

Annual Summary Report 1996



European Environment Agency

European Topic Centre on Land Cover

ANNUAL SUMMARY REPORT 1996

By

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ETC Leader (1996)

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Note

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A great deal of additional information on the European Union is available on the Internet. It can be accessed through the Europa server (<http://europa.eu.int>)

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1. BACKGROUND

The Environmental Satellite Data Centre (MDC) has been appointed the lead organisation of the European Environment Agency's Topic Centre on Land Cover (ETC/LC). This consists of a consortium of 16 ETC-partners:

Environmental Satellite Data Centre	MDC	Sweden
Centro Nacional de Informação Geográfica	CNIG	Portugal
EC Joint Research Centre / Space Applications Institute	JRC / SAI	EC (Ispra, Italy)
Centro Interregionale	CI	Italy
Centre de Recherche Public - Henri Tudor	CRP-HT / G2ere	Luxembourg
Danish Institute of Plant and Soil Science	DIPS	Denmark
Federal Statistic Office	StBA	Germany
Finnish Environment Institute	FEI	Finland
Geospace		Austria
Geographic Information Management	GIM	Belgium
Hellenic Mapping & Cadastral Organisation	HEMCO	Greece
Institute Français de l'Environnement	IFEN	France
Instituto Geográfico Nacional	IGN	Spain
Institute for Terrestrial Ecology	ITE	UK
Natural Resources Development Centre	NRDC	Ireland
Winand Staring Centre for Integrated Land, Soil and Water Research	SC-DLO	The Netherlands

The ETC/LC project leader is Ulf von Sydow. He is supported by a Core Team of four people set up at MDC. A Steering Group consists of MDC, CNIG and JRC/SAI and the Management Committee includes the Steering Group plus DIPS, IFEN, IGN, NRDC and StBA. The full consortium meets twice a year.

In each Member State there is also a National Land Cover Team working with the CORINE land cover inventories. For most of the countries the National Land Cover Team is also the participating organisation in the ETC/LC.

In order to co-ordinate and provide support to the National Teams, a Land Cover Technical Unit (LCTU) was set up in the ETC/LC to continue earlier work done under contract to the European Environment Agency Task Force which was part of the DGXI Environment Directorate until the EEA was established in 1994. The LCTU consists of a small team (CNIG and GIM) operating all over the EEA area with a permanent secretariat at CNIG.

When the frame of the project was defined, some research and development sub-tasks were requested. Those are summarised under the task "Research and Development" and are led and funded by the Joint Research Centre, Space Application Institute (JRC/SAI). A summary of developments within the task is also included in this Annual Summary Report 1996.

2. WORKING METHODS AND COMMUNICATION

General management and co-ordination

The ETC/LC initiated the work in September 1995 with an internal workshop for deciding the R&D programme, under JRC responsibility. The workplan was discussed and contacts prepared during the Autumn. The work started in the different projects in the beginning of 1996. Technical Workplan for the year was prepared, and approved by the Agency. The workplan reflects the request to the ETC/LC from the Agency, as written in the Technical Annex.

The following consortium meetings and important events took place:

Calender	Proj.-Manager ETC Leader	Steering Group	Manag.- Comm.	Partners	Others	Event
February	x	x				NFP/EIONET meeting
February	x	x	x		x	Workgroup data policy
February	x	x	x			Management Meeting
May	x	x	x	x		Consortium Meeting
June	x					NFP/EIONET Meeting
August	x	(x)				Inauguration MDC
October	x					NFP/EIONET Meeting
November	x	(x)			x	Follow-up Committee
November	x	x	x	x		Consortium meeting
December	x				x	Workshop preparation
Total	10	7	4	2	2	

(x)= part of the group

The LCTU Operational Unit

The LCTU was implemented in order to assist and support the National Teams in the implementation and development of their CORINE land cover projects, through methodological and technical support. The LCTU is responsible for guaranteeing consistency and coherence of the land cover results.

The LCTU has been operational all over the EEA area, with a permanent secretariat at CNIG (Lisbon). This unit has been centralising all the information related to the LCTU land cover activities, including reports, received publications from National Land Cover Teams and planning of the LCTU and has reported accordingly to MDC in order to provide EEA with all the relevant information. The requests for Land Cover data submitted to the LCTU were transmitted to GISCO/Eurostat. The LCTU met three times in Lisbon to plan and manage the work programme activities.

The LCTU was present at all meetings of the ETC/LC consortium and represented the EEA and ETC/LC in several meetings.

The JRC / SAI

The JRC Space Application Institute (SAI) is a partner of the ETC/LC, member of the Steering Committee together with the CNIG (Portugal) and MDC (Sweden) and is in charge of the Research & Development related to Land Cover. One task is steering the Topic Centre. It further involves the definition of the work programme according to the priorities defined by EEA, participation in the quarterly and annual reports to EEA, representing EEA or the ETC/LC on meetings, upon request, to promote and to develop inter-Topic Centre activities and information transfer.

The SAI actively participates in meetings at several levels: ETC/LC Steering Committee, Advisory Committee and Consortium meetings, as well as with the EEA Scientific Committee or between the EEA and all the European Topic Centres. SAI was asked to participate on meetings and workshops organised by other Topic Centres to give the contribution of land cover for integrated uses of European databases for environmental assessments. This was mainly done with the ETC on Marine and Coastal Zones and ETC on Nature Conservation.

SAI participated on the elaboration of the Technical Work Programme under the 1995 and 1996 subventions. Four quarterly reports were prepared and the draft 1996 Annual Report of the ETC/LC.

In August a Memorandum of Co-operation between the SAI and the MDC Sweden was signed, which governs SAI activities in the European Topic Centre on Land Cover (ETC/LC) as a partner in the Steering Committee, in charge of the R&D task.

In December a draft of the Technical and Methodological Guide for the Updating of the CORINE land cover inventory was submitted to the Agency.

Information distribution

All information that relates to the Topic Centre is published digitally for all partners to access using a password protected INTRANET. This task also closely co-operates with the initiatives on EIONET to incorporate ideas and standards to the ETC/LC.

The ETC/LC INTRANET provides:

- Technical workprogrammes
- Technical papers
- Task descriptions
- Time-tables
- Addresses
- Guidelines
- Latest news on ETC/LC activities

3. WORK PROGRAMME

The tasks contracted to the ETC/LC are from the Agency's work programme within the project MN4: Land Cover - Ecological Monitoring. The main objectives of the work are to provide and develop land cover information for Europe by:

- continuing the technical co-ordination of national land cover inventories;
- applying and using land cover inventory for environmental and integrated applications;
- identifying needs and executing applied research on land cover.

The specific tasks and the related activities will be introduced in the following chapters.

3.1. Support to National Teams

Co-ordination of data collection

Within this task the Land Cover Technical Unit co-ordinates and supports the national production teams and the EEA in setting up and implementing the CORINE land cover project through technical support to National Teams working with the CORINE land cover inventory, in order to ensure consistency and coherence of results.

Development of guidelines

This task is to ensure a common quality standard by providing a summary of experience, a methodological framework and operational procedures on:

- quality assurance and quality control
- updating
- 4th and 5th level nomenclature

Research and development

The main objectives are:

- to provide scientific and technical support to the EEA, as foreseen in the Agency's Regulation, assisting EEA in formulating scientific requirements and to utilise research results for improving its information provision activities;
- this overall objective is mainly translated by the participation of SAI in the ETC/LC as co-leading partner in charge of the research and development task.

The task is to find and/or check new methods and procedures for more cost and time effectiveness to obtain and update land cover information, focusing on:

- development of indicators
- spatial generalisation procedures
- development of updating
- multimedia presentation

- regional nomenclature

3.2. Support to Users

Environmental applications

This task focuses on the assessment of existing experiences and lessons learnt so far in order to ensure optimal use of land cover data and information.

Application service and strategies

This task is:

- to support users with information about possible uses of the LC-database and how access to the database could be made
- to investigate the most efficient way of collecting, processing and distributing derived and value added land cover information from national teams to the users
- to use output from R&D-tasks by implementing the methods into a production system and produce documentation on how to use these routines
- to produce statistical datasets, spatially generalised datasets, and derived datasets from different, combined, environmental data sources.

3.3. Support to EEA and EIONET

This task includes:

- support to EIONET
- ad hoc support to the Agency
- support to EEA Reporting

4. PROGRESS IN 1996

4.1. Support to National Teams

4.1.1. Co-ordination of data collection

The objective of this task managed by the National Centre for Geographic Information in Portugal is to ensure consistency and coherence of Land Cover data. This is done through the provision of methodological and technical support by the Land Cover Technical Unit to the National Teams and co-ordination, where necessary, on the planning, execution, quality assurance and updating, as well as assistance in the introduction of new operational procedures.

The co-ordination and support to the National Teams began with the identification of the activities to be carried out in each country. A permanent assistance, on demand, of the production concerning the specificity of Alpine and Nordic landscapes was given. Also, assistance to each National Team concerning methodological and technical support on project planning, execution, quality assurance and new operational procedures was provided. This support included technical assistance to the selection of the satellite imagery to be used, as well as the ancillary data and training on the implementation of the methodology, or its developments. Representation of the EEA on initiatives regarding land cover use was provided.

The work programme of this task was carried out through several activities.

State of the art of CORINE Land Cover projects

The main goal of this activity was to elaborate the CORINE land cover (CLC) Directory, based on a two page administrative and technical information per country. This Directory is produced with up to date information and available in printed or in digital format on the ETC/LC Home Page www.mdc.kiruna.se. A second version of the document will be produced in 1997 with overview maps of the land cover data for the countries.

Follow up of CORINE Land Cover projects

The CORINE land cover data was collected in each member state by the National Land Cover Teams. The basic Land cover data is in vector format at scale 1/100 000. During the data collection process, the LCTU co-ordinated the Land Cover projects and gave technical support in order to ensure consistency and coherence of the Land Cover results. Examples of activities identified were:

- identification of the necessary tasks to be carried out in each country in order to complete their CORINE land cover inventories
- verification of interpretation and digitising results

- evaluation of results
- conversion of the national contributions to the European reference system defined by GISCO/Eurostat

By the beginning of 1997 the inventories of 12 EU countries (except UK, Finland and Sweden) and of 6 Phare countries will be finished and delivered to GISCO/Eurostat for integration in the European data base. The land cover database is now covering over 3 million km². The LCTU will provide assistance to GISCO/Eurostat in the integration of the land cover data and in solving the border matching problems.

Evaluation of completed Land Cover data sets

For a number of CORINE land cover data sets some anomalies have been identified that need to be corrected. A first report "Co-ordination and support to the National Teams and EEA", intending to provide the ETC/LC with an overview about the known problems which exist in the LC database currently being prepared for installation by GISCO/Eurostat, was prepared. This report focused on systematic errors and problems existing in the data base in general and in each country specifically. Geometric and thematic interpretation errors still need to be examined for a number of countries. This evaluation has been performed for all data which is considered "final and accepted" in the European Union Member States.

The report presents the general problems which exist in the database in the first part and discusses country specific problems in the second part. Concerning the general description of the problems, the following general errors were found in the database:

- presence of non-existent land cover codes;
- presence of areas smaller than 25 hectares;
- presence in the database of the boundaries of the map sheets (on which the data was collected);
- existence of "holes" in the database between countries and also between regions in a country. This means the edge matching was not correctly done;
- digitisation and/or delivery of the vector data according to different standards: some countries generalised the data to decrease the number of segments per polygon, other countries smoothed the contours.

Concerning the country specific problems, the National Teams have been informed about the problems existing in their data bases. They have the opportunity to make the corrections and send the corrected data to the ETC/LC for integration in the European data base.

Support for implementation of new CORINE Land Cover projects

The implementation of the CLC projects in the "missing" EU countries (United Kingdom, Sweden and Finland) has been followed and advised by the LCTU. Such implementation in these countries is based on methodologies proposed to convert

existing land cover maps into CLC data bases. Those methodologies have been accepted by the LCTU. Nevertheless the LCTU will have to verify and accept the intermediate results of these countries during production.

Addendum to the Technical Guide / Technical Guide, Volume 2

The Addendum to the Technical Guide (which will be published by the EEA as a Topic Report on 1997 with the title: Technical Guide Volume 2) is intended to provide its users with more detailed and precise information regarding some of the contents of the CORINE Land Cover Technical Guide. At the end of 1996 the Addendum to the Technical Guide exists as a first draft. Most of the information needed for the Addendum was produced in the frame of other tasks, especially within the task "Development of guidelines" (see chapter 3.1.2). This Technical Guide will be a key product of the ETC/LC in 1997.

CORINE Land Cover data base management assistance

After the verification and acceptance of the data by the LCTU, the digital land cover data is transferred to GISCO/Eurostat, where they integrated the land cover data in their references, as specified in the GISCO/Eurostat Database Manual, for dissemination to different ETCs and other users.

Technical support was given to GISCO/Eurostat to finalise the chapter on Land Cover of the Eurostat GISCO/Eurostat Data Base Manual. This Manual is available as a final draft; GISCO/Eurostat intends to publish the final version as a Commission report in April 1997. This Manual will help potential users of the CORINE land cover data to access the data.

CORINE Land Cover meta information

For the proper management of the CORINE land cover data a number of missing data sources have been collected for the available map sheets at scale 1/100 000. This meta data, that is organised to facilitate the updating process and the quality assurance/control of the data, is already available for some of the member states and the work will continue under the 97 subvention. Nevertheless, it is important to have this information structured in an application that is easily accessed, user friendly and that can be distributed to the National Teams. Compatibility with the ETC/CDS initiatives will be guaranteed. This prototype is implemented in Microsoft ACCESS and will be attached to the ETC/LC homepage, thus this information is available for public.

4.1.2. Development of Guidelines

Quality assurance and quality control

The development of guidelines for quality control were performed by the Federal Statistical Office of Germany (StBA) under the leadership of CNIG, Portugal. It is the goal of quality assurance and control procedures to achieve high degree of homogeneity

and openness in the data collection process together with a high level of quality e.g. a high geometric accuracy and thematic accuracy in the framework of the CORINE land cover method. National teams have been responsible for the realisation of the CORINE land cover project in their countries.

To integrate national experiences in the application of the method for data collection a questionnaire was distributed. The questionnaire gave an overall view of the application of the CORINE land cover method and provided information on additional methods for quality control in the different steps of the data production.

The technical report on quality assurance and quality control includes detailed information on the application of quality control and assurance techniques on the CORINE land cover production process, as well as a method for statistical validation of the obtained land cover data.

Updating

The main objectives of this task were to identify and assess the existing experiences in updating, to bring elements to technical evolution of updating, to define guidelines for updating the European land cover inventory, to participate in the development of a Technical Guide for the Updating process, in collaboration with JRC and, to prepare the training/technical assistance to National Teams for the updating process.

The methodological guidelines for the updating process are based on the methodology developed by JRC, consisting of a set of rules and procedures to ensure homogeneity amongst the National Teams. To ensure consistency in the updated CORINE land cover database, supervision and, if necessary, training are provided to the National Teams involved in the updating process.

In order to start the work under this task, input from the Research & Development task on updating was necessary. This input concerns the results and conclusions obtained in the evaluation report of the updating prototype and the Technical Guide for Updating that was produced by JRC.

The development of methodological guidelines for the updating process was performed by the National Geographic Institute of Spain (IGN) and the Public Research Centre Henri Tudor (CRP-HT) from Luxembourg, in collaboration with the Joint Research Centre (JRC), Italy, under the leadership of CNIG, Portugal.

4th and 5th level nomenclature

The main objective of this study was to produce an assessment report with an overview on the state of the art of existing Land Cover inventories in Europe at local or regional level, which are based on the refinement of the European CORINE land cover nomenclature system.

In respect of the wide range of regional/local objectives, natural conditions and methodologies, on the one hand, and of the interest in having some consistency in land cover monitoring in an environmental perspective, on the other hand, a flexible strategy was proposed to the EEA.

Cost/efficiency does not push in a way where larger scales (e.g. 1:25 000) and more refined nomenclature (e.g. level 5), are necessary or even relevant in any case. Mapping is not the only way of collecting data on land cover (and, more, on connected biotopes and land uses). The use of a GIS (Geographic Information System), the combination of mapping and statistical (sampling) methodologies offer solutions which are altogether cheaper and more efficient. However, the refinement of the European land cover database at scale 1:100 000 at level 3 is in many cases required. These cases are to be identified and analysed clearly in order to propose adequate solutions.

European policy requirements and regional/local requirements need to be distinguished. Only for the first one, standard methodologies will be developed and implemented. In order to answer demands from regional/local initiatives, it is proposed that the EEA plays the role of facilitator by making the best methodologies available. This could be done by editing guidelines which could illustrate the possible approaches for specific issues while ensuring some consistency with the European CLC. This balance is essential both for the Agency (building up the European environment information system) and the regional/local users (possibility of comparisons with similar situations).

Accordingly, the following was proposed by the ETC/LC:

- limitation of standardised more detailed land cover inventories to areas of major environmental policy interest at European level. Priority could be given to the monitoring of the Habitats of the Directive and to the monitoring of the Coastal Zones.
- introduction of smaller mapped units when updating the European CORINE land cover data. This improvement could provide a practical solution to many difficulties and secure, in the future, a better assessment of land cover changes.
- integration of CORINE land cover with other databases such as a digital elevation model in order to produce more detailed land units by automatic combination on a GIS.
- development of geo-statistical approaches in order to integrate field data in landscape databases developed from CORINE land cover. This integration is essential both for bio-physical data and socio-economic data.

The technical reports on Quality Assurance and Quality Control, Updating, 4th and 5th level Nomenclature will contribute to the Addendum of the Technical Guide which will be published in 1997.

4.1.3. Research and Development

The main activities carried out within the framework of the ETC/LC were to define, launch and follow up the research and development activities related to land cover, relevant to the production tasks and to the integrated use of the database.

The defined Work Programme for the Research and Development Task was accomplished as foreseen for 1996. Studies were launched and monitored for 5 sub-tasks:

Development of environmental indicators

derived from the CORINE land cover database, in combination with other sources of information. It was mainly linked with the needs for nature conservation.

Spatial generalisation

to study and to establish a method which permits to apply spatial generalisation to generate or to be compared with CLC for further integration. The priority was given to the methods necessary to finalise the CLC database in countries where the database is not complete.

Updating the CLC database

the global assessment of the methodology and prototype computer system developed by SAI to update the CLC database was achieved. The draft Technical and Methodological Guide for the Updating of the CLC database was presented to the EEA and its publication will occur as a joint JRC/EEA publication in 1997.

Regional nomenclature workshops and pilot project

the objective was to define a nomenclature at 4th and 5th levels for different European regions. Two workshops were held: one for Alpine (mountain) areas, for which the Alpine Observatory was invited and participated and another on Nature Conservation with the participation of the Topic Centre on Nature Conservation.

Feasibility study for the Lacoast Project (Land Cover Changes in the European Coastal Zone)

which contributes to all the R&D aspects being studied by the ETC/LC, and represents a practical application of the CLC database at European level as a fundamental input for monitoring changes in land cover for further environmental assessments. The main user of the results of the project is EEA and EIONET, especially as a valuable input for the work developed by the ETC on Marine and Coastal Environment on environmental indicators. Other Commission services participating in the Programme for the Integrated Coastal management are potential users of the results.

The following reports were produced under the Research and Development Task and available from JRC:

- “Test of the prototype system developed for the updating of CORINE land cover database - Final Evaluation”, May 1996.
- “Besoin des utilisateurs de CORINE land cover en matière de nomenclature spécifique - cas des zones de montagne et de la conservation de la nature”, August 1996.
- “Proposition de nomenclature 4 et 5 sur CORINE land cover pour les espaces naturels gérés”, November 1996.
- “Technical and methodological guide for the updating of the CORINE land cover database”, December 1996, to be published as joint JRC/EEA product in 1997.

4.2. Support to Users

4.2.1. Environmental Applications

Workshop "Land Cover Applications and User Needs"

A first Workshop on “Land Cover - Applications and User Needs” was organised by the European Environment Agency and was held on 7-8 November 1995 in Copenhagen. In the frame of the 1995 subvention to the ETC/LC, a report on the workshop was produced by the ETC/LC partner Winand Staring Centre for Integrated Land, Soil and Water Research (SC-DLO), The Netherlands. This report which is available from EEA, is a summary of the presentations and the discussions, as well as recommendations made by workshop participants. Some additional material is attached as appendices including the contribution by the Centre of Earth Observation (CEO) which is the complete CEO Concept.

The original idea with the workshop report was to develop on this basis a general assessment report with a discussion on user needs and recommendations for applications. Because of limited resources this was not possible. Thus this report is mainly to be seen as minutes of the workshop and as a basis for future and further discussions on this matter. The information will be used for the production of the “Assessment Report on LC results obtained and future outlooks ” and as a basis for the second Workshop on Land Cover foreseen in May 1997.

Assessment of Land Cover results obtained and future outlooks

The assessment report prepared by the Danish Institute of Plant and Soil Science covers the EEA member countries, as well as Switzerland and the Phare countries. The collected information has been obtained by means of questionnaires. Through this survey, information was collected on the type of existing and planned land cover and land use inventories at national and regional level, the organisation of work, the applied methodology and the use of the data for different applications.

Correspondence to other themes

This task of looking at correspondence to other themes as a basis for integrated approaches, conducted by the Institute for Terrestrial Ecology aims to examine a range of key European land cover and land use classifications, to see how they compare and contrast and to devise a versatile, operational system for translation between surveys, for integrated use of the maps and data.

During this first phase of the project, a prototype software system has been built and populated with attribute data for a sample of surveys. These surveys range from the national to the global in their intended extent, they incorporate land cover, land use and hybrid classifications, they involve maps and statistical data. In 1997, the software will be refined and converted to full operation. This will include a user-friendly 'front end' to make the interrogations entirely transparent to the user.

4.2.2. Application Service and Strategies

Helpdesk management and application service

The main goal of this task managed by the Environmental Satellite Data Centre is to support users with information about possible uses of the LC inventory and how access to the database could be made. This is made through a helpdesk service where clients can communicate with the ETC/LC through telephone, fax, e-mail or WWW. The helpdesk promotes the use of the ETC/LC database by publishing work that has been done on the database. It also helps the ETC/LC to consider initiatives to develop new uses of the database. The main feature of the helpdesk is the ETC homepage: www.mdc.kiruna.se.

This homepage is continuously updated. Information can be found on all tasks within the ETC/LC and participating partners. All official reports will also be published here. A recent development is the addition of a server-database (ORACLE) to the Internet server. This will make it possible to search and publish larger amounts of data. The first step which is still under construction is the implementation of the CLC-directory within this database.

Examples on operational uses of earth observation data are published on the homepage. This will be extended with illustrative examples on the present use of earth observation data in isolation or in combination with land cover data. This is designed to help stimulate the use of land cover datasets.

Strategy for data storage and dissemination

This task has been performed in close connection with GISCO/Eurostat and EIONET and the work is co-ordinated with the international work developed at JRC and EUROSTAT on standardisation of geographic exchange formats and meta data. This

task includes adoption of the standards for data-documentation and structuring developed by GISCO/Eurostat.

The work started in late November 1996. Initial work has been to get an overview of different organisations to review their work on data storage and distribution. Of specific interest are:

- ETC/CDS: for their work on meta data.
- CEN/TC-287: this is a standardisation work on meta data and data structures for data distribution. It is important that the Agency recognises and observes these standardisations.
- CEO-CIP: this is a work for interoperability between different catalogues mainly for earth observation data but which could be of interest for EEA.
- GISCO/Eurostat: for their role as a final repository for geographical data produced by the EC.

4.3. Support to EEA and EIONET

4.3.1. Support to the Development of EIONET

The Project Leader participated in the NFP/EIONET meetings in November 1995, February, June and October 1996 and made presentations of the state of the art for the Topic Centre. The requests and possible contributions from the ETC/LC to the EEA discussion on forest issues were discussed at the EEA Workshop on Forest Information in October 1996. The ETC/LC was also present at the EEA Workshop on Environmental Indicators in November 1996.

The ETC/LC also participated in workshops together with ETC/Nature (Paris; June), Marine and Coastal Zones (Lisbon; November) and Eurostat (Luxembourg; September) for discussions on closer co-operation between the centres.

ETC/LC published 3 Newsletters to inform the EIONET group on land cover related activities.

4.3.2. Ad-hoc Support to the EEA

The Project Leader represented the Agency as a member of the Thematic Co-operation Group on Operational Environmental Monitoring, set up under DG XII, Space. The Group has met four times and conducted a survey of the use of satellite earth observation for operational environmental monitoring in Europe. The survey will be published during 1997. A discussion within the Group has started with the aim, if possible, to implement the survey on the ETC/LC Homepage, to which there is a connection from the EEA Homepage to enable the survey to be searchable within the EIONET.

4.3.3. *Support to EEA Reporting*

The ETC/LC consortium has discussed, and proposed to EEA, possible contributions for the following chapters in Dobris+3 report:

- Socio-economic developments
- Nature and Biodiversity
- Water
- Climate change
- Nature / Protected areas
- Coastal zones
- Acidification
- Nature / Landscapes
- Soil degradation
- Chemicals
- Forests
- Urban environment

The proposals were summarised in a paper "Possible contributions of ETC/LC to EEA Reporting". The proposals refer mostly to CORINE land cover data which will be available in 1997 with full coverage for EU (except for the United Kingdom, Sweden and Finland), other Central and Eastern European Countries (PHARE Partner Countries) and North Africa (coastal regions of Morocco and Tunisia).

The preparation and processing work for the Dobris+3 reporting will be carried out in 1997.

5. OVERVIEW OF PRODUCTS / DELIVERABLES IN 1996

Type of product	Title	Main user	status	Delivery date
Topic Reports	CORINE land cover Directory 1996	MS, Public	final draft	12 Dec. 1996
	Assessment report on Land Cover results	EC, MS, Public	final draft	12 Dec. 1996
Technical Reports	Quality Assurance / Quality Control	EEA/ETC Nat. Teams	final draft	12 Dec. 1996
	Updating	EEA/ETC Nat. Teams	final draft	12 Dec. 1996
	CORINE LC 4 th & 5 th level Nomenclature	Nat. Teams	final draft	12 Dec. 1996
Database	CORINE Land Cover	EC, EEA, MS, Public	available	15 Dec 1996
Applications	Homepage	EC, MS, Public	accessible on WWW	8 June 1996
Newsletter	ETC LC Newsletter Issue 1, 2 and 3	Public	printed	Dec. 1995 Jun. 1996 Oct. 1996

Additionally those products which are developed and published under responsibility of JRC

Type of product	Title	Main user	Version	Delivery date
Technical Report	Technical and Methodological Guide for Updating CORINE Land Cover	Nat. Teams	final draft	12 Dec. 1996

6. WORK PROGRAMME FOR 1997

Most of the projects are continuing into the second year of the ETC/LC. The work will concentrate on

- contribution to EEA reporting,
- continuing the co-ordination of the land cover data collection at national and European level especially related to updating the database,
- integration of the national land cover inventories into the European land cover database,
- implementation of the meta data collection on land cover,
- finalise the project on correspondence to other themes as basis for integrated approaches,
- develop the application service and strategies.

The ETC/LC will play a key role in the integration of land cover information with other environmental data from other ETCs. The R&D tasks will emphasise on land cover change monitoring and investigate the integration of bio-physical with socio-economic data.

Second Workshop on "Land Cover Applications and User Needs"

To gather information about the state of the art, a workshop will be held in May 1997 to discuss the operational and potential use of land cover data in environmental monitoring programmes. The workshop aims to bring together both experts in land cover applications and European users. One important aspect is to assess the potential use of existing information for European policy issues as well as improvements and new products needed to fulfil user requirements.

The results of the workshop, presented in a report, will enable the ETC/LC to make adjustments of its work plan according to user needs. A concept-report for the workshop has been prepared and has been submitted to EEA. Experiences and user requirements have been described in the field of nature conservation, physical planning, coastal zones, agriculture, transport, forestry, green accounting and water management. Especially, the role of the CORINE land cover database will be discussed. Priorities will be defined for support to European applications.

Implementation and Production of Generalised, Aggregated Data and Indicators

Methods developed within R&D tasks on "indicators" and "spatial generalisation" will be implemented for use by potential customers. When implemented, they will be used on demand to provide information and distribute different types of value added datasets. This includes production of statistical datasets, spatially generalised datasets, and spatial analysis combining land cover with different environmental data sources.

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This is the first Annual Summary Report from the European Environment Agency's Topic Centre on Land Cover (ETC/LC) which was appointed in December 1995.

The report summarises and highlights the main activities and findings in 1996:

- Production and Support to National Teams
- Development of Guidelines
- Environmental Applications
- Application Service and Strategies
- Research and Development (led and funded by Joint Research Centre, Space Application Institute) as well as the main actions in supporting EEA and EIONET which is part of the overall mission of each ETC.

The tasks carried out by the ETC/LC in 1996 were focused on work to provide and develop land cover information for Europe by:

- continuing the technical co-ordination of national land cover inventories and integration into a European land cover database;
- applying and using the land cover inventory for environmental and integrated applications;
- identifying needs and executing applied research on land cover

In this frame the ETC/LC developed overviews of running projects, existing data and applications and their use and availability as well as reviewed the experience in the CORINE land cover methodology and developed guidelines on updating, quality assurance and the further development of the CORINE nomenclature.



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