person)	Jón Guðmundsson		
Email	jong@lbhi.is		
Telephone	+ 354 4335000		

### 3.4.11. Ireland

#### 3.4.11.1. Organisations

Organisation description	
Organisation title (original language)	Environmental Protection Agency
Organisation title (English)	Environmental Protection Agency
URL	<a href="http://www.epa.ie">http://www.epa.ie</a>
Description (English)	National environmental protection agency of Ireland. Responsible for environmental enforcement and monitoring including LULC change. Produces CORINE dataset for EEA
Key competences (add keywords)	Environmental Monitoring and Assessment, Environmental Law Enforcement
Role(s)	<input checked="" type="checkbox"/> mandated authority <input checked="" type="checkbox"/> service provider <input checked="" type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Gavin Smith
email	g.smith@epa.ie
Telephone	+353 (0)53 9170725

Organisation description	
Organisation title (original language)	Teagasc
Organisation title (English)	Teagasc – [Agriculture and Food Development Authority]
URL	<a href="http://www.teagasc.ie">http://www.teagasc.ie</a>
Description (English)	Semi-state authority in Ireland responsible for research and development, training and advisory services in the agri-food sector. Produces agriculture-related landuse maps.
Key competences (add keywords)	Agriculture based research and education
Role(s)	<input checked="" type="checkbox"/> mandated authority <input checked="" type="checkbox"/> service provider <input checked="" type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Stuart Green
email	StuartGreen@teagasc.ie
Telephone	

## Panorama of European Land Monitoring

Organisation description	
Organisation title (original language)	National Parks and Wildlife Service
Organisation title (English)	National Parks and Wildlife Service
URL	<a href="http://www.npws.ie">http://www.npws.ie</a>
Description (English)	
Key competences (add keywords)	To manage, maintain and develop State-owned National Parks and Nature Reserves. To secure the conservation of ecosystems and maintain and enhance populations of flora and fauna in Ireland. Involved in habitat mapping programmes.
Role(s)	<input checked="" type="checkbox"/> mandated authority <input checked="" type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Gemma Weir
email	gemma_weir@environ.ie

Organisation description	
Organisation title (original language)	Ordnance Survey Ireland
Organisation title (English)	Ordnance Survey Ireland
URL	<a href="http://www.osi.ie">http://www.osi.ie</a>
Description (English)	National mapping agency
Key competences (add keywords)	Production of national cartographic products. Mandated national mapping agency
Role(s)	<input checked="" type="checkbox"/> mandated authority <input checked="" type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Bernard Farrell
email	Bernard.Farrell@osi.ie

Organisation description	
Organisation title (original language)	Heritage Council
Organisation title (English)	Heritage Council
URL	<a href="http://www.heritagecouncil.ie">http://www.heritagecouncil.ie</a>
Description (English)	Council responsible for protecting and enhancing the richness, quality and diversity of Irelands national heritage. Is invovled in local habitat mapping projects.
Key competences (add keywords)	National heritage awareness,education and protection.
Role(s)	<input type="checkbox"/> mandated authority <input type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Cliona O' Brien
email	cobrien@heritagecouncil.ie

## Panorama of European Land Monitoring

### 3.4.11.2. Initiatives

Initiative description			
Initiative Title (original language)	The national Teagasc Landcover Map 1995		
Initiative Title (English)			
URL	<a href="http://www.teagasc.ie/publications/2010/6/6_TRResearch_201002.pdf">http://www.teagasc.ie/publications/2010/6/6_TRResearch_201002.pdf</a>		
Description (English)	Ireland's first and only national scale landcover map (apart from CORINE)		
geographic extent (coverage)	national		
Data source	<input checked="" type="checkbox"/> satellite		name of satellite(s) Landsat 5
	<input type="checkbox"/> aerial photographs		
	<input type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
	<input type="checkbox"/> other		Other, please specify:
Nomenclature	Name	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes 10+
	Nomenclature – list the classes in the highest level of the hierarchy	Bare peat Bare rock Bog Bog and heath Built land Coastal complex Cut bog Cut&Eroding bog	Dry grassland Forest (U) & scrub Mature forest Rocky complex Sand Water Wet grassland
Scale / resolution	Minimum mapping unit 15ha	Scale	Pixel size
Reference date			
Update frequency	Once off	Comment:	
Initiative status	completed project	Other, please specify:	
Funding agency	Teagasc		
Responsible Organisation	Teagasc		
Point of Contact (person)	Stuart Green		
Email	StuartGreen@teagasc.ie		
Telephone			

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	Irish Forestry Inventory		
Initiative Title (English)			
URL	<a href="http://www.agriculture.gov.ie/nfi/">http://www.agriculture.gov.ie/nfi/</a> <a href="http://www.agriculture.gov.ie/forests-service/forests-service-general-information/about-the-forests-service/">http://www.agriculture.gov.ie/forests-service/forests-service-general-information/about-the-forests-service/</a>		
Description (English)	GIS Inventory of forestry parcels in Ireland		
geographic extent (coverage)	international		
Data source	<input type="checkbox"/> satellite	name of satellite(s)	
	<input type="checkbox"/> aerial photographs		
	<input type="checkbox"/> topographic maps		
	<input checked="" type="checkbox"/> in-situ data		
	<input checked="" type="checkbox"/> field survey		
	<input checked="" type="checkbox"/> other	Other, please specify: Afforestation applications	
	Additional comments:		
Nomenclature	Name	Type <input type="checkbox"/> hierarchical <input checked="" type="checkbox"/> non-hierarchical	No. of classes ?
	Nomenclature – list the classes in the highest level of the hierarchy Tree Species		
Scale / resolution	Minimum mapping unit 1ha	Scale	Pixel size
Reference date			
Update frequency	6-10yrs	Comment:	
Initiative status	operational program	Other, please specify:	
Funding agency	Department of Agriculture, Fisheries and Food		
Responsible Organisation	Department of Agriculture, Fisheries and Food		
Point of Contact (person)	Frank Barrett		
Email	Frank.Barrett@agriculture.gov.ie		
Telephone			

### 3.4.12. Italy

#### 3.4.12.1. Organisations

Organisation description	
Organisation title (original language)	Istituto Superiore per la Protezione e la Ricerca Ambientale (ISPRA)
Organisation title (English)	Italian National Institute for Environmental Protection and Research
URL	<a href="http://www.isprambiente.gov.it/site/it-IT/">http://www.isprambiente.gov.it/site/it-IT/</a>
Description (English)	<p>ISPRA is the competent government authority for all tasks and scientific activities of national interest for the protection, enhancement and improvement for the environment, water resources, nature conservation and soil. The institute also supports regulatory activities of the Ministry of Environment, Land and Sea at national, European and international level, including regular reporting on the state of environment and on sustainable development indicators.</p> <p>ISPRA coordinates the National System of Environment Protection Agencies of the 19 Regions and of the two autonomous provinces, through which it ensures the exchange of information and expertise for the improving environmental monitoring and inspections, as well as the knowledge on the state of the environment throughout the territory. ISPRA is also responsible for the development and operation of the Environmental Information and Monitoring System (SINAnet) and represents the Italian National Focal Point and the National Reference Centres for the European Environment Agency.</p> <p>Fields of activities include EMAS, Ecolabel, air and water quality, waste data and policies, hydro geological risk, nuclear and industrial risks, electromagnetic fields, noise, environment and health, impact assessment of projects and plans (EIA; SEA) of national relevance, technical support to the Integrated Environmental Authorisation under IPPC Directive, environmental emergency management, metrology through ISPRA's own labs, as well as communication and training.</p>
Key competences (add keywords)	
Role(s)	<input checked="" type="checkbox"/> mandated authority <input checked="" type="checkbox"/> service provider <input checked="" type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Valter Sambucini
email	valter.sambucini@isprambiente.it
Telephone	+39 06 50072074

## Panorama of European Land Monitoring

Organisation description	
Organisation title (original language)	AGEA-SIN agenzia per i pagamenti in agricoltura-sistema informativo nazionale per l'agricoltura
Organisation title (English)	AGEA-SIN agency for agricultural payments (CAP)- National information System for agriculture
URL	<a href="http://www.sin.it">http://www.sin.it</a> <a href="http://www.agea.gov.it">http://www.agea.gov.it</a>
Description (English)	AGEA, the Italian Payment Agency for CAP (common agricultural policies) agri-subsidies distribution and controls, due to its Institutional purposes and duty began to create agronomic and land use maps and maintain them into a unique integrated national system, since the mid-1990s. SIN is a private-public company which, after int. tender, helps AGEA for any operational and development task. To do this in correct way AGEA has been becoming a collector and a player of Remote sensing and thematic data, at different resolution and characteristics. Ortho-photos 1m resolution, acquired for 90 years on Administrative Units, were replaced in 2007 by 0,5m digital multispectral ones (complete updating of Italy 0,5m every 3 years), while VHR and HR satellite ortho-imagery, selected and processed every year for agricultural controls have been improving the wide amount of available data for any land investigations.
Key competences (add keywords)	airborne and satellite remote sensing; land cover/use; information systems; agronomic/forestry ground surveys; renewable resources statistics; agro-environment policies; geodatawarehouse
Role(s)	<input checked="" type="checkbox"/> mandated authority <input checked="" type="checkbox"/> service provider <input checked="" type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Livio Rossi; Giulio Monaldi
email	livio.rossi@sin.it
Telephone	+39 06 44490532 / +39 3355772565

Organisation description	
Organisation title (original language)	Regione Emilia-Romagna
Organisation title (English)	Emilia-Romagna Region
URL	<a href="http://www.regione.emilia-romagna.it/">http://www.regione.emilia-romagna.it/</a>
Description (English)	an administrative region of Italy
Key competences (add keywords)	The regions of Italy are the first-level administrative divisions of the state, constituting its first NUTS administrative level.
Role(s)	<input checked="" type="checkbox"/> mandated authority <input checked="" type="checkbox"/> service provider <input checked="" type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Stefano Corticelli
email	scorticelli@regione.emilia-romagna.it
Telephone	+39 051.527.4602

## Panorama of European Land Monitoring

Organisation description	
Organisation title (original language)	Regione Lombardia
Organisation title (English)	Lombardy Region
URL	<a href="http://www.regione.lombardia.it">http://www.regione.lombardia.it</a>
Description (English)	an administrative region of Italy
Key competences (add keywords)	The regions of Italy are the first-level administrative divisions of the state, constituting its first NUTS administrative level.
Role(s)	<input checked="" type="checkbox"/> mandated authority <input checked="" type="checkbox"/> service provider <input checked="" type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Direzione Generale Territorio ed Urbanistica - Director General Bruno Mori
email	bruno_mori@regione.lombardia.it
Telephone	+39 02 6765 5801

Organisation description	
Organisation title (original language)	Regione autonoma della Sardegna
Organisation title (English)	Autonomous Region of Sardinia
URL	<a href="http://www.regione.sardegna.it/">http://www.regione.sardegna.it/</a>
Description (English)	an administrative region of Italy
Key competences (add keywords)	The regions of Italy are the first-level administrative divisions of the state, constituting its first NUTS administrative level.
Role(s)	<input checked="" type="checkbox"/> mandated authority <input checked="" type="checkbox"/> service provider <input checked="" type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Servizio sistema informativo territoriale regionale
email	eell.urb.infocarto@regione.sardegna.it
Telephone	+390706064325

## Panorama of European Land Monitoring

### 3.4.12.2. Initiatives

Initiative description			
Initiative Title (original language)	CORINE Land Cover		
Initiative Title (English)	CORINE Land Cover		
URL	<a href="http://www.sinanet.isprambiente.it/it/coperturasuolo">http://www.sinanet.isprambiente.it/it/coperturasuolo</a>		
Description (English)	CORINE Land Cover for Italy (1990, 2000 and 2006)		
geographic extent (coverage)	national		
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) Landsat, Spot 4/5,IRS	
	<input checked="" type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input checked="" type="checkbox"/> in-situ data		
	<input checked="" type="checkbox"/> field survey		
	<input checked="" type="checkbox"/> other	Other, please specify:	
	Additional comments: a fourth thematic level for natural environments (class 3) was developed on the basis of main forest categories (based on species composition)		
Nomenclature	Name CLC	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes 44 3th level
	Nomenclature – list the classes in the highest level of the hierarchy		
Scale / resolution	Minimum mapping unit 25ha	Scale 1:100.000	Pixel size
Reference date			
Update frequency	infrequent	Comment:	
Initiative status	completed project	Other, please specify:	
Funding agency	EEA, ISPRA		
Responsible Organisation	ISPRA		
Point of Contact (person)	Valter Sambucini		
Email	valter.sambucini@isprambiente.it		
Telephone	+39 06 5007 2074		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	LPIS refresh Italia		
Initiative Title (English)	Land Parcel Identification System - land cover/use refresh of the entire nation		
URL	<a href="http://www.sin.it">http://www.sin.it</a>		
Description (English)	<p>AGEA-SIN has already completed a large scale land cover/use map of the entire nation (1:10,000 scale, MMU ranging from 1,000 to 100 sqm), based on 280,000 Italian cadastral maps, using VHR multispectral/multitemporal data. The first goal was to update and maintain the payment eligibility of the entire national agro-forestry environment; the second is to create, provide and exchange, following the Inspire criteria, a common very high geometrical territorial data set, including agro-environment parameters (EU Cross-Compliance, with digitised national landscape features) and pasture/forestry elements, with the purposes of interoperability and reutilisation among the Institutional user community (Public A, local, statistics, etc.).</p> <p>AGEA-SIN, due to its long experience in remote sensing on territorial data treatment and land use systems can be proactive for any scientific and technical thematic working groups. AGEA-SIN can also provide not only requirements and validation support, but a wide contribution on feasibility, operations and problem solving in land applications, especially at large scale.</p>		
geographic extent (coverage)	national	nation, up to each single municipality	
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) all VHR (GeoEye, QuickBird, WorldView, Ikonos)	
	<input checked="" type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input checked="" type="checkbox"/> in-situ data		
	<input checked="" type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify: VHR digital multispectral airborne 0,5m	
	Additional comments:		
Nomenclature	Name LPIS refresh Italy	Type <input checked="" type="checkbox"/> hierarchical <input checked="" type="checkbox"/> non-hierarchical	No. of classes 45
Nomenclature – list the classes in the highest level of the hierarchy			
Scale / resolution	Minimum mapping unit 0,01 ha	Scale ref 1:10,000	Pixel size 0.5 m
Reference date			
Update frequency	annual 30% of the Italian surface- wall to wall	Comment: multitemporal sat data existing (VHR and HR)	
Initiative status	completed project	Other, please specify: the updating has long time planned	
Funding agency	AGEA		
Responsible Organisation	Maurizio Piomponi		
Point of Contact (person)	Livio Rossi		
Email	livio.rossi@sin.it; giulio.monaldi@sin.it		
Telephone	+39 06 44490532		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	Usodel Suolo [Regione Emilia-Romagna]		
Initiative Title (English)	Land Use database [Emilia-Romagna Region]		
URL	<a href="http://www.regione.emilia-romagna.it/temi/territorio/cartografia-regionale/vedi-anche-uso-del-suolo">http://www.regione.emilia-romagna.it/temi/territorio/cartografia-regionale/vedi-anche-uso-del-suolo</a> <a href="http://archiviocartografico.regione.emilia-romagna.it/bookshopfe/mappeonline.html">http://archiviocartografico.regione.emilia-romagna.it/bookshopfe/mappeonline.html</a>		
Description (English)	land-use data base for the Emilia-Romagna region.		
geographic extent (coverage)	sub-national	Emilia-Romagna Region	
Data source	<input type="checkbox"/> satellite	name of satellite(s)	
	<input checked="" type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input checked="" type="checkbox"/> in-situ data		
	<input checked="" type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments:		
Nomenclature	Name CORINE 4 <sup>th</sup> thematic level	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes 83
	Nomenclature – list the classes in the highest level of the hierarchy		
Scale / resolution	Minimum mapping unit 1560 sqm	Scale	Pixel size
Reference date			
Update frequency			Comment:
Initiative status	operational program	Other, please specify:	
Funding agency	Emilia-Romagna Region		
Responsible Organisation	Emilia-Romagna Region Servizio Sviluppo amministrazione digitale e sistemi informativi geografici		
Point of Contact (person)	Stefano Corticelli		
Email	scorticelli@regione.emilia-romagna.it		
Telephone	+39 051.527.4602		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	DUSAF (Destinazione d'Uso dei Suoli Agricoli e forestali) [Regione Lombardia]		
Initiative Title (English)	Land Use map [Lombardy Region]		
URL	<a href="http://www.territorio.regione.lombardia.it/cs/Satellite?c=Redazionale_P&amp;childpagename=DG_Territorio%2FDetail&amp;cid=1213302903435&amp;pagename=DG_TERRWrapper">http://www.territorio.regione.lombardia.it/cs/Satellite?c=Redazionale_P&amp;childpagename=DG_Territorio%2FDetail&amp;cid=1213302903435&amp;pagename=DG_TERRWrapper</a>		
Description (English)	Agricultural and forest land uses map		
geographic extent (coverage)	sub-national	Lombardy Region	
Data source	<input type="checkbox"/> satellite	name of satellite(s)	
	<input checked="" type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input checked="" type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments:		
Nomenclature	Name CLC 5 <sup>th</sup> thematic level	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes 105
	Nomenclature – list the classes in the highest level of the hierarchy		
Scale / resolution	Minimum mapping unit 1600 m2	Scale 1:10.000	Pixel size
Reference date			
Update frequency	biennial	Comment:	
Initiative status	operational program	Other, please specify:	
Funding agency	Lombardy Region		
Responsible Organisation	Regione Lombardia - Direzione Generale Territorio ed Urbanistica		
Point of Contact (person)	Mario Nova Alberto De Luigi Luisa Pedrazzini		
Email			
Telephone			

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	Carta dell'Uso del Suolo in scala 1:25.000- 2008 [Regione autonoma della Sardegna]		
Initiative Title (English)	Land use map scale 1:25.000 - 2008 [Autonomous Region of Sardinia]		
URL	<a href="http://www.sardegнатerritorio.it/j/v/1293?s=141401&amp;v=2&amp;c=8162&amp;t=1">http://www.sardegнатerritorio.it/j/v/1293?s=141401&amp;v=2&amp;c=8162&amp;t=1</a>		
Description (English)			
geographic extent (coverage)	sub-national		
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) Landsat, Ikonos, Aster,	
	<input checked="" type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input checked="" type="checkbox"/> in-situ data		
	<input checked="" type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments:		
Nomenclature	Name CLC 5 thematic level	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes
	Nomenclature – list the classes in the highest level of the hierarchy		
Scale / resolution	Minimum mapping unit 0,5 urban - 0,75 other	Scale 1:25.000	Pixel size
Reference date			
Update frequency	5 years	Comment:	
Initiative status	operational program	Other, please specify:	
Funding agency	Autonomous Region of Sardinia		
Responsible Organisation	Servizio sistema informativo territoriale regionale Regione Autonoma della Sardegna		
Point of Contact (person)			
Email	eell.urb.infocarto@regione.sardegna.it		
Telephone	+390706064325		

### 3.4.13. Luxembourg

#### 3.4.13.1. Organisations

Organisation description	
Organisation title (original language)	Ministère du Développement durable et des Infrastructures - Département de l'Environnement
Organisation title (English)	Ministry for sustainable development and infrastructures - Department of Environment
URL	<a href="http://www.environnement.public.lu/">http://www.environnement.public.lu/</a>
Description (English)	Former Ministry of Environment has been integrated together with the Ministry for Spatial Planning into the Ministry for sustainable development
Key competences	Nature conservation, GIS, forestry
Role(s)	<input checked="" type="checkbox"/> mandated authority <input checked="" type="checkbox"/> service provider <input checked="" type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Patrick Grivet
email	Patrick.Grivet@mev.etat.lu
Telephone	+352 2478-6815

Organisation description	
Organisation title (original language)	Ministère du Développement durable et des Infrastructures - Département de l'aménagement du territoire
Organisation title (English)	Ministry for sustainable development and infrastructures - Department of spatial planning
URL	<a href="http://www.dat.public.lu/">http://www.dat.public.lu/</a>
Description (English)	Former Ministry of Environment has been integrated together with the Ministry for Spatial Planning into the Ministry for sustainable development
Key competences	Spatial planning, territorial cohesion, transport, housing, cross-border cooperation, GIS
Role(s)	<input checked="" type="checkbox"/> mandated authority <input checked="" type="checkbox"/> service provider <input checked="" type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Marco Tholl
email	marco.tholl@mat.etat.lu
Telephone	+352 2478-6918

## Panorama of European Land Monitoring

Organisation description	
Organisation title (original language)	STATEC - Institut National de la Statistique et des Études Économiques du Grand-Duché du Luxembourg
Organisation title (English)	STATIC - National statistical institute
URL	<a href="http://www.statistiques.public.lu/fr/acteurs/statec/index.html">http://www.statistiques.public.lu/fr/acteurs/statec/index.html</a>
Description (English)	National statistical institute
Key competences	statistics
Role(s)	<input checked="" type="checkbox"/> mandated authority <input checked="" type="checkbox"/> service provider <input checked="" type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Jean Hauptert
email	jean.hauptert@statec.etat.lu
Telephone	

Organisation description	
Organisation title (original language)	ASTA - Administration des services techniques de l'agriculture
Organisation title (English)	Technical services of the agricultural administration
URL	<a href="http://www.asta.etat.lu/">http://www.asta.etat.lu/</a>
Description (English)	The tasks of ASTA (already founded in 1883) cover are very broad and range from the promotion of technical progress in agriculture via quality inspection of agricultural products to the execution of national legislation and implementation of EU regulations.
Key competences	Crops, agro-meteorology, Land Parcel Information System
Role(s)	<input checked="" type="checkbox"/> mandated authority <input checked="" type="checkbox"/> service provider <input checked="" type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Marc Weyland Anne Peschon
email	marc.veyland@asta.etat.lu
Telephone	+352 4571 72 -234

## Panorama of European Land Monitoring

### 3.4.13.2. Initiatives

Initiative description			
Initiative Title (original language)	OBS - Occupation Biophysique du Sol		
Initiative Title (English)	National land cover map of the Grand Duchy of Luxembourg		
URL	N/A		
Description (English)	National land cover map		
geographic extent (coverage)	national	Grand Duchy of Luxembourg	
Data source	<input checked="" type="checkbox"/> satellite		name of satellite(s) IKONOS
	<input checked="" type="checkbox"/> aerial photographs		
	<input type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input checked="" type="checkbox"/> field survey		
	<input type="checkbox"/> other Additional comments:		
Nomenclature	Name CLC level 5	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes Area features: 76 Point & line features: 20
	Scale / resolution Minimum mapping unit 500 m <sup>2</sup>	Scale 1:10.000	Pixel size 0.5 - 1 m
Reference date			
Update frequency	Approx. every 10 years (1989 - 1999 - 2007)	Comment: Original data and first update based on aerial photos, second update based on IKONOS data	
Initiative status	completed project		
Funding agency	Ministry of Environment (former)		
Responsible Organisation	Ministère du Développement durable et des Infrastructures - Département de l'Environnement		
Point of Contact (person)	Patrick Grivet		
Email	Patrick.Grivet@mev.etat.lu		
Telephone	+352 2478-6815		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	Natura 2000 - Sites Habitats Directive & Birds Directive		
Initiative Title (English)	Natura 2000 - Sites Habitats Directive & Birds Directive		
URL	<a href="http://ec.europa.eu/environment/nature/natura2000/index_en.htm">http://ec.europa.eu/environment/nature/natura2000/index_en.htm</a>		
Description (English)	Natura 2000 is the centrepiece of EU nature & biodiversity policy. It is an EUwide network of nature protection areas established under the 1992 Habitats Directive. The aim of the network is to assure the long-term survival of Europe's most valuable and threatened species and habitats. It is comprised of Special Areas of Conservation (SAC) designated by Member States under the Habitats Directive, and also incorporates Special Protection Areas (SPAs) which they designate under the 1979 Birds Directive.		
geographic extent (coverage)	national	Comment: for the transboundary and sub-national initiatives specify which countries/areas are covered? Member states of the european union	
Data source	<input type="checkbox"/> satellite	name of satellite(s)	
	<input checked="" type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input checked="" type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments:		
Nomenclature	Name	Type	No. of classes
		<input type="checkbox"/> hierarchical <input checked="" type="checkbox"/> non-hierarchical	2
Scale / resolution	Minimum mapping unit	Scale 1:20000	Pixel size
Reference date			
Update frequency	infrequent	Comment:	
Initiative status	completed project	Other, please specify:	
Funding agency	Ministry of Environment (former)		
Responsible Organisation	Ministère du Développement durable et des Infrastructures - Département de l'Environnement		
Point of Contact (person)	Patrick Grivet		
Email	Patrick.Grivet@mev.etat.lu		
Telephone	+352 2478-6815		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	CORINE Land Cover		
Initiative Title (English)			
URL	N/A		
Description (English)	This is the Luxembourg part of the European CORINE Land Cover.		
geographic extent (coverage)	European Union		
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) SPOT XS + IRS P6	
	<input checked="" type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
	<input checked="" type="checkbox"/> other	Other, please specify: OBS	
	Additional comments:		
Nomenclature	Name	Type	No. of classes
	European nomenclature CLC	<input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	44
Scale / resolution	Minimum mapping unit	Scale	Pixel size
	25 ha	1:100000	25 m
Reference date			
Update frequency	infrequent	Comment: 1990, 2000, 2006	
Initiative status	completed project	Other, please specify:	
Funding agency	EEA		
Responsible Organisation	Ministère du Développement durable et des Infrastructures - Département de l'Environnement		
Point of Contact (person)	Patrick Grivet		
Email	Patrick.Grivet@mev.etat.lu		
Telephone	+352 2478-6815		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)			
Initiative Title (English)	LPIS / IACS - Integrated agricultural control system		
URL	N/A		
Description (English)	Land parcel information system / Integrated agricultural control system		
geographic extent (coverage)	national		
Data source	<input type="checkbox"/> satellite	name of satellite(s)	
	<input checked="" type="checkbox"/> aerial photographs		
	<input type="checkbox"/> topographic maps		
	<input checked="" type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments:		
Nomenclature	Name	Type	No. of classes
		<input type="checkbox"/> hierarchical <input checked="" type="checkbox"/> non-hierarchical	
Scale / resolution	Minimum mapping unit	Scale	Pixel size 1 m
Reference date			
Update frequency	/	Comment:	
Initiative status	ongoing project	Other, please specify:	
Funding agency			
Responsible Organisation	ASTA		
Point of Contact (person)	Anne Peschon		
Email	anne.peschon@asta.etat.lu		
Telephone			

### 3.4.14. The Netherlands

#### 3.4.14.1. Organisations

Organisation description	
Organisation title (original language)	Alterra - Wageningen University and Research Centre
Organisation title (English)	Alterra - Wageningen University and Research Centre
URL	<a href="http://www.terra.wur.nl/NL/">http://www.terra.wur.nl/NL/</a>
Description (English)	Alterra: your environment is our concern
Key competences	soil, ecosystems, landscape, geo-information, water and climate
Role(s)	<input type="checkbox"/> mandated authority <input checked="" type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Gerard Hazeu
email	gerard.hazeu@wur.nl
Telephone	++31 317 481928

Organisation description	
Organisation title (original language)	Centraal Bureau voor de Statistiek (CBS)
Organisation title (English)	Central Office of Statistics
URL	<a href="http://www.cbs.nl/nl-NL/menu/home/default.htm">http://www.cbs.nl/nl-NL/menu/home/default.htm</a>
Description (English)	National Statistical Institute
Key competences	
Role(s)	<input checked="" type="checkbox"/> mandated authority <input type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Chantal Melser
email	c.melser@cbs.nl
Telephone	++31 70 3374483

## Panorama of European Land Monitoring

Organisation description	
Organisation title (original language)	Dienst van Het Kadaster en Openbare Registers
Organisation title (English)	Topographical Institute and Cadastre
URL	<a href="http://www.kadaster.nl/">http://www.kadaster.nl/</a>
Description (English)	topographical institute
Key competences	
Role(s)	<input checked="" type="checkbox"/> mandated authority <input type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Haico van der Vegt
email	haico.vegt@kadaster.nl
Telephone	

## Panorama of European Land Monitoring

### 3.4.14.2. Initiatives

Initiative description			
Initiative Title (original language)	Landelijk Grondgebruiksbestand Nederland (LGN)		
Initiative Title (English)	Land use/cover database of the Netherlands		
URL	<a href="http://www.lgn.nl">http://www.lgn.nl</a>		
Description (English)	The LGN dataset is based on satellite imagery and additional data. Land use information is stored in 25*25m grid cells. The nomenclature of the database includes crop types, forest types, water, various urban classes and several ecological classes. With finishing LGN6 a detailed series of six land use databases (LGN1-6) from 1990's till 2008 is made available for The Netherlands		
geographic extent (coverage)	national		
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) Landsat, Spot, IRS	
	<input checked="" type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
	<input checked="" type="checkbox"/> other	Other, please specify: statistical information, agricultural subsidy information	
	Additional comments:		
Nomenclature	Name LGN	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes 39
	Scale / resolution	Minimum mapping unit	Scale 1:50000 Pixel size 25*25m
Reference date			
Update frequency	+/- 4 years	Comment:	
Initiative status	ongoing project	Other, please specify:	
Funding agency	commercial. Ministeries, Provinces, National institutes, Water Boards buy the product for their internal use.		
Responsible Organisation	Alterra		
Point of Contact (person)	Gerard Hazeu		
Email	gerard.hazeu@wur.nl		
Telephone	++31 317 481928		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	Bestand Bodemgebruik (BBG)		
Initiative Title (English)	Land use database		
URL	<a href="http://www.cbs.nl/nl-NL/menu/methoden/classificaties/overzicht/bestand-bodemgebruik/default.htm">http://www.cbs.nl/nl-NL/menu/methoden/classificaties/overzicht/bestand-bodemgebruik/default.htm</a>		
Description (English)	The database is a hierarchical classification of the Netherlands based on the different land use functions. It is regularly updated and based on the geometry of the topographical database (Top10vector/Top10NL) of the topographical institute.		
geographic (coverage) extent	national		
Data source	<input type="checkbox"/> satellite		name of satellite(s)
	<input checked="" type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
	<input type="checkbox"/> other		Other, please specify:
	Additional comments:		
Nomenclature	Name BBG	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes 38
	Scale / resolution	Minimum mapping unit Scale 1:10000	Pixel size
Reference date			
Update frequency	2-4years	Comment:	
Initiative status	operational program	Other, please specify:	
Funding agency	Central Office of Statistics (CBS)		
Responsible Organisation	Central Office of Statistics (CBS)		
Point of Contact (person)	Chantal Melser		
Email	c.melser@cbs.nl		
Telephone	++31 70 3374483		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	TOP10NL /Basisregistratie Topografie (BRT)		
Initiative Title (English)	Topographical database of the Netherlands		
URL	<a href="http://www.kadaster.nl/top10nl_engels/">http://www.kadaster.nl/top10nl_engels/</a>		
Description (English)	TOP10NL is the new, object-oriented topographical vector file, which will be replacing the TOP10vector file in 2007. The need to develop TOP10NL as the successor to TOP10vector is a result of new developments in the field of geographical information. It is important to keep in step with new standards, and that is no longer possible within the structure, content and delivery of TOP10vector. TOP10NL supports such things as object orientation, unique identification, was-becomes detection, seamless database, temporal features, multiple geometry and links to other national databases.		
geographic extent (coverage)	national		
Data source	<input type="checkbox"/> satellite	name of satellite(s)	
	<input checked="" type="checkbox"/> aerial photographs		
	<input type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input checked="" type="checkbox"/> field survey		
	<input checked="" type="checkbox"/> other	Other, please specify: Top10vector, Top10roads etc	
	Additional comments:		
Nomenclature	Name	Type	No. of classes
	object oriented nomenclature	<input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	
Scale / resolution	Minimum mapping unit	Scale 1:100000	Pixel size
Reference date			
Update frequency	continuous	Comment:	
Initiative status	operational program	Other, please specify:	
Funding agency			
Responsible Organisation	Dienst van Het Kadaster en Openbare Registers		
Point of Contact (person)			
Email			
Telephone			

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	CORINE Land Cover		
Initiative Title (English)	CORINE Land Cover		
URL			
Description (English)	Corine Land Cover for NL (1990, 2000 and 2006)		
geographic extent (coverage)	national		
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) SPOT, Landsat	
	<input checked="" type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
	<input checked="" type="checkbox"/> other	Other, please specify:	
	Additional comments:		
Nomenclature	Name CLC	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes 30 out of 44
	Scale / resolution	Minimum mapping unit 25ha	Scale 1:100000 Pixel size
Reference date			
Update frequency	infrequent	Comment:	
Initiative status	completed project	Other, please specify:	
Funding agency	EEA and Ministry of Infrastructure and Environment		
Responsible Organisation	Alterra		
Point of Contact (person)	Gerard Hazeu		
Email	gerard.hazeu@wur.nl		
Telephone	++31 317 481928		

### 3.4.15. Norway

#### 3.4.15.1. Organisations

Organisation description	
Organisation title (original language)	Norsk institutt for skog og landskap
Organisation title (English)	Norwegian Forest and Landscape Institute
URL	<a href="http://www.skogoglandskap.no">http://www.skogoglandskap.no</a>
Description (English)	Public institution under the Ministry of Food and Agriculture. Responsible for mapping and monitoring of land resources and national research institute for issues related to forestry, outfields and rural landscapes.
Key competences	
Role(s)	<input checked="" type="checkbox"/> mandated authority <input type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Geir-Harald Strand (Director, Land Resource Surveys)
email	ghs@skogoglandskap.no (or post@skogoglandskap.no)
Telephone	+47 64 94 87 00

Organisation description	
Organisation title (original language)	Statistisk sentralbyrå
Organisation title (English)	Statistics Norway
URL	<a href="http://www.ssb.no">http://www.ssb.no</a>
Description (English)	National statistical institute. Responsibility for land use statistics and monitoring in Norway.
Key competences	
Role(s)	<input checked="" type="checkbox"/> mandated authority <input type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Jørn Kristian Undelstvedt (Senior adviser)
email	jku@ssb.no (or post@ssb.no)
Telephone	+47 21 09 00 00

## Panorama of European Land Monitoring

### 3.4.15.2. Initiatives

Initiative description			
Initiative Title (original language)	Arealressurskartlegging		
Initiative Title (English)	Land resource survey		
URL	<a href="http://kilden.skogoglandskap.no">http://kilden.skogoglandskap.no</a>		
Description (English)	A complete field survey of all areas below the tree-line (AR5) combined with topographic maps and interpretation of satellite images above the tree line. The information is a combination of land cover, land use and land capability. Areas below the tree line are continuously updated using aerial photographs and input from municipal authorities. Areas above the tree line are updated infrequently. The main product besides statistics is detailed maps in scale 1:5,000 (AR5) but maps generalized to fit scales 1:50,000 (AR50) and 1:250,000 (AR250). AR50 and AR250 are distributed free of charge for non-commercial use.		
geographic extent	national		
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) Landsat	
	<input checked="" type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input checked="" type="checkbox"/> field survey		
	<input checked="" type="checkbox"/> other	Other, please specify: Administrative procedures in the municipalities	
Nomenclature	Name AR5	Type <input type="checkbox"/> hierarchical <input checked="" type="checkbox"/> non-hierarchical	No. of classes 125
Nomenclature -	There are restrictions on distribution of AR5 – most detailed dataset. AR50 (1:50,000) is available to all and has the following 18 basic classes	<ol style="list-style-type: none"> <li>1. Built-up land</li> <li>2. Agriculture &gt; Harvested land</li> <li>3. Agriculture &gt; Infield pasture</li> <li>4. Agriculture &gt; Unspecified agricultural land</li> <li>5. Forest &gt; Conifer forest</li> <li>6. Forest &gt; Deciduous forest</li> <li>7. Forest &gt; Mixed forest</li> <li>8. Forest &gt; Unspecified forest</li> <li>9. Open land &gt; No vegetation</li> <li>10. Open land &gt; Scattered and meagre vegetation</li> <li>11. Open land &gt; Lichen</li> <li>12. Open land &gt; Continuous dry or intermediate vegetation</li> <li>13. Open land &gt; Lush vegetation</li> <li>14. Open land &gt; Unspecified coverage</li> <li>15. Peat and wetland</li> <li>16. Perennial ice and snow</li> <li>17. Inland water bodies</li> <li>18. Ocean</li> </ol>	
Scale / resolution	Minimum mapping unit 0,1 haa	Scale 1:5,000	Pixel size
Reference date			
Update frequency	Continuous	Comment:	
Initiative status	operational program	Other, please specify:	
Funding agency	Ministry of Agriculture and Food		
Responsible Organisation	Norwegian Forest and Landscape Institute		
Point of Contact (person)	Jostein Frydenlund		
Email	jof@skogoglandskap.no		
Telephone	+47 64 94 89 26		



## Panorama of European Land Monitoring

Initiative description					
Initiative Title (original language)	Arealregnskap for utmark				
Initiative Title (English)	Area frame survey of land cover and outfield land resources (AR18X18)				
URL	<a href="http://kilden.skogoglandskap.no">http://kilden.skogoglandskap.no</a>				
Description (English)	National area frame survey based on the 2003 version of Eurostat LUCAS survey combined with a detailed in situ mapping of the land cover of each PSU (0,9 km <sup>2</sup> ). The area frame is 18 x 18 km and the survey consists of 1070 survey plots throughout Norway				
geographic extent (coverage)	national				
Data source	<input type="checkbox"/> satellite	name of satellite(s)			
	<input checked="" type="checkbox"/> aerial photographs				
	<input type="checkbox"/> topographic maps				
	<input type="checkbox"/> in-situ data				
	<input checked="" type="checkbox"/> field survey				
	<input type="checkbox"/> other	Other, please specify:			
	Additional comments:				
Nomenclature	Name LUCAS and NFLI Land Cover Classification System	Type <input checked="" type="checkbox"/> hierarchical <input checked="" type="checkbox"/> non-hierarchical	No. of classes 1200		
Nomenclature – list the classes in the highest level of the hierarchy	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;">           1: Snow bed communities            2: Alpine heath communities            3: Alpine meadow communities            4: Boreal deciduous forest            5: Temperate deciduous forest            6: Pine forest            7: Spruce forest         </td> <td style="width: 50%; vertical-align: top;">           8: Peatland forest            9: Wetlands            10: Coastal heath and meadows            11: Farmland            12: Non-productive land            13: Water         </td> </tr> </table>			1: Snow bed communities 2: Alpine heath communities 3: Alpine meadow communities 4: Boreal deciduous forest 5: Temperate deciduous forest 6: Pine forest 7: Spruce forest	8: Peatland forest 9: Wetlands 10: Coastal heath and meadows 11: Farmland 12: Non-productive land 13: Water
1: Snow bed communities 2: Alpine heath communities 3: Alpine meadow communities 4: Boreal deciduous forest 5: Temperate deciduous forest 6: Pine forest 7: Spruce forest	8: Peatland forest 9: Wetlands 10: Coastal heath and meadows 11: Farmland 12: Non-productive land 13: Water				
Scale / resolution	Minimum mapping unit 0,5 ha	Scale	Pixel size		
Reference date					
Update frequency	Comment:				
Initiative status	ongoing project	Other, please specify: First national survey to be completed in 2014			
Funding agency	Ministry of Agriculture and Food				
Responsible Organisation	Norwegian Forest and Landscape Institute				
Point of Contact (person)	Geir-Harald Strand				
Email	ghs@skogoglandskap.no				
Telephone	+47 64 94 96 99				

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	CORINE Land Cover		
Initiative Title (English)	CORINE Land Cover		
URL	<a href="http://kilden.skogoglandskap.no">http://kilden.skogoglandskap.no</a>		
Description (English)	CORINE Land Cover for Norway (2000 and 2006)		
geographic extent (coverage)	national		
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) various	
	<input checked="" type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input checked="" type="checkbox"/> in-situ data		
	<input checked="" type="checkbox"/> field survey		
	<input checked="" type="checkbox"/> other	Other, please specify: Several national registers are used	
Additional comments: CLC2000 was generalized from existing Norwegian maps and registers. CLC2006 was produced using the standard (EEA) methodology, and using various national registers, maps and orthophoto as auxiliary information.			
Nomenclature	Name	Type	No. of classes
	CLC	<input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	45
Scale / resolution	Minimum mapping unit	Scale	Pixel size
	25 ha	1:500,000	
Reference date			
Update frequency	infrequent	Comment: 2000 and 2006	
Initiative status	completed project	Other, please specify:	
Funding agency	EEA, Ministry of Environment (2006) and Ministry of Agriculture and Food (in kind 2000)		
Responsible Organisation	Norwegian Forest and landscape Institute		
Point of Contact (person)	Linda Aune-Lundberg		
Email	lla@skogoglandskap.no		
Telephone	+47 64 94 96 04		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	Nasjonal arealstatistikk		
Initiative Title (English)	Norwegian Land Use Statistics		
URL			
Description (English)	National land use statistics compiled by combining information from a very large number of existing maps and registers. A wall-to-wall digital land use "map" is produced as an intermediary product, but this map is only used for compilation of statistics and will not be released. The statistics is still under development - planned release fall 2011.		
geographic extent (coverage)	national	ff	
Data source	<input type="checkbox"/> satellite	name of satellite(s)	
	<input type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
	<input checked="" type="checkbox"/> other	Other, please specify: various maps and national registers	
	Additional comments:		
Nomenclature	Name	Type	No. of classes
		<input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	
Scale / resolution	Minimum mapping unit	Scale	Pixel size
Reference date			
Update frequency			Comment:
Initiative status	operational program	Other, please specify:	
Funding agency	Ministry of Environment		
Responsible Organisation	Statistics Norway		
Point of Contact (person)	Jørn Kristian Undelstvedt (Senior adviser)		
Email	jku@ssb.no (or post@ssb.no)		
Telephone	+47 21 09 00 00		

## Panorama of European Land Monitoring

### 3.4.16. Portugal

#### 3.4.16.1. Organisations

Organisation description	
Organisation title (original language)	Instituto Geográfico Português (IGP)
Organisation title (English)	Portuguese Geographic Institute
URL	<a href="http://www.igeo.pt/">http://www.igeo.pt/</a>
Description (English)	IGP is a National Agency of the Central Public Administration with the main objective of ensuring the execution of the geographic information policy at a national level. IGP is also the National Authority for Cartography, Cadastre and Geodesy. Within the field of land monitoring IGP has been co- or fully responsible for the production of the different editions of the CORINE Land Cover (CLC) for Continental Portugal, as well as responsible for the Land Use and Land Cover Map of Continental Portugal. It also has been and is involved in numerous Research & Development projects related with land monitoring.
Key competences (add keywords)	Cartographic, geodetic and cadastral information; National Geographic Information System; INSPIRE; Regulation of cadastral and cartographic activities; Cartographic production; Research and Development; Land Use and Land Cover (LULC); Development of LULC cartographic technical specifications; Remote Sensing; LULC characterisation for application in different environmental fields (e.g. forest, agriculture, climate change).
Role(s)	<input checked="" type="checkbox"/> mandated authority <input checked="" type="checkbox"/> service provider <input checked="" type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Eng.º João Geirinhas
E-mail	joao.geirinhas@igeo.pt
Telephone	+351-21-3819600

Organisation description	
Organisation title (original language)	Direcção Regional de Informação Geográfica e Ordenamento do Território (DRIGOT)
Organisation title (English)	Regional Directorate for Geographic Information and Land Planning [Madeira]
URL	<a href="http://www.sres.pt/">http://www.sres.pt/</a>
Description (English)	DRIGOT is a regional entity belonging to the Government of the Autonomous Region of Madeira (RAM). DRIGOT is responsible for, among others: (i) developing and coordinating the implementation of the Geographic Information System (GIS) for the RAM; (ii) studying and formulating proposals to improve RAM's geodetic reference; (iii) promoting cartographic coverage, including for land use and land cover; (iv) promoting the implementation, renewal and conservation of land cadastre; (v) promoting and disseminating cartographic and land cadastre information; (vi) promoting, coordinating and implementing GIS projects and research projects.
Key competences (add keywords)	Geographic Information Systems; Cartography; Geodesy; Cadastre; Research & Development; LULC cartographic production.
Role(s)	<input checked="" type="checkbox"/> mandated authority <input checked="" type="checkbox"/> service provider <input checked="" type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Dr.ª Maria João Neves
E-mail	mjoaoneves.sres@gov-madeira.pt
Telephone	+351-291-000410

## Panorama of European Land Monitoring

Organisation description	
Organisation title (original language)	Direcção Regional do Ambiente (DRA) (ex-Direcção Regional do Ordenamento do Território e dos Recursos Hídricos (DROTRH))
Organisation title (English)	Regional Directorate for the Environment (ex-Regional Directorate for Land Planning and Water Resources [Azores])
URL	<a href="http://www.azores.gov.pt/Portal/en/entidades/sram-dra/?cName=sram-dra&amp;lang=en&amp;area=ct">http://www.azores.gov.pt/Portal/en/entidades/sram-dra/?cName=sram-dra&amp;lang=en&amp;area=ct</a>
Description (English)	DRA is a regional entity belonging to the Government of the Autonomous Region of Azores (RAA). In this context and in the environmental sector, the execution of activities attributed to the Regional Directorate for the Environment includes its own responsibilities regarding Nature Conservation, which includes management of protected areas, species and habitats of the Natura 2000 Network, and Environmental Quality, including management and supervision of noise, air quality and waste. The different aspects of environmental promotion and education are also an important responsibility of this Regional Directorate.
Key competences (add keywords)	Territorial Management; Water Resources; Nature Conservation; Environmental Quality.
Role(s)	<input checked="" type="checkbox"/> mandated authority <input checked="" type="checkbox"/> service provider <input checked="" type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Dr.ª Ana Moreira
email	ana.cp.moreira@azores.gov.pt
Telephone	+351 296 206 700

## Panorama of European Land Monitoring

### 3.4.16.2. Initiatives

Initiative description				
Initiative Title (original language)	CORINE Land Cover (CLC) para Portugal Continental			
Initiative Title (English)	CORINE Land Cover (CLC) for Continental Portugal			
URL	CLC2006: <a href="http://www.igeo.pt/gdr/en/index.php?princ=Projects/CLC2006&amp;sessao=m_projectos">http://www.igeo.pt/gdr/en/index.php?princ=Projects/CLC2006&amp;sessao=m_projectos</a>			
Description (English)	The CORINE (Co-ordination of Information on the Environment) program was launched in 1985 by the European Community with the aim of developing an information system (i.e. the CORINE system) of the state of the Environment at European level. One of the main components related with this program is the CORINE Land Cover (CLC), whose main objective is the production of Land Use and Land Cover (LULC) cartography for Europe.			
Geographic extent (coverage)	National – Continental Portugal			
Data source	<input checked="" type="checkbox"/> satellite Name of satellite(s) CLC2006: IRS-P6 LISS III, SPOT-4, SPOT-5 and Landsat-7 ETM+ CLC2000: Landsat-7 ETM+ CLC90: Landsat-5 TM and MSS  <input type="checkbox"/> aerial photographs  <input type="checkbox"/> topographic maps  <input type="checkbox"/> in-situ data  <input type="checkbox"/> field survey  <input type="checkbox"/> other			
	Other, please specify:			
	Additional comments: We refer only to base data			
Nomenclature	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Name CLC</td> <td style="width: 33%;">Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical</td> <td style="width: 33%;">Nr. of classes In CLC2006: 44 classes at the most detailed (3<sup>rd</sup>) level, of which 42 are used in the case of Continental Portugal</td> </tr> </table>	Name CLC	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	Nr. of classes In CLC2006: 44 classes at the most detailed (3 <sup>rd</sup> ) level, of which 42 are used in the case of Continental Portugal
Name CLC	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	Nr. of classes In CLC2006: 44 classes at the most detailed (3 <sup>rd</sup> ) level, of which 42 are used in the case of Continental Portugal		
Nomenclature – list the classes in the highest level of the hierarchy	See file in annex			
Scale / resolution	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Minimum mapping unit 25 ha</td> <td style="width: 33%;">Scale 1: 100 000</td> <td style="width: 33%;">Pixel size</td> </tr> </table>	Minimum mapping unit 25 ha	Scale 1: 100 000	Pixel size
Minimum mapping unit 25 ha	Scale 1: 100 000	Pixel size		
Reference date	1985/86/87; 2000; 2006			
Update frequency	6-10 years			
	Comment:			
Initiative status	operational program			
	Other, please specify:			
Funding agency	CLC2006: European Environment Agency (EEA), Portuguese Environment Agency (APA) and Portuguese Geographic Institute (IGP) CLC2000: European Commission (EC) and Institute of the Environment (IA)			
Responsible Organisation	CLC2006: Portuguese Geographic Institute (IGP) CLC2000: Higher Institute of Statistics and Information Management of the New University of Lisbon (ISEGIUNL) and Portuguese Geographic Institute (IGP)			
Point of Contact (person responsible for land monitoring)	Eng.º João Geirinhas			
E-mail	joao.geirinhas@igeo.pt			
Telephone	+351-21-3819600			

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	CLC-Alterações para Portugal Continental		
Initiative Title (English)	CLC-Changes for Continental Portugal		
URL	CLC-Changes <a href="http://www.igeo.pt/gdr/en/index.php?princ=Projects/CLC2006&amp;sessao=m_projectos">http://www.igeo.pt/gdr/en/index.php?princ=Projects/CLC2006&amp;sessao=m_projectos</a>		2000-2006:
Description (English)	LULC change maps produced within the CLC initiative for Continental Portugal		
Geographic extent (coverage)	National – Continental Portugal		
Data source	<input checked="" type="checkbox"/> satellite	Name of satellite(s) See initiative description for “CORINE Land Cover (CLC) for Continental Portugal”	
	<input type="checkbox"/> aerial photographs		
	<input type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments: We refer only to base data		
Nomenclature	Name CLC	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	Nr. of classes In CLC2006: 44 classes at the most detailed (3 <sup>rd</sup> ) level, of which 42 are used in the case of Continental Portugal
Nomenclature – list the classes in the highest level of the hierarchy	See file in annex		
Scale / resolution	Minimum mapping unit CLC-Changes 2000-2006: 5 ha CLC-Changes 1985-2000: 5 / 25 ha	Scale 1: 100 000	Pixel size
Reference date	1985/86/87 - 2000; 2000 - 2006		
Update frequency	6 years	Comment:	
Initiative status	operational program	Other, please specify:	
Funding agency	CLC-Changes 2000-2006: European Environment Agency (EEA), Portuguese Environment Agency (APA) and Portuguese Geographic Institute (IGP) CLC-Changes 1985-2000: European Commission (EC) and Institute of the Environment (IA)		
Responsible Organisation	CLC-Changes 2000-2006: Portuguese Geographic Institute (IGP) CLC-Changes 1985-2000: Higher Institute of Statistics and Information Management of the New University of Lisbon (ISEGIUNL) and Portuguese Geographic Institute (IGP)		
Point of Contact (person responsible for land monitoring)	Eng.º João Geirinhas		
E-mail	joao.geirinhas@igeo.pt		
Telephone	+351-21-3819600		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	CLC RAM - CORINE Land Cover para a Região Autónoma da Madeira		
Initiative Title (English)	CLC RAM - CORINE Land Cover for the Autonomous Region of Madeira		
URL	<a href="http://www.geocidmadeira.com/">http://www.geocidmadeira.com/</a>		
Description (English)	CORINE Land Cover cartography for the Autonomous Region of Madeira		
Geographic extent (coverage)	Sub-national	Autonomous Region of Madeira	
Data source	<input checked="" type="checkbox"/> satellite <input type="checkbox"/> aerial photographs <input type="checkbox"/> topographic maps <input type="checkbox"/> in-situ data <input type="checkbox"/> field survey <input type="checkbox"/> other		Name of satellite(s) CLC RAM 2006: SPOT-4, SPOT-5, Landsat-5 TM and Landsat-7 ETM+ CLC RAM 2000: Landsat-7 ETM+ CLC RAM 1990: Landsat-5 TM  Other, please specify:
	Additional comments: We refer only to base data		
Nomenclature	Name CLC	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	Nr. of classes 44 classes at the most detailed (3 <sup>rd</sup> ) level, of which 31 are used in the case of the RAM
Nomenclature – list the classes in the highest level of the hierarchy	See file in annex		
Scale / resolution	Minimum mapping unit 25 ha	Scale 1: 100 000	Pixel size
Reference date	1990; 2000; 2006		
Update frequency	6-10 years		Comment: Although the CLC maps for RAM have different reference dates, they were all produced at the same time
Initiative status	Operational program		Other, please specify:
Funding agency	Regional Directorate for Geographic Information and Land Planning (DRIGOT) and European Commission (EC)		
Responsible Organisation	Product owner: Regional Directorate for Geographic Information and Land Planning (DRIGOT) Production: Portuguese Geographic Institute (IGP)		
Point of Contact (person responsible for land monitoring)	Dr.ª Maria João Neves		
E-mail	mjoaoneves.sres@gov-madeira.pt		
Telephone	+351-291-000410		

## Panorama of European Land Monitoring

Initiative description				
Initiative Title (original language)	CLC-Alterações para a Região Autónoma da Madeira			
Initiative Title (English)	CLC-Changes for the Autonomous Region of Madeira			
URL	<a href="http://www.geocidmadeira.com/">http://www.geocidmadeira.com/</a>			
Description (English)	LULC change maps produced within the CLC initiative for the Autonomous Region of Madeira			
Geographic extent (coverage)	Sub-national	Autonomous Region of Madeira		
Data source	<input checked="" type="checkbox"/> satellite		Name of satellite(s) See initiative description for “CLC-Changes for the Autonomous Region of Madeira”	
	<input type="checkbox"/> aerial photographs			
	<input type="checkbox"/> topographic maps			
	<input type="checkbox"/> in-situ data			
	<input type="checkbox"/> field survey			
	<input type="checkbox"/> other	Other, please specify:		
	Additional comments: We refer only to base data			
Nomenclature	Name CLC	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	Nr. of classes 44 classes at the most detailed (3 <sup>rd</sup> ) level, of which 31 are used in the case of the RAM	
Nomenclature – list the classes in the highest level of the hierarchy	See file in annex			
Scale / resolution	Minimum mapping unit 5 ha	Scale 1: 100 000	Pixel size	
Reference date	1990 - 2000; 2000 - 2006			
Update frequency	6 years	Comment: Although the CLC-Change maps for RAM have different reference dates, they were all produced at the same time		
Initiative status	Operational program	Other, please specify:		
Funding agency	Regional Directorate for Geographic Information and Land Planning (DRIGOT) and European Commission (EC)			
Responsible Organisation	Product owner: Regional Directorate for Geographic Information and Land Planning (DRIGOT) Production: Portuguese Geographic Institute (IGP)			
Point of Contact (person responsible for land monitoring)	Dr.ª Maria João Neves			
E-mail	mjoaoneves.sres@gov-madeira.pt			
Telephone	+351-291-000410			

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	COS2007 - Carta de Uso e Ocupação do Solo de Portugal Continental para 2007		
Initiative Title (English)	COS2007 - Land Use and Land Cover Map of Continental Portugal for 2007		
URL	<a href="http://www.igeo.pt/produtos/CEGIG/Cos2007.htm">http://www.igeo.pt/produtos/CEGIG/Cos2007.htm</a> <a href="http://www.igeo.pt/e-IGEO/egeo_downloads.htm">http://www.igeo.pt/e-IGEO/egeo_downloads.htm</a>		
Description (English)	<p>The main goal of COS2007 is the characterisation of land use and land cover in Continental Portugal for the year 2007.</p> <p>COS2007 is a cartography developed through computer-assisted visual interpretation of high spatial resolution data, specifically orthorectified aerial images of the year 2007. These images have a 50-cm spatial resolution and 4 spectral bands (red, green, blue and near infra-red). For assisting in the visual interpretation process several ancillary data were used, namely AWiFS satellite images and other national GIS datasets.</p> <p>The derivation of the technical specifications of COS2007 was done in a perspective of harmonising the product with international initiatives, namely in the framework of the INSPIRE directive. For example, the nomenclature of COS2007 is based on the CLC nomenclature, with the first three levels of both maps being the same. On the other hand, the reference system of COS2007 is the European Terrestrial Reference System 1989 (ETRS89), in order to have a more precise and easier compatibility with other information developed for Europe.</p>		
Geographic extent	National – Continental Portugal		
Data source	<input type="checkbox"/> satellite <span style="float: right;">Name of satellite(s)</span> <input checked="" type="checkbox"/> aerial photographs <input type="checkbox"/> topographic maps <input type="checkbox"/> in-situ data <input type="checkbox"/> field survey <input type="checkbox"/> other <span style="float: right;">Other, please specify:</span> Additional comments: We refer only to base data		
Nomenclature	Name COS2007	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	Nr. of classes 193 classes at the most detailed (5 <sup>th</sup> ) level
Nomenclature – list the classes in the highest level of the hierarchy	See file in annex 1. Artificial areas 2. Agricultural and agroforestry areas 3. Forests and natural and semi-natural areas 4. Wetlands 5. Water bodies		
Scale / resolution	Minimum mapping unit 1 ha	Scale	Pixel size
Reference date	2007		
Update frequency	Comment: Previous edition: reference date 1990 Next edition (planned): reference date 2010		
Initiative status	Completed project		Other, please specify:
Funding agency	Portuguese Government		
Responsible Organisation	Portuguese Geographic Institute (IGP)		
Point of Contact (person responsible for land monitoring)	Eng.º João Geirinhas		
E-mail	joao.geirinhas@igeo.pt		
Telephone	+351-21-3819600		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	COSRAM - Carta de Ocupação de Solos da Região Autónoma da Madeira		
Initiative Title (English)	COSRAM - Land Cover Map of the Autonomous Region of Madeira		
URL	<a href="http://www.geocidmadeira.com/">http://www.geocidmadeira.com/</a>		
Description (English)	The COSRAM cartography is very similar to the COS2007, the Land Use and Land Cover Map of Continental Portugal for 2007. The main differences between both cartographies are the spatial level of detail and the nomenclature. COSRAM, being a regional initiative, attains an even bigger spatial detail than COS2007: the former has a Minimum Mapping Unit (MMU) of 0,25 ha whereas the later has a MMU of 1 ha. The nomenclature of COSRAM is based on the nomenclature of COS2007 but has some additional classes to account for regional specificities.		
Geographic extent (coverage)	Sub-national	Autonomous Region of Madeira	
Data source	<input type="checkbox"/> satellite	Name of satellite(s)	
	<input checked="" type="checkbox"/> aerial photographs		
	<input type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments: We refer only to base data		
Nomenclature	Name COSRAM	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	Nr. of classes 198 classes at the most detailed (5 <sup>th</sup> ) level
Nomenclature – list the classes in the highest level of the hierarchy	1 Artificial areas; 2 Agricultural and agroforestry areas; 3 Forests and natural and semi-natural areas; 4 Wetlands; 5 Water bodies.		
Scale / resolution	Minimum mapping unit 0,25 ha	Scale 1: 10 000	Pixel size
Reference date	2004		
Update frequency			Comment: Previous edition: reference date 1990
Initiative status	Completed project		Other, please specify:
Funding agency	Regional Directorate for Geographic Information and Land Planning (DRIGOT) and European Commission (EC)		
Responsible Organisation	Regional Directorate for Geographic Information and Land Planning (DRIGOT)		
Point of Contact (person responsible for land monitoring)	Dr.ª Maria João Neves		
E-mail	mjoaoneves.sres@gov-madeira.pt		
Telephone	+351-291-000410		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	COSAçores - Carta de Ocupação do Solo da Região Autónoma dos Açores		
Initiative Title (English)	COSAçores - Land Cover Map of the Autonomous Region of Azores		
URL	<a href="http://www.azores.gov.pt/Gra/sram-drotrh/contudos/publicacoes/Carta+de+Ocupação+do+Solo.htm?lang=pt&amp;area=ct">http://www.azores.gov.pt/Gra/sram-drotrh/contudos/publicacoes/Carta+de+Ocupação+do+Solo.htm?lang=pt&amp;area=ct</a>		
Description (English)	<p>The Land Cover Map of the Autonomous Region of the Azores was prepared by GEOMETRAL, Técnicas de Medição e Informática, S.A. under a contract awarded by the Regional Directorate for Land Planning and Water Resources, integrated in the project “Sinergy and Cooperation in Land Management in Macaronesia” (SUEMAC), approved by EU INTERREG III-B (2000-2006) Azores, Madeira Canary Islands. The images that were used to produce the Land Occupation Map of the Autonomous Region of the Azores are from the LANDSAT 7 satellite (obtained from the United States Geological Survey and Global Land Cover Facility), and are dated from 2000 to 2003.</p> <p>The development of COSAçores (Land Cover Map of the Azores) is the result of the lack of updated information on land use and of the fact that SUEMAC project aims to create a model of public land management in Macaronesia, and contribute toward the sustainability of the environmental, social and economical systems.</p>		
Geographic extent	Sub-national	Autonomous Region of Azores	
Data source	<input checked="" type="checkbox"/> satellite	Name of satellite(s) Landsat-7 ETM+	
	<input type="checkbox"/> aerial photographs		
	<input type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments: We refer only to base data		
Nomenclature	Name COSAçores	Type <input type="checkbox"/> hierarchical <input checked="" type="checkbox"/> non-hierarchical	Nr. of classes 9
Nomenclature – list the classes in the highest level of the hierarchy	Urban Areas; Industrial Areas; Agricultural Areas; Pastures; Forest Areas; Natural Vegetation Areas; Unproductive Areas; Uncovered Areas; Lagoons.		
Scale / resolution	Minimum mapping unit 1 ha	Scale	Pixel size
Reference date	2000-2003		
Update frequency	Not planned		Comment:
Initiative status	Completed project		Other, please specify:
Funding agency	Regional Directorate for Land Planning and Water Resources (DROTRH) and European Commission (EC)		
Responsible Organisation	Regional Directorate for the Environment (ex-Regional Directorate for Land Planning and Water Resources)		
Point of Contact (person)	Dr.ª Ana Moreira		
Email	ana.cp.moreira@azores.gov.pt		
Telephone	+351 296 206 700		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	SIGN II - Infra-estrutura de Dados Espaciais para o território rural da Galiza e Norte de Portugal		
Initiative Title (English)	SIGN II – Spatial Data Infrastructure (SDI) for the rural territory of Galicia and North of Portugal		
URL	<a href="http://www.projectosign.org/">http://www.projectosign.org/</a>		
Description (English)	This project was a continuation of a first edition (SIGN) and finished in 2007. It involved seven partners, both Portuguese and from Galicia (Spain). At a first glance, we think it may be of interest and worth exploring in the HELM context. The project designed and developed a SDI for the rural territory of Galicia and North of Portugal, following the tendencies delineated by the INSPIRE directive in terms of information exchange. The project comprised several sub-projects, including one focused on land use and land cover. This sub-project (BDUSO) in turn aimed at creating and implementing a land use and land cover cartographic data model, homogeneous for the project intervention area.		
Geographic (coverage) extent	Trans-boundary	Comment: Area covered: 6.303 km <sup>2</sup> (45% in Spain and 55% in Portugal) distributed among 40 municipalities in Galicia and 16 municipalities in the North of Portugal.	
Data source	<input type="checkbox"/> satellite	name of satellite(s)	
	<input type="checkbox"/> aerial photographs		
	<input type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments:		
Nomenclature	Name	Type <input type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes
	Nomenclature – list the classes in the highest level of the hierarchy		
Scale / resolution	Minimum mapping unit	Scale	Pixel size
Reference date			
Update frequency			Comment:
Initiative status	Completed project		Other, please specify:
Funding agency	European Commission		
Responsible Organisation	SIGN II project coordinator: SDC - Sociedade para o Desenvolvimento Comarcal de Galicia ( <a href="http://www.comarcasdeg Galicia.com/">http://www.comarcasdeg Galicia.com/</a> )		
Point of Contact (person responsible for land monitoring)	José Marcial Díaz Manso (manager of the sub-project BDUSO)		
E-mail	jdiazman@xunta.es (manager of the sub-project BDUSO)		
Telephone	+34-981545858 (SDC)		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	OTALEX – Observatório Territorial Alentejo-Extremadura		
Initiative Title (English)	OTALEX – Alentejo-Extremadura Territorial Observatory		
URL	<a href="http://www.ideotalex.eu/">http://www.ideotalex.eu/</a>		
Description (English)	One of the main results of the OTALEX project was the implementation of a Spatial Data Infrastructure for the intervention area. At a first glance, the components we think may be of interest and worth exploring in the HELM context are: (i) the use of CLC cartography for both regions (Alentejo and Extremadura); (ii) the trans-boundary harmonisation of cartography. In the later component, the data interoperability and homogenisation were conducted according to the INSPIRE directive.		
Geographic extent (coverage)	Trans-boundary	Comment: Area covered: region of Alentejo in Portugal and region of Extremadura in Spain.	
Data source	<input type="checkbox"/> satellite	name of satellite(s)	
	<input type="checkbox"/> aerial photographs		
	<input type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments:		
Nomenclature	Name	Type <input type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes
	Nomenclature – list the classes in the highest level of the hierarchy		
Scale / resolution	Minimum mapping unit	Scale	Pixel size
Reference date			
Update frequency			Comment:
Initiative status	Completed project		Other, please specify:
Funding agency	European Commission (co-financing)		
Responsible Organisation	Several participating Portuguese and Spanish entities, including, from the Portuguese side, the Portuguese Geographic Institute (IGP)		
Point of Contact (person responsible for land monitoring)	Contact persons in IGP: Vanda Machado, Sara Reis and Danilo Furtado		
Email			
Telephone			

### 3.4.17. Romania

#### 3.4.17.1. Organisations

Organisation description	
Organisation title (original language)	Institutul National de Cercetare Dezvoltare Delta Dunarii - Tulcea
Organisation title (English)	Danube Delta national Institute for Research & Development
URL	<a href="http://www.ddni.ro">http://www.ddni.ro</a>
Description (English)	Biodiversity conservation and sustainable development
Key competences (add keywords)	<ul style="list-style-type: none"> <li>• Sustainable use of the natural resources</li> <li>• Rehabilitation of some threatened species populations</li> <li>• Ecological restoration</li> <li>• GIS development</li> </ul>
Role(s)	<input type="checkbox"/> mandated authority <input checked="" type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Jenica Hanganu
email	hanganu@indd.tim.ro
Telephone	+40 240 531520

Organisation description	
Organisation title (original language)	Institutul National de Statistica
Organisation title (English)	National Statistical Institute
URL	<a href="http://www.insse.ro">http://www.insse.ro</a>
Description (English)	Central statistics institute
Key competences (add keywords)	Statistics analyses
Role(s)	<input checked="" type="checkbox"/> mandated authority <input checked="" type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Gheorghe Puiu
email	gheorghe.puiu@insse.ro
Telephone	+40 240 3181824

## Panorama of European Land Monitoring

Organisation description	
Organisation title (original language)	Agentia Spatiale Romana
Organisation title (English)	Romania Space Agency
URL	<a href="http://www.rosa.ro">http://www.rosa.ro</a>
Description (English)	ROSA is authorised to establish research and development centres oriented on specific objectives of the Romanian Space Programme. ROSA is developing its own research and development projects.
Key competences (add keywords)	ROSA is the national co-ordinating body of the space activities
Role(s)	<input checked="" type="checkbox"/> mandated authority <input checked="" type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Marius-Ioan Piso
email	rosa-hq-at-rosa.ro
Telephone	+40-21-3168722

Organisation description	
Organisation title (original language)	Agentia Nationala de Cadastru si Publicitate Imobiliara
Organisation title (English)	National Agency for Cadastre and Land Registration
URL	<a href="http://www.ancpi.ro">http://www.ancpi.ro</a>
Description (English)	topographical institute
Key competences (add keywords)	
Role(s)	<input type="checkbox"/> mandated authority <input type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Mihai Busuioc
email	office@ancpi.ro
Telephone	+40 (21) 3115161

## Panorama of European Land Monitoring

Organisation description	
Organisation title (original language)	Institutul de Cercetari si Amenajari Silvice
Organisation title (English)	Forest Research and Management Institute
URL	<a href="http://www.icas.ro">http://www.icas.ro</a>
Description (English)	National Forest Research Institute
Key competences (add keywords)	Forest management, GIS, Forest Research
Role(s)	<input checked="" type="checkbox"/> mandated authority <input checked="" type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Iovu Biris
email	icas@icas.ro
Telephone	+40.21.350.32.38

## Panorama of European Land Monitoring

### 3.4.17.2. Initiatives

Initiative description			
Initiative Title (original language)	Baza de date Corine Land Cover Romania		
Initiative Title (English)	Land use/cover database of the Romania		
URL	<a href="http://www.ddni.ro">http://www.ddni.ro</a>		
Description (English)	The CLC database for the years 1990, 2000, and 2006.		
geographic extent (coverage)	national		
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) Landsat, Spot, IRS	
	<input checked="" type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input checked="" type="checkbox"/> in-situ data		
	<input checked="" type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments:		
Nomenclature	Name	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes 37out of 44
	Nomenclature – list the classes in the highest level of the hierarchy CLC		
Scale / resolution	Minimum mapping unit 25ha	Scale 1:100000	Pixel size 25*25
Reference date			
Update frequency	infrequent	Comment:	
Initiative status	completed project	Other, please specify:	
Funding agency	EEA, Romanian Ministry of Environment		
Responsible Organisation	Danube Delta National Institute		
Point of Contact (person)	Jenica Hanganu		
Email	hanganu@indd.tim.ro		
Telephone	+40240 531520		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	Acoperirea terenului TOPRO5		
Initiative Title (English)	Land Cover TOPRO5		
URL	<a href="http://geoportal.ancpi.ro/geoportal">http://geoportal.ancpi.ro/geoportal</a>		
Description (English)	Object class "CATEREN", of polygon type includes agricultural and non-agricultural land, water bodies, and forest, vineyard, pasture, etc. Topographic reference system TOPRO5 at the scale 1:5000.		
geographic extent (coverage)	national		
Data source	<input type="checkbox"/> satellite		name of satellite(s)
	<input checked="" type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
	<input type="checkbox"/> other		Other, please specify:
	Additional comments:		
Nomenclature	Name	Type	No. of classes
	Acoperirea terenului TOPRO5	<input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	
Nomenclature – list the classes in the highest level of the hierarchy			
Scale / resolution	Minimum mapping unit	Scale	Pixel size
		1:5000	
Reference date			
Update frequency	infrequently	Comment:	
Initiative status	completed project	Other, please specify:	
Funding agency	National Agency for Cadastre and Land Registration		
Responsible Organisation	CNGCFT		
Point of Contact (person)	Mihai Busuioc		
Email	office@ancpi.ro		
Telephone	+40 (21) 3115161		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	Inventarul Forestier National -IFN		
Initiative Title (English)	National Forest Inventory		
URL	<a href="http://www.icas.ro">http://www.icas.ro</a>		
Description (English)	Up dated forest database		
geographic extent (coverage)	national		
Data source	<input type="checkbox"/> satellite	name of satellite(s)	
	<input checked="" type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input checked="" type="checkbox"/> in-situ data		
	<input checked="" type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments:		
Nomenclature	Name IFN	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes
	Nomenclature – list the classes in the highest level of the hierarchy		
Scale / resolution	Minimum mapping unit 0,5	Scale 1:5000 ; 1:10000	Pixel size 2*2; 4*4 Km
Reference date			
Update frequency	5	Comment:	
Initiative status	ongoing project	Other, please specify:	
Funding agency	Ministry of Forest		
Responsible Organisation	ICAS		
Point of Contact (person)	Iovu Biris		
Email	icas@icas.ro		
Telephone	+40 21 350 32 38		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	Natura 2000 Romania		
Initiative Title (English)	Natura 2000		
URL	<a href="http://www.dni.ro">http://www.dni.ro</a>		
Description (English)	Specially Protected Areas , Sites of Community Importance, SCIs, and Special Areas of Conservation, SACs - Habitats Directive		
geographic extent (coverage)	national		
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) SPOT 5	
	<input checked="" type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input checked="" type="checkbox"/> in-situ data		
	<input checked="" type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments:		
Nomenclature	Name Natura 2000	Type <input type="checkbox"/> hierarchical <input checked="" type="checkbox"/> non-hierarchical	No. of classes
	Nomenclature – list the classes in the highest level of the hierarchy		
Scale / resolution	Minimum mapping unit	Scale 1:5000	Pixel size
Reference date			
Update frequency	Comment:		
Initiative status	ongoing project	Other, please specify:	
Funding agency	Ministry of the Environment		
Responsible Organisation	DDNI		
Point of Contact (person)	Grigoras Ion		
Email	grig@indd.tim.ro		
Telephone	+40 240 531520		

### 3.4.18. Serbia

#### 3.4.18.1. Organisations

Organisation description	
Organisation title (original language)	Republički Geodetski Zavod (RGZ)
Organisation title (English)	Republic Geodetic Authority
URL	<a href="http://www.rgz.gov.rs">http://www.rgz.gov.rs</a>
Description (English)	The Republic Geodetic Authority - RGA is a specialised Organisation carrying out technical and administrative tasks related to state survey, land cadastre, real estate cadastre, utilities cadastre and registration of real estate rights, their maintenance and updating as well as other assignments defined by the Law.
Key competences (add keywords)	Cadastre, topographic mapping, remote sensing, INSPIRE, aerial images
Role(s)	<input checked="" type="checkbox"/> mandated authority <input checked="" type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Vladimir Milenković
email	vmilenkovic@rgz.gov.rs
Telephone	+381 (11) 2650 445

Organisation description	
Organisation title (original language)	Evrogeomatika d.o.o.
Organisation title (English)	Evrogeomatika Ltd.
URL	<a href="http://www.evrogeomatika.co.rs">http://www.evrogeomatika.co.rs</a>
Description (English)	EvroGeomatika Ltd. is a private service company that offers and executes complete engineering solutions in the field of geodesy, survey, cartography, photogrammetry and GIS. It is also the Serbian National Reference Center for Land Cover.
Key competences (add keywords)	CORINE Land Cover mapping, aerial images, GIS
Role(s)	<input type="checkbox"/> mandated authority <input checked="" type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Dragutin Protić
email	drate74@yahoo.com
Telephone	+381 64 1733256

## Panorama of European Land Monitoring

### 3.4.18.2. Initiatives

Initiative description			
Initiative Title (original language)	CORINE Land Cover (CLC)		
Initiative Title (English)	CORINE Land Cover (CLC)		
URL			
Description (English)	CLC mapping in Serbia		
geographic extent (coverage)	Europe		
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) Landsat TM/ETM, Spot, IRS	
	<input checked="" type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input checked="" type="checkbox"/> in-situ data		
	<input checked="" type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments:		
Nomenclature	Name	Type	No. of classes
	CLC nomenclature, 3th level	<input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	44
Nomenclature – list the classes in the highest level of the hierarchy	European CLC		
Scale / resolution	Minimum mapping unit	Scale	Pixel size
	25ha	1:100.000	25
Reference date			
Update frequency	1990,2000,2006	Comment:	
Initiative status	operational program	Other, please specify:	
Funding agency	European Commission		
Responsible Organisation	Evrogeomatika Ltd.		
Point of Contact (person)	Dragutin Protic		
Email	drale74@yahoo.com		
Telephone	+381 64 1733256		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	Karta zemljišnog pokrivača Srbije		
Initiative Title (English)	Land Cover map of Serbia		
URL			
Description (English)			
geographic extent (coverage)	sub-national	3000 km <sup>2</sup> for the pilot, mapping of the entire national territory is foreseen	
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) Spot	
	<input type="checkbox"/> aerial photographs		
	<input type="checkbox"/> topographic maps		
	<input checked="" type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments:		
Nomenclature	Name	Type <input type="checkbox"/> hierarchical <input checked="" type="checkbox"/> non-hierarchical	No. of classes 8
	Nomenclature – list the classes in the highest level of the hierarchy artificial areas, arable land and permanent crops, pasture and mosaic farmland, forest and transitional woody shrub, heathland and sclerophyllous vegetation, open space with little or no vegetation, wetlands-water bodies		
Scale / resolution	Minimum mapping unit	Scale	Pixel size 2.5m
Reference date			
Update frequency	Comment:		
Initiative status	ongoing project	Other, please specify:	
Funding agency			
Responsible Organisation	Republic Geodetic Authority		
Point of Contact (person)	Vladimir Milenković		
Email	vmilenkovic@rgz.gov.rs		
Telephone	+381 (11) 2650 445		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	Karta staništa		
Initiative Title (English)	Natural habitat map		
URL			
Description (English)			
geographic extent (coverage)	sub-national	3000 km <sup>2</sup> for the pilot, mapping of the entire national territory is foreseen	
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) Spot	
	<input type="checkbox"/> aerial photographs		
	<input type="checkbox"/> topographic maps		
	<input checked="" type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments:		
Nomenclature	Name	Type	No. of classes
	National classification	habitats <input type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	
Nomenclature – list the classes in the highest level of the hierarchy			
Scale / resolution	Minimum mapping unit	Scale	Pixel size 2.5
Reference date			
Update frequency	Comment:		
Initiative status	ongoing project	Other, please specify:	
Funding agency			
Responsible Organisation	Republic Geodetic Authority		
Point of Contact (person)	Vladimir Milenkovic		
Email	vmilenkovic@rgz.gov.rs		
Telephone	+381 (11) 2650 445		

### 3.4.19. Spain

#### 3.4.19.1. Organisations

Organisation description	
Organisation title (original language)	Instituto Geográfico Nacional
Organisation title (English)	National Geographic Institute of Spain
URL	<a href="http://www.ign.es">http://www.ign.es</a>
Description (English)	The National Geographic Institute of Spain is the national authority for cartography and the national agency of the Central Public Administration with the mandate of ensuring the execution of geographical information policy.
Key competences (add keywords)	Territory observation, land cover topographic maps, land use, geodesy
Role(s)	<input checked="" type="checkbox"/> mandated authority <input checked="" type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Nuria Valcárcel Sanz
email	nvalcarcel@fomento.es
Telephone	+34 91 597 95 85

Organisation description	
Organisation title (original language)	Dirección General de Medio Natural y Política Forestal del Ministerio de Medio Ambiente y Medio Rural y Marino
Organisation title (English)	Natural Environment and Forest Policy Directorate of the Ministry of Environment, Rural and Marine
URL	<a href="http://www.marm.es/es/ministerio/organizacion/organigrama/DGMedioNaturalPoliticaForestal.aspx">http://www.marm.es/es/ministerio/organizacion/organigrama/DGMedioNaturalPoliticaForestal.aspx</a>
Description (English)	Department of the Ministry responsible for the management and conservation of natural heritage and biodiversity, and also the development of the Spanish Inventory of Natural Heritage and Biodiversity; development, management and conservation of protected natural areas; preparation of plans for protection of forests and, especially in the defense against forest fires and forest health.
Key competences (add keywords)	Natural heritage, biodiversity, forest health, inventories, forest fires
Role(s)	<input checked="" type="checkbox"/> mandated authority <input checked="" type="checkbox"/> service provider <input checked="" type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Roberto Vallejo Bombín
email	rvallejo@mma.es
Telephone	+34 91 749 36 19

## Panorama of European Land Monitoring

Organisation description	
Organisation title (original language)	Subdirección General de Cultivos Herbáceos e Industriales
Organisation title (English)	Agricultural Resources Directorate of the Ministry of Environment, Rural and Marine
URL	<a href="http://www.marm.es/es/agricultura/temas/default.aspx">http://www.marm.es/es/agricultura/temas/default.aspx</a>
Description (English)	Department in charge of the elaboration of the Crop and Land use Map of the Ministry of Environment, Rural and Marine in addition to other activities related to the agricultural means of production.
Key competences (add keywords)	Crops, livestock, animal health, plant health, agricultural cartography
Role(s)	<input type="checkbox"/> mandated authority <input checked="" type="checkbox"/> service provider <input checked="" type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Susana Humanes Magán Luis Eugenio Bernardo Carrascal
email	sgcherba@marm.es
Telephone	+34 91 347.66 30

Organisation description	
Organisation title (original language)	Fondo español de Garantía Agraria (FEGA)
Organisation title (English)	Spanish Agrarian Guarantee Fund
URL	<a href="http://www.fega.es/PwfGcp/es/">http://www.fega.es/PwfGcp/es/</a>
Description (English)	Organism responsible of the application of the Common Agricultural Policy in Spain
Key competences (add keywords)	PAC
Role(s)	<input checked="" type="checkbox"/> mandated authority <input checked="" type="checkbox"/> service provider <input checked="" type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Isabel Encinas
email	sg.ayudasdirectas@fega.es
Telephone	+34 91 347 64 66

## Panorama of European Land Monitoring

Organisation description	
Organisation title (original language)	Departamento de Desarrollo Rural y Medio Ambiente del Gobierno de Navarra
Organisation title (English)	Department of Rural Development and Environment of the Government of Navarra
URL	<a href="http://www.navarra.es/home_es/Gobierno+de+Navarra/Organigrama/Los+departamentos/Desarrollo+Rural+y+Medio+Ambiente/">http://www.navarra.es/home_es/Gobierno+de+Navarra/Organigrama/Los+departamentos/Desarrollo+Rural+y+Medio+Ambiente/</a>
Description (English)	Department of the Government of Navarra (Spanish region) in charge of agricultural and environmental themes
Key competences (add keywords)	agriculture, environment , land cover, cartography
Role(s)	<input type="checkbox"/> mandated authority <input checked="" type="checkbox"/> service provider <input checked="" type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Delia Sola Giménez
email	dsolajim@cfnavarra.es
Telephone	+34 848 426 705

Organisation description	
Organisation title (original language)	Departamento de Agricultura, Ganadería, Pesca, Alimentación y Medio Natural de la Generalitat de Cataluña
Organisation title (English)	Agriculture, Fishing, Food and Natural Resources Department of the Government of Cataluña (Spanish region)
URL	<a href="http://www10.gencat.cat/sac/AppJava/organisme_fitxa.jsp?codi=4163">http://www10.gencat.cat/sac/AppJava/organisme_fitxa.jsp?codi=4163</a>
Description (English)	Department of the government of Cataluña (Spanish region) in charge of the agricultural, fishing, rural development and environment, also in charge of the land cover cartography in Cataluña.
Key competences (add keywords)	Agriculture, fishing, environment, land cover, cartography
Role(s)	<input type="checkbox"/> mandated authority <input checked="" type="checkbox"/> service provider <input checked="" type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Diana López Agostini
email	diana.lopez@gencat.cat
Telephone	+34 93 419 97 18

## Panorama of European Land Monitoring

### 3.4.19.2. Initiatives

Initiative description			
Initiative Title (original language)	Corine Land Cover		
Initiative Title (English)	Corine land Cover		
URL	<a href="http://www.01.ign.es/ign/layoutIn/corineLandCover.do">http://www.01.ign.es/ign/layoutIn/corineLandCover.do</a>		
Description (English)	Corine Land Cover for Spain (1990, 2000 and 2006)		
geographic extent (coverage)	national		
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) SPOT5; Landsat	
	<input checked="" type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
	<input checked="" type="checkbox"/> other	Other, please specify: MCA MFE	
	Additional comments:		
Nomenclature	Name	Type	No. of classes
	CLC nomenclature	<input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	44
Nomenclature – list the classes in the highest level of the hierarchy			
Scale / resolution	Minimum mapping unit	Scale	Pixel size
	25 ha	1:100.000	
Reference date	1990/2000/2005		
Update frequency	Not fixed	Comment: Next update 2012	
Initiative status	completed project	Other, please specify:	
Funding agency	EEA, Spanish National Geographic Institute		
Responsible Organisation	Spanish National Geographic Institute		
Point of Contact (person)	Nuria Valcárcel Sanz		
Email	nvalcarcel@ign.es		
Telephone	+34 91 597 95 85		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	Sistema de Información de Ocupación del Suelo en España (SIOSE)		
Initiative Title (English)	Spanish Land cover/Land use Information System		
URL	<a href="http://www.siose.es">http://www.siose.es</a>		
Description (English)	<p>The objective of SIOSE is to integrate and harmonise the land cover/land use information of the National and Regional Public Administrations with a normalise data model and methodology reached by consensus between all the organisations involved.</p> <p>SIOSE is part of the Spanish Territory Observation National Plan (PNOT) coordinated and managed by the Spanish National Geographic Institute.</p>		
geographic (coverage) extent	national		
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) SPOT5, Landsat	
	<input checked="" type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input checked="" type="checkbox"/> field survey		
	<input checked="" type="checkbox"/> other	Other, please specify: Cadastré MCA MFE Regional land cover databases	
	Additional comments:		
Nomenclature	Name SIOSE data model	Type <input type="checkbox"/> hierarchical <input checked="" type="checkbox"/> non-hierarchical	No. of classes Undefined: as many as they are needed
Nomenclature – list the classes in the highest level of the hierarchy	Attached documents with SIOSE data model		
Scale / resolution	Minimum mapping unit Beaches, Riparian vegetation and Wetlands: 0,5 ha; Urban and Water: 1 ha; Agricultural and Forestry areas: 2 ha	Scale 1:25.000	Pixel size
Reference date	2005		
Update frequency	2 years	Comment: Finished 2005 version , ongoing 2009 version, planned 2011 version	
Initiative status	operational program	Other, please specify:	
Funding agency	Shared between National and Regional Public Administrations		
Responsible Organisation	Spanish National Geographic Institute		
Point of Contact (person)	Nuria Valcárcel Sanz		
Email	nvalcarcel@ign.es		
Telephone	+34 91 597 95 85		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	Sistema de Información Geográfica de Parcelas Agrícolas (SIGPAC)		
Initiative Title (English)	Land Parcel Geographic Information System		
URL	<a href="http://www.marm.es/es/agricultura/temas/sistema-de-informacion-geografica-de-parcelas-agricolas-sigpac/default.aspx">http://www.marm.es/es/agricultura/temas/sistema-de-informacion-geografica-de-parcelas-agricolas-sigpac/default.aspx</a>		
Description (English)	Allows the geographic identification of the land parcels declared by the farmers in every aid scheme related with the area		
geographic extent (coverage)	national		
Data source	<input type="checkbox"/> satellite		name of satellite(s)
	<input checked="" type="checkbox"/> aerial photographs		
	<input type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input checked="" type="checkbox"/> field survey		
	<input type="checkbox"/> other		Other, please specify:
	Additional comments:		
Nomenclature	Name	Type	No. of classes
	SIGPAC	<input type="checkbox"/> hierarchical <input checked="" type="checkbox"/> non-hierarchical	31
Nomenclature – list the classes in the highest level of the hierarchy	Attached document with SIGPAC nomenclature		
Scale / resolution	Minimum mapping unit subparcel	Scale 1:5.000	Pixel size
Reference date			
Update frequency	continous	Comment: Not all the territory at the same time	
Initiative status	operational program	Other, please specify:	
Funding agency	FEGA		
Responsible Organisation	FEGA		
Point of Contact (person)	Isabel Encinas González		
Email	sg.ayudasdirectas@fega.es		
Telephone	+34 91 347 64 66		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	Mapa Forestal de España (MFE25)		
Initiative Title (English)	Spanish Forestry Map		
URL	<a href="http://www.marm.es/es/biodiversidad/temas/montes-y-politica-forestal/mapa-forestal/">http://www.marm.es/es/biodiversidad/temas/montes-y-politica-forestal/</a>		
Description (English)	Shows the forests distribution in Spain since it began 100 years ago - principally by visual interpretation of aerial photographs		
geographic extent (coverage)	national		
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) Spot 5	
	<input checked="" type="checkbox"/> aerial photographs		
	<input type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input checked="" type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments:		
Nomenclature	Name	Type	No. of classes
	MFE25 data model	<input type="checkbox"/> hierarchical <input checked="" type="checkbox"/> non-hierarchical	Undefined: As many as they are needed
Nomenclature – list the classes in the highest level of the hierarchy	Attached image with the MFE data model diagram (in Spanish)		
Scale / resolution	Minimum mapping unit	Scale	Pixel size
	Forestry areas: 1ha; Riparian vegetation: 0,5 ha; Wetlands: 0,5 ha; Urban and water: 1 ha; Agricultural areas: 2 ha	1:25.000	
Reference date			
Update frequency	10 years	Comment: The update is not done simultaneously for all the territory, but one area is updated every 10 years	
Initiative status	operational program	Other, please specify:	
Funding agency	Ministry of Environment, Rural and Marine		
Responsible Organisation	Ministry of Environment, Rural and Marine		
Point of Contact (person)	Roberto Vallejo Bombín		
Email	rvallejo@mma.es		
Telephone	+34 91 749 36 19		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	Mapa de Cultivos y Aprovechamientos (MCA)		
Initiative Title (English)	Crops and Land Use Map		
URL	<a href="http://www.marm.es/es/agricultura/temas/sistema-de-informacion-geografica-de-datos-agrarios/">http://www.marm.es/es/agricultura/temas/sistema-de-informacion-geografica-de-datos-agrarios/</a>		
Description (English)	Represents the principal crops, land use and unproductive areas in Spain		
geographic extent (coverage)	national		
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) Spot, Landsat	
	<input checked="" type="checkbox"/> aerial photographs		
	<input type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input checked="" type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments:		
Nomenclature	Name	Type	No. of classes
	MCA nomenclature	<input type="checkbox"/> hierarchical <input checked="" type="checkbox"/> non-hierarchical	Undefined: as many as they are needed
Nomenclature – list the classes in the highest level of the hierarchy	Attached a document with the MCA simple classes (in Spanish)		
Scale / resolution	Minimum mapping unit	Scale	Pixel size
	2 ha	1:50.000	
Reference date			
Update frequency	Not fixed	Comment:	
Initiative status	operational program	Other, please specify:	
Funding agency	Ministry of Environment, Rural and Marine		
Responsible Organisation	Ministry of Environment, Rural and Marine		
Point of Contact (person)	Luis Eugenio Bernardo Carrascal		
Email	sgcherba@marm.es		
Telephone	+34 91 347 6630/+34 91 347 6631		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	Mapa de Cultivos y Aprovechamientos de Navarra		
Initiative Title (English)	Crops and Land Use Map of Navarra		
URL	<a href="http://www.cfnavarra.es/agricultura/informacion_agraria/MapaCultivos/index2.html">http://www.cfnavarra.es/agricultura/informacion_agraria/MapaCultivos/index2.html</a>		
Description (English)	Cartography done as a part of a general policy of continuous land evaluation to promote the most suitable land use in each moment in Navarra (Spanish region)		
geographic extent (coverage)	sub-national		
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) SPOT5	
	<input checked="" type="checkbox"/> aerial photographs		
	<input type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments:		
Nomenclature	Name MCA25 Navarra	Type <input type="checkbox"/> hierarchical <input checked="" type="checkbox"/> non-hierarchical	No. of classes 105
	Nomenclature – list the classes in the highest level of the hierarchy Attached a document with the classes of MCA25 Navarra (in Spanish)		
Scale / resolution	Minimum mapping unit 0,25 ha	Scale 1:25.000	Pixel size
Reference date			
Update frequency	Continuous update	Comment: Each year 20% territory of Navarra updated	
Initiative status	operational program	Other, please specify:	
Funding agency	Government of Navarra		
Responsible Organisation	Agriculture Department of the Government of Navarra		
Point of Contact (person)	Ana M <sup>a</sup> Vicente Alzuaz		
Email	am.vicente.alzuaz@cfnavarra.es		
Telephone	+34 848 428 911		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	Mapa de Cubiertas del Suelo de Cataluña (MCSC)		
Initiative Title (English)	Land Cover Map of Cataluña		
URL	<a href="http://www.creaf.uab.cat/MCSC/esp/index.htm">http://www.creaf.uab.cat/MCSC/esp/index.htm</a>		
Description (English)	The MCSC is a high resolution thematic cartography of the principal types of land cover of Cataluña.		
geographic extent (coverage)	sub-national		
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) SPOT5 (only in 2005-2007 version)	
	<input checked="" type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
	<input checked="" type="checkbox"/> other	Other, please specify: Cadaastre SIGPAC MFE Cartografía de Habitats de Cataluña Delimitación de zonas húmedas de Cataluña	
	Additional comments:		
Nomenclature	Name MCSC	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes 1999: 24 classes (2 levels) 2000-2003: 61 classes (3 levels) 2005-2007: 233 classes (4 levels)
	Nomenclature – list the classes in the highest level of the hierarchy		
Scale / resolution	Minimum mapping unit 500 m <sup>2</sup>	Scale 1:5.000	Pixel size
	Reference date 1993/2000-2003/2005-2007		
Update frequency	Not fixed	Comment: Three versions completed. Ongoing 2009 update	
Initiative status	operational program	Other, please specify:	
Funding agency	Government of Cataluña		
Responsible Organisation	CREAF		
Point of Contact (person)	Joan Josep Ibàñez		
Email	j.ibanez@creaf.uab.es		
Telephone	+34 93 581 46 72		

### 3.4.20. Switzerland

#### 3.4.20.1. Organisations

Organisation description	
Organisation title (original language)	Bundesamt für Umwelt BAFU
Organisation title (English)	Federal Office for the Environment FOEN
URL	<a href="http://www.bafu.admin.ch/org/index.html?lang=en">http://www.bafu.admin.ch/org/index.html?lang=en</a>
Description (English)	The Swiss Federal Office for the Environment (FOEN) is the federal environmental authority. It is responsible for the sustainable use of natural resources, including soil, water, air and forests. The FOEN's tasks include minimising natural hazards, protecting the environment and reducing risks to human health from excessive pollution, maintaining biological diversity and representing Switzerland in international environmental policy areas.
Key competences (add keywords)	environmental monitoring, measuring, reporting, consultation for national and international customers
Role(s)	<input checked="" type="checkbox"/> mandated authority <input type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Tom Klingl
email	tom.klingl@bafu.admin.ch
Telephone	+41 31 324 71 03

Organisation description	
Organisation title (original language)	Bundesamt für Statistik
Organisation title (English)	Swiss Federal Statistical Office (SFSO)
URL	<a href="http://www.bfs.admin.ch/bfs/portal/en/index.html">http://www.bfs.admin.ch/bfs/portal/en/index.html</a>
Description (English)	The SFSO's main task is to run and to co-ordinate Switzerland's entire public statistics system, to produce and to disseminate key statistical information showing the current status and trends in the fields of demographics, economy, society, spatial planning and environment. Furthermore it carries out comprehensive analysis, devises indicator systems to monitor complex processes, produces scenario forecasts and maintains a historical database.
Key competences (add keywords)	statistical tasks
Role(s)	<input checked="" type="checkbox"/> mandated authority <input type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Rainer Humbel
email	rainer.humbel@bfs.admin.ch
Telephone	+41 32 713 66 91

## Panorama of European Land Monitoring

Organisation description	
Organisation title (original language)	Bundesamt für Landestopografie swisstopo
Organisation title (English)	Federal Office of Topography swisstopo
URL	<a href="http://www.swisstopo.admin.ch/internet/swisstopo/en/home.html">http://www.swisstopo.admin.ch/internet/swisstopo/en/home.html</a>
Description (English)	The Federal Office of Topography (swisstopo) is the centre of competence for the Swiss Confederation responsible for geographical reference data, for instance the description, representation and archiving of geographic spatial data (such as national maps, elevation and landscape models, satellite images, orthophotos).
Key competences (add keywords)	mapping, geoinformation, Swiss coordinate system
Role(s)	<input checked="" type="checkbox"/> mandated authority <input type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	André Streilein
email	andre.streilein@swisstopo.ch
Telephone	41 31 963 22 93

Organisation description	
Organisation title (original language)	Eidg. Forschungsanstalt für Wald, Schnee und Landschaft WSL
Organisation title (English)	Swiss Federal Institute for Forest, Snow and Landscape Research WSL
URL	<a href="http://www.wsl.ch/index_EN?sid=13105464346946665830504882244">http://www.wsl.ch/index_EN?sid=13105464346946665830504882244</a>
Description (English)	Research Institute, concerned with the use, development and protection of natural and urban spaces. The focus of the research is on solving problems to do with the responsible use of landscapes and forests and a prudent approach to natural hazards, especially those common in mountainous countries.
Key competences (add keywords)	landscape research, forest ecology & management, natural hazards & risk management, snow/ice/avalanche/permafrost
Role(s)	<input type="checkbox"/> mandated authority <input checked="" type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Charlotte Steinmeier
email	charlotte.steinmeier@wsl.ch
Telephone	+41 44 7392 342

## Panorama of European Land Monitoring

Organisation description	
Organisation title (original language)	Forschungsanstalt Agroscope Reckenholz-Tänikon ART
Organisation title (English)	Research Station Agroscope Reckenholz-Tänikon ART
URL	<a href="http://www.agroscope.admin.ch">http://www.agroscope.admin.ch</a>
Description (English)	The main task of Agroscope's three research stations is research for the Federal Office for Agriculture (BLW). The goals are defined in Agroscope's research concept for 2008-2011. Since 1984 Agroscope manages the Swiss Soil Monitoring Network, operated jointly by Federal Office of the Environment and the Federal Office for Agriculture. The Swiss Soil Monitoring Network (NABO) is an instrument used for early detection purposes and for evaluating the effectiveness of soil protection measures.
Key competences (add keywords)	safe and flavoursome food, healthy environment, innovative and competitive agriculture, soil quality
Role(s)	<input type="checkbox"/> mandated authority <input checked="" type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Reto Giulio Meuli
email	reto.meuli@art.admin.ch
Telephone	+41 44 377 75 45

## Panorama of European Land Monitoring

### 3.4.20.2. Initiatives

Initiative description			
Initiative Title (original language)	Arealstatistik der Schweiz		
Initiative Title (English)	Swiss Land Use Statistics		
URL	<a href="http://www.bfs.admin.ch/bfs/portal/en/index/themen/02/01/new/nip_detail.html?gnpID=2010-211">http://www.bfs.admin.ch/bfs/portal/en/index/themen/02/01/new/nip_detail.html?gnpID=2010-211</a>		
Description (English)	Statistical dataset for landcover and landuse at national level. Manual interpretation of points, based on a regular grid of 100m width on aerial images. 3 different data models: landcover (27categories) / landuse (46 cat.) / standard (72cat.)		
geographic extent (coverage)	national		
Data source	<input type="checkbox"/> satellite	name of satellite(s)	
	<input checked="" type="checkbox"/> aerial photographs		
	<input type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input checked="" type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments:		
Nomenclature	Name	Type	No. of classes
	NOAS04	<input checked="" type="checkbox"/> hierarchical	72
	NOLU04	<input type="checkbox"/> non-hierarchical	46
	NOLC04		27
Nomenclature – list the classes in the highest level of the hierarchy	NOAS04: settlement & urban areas, agricultural areas, wooded areas, unproductive areas NOLU04: settlement & urban areas, agricultural areas, forest areas, unproductive areas NOLC04: Artificial areas, Grass & herb vegetation, brush vegetation, tree vegetation, bare land, water areas		
Scale / resolution	Minimum mapping unit Point	Scale Grid: 100 x 100m	Pixel size
Reference date			
Update frequency	12 yrs	Comment:	
Initiative status	operational program	Other, please specify:	
Funding agency	Swiss Federal Statistical Office (FSO)		
Responsible Organisation	Swiss Federal Statistical Office (FSO)		
Point of Contact (person)	Rainer Humbel		
Email	rainer.humbel@bfs.admin.ch		
Telephone	+41 32 713 66 91		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	CORINE Land Cover		
Initiative Title (English)	CORINE Land Cover		
URL			
Description (English)	CORINE Land Cover for Switzerland		
geographic extent (coverage)	national		
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s)	
	<input checked="" type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
	<input checked="" type="checkbox"/> other	Other, please specify: Several national registers are used	
Additional comments: CLC1990 was derived directly from the land use statistics; 2000 is generalised from existing registers, maps and manual corrections. CLC2006 was produced using the standard (EEA) methodology but using various national registers, maps and orthophoto as ancillary information.			
Nomenclature	Name	Type	No. of classes
	CLC	<input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	45
Nomenclature – list the classes in the highest level of the hierarchy	Artificial areas, agricultural areas, forest & semi-natural areas, wetlands, water bodies		
Scale / resolution	Minimum mapping unit	Scale	Pixel size
	25ha	1:500'000	
Reference date			
Update frequency	infrequent	Comment:	
Initiative status	operational program	Other, please specify:	
Funding agency	Federal Office for the Environment FOEN		
Responsible Organisation	Federal Office for the Environment FOEN		
Point of Contact (person)	Tom Klingl		
Email	tom.klingl@bafu.admin.ch		
Telephone	+41 31 324 71 03		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	Schweizerisches Landesforstinventar (LFI)		
Initiative Title (English)	Swiss National Forest Inventory NFI		
URL	<a href="http://www.lfi.ch/lfi/lfi-en.php">http://www.lfi.ch/lfi/lfi-en.php</a>		
Description (English)	The Swiss National Forest Inventory (NFI) records the current state and the changes of the Swiss forest. The survey obtains data about trees, stands, sample plots and through enquiries at the local forest service.		
geographic extent (coverage)	national		
Data source	<input type="checkbox"/> satellite	name of satellite(s)	
	<input checked="" type="checkbox"/> aerial photographs		
	<input type="checkbox"/> topographic maps		
	<input checked="" type="checkbox"/> in-situ data		
	<input checked="" type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments:		
Nomenclature	Name	Type <input type="checkbox"/> hierarchical <input checked="" type="checkbox"/> non-hierarchical	No. of classes
	Nomenclature – list the classes in the highest level of the hierarchy		
Scale / resolution	Minimum mapping unit sample plots, different sizes	Scale	Pixel size
Reference date			
Update frequency	continous	Comment: NFI 1-3 every 10 yrs.	
Initiative status	operational program	Other, please specify:	
Funding agency	Federal Office for the Environment FOEN		
Responsible Organisation	Federal Office for the Environment FOEN + Swiss Federal Institute for Forest, Snow and Landscape Research WSL		
Point of Contact (person)	Urs-Beat Brändli		
Email	Urs-Beat. Braendli@wsl.ch		
Telephone	+41 44 7392 343		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	Topografisches Landschaftsmodell TLM		
Initiative Title (English)	Topographic Landscape Model (TLM)		
URL	<a href="http://www.swisstopo.admin.ch/internet/swisstopo/en/home/swisstopo/org/topography/tg.html">http://www.swisstopo.admin.ch/internet/swisstopo/en/home/swisstopo/org/topography/tg.html</a>		
Description (English)	The Topographic Landscape Model TLM replaces the map-based models VECTOR25, SwissNames and GG25 from swisstopo. The TLM is an immense 3D geodatabase and covers the whole of Switzerland as a comprehensive basic landscape model. The natural and artificial features in the landscape such as roads or watercourses are displayed as three-dimensional vectors and grouped into nine categories		
geographic extent (coverage)	national		
Data source	<input type="checkbox"/> satellite		name of satellite(s)
	<input checked="" type="checkbox"/> aerial photographs		
	<input type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input checked="" type="checkbox"/> field survey		
	<input type="checkbox"/> other		Other, please specify:
	Additional comments:		
Nomenclature	Name	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes
	Roads and Tracks,Public Transportation,Buildings,Areas,Land cover,Hydrography,Single Point Objects,Names		
Scale / resolution	Minimum mapping unit MMU is not general but depends on type of class	Scale 1: 25'000	Pixel size
Reference date			
Update frequency	continuous	Comment:	
Initiative status	ongoing project	Other, please specify:	
Funding agency	Federal Office of Topography swisstopo		
Responsible Organisation	Federal Office of Topography swisstopo		
Point of Contact (person)	Emanuel Schmassmann		
Email	emanuel.schmassmann@swisstopo.ch		
Telephone	+41 31 963 24 12		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	Landschaftsbeobachtung Schweiz (LABES)		
Initiative Title (English)	Landscape Observation Programme (LABES)		
URL	<a href="http://www.bafu.admin.ch/publikationen/publikation/01563/index.html?lang=de">http://www.bafu.admin.ch/publikationen/publikation/01563/index.html?lang=de</a>		
Description (English)	The landscape observation programme (LABES) documents and assesses the state and development of the Swiss landscape, based on a number of indicators. The first series of data has now been collected and interpreted. The indicators are presented here for the first time in an internationally standardised format (the so-called DPSIR framework) and therefore allow comparisons with other countries. They highlight the problems due to the increasing pressure of human activities, but also point to the positive effects of the corrective efforts that have been undertaken in this field. The second series of indicators will mainly address aspects of landscape quality and perception and is to be published in 2013.		
geographic extent (coverage)	national		
Data source	<input type="checkbox"/> satellite		name of satellite(s)
	<input type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
	<input checked="" type="checkbox"/> other		Other, please specify: Multiple federal databases
	Additional comments:		
Nomenclature	Name	Type <input type="checkbox"/> hierarchical <input checked="" type="checkbox"/> non-hierarchical	No. of classes
	Nomenclature – list the classes in the highest level of the hierarchy		
Scale / resolution	Minimum mapping unit	Scale	Pixel size
Reference date			
Update frequency	6 to 10 years	Comment:	
Initiative status	operational program	Other, please specify:	
Funding agency	Federal Office for the Environment FOEN		
Responsible Organisation	Federal Office for the Environment FOEN		
Point of Contact (person)	Dr. Matthias StremLOW		
Email	matthias.stremLOW@bafu.admin.ch		
Telephone	+41 31 324 84 01		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	NABO: Nationale Bodenbeobachtung		
Initiative Title (English)	NABO: Swiss Soil Monitoring Network		
URL	<a href="http://www.nabo.admin.ch">http://www.nabo.admin.ch</a>		
Description (English)	<p>The Swiss Soil Monitoring Network (NABO) is an instrument used for early detection purposes and for evaluating the effectiveness of soil protection measures.</p> <p>Since 1984 the Swiss Soil Monitoring Network has been operated jointly by FOEN and the Federal Office for Agriculture. The network is managed on behalf of these federal agencies by Agroscope ART Reckenholz-Tänikon, the Swiss Federal Research Station for Agroecology and Agriculture.</p>		
geographic extent (coverage)	national		
Data source	<input type="checkbox"/> satellite	name of satellite(s)	
	<input type="checkbox"/> aerial photographs		
	<input type="checkbox"/> topographic maps		
	<input checked="" type="checkbox"/> in-situ data		
	<input checked="" type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
Additional comments: NABO combines several methods of data gathering and modelling to provide information about soil quality (NABO Status, NABO Trend, NABO Flux, etc.)			
Nomenclature	Name	Type	No. of classes
		<input checked="" type="checkbox"/> hierarchical <input checked="" type="checkbox"/> non-hierarchical	
Nomenclature – list the classes in the highest level of the hierarchy			
Scale / resolution	Minimum mapping unit Point	Scale several hundred points	Pixel size
Reference date			
Update frequency	yearly or less	Comment: depending on measurement aspect	
Initiative status	operational program	Other, please specify:	
Funding agency	Federal Office of the Environment and Federal Office for Agriculture		
Responsible Organisation	Research Station Agroscope Reckenholz-Tänikon ART		
Point of Contact (person)	Reto Giulio Meuli		
Email	reto.meuli@art.admin.ch		
Telephone	+41 44 377 75 45		

### 3.4.21. United Kingdom

#### 3.4.21.1. Organisations

Organisation description	
Organisation title (original language)	Centre for Ecology and Hydrology
Organisation title (English)	CEH
URL	<a href="http://www.ceh.ac.uk">http://www.ceh.ac.uk</a>
Description (English)	The Centre for Ecology & Hydrology is the UK's Centre of Excellence for integrated research in terrestrial and freshwater ecosystems and their interaction with the atmosphere. As part of the Natural Environment Research Council (NERC), it provides National Capability based on innovative, independent and interdisciplinary science and long-term environmental monitoring, forming an integral part of NERC's vision and strategy. Working in partnership with the research community, policy-makers, industry and society, it delivers world-class solutions to the most complex environmental challenges facing humankind. CEH is a member of PEER (the Partnership for European Environmental Research).
Key competences (add keywords)	Ecology, hydrology, biodiversity, biogeochemistry, environmental informatics.
Role(s)	<input checked="" type="checkbox"/> mandated authority <input type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Dan Morton
email	danm@ceh.ac.uk
Telephone	+44 1524 595967

Organisation description	
Organisation title (original language)	Forestry Commission
Organisation title (English)	FC
URL	<a href="http://www.forestry.gov.uk/">http://www.forestry.gov.uk/</a>
Description (English)	The Forestry Commission aims to protect and expand Britain's forests and woodlands and increase their value to society and the environment. FC takes the lead, on behalf of all three country administrations (England, Wales & Scotland), in the development and promotion of sustainable forest management. FC delivers the distinct forestry policies for the country administrations through specific objectives drawn from the country forestry strategies.
Key competences (add keywords)	Forest management and conservation
Role(s)	<input checked="" type="checkbox"/> mandated authority <input type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Mark Lawrence
email	mark.lawrence@forestry.gsi.gov.uk
Telephone	+44 131 445 2176

## Panorama of European Land Monitoring

Organisation description	
Organisation title (original language)	Countryside Commission for Wales
Organisation title (English)	CCW
URL	<a href="http://www.ccw.gov.uk">http://www.ccw.gov.uk</a>
Description (English)	The Countryside Council for Wales is the Government's statutory advisor on sustaining natural beauty, wildlife and the opportunity for outdoor enjoyment in Wales and its inshore waters. CCW champions the environment and landscapes of Wales and its coastal waters as sources of natural and cultural riches, as a foundation for economic and social activity, and as a place for leisure and learning opportunities. We aim to make the environment a valued part of everyone's life in Wales.
Key competences (add keywords)	Conservation
Role(s)	<input checked="" type="checkbox"/> mandated authority <input type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Alan Brown
email	a.brown@ccw.gov.uk
Telephone	+44 1248 385500

## Panorama of European Land Monitoring

### 3.4.21.2. Initiatives

		Initiative description	
Initiative Title (original language)		Land Cover Map 2007	
Initiative Title (English)		LCM2007	
URL		<a href="http://www.countrysidesurvey.org.uk/land-cover-map-2007">http://www.countrysidesurvey.org.uk/land-cover-map-2007</a>	
Description (English)		Land Cover Map 2007 is the third national land cover product produced for the UK by the Centre for Ecology and Hydrology. It is an object-based product with the land parcel structure derived from generalised digital cartography, additional parcel datasets and image segmentation. The spatial structure has a MMU of 0.5 ha and a MFW of 20m. The land parcels were classified by an object-based maximum likelihood classifier driven by multi-date high spatial resolution multi-spectral EO data. The EO based classification was refined by a series of knowledge-based enhancements controlled by ancillary data.	
geographic (coverage)	extent	national	
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) IRS LISS-III, Landsat 5 TM, Spot HRV, AWIFS	
	<input type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input checked="" type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
	<input checked="" type="checkbox"/> other	Other, please specify: Soils, DEM	
	Additional comments: Land parcel, object, structure was derived by generalising the national cartographic data set and adding additional boundaries from agricultural land parcels and image segmentation.		
Nomenclature	Name	Type	No. of classes
	Widespread examples of the Broad habitats within a hierarchy	<input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	
Nomenclature – list the classes in the highest level of the hierarchy			
Scale / resolution	Minimum mapping unit 0.5 ha	Scale	Pixel size
Reference date			
Update frequency	8 - 10 years	Comment: Aligned with the UK Countryside Survey programme ( <a href="http://www.countrysidesurvey.org.uk/">http://www.countrysidesurvey.org.uk/</a> )	
Initiative status	operational program	Other, please specify: Countryside Survey has been carried out five times, with three land cover maps, but it is not officially operational.	
Funding agency	Government departments and research agencies.		
Responsible Organisation	CEH undertakes the work for the Department of Environment, Farming and Rural Affairs.		
Point of Contact (person)	Dan Morton		
Email	danm@ceh.ac.uk		
Telephone	+44 1524 595967		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	CORINE Land Cover 2006 UK		
Initiative Title (English)	CLC2006		
URL	<a href="http://www.ceh.ac.uk/sci_programmes/BioGeoChem/CORINELandCoverMap.html">http://www.ceh.ac.uk/sci_programmes/BioGeoChem/CORINELandCoverMap.html</a>		
Description (English)	Production of the European CLC for the UK. To date this product has been based on a spatial generalisation and thematic translation of the most appropriate national land cover product to the European specification. Due to the differences between the national and European nomenclatures some manual editing has been required to complete the process. CLC2012 for the UK will be based on a conventional change only update of CLC2006.		
geographic extent (coverage)	Europe	UK	
Data source	<input checked="" type="checkbox"/> satellite <input checked="" type="checkbox"/> aerial photographs <input checked="" type="checkbox"/> topographic maps <input type="checkbox"/> in-situ data <input type="checkbox"/> field survey <input type="checkbox"/> other		name of satellite(s) Image2000 and Image2006  Other, please specify:
Additional comments:			
Nomenclature	Name CLC	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes 44
Nomenclature – list the classes in the highest level of the hierarchy	Standard		
Scale / resolution	Minimum mapping unit 25ha / 5 ha changes	Scale 1:100000	Pixel size
Reference date			
Update frequency	6 - 10 years	Comment:	
Initiative status	operational program	Other, please specify:	
Funding agency	EEA and MS		
Responsible Organisation	CEH		
Point of Contact (person)	Dan Morton		
Email	danm@ceh.ac.uk		
Telephone	+44 1524 595967		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	National Forest Inventory		
Initiative Title (English)	NFI		
URL	<a href="http://www.forestry.gov.uk/forestry/INFD-89PJU5">http://www.forestry.gov.uk/forestry/INFD-89PJU5</a>		
Description (English)	The NFI map is produced by visual interpretation in conjunction with ancillary datasets. It is based upon 40cm per pixel orthorectified digital imagery. In general the photographic images should have been no older than 3 years at the time of creating the digital map. The woodland features from existing digital cartography (OS MasterMap) were used where the woodland boundary was coincident with or within 10m of the perceived woodland edge. As well as being differentiating by interpreted forest type, open areas in woodland were also mapped as interpreted open areas (IOA's).		
geographic extent (coverage)	national		
Data source	<input type="checkbox"/> satellite		name of satellite(s)
	<input checked="" type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
	<input type="checkbox"/> other		Other, please specify:
	Additional comments:		
Nomenclature	Name	Type	No. of classes
		<input type="checkbox"/> hierarchical <input checked="" type="checkbox"/> non-hierarchical	21
Nomenclature – list the classes in the highest level of the hierarchy	Interpreted Forest Types (Conifer, Broadleaved, Mixed Predominantly Conifer, Mixed predominantly Broadleaved, Coppice, Coppice with Standards, Shrub, Young Trees, Ground Prepared for Planting, Felled) and Interpreted Open Areas (Agric, Bare, Grass, Power line, Quarry, River, Road, Urban, Other Vegetation, Water, Wind farm).		
Scale / resolution	Minimum mapping unit	Scale	Pixel size
	0.5 ha		
Reference date			
Update frequency	Regular rolling programme	Comment:	
Initiative status	operational program	Other, please specify:	
Funding agency	FC		
Responsible Organisation	FC		
Point of Contact (person)	Mark Lawrence		
Email	mark.lawrence@forestry.gsi.gov.uk		
Telephone	+44 131 445 2176		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	Gwyllo		
Initiative Title (English)	Habitat Inventory of Wales		
URL	<a href="http://www.gwyllo.org.uk/">http://www.gwyllo.org.uk/</a>		
Description (English)	The Habitat Inventory for Wales is a series of habitat maps, rich in information and ideally suited for use in policy, land management and monitoring for nature conservation, biodiversity, land use/land cover and ecosystem services. The structure of the mapping system means it can be easily updated as new satellite or aerial imagery become available.		
geographic extent (coverage)	sub-national	Wales, one part of the UK	
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) SPOT, Landsat TM, LISS-III	
	<input checked="" type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input checked="" type="checkbox"/> in-situ data		
	<input checked="" type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments:		
Nomenclature	Name	Type	No. of classes
	Phase 1 Habitats	<input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	50+
Nomenclature – list the classes in the highest level of the hierarchy	<a href="http://jncc.defra.gov.uk/page-2468">http://jncc.defra.gov.uk/page-2468</a>		
Scale / resolution	Minimum mapping unit	Scale	Pixel size 5 m ?
Reference date			
Update frequency	?	Comment:	
Initiative status	ongoing project	Other, please specify:	
Funding agency	Welsh Government		
Responsible Organisation	CCW		
Point of Contact (person)	Alan Brown		
Email	alan.brown@ccw.gov.uk		
Telephone	+44 1248 385500		

## 3.5. National Organisations and Initiatives – Non-HELM

### 3.5.1. Croatia

#### 3.5.1.1. Organisations

Organisation description	
Organisation title (original language)	Agencija za zaštitu okoliša
Organisation title (English)	Croatian Environmental Agency
URL	<a href="http://www.azo.hr/">http://www.azo.hr/</a>
Description (English)	
Key competences (add keywords)	
Role(s)	<input checked="" type="checkbox"/> mandated authority <input type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Marijo Vranaric
Email	marijo.vranaric@azo.hr
Telephone	+38514886859

## 3.5.2. Denmark

## 3.5.2.1. Initiatives

Initiative description			
Initiative Title (original language)	SINKS KP34		
Initiative Title (English)			
URL			
Description (English)	Mapping of wall-to-wall Denmark to support the area matrice calculations to the Kyoto Protocol produced by semi-automatic process.		
geographic extent (coverage)	national		
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) Landsat TM and ETM	
	<input checked="" type="checkbox"/> aerial photographs		
	<input type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments:		
Nomenclature	Name	Type <input type="checkbox"/> hierarchical <input checked="" type="checkbox"/> non-hierarchical	No. of classes 6
	Scale / resolution	Minimum mapping unit 0.5 ha	Scale Pixel size 25m
Reference date	1990, 2005		
Update frequency	5 year cycle		
Initiative status	completed project		
Funding agency			
Responsible Organisation			
Point of Contact (person)	Annemarie Bastrup-Birk		
Email	ab@life.ku.dk		
Telephone	+4535331897		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	Kort10		
Initiative Title (English)			
URL	<a href="http://www.kms.dk/English/Maps+and+Topography/Topographic+Data/Denmark+1-10000/">http://www.kms.dk/English/Maps+and+Topography/Topographic+Data/Denmark+1-10000/</a>		
Description (English)	Kort10 is used as the geographic basis for Denmark's e-government infrastructure. The Kort10 data are developed from the Danish Topographic Base Map Database. This product is available to subscribers through the Digital Map Supply. The database includes seven data classes and a total of 47 themes. Among these are six administrative boundary themes, two toponym themes and elevation data.		
geographic extent (coverage)	national		
Data source	<input type="checkbox"/> satellite	name of satellite(s)	
	<input type="checkbox"/> aerial photographs		
	<input checked="" type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments:		
Nomenclature	Name	Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes 7 data classes 47 themes
	Nomenclature – list the classes in the highest level of the hierarchy		
Scale / resolution	Minimum mapping unit	Scale 1:10000	Pixel size
Reference date			
Update frequency	5-year cycle	Comment:	
Initiative status	operational program		
Funding agency			
Responsible Organisation	Århus University, National Environmental Research Institute (rearrangement of institution. Now the National Centre for Environment and Energy); National Survey and Cadastre		
Point of Contact (person)	Michael Stjernholm		
Email	msh@dmu.dk kms@kms.dk (National Survey and Cadastre)		
Telephone			

## 3.5.3. Estonia

## 3.5.3.1. Initiatives

Initiative description			
Initiative Title (original language)			
Initiative Title (English)	Estonian Basic Map		
URL	<a href="http://geoportaal.maaamet.ee/">http://geoportaal.maaamet.ee/</a> (geoportal website) <a href="http://xgis.maaamet.ee/xGIS/XGis">http://xgis.maaamet.ee/xGIS/XGis</a> (web map service)		
Description (English)	Topographic database		
geographic extent (coverage)	national		
Data source	<input type="checkbox"/> satellite	name of satellite(s)	
	<input checked="" type="checkbox"/> aerial photographs		
	<input type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments:		
Nomenclature	Name	Type	No. of classes
		<input type="checkbox"/> hierarchical <input checked="" type="checkbox"/> non-hierarchical	6
Scale / resolution	Minimum mapping unit	Scale 1:10000	Pixel size
Reference date	2006, 1996-2008		
Update frequency			
Initiative status	operational program		
Funding agency			
Responsible Organisation			
Point of Contact (person)	Tiina Dislis Kristian Teiter		
Email	<a href="mailto:tiina.dislis@ic.envir.ee">tiina.dislis@ic.envir.ee</a> <a href="mailto:kristian.teiter@maaamet.ee">kristian.teiter@maaamet.ee</a>		
Telephone	+3726750133		

### 3.5.4. Greece

#### 3.5.4.1. Organisations

Organisation description	
Organisation title (original language)	Οργανισμός Κτηματολογίου και Χαρτογραφήσεων Ελλάδας (Ο.Κ.Χ.Ε.)
Organisation title (English)	Hellenic Mapping and Cadastral Organisation
URL	<a href="http://www.okxe.gr/">http://www.okxe.gr/</a>
Description (English)	
Key competences (add keywords)	
Role(s)	<input checked="" type="checkbox"/> mandated authority <input type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	
email	m.aravantinou@dpers.minenv.gr  info@okxe.gr
Telephone	+302106446856 +302111044700

### 3.5.5. Latvia

#### 3.5.5.1. Organisations

Organisation description	
Organisation title (original language)	LR Centrālā statistikas pārvalde
Organisation title (English)	Central Statistical Bureau of Latvia (CSB of Latvia)
URL	<a href="http://www.csb.gov.lv/">http://www.csb.gov.lv/</a>
Description (English)	CSB is responsible for the Agricultural crop statistics survey and data collection on land use.
Key competences (add keywords)	
Role(s)	<input checked="" type="checkbox"/> mandated authority <input type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Anita Raubena
email	<a href="mailto:Anita.Raubena@csb.gov.lv">Anita.Raubena@csb.gov.lv</a>
Telephone	+37167366977

Organisation description	
Organisation title (original language)	Latvijas Vides, ģeoloģijas un meteoroloģijas centrs
Organisation title (English)	Latvian Environment, Geology and Meteorology Centre
URL	<a href="http://www.meteo.lv/">http://www.meteo.lv/</a>
Description (English)	
Key competences (add keywords)	
Role(s)	<input checked="" type="checkbox"/> mandated authority <input type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	
email	
Telephone	

### 3.5.6. Liechtenstein

#### 3.5.6.1. Organisations

Organisation description	
Organisation title (original language)	Amt für Wald, Natur und Landschaft
Organisation title (English)	
URL	
Description (English)	
Key competences (add keywords)	
Role(s)	<input checked="" type="checkbox"/> mandated authority <input type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Hermann Schmuck
email	hermann.schmuck@awnl.llv.li
Telephone	

## 3.5.7. Lithuania

## 3.5.7.1. Initiatives

Initiative description			
Initiative Title (original language)			
Initiative Title (English)	Regional Land Stock Inventory Data Base of the Republic of Lithuania (ŽInv DB50LT)		
URL			
Description (English)	The content of the Regional Land Inventory Data Base of the Republic of Lithuania at scale 1: 50 000 ŽInv_DB50LT consists of cultivated land, forests, other land, inland waters, uncultivated land. The data base covers the entire territory of Lithuania.		
geographic extent (coverage)	national		
Data source	<input checked="" type="checkbox"/> satellite	name of satellite(s) Landsat5; Landsat7	
	<input type="checkbox"/> aerial photographs		
	<input type="checkbox"/> topographic maps		
	<input checked="" type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments:		
Nomenclature	Name	Type <input type="checkbox"/> hierarchical <input checked="" type="checkbox"/> non-hierarchical	No. of classes 5
	Scale / resolution	Minimum mapping unit Scale 1:50000	Pixel size
Reference date	2005		
Update frequency			
Initiative status			
Funding agency			
Responsible Organisation	National Land Service under the Ministry of Agriculture		
Point of Contact (person)	Saulius Urbanas		
Email	sauliusu@zum.lt info@gis-centras.lt		
Telephone	+37052398440		

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)			
Initiative Title (English)	Land Parcel Identification System and Block Database KZS_DB10LT		
URL			
Description (English)	Land Parcel Identification System and Block Database KZS_DB10LT is a part of an integrated administration and control system (IAKS), that allows to control declared land use and land parcels. Land Parcel Identification System and Block Database is the system of land parcel identification and registering, that consists of graphic and attribute data. KZS_DB10LT covers the entire territory of Lithuania. Land Parcel Identification System and Block Database of Lithuania consists of information about parcels of farmland, built up territories, integrated territories, pastures and orchards.		
geographic extent (coverage)	national		
Data source	<input type="checkbox"/> satellite	name of satellite(s) Landsat5; Landsat7	
	<input checked="" type="checkbox"/> aerial photographs		
	<input type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments:		
Nomenclature	Name	Type	No. of classes
		<input type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	5
Scale / resolution	Minimum mapping unit	Scale 1:10000	Pixel size
Reference date	2008		
Update frequency			
Initiative status			
Funding agency			
Responsible Organisation	National Land Service under the Ministry of Agriculture		
Point of Contact (person)	Saulius Urbanas		
Email	sauliusu@zum.lt info@gis-centras.lt		
Telephone	+37052398440		

### 3.5.8. Malta

#### 3.5.8.1. Organisations

Organisation description	
Organisation title (original language)	
Organisation title (English)	Malta Environment & Planning Authority (MEPA)
URL	<a href="http://www.mepa.org.mt/">http://www.mepa.org.mt/</a>
Description (English)	
Key competences (add keywords)	
Role(s)	<input checked="" type="checkbox"/> mandated authority <input type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Saviour Formosa
Email	saviour.formosa@mepa.org.mt
Telephone	+35622901620

### 3.5.9. Montenegro

#### 3.5.9.1. Organisations

Organisation description	
Organisation title (original language)	
Organisation title (English)	Geological Survey of Montenegro
URL	<a href="http://geozavod.co.me/">http://geozavod.co.me/</a>
Description (English)	
Key competences (add keywords)	
Role(s)	<input checked="" type="checkbox"/> mandated authority <input type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Slobodan Radusinovic
Email	slobo.r@t-com.me
Telephone	

### 3.5.10. Poland

#### 3.5.10.1. Organisations

Organisation description	
Organisation title (original language)	Główny Urząd Geodezji i Kartografii
Organisation title (English)	Head Office of Geodesy and Cartography, Department of Geodesy and GIS
URL	<a href="http://www.gugik.gov.pl/">http://www.gugik.gov.pl/</a>
Description (English)	
Key competences (add keywords)	
Role(s)	<input checked="" type="checkbox"/> mandated authority <input type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Jerzy Zieliński
email	Sekretariat.gi@gugik.gov.pl gugik@gugik.gov.pl
Telephone	+48226618027 +48226618017

Organisation description	
Organisation title (original language)	Instytut Geodezji i Kartografii
Organisation title (English)	Institute of Geodesy and Cartography
URL	<a href="http://www.igik.edu.pl/">http://www.igik.edu.pl/</a>
Description (English)	The main task of IGiK concerns research in the field of geodesy, cartography, remote sensing & photogrammetry, GIS & GI and related disciplines for the needs of science, geodetic and cartographic service, public life, administration and state security. The Institute works for different ministries (e.g. Environment, Forestry, Agriculture), governmental and self-governmental authorities, domestic and foreign scientific institutions and for geodetic/cartographic enterprises, regardless of their type of legal status.
Key competences (add keywords)	
Role(s)	<input checked="" type="checkbox"/> mandated authority <input type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Elzbieta Bielecka
email	
Telephone	+48223291984

## Panorama of European Land Monitoring

### 3.5.10.2. Initiatives

Initiative description			
Initiative Title (original language)	Baza Danych Topograficznych		
Initiative Title (English)	Database of topographical objects, cadastre		
URL	<a href="http://www.gugik.gov.pl/produkty/tbd">http://www.gugik.gov.pl/produkty/tbd</a>		
Description (English)			
geographic extent (coverage)	national		
Data source	<input type="checkbox"/> satellite	name of satellite(s)	
	<input type="checkbox"/> aerial photographs		
	<input type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments:		
Nomenclature	Name	Type <input type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical	No. of classes
	Scale / resolution	Minimum mapping unit	Scale Pixel size
Reference date			
Update frequency			
Initiative status			
Funding agency			
Responsible Organisation	Institute of Geodesy and Cartography		
Point of Contact (person)			
Email			
Telephone			

### 3.5.11. Slovakia

#### 3.5.11.1. Organisations

Organisation description	
Organisation title (original language)	Slovenská agentúra životného prostredia (SAŽP)
Organisation title (English)	Slovak Environmental Agency
URL	<a href="http://www.sazp.sk/">http://www.sazp.sk/</a>
Description (English)	
Key competences (add keywords)	
Role(s)	<input checked="" type="checkbox"/> mandated authority <input type="checkbox"/> service provider <input type="checkbox"/> user <input type="checkbox"/> other
Point of Contact (person responsible for land monitoring)	Nada Machkova
email	nada.machkova@sazp.sk
Telephone	+421484374139

## 3.5.12. Slovenia

## 3.5.12.1. Initiatives

Initiative description			
Initiative Title (original language)			
Initiative Title (English)	Statistical land cover GIS 2005		
URL			
Description (English)	Statistical land cover and land use GIS 2005 is a vector data set of land cover and land use elaborated at the Statistical Office of the Republic of Slovenia. It is a continuation of surveys of Statistical land cover and land use GIS from 1993, 1997 and 2001.		
geographic extent (coverage)	national		
Data source	<input type="checkbox"/> satellite	name of satellite(s) Landsat TM, Landsat ETM	
	<input checked="" type="checkbox"/> aerial photographs		
	<input type="checkbox"/> topographic maps		
	<input checked="" type="checkbox"/> in-situ data		
	<input checked="" type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments:		
Nomenclature	Name Corine modified	Type <input type="checkbox"/> hierarchical <input checked="" type="checkbox"/> non-hierarchical	No. of classes 7
	Scale / resolution	Minimum mapping unit 1, 2, 5, 25 ha depending on class	Scale Pixel size 25m
Reference date	2005		
Update frequency	4 years		
Initiative status	operational program		
Funding agency			
Responsible Organisation	Statistical Office of the Republic of Slovenia		
Point of Contact (person)	Igor Kuzma		
Email	Igor.kuzma@gov.si		
Telephone	+38612340860		

### 3.5.13. Sweden

#### 3.5.13.1. Initiatives

Initiative description	
Initiative Title (original language)	GSD-Marktäckedata
Initiative Title (English)	GSD-Land Cover
URL	<a href="http://www.lantmateriet.se/templates/LMV_Page.aspx?id=17748&amp;lang=SV">http://www.lantmateriet.se/templates/LMV_Page.aspx?id=17748&amp;lang=SV</a>
Description (English)	GSD–Land Cover is based on interpretation of Landsat TM satellite imagery with additional input data mainly from Lantmäteriet’s map databases (Topographic Map, GGD, Road Map, Vegetation Map, Orthophotos) supplemented with national forest taxation data from the Swedish University of Agricultural Sciences (SLU) and information from the Swedish Meteorological and Hydrological Institute (SMHI), Statistics Sweden (SCB), the Geological Survey of Sweden (SGU), the National Environmental Protection Agency, and the County Administrative Boards’ environmental units. The reference year is 2000. The database contains fifty-eight classes and the minimum mapping unit is 1-25 hectares. The fifty-eight classes in GSD–Land Cover are based on EU specifications, identified user requirements and what is technically and economically possible to map. At the end of this document there is a list of the classes. Depending on the class, the smallest mapped unit is 1, 2, 5 or 25 hectares.
geographic extent (coverage)	national
Data source	<input checked="" type="checkbox"/> satellite name of satellite(s) Landsat TM
	<input checked="" type="checkbox"/> aerial photographs
	<input checked="" type="checkbox"/> topographic maps
	<input type="checkbox"/> in-situ data
	<input type="checkbox"/> field survey
	<input type="checkbox"/> other Other, please specify:
	Additional comments:
Nomenclature	Name Corine modified Type <input checked="" type="checkbox"/> hierarchical <input type="checkbox"/> non-hierarchical No. of classes 58
Scale / resolution	Minimum mapping unit 1, 2, 5, 25 ha depending on class Scale Pixel size 25m
Reference date	2000
Update frequency	5-10 years
Initiative status	operational program
Funding agency	
Responsible Organisation	Lantmäteriet
Point of Contact (person)	Mats Halling
Email	mats.halling@lm.se
Telephone	+4626633603

## Panorama of European Land Monitoring

Initiative description			
Initiative Title (original language)	Nationell inventering av landskapet i Sverige (NILS)		
Initiative Title (English)	National Inventory of Landscapes in Sweden (NILS)		
URL	<a href="http://www.slu.se/sv/centrumbildningar-och-projekt/nils/">http://www.slu.se/sv/centrumbildningar-och-projekt/nils/</a>		
Description (English)	<p>NILS is a nationwide environmental protection program that monitors the conditions and changes in the Swedish landscape and how these changes influence conditions for the biological diversity. The program started in 2003 and is the first Swedish inventory program that includes all types of terrestrial environments. Agricultural land as well as forests, wetlands, shores, alpine and populated environments are inventoried. NILS includes all types of landscapes within the framework of a nationwide random sampling. The random sampling consists of over 600 permanent sample plots (5x5 km) that are inventoried every fifth year. Every year about 120 plots scattered over the entire county are inventoried. NILS, first and foremost, aims to provide data for national environmental protection and follow-up of environmental goals, but will also offer authorities, county administrative boards and other regional programs the benefits of more frequent random sampling. An expansion of NILS will provide increased possibilities of results on a regional level. NILS is organised within SLU at the Department of Forest Resource Management, where NILS is an important part of SLU's area of long-term environmental landscape analysis.</p>		
geographic extent (coverage)	national		
Data source	<input type="checkbox"/> satellite	name of satellite(s)	
	<input checked="" type="checkbox"/> aerial photographs		
	<input type="checkbox"/> topographic maps		
	<input type="checkbox"/> in-situ data		
	<input checked="" type="checkbox"/> field survey		
	<input type="checkbox"/> other	Other, please specify:	
	Additional comments:		
Nomenclature	Name	Type <input type="checkbox"/> hierarchical <input checked="" type="checkbox"/> non-hierarchical	No. of classes
Nomenclature – list the classes in the highest level of the hierarchy			
Scale / resolution	Minimum mapping unit	Scale	Pixel size
Reference date			
Update frequency	5-year cycle	Comment:	
Initiative status	operational program		
Funding agency			
Responsible Organisation	Inst för skoglig resurshushållning, Swedish University of Agricultural Sciences		
Point of Contact (person)	Johan Svensson		
Email	johan.svensson@slu.se		
Telephone	+46 90-7868333		

