European Topic Center
Terrestrial Environment

EUROSTAT

Integration of geographical and statistical data in the environmental accounting framework; methodological development based on two case studies

Action 1:
Accounts of the impacts on Forest and Biodiversity of Land Cover/Land Use changes; case from the land cover changes 1975-90 in the 4 Central and Eastern European countries

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Report of the European Topic Centre on Terrestrial Environment,
with the support of the European Environment Agency,
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The Development of Land Cover Accounts and Environmental Indicators for the Forest and Biodiversity for the 4 CEE Countries: Final Report

Introduction

This report is a second part of the work done by the European Topic Centre on Terrestrial Environment with the support of the European Environment Agency on *Integration of geographical and statistical data in the environmental accounting framework.* This part is geographically focused on the 4 Central and Eastern European (CEE) countries, the Czech Republic, Hungary, Slovakia and Romania, and thematically on forest and forest biodiversity issues. In evaluating the contribution of this study to the general development of the environmental accounts, the outputs should be considered alongside those of a parallel study on the coastal zones in Europe, also funded by the present contract, which uses the same concepts and similar data and analytical methods to address a different set of environmental issues.

The aims of this part of the work were as follows:

i. To produce a set of environmental indicators based on CORINE Land Cover data using the concept of land cover accounting as a decision making and integrating framework for forest issues and biodiversity

ii. To investigate the feasibility of producing more general land cover account at the European scale

iii. To raise general awareness of land cover accounts concept as a framework for indicator development.

The structure of this report is as follows. This introductory chapter reminds the common information on the background, the context of the study and the general concepts presented already in coastal part of the study with some amendments reflecting specifics of forest and biodiversity issues. In Part 2, the data sources used for the study are described. In Part 3, the construction of the basic account are described in detail. The analytical methods used to create the basic accounts are summarised here and the results and first assessment are provided. Similarly, in Parts 4, the theoretical concepts underlying the construction of the targeted account are described in detail, methods used to create the targeted accounts are presented and results summarised. Part 5 presents the contribution of forest accounting for forest indicators development Finally, the outputs of this study and the implications of this project for subsequent work are discussed. Detailed versions of all accounts are included in Annex.

Part 1: Background, Context and General Concepts

1.1 Background and Context for Study

The need to develop and apply systems of environmental accounting has been widely recognised by the international community. In the 1990s for example, *Agenda 21* highlighted the need for reform of national systems of economic accounting to ensure that the environmental impacts of economic activity are to be expressed clearly. As a result subsequent work has sought to develop different ways of 'taking the environment into account'.

A key stimulus to recent work has been activities of the 'London Group' of the United Nations Statistical Division[1], which aims to provide an annual forum for leading countries and international organisations to exchange practical and conceptual expertise with respect to the development of environmental accounts linked to the System of National Accounts. Their goal is to play a leading role in defining international standards in the theory and practice of environmental accounting.

Reviews of approaches provided by the London Group and others broadly leads to the definition of environmental accounting as any method that records changes, directly or indirectly, in the quantity or quality of the environment where change is expressed in monetary or physical units. In this sense two broad approaches can be recognised:

- Monetary Environmental Accounting (MEA), in which changes in the status of environmental assets or resources are given monetary value.
- Physical Environmental Accounting (PEA), in which changes in the status of environmental assets or resources are expressed in appropriate physical units, rather than in non-monetary terms.

This study focuses on one type of PEA, namely *Land and Ecosystems Accounts*[2] (LEAC). These accounts deal with changes in land cover and land use and seek to trace the wider implications environmental, social and economic implications of these transformations.

The methodology, which PEA is based on, has been developed in a consistent way since mid-90's, as the result of a pilot study sponsored by the UNECE and published by IFEN[3] in 1995.

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1 http://unstats.un.org/unsd/environment/londongroup.htm

2 SEEA 2000, draft version, Chapter IX, section C, *London Group website and CBS of the Netherlands, papers of the London Group meeting, Voorburg, 7-11 May 2001* and Emission Structure Information System : Physical Accounts for Land cover /Land use and related Changes in Artificiality of Land and Biodiversity" *report for Eurostat by IFEN with contributions from StBA of Germany and the University of Nottingham, 1997.*

3 Physical Environmental Accounting : Land Use/ Land Cover, Nutrients and the Environment, *UN-Economic Commission for Europe, Etudes et Travaux n°4, IFEN, Orléans, France, 1995.*

The results were presented, the following year, with 3 communications at the IARIW Special Conference on *Environment accounting in theory and practice* in Tokyo[4].

The research continued in the context of a task force at Eurostat with a set of 3 case studies in France, UK and Germany[5]. These were designed to assess:

- the possibility of building up accounts on CORINE Land Cover (an assessment in Franche-Comté, France);
- the benefits for reporting in an accounting framework an the stratification of land requested (from the Countryside Survey, UK);
- the linkages of land accounts and sectors (Germany)

As a result of such work, the Eurostat working group6 argued that *"... land accounting techniques, with linkages to both human activities and natural processes, can be regarded as a useful tool for responding to a number of issues set out by policy objectives*". It was suggested that these included:

- Biodiversity and habitats
- Intensity of land use
- Urbanisation and, in general, changes in land use
- Linear features
- Spatial fragmentation and contiguity
- Soil sealing
- Tranquillity and resilience of ecosystems
- Possibly net primary production and climate change

Initial research on LEAC has led on to the drafting of the Section C (Land and ecosystem accounts) in Chapter VII (Specific resource accounts) of the new SEEA (System of Environmental and Economic Accounting, SEEA 2000, draft version)[7].

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4 Jonathan Parker, Anton Steurer, Ronan Uhel and Jean-Louis Weber, A general model for land cover and land use accounting (Drafted from the report of the UN-ECE Task Force on Physical Environmental Accounting), Invited paper, IARIW Special Conference on « Environmental Accounting in Theory and Practice », Tokyo, March 5-8, 1996; Andrew Stott, Roy Haines-Young, Linking Land Cover, Intensity of Use and Botanical Diversity in an Accounting framework in the UK, Invited Paper, IARIW Special Conference...;Walter Radermacher, Land Use Accounting - Pressure Indicators for Economic Activities, Invited Paper, IARIW Special Conference...

5 Jean-Louis Weber (French Institute of Environment, IFEN), Philippe Cour & François-Pierre Tourneux (Unisfere-Besançon, France), Roy Haines-Young (University of Nottingham, UK), Elle Krack-Roberg & Dieter Schäfer, (Federal Statistical Office of Germany, StBA), Emission Structure Information System : Physical Accounts for Land cover /Land use and related Changes in Artificiality of Land and Biodiversity, Final Report of the Contract n°B4-3040/96/021, Eurostat, 1997

6 Land Accounting - Proposals for a Work programme, A preliminary report by Eurostat B1 for the joint meeting of the Environmental Statistics Working Group and the Environmental Accounts Working Party, 9-11 September 1998

7 SEEA, System of Environmental and Economic Accounts, rev. 2000, Chapter 8, Section F Land and Ecosystems Accounts, §8.336 to §8.399 – Draft prepared by the London Group on Environmental

Despite such progress, while the usefulness of the overall approach to LEAC has been established, further empirical applications of the techniques are required to demonstrate the value of Europe-wide applications. When the Topic Centre on Terrestrial Environment of the EEA was created end of 2001, EUROSTAT proposed to test the draft "LEAC" methodology, in view of its possible implementation with CORINE land cover data and European statistics in context of undergoing I&CLC2000 project resulting in CLC database update in 2004. Two case studies were agreed upon for two areas were CLC data on change were already available: the European coast (LACOAST project of the JRC, 1975-1990) and 4 countries of Central Europe (Czech Republic, Slovakia, Hungary and Romania) which have made an assessment of retrospective CLC for 1975 for the EEA[8], and also have available the PHARE inventory of 1990.

This Report follows the first study focused on the coastal zones of Europe and describes the LEAC approach, which can be useful in the context of understanding land use and land cover changes on country or European-wide level, in particular referring to forest and biodiversity issues. Some adjustments to methodology have been considered working with multi-country wide data and the results are published further in Parts 3, 4 and Annex.

1.2 Justification and contribution of the project

The justification for this project lies in the potential contribution of environmental accounts to tasks such as preparing 'state of the environment reports', and the development and appraisal of environmental policy. In general terms, the main purpose of preparing accounts is to draw up a 'balance sheet' for a set of environmental resources that shows both their current stock and how these stocks are changing over time. The analysis of these temporal changes is, however, particularly significant because accounts seek go beyond the simple plotting of the stocks of resources over time in a simple graphical manner to look at the processes that transform those resources. Thus the construction of 'flow accounts' is particularly significant in this context.

The idea of a flow account, as they might be applied to problem of understanding land cover change is illustrated in Figure 1.1. If the stocks (area) of a given land cover resource, such as woodland, are tracked over time, the change observed is determined by the balance of gains and losses to the initial stock. While in some contexts, an analysis of the net change in area of woodland may be important, it is clearly just as important to understand how the stock 'turns over', because the flux of land into and out of this land cover category may also affect the quality of the woodland resource that is carried forward over time. In terms of making a judgement about the sustainability of the net woodland change, for example, the quality of the woodland resource at the end of the accounting period would only be maintained if the new woodland gained compensated in some way for the woodlands lost.

Looked at in this way, flow accounts in particular provide a powerful set of tools for both monitoring environmental resources, and for evaluating different policy options. They can, for

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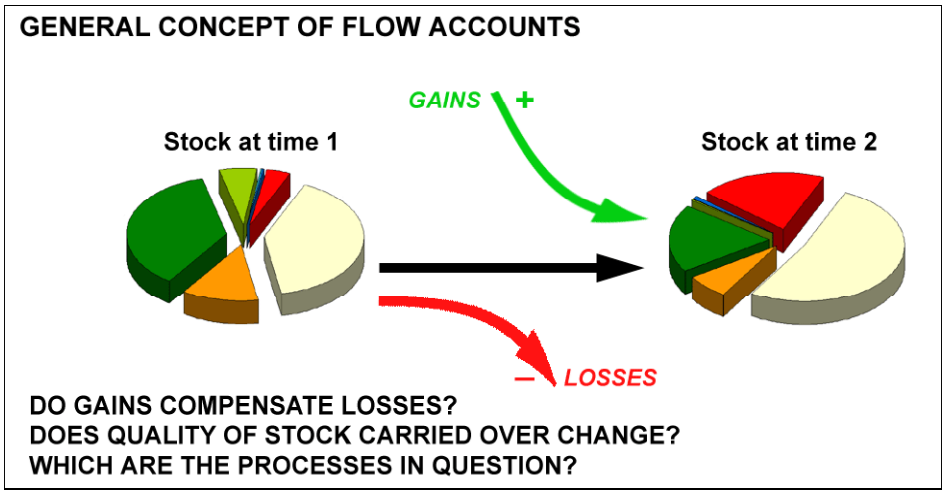
Accounting and submitted to the UN Statistical Commission in March 2001 – forthcoming publication by UN.

8 PTL/LC (1999) - Inventory and Analysis of Major Land Cover Changes in Central and Eastern Europe over the Past 20 Years, Topic Report, EEA Phare Topic Link on Land Cover (PTL/LC), GISAT

example, provide a systematic basis for the development of indicators of change. In the context of illustration provided by Figure 1.1, for example, the proportion of the initial stock carried over from time 1 to time 2 could serve as a potential sustainable development indicator. In addition, by expressing the flows into and out of the different resource categories in a clear and consistent and comprehensive way, targets for future resource levels can be identified, together with the potential costs of encouraging or preventing certain types of transformation.

Figure 1.1 – General concept of flow accounts



The application of environmental accounting techniques is particularly appropriate in the context of forests sustainable development and its spatial dimension – one of priority policy issues at EU level. Forests are a complex and multifunctional natural asset which is at the same time an economic resource for timber, other wood products and non-wood products, an amenity of high value for urban as well as rural population, a protection of soil against erosion and a major reserve of biodiversity, in itself as well as due to its interfaces with other types of landscapes. Forests are unevenly distributed over Europe and their biological characteristics vary from the North to the South. Ahead of a possible over-harvesting and landtake by urbanisation, pressure on forests relate to their increasing fragmentation by transport networks, acidification and soil contamination, selection of species with a unique interset in timber and pulp production and the multiplication of forest fires. Sustainable forests policies aim at a balanced management.

Europe's forest biodiversity is under pressure, with a significant proportion of the protected species and habitats under European Directives being forest-related. Forestry and biodiversity issues are therefore among the priorities, resulting in the Convention on Biological Diversity, the Forest Principles and a forest component of *Agenda 21*. In Europe, activities to implement these commitments have resulted, for example, in the `*Environment for Europe*' process endorsed by the Environment Ministers and the Ministerial Conferences for Protection of Forests in Europe (MCPFE)[9] set up by the Forest Ministers. MCPFE has developed a set of Pan-European Criteria, Indicators and Operational Level Guidelines for Sustainable Forest Management. The EU has implemented these concerns in, for example, *the Habitats Directive*[10], *the Community Forestry Strategy*[11] *and Community Biodiversity Strategy*[12] and,

9 MCPFE - www.minconf-forests.net

10 EU Habitats Directive 92/43/EEC

11 European Community strategy and action programme for the forestry sector - COM(88) 255

most recently, *the Biodiversity Action Plans*[13] and *the 6th Environmental Action Plan (EAP)*[14].

The need to understand patterns of land use and land cover change are recognised as essential elements of future strategies designed to overcome the problems with biodiversity loss through sustainable management of European forests. **This project therefore represents one step towards the creation of the information base to support these strategies.**

1.3 General concepts

1.3.1 Types of Account

Stock and change accounts for land cover and land use

For a given region or country there is a finite stock of land[15], the characteristics of which are determined by physical and ecological factors such as relief, geology, climate, vegetation and soils, together with a range of cultural and economic factors associated with the human use of those areas. However, the character of the land resource is not fixed, for with long-term environment change, and changing patterns of human development, the character of the land resource can be transformed over time. ***Stock accounts*** are one way of describing what types of land resources exist, and what kinds of changes occur over time.

In order to understand some of the key the issues underlying the construction of stock accounts for land, it is important to make a distinction between ***land cover,*** which is a description of the physical or ecological state of a given parcel of land, and ***land use,*** which is determined more by the human activities that the land supports, or its wider cultural or historic value. The distinction is important to make, for it is clear that in describing land resources, there is no simple relationship between cover and use. Thus a single cover type, such as woodland, may have a number of uses. In one area, for example that woodland may have an economic use though forestry. In another, it may have a recreational use. Conversely, a particular type of land use many involve many different cover types. 'Agriculture', is for example, a specific type of land use that may include a range of different cover types. The complexity of the relationship between land cover and land use is increased further in those situations where a single cover type can have **multiple** uses. The analysis of **multifunctional land use** or **landscapes, and the compatibility and conflicts between different types of land uses,** has emerged as an important issue within the EU, and it is one that can clearly be addressed by the development of land accounting techniques.

Various schemes have been devised to classify different types of land cover and land use. We may therefore exploit and use them to construct a set of related land cover and use accounts,

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12 European Community Biodiversity Strategy - COM (98)42

13 European Community Biodiversity Action Plans, - COM (2001) 162

14 The Sixth Environment Action Programme - COM(2001)31

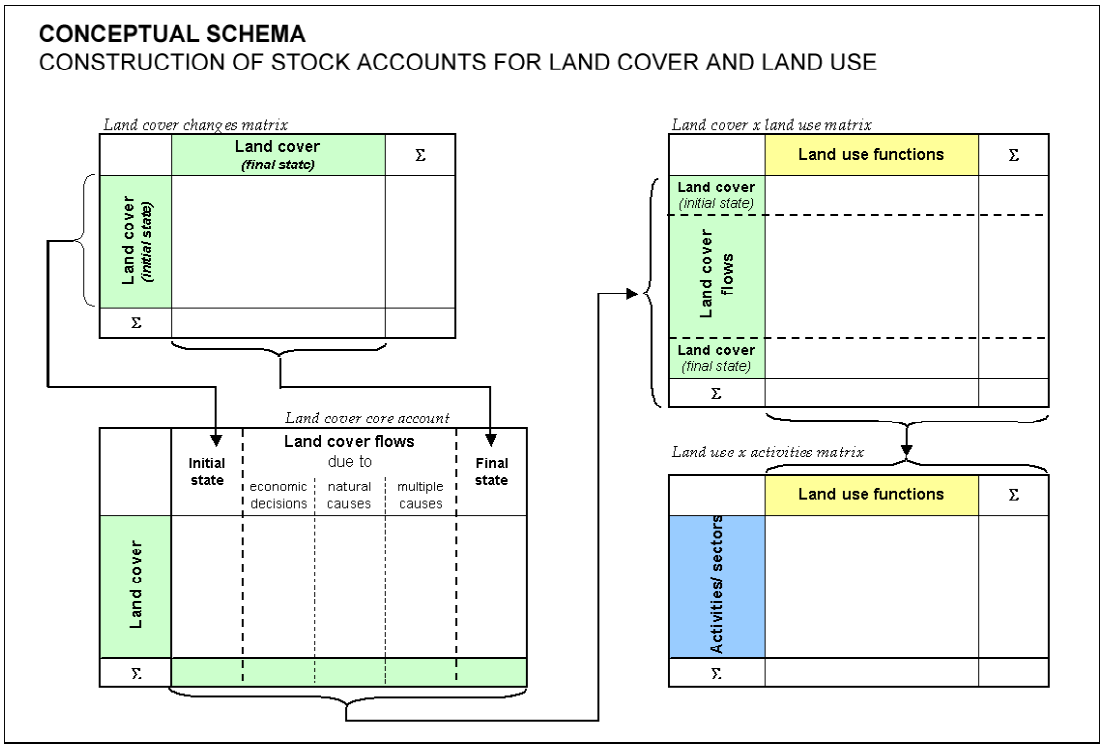
15 Locally or other long periods of time, this is not absolutely true and the LEAC will have to reflect these changes. Exceptions are of limited natural phenomena such as consequences of volcanic and seismic events. Coastal erosion and progradation or the creation of polders, some harbour or airport infrastructure or marinas reduce or expand land available for human use.

which ultimately map out how they change over time. A particularly valuable hierarchical classification scheme for land cover is the one devised for CORINE, which was developed as a result of the EU's need to provide up to date information on land cover at scale 1:100.000 for the whole Europe. The classification scheme at its more detailed level includes 44 categories of land cover based on a standard European nomenclature (level 3). These can be aggregated into 15, more general groups at level 2, or just five large groups at level 1, namely artificial surfaces, agricultural areas, forest and semi-natural areas, wetlands, water bodies.

In respect of land use, other classification schemes exist, including the Standard Statistical Classification of land use published by the Economic Commission for Europe (ECE). Such classifications are often problematic in that they often mix cover and use categories, and as a result they are often difficult to apply. For this project, a purpose-built classification of use was constructed, the details of which will be given below.

A conceptual schema showing how stock and change accounts for land cover and use can be constructed land cover is shown on Figure 1.2. A matrix can, for example, be used to show how the stock of land in each cover category changes over time. Such a device is particularly useful, because it records the transfers between categories as well as the overall change a given stock category exhibits over the 'accounting period'. Traditionally, such a change matrix has been used to present data on cover change from the analysis of satellite imagery or field survey data. Key features to note about the matrix are that the diagonal shows the proportion of each stock category that is stable over the monitoring period, while the row and column totals show the total initial and final stocks for each category.

Figure 1.2 - Conceptual schema for the construction of stock accounts for land cover and land use



These transformations expressed in the change matrix can be presented more clearly by constructing the table shown in Figure 1.2. (down-left), which shows for each cover type the

opening and closing balance, and the magnitude of the gains and losses due to various natural and economic factors. Such a Table is known as a **flow account**[16].

In the Table the (+) and the (-) values are explicit for each land cover, so that the final stock will equal the initial stock plus the algebraic sum of the flows into and out of that category. The ability to classify and represent these different types of transformation is a particular advantage of this kind of table over the simple matrix approach shown in Figure 1.2. (up-left). In order to trace some of the implications of the changes in stock which are shown in a table like that on Figure 1.2 (down-left), a further matrix can be constructed, showing the multiple relationships between land cover and land use (Figure 1.2 up-right). Such a matrix is particularly useful, because it represents the first step in relating land cover and use change to the various economic activity areas that are often a key aspect of any long term-policy strategy. In the schema shown in Figure 1.2, the flow account has a particularly important role to play.

Figure 1.3 – Example of cover account derived from the UK Countryside Survey

LAND COVER ACCOUNT
GREAT BRITAIN 1990 - 1998

	Types of changes in stock											
	1990 Stock	Woodland creation	Woodland rotation	Agricultural intensification	Agricultural rotation	Semi-natural creation	Semi-natural rotation	Water body creation	Development	Developed land recycling	Losses unknown	**1998 Stock**
Broadleaved and mixed woodland	1 371.2	132,4	13,5	-22,2		-42,1		-0,8	-12,9		-0,4	1 439.7
Coniferous woodland	1 369.3	67,2	-13,5	-9		-48,3		-0,6	-5		0	1 360.2
Woodland sub-total	2 740.5	211,6	0	-31,2		-90,4		-1,4	-17,8		-0,4	2 798.9
Arable and horticultural	5 246.1	-28,8		58,2	118,2	-41,4		-1	-14,3		-0,2	5 336.9
Improved grassland	5 538.6	-34,1		341	-118,2	-232		-0,5	-53,9		-5,3	5 435.5
Intensive agriculture sub-total	10 784.7	-62,8		400,2	0	-273,4		-1,5	-73,2		-5,5	10 768.4
Neutral grassland	569,5	-24,4		-153,6		236,9	-16,2	-0,5	-33,2		-0,1	576,3
Calcareous grassland	81,4	-1,1		-13,3		3,7	-3,8	0	-0,2		0	66,7
Acid grassland	1 470.9	-24		-133,7		43,3	-34,7	0	-4,6		-0,7	1 316.5
Bracken	456,9	-21,8		-8,7		20,4	38,9	0	-0,5		0	485,1
Dwarf shrub heath	1 487.1	24,5		1,2		13,1	41,4	0	3,3		0	1 429.7
Fen, marsh, and swamp	456,4	-6,1		-25,1		61	71,3	-0,7	-1,2		-0,6	554,9
Bog	2 297.3	17,9		0,7		10,5	10,1	0,3	0,2		0,1	2 278.5
Montane	49,8	0		0		0	0	0	0		0	49,8
Coastal habitats	274,1	-0,3		-0,8		2,6	-2	-0,3	0		0	273,3
Semi-natural sub-total	7 143.3	-120,1		-337,2		393,5	0	-1,8	-43,2		-1,5	7 032.9
Standing open water and canals	208,4	-0,2		-1		-0,9		5,2	-1,2		0	210,3
Rivers and streams	66,7	-0,2		-0,1		-1,4		0,3	-0,1		0	65,2
Water bodies sub-total	275,1	-0,4		-1,1		-2,3		5,5	-1,2		-0,1	275,5
Inland rock	53,6	-0,6		-2,2		-7,6		0	13,2	3,8	0	60,2
Built up areas and gardens	1 230.4	-14,2		-12,3		-9,4		-0,7	100,4	-2,1	-1,2	1 291.0
Boundary and linear features	495	-1		-14,5		-7,8		-0,1	21,9	-1,7	-0,1	491,7
Developed sub-total	1 779.0	-15,9		-28,9		-24,8		-0,8	135,5	0	-1,3	1 842.9
Sea	298,5	0		0		-0,7		0	0		0	297,8
Unknown	73,9	-0,3		-1,8		-2		0	0		8,8	78,6
Unsurveyed urban land	463											463
Total	23 557.9	0	0	0	0	0	0	0	0	0	0	23 556.0

Source: Department for Environment, Food and Rural Affairs

Areas which are more than 75% built up were not covered by the survey.

16 Also known as a 'screen account' in traditional accounting practice

Figure 1.3 shows an example of a real account constructed using data from the UK's Countryside Survey. In this account, the flows or types of change are classified into such processes as 'woodland creation', 'agricultural intensification', and 'development'.

More generally, for the SEEA it has been accepted that the main flows that should be distinguished are “changes due to economic decisions”, “changes due to natural causes” and “changes due to multiple causes”. Similar approach has been applied in the PTL/LC study done for EEA[17] in 1999, where 7 main flows has been defined on CLC level 2 (see Figure 1.4).

Similar approach has been applied here, too, but in case of this study for the 4 CEE countries, it was implemented by classifying the flows represented by the 15x44 CLC (level2/level 3) land cover change matrix. The classification of flows used was based on a compromise between the types of information required to make an informed environmental assessment and what can be extracted most reliably from CLC data. When the flows are broken down by land cover class, they can have either a negative or positive value. In the first case, the flow is regarded as a *consumption of land cover* (or simply of cover), resulting from the given flow. In the second case, the flow is a *formation of land cover* (of cover). For each flow, the magnitude of the 'consumptions' and 'formations' of cover are equal. The detail of the method and classification used will be described later in Part 3 of this report.

Figure 1.4 – Example of land cover change flows as defined in the PTL/LC study

LAND COVER CHANGE FLOWS
PTL/LC STUDY

1970s classes \ 1990s classes	11	12	13***	131	14	21	22	23	24	31	32	33	41	42	51	52
11	0	7	7	4	7	7	7	7	7	7	7	7	7	7	7	7
12	7	0	7	4	7	7	7	7	7	7	7	7	7	7	7	7
13	7	7	0	0	7	7	7	7	7	7	7	7	7	7	7	7
14	/	/	/	4	0	/	/	/	/	/	/	/	/	/	/	/
21	3	3	3	4	3	0	1	2	2	5	5	7	7	7	7	7
22	3	3	3	4	3	2	0	2	7	5	5	7	7	7	7	7
23	3	3	3	4	3	1	1	0	1	5	5	7	7	7	7	7
24	3	3	3	4	3	1	1	2	0	5	5	7	7	7	7	7
31	3	3	3	4	3	6	6	6	6	0	6	6	6	7	7	7
32	3	3	3	4	3	1	1	1	1	5	0	6	7	7	7	7
33	3	3	3	4	3	1	1	1	1	5	5	0	7	7	7	7
41	3	3	3	4	3	1	7	1	7	5	5	7	0	7	7	7
42	3	3	3	4	3	1	7	1	7	5	5	7	7	0	7	7
51	3	3	3	4	3	7	7	7	7	5	5	7	7	7	0	7
52	3	3	3	4	3	7	7	7	7	5	5	7	7	7	7	0

Type of change:

0	no change
1	intensification of agriculture
2	extensification of agriculture
3	urbanisation (industrialisation) - except transition to class 131
4	enlargement (exhaustion) of natural resources - transition to class 131 only
5	afforestation
6	deforestation
7	other antropogenic causes (recultivations, dump sites, unclassified change, etc.)

*** classes 132 + 133

CLC - level1

1	artificial areas
2	agricultural areas
3	forest and semi-natural areas
4	wetlands
5	water bodies

Basic and Supplementary Accounts

The flow account described above represents what can be though of a 'basic account'. In the original UNECE and EUROSTAT work that led to development of the accounting concept, a distinction was made between such accounts and those constructed for more specific purposes, say, to describe a particular theme or issue. These accounts are known as

[17] PTL/LC (1999) - Inventory and Analysis of Major Land Cover Changes in Central and Eastern Europe over the Past 20 Years, Topic Report, EEA Phare Topic Link on Land Cover (PTL/LC), GISAT

'supplementary' or 'targeted' accounts. In many cases such accounts are derived from these basic types of account, and present a more detailed view of the data.

One such type of such accounts are those used to give a **geographical** or **zonal** breakdown of the data. These accounts are particularly useful in the context of land cover and land use policy, because they allow us to see what geographical contrasts and differences occur between different regions and environments. More importantly they can show how a global indicator is expressed spatially. Ideally, the zonal breakdowns used should be specific to the phenomenon under study. However, when we examine cross cutting issues and/or interactions, it is useful to find some commonalities, including some common geographical pattern.

In fact, pre-existing units such as administrative units, river basins or other types of geographical breakdowns can be used. A classification of potential Land Analytical and Reporting Units (LARU's) is shown on Figure 1.5. Other approaches that are available include analysing the territory with a regular grid to which are associated attributes related to physical geography, vegetation and ecosystems and by human activities. Multi-criteria analysis can be used, to define a set of zones according to the combination of a specific set of characteristics (Figure 1.6).

Table 1.5 - Nomenclature for Land Analytical and Reporting Units

A - Analytical Units

- *Administrative Units*
- *Geographic Regions*
- *Geo-physical regions (River basins (small), Mountains areas (small…)*
- *Ecological regions (e.g. DMEER, Potential vegetation…)*
- *Other*
- *Land Analytical Units*
- *Geometric Units*
- *Grids*
- *Buffers*

B - Reporting Units

- *Administrative Regions, Countries*
- *Geographic Regions (e.g. River basins (large), Sea catchments, Mountain areas…)*
- *Bio-Geographic zones*
- *Geographic Sectors (grouping of LAU or Geometric Units according to proximity or to Landscape Types)*

Other types of targeted or supplementary accounts include those which seek to place a monetary or relative value on the resources or types of change within the flow account. Such accounts many for example, provide an important opportunity for the future in terms of showing how the value of various ecosystem goods and services are affected by different types of lands cover change. Targeted accounts derived from the basic data flow data can also be used to construct various other economic, social and environmental indicators, by linking the flow data to information about demographic change or ecological characteristics of the land cover units, such as biodiversity.

In this study the supplementary account based on a geographical breakdown of the data are present. The zonal units used to give this geographical breakdown are described below. Ultimately the aim is to develop such accounts to give a more detailed view of the important changes occurring in the study area by the creation of an additional set of targeted accounts for themes such as forestry. A provisional accounts for forestry is presented in this study. An overview of the relationship between the different types of basic and supplementary accounts is shown in Figure 1.7.

Figure 1.6: Methodology for the creation of spatial analytical units

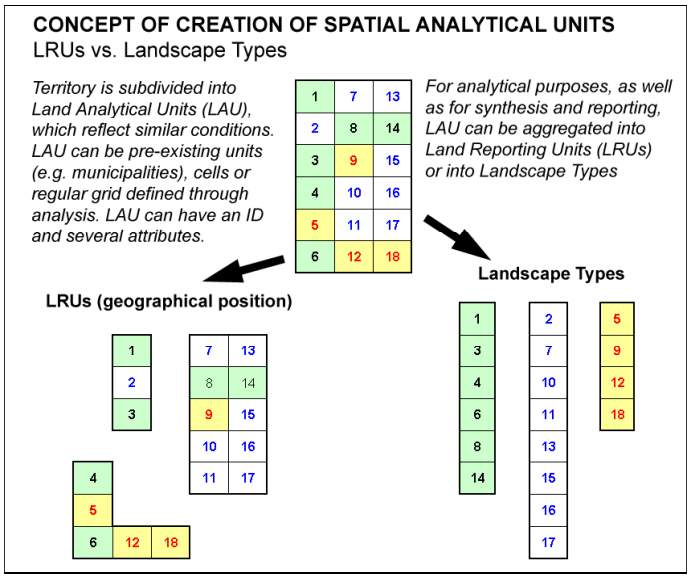
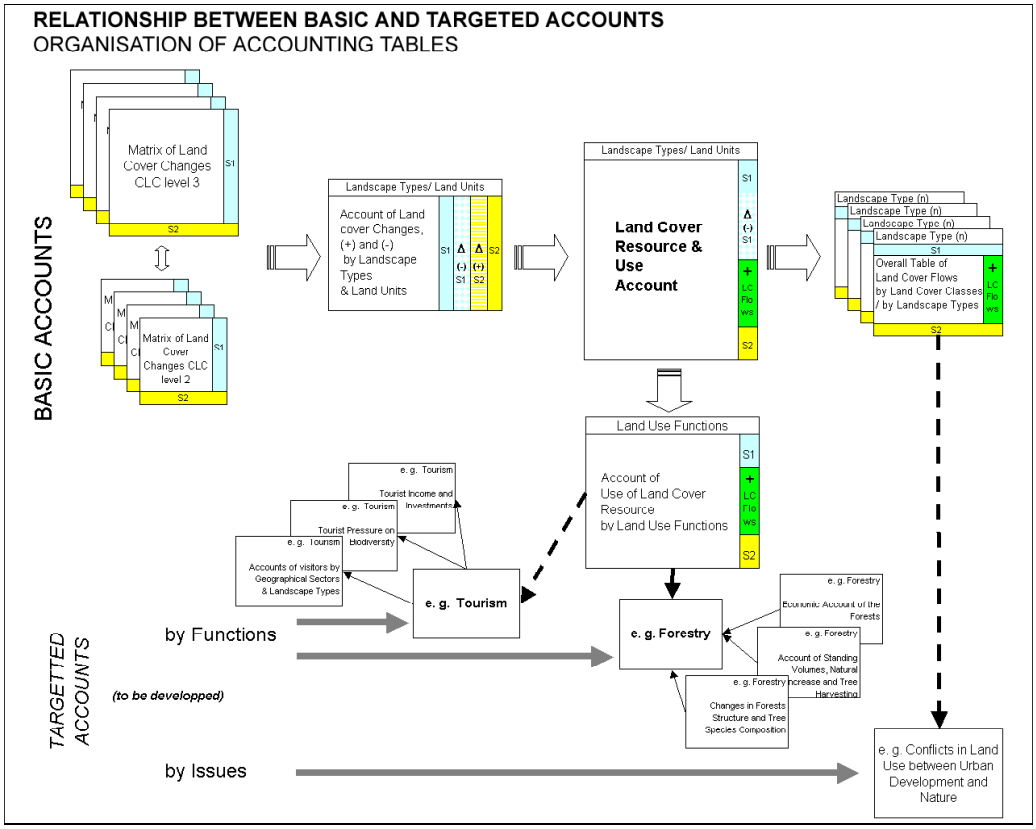


Figure 1.7 - Relationship between basic and targeted accounts



Part 2: Data Resources

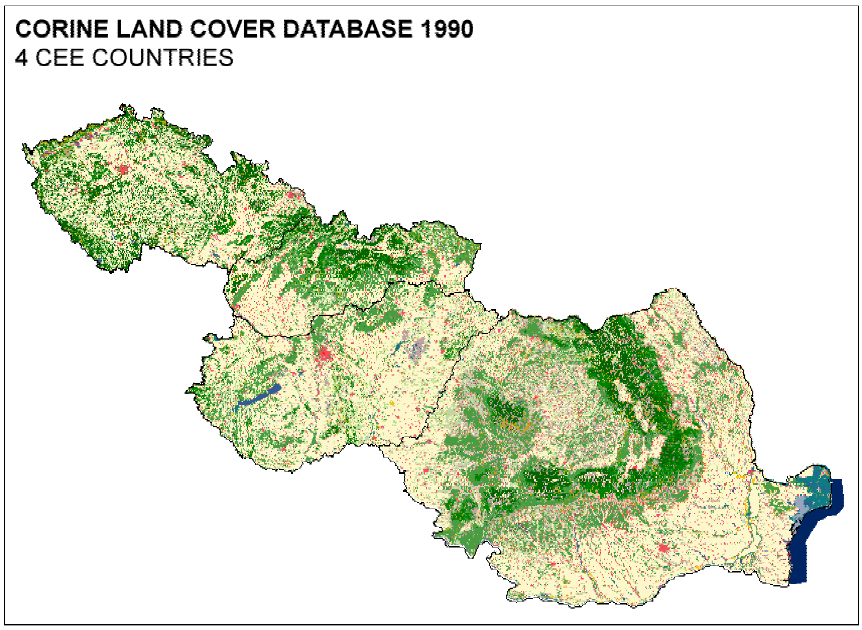
2.1 CORINE Land Cover database (1990, and potential 2000)

The CORINE Land Cover (CLC) database is a European-wide seamless geographic database on land cover / land use prepared according to uniform methodology during 1980s-90s. It provides consistent land cover mapping at a scale of 1:100 000, with a minimum mapping unit of 25 ha. Nomenclature includes 44 classes organised in three hierarchical levels. More general representations of CLC data can be given using the 15 classes in aggregation at level 2 or 7 classes at level 1. A detailed list of the classes of the nomenclature is included in Annex.

The CORINE Land Cover specifications have been defined in the first CLC Technical Guide[18]. The unique methodology covers both the basic interpretation principles and the particular methodology steps and consists of computer-assisted visual photo-interpretation of satellite images (mainly Landsat TM imagery), with the simultaneous consultation of ancillary data, classifying data into classes of the CORINE Land Cover nomenclature.

This data set encompasses most of the countries of the European Community[19], all 15 Member States of the European Union (except Sweden), as well as 13 Central and Eastern European[20] countries (Albania, Bosna-Hercegovina, Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, F.Y.R. of Macedonia, Poland, Romania, Slovakia and Slovenia). See example for the area of the study shown on Figure 2.1.

Figure 2.1 – Extract of CORINE Land Cover 1990 database for the 4 CEE countries



18 Y. Heymann, et al., CLC Technical Guide (1994)

19 http://dataservice.eea.eu.int/dataservice/other/land_cover/lcsource.asp

20 http://ptl.gisat.cz/clc_dirb1.shtml

The CLC database is being updated every 10 years. Recently, the ongoing I&CLC2000[21] project will provide a snapshot of land cover/use for the year 2000 by updating of the original database[22]. For the purposes of mapping change, a minimum changes unit of 5 ha is used.

Due to the comparability of data on European level the CLC database offers an excellent input for the European-wide land cover change studies. Nevertheless, certain limitation can be imposed by thresholds used for CLC mapping (25ha minimum mapped unit, 5ha minimal mapped change) in form of underestimation (or overestimation) of certain processes running on scale close to these thresholds. As example, a comparative study carried out on the French coast with aerial photographs at the scale of 1:25 000, shows the importance of a very diffuse urban sprawl, which is poorly detected by the satellite images in the CLC-like mapping before it reaches the minimum size of 25 ha (underestimation of change). In fact, this sprawl is identified at a later stage of the process, in a following period, when the process finally reaches the minimal mapped area (overestimation of change). This limited sensitivity of CLC suggests that phenomenon such as urban sprawl should be, in addition to CLC, monitored also at a larger scale with high resolution satellites or aerial photos and with a periodicity of 3 to 5 years maximum.

2.2 CORINE Land Cover database (1975)

In the frame of EEA Phare Topic Link on Land Cover (PTL/LC) the project of landscape changes identification and analysis was realised in 1998-1999[23]. It introduces the practical case of the large-scale application of the CLC database and the methodology of landscape changes inventory (a territory of the Czech Republic, Hungary, Romania and Slovakia) with the total area of almost half million km2 mapped). First phase of this project consisted of CLC database creation reflecting situation in the 70's by retrospective updating (downdating) of original CLC 1990 database.

From the methodological point of view this land cover database (CLC1975) was created by the computer aided visual interpretation of land cover changes as identified on archive satellite images (Landsat MSS imagery). In fact, the methodological approach was very similar to the one used in the I&CLC2000 project as the same threshold for change polygon was used (5 ha). Nevertheless, reflecting interpretability of Landsat MSS for mapping the land cover change, aggregation of the 3rd level classes to the 2nd hierarchic level of the CLC nomenclature was applied for CLC1975, which reduced the number of land cover classes 15. Other characteristics of CLC database remained intact (criterion of the minimum area 25 hectares and the minimum width 100 metres).

CORINE Land Cover 1975 database is available for the Czech Republic, Hungary, Romania and Slovakia.

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21 IMAGE&CLC2000 project to be finalized by 2004

22 M. Bossard, J. Feranec and J. Otahel (2000) CORINE land cover technical guide – Addendum 2000. Technical report No 40. EEA.

23 PTL/LC (1999) - Inventory and Analysis of Major Land Cover Changes in Central and Eastern Europe over the Past 20 Years, Topic Report, EEA Phare Topic Link on Land Cover (PTL/LC), GISAT

2.3 Elevation data (Digital Elevation Model)

The digital elevation model (DEM) used in this project is the one from the GISCO database[24]. The resolution of this dataset is very coarse but is, nevertheless, sufficient for the purpose of mapping altitude throughout Europe, and for producing maps of major landscape types. For the purposes of this project, the combined elevation/slope threshold has been used for splitting the lowland, upland and mountain areas (see Figure 3.15).

2.4 Administrative boundaries

Administrative boundaries used in this project also came from the GISCO database. At this stage, only countries and NUTS3 have been available. For further integration of forest statistics in the Czech Republic case study other local level administrative boundaries required were obtained from national sources, as there are presently problems with access and dissemination of NUTS5 Europe-wide administrative boundaries.

2.5 Physical boundaries

The major physical units used as the basis for this study were drawn from the Biogeographic Regions and Watersheds contained in the GISCO database. The 'Regional Seas Basins' layer was obtained as aggregation of watersheds.

2.6 Statistical information

Socio-economic statistics have been used in this study for the forest case in the Czech Republic secured from various national sources, mainly form the Czech Statistical Office (CSO)[25] and the Forest Management Institute (FMI)[26]. More details on statistical data used can be found in Part 4.

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24 Geographic Information System of the Community, at Eurostat

25 CSO - http://www.czso.cz

26 FMI - http://www.uhul.cz

Part 3: Basic Accounts

First, the accounting concept described schematicaly in Part 1 was implemented on level of the basic accounts for the 4 CEE countries. Following the developments of the "coastal part"[27] of the study, several additional issues were considered and further developed specific for this part of the study: adjustment of methodology and accounts for different classification of input land cover data, subsequent adjustment of classification of land cover flows and further refining of landscape types by introduction of broader altitute/slope characteristics needed for continental wide accounting. Details of methods and approaches used are described in this chapter.

3.1 General concept implementation

3.1.1 Main tables of the basic land accounts

Based on the general concept outlined above set of the basic account tables have been selected for presentation of land cover changes.

Matrix of land cover changes

This square matrix describes for each land cover type the changes between an initial situation (initial stock of land cover) and a final situation. When no change happens, the values are recorded in the diagonal. The difference between the final and the initial situation is the Net Change of land cover. The detail of the matrix depends on the database and on the information that is requested. Three complementary options are proposed, using CLC database: 1. a detailed matrix based on CLC level 3 (44 classes), 2. a semi-detailed matrix based on CLC level 2 (15 classes) and 3. an aggregated matrix based on CLC level 1 supplemented by some details (7 classes) as shown on Figure 3.1. In this study, working with CLC data for initial stock on level 2 only (15 classess), options 2. and 3. were applicable on initial part of this matrix as well as in case of other account tables.

Table 3.1 CORINE Land Cover Aggregated Nomenclature (Level 1 bis)

1	*Artificial surfaces*
2.1+2.2	*Arable Land & Permanent Crops*
2.3+2.4	*Pastures & Heterogeneous agricultural areas*
3.1	*Forests*
3.2+3.2	*Shrub and other semi-natural land*
4	*Wetlands*
5	*Water bodies*

27 Weber, J. L., Paramo, F., Breton, F. Haines-Young, R. (2003): Integration of geographical and statistical data in the environmental accounting framework; methodological development based on two case studies Action 2: Integration of environmental accounts in coastal zones; case study of tourism, Barcelona 2003, Contract n° 200141200017, EUROSTAT

Account of Land Cover Changes

This account is compiled by countries, regions or by landscape types. For one given land cover class, the changes are summarized in (+) and (-) values. Therefore, the final stock is defined as:

EQUATION *Initial stock + algebraic sum of Changes = Final stock*

Account of Formation of Land Cover

This account presents, by countries, regions or by landscape types, the balance between the *Formation of land cover* which has lead to the present situation and the *Consumption of land cover* from the past situation. The flows of Formation of cover and Consumption of cover are detailed according to the nomenclature of land cover flows (see the aggregated level of the Nomenclature of the Land Cover Flows used in this study on Figure 3.2). Assignment of individual land cover changes to these flows are discussed further in this chapter. In this account, each individual flow of consumption is balanced by a flow of formation of cover. For each Land cover class, the difference between Formation and Consumption is called "Net formation of cover". It can be positive or negative. The equation of the account is:

EQUATION *Formation - Consumption = Net Formation of land cover.*

When the stocks of land cover are introduced, the equation is:

EQUATION *Initial stock + Formation =Consumption + Final stock*
or
Initial stock + Net Formation of land cover= Final stock

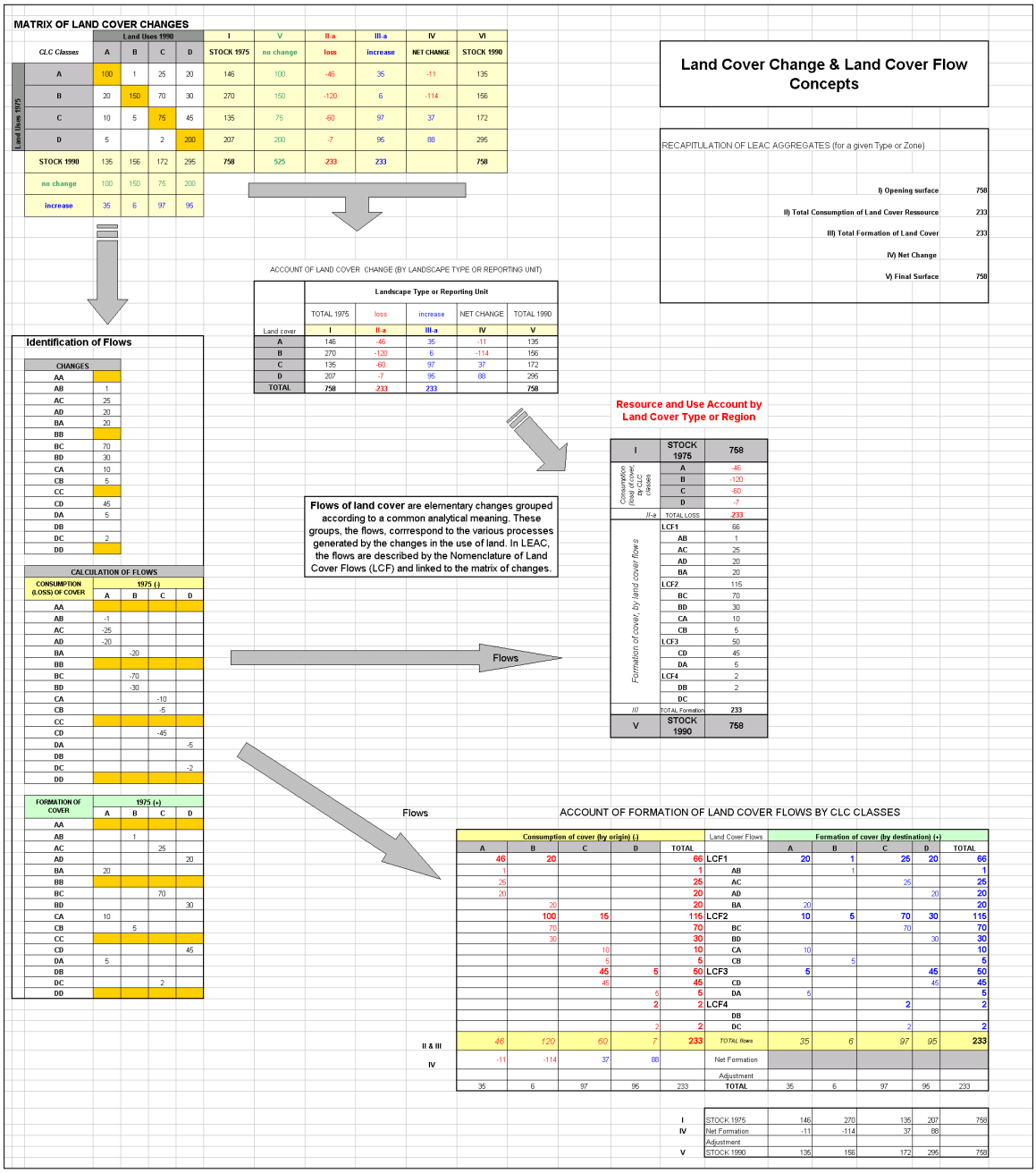
Table 3.2: Nomenclature of Land Cover Flows used (Level 1)

LCF1	*Urban land management*
LCF2	*Urban sprawl*
LCF3	*Extension of economic sites and infrastructures*
LCF4	*Agricultural rotation and intensification*
LCF5	*Conversion of land to agriculture*
LCF6	*Forests creation and management*
LCF7	*Water body creation and management*
LCF8	*Changes of land cover due to natural and multiple causes*

Accounting separately for the consumption and the formation has the advantage of presenting a total of flows which is identical, whatever the level of aggregation of land cover classes. This is different from the conventional matrixes of land cover change in which the aggregation leads to the consolidation of changes.

The balance of the Formation of Land Cover Account, i.e. the Net Formation of Cover is computed from flows when Net Changes are computed from the Matrix of changes as the difference of two stocks. At the most detailed level, the two results are strictly equal. When

Figure 3.3: Land Cover Change & Land Cover Flow Concepts



the two are compiled with an aggregated Nomenclature, an additional element has to be introduced to reflect the fact that the total of Formation or Consumption remains identical when the Changes vary due to the aggregation that "hides" internal flows in the diagonal of the matrix. These "hidden changes" have to be added to the result of the comparison of the two stocks. The equation is therefore:

EQUATION *Final Stock of cover - Initial Stock of cover= Net Change (at a given scale)*
= Net formation of cover -"hidden changes"(at a given scale)

The Formation of Cover Account can usefully be compiled by zones, region or landscape type.

Land cover Resource and Use account

This account aims at presenting a synthesis of stocks, changes (losses by Land Cover Classes) and Formation of cover by zones, regions or by landscape types, as the previous one. This presentation avoids redundancies (i.e. Formation and Consumption accounted with the same value, once + and once). The equation of the account is:

EQUATION *Initial stock – Loss of land cover (by CLC class) + Formation of land cover (by flows type) = Final stock*

In most cases, the initial and final stocks are equal equal, but theoreticaly they may differ in the cases mentioned in 1.3.1 footnote 10.

The full set of land cover change and land cover flows as well as the relation between the basic accounts proposed is summarized in Figure 3.3 using hypothetical numbers.

3.1.2 Classification and Nomenclature

A key data resource for land cover information in this study was CORINE Land Cover (CLC) data. Three level hierarchical classification system of CLC data includes at its most detailed level (level 3) in total 44 classes. Aggregation to level 2 results in 15 classes, while 7 classes is available on level 1. List of classes on level 1 and level 2 is presented in Figure 3.4. Complete classification on level 3 is included for reference in Annex.

Figure 3.4 – CORINE Land Cover Nomenclature (level 1 and level 2 aggregation)

LEVEL 1		LEVEL 2	
1	ARTIFICIAL SURFACES	11	Urban fabric
		12	Industrial, commercial and transport units
		13	Mines, dump and construction sites
		14	Artificial non-agricultural vegetated areas
2	AGRICULTURAL AREAS	21	Arable Land
		22	Permanent Crops
		23	Pastures
		24	Heterogeneous agricultural areas
3	FORESTS AND SEMI-NATURAL AREAS	31	Forests
		32	Shrub and/or herbaceous vegetation associations
		33	Open spaces with little or no vegetation
4	WETLANDS	41	Inland wetlands
		42	Coastal wetlands
5	WATER BODIES	51	Inland waters
		52	Coastal waters

When CLC data are used for land cover change matrix creation, total of 1936 (44x44) class combinations exist at the most detailed level 3. In order to support interpretation of land cover changes, typology of land cover changes to smaller set of land cover change types is therefore advantageous. Althrough certain ambiguities existed, working version of typology of land cover transformations was prepared for "coastal case study" based on inputs from existing typology attempts[28] [29] [30] and systematic definition of the land cover flows (LCF) in terms of

28 Perdigão, V., Christiansen, S., eds. (2000). The LACOAST atlas: Land cover changes in European coastal zones. Ispra (JRC).

29 PTL/LC (1999) - Inventory and Analysis of Major Land Cover Changes in Central and Eastern Europe over the Past 20 Years, Topic Report, EEA Phare Topic Link on Land Cover (PTL/LC), GISAT

clusters of land cover changes was developed. Figure 3.5 illustrate the nature of land cover flows produced – correspondance of land cover changes on level 3 and land cover flows (extract only). The full table is presented in Annex.

Figure 3.5 – Correspondance of land cover changes and land cover flows on level 3/level 3 *(extract only)*

		132	133	141	142	211	212	213	221	222	223
		Dump sites	Construction sites	Green urban areas	Sport and leisure facilities	Non-irrigated arable land	Permanently irrigated land	Rice fields	Vineyards	Fruit trees and berry plantations	Olive groves
243	Land principally occupied by agriculture with significant areas of natural vegetation	Extension of dumpsites	Construction	Development of green urban areas	Extension of sport and leisure facilities	Intensive conversion of marginal land to agriculture	Intensive conversion of marginal land to agriculture	Intensive conversion of marginal land to agriculture	Intensive conversion of marginal land to agriculture	Intensive conversion of marginal land to agriculture	Intensive conversion of marginal land to agriculture
244	Agro-forestry areas	Extension of dumpsites	Construction	Development of green urban areas	Extension of sport and leisure facilities	Intensification of agriculture	Intensification of agriculture	Intensification of agriculture	Planting of vineyards, fruit and olive trees over arable & pasture	Planting of vineyards, fruit and olive trees over arable & pasture	Planting of vineyards, fruit and olive trees over arable & pasture
311	Broad-leaved forest	Extension of dumpsites	Construction	Development of green urban areas	Extension of sport and leisure facilities	Intensive conversion of forest to agriculture	Intensive conversion of forest to agriculture	Intensive conversion of forest to agriculture	Intensive conversion of forest to agriculture	Intensive conversion of forest to agriculture	Intensive conversion of forest to agriculture
312	Coniferous forest	Extension of dumpsites	Construction	Development of green urban areas	Extension of sport and leisure facilities	Intensive conversion of forest to agriculture	Intensive conversion of forest to agriculture	Intensive conversion of forest to agriculture	Intensive conversion of forest to agriculture	Intensive conversion of forest to agriculture	Intensive conversion of forest to agriculture
313	Mixed forest	Extension of dumpsites	Construction	Development of green urban areas	Extension of sport and leisure facilities	Intensive conversion of forest to agriculture	Intensive conversion of forest to agriculture	Intensive conversion of forest to agriculture	Intensive conversion of forest to agriculture	Intensive conversion of forest to agriculture	Intensive conversion of forest to agriculture
321	Natural grassland	Extension of dumpsites	Construction	Development of green urban areas	Extension of sport and leisure facilities	Intensive conversion of marginal land to agriculture	Intensive conversion of marginal land to agriculture	Intensive conversion of marginal land to agriculture	Intensive conversion of marginal land to agriculture	Intensive conversion of marginal land to agriculture	Intensive conversion of marginal land to agriculture
322	Moors and heathland	Extension of dumpsites	Construction	Development of green urban areas	Extension of sport and leisure facilities	Intensive conversion of marginal land to agriculture	Intensive conversion of marginal land to agriculture	Intensive conversion of marginal land to agriculture	Intensive conversion of marginal land to agriculture	Intensive conversion of marginal land to agriculture	Intensive conversion of marginal land to agriculture

For the case study in the 4 CEE countries, CLC data on level 3 of CLC classification have been available for 1990 year, while CLC data used as reference to the situation in 1975 exist on level 2 only. Therefore, first, the LCF definition had to be addapted to be applicable on level 2 and at the same time as much as possible consistent for use on both level 2 and level 3 of CLC data. More, a complete check up of the matrix of definition of land cover flows was done and several changes have been introduced based on discussions following the Action 2 March Report.

By definition, the LCF were originaly classified for level 3/level 3 land cover changes, but analysis showed that most of the flows allowed aggregation of CLC classes to level 2 on consumption side ("from" class) of land cover change. In oposite, aggregation of CLC classes to level 2 on formation side ("to" class) of the land cover change was not feasible without considerable modification in the LCF definition. Therefore, it have been decided that for the 4 CEEC study, the LCF definition based on level 2 / level 3 land cover change matrix was used, which was, with few exceptions, consistent with definition on level 3 /level 3. The full table of correspondances is present in Annex.

Few exceptions in consistency between level 2 and level 3 matrices include:

- 243>22_ move from LCF52 – "Intensive conversion of marginal land to agriculture" on level 3 to LCF42 – "Planting of vineyards, fruit and olive trees over arable &pastures" on level 2.

- 243>21_ move from LCF52 – "Intensive conversion of marginal land to agriculture" on level 3 to LCF45 – "Intensification of agriculture" on level 2

30 Countryside Survey of Great Britain, www.cs2000.org.uk

- 213>41_, 42_ & 521 (abandonment of rice fields) move from LCF82 – "Farmland abandonment without significant woodland creation" on level 3 to LCF89 – "Other changes and unknown" on level 2.

- 523>423 move from LCF89 - "Other changes and unknown" on level 3 to LCF86 – "Coastal erosion" on level 2

Beside the exceptions described above, also the extended diagonal has to be considered when using level 2/level 3 change matrix. Obviously, this effect is concentrated on flows of internal rotations, but it can represents a limitation, when these flows are matter of specific interest.

In order to access mentioned differences in terms of hectares and percentage of total flows, a comparison of the LCF figures has been produced using available CLC1990 and CLC2000 data[31] (both on level 3) for Netherlands. Figure 3.6 shows summary of the results obtained for level 2 and level 3 matrix based LCF definition. It proves that. except the LCF52 and the LCF62, the flows figures are almost identical, especially at aggregated level. Certainly, in absolute numbers, this can be depended on type of landscape, but still is interesting message for future planning of country or European wide retrospective CLC inventories[32].

Figure 3.6 – Comparison of the LCF figures produced using level 2 and level 3 matrix based definition

LAND COVER FLOWS DEFINITION COMPARISON
LEVEL2/LEVEL3 DEFINITION vs. LEVEL3/LEVEL3 DEFINITION

	LCF definition - Level 2/Level 3					LCF definition - Level 3/Level 3						
	0	1	2	3	TOTAL	0	1	2	3	TOTAL	+/-	%
LCF1 Urban land management	11870	0	0	0	11870	11870	67	0	0	11937	67	1%
LCF2 Urban sprawl	40860	0	0	0	40860	40860	0	0	0	40860	0	0%
LCF3 Extension of economic sites and infrastructures	44465	0	0	0	44465	44465	0	0	0	44465	0	0%
LCF4 Agricultural rotation and intensification	30032	0	46	0	30078	30032	0	0	0	30032	-46	0%
LCF5 Conversion of land to agriculture	1327	0	0	0	1327	1327	0	46	0	1373	46	3%
LCF6 Forests creation and management	9095	0	0	0	9095	9095	38	0	0	9133	38	0%
LCF7 Water body creation and management	3711	0	0	0	3711	3711	0	0	0	3711	0	0%
LCF8 Changes of land cover due to natural and multiple causes	28373	0	0	1409	29782	28373	287	0	1409	30070	287	1%
TOTAL (ha)	**169733**	**0**	**46**	**1409**	**171188**	**169733**	**392**	**46**	**1409**	**171580**	**392**	**0%**

Note: 0 – consistent definition , 1 – diagonal effect, 2 – LCF5 to LCF4 moves, 3 – moves within LCF8

Using aggregated CLC classification on level 2 extended with classes 213, 243 and forest classes 311, 312, 313 (Level 2bis) would allow to assess land cover flows (as defined in this study) completely. For detailed comparison see table present in Annex.

31 CLC2000 data for Netherlands has been produced under the I&CLC2000 project and provided by ETCTE.

32 Retrospective CLC inventories demand extensive ancillary information support for interpretation of old satellite data or aerial photos. This represents a serious limitation due to restricted availability and cost of such information. Aggregated CLC nomenclature (e.g. from level 3 to level 2) can help reducing this demand.

Additional main changes introduced to the original LCF definition not connected to CLC nomenclature included:

- extension of activities within the urban perimeter (in a broad sense artificial) were reclassified to LCF11 – "Urban devepment/infilling". It allows better separation of flows 'within artifical area' from flows 'to artificial areas'. The extension is now considered against agriculture and nature. In this sense, the development of any item, e.g. harbours, commercial areas etc. is made of two parts: rotation and extension.

- exceptional land cover changes (previously N.A.) were classified into LCF89 – "Other changes and unknown" flow .

- accordingly exceptional flows related to Glaciers and Intertidal flats were classified into the LCF similar to the other classes of their group

- LCF81 with LCF83 were merged and subsequently LCF8 were renumbered

Figure 3.7 shows extract of final list of land cover change flows definition. Full list is present in Annex as well as full table of correspondance of land cover changes and land cover flows on level 2/ level 3. Detailed nomenclature of land cover flows is listed on figure 3.8. Hierarchical structure allows aggregation for summary accounting purposes still keeping detail insight to undergoing flows.

Figure 3.7 – Land Cover Change Flows definition *(extract only)*

LAND COVER CHANGE FLOWS DEFINITION LIST

LCF1	**Urban land management**						
	LCF11	*Urban development/ infilling*	112>111	14_>11_	14_>12_	14_>13_	
	LCF12	*Developped land recycling*	111>112	*11_>12_*	*11_>13_*	*11_>142*	12_>11_
	LCF13	*Development of green urban areas*	11_>141	12_>141	13_>141	142>141	21_>141
LCF2	**Urban sprawl**						
	LCF21	*Urban continuous sprawl*	21_>111	22_>111	23_>111	24_>111	31_>111
	LCF22	*Urban diffuse sprawl*	21_>112	22_>112	23_>112	24_>112	31_>112
LCF3	**Extension of economic sites and infrastructures**						
	LCF31	*Extension of industrial & commercial sites*	21_>121	22_>121	23_>121	24_>121	31_>121
	LCF32	*Extension of transport networks*	21_>122	22_>122	23_>122	24_>122	31_>122
	LCF33	*Extension of habours*	21_>123	22_>123	23_>123	24_>123	31_>123
	LCF34	*Extension of airports*	21_>124	22_>124	23_>124	24_>124	31_>124
	LCF35	*Extension of mines and quarrying areas*	21_>131	22_>131	23_>131	24_>131	31_>131
	LCF36	*Extension of dumpsites*	21_>132	22_>132	23_>132	24_>132	31_>132
	LCF37	*Construction*	21_>133	22_>133	23_>133	24_>133	31_>133
	LCF38	*Extension of sport and leisure facilities*	21_>142	22_>142	23_>142	24_>142	31_>142
LCF4	**Agricultural rotation and intensification**						
	LCF41	*Recent extension of pasture, fallow land, set aside*	21_>23_	21_>242	22_>23_	24_>23_	241>242
	LCF42	*Planting of vineyards, fruit and olive trees over arable & pasture*	21_>22_	21_>241	23_>22_	241>22_	242>22_
	LCF43	*Rotation of annual crops*	211>213	212>211	212>213	213>211	213>212
	LCF44	*Rotation of permanent crops*	221>222	221>223	222>221	222>223	223>221

Note: *land cover change on extended diagonal*

Figure 3.8 – Detailed Nomenclature of Land Cover Flows

LCF1 Urban land management
- *LCF11 Urban development/ infilling*
- *LCF12 Developed land recycling*
- *LCF13 Development of green urban areas*

LCF2 Urban sprawl
- *LCF21 Urban continuous sprawl*
- *LCF22 Urban diffuse sprawl*

LCF3 Extension of economic sites and infrastructures
- *LCF31 Extension of industrial & commercial sites*
- *LCF32 Extension of transport networks*
- *LCF33 Extension of harbours*
- *LCF34 Extension of airports*
- *LCF35 Extension of mines and quarrying areas*
- *LCF36 Extension of dumpsites*
- *LCF37 Construction*
- *LCF38 Extension of sport and leisure facilities*

LCF4 Agricultural rotation and intensification
- *LCF41 Recent extension of pasture, fallow land, set aside*
- *LCF42 Planting of vineyards, fruit and olive trees over arable & pasture*
- *LCF43 Rotation of annual crops*
- *LCF44 Rotation of permanent crops*
- *LCF45 Intensification of agriculture*

LCF5 Conversion of land to agriculture
- *LCF51 Intensive conversion of forest to agriculture*
- *LCF52 Intensive conversion of marginal land to agriculture*
- *LCF53 Diffuse conversion of forest to agriculture*
- *LCF54 Diffuse conversion of marginal land to agriculture*
- *LCF55 Conversion of wetlands to agriculture*
- *LCF56 Conversion of developed areas to agriculture*

LCF6 Forests creation and management
- *LCF61 Forests creation*
- *LCF62 Forests rotation*
- *LCF63 Recent felling and transition*

LCF7 Water body creation and management
- *LCF71 Water body creation*
- *LCF72 Water body management*

LCF8 Changes of land cover due to natural and multiple causes
- *LCF81 Semi-natural rotation*
- *LCF82 Farmland abandonment without significant woodland creation*
- LCF83 Farmland abandonment with woodland creation
- *LCF84 Other land abandonment (other than farmland)*
- *LCF85 Forests and shrubs fires*
- *LCF86 Coastal erosion*
- *LCF87 Impacts of storms, floods…*
- *LCF89 Other changes and unknown*

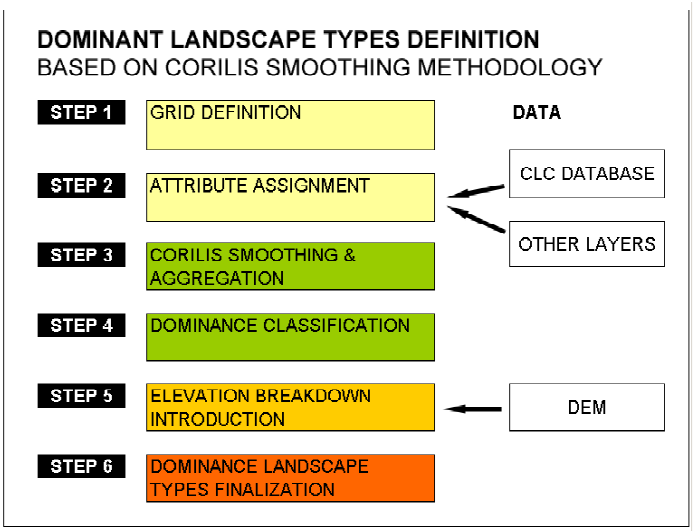
3.1.3 Definition of Land Accounting Units & Landscape types

Two general approaches can be followed for definition of land accounting units and landscape types. First one is based on landscape types definition by a statistical analysis of land units that are defined a priori. This means that it can be applied only if a distinct geographic pattern already exists, e.g. such as administrative units, river basins or climatic zones. Second one is based on analysis of the physical and the bio-physical (land cover) elements in a regular or iregular grid. As example, this solution has been used in the Countryside Survey of Great

Britain[33] for defining the Landscape types used later on for sampling in the field, as well as for reporting the results.

A similar approach has been chosen for creating LEAC, with the modification of in replacing the raw CLC data by smoothed data, using the CORILIS methodology (CORILIS = CORIne + LISsage – smoothing in French) at the European level. Using smoothed values creates a *de facto* zoning of the intensity (or potential) of a given land cover theme in one given cell and its surroundings. More about history and possibilities of CORILIS for a European-wide zoning can be found in the Action 2 Report from March 2003.[34]

Figure 3.9 – Dominant Landscape types creating based on CORILIS methodology



As a result, using the advantage of CORILIS methodology, maps can be produced showing spatial distribution of the intensity of an individual land cover type in an area . More, it is then possible to combine these paticular maps in a simple and transparent way in order to identify a dominant landscape type. This arrangement is flexible for modification, so the rules (as well as the parameters of the calculation) can be adjusted easily in order to achieve an acceptable representation for a given area. In this study CORINE land cover data were pre-processed using the CORILIS methodology and utilizing the software implementation developed by ETC-TE. Figure 3.9 gives an overview of application of CORILIS methodology for definition of Landscape Types in the 4 CEEC countries. In following paragraphs, it is further explained step by step.

Step 1 -Accounting grid definition

Spatial 'accounting grid' has been used for the 4 CEEC countries compatible with the one used for the Action 2. In fact, extract from this regular 3x3 km grid have been prepared covering the Czech Republic, Hungary, Slovakia and Romania. Usage of the accounting grid simplified resolving of slight spatial mis-adjustment between various data sources.

Step 2 -Attribute input to accounting grid

Additional attributes has been assigned to accounting grid by geographic intersection with other data sources as CLC1990 data, CLC1975 data, administrative boundaries etc.

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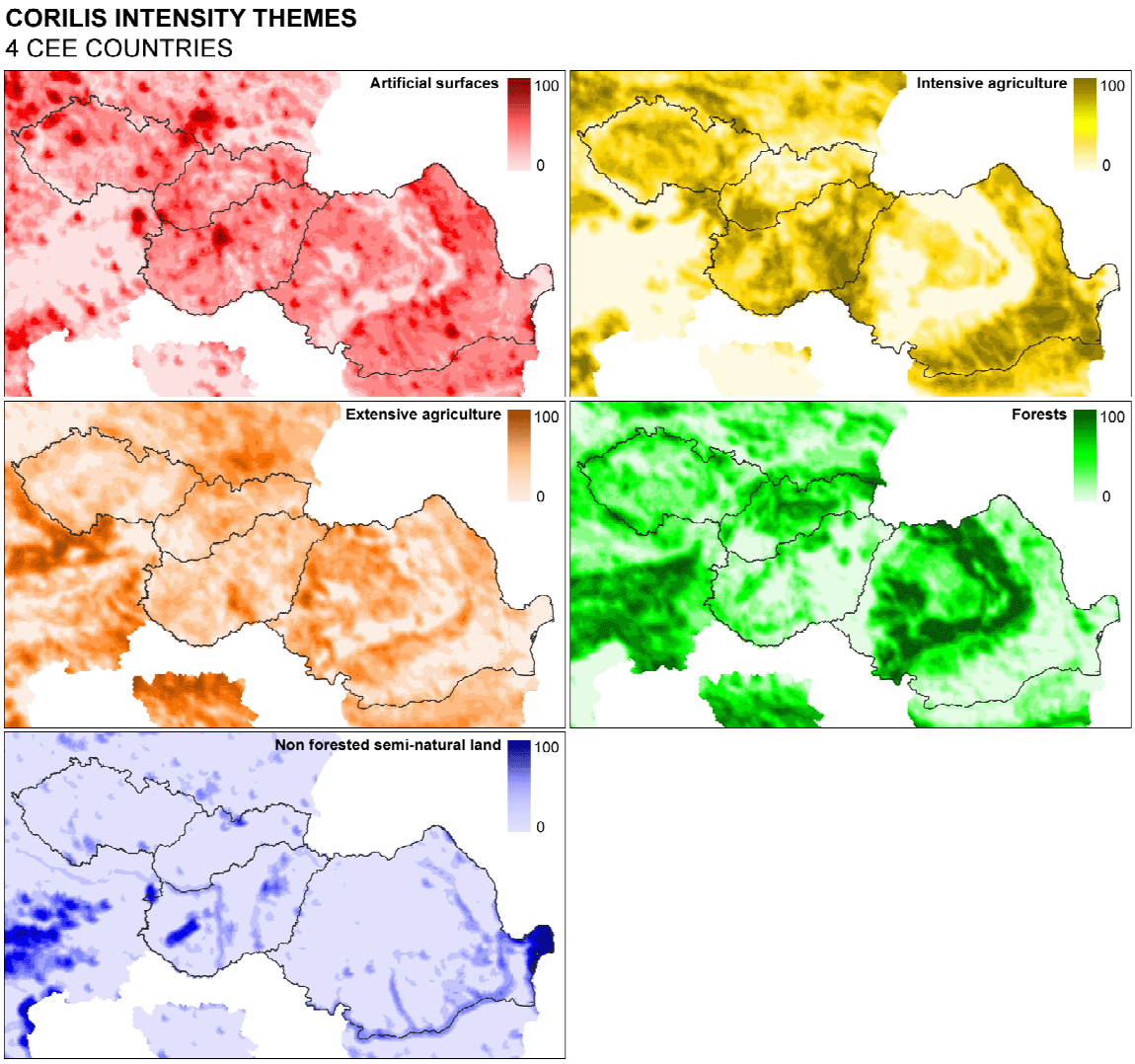
33 For details on Countryside Survey of Great Britain see www.cs2000.org.uk

34 Weber, J. L., Paramo, F., Breton, F. Haines-Young, R. (2003): Integration of geographical and statistical data in the environmental accounting framework; methodological development based on two case studies. Action 2: Integration of environmental accounts in coastal zones; case study of tourism, Barcelona 2003, Contract n° 200141200017, EUROSTAT

Step 3 - CORILIS smoothing of CLC data – intensity themes creation

Geostatistical analysis of CLC data using CORILIS methodology has been performed in this step. CLC data (CLC1990) assigned to 3x3 km accounting grid were smoothed using a search radius of 20km and the Gausian function was used in smoothing algorithm to weight data in the neighbourhood of particular grid cell. Calculation were done on combined individual classes by simple addition of at aggregated level of the CLC data and 5 main themes have been produced: Artificial surfaces (1), Intensive agriculture (21+22), Extensive agriculture (or Heterogeneous agriculture & Pastures) (23+24), Forests (31) and Non forested semi natural land (32+4+5).

Figure 3.10 – CORILIS intensity themes for the 4 CEE countries



Each prepared theme represents percentage of area of a particular class within 20km radius. This way, aggregated intensity themes provide the information of the "intensity of neighbourhood" or "potential" of particular aggregated class.. Figure 3.10 previews five intensity themes created.

Step 4 - Classification to Dominant Landscape Types

In this step smoothed features – aggregated CORILIS classes were reclassified into the Dominant Landscape Types. The same nomenclature of main landscape types has been used as in "coastal study" as presented on Figure 3.11

Figure 3.11 – Nomenclature of main Landscape Types

A1	*Urban dense areas*
A2	*Dispersed urban areas*
B1	*Broad pattern intensive agriculture*
B2	*Composite rural landscape*
C1	*Forested landscape*
C2	*Open semi-natural or natural landscape*
C3	*Landscape with no dominant land cover character*

While A1, B1, C1 and C2 represent landscape types with clearly dominant landscape patterns, other three landscape types relate to dispersed or composite landscape patterns. A2 describes landscape where urban agglomerations are present, although in minority, but which are nevertheless significant in terms of their functions and probable future development. B2 corresponds to traditional European landscapes where mixed agriculture has historically coexisted with forests and other natural habitats. C3 is a type of landscape where no dominant land cover character has been identified, i.e. neither urban nor the agriculture or forest/natural ones determinant was detected. Such areas may be open to a particular type of future change.

Having defined main landscape types, a correspondence was established between the aggregated CORILIS classes and the Landscape types. Assignment was based on criterion that CORILIS dominance value Vn > mean + standard deviation (where Vn is the smoothed value of class "n" in particular grid cell). In order to introduce regional differences, mean and standard deviation values has been computed for each Sea Catchment separately. Nevertheless, in fact using this methodology often co-dominance of more classes can be present, therefore additional supplementary criterion had to be defined. The hierarchical "priority criterion" was based on the theoretical assumption as presented on Figure 3.12. The assignment of main landscape types has been done consistently with the previous part of the study and resulting Dominant Landscape Types are shown on Figure 3.13.

When compared the results, this methodology tends to slightly overweight the themes, when they are concentrated spatially. In particular, it was apparent for the urban areas (e.g. in area of high concentration of small urban areas in Carpathian region in Romania). Nevertheless, considering the fact that intensity of the environmental pressure by urban is usually (per hectare) much more important than by other classes (including intensive agriculture), this bias towards urban was found appropriate for the purposes of constructing LEAC. Modified criteria for dominance assignment as well as different thresholds have been tested, but finally the same criteria were used being compatible with coastal study and representing the best result for the 4 CEE countries.

Figure 3.12 – Correspondence between aggregated CLC land cover and main Landscape types

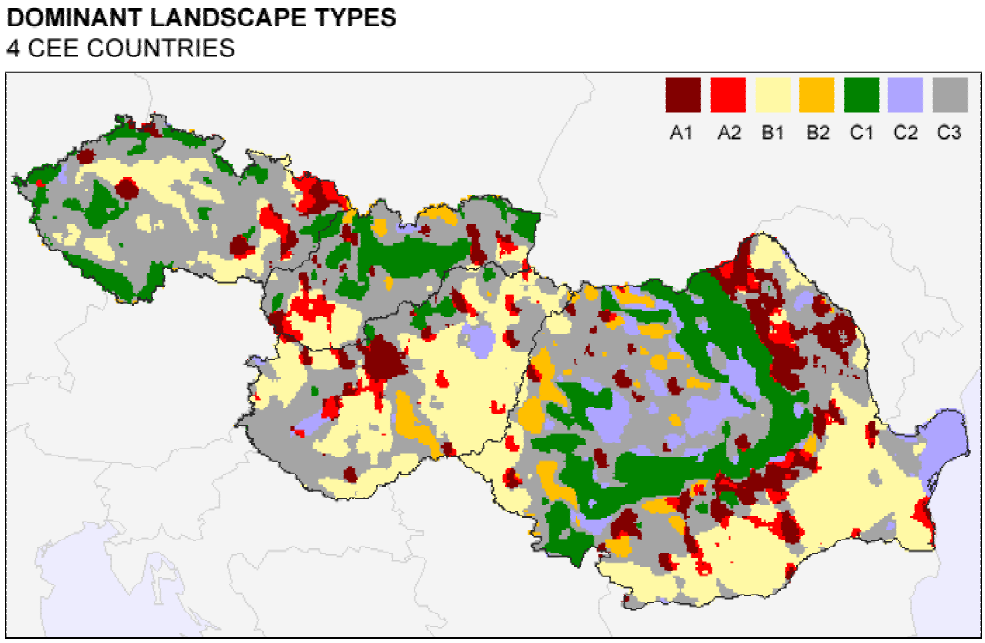
DOMINANT LANDSCAPE TYPE ASSIGNMENT
DOMINANCE CRITERIA

	A1	A2	B1	B2	C1	C2	C3
Artificial							
Intensive agriculture							
Heterogeneous agriculture & Pasture							
Forests							
Non forested semi natural land							

Dominant LC character of the type
Possible co-dominance, considered as secondary
No co-dominance is possible

A1 Urban dense areas	*Dominant urban character without any co-dominance*
A2 Dispersed urban areas	*Dominant urban character co-existing with agriculture, forests or semi-natural co-dominance*
B1 Broad pattern intensive agriculture	*Broad pattern intensive agriculture dominant character with no co-dominance*
B2 Composite rural landscape	*Dominant mixed agriculture and pasture with possible co-dominance of broad agriculture, forests or semi-natural land*
C1 Forested landscape	*Dominant forests character with possible co-dominance of broad pattern agriculture and semi-natural land*
C2 Open semi-natural or natural landscape	*Dominant shrubs and other semi natural and natural land with possible broad pattern agriculture co-dominance*
C3 Landscape with no dominant land cover character	*No dominant land cover characteristic identified*

Figure 3.13 – Dominant Landscape Types for 4 CEE countries



Step 5 -Introduction of elevation/slope breakdown

For the purpose of the 4 CEEC study, additional elevation breakdown has been introduced in addition to 200m altitude breakdown used for the "coastal study". The idea was to split "mountain areas" from "upland ones". The proposed threshold of 500 m for such split has been examined against policy documents and literature. As mountain municipalities are defined in EU regulations[35] by altitude (80% of the territory higher than 600m) and slope (various expressions), the threshold of 500 m alone would lead to classifying large plateaux dominated by broad pattern agriculture in "Mountain areas", which would not conform to the current definitions. Therefore, it has been decided to introduce a criterion of slope in order to

[35] e.g. "Severely Disadvantaged Areas" - land classed as LFA under Directive 75/268/EEC

keep large plateaux (or altitude plains) in "Upland areas". See final criterion definition on Figure 3.14. Despite "Mountain areas" are initiated there, classification is still consistent with the one used for the "coastal study".

A methodology was tested based on 1km GISCO DEM and the resulting elevation/slope breakdown layer for 4 CEE countries is present on Figure 3.15

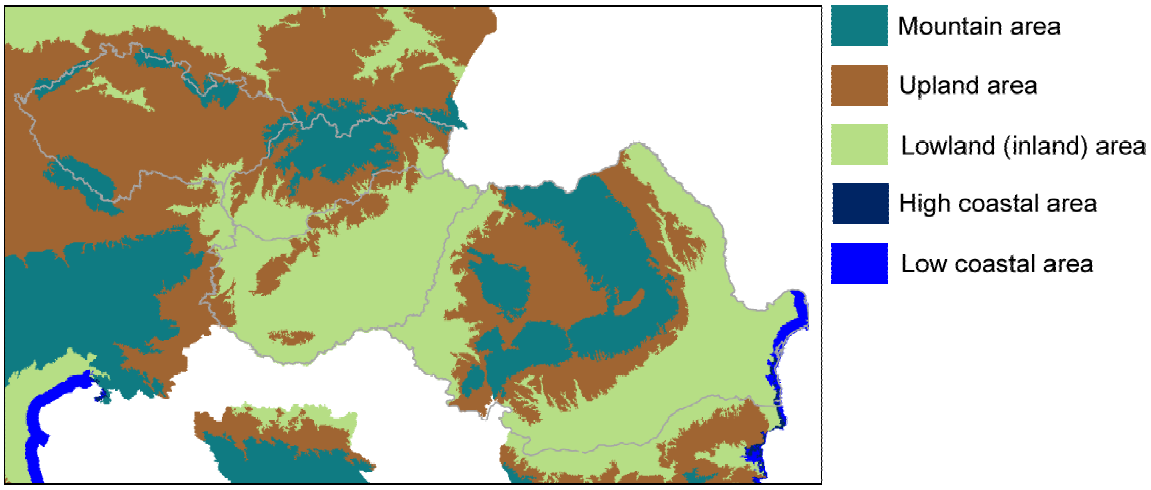
Figure 3.14 – Criterion definition for introduction of Mountain areas

ELEVATION/SLOPE BREAKDOWN CRITERIA

ELEVATION (m)	In the Coastal strip	Not in the Coastal Strip SLOPE (%) < 2	> 2
0 – 50	Low coast	Inlands	
50 – 200	High coast		
200 – 500		Uplands	
500 – 1000		Uplands	Mountain
> 1000		Mountain	

Figure 3.15 – Final elevation/slope breakdown layer

ELEVATION/SLOPE BREAKDOWN LAYER
4 CEE COUNTRIES



Step 6 - Final Dominant Landscape Types creation

Finaly, the elevation/slope breakdown have been added to original landscape types, namely to classes B1, B2, C1, C2 and C3 (see Figure 3.16). The introduction of the Mountain areas and the decision to assign the geographic rule also to the B1 Landscape type led to the presentation of the DLT nomenclature in 3 levels. The third level is *de facto* used for coastal zones only, but this arrangement allows to be compatible with classification for both coastal and European-wide studies. This classification should be used until 2004 when a revised version of CLC1990 will be available as well as a standard km grid for Europe. The final Dominat Landscape Type classification is listed on figure 3.18. and presented for the 4 CEE countries on Figure 3.17.

Figure 3.16 – Combination of original Dominant Landscape Types with breakdown layer

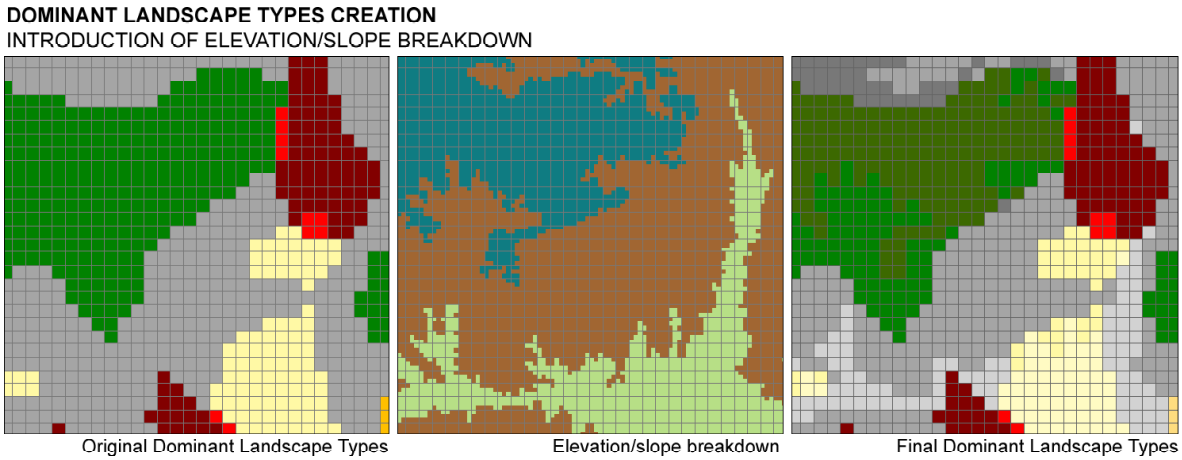


Figure 3.17 – Final Dominant Landscape Types for 4 CEE countries

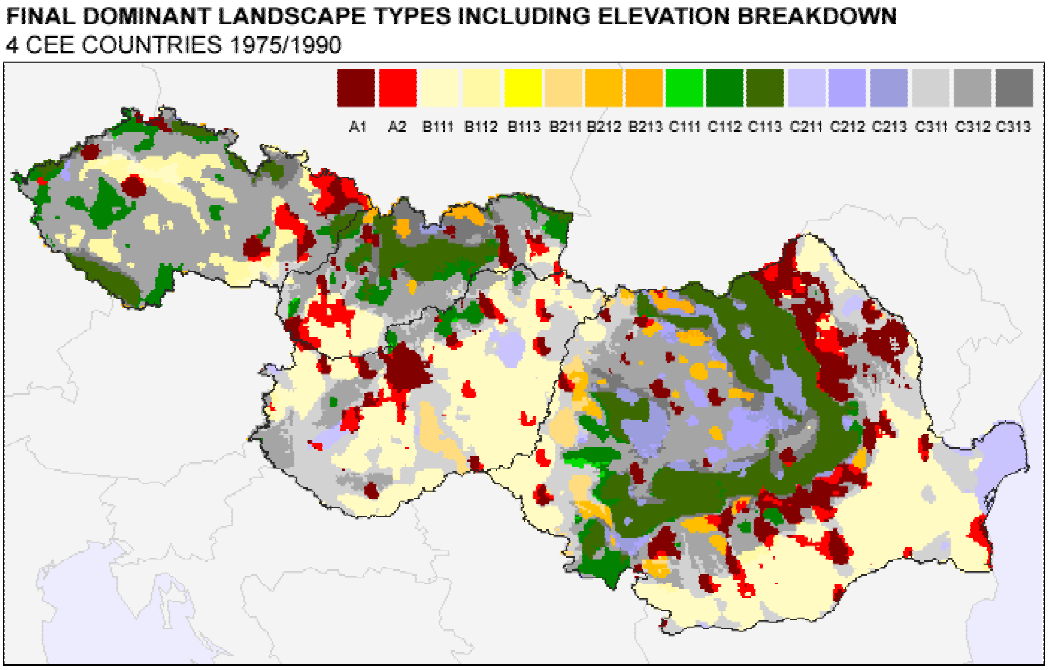


Figure 3.18 – Final classification of Dominant Landscape Types

A1 Urban dense areas

A2 Dispersed urban areas

B1 Broad pattern intensive agriculture
B11 Lowland broad pattern intensive agriculture
B111 Low coastal low broad pattern intensive agriculture
B112 High coastal broad pattern intensive agriculture
B113 Inland broad pattern intensive agriculture
B12 Upland broad pattern intensive agriculture
B13 Mountain broad pattern intensive agriculture

B2 Composite rural landscape

B21 Lowland composite rural landscape
B211 Low coastal composite rural landscape
B212 High coastal composite rural landscape
B213 Inland composite rural landscape
B22 Upland composite rural landscape
B23 Mountain composite rural landscape

C1 Forested landscape

C11 Lowland forested landscape
C111 Low coastal forested landscape
C112 High coastal forested landscape
C113 Inland coastal forested landscape
C12 Upland forested landscape
C13 Mountain forested landscape

C2 Open semi-natural or natural landscape

C21 Lowland open semi-natural or natural landscape
C211 Low open semi-natural or natural landscape
C212 High open semi-natural or natural landscape
C213 Inland open semi-natural or natural landscape
C22 Upland open semi-natural or natural landscape
C23 Mountain open semi-natural or natural landscape

C3 Landscape with no dominant land cover character

C31 Lowland with no dominant land cover character
C311 Low landscape with no dominant land cover character
C312 High landscape with no dominant land cover character
C313 Inland landscape with no dominant land cover character
C32 Upland with no dominant land cover character
C33 Mountain with no dominant land cover character

3.2 Results

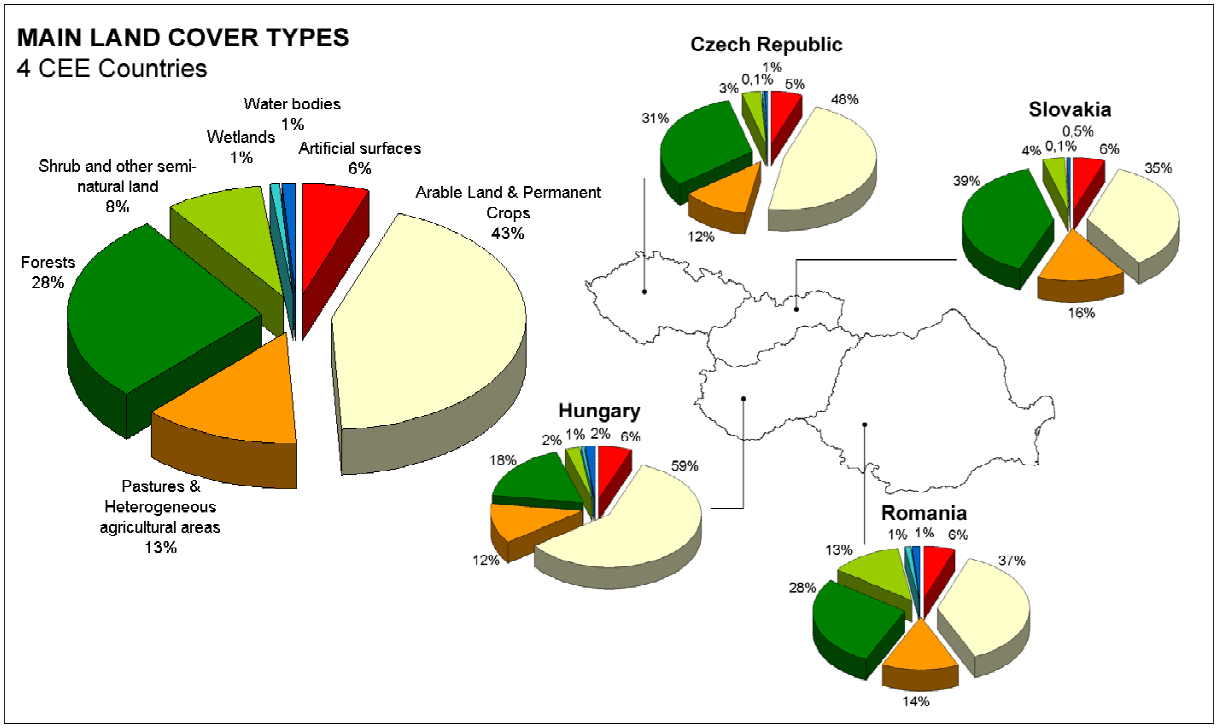
Using the above described classifications, nomenclatures and landscape types, full set of the basic accounts have been prepared according the general concept to test the feasibility of the basic accounts methodology on existing data. First, the basic accounts have been prepared on country level for the 4 Central and Eastern European countries. Later, more detailed spatial breakdown have been used for the basic accounts of the Czech Republic, which were used for the subsequent Targeted Accounts trial focused on forest and biodiversity.

3.2.1 Results for the 4 Central and Eastern European countries

The four Central and Eastern European countries covered in the study, Czech Republic, Hungary, Slovakia and Romania, represent countries with rather distinct landscape patterns, ideal for assessment of methodology application in areas with different landscape dominances.

On one side Hungary, country with predominant lowland landscape suitable for intensive agriculture, where only the northern part of the territory has gentle highland character. On the other, Romania and Slovakia, countries which include extensive mountain landscape of Carpathian mountain range with large areas of continuous forests and semi-natural land. More, in case of Romania, there are also large areas of wetlands present near the Danube river delta. Finally, somewhere in between, the Czech Republic with predominat heterogeneous, patchy and hilly landscape manifested by mixture of agricultural land, pastures and forests. These differences are reflected in distribution of main land cover types (as defined by CORINE Land Cover project, see figure 2.1 in Part 2) in each particular country presented on Figure 3.20.

Figure 3.20 – Distribution of the major land cover types in the 4 CEE countries



Full set of detailed basic accounts prepared for each country is included in Annex. Following paragraphs gives an overview of results and shows some interesting points apparent in produced accounts.

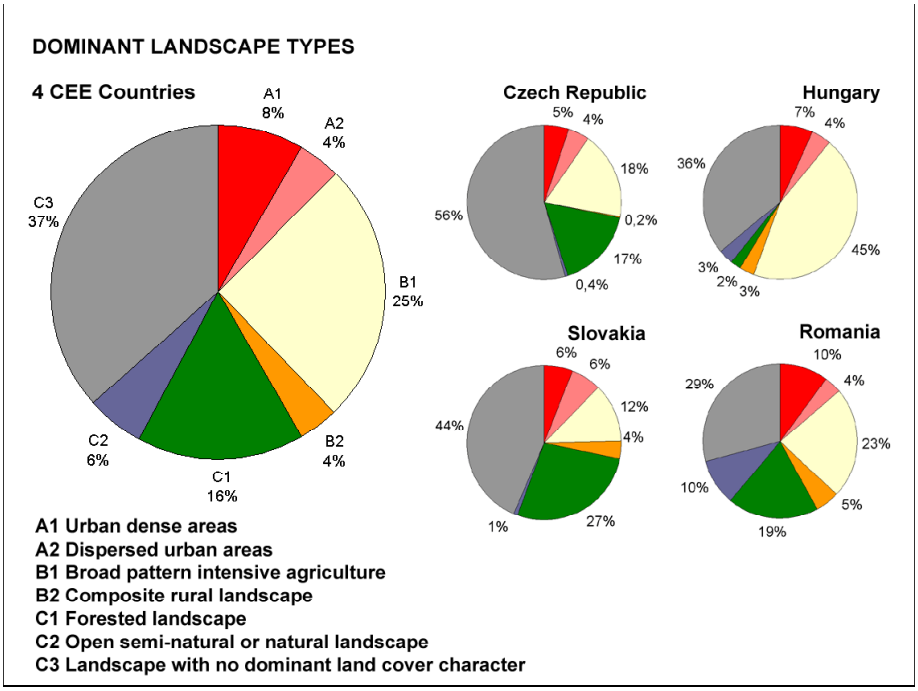
First, on Figure 3.21, the matrix of land cover change outlines the basic land cover changes which have occurred on aggregated level of main land cover classes in the 4 CEE countries during the study period 1975-1990. In total about 5 % of the total area have been subject of change leaded by changes in forests, shrub & semi-natural land and agricultural areas.

Figure 3.21 – Summary Matrix of land cover change for the 4 CEE countries

SUMMARY MATRIX OF LAND COVER CHANGE
4 CEE COUNTRIES 1975/1990, Surface in hectares

FINAL YEAR ⇊ / OPENING YEAR ⇉		1 Artificial surfaces	2.1+2.2 Arable Land + Permanent Crops	2.3+2.4 Pastures + Heterogeneous agricultural areas	3.1 Forests	3.2+3.3 Shrub and other semi-natural land	4 Wetlands	5 Water bodies	TOTAL OPENING YEAR ~1975	Increase (+)	Decrease (-)	Net Changes 1975-1990	TOTAL FINAL YEAR ~1990
1	Artificial surfaces	2482444	8071	6422	2080	5949	387	3052	2508406	89615	34962	54653	2563059
2.1+2.2	Arable Land + Permanent Crops	36061	19620960	410326	27897	64895	3968	12915	20177021	421674	664746	-243072	19933950
2.3+2.4	Pastures + Heterogeneous agricultural areas	13144	125323	5475628	25309	32525	2097	8715	5682740	688804	313162	375642	6058382
3.1	Forests	14625	48332	62430	12427679	489568	2664	6866	13052164	272642	624485	-351843	12700321
3.2+3.3	Shrub and other semi-natural land	12690	73119	88816	197446	3092784	7477	15607	3487938	620170	408499	211671	3699609
4	Wetlands	801	44395	9504	12416	6147	313795	25139	412196	32699	98401	-65702	346493
5	Water bodies	3293	13750	5258	7495	7741	16106	468550	522193	73554	54903	18651	540844
TOTAL FINAL YEAR 1990		2563059	19933950	6058382	12700321	3699609	346493	540844	45842658	2199158	2199158		45842658

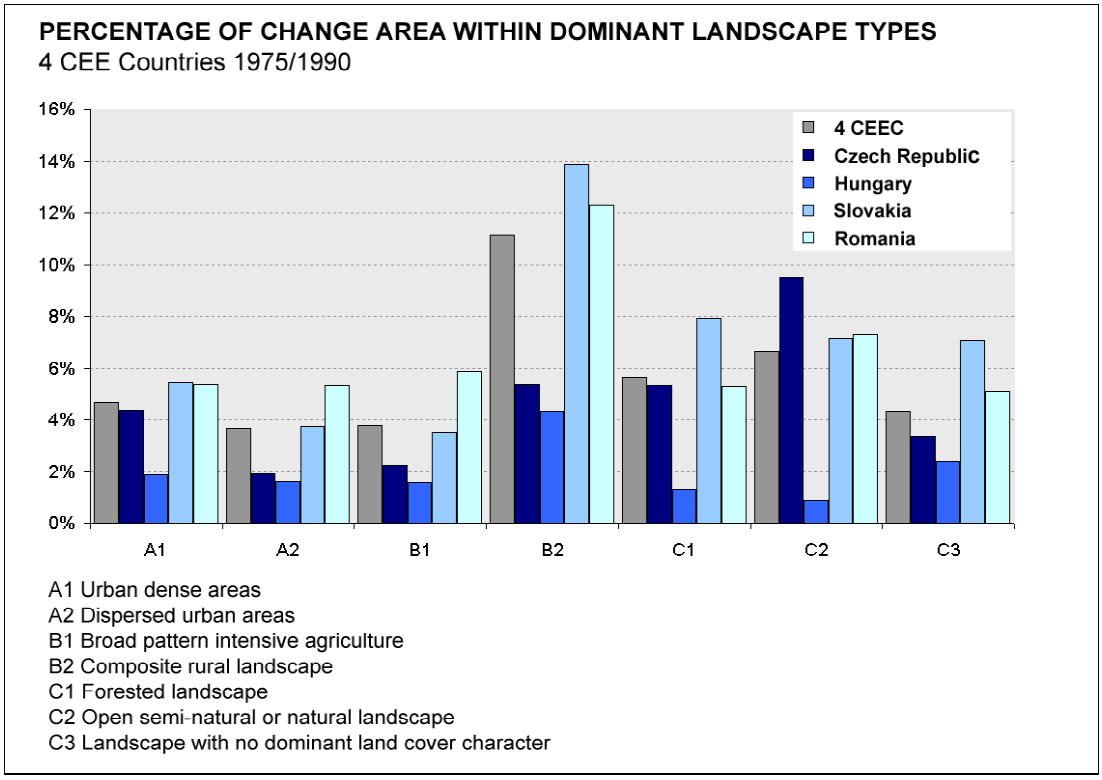
Figure 3.22 – Dominant Landscape Types for the 4 CEE countries



In addition to separate country accounts produced, further zonal breakdown have been applied using defined Dominat Landscape Types. Figure 3.22 on previous page shows the resulting proportion of area assigned to particular main landscape type. A first analysis proved that it correspond very well with distinct character of each country landscape as described above. Full classification of landscape types including also elevation aspect was used for detailed accounts listed in Annex.

Having the main landscape types assigned, we could compare percentage of changed area within particular landscape type (in % of total landscape type area). As seen on Figure 3.23, (in average!) the most "dynamic" areas are those belonging to "composite rural landscape" and "open semi-natural or natural landscape" followed by "forested landscape". Nevertheless, it is evident that differences between particular countries are high. In fact, on country level we get a completely different sequence of "dynamics" of main landscape types for each country.

Figure 3.23 – Percentage of change area per Dominant Landscape Types for the 4 CEE countries



Further details can be analysed when data are presented in the Summary Land Cover Change Account prepared per Landscape Types on Figure 3.24 as well as the Summary Account of Formation of Land Cover on Figure 3.25. In particular the Account of Formation of Land Cover presents the balance between Formation and Consumption. This account is established by CORINE Land Cover classes, their total being equal for each individual flow. The balance of the account is then the Net Formation of Land Cover. The Net Formation of Cover is at the same time the difference between the two stocks, Land Cover 1975 and Land Cover 1990.

Detailed versions of both accounts for each country are present in Annex.

LAND COVER CHANGE ACCOUNT

4 CEE COUNTRIES 1975/1990, Surface by Landscape Types in hectares

LandscapeTypes	A1 URBAN DENSE AREAS				A2 DISPERSED URBAN AREAS				B1 BROAD PATTERN INTENSIVE AGRICULTURE				B2 COMPOSITE RURAL LANDSCAPE			
	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990
1 Artificial surfaces	508668	27195	10075	525787	197171	11131	3514	204788	613388	15935	6711	622611	85588	806	147	86247
2 1+2.2 Arable Land + Permanent Crops	1528162	37983	49217	1516938	1217647	16413	28491	1205569	8879586	133237	204041	8808782	533550	12501	131058	414993
2 3+2.4 Pastures + Heterogeneous agricultural areas	485891	48741	25616	509015	163689	17118	6006	174811	956626	139760	36043	960343	490877	150461	28603	612735
3.1 Forests	866948	25198	34629	857518	215520	6375	12948	208947	801150	39995	61967	779178	388686	9831	15361	383256
3 2+3.3 Shrub and other semi-natural land	289905	30795	54770	265930	67362	12252	14385	65249	295803	76525	89311	283017	185950	13436	12778	186607
4 Wetlands	6034	1737	1096	6675	6762	682	2366	5079	57405	11937	23542	45799	6449	602	225	6826
5 Water bodies	41159	7592	3847	44903	51644	6465	2727	55382	116422	20351	16124	120649	2481	775	340	2916
TOTAL	3826767	179250	179250	3826767	1919825	70435	70436	1919825	11620390	437740	437740	11620390	1693580	188512	188512	1693580

LandscapeTypes	C1 FORESTED LANDSCAPE				C2 OPEN SEMI-NATURAL OR NATURAL LANDSCAPE				C3 LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER				TOTAL				
	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	Net Ch.	1990
1 Artificial surfaces	179623	8421	3210	184834	71597	2787	1346	73039	852371	23340	9959	865752	2508406	89615	34962	54653	2563059
2 1+2.2 Arable Land + Permanent Crops	546470	19160	18448	547182	485572	49361	27433	507499	6986024	153010	206058	6932976	20177021	421674	664746	-243072	19933950
2 3+2.4 Pastures + Heterogeneous agricultural areas	797162	82565	73014	806713	282675	21065	12180	291560	2605811	229095	131700	2703206	5882740	688804	313162	375642	6058382
3.1 Forests	4929909	83132	231287	4781754	702838	24427	37874	689390	5047114	83585	230420	4900279	13052164	272642	624485	-351843	12700321
3 2+3.3 Shrub and other semi-natural land	893231	221239	90075	1024394	655031	51425	28000	678455	1100637	214499	119180	1195956	3487938	620170	408499	211671	3699609
4 Wetlands	5640	164	441	5363	273196	11393	52912	231677	56709	6184	17819	45074	412196	32699	96401	-65702	346493
5 Water bodies	23909	2758	964	25703	168720	15193	15904	168009	117659	20419	14997	123282	522193	73554	54903	18651	540844
TOTAL	7375943	417438	417438	7375943	2639629	175650	175650	2639629	16766525	730132	730132	16766525	45842658	2199158	2199158	0	45842658

Figure 3.24 – Summary Land Cover Change Account for the 4 CEE countries

SUMMARY ACCOUNT OF FORMATION OF LAND COVER

4 CEE Countries 1975/1990

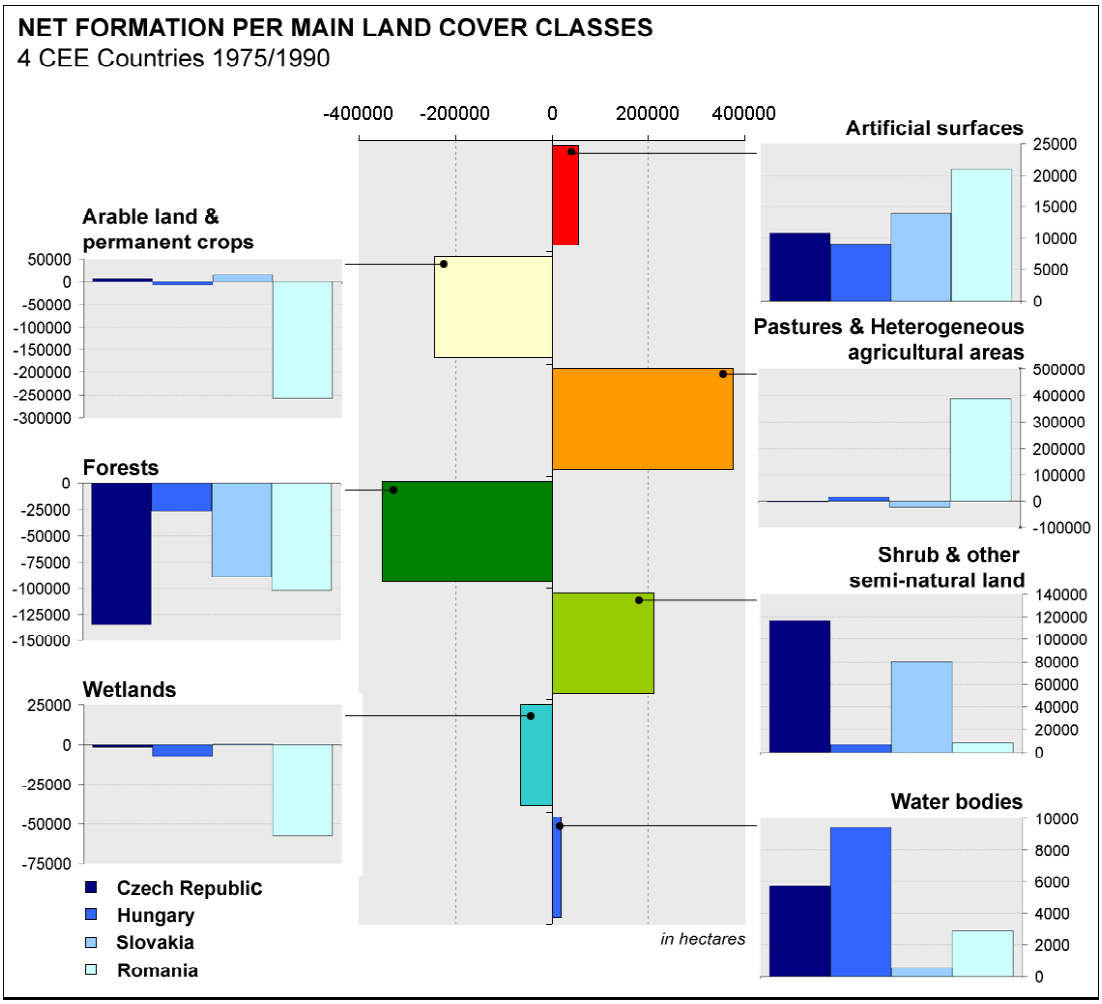
Consumption of land cover										*Formation of land cover*							
1	2.1+2.2	2.3+2.4	3.1	3.2+3.3	4	5				1	2.1+2.2	2.3+2.4	3.1	3.2–3.3	4	5	
Artificial surfaces	Arable land & Permanent crops	Pastures & Mixed agricultural areas	Forests	Shrub and other semi-natural land	Wetlands	Water bodies	Total	Land cover flows		Artificial surfaces	Arable and & Permanent crops	Pastures & Mixed agricultura areas	Forests	Shrub and other semi-natural and	Wetlands	Water bodies	Total
9001	32	37	55	82	0	40	9247	LCF1	Urban land management	9247	0	0	0	0	0	0	9247
0	13224	6446	3064	3365	180	817	27095	LCF2	Urban sprawl	27095	0	0	0	0	0	0	27095
0	22805	6661	11506	9244	621	2436	53273	LCF3	Extension of economic sites and infrastructures	53273	0	0	0	0	0	0	53273
0	429994	173637	0	0	0	0	603631	LCF4	Agricultural rotation and intensification	0	234007	369624	0	0	0	0	603631
14493	0	0	110762	161935	53898	19007	360096	LCF5	Conversion of land to agriculture	0	187667	172429	0	0	0	0	360096
2080	27897	0	489522	197446	12416	7495	736856	LCF6	Forests creation and management	0	0	0	247333	489522	0	0	736856
1661	11089	8161	4658	12831	0	0	38600	LCF7	Water body creation and management	0	0	0	0	0	0	38600	38600
7527	159705	118220	4918	23598	31286	25108	370361	LCF8	Changes of land cover due to natural and multiple causes	0	0	146751	25309	130343	32699	34954	370361
34962	**664746**	**313162**	**624485**	**408499**	**98401**	**54903**	**2199158**		**Sub/Total Flows**	**89615**	**421674**	**688804**	**272642**	**620170**	**32699**	**73554**	**2199158**
54653	***-243072***	***375642***	***-351843***	***211671***	***-65702***	***18651***			***Net Formation of Land Cover***								
89615	**421674**	**688804**	**272642**	**620170**	**32699**	**73554**	**2199158**		**TOTAL**	**89615**	**421674**	**688804**	**272642**	**620170**	**32699**	**73554**	**2199158**

Land Cover stock 1975	**2508406**	**20177021**	**5682740**	**13052164**	**3487938**	**412196**	**522193**	**45842658**
Net Formation of Land Cover	*54653*	*-243072*	*375642*	*-351843*	*211671*	*-65702*	*18651*	
Land Cover stock 1990	**2563059**	**19933950**	**6058382**	**12700321**	**3699609**	**346493**	**540844**	**45842658**

Figure 3.25 – Summary Account of Formation for the 4 CEE countries

Based on these accounts, a comparison of the particular Net Formation per each land cover type as identified for the Czech Republic, Hungary, Romania and the Slovak Republic is presented on Figure 3.26. It provides an integrated view on total net formation for the 4 CEE countries combined with country breakdown for each main land cover type. Although the same net formation trend can be noticed for most of land cover types (with exception of agricultural land cover types: arable land & permanent crops, pastures & heterogeneous agricultural areas), quite different intensity is manifested in particular country.

Figure 3.26 – Total Net Formation per major land cover types for the 4 CEE countries



To understand net formation figures presented above, we have to combine it in particular case with information about natural, social, economic and political consequences in respective period (which is in fact on of the aims of the Targeted Accounts). As example, exceptionaly high changes in agricultural areas in Romania have been connected with extensification of agriculture as a consequence of new law (the Land Use Act No.18) in the beginning of 90ties, when agriculture land returned to former owners was subsequently divided in parcels for complex cultivation with lesser share of arable land. In opposite, considerable decrease of area of wetlands in Danube delta area in Romania is caused by agriculture intensification supported by the government. The greatest share of changes in forested land is represented by decrease of forests and enlargement of transitional woodland-scrub due to air pollution in the Czech Republic.

More synthetic view of the land cover change data is provided also the Land Cover Resource & Use account by identifying both the processes of land cover change (that is the Formation of cover), as well as the losses, which are distributed by landscape type. Zonal breakdown per landscape types is shown on Figure 3.27, where selected interesting sub-flows are highlighted in blue. Detailed Land Cover Resource & Use accounts for each country are included in Annex, nevertheless several important points apparent from summary account are presented further.

Figure 3.27 – Land Cover Resource and Use account for the 4 CEE countries

SUMMARY LAND COVER RESOURCE AND USE ACCOUNT

4 CEE COUNTRIES 1975/1990, Surface by Landscape Types in hectares

Summary Account	Landscape Types							
	A1 Urban dense areas	A2 Dispersed urban areas	B1 Broad pattern intensive agriculture	B2 Composite rural landscape	C1 Forested landscape	C2 Open semi-natural or natural landscape	C3 Landscape with no dominant land cover character	TOTAL
A - TOTAL INITIAL SURFACE ~ 1975	3826767	1919825	11620390	1693580	7375943	2639629	16766525	45842658
Consumption of Land Cover Resource (Supply by Land Cover)								
1 Artificial surfaces	10075	3514	6711	147	3210	1346	9959	34962
2.1+2.2 Arable Land + Permanent Crops	49217	26491	204041	131058	18448	27433	206058	664746
2.3+2.4 Pastures + Heterogeneous agricultural areas	25616	6006	36043	28603	73014	12180	131700	313162
3.1 Forests	34629	12948	61967	15361	231287	37874	230420	624485
3.2+3.3 Shrub and other semi-natural land	54770	14385	89311	12778	90075	28000	119180	408499
4 Wetlands	1096	2366	23542	225	441	52912	17819	98401
5 Water bodies	3847	2727	16124	340	964	15904	14997	54903
B - TOTAL CONSUMPTION OF LAND COVER RESOURCE	179250	70436	437740	188512	417438	175650	730132	2199158
Land Cover Flows resulting from Changes in the Uses of Land								
LCF1 Urban land management	4636	890	1128	28	316	256	1994	9247
LCF2 Urban sprawl	5623	1863	6330	397	3284	1190	8409	27095
LCF3 Extension of economic sites and infrastructures	18936	8378	8477	382	4822	1341	12937	53273
LCF4 Agricultural rotation and intensification	36990	16681	154071	127077	38605	11460	218748	603631
LCF41 Recent extension of pasture, fallow land, set aside	*15484*	*8243*	*74729*	*115283*	*21629*	*2979*	*115583*	*353929*
LCF42 Planting of vineyards, fruit and olive trees over arable & pasture	*9949*	*3281*	*35834*	*2052*	*865*	*6443*	*31807*	*90231*
LCF45 Intensification of agriculture	*11557*	*5157*	*43509*	*9743*	*16111*	*2038*	*71358*	*159472*
LCF5 Conversion of land to agriculture	42505	14358	97918	11269	28244	49725	116077	360096
LCF51 Intensive conversion of forest to agriculture	*4734*	*2811*	*14752*	*1572*	*1396*	*1147*	*22171*	*48584*
LCF52+LCF54 Conversion of marginal land to agriculture	*27640*	*7165*	*55269*	*5951*	*10534*	*8670*	*46706*	*161935*
LCF53 Diffuse conversion of forest to agriculture	*0899*	*1099*	*0088*	*3342*	*14833*	*2512*	*26775*	*82178*
LCF55 Conversion of wetlands to agriculture	*1246*	*1637*	*16496*	*331*	*214*	*36797*	*16284*	*72905*
LCF6 Forests creation and management	40806	11573	73808	17699	289351	54226	249392	736856
LCF61 Forests creation	*21766*	*6761*	*37807*	*7477*	*78441*	*21612*	*74403*	*247333*
LCF63 Recent felling and transition	*19050*	*5822*	*35911*	*10227*	*210910*	*32614*	*174989*	*489522*
LCF7 Water body creation and management	5934	4864	9931	641	2364	2461	12405	38600
LCF8 Changes of land cover due to natural and multiple causes	25820	11828	86078	31019	50453	54992	110171	370361
LCF82 Farmland abandonment without significant woodland creation	*15367*	*6731*	*53738*	*21888*	*43576*	*23274*	*76857*	*241431*
LCF83 Farmland abandonment with woodland creation	*3442*	*624*	*2098*	*2458*	*4691*	*2815*	*9182*	*25309*
LCF84 Other land abandonment (other than farmland)	*1941*	*603*	*284*	*30*	*563*	*129*	*2400*	*5949*
LCF89 Other changes and unknown	*1220*	*746*	*7207*	*300*	*400*	*3213*	*3001*	*16926*
C - TOTAL LAND COVER FLOWS 1975-1990	179250	70436	437740	188512	417438	175650	730132	2199158
D - Final Surface ~ 1990 (D = A-B+C)	3826767	1919825	11620390	1693580	7375943	2639629	16766525	45842658

For example, Figure 3.28 express the level of urban management flows as well as flows representing conversion of land into urban. Urban extension appears to be driven by extension of economic sites and infrastructure rather then urban sprawl. The data suggest that in terms of total area in hectares, urban expansion is highest in areas already dominated by dense urban, but also areas with specific no dominance contribute significantly. When the same figures analysed in relative terms of percentage of total area in particular landscape type, it is evident that expansion is more frequent process in those areas already dominated by urban (both dense and dispersed) then elsewhere.

Figure 3.28 – Urban related flows in the 4 CEE countries per Landscape Types

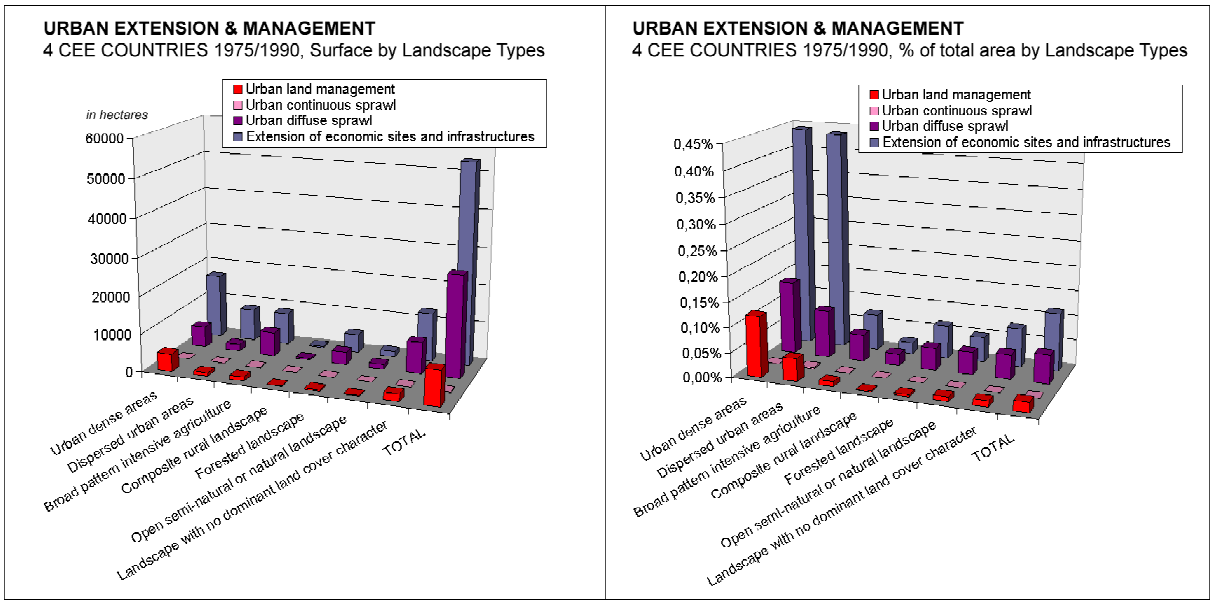
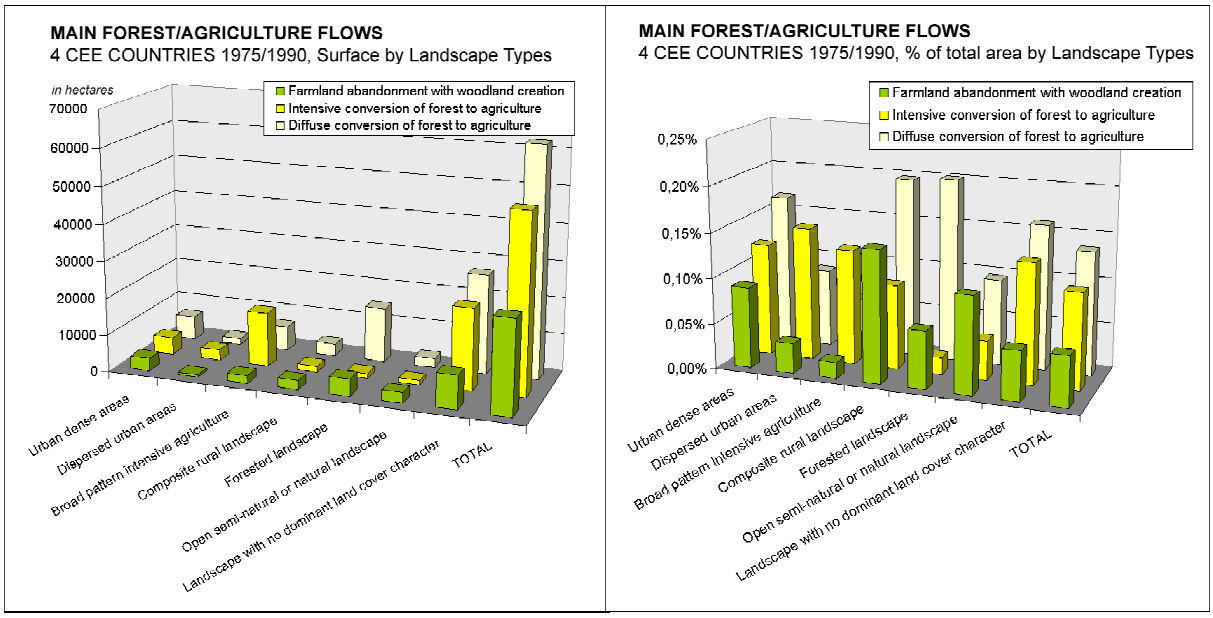


Figure 3.29 – Forest vs. agriculture flows in the 4 CEE countries per Landscape Types



Similarly, we can identify exchange flows between agriculture and forest land. The data on Figure 3.29 suggest that, in terms of hectares, conversion of forest to agriculture far exceed the oposite flows, due to farmland abandonment accompanied with woodland creation, irrespectively of the landscape type. Further analysis in terms of relative values (percentage of total area per particular landscape type) prove this assumption, but uncovers high variability of such processes in individual lanscape type.

Figure 3.30 – Main forest in the 4 CEE countries per Landscape Types and elevation/slope zones.

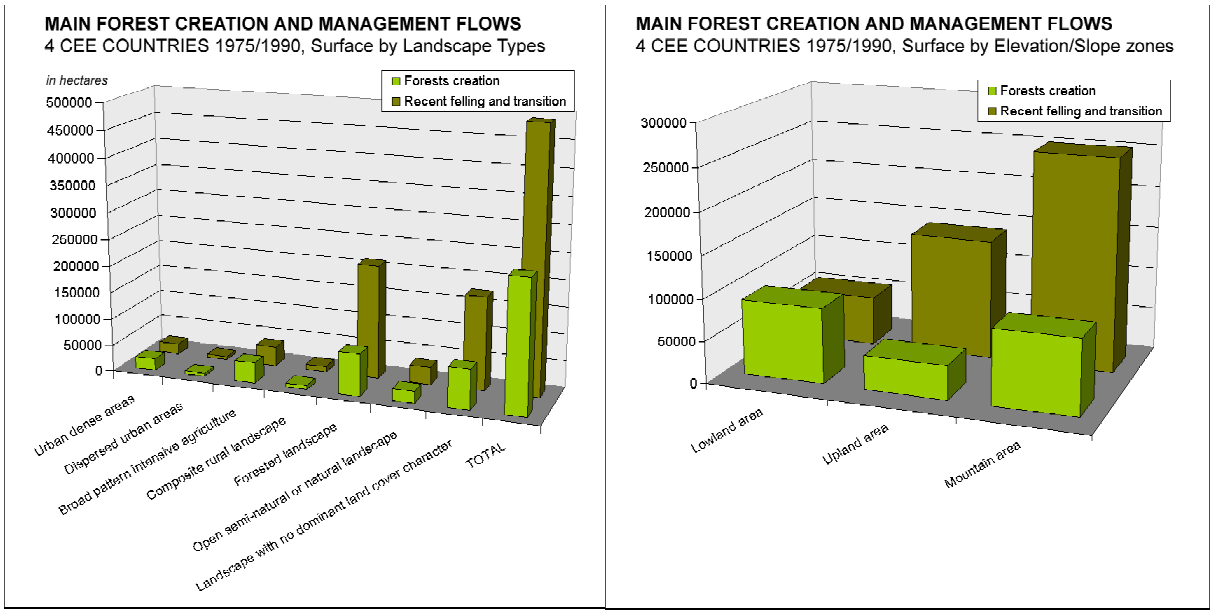
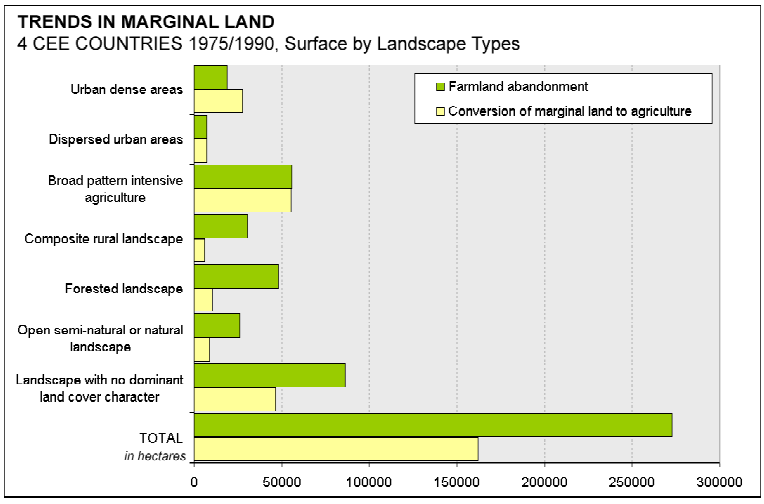


Figure 3.30 presents the analysis of main forest flows, forest creation and oposite recent felling and transition . The figure indicates the fact, that in average negative net formation of forests occurs, but on the other hand, it also demonstrate that in landscape types dominated by urban and agriculture these processes are more or less balanced. From this point of view the interesting result is obtained when using elevation/slope breakdown, where possitive net formation of forests is flashed in lowland areas. Please note that these figures exclude areas with urban dominance as currently now elevation breakdown was applied in these landscape types.

Figure 3.31 – Trends in marginal land in the 4 CEE countries per Landscape Types



Finaly, the figure 3.31 showing the trends in marginal land development in the 4 CEE countries has been produced for comparison with the same figure in the "coastal study". While generaly similar, it present a different pattern in case of agricultural areas (both broad pattern intensive agriculture and composite rural landscape) in favour of farmland abandonment. We suggest this as a first indication of processes connected to changes of land

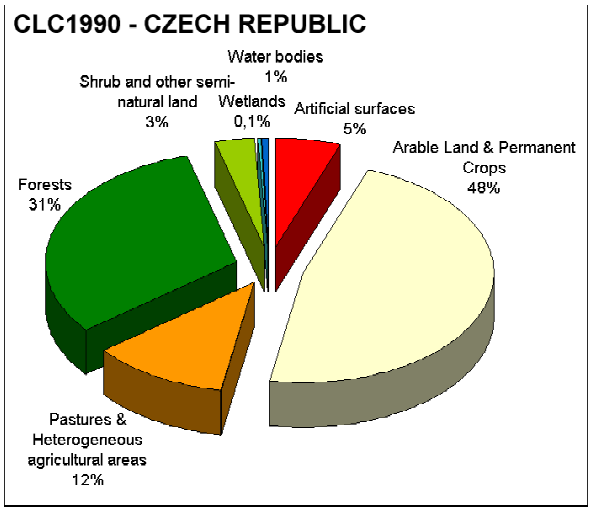
property ownership, which just started at during the last years of our study period (particularly in large extent in Romania).

All above presented figures are only preliminary results showing the avantage of land cover change information structured in the form of basic accounts as well as their spatial breakdown for assessment. These information will be subject of more detailed analysis in future, in particular in the context of additional information as well as using different spatial breakdown according zonal approach.

3.2.2 Results for the Czech Republic Regions

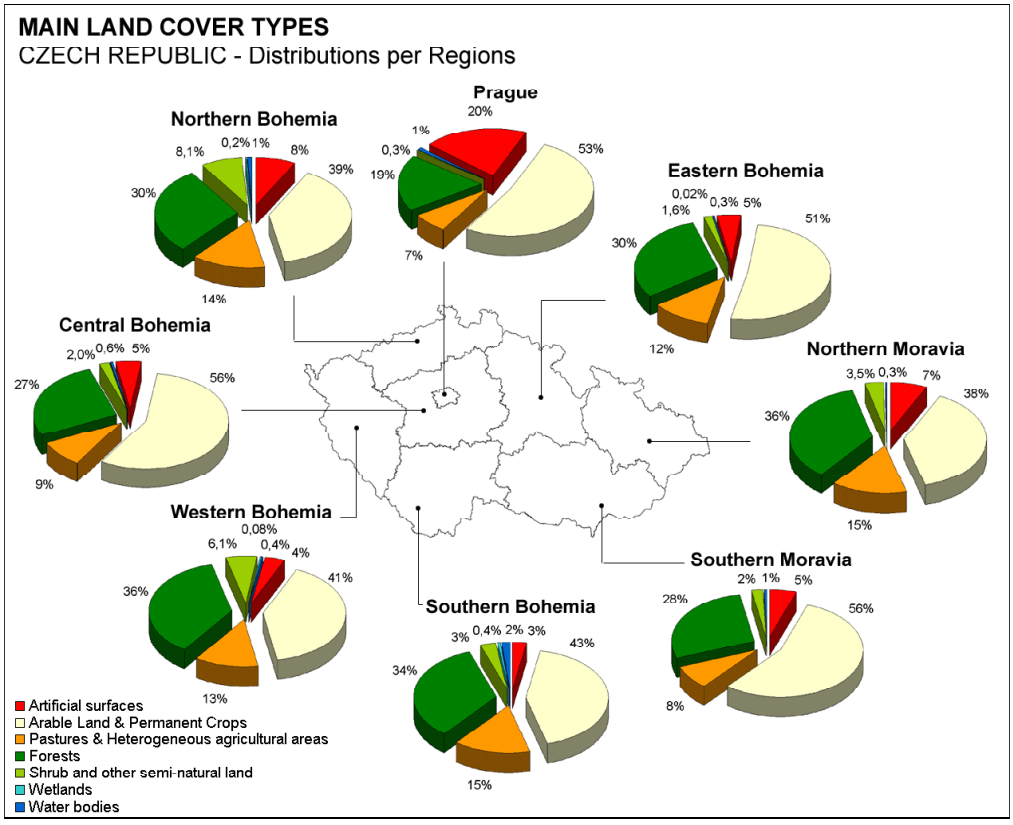
Considering availability of statistics about forest, finaly administrative regions have been selected as appropriate level of Land Reporting Units for preparation of Targeted Accounts (disscused detail in Part 4). Therefore, in addition to the basic accounts on country level and by Landscape Types, the basic accounts for 8 regions have been produced. Detailed accounts are presented in Annex. Following pages give these information in summary with some interesting points focused on forest land status and flows as present in the basic accounts.

Figure 3.32 – Main land cover types in the Czech Republic.



Figures 3.32 and 3.33 show the proportion of the major land cover types within the Czech Republic as well as its regional variation. As seen, the regional differences are not very high. Prevailing landscape is heterogeneous and with partial exception of traditional regions of agricultural production (e.g. Central Bohemia and South Moravia), no land cover type is clearly dominating. The forest areas occupy about one third of the total area of the depending on the appropriateness of land for agriculture. Large continuous forest areas are concentrated mainly in mountainous regions situated along the state border.

Figure 3.33 – Main land cover types distribution in particular region of the Czech Republic.



The summary matrix of the land cover changes recorder between 1975 and 1990, using the aggregated CLC cover classes, is shown on Figure 3.34. As seen, total change area during studied period represent about 3,5% from the total area of the Czech Republic.

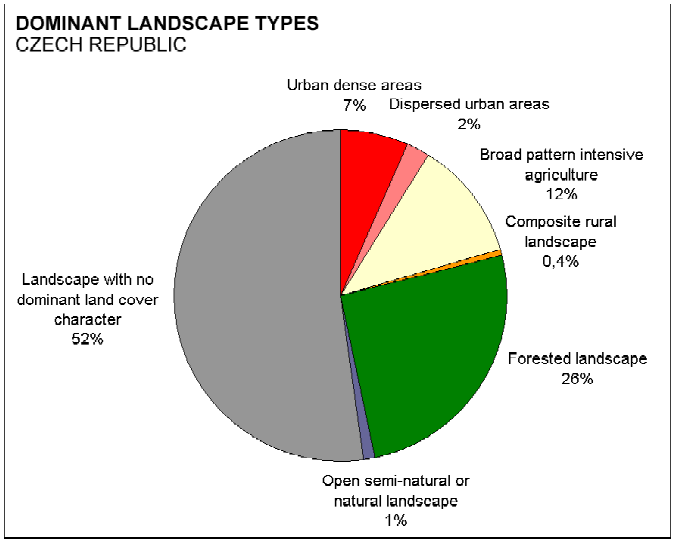
Figure 3.34 – Land cover resource and use account for the Czech Republic by Regions

SUMMARY MATRIX OF LAND COVER CHANGE
CZECH REPUBLIC 1975/1990, Surface in hectares

FINAL YEAR ⇊ / OPENING YEAR ⇉		1 Artificial surfaces	2.1+2.2 Arable Land + Permanent Crops	2.3+2.4 Pastures + Heterogeneous agricultural areas	3.1 Forests	3.2+3.3 Shrub and other semi-natural land	4 Wetlands	5 Water bodies	TOTAL OPENING YEAR ~1975	Increase (+)	Decrease (-)	Net Changes 1975-1990	TOTAL FINAL YEAR ~1990
1	Artificial surfaces	409101	2669	1385	655	4001	0	1077	418887	24400	13602	10807	429694
2.1+2.2	Arable Land + Permanent Crops	8164	3698507	8348	1557	798	0	906	3718280	39949	33755	6194	3724474
2.3+2.4	Pastures + Heterogeneous agricultural areas	3399	17171	912265	2430	1583	0	2276	939123	26002	29275	-3273	935851
3.1	Forests	3528	4679	11578	2433418	142530	141	1247	2597122	29237	163704	-134467	2462655
3.2+3.3	Shrub and other semi-natural land	5190	1121	1905	23909	125240	52	379	157796	149336	32688	116648	274444
4	Wetlands	0	187	15	361	130	7277	1178	9148	239	1871	-1632	7516
5	Water bodies	312	139	354	325	163	46	46320	47660	7063	1339	5723	53383
TOTAL FINAL YEAR 1990		429694	3724474	935851	2462655	274444	7516	53383	7888016	276233	276233		7888016

Total net changes are generaly small, except huge changes in “Forests” and “Shrub and other semi–natural areas” classes demonstrated in dramatic decrease of timberland area (31) in favour of class 32. Further analysis of the forest related changes can be done using Land Cover Change Account per Regions on Figure 3.36. Dramatic changes can be identified in Northwest Bohemia, in the area of strong concentration of mining, chemical industry and power supply resulting in excessive air pollution. Further, these changes appear also in Krkonose Mountains, which were affected also by the air pollution as well as military activities (military bases). The next important group of changes (more then 10% from total changed area) occurred due to intensification of agriculture or crop rotation practices.

Figure 3.35 – Land Cover Change Account of the Czech Republic per Regions

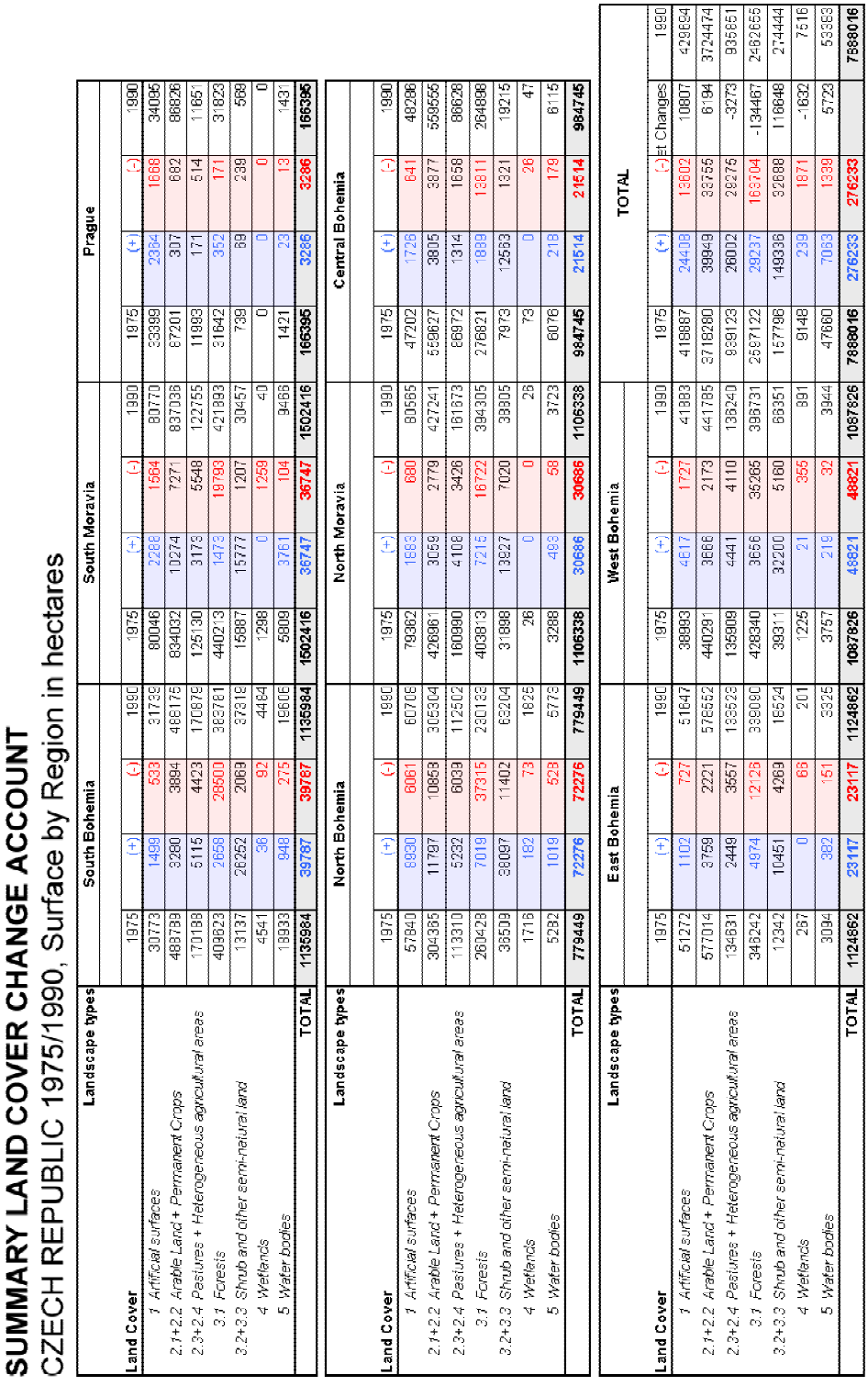


In terms of relative figures we should also note high decrease in percentage of total area of wetland during study period.

Analysing land cover changes by landscape types allows another perspective in understanding of the processes of land cover change. Figure 3.35 shows proportion of main Dominant Landscape Types in the Czech Republic. Large percentage of area with no clear dominance reflects well heterogeneous character of

majority of landscape in the Czech Republic. Summary Land Cover Change Account per Landscape Types is presented on Figure 3.37. Detailed Land Cover Change Account per Landscape Types (present in Annex) allows also further split and analysis of figures based on altitude.

Figure 3.36 – Land Cover Change Account of the Czech Republic per Regions



SUMMARY LAND COVER CHANGE ACCOUNT
CZECH REPUBLIC 1975/1990, Surface by Region in hectares

Landscape types	South Bohemia				South Moravia				Prague			
Land Cover	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990
1 Artificial surfaces	30773	1499	533	31739	80046	2288	1564	80770	53389	2364	1668	54085
2.1+2.2 Arable Land + Permanent Crops	488739	3280	3894	488175	834032	10274	7271	837035	67201	307	682	66826
2.3+2.4 Pastures + Heterogeneous agricultural areas	170138	5115	4423	170879	125130	3178	5548	122755	11983	171	514	11651
3.1 Forests	409623	2658	28500	383781	440213	1473	19793	421893	31642	352	171	31823
3.2+3.3 Shrub and other semi-natural land	13137	26252	2069	37319	15687	15777	1207	30457	739	89	239	589
4 Wetlands	4541	36	92	4484	1298	0	1259	40	0	0	0	0
5 Water bodies	18933	948	275	19606	5909	3761	104	9466	1421	23	13	1431
TOTAL	1135984	39787	39787	1135984	1502416	36747	36747	1502416	166395	3286	3286	166395

Landscape types	North Bohemia				North Moravia				Central Bohemia			
Land Cover	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990
1 Artificial surfaces	57840	8830	8061	60709	79362	1883	680	80565	47202	1726	641	48286
2.1+2.2 Arable Land + Permanent Crops	304385	11797	10853	305304	426961	3059	2779	427241	559627	3835	3877	559585
2.3+2.4 Pastures + Heterogeneous agricultural areas	113310	5232	6039	112502	160990	4108	3426	161673	86972	1314	1658	86628
3.1 Forests	260429	7019	37315	230133	403813	7215	16722	394305	276821	1899	13811	264908
3.2+3.3 Shrub and other semi-natural land	38509	38097	11402	65204	31888	13927	7020	38805	7973	12563	1221	19215
4 Wetlands	1716	182	73	1825	26	0	0	26	73	0	26	47
5 Water bodies	5232	1019	523	5728	3288	493	58	3723	6076	218	179	6115
TOTAL	779449	72276	72276	779449	1106338	30686	30686	1106338	984745	21514	21514	984745

Landscape types	East Bohemia				West Bohemia				TOTAL			
Land Cover	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	Net Changes	1990
1 Artificial surfaces	51272	1102	727	51647	38983	4617	1727	41883	416887	24408	13602	10807	429694
2.1+2.2 Arable Land + Permanent Crops	577014	3759	2221	578552	440291	3666	2173	441785	3718280	39949	33755	6194	3724474
2.3+2.4 Pastures + Heterogeneous agricultural areas	134631	2449	3557	133523	135909	4441	4110	136240	959123	26032	29275	-3243	936661
3.1 Forests	346242	4974	12128	339090	428340	3656	36265	395731	2667122	29237	168704	-134467	2662655
3.2+3.3 Shrub and other semi-natural land	12342	10451	4269	18524	39311	32200	5160	66351	157796	149396	32688	116648	274444
4 Wetlands	287	0	66	201	1225	21	355	891	9148	239	1871	-1632	7516
5 Water bodies	3094	382	151	3325	3757	219	32	3944	47660	7093	1398	5723	53383
TOTAL	1124862	23117	23117	1124862	1087826	48821	48821	1087826	7888016	276233	276233		7888016

SUMMARY LAND COVER CHANGE ACCOUNT

CZECH REPUBLIC 1975/1990, Surface by Landscape Types in hectares

Landscape types	A1 URBAN DENSE AREAS				A2 DISPERSED URBAN AREAS				B1 BROAD PATTERN INTENSIVE AGRICULTURE				B2 COMPOSITE RURAL LANDSCAPE			
Land Cover	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990
1 Artificial surfaces	76559	7906	4662	79803	42981	2405	778	44609	74667	2641	901	76406	601	17	0	618
2.1+2.2 Arable Land + Permanent Crops	184367	2660	3716	183311	208979	972	1483	208469	1018519	12057	11051	1019526	2538	431	0	2968
2.3+2.4 Pastures + Heterogeneous agricultural areas	42815	1529	2307	42038	40345	438	1229	39553	100639	3287	5471	98455	4262	122	492	3892
3.1 Forests	97252	1042	3729	94565	54731	278	2046	52963	243869	1594	12932	232531	10496	46	487	10055
3.2+3.3 Shrub and other semi-natural land	8203	4465	3296	9372	3875	1970	1036	4809	8279	10666	1040	17904	502	376	13	865
4 Wetlands	62	0	38	23	77	0	74	3	956	0	701	255	8	0	0	8
5 Water bodies	2402	461	316	2547	2250	626	43	2832	5564	2143	291	7416	26	0	0	26
TOTAL	411658	18064	18064	411658	353239	6689	6689	353239	1452493	32388	32388	1452493	18432	991	991	18432

Landscape types	C1 FORESTED LANDSCAPE				C2 OPEN SEMI-NATURAL OR NATURAL				C3 LANDSCAPE WITH NO DOMINANT				TOTAL				
Land Cover	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	Net Ch.	1990
1 Artificial surfaces	44523	2784	1187	46120	242	0	0	242	179313	8656	6073	181897	418887	24408	13602	10807	429694
2.1+2.2 Arable Land + Permanent Crops	300089	4016	2891	301213	904	0	0	904	2002885	19813	14614	2008083	3718280	39949	33755	6194	3724474
2.3+2.4 Pastures + Heterogeneous agricultural areas	195575	6647	5136	197086	5401	195	176	5420	550087	13784	14464	549407	939123	26002	29275	-3273	935851
3.1 Forests	717375	11216	49750	678841	13032	314	2258	11088	1460388	14747	32502	1382612	2597122	29237	163704	-134467	2462655
3.2+3.3 Shrub and other semi-natural land	46686	45298	11254	80730	9020	2212	287	10945	81232	84349	15762	149820	157796	149336	32688	116648	274444
4 Wetlands	5474	164	441	5197	0	0	0	0	2570	75	616	2029	9148	239	1871	-1632	7516
5 Water bodies	9792	658	123	10328	0	0	0	0	27626	3174	567	30233	47660	7033	1339	5723	53383
TOTAL	1319514	70783	70783	1319514	28599	2721	2721	28599	4304081	144597	144597	4304081	7888016	276233	276233	0	7888016

Figure 3.37 – – Land Cover Change Account of the Czech Republic per Landscape Types

Figure 3.38 – – Account of Formation of Land Cover for the Czech Republic

SUMMARY ACCOUNT OF FORMATION OF LAND COVER

Czech Republic 1975/1990

Consumption of land cover										***Formation of land cover***							
1	2.1+2.2	2.3–2.4	3.1	3.2+3.3	4	5				1	2.1–2.2	2.3+2.4	3.1	3.2–3.3	4	5	
Artificial surfaces	Arable land & Permanent crops	Pastures & Mixed agricultural areas	Forests	Shrub and other semi-natural land	Wetlands	Water bodies	Total		Land cover flows	Artificial surfaces	Arable land & Permanent crops	Pastures & Mixed agricultural areas	Forests	Shrub and other semi-natural land	Wetlands	Water bodies	Total
3815	4	0	0	0	0	0	3819	LCF1	Urban land management	3819	0	0	0	0	0	0	3819
0	2253	1064	265	61	0	13	3656	LCF2	Urban sprawl	3656	0	0	0	0	0	0	3656
0	5907	2335	3283	5129	0	299	16933	LCF3	Extension of economic sites and infrastructures	16933	0	0	0	0	0	0	16933
0	20403	18929	0	0	0	0	39332	LCF4	Agricultural rotation and intensification	0	31152	8180	0	0	0	0	39332
4054	0	0	16258	3026	202	494	24033	LCF5	Conversion of land to agriculture	0	8797	15237	0	0	0	0	24033
655	1557	0	142484	23909	361	325	169291	LCF6	Forests creation and management	0	0	0	26807	142484	0	0	169291
1060	906	2276	1247	379	0	0	5868	LCF7	Water body creation and management	0	0	0	0	0	0	5868	5868
4018	2725	4672	187	184	1308	209	13302	LCF8	Changes of land cover due to natural and multiple causes	0	0	2586	2430	6852	239	1195	13302
13602	**33755**	**29275**	**163704**	**32688**	**1871**	**1339**	**276233**		**Sub/Total Flows**	**24408**	**39949**	**26002**	**29237**	**149336**	**239**	**7053**	**276233**
10807	***6194***	***-3273***	***-134467***	***116648***	***-1632***	***5723***			***Net Formation of Land Cover***								
24408	**39949**	**26002**	**29237**	**149336**	**239**	**7053**	**276233**		**TOTAL**	**24408**	**39949**	**26002**	**29237**	**149336**	**239**	**7053**	**276233**

Land Cover stock 1975	**418887**	**3718230**	**939123**	**2597122**	**157796**	**9148**	**47650**	**7888016**
Net Formation of Land Cover	*10807*	*6194*	*-3273*	*-134467*	*116648*	*-1632*	*5723*	
Land Cover stock 1990	**429694**	**3724474**	**935851**	**2462655**	**274444**	**7516**	**53383**	**7888016**

Another presentation providing better insight into land cover changes processes is the Account of Formation of Land Cover, which represents the balance between Formation and Consumption per individual defined flows (LCF). This account is established by CLC classes, their total being equal for each individual flow. The balance of the account is the Net Formation of Land Cover. The Net Formation of Cover is at the same time the difference between the two stocks, Land Cover 1975 and Land Cover 1990. Summary Account of Formation of Land Cover for the Czech Republic is shown on previous page on Figure 3.38. Using the detailed Account of Formation of Land Cover (present in Annex) we are able to trace in depth exact contribution to/from particular land cover class to individual defined flows and vice versa.

Finaly, the Land Cover Resource & Use Account provides a more synthetic view of the land cover change data, by identifying both the processes of land cover change (that is the Formation of cover), as well as the losses, which are distributed by Regions (Figure 3.39) or by Landscape types (Figure 3.40). Selected sub-flows related to agriculture, farmland abandonment, marginal land, forest and wetlands are highlighted in blue. Regional and zonal approach clearly show different profiles and facilitate a more detailed commentary on the statistics. Comprehensive assessment of presented figures is far beyond this study, but some of the interesting finding related specifically forest to flows apparent in produced accounts is further developed on Figures 3.41 – 3.46.

Figure 3.39 – – Summary Land Cover Resource and Use Account for the Czech Republic per Regions

SUMMARY LAND COVER RESOURCE AND USE ACCOUNT

CZECH REPUBLIC 1975/1990, Surface by Regions in hectares

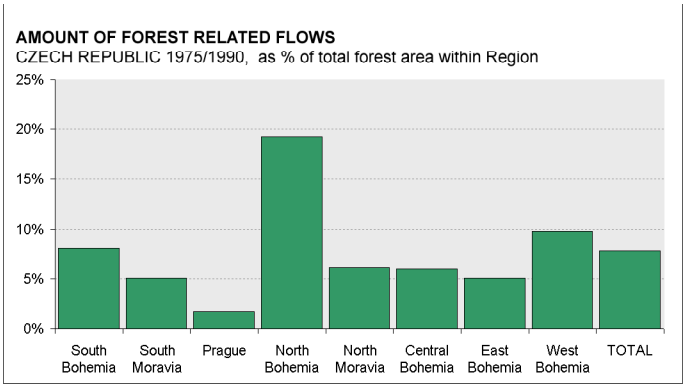
Summary Account		South Bohemia	South Moravia	Prague	North Bohemia	North Moravia	Central Bohemia	East Bohemia	West Bohemia	TOTAL
	A - TOTAL INITIAL SURFACE ~ 1975	**1135984**	**1502416**	**166395**	**779449**	**1106338**	**984745**	**1124862**	**1087826**	**7888016**
Consumption of Land Cover Resource (Supply by Land Cover)										
1	*Artificial surfaces*	533	1564	1668	6061	680	641	727	1727	13602
2.1+2.2	*Arable Land + Permanent Crops*	3894	7271	682	10858	2779	3877	2221	2173	33755
2.3+2.4	*Pastures + Heterogeneous agricultural areas*	4423	5548	514	6039	3426	1658	3557	4110	29275
3.1	*Forests*	28500	19793	171	37315	16722	13811	12126	36265	163704
3.2+3.3	*Shrub and other semi-natural land*	2069	1207	239	11402	7020	1321	4269	5160	32688
4	*Wetlands*	92	1259	0	73	0	26	66	355	1871
5	*Water bodies*	275	104	13	528	58	179	161	32	1339
	B - TOTAL CONSUMPTION OF LAND COVER RESOURCE	**39787**	**36747**	**3286**	**72276**	**30686**	**21514**	**23117**	**48821**	**276233**
Land Cover Flows resulting from Changes in the Uses of Land										
LCF1	Urban land management	72	693	1312	734	252	134	218	404	3819
LCF2	Urban sprawl	441	624	414	482	496	301	333	565	3656
LCF3	Extension of economic sites and infrastructures	986	971	638	7713	1136	1291	551	3648	16933
LCF4	Agricultural rotation and intensification	5962	8960	150	10270	3167	3469	3981	3373	39332
LCF41	*Recent extension of pasture, fallow land, set aside*	*3041*	*461*	*42*	*851*	*972*	*493*	*891*	*999*	*7752*
LCF42	*Planting of vineyards, fruit and olive trees over arable & pasture*	*0*	*2587*	*26*	*3012*	*210*	*1736*	*472*	*131*	*8174*
LCF45	*Intensification of agriculture*	*2921*	*5911*	*81*	*6407*	*1985*	*1240*	*2618*	*2243*	*23406*
LCF5	Conversion of land to agriculture	2262	4048	320	5960	3367	1427	2057	4596	24033
LCF51	*Intensive conversion of forest to agriculture*	*436*	*917*	*4*	*677*	*585*	*409*	*495*	*1156*	*4679*
LCF52+LCF54	*Conversion of marginal land to agriculture*	*78*	*235*	*0*	*1578*	*298*	*92*	*230*	*514*	*3026*
LCF53	*Diffuse conversion of forest to agriculture*	*1442*	*1948*	*27*	*1919*	*2163*	*515*	*976*	*2588*	*11578*
LCF55	*Conversion of wetlands to agriculture*	*139*	*266*	*13*	*42*	*40*	*82*	*88*	*26*	*696*
LCF6	Forests creation and management	28456	16893	365	40103	20476	13964	14883	34150	169291
LCF61	*Forests creation*	*2320*	*1280*	*296*	*6631*	*6888*	*1614*	*4500*	*3377*	*26807*
LCF63	*Recent felling and transition*	*26136*	*15613*	*69*	*33572*	*13588*	*12350*	*10383*	*30773*	*142484*
LCF7	Water body creation and management	920	2692	6	1019	493	192	327	219	5868
LCF8	Changes of land cover due to natural and multiple causes	688	1867	81	5987	1299	737	767	1876	13302
LCF82	*Farmland abandonment without significant woodland creation*	*264*	*579*	*9*	*2039*	*871*	*341*	*234*	*629*	*4966*
LCF83	*Farmland abandonment with woodland creation*	*338*	*193*	*55*	*488*	*327*	*275*	*475*	*279*	*2430*
LCF84	*Other land abandonment (other than farmland)*	*12*	*25*	*0*	*2981*	*0*	*95*	*3*	*885*	*4001*
LCF89	*Other changes and unknown*	*46*	*0*	*17*	*231*	*5*	*0*	*0*	*22*	*321*
	C - TOTAL LAND COVER FLOWS 1975-1990	**39787**	**36747**	**3286**	**72276**	**30686**	**21514**	**23117**	**48821**	**276233**
	D - Final Surface ~ 1990 (D = A+B+C)	**1135984**	**1502416**	**166395**	**779449**	**1106338**	**984745**	**1124862**	**1087826**	**7888016**

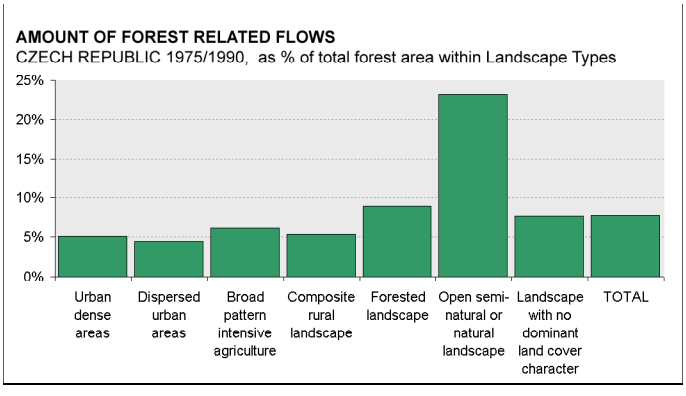
Figure 3.40 – Land cover resource and use account for Czech Republic by Landscape Types

SUMMARY LAND COVER RESOURCE AND USE ACCOUNT
CZECH REPUBLIC 1975/1990, Surface by Landscape Types in hectares

Summary Account	Landscape Types							
	A1 Urban dense areas	A2 Dispersed urban areas	B1 Broad pattern intensive agriculture	B2 Composite rural landscape	C1 Forested landscape	C2 Open semi-natural or natural landscape	C3 Landscape with no dominant land cover character	TOTAL
A TOTAL INITIAL SURFACE ~ 1975	411658	353239	1452493	18432	1319514	28599	4304081	7888016
Consumption of Land Cover Resource (Supply by Land Cover)								
1 Artificial surfaces	4662	778	901	0	1187	0	6073	13602
2.1+2.2 Arable Land & Permanent Crops	3716	1483	11051	0	2891	0	14614	33755
2.3+2.4 Pastures & Heterogeneous agricultural areas	2307	1229	5471	492	5136	176	14464	29275
3.1 Forests	3729	2046	12932	487	49750	2258	92502	163704
3.2+3.3 Shrub and other semi-natural land	3296	1036	1040	13	11254	287	15762	32688
4 Wetlands	38	74	701	0	441	0	616	1871
5 Water bodies	316	43	291	0	123	0	567	1339
B TOTAL CONSUMPTION OF LAND COVER RESOURCE	18064	6689	32388	991	70783	2721	144597	276233
Land Cover Flows resulting from Changes in the Uses of Land								
LCF1 Urban land management	2158	129	184	0	137	0	1211	3819
LCF2 Urban sprawl	889	298	674	0	296	0	1499	3656
LCF3 Extension of economic sites and infrastructures	4859	1979	1782	17	2351	0	5946	16933
LCF4 Agricultural rotation and intensification	1936	785	11833	442	5461	20	18856	39332
LCF41 Recent extension of pasture, fallow land, set aside	181	165	1145	25	2134	20	4082	7752
LCF42 Planting of vineyards, fruit and olive trees over arable & pasture	367	98	3772	0	215	0	3722	8174
LCF45 Intensification of agriculture	1388	522	6916	417	3112	0	11052	23406
LCF5 Conversion of land to agriculture	2052	578	2832	111	4843	175	13442	24033
LCF51 Intensive conversion of forest to agriculture	203	107	632	14	697	0	3027	4679
LCF52+LCF54 Conversion of marginal land to agriculture	682	20	86	0	506	20	1712	3026
LCF53 Diffuse conversion of forest to agriculture	469	153	1193	97	3245	155	6266	11578
LCF55 Conversion of wetlands to agriculture	12	78	221	0	26	0	360	696
LCF6 Forests creation and management	3497	1772	11725	389	55263	2370	94276	169291
LCF61 Forests creation	888	247	1337	13	10608	267	13446	26807
LCF63 Recent felling and transition	2609	1525	10387	376	44655	2103	80830	142484
LCF7 Water body creation and management	405	592	1562	0	659	0	2650	5868
LCF8 Changes of Land Cover due to natural and multiple causes	2268	557	1796	33	1774	156	6718	13302
LCF82 Farmland abandonment without significant woodland creation	487	135	931	0	598	109	2705	4966
LCF83 Farmland abandonment with woodland creation	155	31	257	33	608	46	1300	2430
LCF84 Other land abandonment (other than farmland)	1480	357	4	0	239	0	1921	4001
LCF89 Other changes and unknown	108		23	0	107	0	83	321
C - TOTAL LAND COVER FLOWS 1975-1990	18064	6689	32388	991	70783	2721	144597	276233
D - Final Surface ~ 1990 (D = A-B+C)	411658	353239	1452493	18432	1319514	28599	4304081	7888016

Figure 3.41 – Amount of forest related flows in the Czech Republic by Regions and Landscape Types



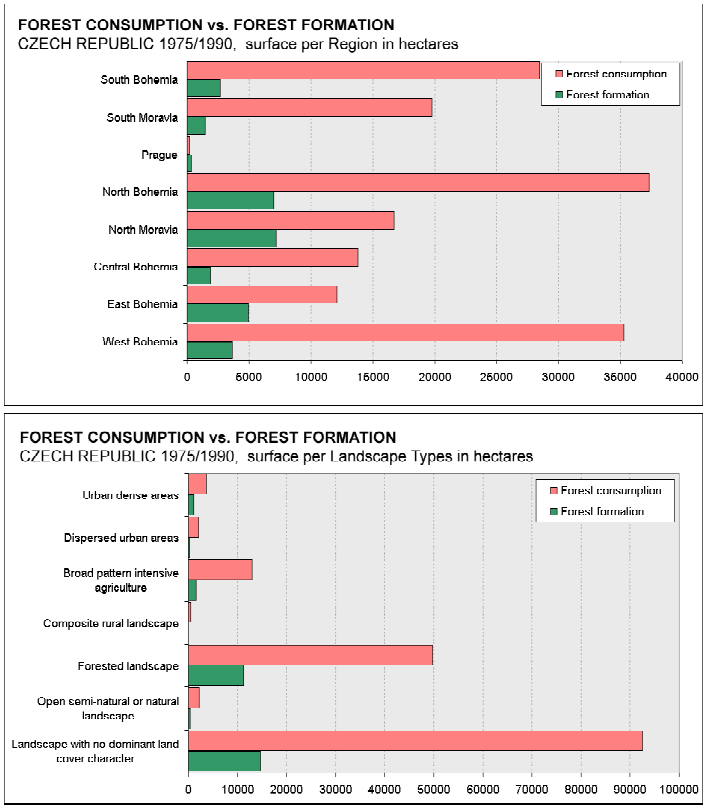


In average about 8% percent of the forest areas are subject of some change, percentage being extremely high in North and West of the country (~20%) as well as in Open semi-natural or natural landscape type (~24%). As explained above reason for massive changes was mainly excessive air emissions by coal-burning power plants especially in Mountains Krusne hory and Krkonose and these changes regard more to change of the forest quality and health than a total extent. Part of forest changes also belongs to a regular forest cut-grow process as large amount of wood was exported.

It also shows that the damaged forest was simultaneously restored, but not with the same intensity as damages

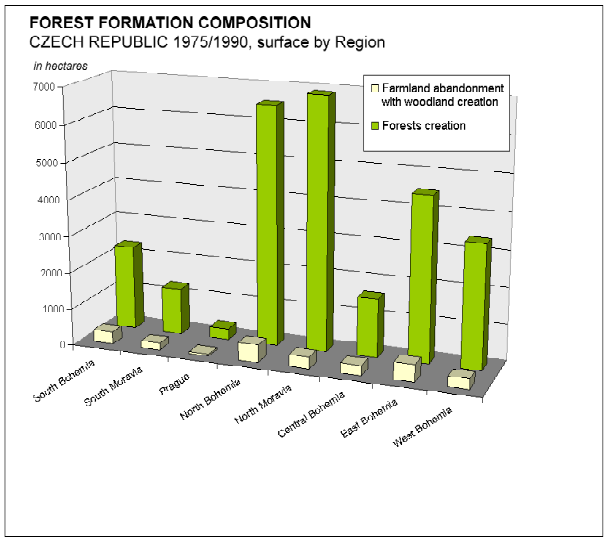
occured. Figure 3.42 presents regional overview on ratio between forest consumption and forest formation flows as well as it allows their perception per main Landscape Types.

Figure 3.42 – Consumption vs. formation of forest in the Czech Republic by Regions and main Landscape Types



Using the prepared basic accounts, we can have a closer look at composition of both the consumption and the formation flows. We can identify more detailed thematic breakdown of total flows according to particular sub-flows as well as spatial breakdown using different administrative units or zones. Figure 3.43 shows composition of the forest formation flows per Regions and main Landscape Types, while Figure 3.44 illustrates the same for the consumption flows. Figure 3.45 finally focuses in detail on further composition of minor flows of forest consumption both per Regions and main Landscape Types.

Figure 3.43 - Forest formation flows in the Czech Republic per Regions and main Landscape Types.



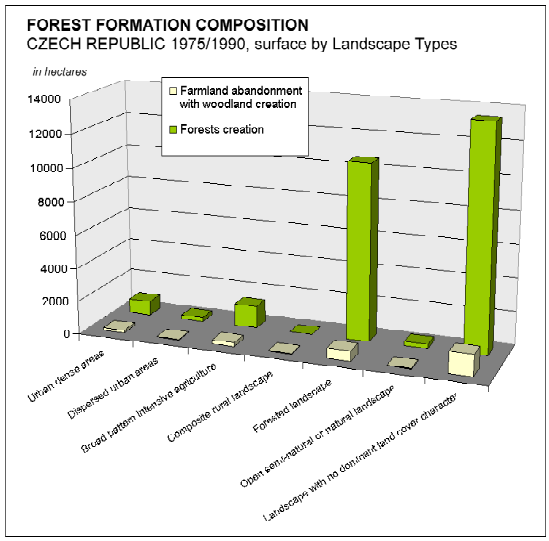


Figure 3.44 Forest consumptions flows in the Czech Republic per Regions and Landscape Types.

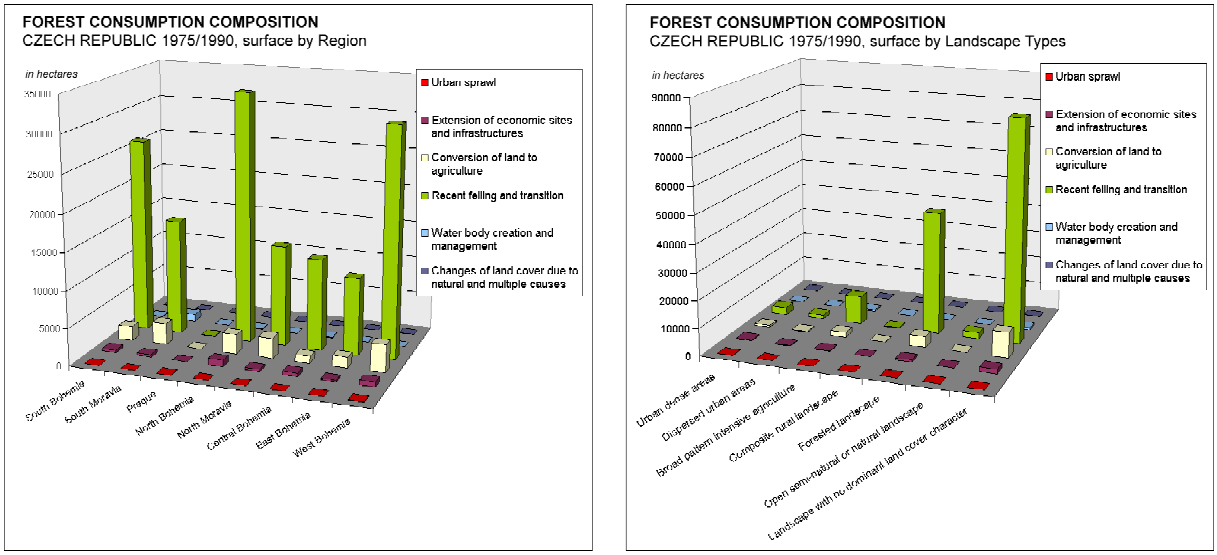
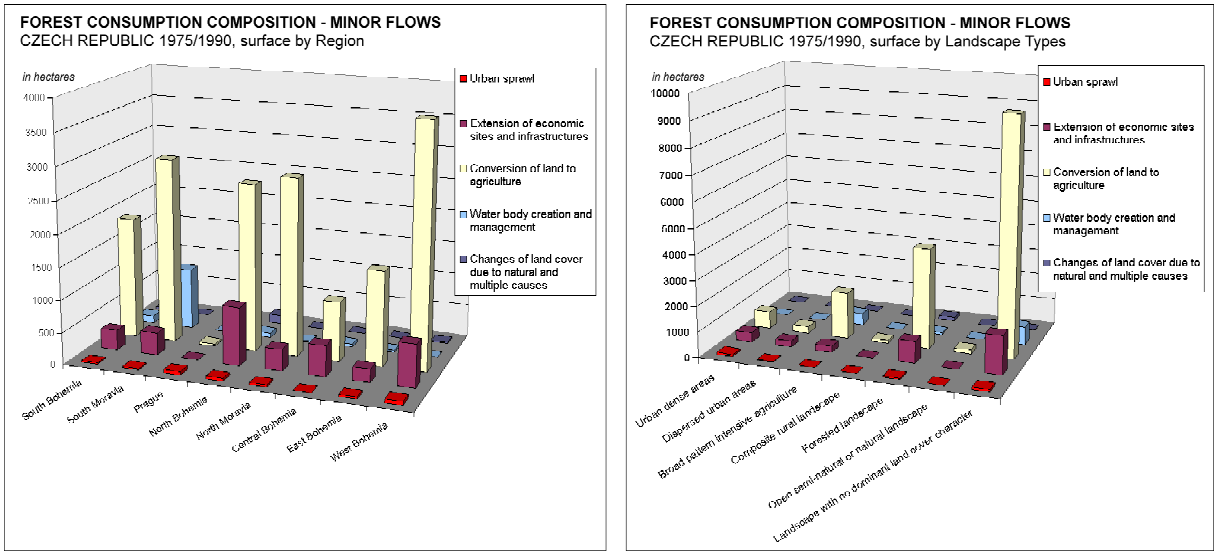
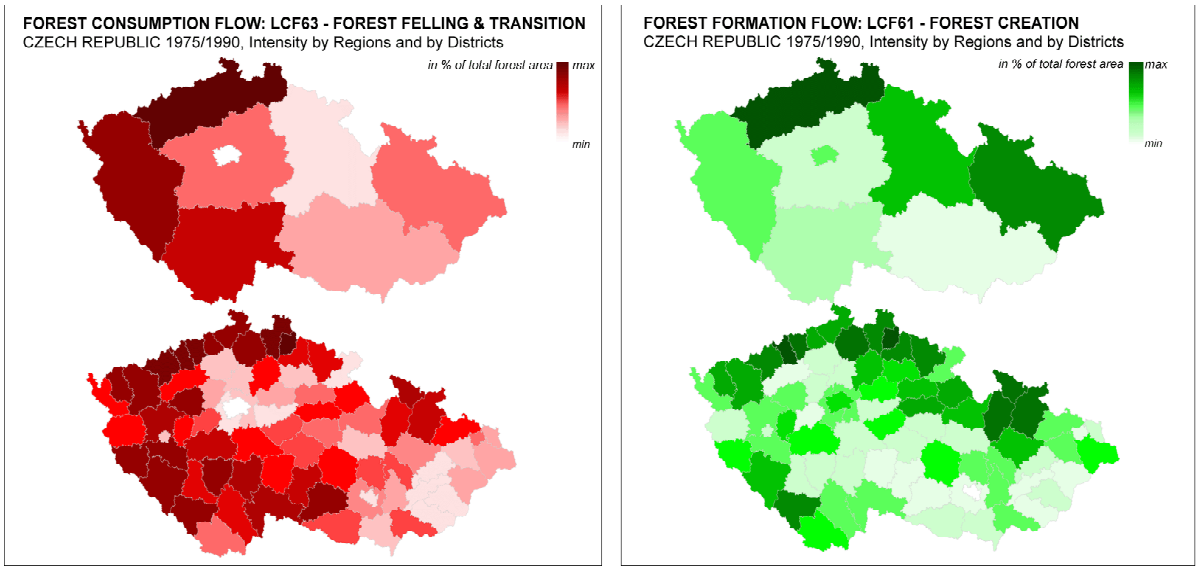


Figure 3.45 Minor forest consumptions flows in the Czech Republic per Regions and Landscape Types.



Introduction of spatial aspect and especialy flexibility to exploit various spatial breakdowns using different reporting units like administrative districts or zones (e.g. watersheds etc.) or landscape types brings major advantage into the accounts assessment. More, it also allows mapping of accounting results at most suitable level selected for particular processes under study and production of the targeted indicators as discissed in next chapter. Figure 3.46 shows example of mapping of the spatial intensity of two distinct forest flows, LCF61 “Forest creation” and LCF63 “Forest felling & transition”, for the Czech Republic on two different levels of administration: regions and districts.

Figure 3.46 Spatial intensity of selected forest flows on various administrative level



Examples presented above outlines type of information, which can be obtained by simple analysis of the accounts themselves as proposed and created within the study. Nevertheless, this can be further developed when combining with additional statistics in the focused Targeted accounts as discussed in next chapter.

Part 4: Targeted accounts for Forests – Case study Czech Republic

4.1 Targeted accounts

Targeted or supplementary accounts are constructed for specific purposes, to describe a particular theme or issue. They are derived from basic types of land accounts, and present a more detailed view of the data.

One type of supplementary account is used to give a geographical or zonal breakdown of the data. These accounts are particularly useful in the context of land cover and land use policy, because they allow us to see what geographical contrasts and differences occur between different regions and environments. More importantly they can show how a global indicator is expressed spatially and help in assessing how indicators are interlinked.

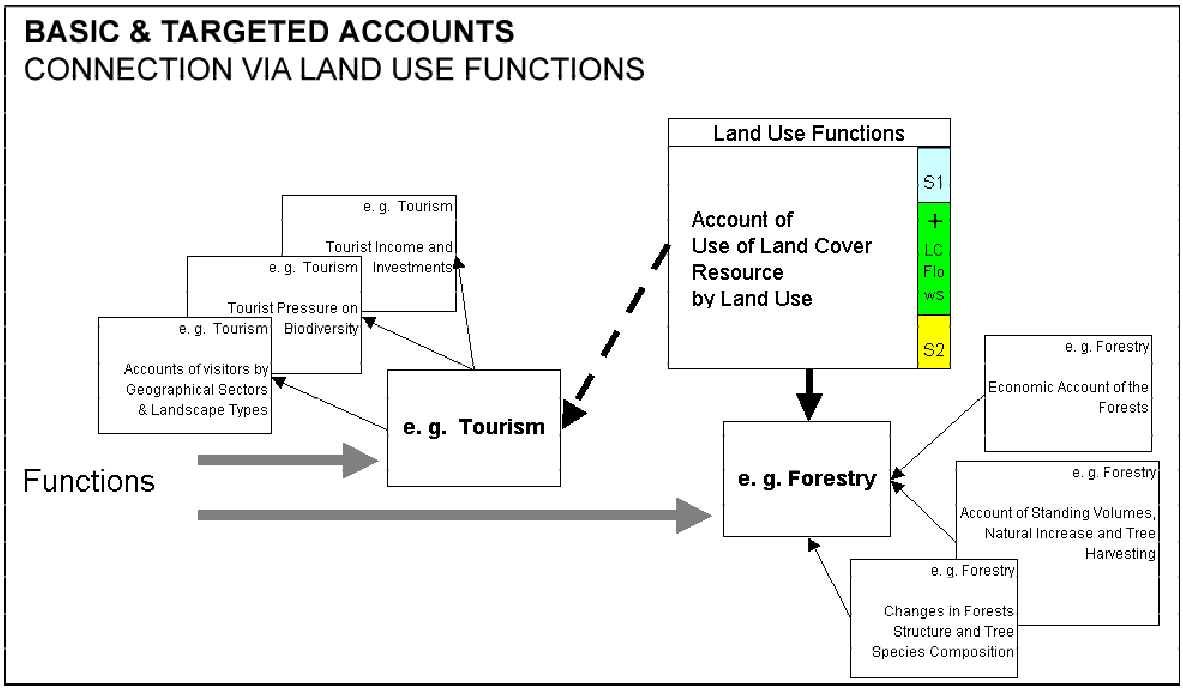
Other types of targeted or supplementary accounts include those, which seek to place a monetary or relative value on the resources or types of change within the flow account. Such accounts provide an important opportunity for the future in terms of showing how the value of various ecosystem goods and services are affected by different types of land cover change.

The so called targeted accounts can be described as a set of accounting tables connected to the LEAC basic accounts via the Land Use Functions account (Fig. 4.1). Such accounts can express stock and change in physical units, such as area or numbers, or there can be some attempt to monetise the account if this is appropriate. The formal relationship of targeted accounts and basic accounts can be made at the level of land analytical units, where detailed and continuous statistics exist, as for population. More often, however, only more general information is available and more aggregated reporting units have to be created. Such accounts could, for example, be developed for large reporting units like administrative regions or river basins when statistics are collected at this level.

The aggregation and linking process required to produce targeted accounts can be made either statistically or, by landscape types, or from multi-variate statistical analysis of grids or of pre-established land units.

The value of targeted accounts is that they allow the calculation of a wider range of indicators that can describe the potentials, the value or the quality of particular natural resources, as well as the intensity of pressure upon them. As a result, they allow the wider use of environmental accounts and indicators in decision-making processes.

Figure 4.1: Connection of LEAC basic accounts and targeted accounts via land use functions



4.2 Targeted accounts for forests

4.2.1 Approaches of forest accounting in published handbooks

Approaches to accounting for forest, as well as possible ways of other natural resources and economic activities accounts construction have been published in several studies. Forest accounts are key element in designing the so-called "targeted accounts for forests" which aim at bridging them with the overall Land and Ecosystems Accounts. It is possible to find types and examples of forest accounts for example in SEEA2003 – "System of Integrated Environmental and Economic Accounting" [36] or in IEEAF (2002) – "The European Framework for Integrated Environmental and Economic Accounting for Forests" [37].

SEEA 2003[38] Accounts for wooded land, timber and forest products

SEEA 2003 introduces following types of forest accounts:

1) Physical accounts
    a) For Forested land
    b) For Timber
2) Monetary accounts for forested land and timber
3) Accounts for forest products
4) Expenditures on forest management and protection
5) Supplementary tables

- 1a) Physical accounts for forested land

Changes in forested land may be brought about by:

– increases in the stock (afforestation and natural expansion);
– decreases in the stock (deforestation and degradation); and
– changes in land classification and reassessment of stocks.

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36 Handbook of National Accounting.Integrated Environmental and Economic Accounting 2003, ST/ESA/STAT/SER.F/61/Rev.1 (Final Draft)

37 The European Framework for Integrated Environmental and Economic Accounting for Forests- IEEAF. Luxembourg: Office for Official Publications of the European Communities, 2002, Cat. No. KS-BE-02-003-EN-N

38 Handbook of National Accounting.Integrated Environmental and Economic Accounting 2003, ST/ESA/STAT/SER.F/61/Rev.1 (Final Draft)

- Terms and definitions

Forested land is defined as land with tree crown cover (or equivalent stocking level) of more than 10 per cent and an area of more than 0.5 hectares. The trees should be able to reach a minimum height of 5 metres at maturity *in situ*. Forested land includes:

– young natural stands and all plantations established for forestry purposes which have yet to reach the crown density of 10 per cent or tree height of 5 metres;

– areas normally forming part of the forested land area which are temporarily unstocked as a result of human intervention or natural causes but which are expected to revert to forest;

– forest roads, cleared tracts, firebreaks and other small open areas, as well as forest nurseries and seed, orchards that constitute an integral part of the forest;

– forested land in national parks, nature reserves and other protected areas such as those of special environmental, scientific, historical, cultural or spiritual interest;

– windbreaks and shelter belts of trees with an area of more than 0.5 hectares and a width of more than 20 metres;

– rubber wood plantations and cork oak stands.

The primary use of forested land is forestry, which includes activities related to the management of forested land and other wooded land for the production and supply of wood and/or other goods and services.

Forested land available for wood supply covers areas where legal, economic, or environmental restrictions do not have a significant impact on the supply of wood. It includes areas where harvesting of timber is not taking place, for example, because of long-term utilisation plans or intentions.

Forested land not available for wood supply includes areas where legal, economic, or environmental restrictions prevent any significant wood production.

Natural forests – Forests with natural species and ecological processes and for which there has been continuity of ecological processes over a very long period of time. The time period of continuity is sometimes quoted as being of more than 200 years but this may not be relevant for all types of forests.

Semi-natural managed forests – Forests in which management has substantially altered the structure and ecological processes but in which growth is still mainly a natural process with no regular and continuous human intervention.

Plantations – Forests for intensive fuel or industrial wood production, planted or artificially regenerated and made up of exotic (non-indigenous) species and/or mono-cultures.

Figure 4.2: An example of physical account table for forested land (1000 ha) in the SEEA

	Forest land available for wood supply	Natural forests	Semi-natural forests	Plantations	Total	Conifers	Broadleaved	Total	Not available for wood supply	Conifers	Broadleaved	**Total**	**Total forest land**
Opening area													
Changes in cover													
Man made changes													
Afforestation													
Deforestation													
Natural events													
Expansion													
Degradation													
Change in classification													
Economic decisions													
Catastrophic events													
Closing area													

- 1b) Physical accounts for timber

Changes in stocks of timber are due to:
– natural growth of timber (gross annual increment);
– felling of timber;
– natural losses, including catastrophic natural events;
– changes in land classification; and
– reassessment of stock.

- Terms and definitions

Standing volume – The volume of standing trees, living or dead, above stump measured over bark to the top

Growing stock – The living component of the standing volume.

Gross annual increment – The average annual volume of increment over the reference period of all trees, with no minimum diameter. Gross annual increment is thus equivalent to natural growth in a year.

Net annual increment – The average annual volume over the reference period of gross increment less natural losses.

Natural losses – The average annual losses to the growing stock during the reference period due to mortality from other causes than cutting by man.

Annual felling – The average annual standing volume of all trees, living or dead, measured over bark (with no minimum diameter) that are felled during the reference period.

Annual removals – The average annual volume of those fellings that are removed from forested land, other wooded land and other felling sites during the reference period.

Figure 4.3: An example of physical account table for standing timber (volume) (million solid m^3)

	Forest land available for wood supply	Natural forests	Semi-natural forests	Plantations	Total	Conifers	Broadleaved	Total	Not available for wood supply	Conifers	Broadleaved	**Total**	**Total forest land**
Opening stock													
Natural growth													
Felling													
Harvested timber													
Saw logs													
Pulp wood													
Fuel wood													
Timber left in the forest													
Felling residuals													
Other timber													
Changes in classification													
Closing stock													

- 2) Monetary accounts for forested land and timber

The monetary asset account for timber consists of the opening stock, flows, changes in classification, revaluations and closing stock. Flows include net natural growth, timber removals, timber left in the forests and catastrophic losses. Revaluation records the change in value due to changes in prices of standing timber between the beginning and the end of the period.

- Valuing timber stocks and flows

For monetary accounts it is essential to value timber stocks and flows. Because monetary accounts are not in the centre of our interest we do not describe the methods of valuations here. For the methods of valuation see SEEA 2003[39]

Figure 4.4: An example of monetary account – Asset account for standing timber (million national monetary units)

	Conifers	Broadleaved	**Total**
Opening stock			
Natural growth			
Felling			
Harvested timbers			
Saw logs			
Pulp wood			
Fuel wood			
Timber left in the forest			
Felling residuals			
Other timber			
Changes in classification			
Closing stock			

- 3) Accounts for forest products

As well as the timber harvested, there are other non-wood products, which should be estimated for a full accounting of the environmental yield of a forest. Non-wood products for own consumption and industrial uses are grouped as:

– food (game, berries, fruits, mushrooms, nuts, palm oil, honey, etc.);
– medicines;
– fodder/forage for animal breeding;
– industrial extracts (cork, rubber, gum, tar, chemicals);
– forest animals as agricultural products (wild boar, reindeer, etc.).

- Valuation of non wood products

The volumes of non-wood products are converted from physical to monetary terms using average market prices for the products concerned. These values are imputed for non-wood products for own consumption as well as for products for sale.

39 Handbook of National Accounting.Integrated Environmental and Economic Accounting 2003, ST/ESA/STAT/SER.F/61/Rev.1 (Final Draft)

Figure 4.5: An example of forest products account – Volume and value of all forest products

	Volume in thousand tonnes	Value in current prices					
	Total in the period	Agriculture	Hunting	Forestry and logging	Charcoal production	Others incl. own consumption	**Total**
Timber							
conifers							
broadleaved							
others							
Industrial extracts							
cork							
rubber							
tar							
chemicals							
others							
Forest animals							
Food							
fruits							
meat for hunting							
berries and mushrooms							
nuts							
palm oil							
honey							
others							
Medicines							
Fooder/forage							
Total							

- 4) Expenditures on forest management and protection

Expenditures on forest protection include conservation of protected forests (according to IUCN categories) and costs of environmental protection activities; such as, the prevention of forest degradation and pollution, and the restoration and reparation of forests. Restoration and reparation costs should be separated from the cost of forestry and logging for purely wood-production purposes. Actual expenditures may represent new investments or maintenance costs. Costs should be split not only by industry but also between the public and private sectors.

Figure 4.6: An example of expenditure on forest management and protection (million national monetary units)

	Private	Forest industry	State	Environmental protection services	Public administration, other public services	Other branches of industry	**Total**	of which public sector
Forestry and logging								
forest improvement and sylviculture								
logging								
environmentally sound forestry and logging								
Forest protection								
prevention								
restoration								
Forest conservation								
Total								

- 5) Supplementary tables

The supplementary tables may be useful to compile when wooded land is being studied in depth. The topics covered are:

– eco-floristic zones;
– protection status (protected (IUCN)/non-protected);
– carbon sequestration;
– age structure of forests;
– forest health;
– biodiversity and ecosystems; and
– non-wood services.

Figure 4.7: An example of supplementary table – Age and timber volumes by dominant species (solid m^3 over bark per hectare; Age in years)

	up to 20	21-60	61-100	100-140	over 140
Pine					
Spruce					
Broadleaved					

IEEAF – The European Framework for Integrated Environmental and Economic Accounting for Forests[40]

The European Framework for Integrated Environmental and Economic Accounting for Forests (IEEAF) is one of the outputs of Eurostat's Environmental Accounting work. It contributes to various EU-wide and international activities in the context of national and environmental accounts, including the implementation of the European System of Accounts (ESA 1995), the implementation of the new Economic Accounts for Forestry (EAF Rev. 1) and the ongoing revision of the above mentioned System of Integrated Environmental and Economic Accounting (SEEA).

Objective of the IEEAF is to consistently link forest balance sheets and flow accounts for land and timber, forest-related economic activities and the supply and use of wood within the economy, in physical and monetary terms and, in a next step, to also integrate monetary and physical data on non-market environmental and protective functions of forests, biodiversity, the health status of forests, etc.

The manual gives an overview of classifications, definitions, accounting frameworks and valuation issues. The classification of forest-related assets is reviewed, as well as the treatment in national accounts of the changes that affect these assets (transactions, other changes in volume, etc.). Physical accounting frameworks and indicators as well as valuation issues of forest-related assets in ESA/SNA are then analysed, with special focus on (wooded) land and stocks of standing timber.

IEEAF proposals are made for integrated environmental and economic accounts for forests. These accounts form a "forest satellite account" to the national accounts allowing for the linking of national accounts data to other environmentally oriented instruments (indicators, land accounting matrices, etc.). The final objective is to describe interactions between economic activities and forests as natural media and to integrate environmental and economic concerns about forests in a consistent and comprehensive way.

The proposed framework covers:

– a core classification of forest-related assets, wood products and related industries,

– balance sheets of forest-related assets, in monetary and physical units, integrating the description of all changes that affect forest-related assets,

– monetary accounts for activities and transactions related to forests (forestry, logging, etc.), including forest protection and management activities,

– supply and use tables, in monetary and physical units,

– mass balances and flows of residuals accounts, in physical units.

40 The European Framework for Integrated Environmental and Economic Accounting for Forests- IEEAF. Luxembourg: Office for Official Publications of the European Communities, 2002, Cat. No. KS-BE-02-003-EN-N

Types of the IEEAF accounts:

1) Flow accounts
    Simplified NAM
    Monetary flows
    Material flows and balances
2) Balance sheets and changes in assets
    Classification of assets
    Changes in balance sheets
3) Flows of residuals
    Objective and general structure
    Description of residual flows
    Application to forests: classifications
    CO2 balances
4) Non-wood and non-ESA/SNA functions of forests
    Non-wood products of forests
    Non-ESA/SNA functions

Twenty tables have been drafted for a first implementation of IEEAF. They cover the main aspects of the IEEAF:

– Balance sheets for land and standing timber (physical balances of wooded land areas, monetary balances of wooded land areas, physical balances of standing timber and monetary balances of standing timber).

– Table for defoliation.

– Output related to wooded land, detailed accounts for forestry and logging and economic accounts for forestry and logging.

– Supply and use tables, in physical and in monetary units.

– Material balances.

– Tables describing origins and destinations of waste containing wood or paper, of black liquors and the corresponding wood contents.

The set of tables is inspiring but only balance sheets (see below) were at least partly applicable (especially due to low availability of statistical data) for our study.

Figure 4.8: Forest balance: area and wooded land (1000 ha or million national monetary units) in IEEAF

	Forest and other wooded land							Other land	Total land
	Available for wood supply			Not available for wood supply			Total		
	Cultivated	Not cultivated	Total	Strictly protected	Not strictly protected	Total			
Opening area									
Changes due to economic activities									
Afforestation									
Deforestation									
Other changes									
Natural colonisation									
Natural regression									
Other									
Changes in use/status									
Closing area									

Figure 4.9: Forest balance: volume of standing timber (1000 ha or million national monetary units) in IEEAF

	Standing volume on wooded land							Other land	Total land
	Available for wood supply			Not available for wood supply			Total		
	Cultivated	Not cultivated	Total	Strictly protected	Not strictly protected	Total			
Opening area									
Gross increment									
Total removals									
Other changes									
Changes in use/status									
Closing area									

4.2.2 Land targeted accounts for forests and their specifics

We have introduced basic (core) accounts on one side and special forest accounts on the other side in the previous parts of the report. Targeted forests accounts have their special nature as compared to both core land cover accounts and conventional forest accounts.

Targeted accounts enrich the core land cover accounts because they record the development of land cover in relation with socio-economic functions of the territory. They reflect land use functions of the territory and this way allow us to study the influence of the use of land on the land cover and its development. For the list of land use functions see Fig. 4.10.

Figure 4.10: Nomenclature of land use functions as proposed for LEAC[41]

UF1 Residential, incl. services
UF2 Commercial
UF3 Transport
UF4 Industrial production
UF5 Energy production
UF6 Mining & quarrying
UF7 Waste dumping
UF8 Water management
UF9 Farming, food production
UF10 Forestry
UF11 Recreation & Tourism
UF12 Nature conservation
UF13 Other uses

Note: The proposed nomenclature of Land use functions of forestry is presented in the section 4.4.2 Land use functions of forestry and targeted accounts.

For the purpose to reflect land use functions the targeted accounts use statistical records for several types of units. Forest targeted accounts use forest statistics for this purpose. The advantage is in the wide geographical breakdown of targeted accounts. They can be constructed as for administrative units on several levels (country, region, district) as for units natural for land cover studies like landscape zones, forest regions or river basins. This way the relation between administrative units by which usually statistics are recorded and natural units is made and land use functions development and influence can be studied in these natural units.

In comparison with the above proposed forest accounts (SEEA, IEEAF) the targeted forest accounts have to be usually simplified as long as not all statistics can be available by natural zones (transferable into them).

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[41] Weber, J. L., Paramo, F., Breton, F. Haines-Young, R. (2003): Integration of geographical and statistical data in the environmental accounting framework; methodological development based on two case studies Action 2: Integration of environmental accounts in coastal zones; case study of tourism, Barcelona 2003, Contract n° 200141200017, EUROSTAT

4.3 Framework and data sources for forest targeted accounts in the Czech Republic

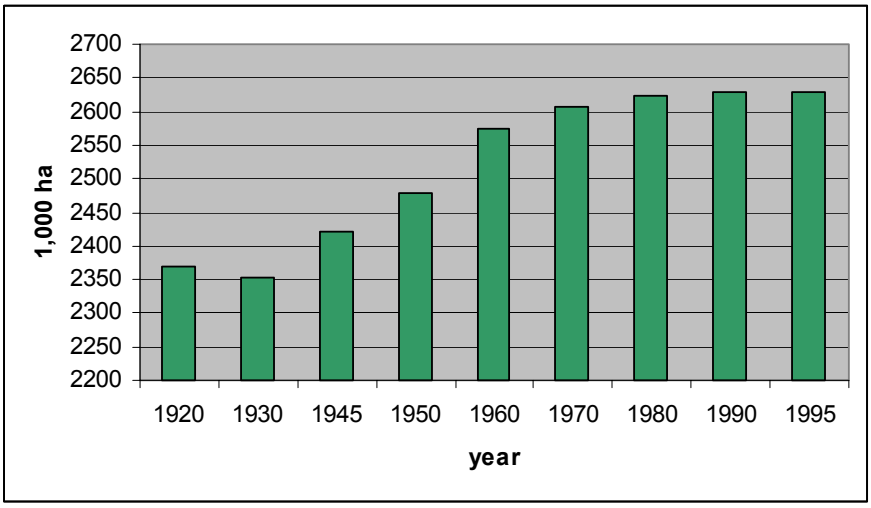
4.3.1 Czech forests – development and state[42]

Long-term development of forest coverage in Czech lands is recorded in the following figures.

Figure 4.11: Forest coverage development in the Czech lands

year	1790	1865	1910	1990	1995
Forest coverage (%)	25	28	30	33.3	33.3

Figure 4.12: Forest land area development in the Czech Republic in 20th century



Czech forests have been mainly influenced by several essential driving forces during the 20th century:

– expropriation of private forests after 1948

– poor management by State after expropriation

– development of industry and energy (brown coal power plants) that resulted in high production of SO_2 emissions (local and long-distance transport from Germany) and forest damage in the north parts of the country (which belongs to the so called "Black triangle")

– breakdown and the return of market economy after 1989

– restitution of forests

42 The main source of the data and information in this chapter is Report of Forestry of the Czech Republic 1996. Compiled by the Forest Management Institute, Brandýs nad Labem (http://www.uhul.cz/zelenazprava/1995

– current subsidy system for forest management (subsidies to owners for the purpose of afforestation and forest management)

– bark beetle calamity in 1990s (damage of protected forests in the south parts of country – Šumava national park)

– good nature preservation low from 1992 (special forest management in strictly preserved areas)

Role of forestry in national economy

Significant change of political system in 1989, as well as significant changes in Czech forestry have been recorded between 1975 and 1990 and further. In the Czech Republic recession as a result of period of transition has finished. the Czech Republic has became a member of the OECD. Macroeconomic results of the Czech Republic has enabled to submit an application for membership of the EU. The CR has become an interesting country for foreign investments as well.

Forestry sector produced 0.8 % of GDP in the Czech Republic in 1990. This percentage did not reflect real importance of forestry for society because benefits of non-wood functions were not included. Forestry employed 0.7 % of total number of national work force (in 1975 the number was 0.5%), investments in forestry sector were 0.4 % of total volume in the Czech Republic.

Forest management

- Changes in Forest Ownership

Because the great majority of Czech forests before 1989 belonged to State their manager was the State organization "*Forests of the Czech Republic*". The other part of the forests about which data sources are practically not available were military forests under management of the Czech army.

While in 1975 and 1990 private property of forests practically did not exist the restitution process continued during 1990s. In 1995 83% of 158,000 claims of individuals was authorized which covers more than 687,000 ha. The average area of forest holding in this category is only 3 ha. In restitution of forests to communities, more than 90% of claims was completed. Restitution of properties of forest communal cooperatives was started (about 22,000 ha is claimed). Return of church forests has not been legislatively regulated yet.

Figure 4.13: Forest ownership changes on the territory of the Czech Republic

Forests	Year															
	1850	1880	1890	1900	1910	1920	1930	1945	1947	1950	1960	1970	1980	1990	1994	1995
	% of forest land area															
state	2.5	0.3	0.3	0.3	0.2	3.6	12.4	18.3	60.1	70.1	74.2	91.6	94.4	95.8	69.6	69.6
communal	9.1	10.2	10.6	9.3	9.4	10.0	11.3	14.9	17.4	16.6	14.2	–	–	–	10.5	11.0
church	8.0	7.2	8.0	6.7	6.6	7.9	7.1	6.1	7.1	–	–	–	–	–	–	–
co-operatives	–			1.0	1.2	1.9	1.8	1.7	3.2	3.2	–	–	–	–	0.0	0.0
foundations	1.7	1.3		0.7	1.3	0.8	1.2	0.9	–	–	–	–	–	–	–	–
nobility	21.0	25.7	24.6	28.7	29.5		–	–	–	–	–	–	–	–	–	–
other private	57.7	55.3	56.5	53.3	51.8	75.8	66.2	58.1	12.2	10.1	3.0	1.2	0.4	0.1	14.9	15.1
agro-cooper.	–	–	–	–	–	–	–	–	–	–	8.6	7.2	5.2	4.1	0.0	–
restitution is under way	–	–	–	–	–	–	–	–	–	–	–	–	–	–	5.0	4.3

- Methods of forest management

Methods of reforestation, balance of unstocked area, thinning and clearings and annual felling during the last period summarize the following figures.

Figure 4.14: Reforested area by methods of reforestation

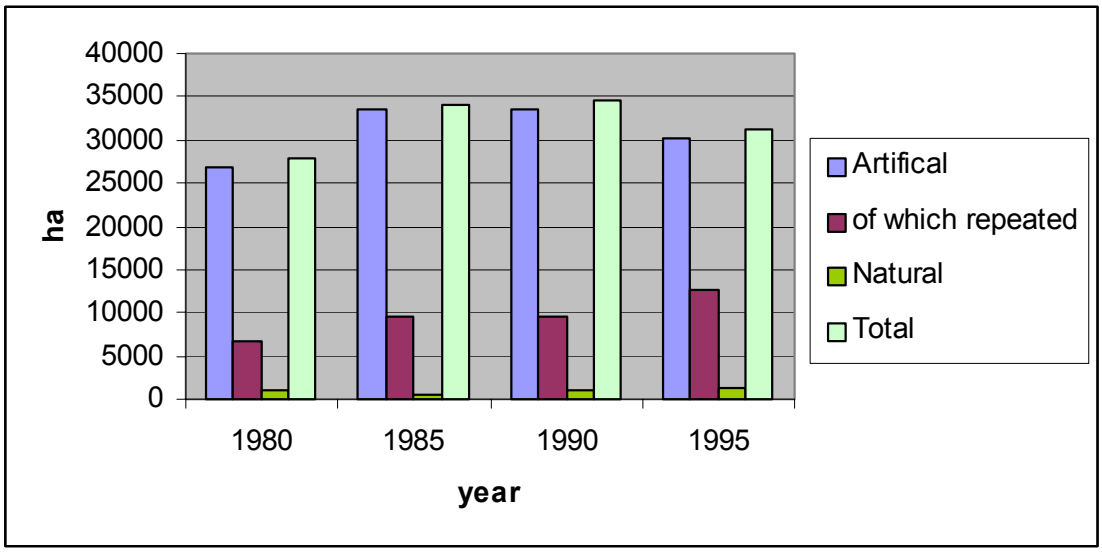


Figure 4.15: Balance of unstocked area

Year	Area on Jan. 1	New unstocked area				Decrease in unstocked area				Area on Dec. 31
		after cutting	refor. losses	other	total	refor.	natural refor.	other	total	
	ha									
1980	31961	19980	6309	4866	31155	26939	999	1403	29341	33775
1985	39332	22706	9954	5090	37750	33555	594	3768	37917	39165
1990	38870	19240	12178	2855	34273	33615	908	1080	35603	37540
1991	37540	15599	13060	4025	32684	31516	557	1283	33356	36868
1992	36868	14651	14452	3392	32495	29600	575	4761	34936	34427
1993	34427	12472	13437	3862	29771	27698	697	4010	32405	31793
1994	31793	12562	14448	3767	30777	26897	818	1667	29382	33188
1995	33188	17016	11090	3615	31721	30128	1163	1189	32480	32429

Figure 4.16: Thinning and clearings

Year	Thinning	Cleanings	Total	Share of salvage felling (%)
	1,000 ha			
1980	92.7	53.7	146.4	51.8
1985	34.9	55.2	90.1	82.4
1990	68.8	51.0	119.8	73.7
1991	93.5	52.6	146.1	64.5
1992	92.9	44.7	137.6	54.8
1993	53.2	34.2	87.4	77.8
1994	74.3	43.0	117.3	77.7
1995	111.4	44.8	156.2	63.7

Figure 4.17: Total annual felling

Felling		1985	1990	1991	1992	1993	1994	1995
conifers	mil. m^3 u. b.	12.82	12.17	9.51	8.70	9.69	11.16	11.31
broadleaved		1.09	1.16	1.24	1.15	0.72	0.79	1.06
total		13.91	13.33	10.75	9.85	10.41	11.95	12.37
per capita	m^3 u. b.	1.34	1.29	1.04	0.95	1.01	1.16	1.20
per 1 ha of fl.		5.29	5.07	4.09	3.75	3.96	4.54	4.70

Forest condition

Area of forests in the Czech Republic has been increased by 656,000 ha since 1790 when the first data were available. The percentage of forest land has enlarged from 25% to 33%. Sylvicultural system has been changed. During the last 90 years proportion of high forests has increased by 10% up to 99.8%. Since 1950 percentage of broadleaved species has increased from 12.5% up to 21.8%. This trend is continuing. Since 1920 average rotation has risen by more than 20 years (and by more than 10 years since 1950) up to the present level of 114.6 years. The age composition shows some anomalies. Low percentage of 2^{nd}–5^{th} age classes is unfavourable (caused predominantly by high volume of salvage felling without consequent reforestation), as well as high percentage of 6^{th}–9^{th} age classes as a result of mass pest outbreaks (mainly of nun moth) in the beginning of this century and the above average percentage of older age classes. The unbalanced age structure will influence volume, proportionality and assortment composition of harvesting in the period after 2040. Therefore, it is desirable to regulate intentionally volume of felling. Growing stock volume amounts to 595 millions m^3 and is nearly as twice as much compared with 1950. Mean annual increment is higher than 16 millions m^3, i.e. more than 6 m^3 per ha of forest stands area.

Figure 4.18: Site conditions of the Czech forests

Ecolog. category	Forest vegetation zone										
	0	1	2	3	4	5	6	7	8	9	total
	% of forest stands area										
extreme	0.3	0.4	0.1	0.1	0.0	0.2	0.2	0.1	0.3	0.1	1.8
acid	2.9	1.3	3.8	7.8	2.3	10.2	5.6	2.4	0.8	0.1	37.2
fertile	0.3	1.8	4.6	10.7	3.7	12.2	2.9	0.6	0.2	0.0	37.0
enriched	0.0	1.6	0.9	2.2	0.6	2.3	1.2	0.2	0.0	0.0	9.0
gleyic	0.4	1.3	0.8	1.5	3.0	2.5	2.0	0.4	0.1	0.0	12.0
water-logged	0.5	0.2	0.0	0.0	0.2	0.3	0.5	0.7	0.5	0.1	3.0
total	4.4	6.6	10.2	22.3	9.8	27.7	12.4	4.4	1.9	0.3	100.0

Figure 4.19: Development of species composition of Czech forests

Species	Year									
	1950		1970		1980		1990		1995	
	ha	%	ha	%	ha	%	ha	%	ha	%
spruce	1353203	60.0	1427735	55.6	1437499	55.7	1413893	54.7	1398498	54.1
fir	64692	2.9	53325	2.1	44786	1.7	27708	1.1	24153	0.9
pine	477627	21.2	491501	19.2	469403	18.3	460481	17.8	452993	17.5
larch	33529	1.5	57410	2.2	68266	2.7	81762	3.2	90043	3.5
other conif.	4719	0.2	14885	0.6	19275	0.8	21446	0.8	24582	1.0
oak	81016	3.6	139761	5.5	145817	5.7	155269	6.0	157753	6.1
beech	102243	4.5	129158	5.0	135988	5.3	139533	5.4	145557	5.6
birch	–	–	66926	2.6	65027	2.5	74167	2.9	76729	3.0
other broad.	99778	4.4	167980	6.5	166209	6.5	167959	6.5	174684	6.8
conifers	1933770	85.8	2044856	79.7	2039229	79.2	2005290	77.6	1990260	77.0
broadleaved	283037	12.5	503825	19.6	513041	20.0	536928	20.8	554723	21.5
total without unstocked area	2216807		2548681		2552270		2542218		2544992	100.0

Figure 4.20: Development of Czech forests age structure

Age range	Year					
	1950	1960	1970	1980	1990	1995
	forest stands area, ha					
0 – unstocked	64281	23335	18627	19796	40562	38871
1–40	948040	941218	940665	834913	791948	789494
41–80	945123	951215	999090	1022009	975060	897766
81–120	475760	474077	527635	593707	662853	710295
121 +		72914	81291	101641	112357	147439

Relation of Forestry and Environment

- Air pollution

One of the most serious environmental problems of forestry in Czechia was during the last decades of the 20th century air pollution. Emissions of SO_2 were reduced between 1980 and 1993 by 31.7%. In the period 1992-1995 the emissions of the main pollutants from stationary source decreased by 19% and total emissions of solid pollutants by 36%. Continuous reduction of selected power plants production and the installation of the precipitators (Prunéřov I, II, Počerady, Ledvice) caused further reduction of sulphur emissions.

The Czech Republic implements its international commitments concerning reduction of SO_2. Further decreasing should be 72% in 2010 related to 1980 state. The state expended CZK 253 mil. for reclamation and torrent control in forests. The development of damage degree due to air pollution shows following figures.

Figure 4.21: Average damage degree in conifers forest stands

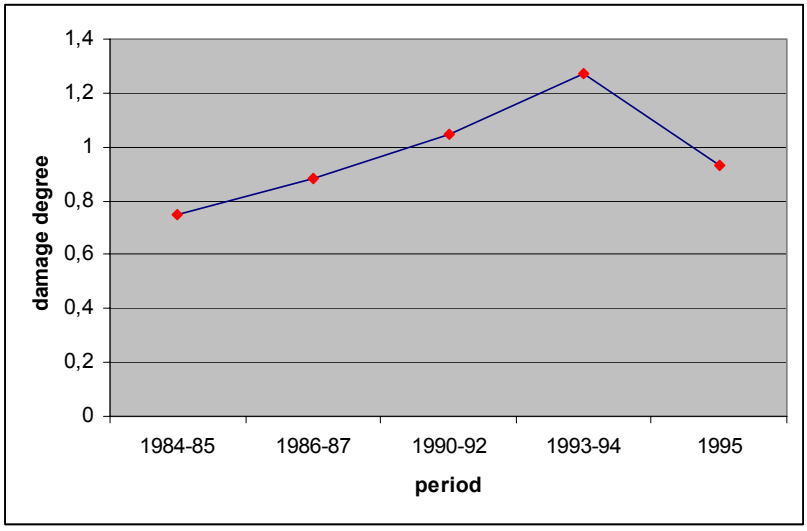
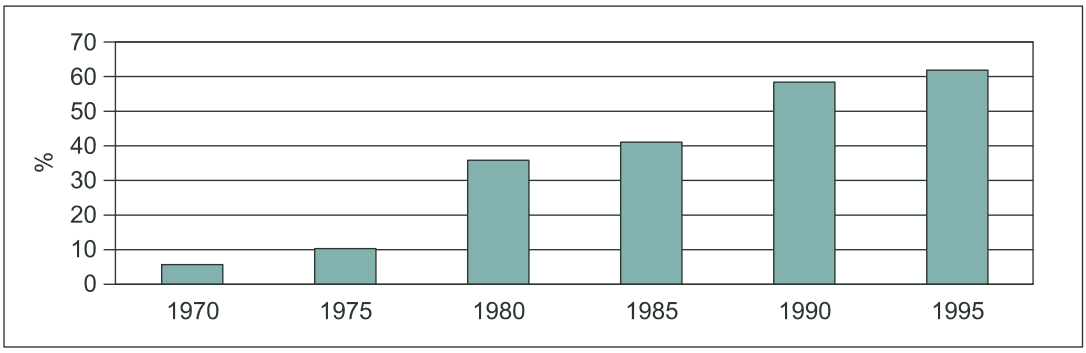


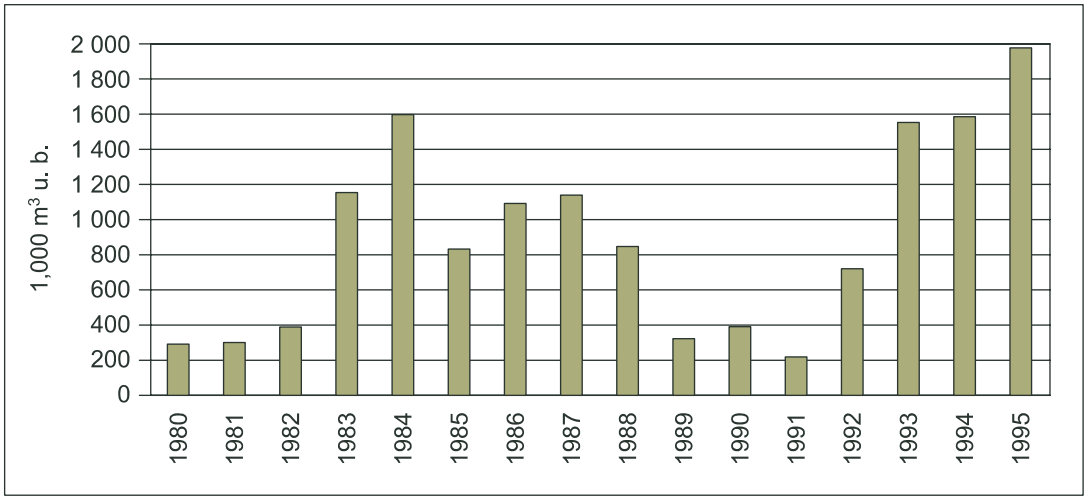
Figure 4.22: Development of air pollution damage of forest



- Insect attacks

As a result of suitable weather conditions and some difficulties in forest management decisions and practice the Bark Beetle calamity took place in some areas. One of the most affected area is Šumava national park. The evidence about the development of the calamity until 1995 gives the amount of Norway Spruce timber attacked by Bark Beetle.

Figure 4.23: Volume of wood infested by Bark Beetle in Norway Spruce stands



- Areal protection

Special forest management with the goal of preservation of the most valuable forest ecosystem is being applied in the forests in protected areas. The share of forests in these areas and the zones of immission damage summarizes following table.

Figure 4.24: Forests of big protected areas with nature preservation function in the Czech Republic

Name of preserved territory	Area of forests	Forest cover	Zones of immission damages at %			
	(ha)	(%)	A	B	C	D
CHKO Beskydy	85 931	74.1	-	7.6	50.8	41.6
CHKO České Středohoří	31 826	29.7	-	20.7	79.1	0.2
CHKO Šumava	52 909	56.0	-	-	-	11.3
CHKO Jeseníky	57 914	78.3	-	16.0	68.0	16.0
CHKO Žďárské vrchy	33 219	46.5	-	-	43.6	56.4
CHKO Bílé Karpaty	32 365	45.3	-	-	1.6	9.4
CHKO Třeboňsko	33 280	47.5	-	-	-	30.0
Šumavský národní park	55 501	81.0	-	-	-	8.8
CHKO Slavkovský les	34 966	54.6	-	17.6	69.1	13.3
CHKO Křivoklátsko	39 165	62.2	-	-	7.8	8.9
CHKO Broumovsko	16 348	39.9	-	8.2	91.8	-
Krkonošský národní park	31 955	83.1	-	21.0	33.4	45.6
CHKO Jizerské hory	27 968	79.9	6.1	45.4	43.3	0.2
CHKO Lužické hory	17 667	50.5	0.4	5.7	82.5	11.4
CHKO Labské pískovce	23 346	77.8	3.6	18.7	61.0	16.7
CHKO Železné hory	12 511	43.6	-	-	20.0	80.0
CHKO Kokořínsko	13 526	50.1	-	10.0	88.0	2.0
CHKO Blanský les	12 190	57.4	-	-	-	1.4
CHKO Orlické hory	15 607	78.0	-	38.5	61.5	-
CHKO Český kras	5 106	38.7	-	15.0	50.0	35.0
CHKO Český ráj	4 429	35.4	-	-	-	100.0
CHKO Lit. Pomoraví	5 380	56.0	-	-	-	100.0
CHKO Moravský kras	5 436	59.1	-	-	-	26.2
CHKO Poodří	786	9.6	-	9.6	19.5	70.9
CHKO Pálava	2 638	37.7	-	-	-	-
Národní park Podyjí	5 320	85.0	-	-	-	-
CHKO Blaník	1 265	31.6	-	-	-	100.0

Economic results of Forestry

Some of the available economic results of forestry from 1985 and especially the results from 1990 and further are in the tables below. It is important to stress that the prices during socialist period were not market prices and that economic results were purposely misrepresented. This is a reason why it is not possible to compare reliable the results before and after 1989.

Figure 4.25: Forest management average costs in CZK (1995 prices, 1€=33CZK)

Activity	Technical unit	Average costs in CZK per unit				
		1985	1990	1993	1994	1995
Forest Regeneration	ha	14 927	19 743	56 443	56 687	56 826
Tending of young plantation	ha	1 283	1 648	4 788	4 318	4 714
Cleanings	ha	1 068	2 703	4 180	4 083	4 648
Forest protection	ha	50	40	131	165	237
Total sylviculture	ha of forest	542	788	1 540	1 479	1 861
Felling	m^3 u.b.	67	85	97	114	114
Skidding	m^3 u.b.	62	94	154	155	125
Hauling	m^3 u.b.	44	53	85	95	108
Total harvesting	ha of forest	1 226	1 477	1 536	2 349	2 206

Figure 4.26: Timber supply

Indicator		1990	1991	1992	1993	1994	1995
Delivered assortments (excl. imports)							
thousand m^3 u. b.							
round-wood		6 963	5 145	4 890	4 745	5 409	6 087
of which	conifers	6 530	4 734	4 507	4 485	5 156	5 740
	broadleaved	433	411	383	260	253	347
pulpwood		3 940	4 145	3 933	4 208	5 228	5 885
of which	conifers	3 472	3 648	3 453	3 868	4 778	5 328
	broadleaved	468	497	480	340	450	557
forest chips		95	73	52	16	13	19
of which	conifers	91	68	50	16	13	19
	broadleaved	4	5	2	0	0	0
fuelwood		1 301	1 014	833	694	778	649
of which	conifers	1 039	729	586	558	647	517
	broadleaved	262	285	247	136	131	132
industrial wood		11 627	9 864	9 037	9 447	11 194	11 991
of which	conifers	10 613	8 943	8 129	8 843	10 470	11 087
	broadleaved	914	921	908	604	724	904
total timber supply		12 828	10 878	9 870	10 141	11 972	12 640
of which	conifers	11 652	9 672	8 715	9 401	11 117	11 604
	broadleaved	1 176	1 206	1 155	740	855	1 036

Figure 4.27: Removals and sawn wood production and trade in Europe and other countries in 1994

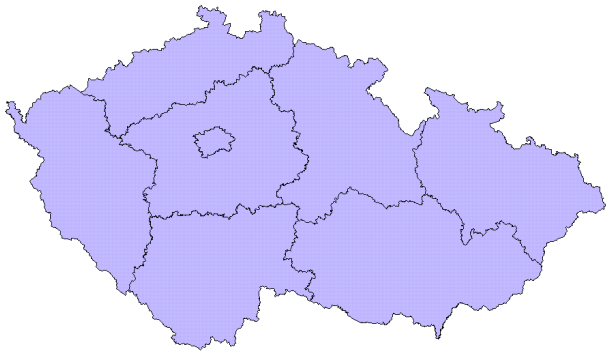
	Removals production			Roundwood	Pulpwood	Industrial wood,Conifers			Conifers		
Country	cnif	brdl	total	cnif	cnif	prod.	export	import	prod.	export	import
	mill. m^3										
A	12.2	2.1	14.3	7.9	2.3	10.2	0.5	4.0	7.2	4.4	0.8
CZ	11.1	0.8	11.9	5.2	4.8	10.5	1.6	0.1	2.8	1.1	0.2
SF	39.8	7.8	47.6	21.4	17.0	38.4	1.5	1.9	9.7	7.1	0.1
F	23.3	19.5	42.8	13.4	5.5	19.3	0.2	0.3	7.0	0.4	1.6
D	26.8	10.2	37.0	18.0	7.2	25.8	3.9	0.9	12.3	1.4	5.1
I	1.6	7.9	9.5	0.8	0.2	1.3	x	2.5	0.8	x	4.8
A	8.2	0.6	8.7	4.3	3.6	8.0	0.4	1.9	2.4	0.8	0.7
PL	13.6	4.8	18.4	7.6	4.1	12.7	0.6	0.0	3.9	0.5	x
S	50.1	6.4	56.5	28.5	19.5	48.2	1.0	3.6	13.6	10.6	0.1
others	48.4	47.1	95.5	26.1	13.8	43.7	2.9	3.4	13.7	2.6	18.6
Europe	235.1	107.2	342.2	133.2	78.0	218.1	12.6	18.6	73.4	28.9	32.0
RUS	76.7	43.3	120.0	42.9	14.7	65.9	10.1	0.1	22.4	6.1	x
CDN	167.0	12.9	179.9	132.6	29.4	165.2	0.8	3.8	60.6	44.9	0.7
USA	275.5	211.7	487.2	165.0	88.4	261.2	11.0	0.4	77.2	4.9	38.1
J	18.8	6.9	25.7	16.1	2.3	18.8	x	14.7	23.3	x	8.8

4.3.2 Statistical data sources for forest targeted accounts in the Czech Republic

Except of basic accounts, land cover flows and landscape types data inputs that are described above in the report also statistical data are essential for targeted accounts construction.

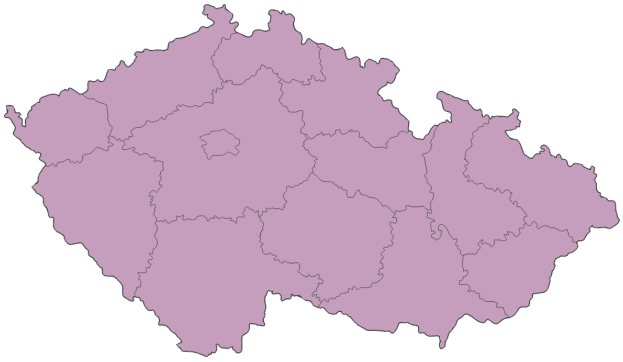
Before 1989 the forest statistics were published by *Czech Statistical Office (CSO)* and by the organization of the Ministry for forest and water management – *Forest Management Institute (FMI)*. The statistics were not fully reliable because socialist regime misrepresented the data, especially for the purpose to pretend better economic results. This is very important information and means we use for targeted accounts data from two such different years (1975, 1990) with different levels of data reliability.

Figure 4.28: Administrative regions in the Czech Republic (valid until the end of 1992)



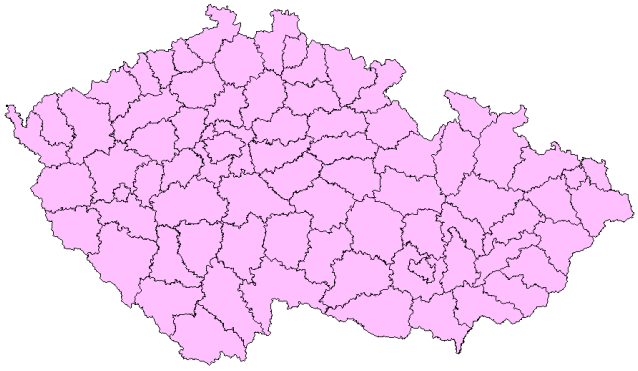
The statistics were produced for the *country level* and very elementary statistics for the level of the *administrative regions* (see Fig. 4.28). These administrative regions were valid until the end of 1992 and they were replaced by wholly different regional system then – new administrative regions (NUTS 3) – compare the figures 4.28 and 4.29.

Figure 4.29: NUTS 3 – administrative regions in the Czech Republic (from the beginning of 1993)



After 1989 the Czech *Statistical Office* (http://www.czso.cz) continued publishing forest data on country and regional levels until 1993. That is why we can use their data sources also for 1990. From 1993 onwards the forest statistics are published for new regions (Fig. 4.29) by CSO. The *Forest Management Institute (*http://www.uhul.cz*)* have also started to produce data for new regions (NUTS 3) and also for district level (NUTS 4) – Fig 4.30 from 1994. These data are valuable because they report about the situation in relative small territorial units and in spite of the fact that in national territorial system the district have been cancelled (from 2003) forest statistics will be published for district level also in the future, so the comparisons of the development (including targeted accounts) on this level will be possible. Unfortunately our study is concerned with previous period so we cannot use districts as reporting units.

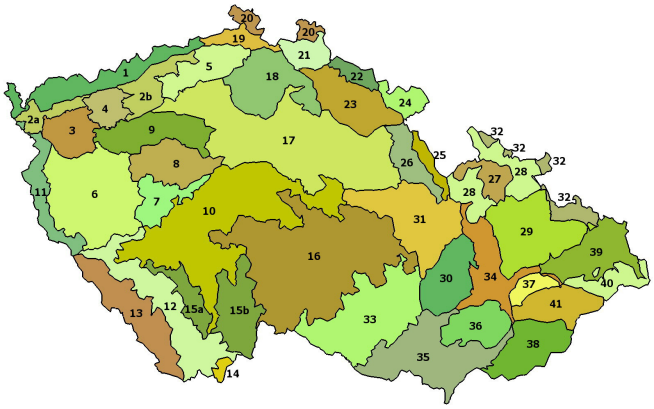
Figure 4.30: NUTS 4 – district in the Czech Republic



It is important for forest accounting to mention that the *Forest Management Institute* works also with special reporting units – so called *natural forest regions* (NFR). These regions are divided on the basis of common geologic, climatic, orographic and phyto-geographic conditions. In this way are delimited relative naturally homogenous zones – see Fig. 4.31. In relation to the NFR, the regional plans of forest development (RPFD) define forest management principles. The RPFD data are shared with the *Forest Management Institute* (FMI) through the Information and Data Centre (IDC). It will be possible to use the data of IDC – "Information about the state of forests" – for forest accounting in the future. They are

available for the country level (NUTS 1), NUTS3 and NUTS 4 from 1994 (up to now until 2000) and for NFR from 1998 (up to now until 2000).

Figure 4.31: Map of natural forest regions (NFR)



Other important note is that no data, except some basic statistics on the country level, were published for military forests that represent about 5-7% of forested land and these forests are certainly incorporated in CORINE database. This produces certain inconsistency for use of forest statistical data in combination with CORINE data set for forest targeted accounts calculations. Even now only basic information about the military forest are available for FMI.

Further inconsistency could appear when we use data of the Czech *Statistical Office* that are published for "forest land" that is not just "forested" land but this category incorporates also other areas like temporary deforested areas that are not classified as "forests" in CORINE data set. Extensive discussion about the problem of the compatibility of national land use/land cover statistics with CORINE land cover records are published in Feranec et all. (2001)[43].

To prevent this inconsistency, when possible, we work not with "forest land" but with "forested land" that has been recorded in the data of FMI and represents only land with tree cover, it means practically the same category like is the category 31 – forests in CORINE nomenclature. Unfortunately as the following table shows in 1975 the result of CORINE classification is closer to the category forest land (CSO) than to the forested land (FMI). This can be caused by inaccuracy of the CSO data sources as we mentioned above or in general by different definitions of forests in CSO, FMI sources and CORINE nomenclature.

Figure 4.32: Comparison of forest nomenclature and area in different data sources for the Czech Republic (ha)

	forest land (CSO)	forested land (FMI)	forests (CORINE)
1975	2613098	2570483	2596992
1990	2629905	2582780	2455398

43 Feranec, J. et all. (2001): Výsledky porovnania národných štatistík Česka, Maďarska, Rumunska a Slovenska s údajmi CORINE land cover. Geodetický a kartografický obzor, 47/89, 2001, No. 8-9, pp. 208 – 213

When we compare the content of forest statistics for 1975 and 1990 we can find rather similar records for the country level, especially in the CSO statistic. Very problematic situation is in the records matching on the regional level. During the time of 15 years the statistical tables have been significantly changed. That is why we were able to produce just very limited amount of forest targeted accounts for this level.

It is obvious from all the above mentioned information that forest statistics data availability and compatibility for 1975 and 1990 are rather problematic. It is the reason why even on the country level the construction of supplementary forest tables was problematic and why the tables had to be simplified in comparison with above introduced tables suggested for this purpose in SEEA 2003[44] and IEEAF[45].

There is a good possibility to improve forests accounting in the Czech Republic in the future especially from 1994 further especially because the above mentioned data will be published by FMI. In any case EUROSTAT should start a wider discussion with CSO and FMI about which records should be stored for this purpose. Even when the level of data records will be appropriate, the content of the statistics records is not at this time sufficient for the construction of forest targeted accounts adequate to SEEA 2003 or IEEAF proposals. We discuss more the data needs and data gaps for forest accounting in Czech statistics in the next parts of the study.

List of the data sources used for the targeted forest accounts construction:

1975

– *Forest Management Institute* (1975): Forest Inventory 1975. Ministry of the forest and water management of the Czech Socialistic Republic.

– *Czech Statistical Office* (1976): Czech statistical yearbook 1976 (state in December 31st 1975).

– *Forest Management Institute* (1996): Report of Forestry of the Czech Republic 1996. Brandýs nad Labem (http://www.uhul.cz)

1990

– *Forest Management Institute* (1991): Forest Inventory 1990. Ministry of forests and water management of the Czech Socialistic Republic.

– *Czech Statistical Office* (1991): Czech statistical yearbook 1991 (state in December 31st 1990).

– *Forest Management Institute* (1996): Report of Forestry of the Czech Republic 1996. Brandýs nad Labem (http://www.uhul.cz)

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44 The European Framework for Integrated Environmental and Economic Accounting for Forests- IEEAF. Luxembourg: Office for Official Publications of the European Communities, 2002, Cat. No. KS-BE-02-003-EN-N

45 Handbook of National Accounting.Integrated Environmental and Economic Accounting 2003, ST/ESA/STAT/SER.F/61/Rev.1 (Final Draft)

4.4 Targeted forest accounts for the Czech Republic – results of the case study

One of the main goals of the project was to produce targeted (supplementary) accounts for forests of the Czech Republic by suitable reporting units. This chapter is an output of theoretical and practical proposal of forest targeted accounts set based on land use functions and functions of forestry on country level, by landscape types and by regions that were only administrative units for what the forest statistical data in 1975 and 1990 were available.

4.4.1 The use of land cover by functions

As we mentioned before one of the specifics of targeted accounts is that they reflect the use of land cover by functions. Following table shows the Supply&Use of land cover resource by Land Use Functions in general for all land cover types.

Figure 4.33: Supply&use of land cover resource by land use functions

SUPPLY & USE OF LAND COVER RESOURCE
BY LAND USE FUNCTIONS

	Supply & Use of Land Cover Resource by Land Use Functions	UF1 Residential, incl services	UF2 Commercial	UF3 Transport	UF4 Industrial production	UF5 Energy production	UF6 Mining & quarrying	UF7 Waste dumping	UF8 Water management	UF9 Farming, food production	UF10 Forestry	UF11 Recreation & Tourism	UF12 Nature conservation	UF13 Other uses	ADJUSTMENT FOR MULTIPLE USES	TOTAL
Initial surface																
1	Artificial surfaces															
2.1+2.2	*Arable Land & Permanent Crops*															
2.3+2.4	*Pastures & Mixed agricultural areas*															
3.1	*Forests*															
3.2+3.3	*Shrub and other semi-natural land*															
4	Wetlands															
5	Water bodies															
A - TOTAL INITIAL SURFACE ~1975																
Net Formation of Land Cover by Use																
LCF1	Urban land management															
LCF2	Urban sprawl															
LCF3	Extension of economic sites and infrastructures															
LCF4	Agricultural rotation and intensification															
LCF5	Conversion of land to agriculture															
LCF6	Forests creation and management															
LCF7	Water body creation and management															
LCF8	Changes of Land Cover due to natural and multiple causes															
B - TOTAL Net Formation of Land Cover																**0**
Net Extension of Use without Formation of Cover																
1	Artificial surfaces															
2.1+2.2	*Arable Land & Permanent Crops*															
2.3+2.4	*Pastures & Mixed agricultural areas*															
3.1	*Forests*															
3.2+3.3	*Shrub and other semi-natural land*															
4	Wetlands															
5	Water bodies															
C - TOTAL Net Extension of Use without Formation of Cover																
Final Surface																
1	Artificial surfaces															
2.1+2.2	*Arable Land & Permanent Crops*															
2.3+2.4	*Pastures & Mixed agricultural areas*															
3.1	*Forests*															
3.2+3.3	*Shrub and other semi-natural land*															
4	Wetlands															
5	Water bodies															
D - TOTAL FINAL SURFACE ~1990 (D = A+B+C)																

This describes the use of land by the function and the way it expands or shrinks over the accounting period. These changes may result in formation of a new land cover, e.g. the expansion of forestry resulting in conversion of land to forests. But it is not always the case and the change in the area of a function may take place without any modification of land cover. More generally, the possible multiple uses of a given land cover requires a separate accounting of changes in use that does not result in the formation of a new cover. The new protection of a forest (an extension of the Use Function "Nature protection") does not generate loss of forests, although it may have consequences on the function "Forestry". Consequently, the total allocation of land to these functions is important in environmental and economic assessment and in policy-making, in particular when multiple uses result in possible conflicts of use.

The basic equation of the Supply & Use of Land Cover Resource by Land Use Functions is:

EQUATION ***Initial surface***

+ Net Formation of Land Cover by Use

+ Net Extension of Use without Formation of Cover

= Final surface

This equation is valid for each individual function. When addressing several functions, overlaps generally happen due to possible multiple uses. Therefore, an additional column is necessary to adjust the total by deducing the multiple uses and maintain a formal identity between the sum total of land use and of land cover.

This last point is disputable when considering the Change in Use without Formation of Cover. As long as the total surface depends on the number of functions identified, it seams reasonable not to present results for this total. However, the land used by each individual function is presented and can always be added to others for specific analysis.

Based on the general table of the use of land cover by functions – Fig. 4.33 specific table for forests – Supply & Use of land cover resource by land use functions in the case of forests - have been constructed – see following Fig. (4.34).

Figure 4.34: Supply&use of land cover resource in the case of forests

	UF5	UF8	UF9	UF10	UF11	UF12	UF13		
Supply & Use of Land Cover Resource by Land Use Functions	Energy production	Water management	Farming, food production	Forestry	Recreation & Tourism	Nature conservation	Other uses	ADJUSTMENT FOR MULTIPLE USES	**TOTAL CZ**
Initial surface 1975									**2597121.6**
Consumption									**163703.6**
Formation LCF 61									26806.7
Formation LCF 83									2430.0
Total formation									**29236.7**
Final Surface 1990									**2462654.6**

4.4.2 Functions of forestry and land use functions

The functions of "Forestry" can be in turn detailed for analytical purpose. It corresponds to the concept of "Targeted Accounts" introduced earlier in the report. These accounts present, first, details of land cover flows related to specific zones, landscape types, and environmental issues. Second, they organise the information on a given function in the framework of accounts of land use functions.

Like in the case of tourism also for forestry classification of sub-functions has been established and basic table showing the connection of forest functions and land use functions has been constructed:

Figure 4.35: Functions of forests and land use functions

Forest functions	Land use functions
Wood production	
timber	UF10 Forestry
pulp	UF10 Forestry
firewood	UF10 Forestry UF5 Energy
other	UF10 Forestry
Non-wood production	
food	UF9 Farming, food production
animal breeding	UF9 Farming, food production
Medicinal plants	UF9 Farming, food production
industrial extracts	UF4 Industrial production
Protective functions	
biodiversity protection	UF12 Nature conservation
soil protection	UF12 Nature conservation
landscape maintenance	UF12 Nature conservation
water protection	UF8 Water management
Socio-economic functions	
Recreation & tourism	UF11 Recreation & Tourism
provision of employment	UF13 Other uses
Research & education	UF13 Other uses

4.4.3 Proposal of targeted forest accounts

In the pilot studies on the feasibility of LEAC with CORINE Land Cover, 2 issues have been identified for tests: Tourism on the coastal zone and forestry for the Czech Republic. The first test has been finished already and is published in the first part of this report[46]

46 Weber, J. L., Paramo, F., Breton, F. Haines-Young, R. (2003): Integration of geographical and statistical data in the environmental accounting framework; methodological development based on two case studies Action 2: Integration of environmental accounts in coastal zones; case study of tourism, Barcelona 2003, Contract n° 200141200017, EUROSTAT

In the case of forestry, the test has also been twofold: methodology and statistical implementation. Though the methodological framework tests are limited due to difficulties in collecting statistics they can be considered as a good base for further development. The set of tables show clearly how the various sub-accounts match and what is the interest in bridging them together. Issued from the theoretical approaches and outputs of tourism part the outputs in the case of forestry were further developed. The statistics have been collected and real targeted forest accounts for the Czech Republic (country), regions in the Czech Republic and also for landscape types as natural units were calculated in two levels:

– theoretical level – tables without numbers in blue colour

– practical level – usually simplified tables according to statistics availability – tables with results of calculations (by landscape types, regions and country).

The list of all the tables of proposed targeted forest accounts and the tables follow.

The construction and factual problematic of individual proposed accounts in theoretical and practical levels are further widely commented (chapter 4.4.4).

List of the proposed targeted accounts for forestry (figures 4.36 – 4.44)

- Figure 4.36: Forests by dominant landscape types

A) Forests by dominant landscape types

- Figure 4.37: Forests by regions and/or forest regions

A) Forests by regions

- Figure 4.38: Forest composition (age/structure/ownership/monetary value) by regions and/or forest regions

A) Age structure by regions
B) Categorization of forests in the Czech Republic
C) Owners structure of forests in the Czech Republic
D) Sylvicultural system of forests in the Czech Republic

- Figure 4.39: Forest stocks and use by regions and/or forest regions

A) Annual felling by tree species by regions
B) Annual afforestation by regions
C) Non-wooded forestland available for afforestation in the Czech Republic -annual balance
D) Development of real total felling in the Czech Republic – cumulated balance

- Figure 4.40: Supply and use of wood

A) Wood supply by regions
B) Annual wood supply in the Czech Republic

- Figure 4.41: Forest non-wood products by regions and/or forest regions

A) Trap hunting in the Czech Republic – annual
B) Hunting – shooting in the Czech Republic

- Figure 4.42: Forests and protection by landscape types or regions or forest regions

A) Protected forests by regions

- Figure 4.43: Forests biodiversity and health by landscape types or regions or forest regions

A) Forest diversity by tree species in the Czech Republic

B) Air pollution damage degree of conifers forests in the Czech Republic

- Figure 4.44: Social account of forests

A) Employment by forestry in the Czech Republic
B) Export from the Czech Republic
C) Direct investments for 1 m^3 of wood

Figure 4.36: Forests by Dominant landscape types

Theoretical proposal

UF10.01	Forests by Dominant Landscape Types – (ha)	A1		A2		B1		etc,,,		Total CZ	
		Brdl	Cnif	Brdl	Cnif	Brdl	Cnif	Brdl	Cnif	Brdl	Cnif
	Total Surface 0 (1975)										
+	LCF61										
+	LCF83										
+ / -	LCF62										
-	LCF51										
-	LCF53										
-	....										
=	Total Surface 1 (1990)										

A) Forests by dominant landscape types (ha)

UF 10.01	Forests by dominant landscape types	A1	A2	B1	B11	B12	B13	B2	B22	B23	C1	C11	C12	C13	C2	C22	C23	C3	C31	C32	C33	Total CZ
	Total Surface 1975	**97251.77**	**54730.91**	**243868.84**	**23881.52**	**219887.57**	**99.75**	**10495.78**	**3378.95**	**7116.83**	**717374.88**	**151.27**	**399941.21**	**317282.40**	**13031.68**	**9606.97**	**3424.71**	**1460367.72**	**27961.70**	**1251719.53**	**180686.49**	**2597121.58**
+	LCF61	**887.68**	**247.28**	**1337.25**	280.34	1056.66	0.25	**12.69**	12.69	0.00	**10608.14**	43.22	3687.16	6877.76	**267.36**	113.50	153.86	**13446.27**	396.75	8122.07	4927.45	**26806.67**
+	LCF83	**154.64**	**30.82**	**256.83**	39.90	216.93		**33.23**	0.00	33.23	**607.86**		339.25	268.61	**46.27**	44.18	2.09	**1300.38**	18.41	1057.40	224.57	**2430.03**
-	LCF21	**8.86**																**7.57**		7.57		**16.43**
-	LCF22	**69.59**	**20.38**	**6.09**		6.09					**60.77**		37.28	23.49				**91.50**		91.50		**248.33**
-	LCF31	**80.99**		**29.93**	8.73	21.20					**205.31**		205.31					**181.10**	46.34	134.76		**497.33**
-	LCF32			**29.41**	29.41													**30.66**		30.66		**60.07**
-	LCF34										**29.83**		29.83									**29.83**
-	LCF35	**136.86**	**174.88**	**113.68**	49.62	64.06					**503.71**		503.71					**898.64**	72.24	774.01	52.39	**1827.77**
-	LCF36	**33.58**	**65.83**								**77.35**		77.35					**247.22**	59.79	173.38	14.05	**423.98**
-	LCF37			**76.90**		76.90					**58.74**		42.75	15.99				**163.37**		163.37		**299.01**
-	LCF38	**117.98**																**7.51**			7.51	**125.49**
-	LCF51	**203.05**	**107.18**	**631.56**	71.99	559.57		**14.06**	8.15	5.91	**697.08**		495.94	201.14				**3026.52**	112.29	2801.63	112.60	**4679.45**
-	LCF53	**468.83**	**152.91**	**1193.42**	234.90	958.52		**96.67**	3.22	93.45	**3245.22**		1519.27	1725.95	**155.14**	137.72	17.42	**6265.86**	270.67	5110.14	885.05	**11578.05**
-	LCF63	**2609.14**	**1524.52**	**10387.43**	724.24	9663.19		**375.88**	218.46	157.42	**44654.77**		17973.50	26681.27	**2102.65**	758.49	1344.16	**80829.58**	1651.89	58899.15	20278.54	**142483.97**
-	LCF71			**463.87**	462.43	1.44					**71.56**		71.56					**711.84**	563.80	136.82	11.22	**1247.27**
-	LCF85										**45.78**		45.78									**45.78**
-	LCF89										**100.23**		84.25	15.98				**40.65**			40.65	**140.88**
=	**Total Surface 1990**	**94565.21**	**52963.31**	**232530.63**	**22620.44**	**209810.19**	**100.00**	**10055.09**	**3161.81**	**6893.28**	**678840.53**	**194.49**	**382881.09**	**295764.95**	**11087.52**	**8868.44**	**2219.08**	**1382612.35**	**25599.84**	**1192576.01**	**164436.50**	**2462654.64**

Figure 4.37: Forests by regions and/or forest regions

Theoretical proposal

UF10.02	Forests by regions and/or forest regions – (ha)	Region A		Region B		…		Total CZ	
		Brdl	Cnif	Brdl	Cnif	Brdl	Cnif	Brdl	Cnif
	Surface 0 (1975)								
+	LCF61								
+	LCF83								
+ / -	LCF62								
-	LCF51								
-	....								
+ / -	Statistical adjustment between CLC and forests stat.								
=	Surface 1 (1990)								

A) Forests by regions (ha)

UF10.02	Forests by Regions (ha)	Northern Bohemia	Central Bohemia	Southern Bohemia	Western Bohemia	Eastern Bohemia	Prague	Southern Moravia	Northern Moravia	Total CZ
	Total Surface 1975	**260427.7**	**276820.85**	**409623.16**	**428339.95**	**346241.83**	**31642.3**	**440213.06**	**403812.73**	**2597121.58**
+	LCF61	6531.37	1613.78	2320.12	3377.27	4499.97	296.19	1279.73	6888.24	**26806.67**
+	LCF83	488.12	274.86	338.37	279.02	474.52	55.38	193.03	326.73	**2430.03**
-	LCF21				7.57			8.86		**16.43**
-	LCF22	41.04	3.59	20.89	52.14	34.14	59.53	5.58	31.42	**248.33**
-	LCF31	123.80	244.10	6.46	12.89	11.74		34.40	63.94	**497.33**
-	LCF32	2.89	57.18							**60.07**
-	LCF34	29.83								**29.83**
-	LCF35	398.05	143.39	265.12	599.23	185.45		86.50	150.03	**1827.77**
-	LCF36	311.74	36.28		34.51	10.13			31.32	**423.98**
-	LCF37	37.29		41.02	19.45		6.57	108.36	86.32	**299.01**
-	LCF38							117.98	7.51	**125.49**
-	LCF51	676.87	409.49	436.19	1156.49	494.55	4.25	916.81	584.80	**4679.45**
-	LCF53	1918.68	515.19	1442.34	2588.05	975.72	27.43	1947.92	2162.72	**11578.05**
-	LCF63	33571.50	12349.99	26136.37	30772.62	10383.18	69.23	15613.06	13588.02	**142483.97**
-	LCF71	67.66	52.20	116.50	6.46	30.92	3.58	953.78	16.17	**1247.27**
-	LCF85	45.78								**45.78**
-	LCF89	89.37		35.53	15.98					**140.88**
=	**Total Surface 1990**	**230132.69**	**296721.36**	**383781.23**	**396730.85**	**339090.49**	**31823.28**	**421892.57**	**394305.45**	**2462654.64**
+ / - (ha)	Statistical adjustment between CLC and forests stat. (1990)	-25366.31	1771.2	28902.23	21605.85	-20000.51		20014.57	7165.45	**-120125.36**
+ / - (%)	sign "-" means that CLC record is lower than stat. record	-11.02	0.5	7.53	5.45	-5.90		4.74	1.82	**-4.88**

Figure 4.38: Forest composition (age/structure/ownership/monetary value) by regions and/or forest regions

Theoretical proposal

UF10.03	**Forest composition / age /structure / ownership / monetary value, by regions and/or forest regions (ha)**	Region A	Region B	Region C	…	TOTAL CZ
	to be defined					

A) Age structure by regions (ha)

Age structure	Central Bohemia		Southern Bohemia		Western Bohemia		Northern Bohemia		Eastern Bohemia		Southern Moravia		Northern Moravia		Total CZ	
ha	1975	1990	1975	1990	1975	1990	1975	1990	1975	1990	1975	1990	1975	1990	**1975**	**1990**
1-10	25444.3	19934.6	40457.7	27262.2	46926.4	30367.5	30381.9	36135.2	29463.6	25120.1	36760.6	31057.3	37102.0	36966.9	**245965.3**	**209686.3**
11-20	18896.9	18942.2	32174.8	30940.2	33551.2	32364.2	18191.2	23475.9	26401.7	24585.1	32746.1	30265.9	38155.8	28374.0	**201964.0**	**191940.7**
21-30	21596.6	22655.6	34731.8	29199.8	34114.2	38675.7	13615.1	20804.7	27851.6	26086.5	46610.0	31607.1	32383.3	39643.9	**209816.2**	**208347.5**
31-40	29861.3	14445.6	32832.2	27600.2	36550.0	24967.7	27553.5	12701.9	41978.5	20896.0	54525.8	29846.9	37066.0	25414.9	**261011.8**	**157025.9**
41-50	31597.6	24679.3	35524.9	31192.3	41955.7	32965.2	29592.1	12970.9	41117.5	30374.8	45180.4	49866.0	39655.9	34283.8	**267894.8**	**214965.7**
51-60	24872.7	31830.6	34322.4	33015.4	37874.6	37238.1	26609.6	27398.1	31605.3	45346.0	42636.1	49694.8	37144.4	38008.3	**236155.4**	**264678.3**
61-70	28659.7	24934.2	44184.5	30550.5	45076.8	36862.9	25111.9	20336.9	34960.7	33156.0	44938.3	39905.4	40982.2	35481.7	**266963.2**	**223853.5**
71-80	28508.4	27343.2	42955.1	37045.7	45792.2	38710.1	24235.9	19699.6	33864.6	34226.9	46924.7	45881.8	38276.7	37058.2	**262714.2**	**241176.7**
81-90	22903.0	25603.1	33079.0	41286.3	34113.1	40040.2	18217.1	16260.4	24146.4	33480.0	29109.0	39771.4	32576.2	37681.6	**198553.0**	**236161.8**
91-100	18014.4	20391.9	29182.6	33221.3	28753.5	31868.5	14807.9	13915.9	21343.9	26157.4	25586.3	31451.9	26426.3	30226.4	**167208.2**	**189810.5**
101-110	11004.9	15080.1	22021.5	24675.1	20023.6	22561.4	12463.3	8928.5	13873.3	16135.1	16776.9	19219.3	16402.6	22212.1	**116029.0**	**132670.9**
111-120	7439.4	8453.6	13873.1	17164.9	11409.1	14157.4	8666.2	6647.3	8330.6	10443.2	9276.0	12521.8	11832.3	11054.2	**75440.7**	**83446.5**
121-130	3820.3	4259.9	7390.4	10631.2	6019.5	7756.6	5445.6	3982.7	4570.0	5542.3	4603.3	5876.4	6812.5	7230.1	**40646.2**	**47878.9**
131-140	1873.3	3085.8	3341.9	5274.3	3189.2	3778.3	2387.7	2837.0	2097.0	2833.9	2016.1	2564.4	4269.2	4646.5	**22706.4**	**27281.4**
141 +	2328.2	3258.4	3551.3	4721.7	2990.7	4417.0	3148.4	4037.6	4637.1	4707.3	2523.4	2362.3	4727.2	6022.9	**24052.9**	**33730.1**
Total	**276820.9**	**264898.1**	**409623.2**	**383781.2**	**428340.0**	**396730.9**	**260427.7**	**230132.7**	**346241.8**	**339090.5**	**440213.1**	**421892.6**	**403812.7**	**394305.5**	**2597121.6**	**2462654.6**

B) Categorization of forests in the Czech Republic (ha)

Categorization of forests (ha)	Forests total	commercial forests	protection forests	special purpose forests
Initial Stock 1975 (ha)	2597121.58	2059517.41	345417.17	192187.00
Final Stock 1990 (ha)	2462654.64	1438190.31	61566.37	962897.96
Change 1975-1990 total (ha)	-134466.9	-621327.10	-283850.80	770710.97
%	94.4	69.83	17.82	501.02

C) Owners structure of forests in the Czech Republic (ha)

Ownwers structure of forest (ha)	Forests total	state	private	agro-cooperative
Initial Stock 1975 (ha)	2597121.58	2378963.4	31165.5	186992.8
Final Stock 1990 (ha)	2462654.64	2359223.1	2462.7	100968.8
Change 1975-1990 total (ha)	-134466.9	-19740.2	-28702.8	-86023.9
%	94.4	99.2	7.9	54.0

D) Sylvicultural system of forests in the Czech Republic (ha)

Sylvicultural system of forests (ha)	Forests total	high forest	coppice forest
Initial Stock 1975 (ha)	2597121.58	2565956.12	31165.46
Final Stock 1990 (ha)	2462654.64	2455266.68	7387.96
Change 1975-1990 total (ha)	-134466.9	-110689.44	-23777.50
%	94.4	95.69	23.71

Figure 4.39: Forest stocks and use by regions and/or forest regions

Theoretical proposal

UF10.04	**Forest stocks and use (m3) by regions and/or forest regions**	Region A		Region B		…..		TOTAL CZ	
		1975-1990	annual 1989-90	1975-1990	annual 1989-90	1975-1990	annual 1989-90	1975-1990	annual 1989-90
	Standing stock t0 (1975 / 1994)								
+	Natural increase								
+	Colonisation								
-	Felling								
-	Thinning								
-	Loss in stocks due to storms, floods								
-	Loss in stocks due to degradation by pollution								
=	Standing stock t1 (1990)								

A) Anual felling by tree species by regions (1000 m3 u.b.)

Annual felling	Central Bohemia		Southern Bohemia		Western Bohemia		Northern Bohemia		Eastern Bohemia		Southern Moravia		Northern Moravia		Total CZ	
(1000 m3 u.b.)	1975	1990	1975	1990	1975	1990	1975	1990	1975	1990	1975	1990	1975	1990	**1975**	**1990**
Spruce	393.6	475.7	952.7	1038.2	985.1	1113.8	481.2	639.0	1060.0	1331.0	812.1	1026.6	1540.8	1613.0	**6772.7**	**7872.2**
Fir	11.4	7.5	45.5	34.5	24.6	17.1	1.2	0.3	34.3	20.5	57.8	42.1	189.8	97.9	**426.7**	**250.1**
Pine	257.4	291.4	519.4	572.3	342.7	315.6	150.8	134.7	223.2	256.3	269.9	303.4	83.2	76.3	**2009.0**	**2106.2**
Larch	24.1	35.2	9.1	15.2	11.6	18.3	8.6	10.2	21.3	39.3	41.7	63.5	59.4	68.1	**196.7**	**275**
Conifers total	689.4	810.5	1527.5	1661.8	1356.8	1456.3	643.9	784.6	1343.4	1648	1182.4	1436.5	1874.2	1855.8	**9420.2**	**10510.0**
Oak	56.9	64.3	13.6	16.5	9.9	9.5	19.3	15.8	383.8	41.8	125.2	147.6	24.3	27.7	**316.7**	**350.3**
Beech	31.1	29.5	44.2	48.6	28.7	26.5	55.3	23.1	42.9	37.3	148.4	179.3	247.0	210.2	**671.1**	**618**
Birch	10.2	135	15.1	19.3	7.2	9.3	11.8	10.0	30.8	27.9	22.1	20.3	16.0	11.6	**124.4**	**117.7**
Alder	0	4.6	3.6	6.2	2.0	3.5	1.6	2.3	5.5	7.3	8.5	9.0	7.1	10.4	**32.3**	**44.6**
Linden	0	3.4	1.3	1.9	0.3	0.4	0.9	0.8	1.5	2.3	15.2	19.5	11.9	19.7	**36.3**	**51.3**
Poplars	0	6.0	0	1.6	0	1.2	1.2	2.1	0.4	2.9	15.6	33.8	1.2	3.9	**20.0**	**52.5**
Broadleaved total	119.1	138	79.7	96.1	49.7	52.6	97.2	62.3	129.9	130.4	424.9	497.4	337.5	318.1	**1366.6**	**1409.5**
Total	**808.5**	**948.5**	**1607.2**	**1757.9**	**1415.5**	**1517.9**	**741.1**	**846.9**	**1473.3**	**1778.0**	**1607.3**	**1933.9**	**2211.7**	**2173.9**	**10786.8**	**11919.0**

B) Annual afforestation by regions (ha)

Annual afforestation	Central Bohemia		Southern Bohemia		Western Bohemia		Northern Bohemia		Eastern Bohemia		Southern Moravia		Northern Moravia		**Total CZ**	
ha	1975	1990	1975	1990	1975	1990	1975	1990	1975	1990	1975	1990	1975	1990	**1975**	**1990**
After felling	2351	2434	3253	3926	3399	3641	2384	3326	3054	3971	3436	4100	3700	4432	**23704**	**27752**
Total	**3566**	**3200**	**4854**	**4942**	**5755**	**5107**	**5778**	**4830**	**4400**	**5280**	**4646**	**5083**	**5056**	**5564**	**35213**	**36518**

C) Non-wooded forestland available for afforestation in the Czech Republic -annual balance (ha)

Land for afforestation (ha)		1975	1990
beginning of the year total		25837	38370
of which unstocked area		21655	x
increment during the year			
	caused by calamities	579	1160
	total	24588	34273
decline during the year			
	afforested	21752	33615
	natural increment	1203	908
	total	24486	35603
end of the year total		25939	37040

Note: the difference of total annual afforestation in tables B) and C) is caused by different sources of the data

D) Development of real total felling in the Czech Republic – cumulated balance (1000 m^3 u.b.)

Cumulated felling (1000 m^3 u.b.)	total	conifers	broadleaved	salvage	% of salvage
1975	11404	10022	1382	3865	33.9
1976	12078	10871	1207	7059	58.4
1977	11960	10513	1447	4180	34.9
1978	12963	11479	1484	4156	32.1
1979	13552	12086	1466	5866	43.3
1980	13626	12198	1428	7060	51.8
1981	13435	12061	1374	6715	50.0
1982	13169	11768	1401	5102	38.7
1983	13162	11806	1356	6449	49.0
1984	13511	12359	1152	8198	60.7
1985	13905	12819	1086	11459	82.4
1986	13156	11938	1218	7568	57.5
1987	12891	11621	1270	6580	51.0
1988	12632	11323	1309	5655	44.8
1989	12303	10922	1381	4994	40.6
1990	13332	12175	1157	9822	73.7
TOTAL 1975-1990	**207079**	**185961**	**21118**	**104728**	

Figure 4.40: Supply and use of wood

Theoretical proposal

UF10.05	**Supply and use of wood m^3 (annual)**	Region A		Region B		...		TOTAL CZ	
		1975	1990	1975	1990	1975	1990	1975	1990
	National supply								
+	Import								
=	TOTAL SUPPLY								
	Timber								
+	Pulp								
+	Firewood								
+	Other uses								
+	Exports								
=	TOTAL USE								

A) Wood supply by regions – annual (1000 m^3 u.b.)

Wood supply	Central Bohemia		Southern Bohemia		Western Bohemia		Northern Bohemia		Eastern Bohemia		Southern Moravia		Northern Moravia		Total CZ	
(1000 m3 u.b.)	1975	1990	1975	1990	1975	1990	1975	1990	1975	1990	1975	1990	1975	1990	1975	1990
Fuelwood	61.3	123.6	95.6	326.4	79.1	121.5	46.0	97.9	93.8	196.2	148.5	181.9	202.5	146.3	726.7	1193.7
Total	**835.2**	**1003.5**	**1550.0**	**2329.9**	**1461.1**	**1918.4**	**878.7**	**759.2**	**1427.4**	**1845.0**	**1741.1**	**1967.4**	**2313.8**	**1918.0**	**10207.2**	**11741.3**

B) Annual wood supply in the Czech Republic (1000 m^3 u. b.)

Annual wood supply	**total**	Cnif	Brdl	round-wood		mine props		poles		pulp		industrial wood		fuelwood	
(1000 m^3 u. b.)				Cnif	Brdl	Cnif	Brdl	Cnif	Brdl	Cnif	Brdl	Cnif	Brdl	Cnif	Brdl
1975	**11089**	9777	1312	5292	590	482	20	379	6	2813	255	9246	1051	792	531
1990	**12828**	11652	1176	6530	433	311	8	209	1	3472	468	10613	914	1301	1039

Note: the difference of total annual wood supply *in tables B) and C) is caused by different sources of the data*

Figure 4.41: Forest non-wood products by regions and/or forest regions

Theoretical proposal

UF9.01	**Forest non-wood products by regions and/or forest regions, in tons or number and in €**	Region A		Region B		...		TOTAL CZ	
		1975	1990	1975	1990	1975	1990	1975	1990
	Mushrooms								
	Berries								
	Medicinal plants								
	Game								
	Animal breeding								
	Other forest non-wood products								

A) Trap hunting in the Czech Republic – annual (pieces)

Trap hunting (pieces)	hares	partridges	pheasants	hoofed game
1975	47465	3029	62323	165
1990	20007	157	41731	NA

B) Hunting – shooting in the Czech Republic (pieces –P, weight – W in tons)

Hunting – shooting	deers		fallow deers		mufflons		roebucks		black pigs		hares		partridges		pheasants	
(pieces, weight)	P	W	P	W	P	W	P	W	P	W	P	W	P	W	P	W
1975	9180	688.5	1478	44.3	2466	61.7	107769	1616.5	11747	587.4	968986	3100.8	11808	3.0	998208	1098.0
1990	22947	1721.0	4615	138.5	7110	177.8	81490	1222.4	47817	2390.9	192805	570.8	200	0.1	606119	660.7

Figure 4.42: Forests and protection by landscape types or regions or forest regions

Theoretical proposal

UF12.01	**Forests and protection, by (a) landscape types, or by (b) regions and or forest regions, ha, %**	A1		A2		...		Total CZ	
		Region A		Region B		...		TOTAL CZ	
		1975	1990	1975	1990	1975	1990	1975	1990
	Forests under nature protection designation								
	Other protection forest								
	soil protection								
	water protection								
	other restriction of use								
	Other forests								
	Total Surface of forests								

A) Protected forests by regions (ha)

Protected forests	Central Bohemia		Southern Bohemia		Western Bohemia		Northern Bohemia		Eastern Bohemia		Southern Moravia		Northern Moravia		**The Czech Republic – Total**	
(ha)	1975	1990	1975	1990	1975	1990	1975	1990	1975	1990	1975	1990	1975	1990	**1975**	**1990**
National parks				**22183.5**		**25867.4**	**68.4**	**93.6**	**27126.8**	**30542.6**		**5594.8**			**27195.2**	**84281.9**
conifers				17909.0		24698.0		16.0		27051.3		86.6				**69760.9**
broadleaved				173.2		31.8				54.4		2034.8				**2294.1**
mixed				4101.3		1137.7		77.6		3436.9		3473.4				**12226.9**
not available for wood supply				*2228.2*		*4202.1*				*1272.7*		*2173.7*				***9876.8***
Protected landscape areas	**7169.1**	**47540.3**	**65660.8**	**82994.9**	**77563.1**	**52534.2**	**57022.9**	**85720.0**	**36916.8**	**69220.6**	**26907.2**	**64660.6**	**139035.8**	**141138.56**	**410275.6**	**543809.2**
conifers		15645.5		72224.2		44977.0		41146.0		64048.9		27849.7		100972.5		**366863.8**
broadleaved		8210.8		1748.3		858.3				204.9		15601.2		9547.106		**47953.8**
mixed		23684		9022.3		6699.0		32790.8		4966.8		21209.7		30618.953		**128991.6**
Total under protection	**7169.1**	**47540.3**	**65660.8**	**105178.3**	**77563.1**	**78401.7**	**57091.3**	**85813.7**	**64043.6**	**99763.2**	**26907.2**	**70255.4**	**139035.8**	**141138.6**	**437470.8**	**628091.1**
conifers		15645.5		90133.2		69674.9		41162.0		91100.2		27936.3		100972.5		**436624.6**
broadleaved		8210.8		1921.6		890.0		11783.2		259.2		17636.0		9547.1		**50247.9**
mixed		23684.0		13123.6		7836.7		32868.4		8403.7		24683.1		30619.0		**141218.5**

Figure 4.43: Forests biodiversity and health by landscape types or regions or forest regions

Theoretical proposal

UF12.02	**Forests biodiversity and health of forest ecosystems by (a) landscape types, or by (b) regions and or forest regions (ha)**	A1		A2		...		Total CZ	
		Region A		Region B		...		TOTAL CZ	
		1975	1990	1975	1990	1975	1990	1975	1990
	to be defined								

A) Forests diversity by tree species in the Czech Republic (ha, %)

Forest diversity by tree species	Forests total	spruce	fir	pine	larch	other cnif	oak	beech	birch	other brdl	conifers	broadleaved
Initial Stock 1975 (ha)	2597121.6	1443999.6	54539.6	498647.3	57136.7	15582.7	142841.7	129856.1	67525.2	168812.9	2069905.9	509035.8
Final Stock 1990 (ha)	2462654.6	1347072.1	27089.2	438352.5	78804.9	19701.2	147759.3	132983.4	71417.0	160072.6	1911020.0	512232.2
Change 1975-1990												
total (ha)	-134466.9	-96927.5	-27450.4	-60294.8	21668.3	4118.5	4917.6	3127.3	3891.8	-8740.4	-158885.9	3196.3
%	94.8	93.3	49.7	87.9	137.9	126.4	103.4	102.4	105.8	94.8	92.3	100.6
Initial Stock 1975 (%)		56.0	2.1	19.3	2.2	0.6	5.5	5.0	2.6	6.5	80.3	19.7
Final Stock 1990 (%)		55.6	1.1	18.1	3.3	0.8	6.1	5.5	2.9	6.6	78.9	21.1
Natural composition (%)		11.2	19.8	3.4	0.0	0.3	19.4	40.2	0.8	4.9	34.7	65.3

B) Air pollution damage degree of conifers forests in the Czech Republic (ha, %)

Air pollution damage (ha)	Conifers total	Damage class			
		0/I + I	II	III	IV
Initial Stock 1975 (ha)	1874021.0	612804.9	48724.6	16866.2	5622.1
Final Stock 1990 (ha)	1711980.4	878246.0	77039.1	20543.8	1712.0
Change 1975-1990					
total (ha)	-162040.6	265441.1	28314.6	3677.6	-3910.1
%	91.4	143.3	158.1	121.8	30.5

Figure 4.44: Social account of forests

Theoretical proposal

UF13.01, 11. 01	**Social account of forests, by regions and/or forest regions**	Region A		Region B		...		TOTAL CZ	
		1975	1990	1975	1990	1975	1990	1975	1990
	Employment by forestry								
	Employees (number)								
	Income (millions €)								
	Population in forested / areas (number)								
	Tourism & recreation / frequentation (number)								
	Tourism & recreation / income (millions €)								

A) Employment by forestry in the Czech Republic (number of workers, %)

Employment by forestry	number of workers	share on the total no. of employees (%)
1975	37177	0.5
1990	57724	0.7

B) Export from the Czech Republic (1000 m^3 u.b.)

Export (1000 m^3 u.b.)	total	conifers	broadleaved
1975			
1990	414	187	227

C) Direct investments for 1 m^3 of wood (CZK)

Direct investments (CZK)	felling	skidding	hauling
1975	24	31	9
1990	85	94	53

4.4.4 Remarks and data needs for proposed forest targeted accounts

According to land use functions and related functions of forestry, the above theoretical framework of forest targeted accounts has been established. Then using available LEAC as well as statistical data we have prepared real samples of the accounts. In this chapter we comment more these proposed targeted accounts (theoretical and real), their specifics and data needs for their construction. The parts that are on our opinion the most important for Eurostat are in bold.

- Theoretical proposal of account: Forests by dominant landscape types (Fig. 4.36)

construction remarks:

– in theoretical level forests can be divided into conifers, broadleaved and mixed in the dependence of CORINE data set legend level

– the difference between total initial and final surface could be also incorporated for quick information about the development of forests area changes in individual landscape types during the period

- Real table: A) Forests by dominant landscape types

construction remarks:

– because of the legend level difference in 1975 (level 2) and 1990 (level 3) the diversification between conifers and broadleaved was not incorporated

– also +/- flow of LCF 62 (change between conifers and broadleaved forests) is not incorporated

factual remarks:

– in accordance with the trend of the whole the Czech Republic in most of the landscape types forest area decreases between 1975 and 1990

– an exception are landscape types B13 and C11 – increase of forest is due to LCF 61 – Forest creation

  - statistical data needs:

  statistical data not needed

- Theoretical proposal of account: Forests by regions and/or forest regions (Fig. 4.37)

construction remarks:

– in theoretical level forests can be divided into conifers, broadleaved and mixed in the dependence of CORINE data set legend level

– the difference between total initial and final surface could be also incorporated for quick information about the development of forests area changes in individual landscape types during the period

– this account can be also constructed for other administrative units (for example districts)

factual remarks:

– statistical adjustment between CLC and forest statistics can be incorporated but the explanation of the difference is not easy because the differences can be caused by different definitions of forest, or by incorrect statistical records or by classification accuracy problems

– this account in combination with forests by dominant landscape types creates the "bridge" between CLC and forest statistics

- Real table: A) Forests by regions

construction remarks:

– because of the legend level difference in 1975 (level 2) and 1990 (level 3) the diversification between conifers and broadleaved was not incorporated

– also +/- flow of LCF 62 (change between conifers and broadleaved forests) is not incorporated

factual remarks:

– in accordance with the trend of the whole the Czech Republic there is clear forest decline in all district of the Czech Republic, except Prague

– the most significant decline was in Northern Bohemia (damage due to air pollution)

– the difference between CLC and forest statistics in 1990 is relative high, especially in Northern Bohemia (statistics show 11,02% higher area than CLC)

– the reason of the difference can be in different definitions of forests (in Northern and also Eastern Bohemia there was in 1990 extensive area of temporarily unforested forestland – damaged by air pollution – that is in statistics recorded under forest land still while on satellite image forests cannot be detected)

  - statistical data needs:

  statistical data needed only for statistical adjustment – **area of forested land by regions (districts)**

- Theoretical proposal of account: Forest composition (age/structure/ownership/monetary value) by regions and/or forest regions (Fig. 4.38)

construction remarks:

– forest composition can be expressed by several ways; construction of individual account depends on the variable of expression

– can be constructed for administrative units or for natural units (forest regions)

- Real tables

A) Age structure by regions

construction remarks:

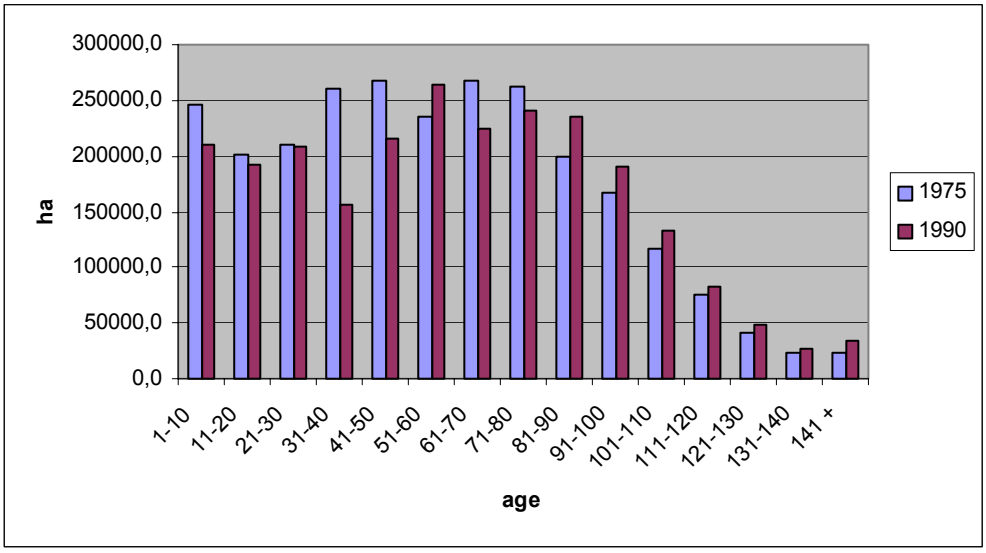
– statistical records in % can be used to recalculate age structure for CLC

– can be constructed for administrative units or for natural units (natural forest regions)

factual remarks:

- as following figure shows Czech forests are getting older during the period under observation – area of younger age groups decreases and area of older age groups increases

Figure 4.45: Age structure development in the Czech Republic



B) Categorization of forests in the Czech Republic

construction remarks:

– the numbers for CLC are recalculated using statistics (% share of the categories)

– during the period some changes in types of categories occured but for the future there will be stable categories

factual remarks:

– high decrease of protection forests (and high increase of special purpose forests) is caused partly due to changes in categories definitions

C) Owners structure of forests in the Czech Republic

construction remarks:

– the numbers for CLC are recalculated using statistics (% share of the categories)

factual remarks:

– there was still very low share of private forests in 1990 but until 2000 the situation has changed dramatically – there are more than 20% of private forests in the Czech Republic now and very low share of agro-cooperative forests

D) Sylvicultural system of forests in the Czech Republic

construction remarks:

– the numbers for CLC are recalculated using statistics (% share of the categories)

- Statistical data needs for forest composition targeted accounts (by districts, regions, natural forest regions)

1) **forested area divided by conifers, broadleaved and total (in ha or %)**
2) **age structure by age groups divided in conifers, broadleaved, total and by tree species**
3) **categories of forests (commercial forests, protection forests divided in water, soil and other types of protection, special purpose forest) divided in conifers, broadleaved and total (in ha or %)**
4) **owners structure (state, communal, church, co-operative, foundations, nobility, other private, agro-cooperatives, other) divided in conifers, broadleaved and total (in ha or %)**
5) **sylvicultural categories (high, medium, coppice forests) divided in conifers, broadleaved and total (in ha or %)**
6) **changes in classification of forests (caused by low or by other reasons)**

- Theoretical proposal of account: Forest stocks and use by regions and/or forest regions (Fig. 4.39)

construction remarks:

– the account is a type of flow accounts; in this case it is based on statistical data of affoestation (plantations, natural increase, colonisation) and deforestation (felling, thinning, loss due to storms, floods, insect calamities, degradation by pollution etc.)

– this account can be constructed as annual – then the data from initial and/or final year are sufficient

– when the account is constructed for the whole period under observation – cumulated account – the data from each year inside the period are needed

– when the units of the account are different from areal extent units (ha), the account has to be based on statistics data and cannot use CLC data (recalculate the values for them)

- Real tables

A) Annual felling by tree species by regions

construction remarks:

– this table is the annual type of the account

– the table is based on statistical data (in 1000 m^3)

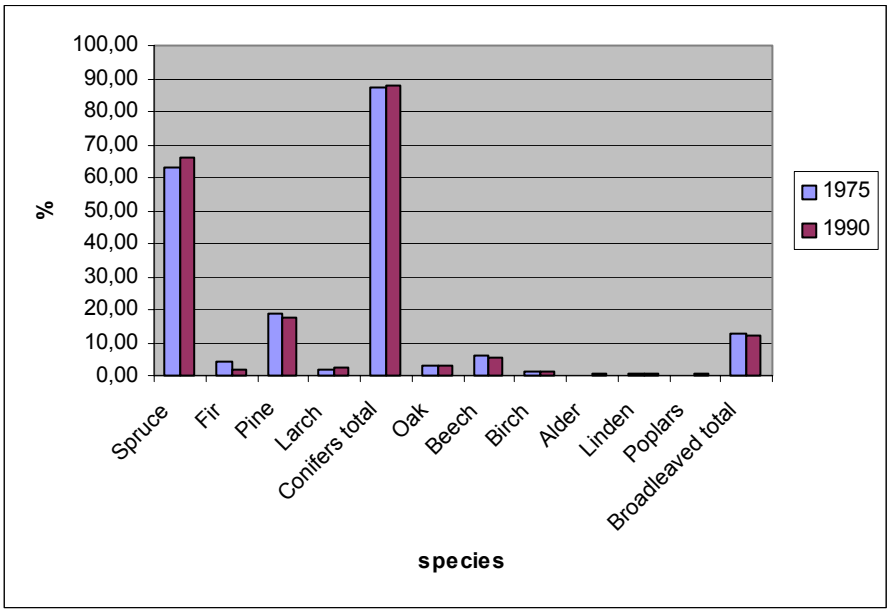
factual remarks:

– the total annual felling in the Czech Republic was more than 10% higher in 1990

– the total annual felling in regions was higher in 1990 except Northern Moravia

– the share (in %) of the tree species on total felling was on the country level higher in 1990 in the case of spruce, larch, conifers in total, alder, linden and poplars, lower in the case of broadleaved in total (see the following figure)

Figure 4.46: Annual felling by tree species in the Czech Republic



B) Annual afforestation by regions

construction remarks:

– this table is the annual type of the account

– the table is based on statistical data

factual remarks:

– while total afforestation in the Czech Republic was higher in 1990 the tendencies in regions were different; higher afforestation in 1990 in Southern, Eastern Bohemia and in the both Moravian regions and lower in other regions

Non-wooded forestland available for afforestation in the Czech Republic -annual balance

construction remarks:

– this table is a special account on country level that shows the extent of non-wooded forest land available for afforestation in the beginning and in the end of the year and the increment and decline of this land during the year

C) Development of real total felling in the Czech Republic – cumulated balance

construction remarks:

– this table is the cumulated type of the account which needs data for each year during the period under observation

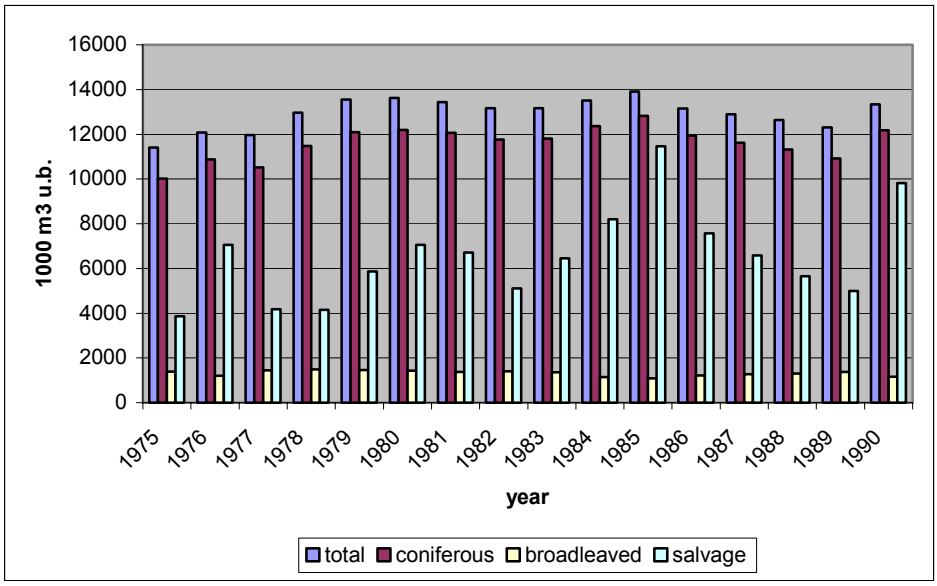
– because of the data and time high demand it is difficult to calculate for lower than country level

– the table is based on statistical data

factual remarks:

– the peak of the felling and salvage felling in 1985 was caused by the forest damage due to air pollution (see the following picture).

Figure 4.47: Development of real total felling in the Czech Republic



- Statistical data needs for forest stocks and use accounts (by districts, regions, natural forest regions) – in m^3 (1000 m^3) or ha

  1) **standing stock**
  2) **afforestation- plantations, natural increase, colonisation**
  3) **deforestation – felling, thinning, cleanings, loss due to storms, floods, insect calamities, degradation by pollution etc.**
  4) **the data should be available for the initial and/or final year of the period under observation – for annual accounts or for all years of the period – for cumulated accounts**
  5) **all the data can be divided in conifers, broadleaved and total, or by forest categories, or by owners structure, by age, by species etc.**

- Theoretical proposal of account: Supply and use of wood by country, regions, natural forest regions (Fig. 4.40)

construction remarks:

– this table is based on statistics (in m^3)

– there are two main information in the table – total supply (crated from national supply and import) and total use (by types of use)

– can be constructed as annual or as cumulated account

- Real tables

A) Wood supply by regions

construction remarks:

– Statistics of *Forest Management Institute* were a source of the data for this table; the numbers do not include military forests – that is why total wood supply is lower than in the next table

– the table is based on statistical data

factual remarks:

– wood supply in 1990 in the Czech Republic and all regions, except Northern Bohemia and Northern Moravia was higher than in 1975

B) Annual wood supply in the Czech Republic

construction remarks:

– Yearbook of *Czech Statistical Office* was a source of data in this table

– the table is based on statistical data

factual remarks:

– except pulp and fuelwood in the cases of all other wood products the supply of broadleaved was lower in 1990 (also the total supply)

– supply of products from conifers was higher in 1990 in total, in the case of round-wood, pulp, industrial wood and fuelwood

– the validity of statistical data from 1975 is problematic

- Statistical data needs for supply and use targeted accounts (by districts, regions, natural forest regions – NFR) – in m^3 (1000 m^3)

1) **national supply of wood, supply from regions (districts, NFR) divided by conifers, broadleaved and total**
2) **export, import of wood (can be divided by types of wood products and/or by countries)**
3) **use of wood by types of wood products (timber, pulp, firewood, round-wood, mine props, poles, industrial wood etc.) – can be divided in products from conifers, broadleaved and total**

- Theoretical proposal of account: Forest non-wood products by regions and/or forest regions (Fig. 4.41)

construction remarks:

– dependent on statistical sources and/or estimations

factual remarks:

– statistics are usually available only for game or animal breeding or in general by products that were extracted from the forests, but the total amount of non wood products can never be calculated, hardly estimated

– non wood products can have also other values like recreational, esthetical etc.; these values can be evaluated only by estimations and special methods as they do not have any market prices

- Real tables

A) Trap hunting in the Czech Republic

factual remarks:

due to landscape damage and pollution partridges in the Czech Republic almost disappeared – the evidence is low amount of partridges hunted down in 1990

B) Hunting – shooting in the Czech Republic

factual remarks:

– interesting is increase of hunted pieces of deers, fallow deers and mufflons and at the same time decrease of hunted pieces of roebucks

– very high was in 1975 the number of hunted hares and pheasants; their quantity in open nature decreased until 1990 for the same reasons as in the case of partridges and also because of excessive hunting

  - Statistical data needs for non-wood supply targeted accounts (by districts, regions, natural forest regions – NFR) – in pieces, tons, or current prices

1) **supply of non-wood products – mushrooms, berries, medicinal plants, game – can be divided by species**
2) **animal breeding results (by species)**
3) **other forest non-wood products**

- Theoretical proposal of account: Forests and protection by landscape types or regions or forest regions (Fig. 4.42)

construction remarks:

– it is possible to divide forest under different types of protection by conifers, broadleaved, total or by age, by tree composition, owners structure etc.

- Real tables

A) Protected forests by regions

construction remarks:

– **construction of this account is based on spatial overlay of geographical layers of forests derived from CLC database and protected areas in the Czech Republic layer in GIS; this is ideal way of targeted accounts construction because the statistical data can be transferred very easily into any spatial units**

– only really protected areas are calculated in the account for 1975 (that is much lower area than in 1990 because in 1990 there were designated more protected areas in the Czech Republic) – other way of calculation can be the calculation of forest area in the same territories for the both years (based of protected areas designated in final year) to find out if the forests in protected areas increased or decreased

factual remarks:

– protection of nature has undergone intensive positive development from 1975 until 1990 and further; many new protected areas have been designated and new low stated also areas (1st zones of national parks) where the forests are left to natural development and felling is not possible (forests not available for wood supply)

Figure 4.48: Forests of protected areas in the Czech Republic 1975

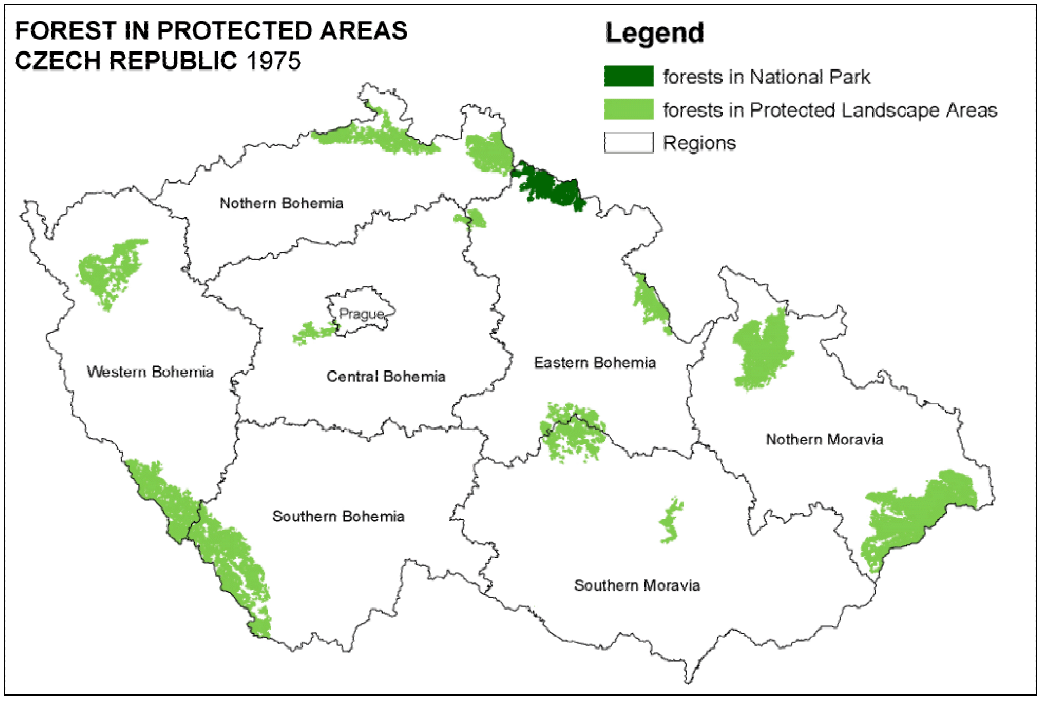
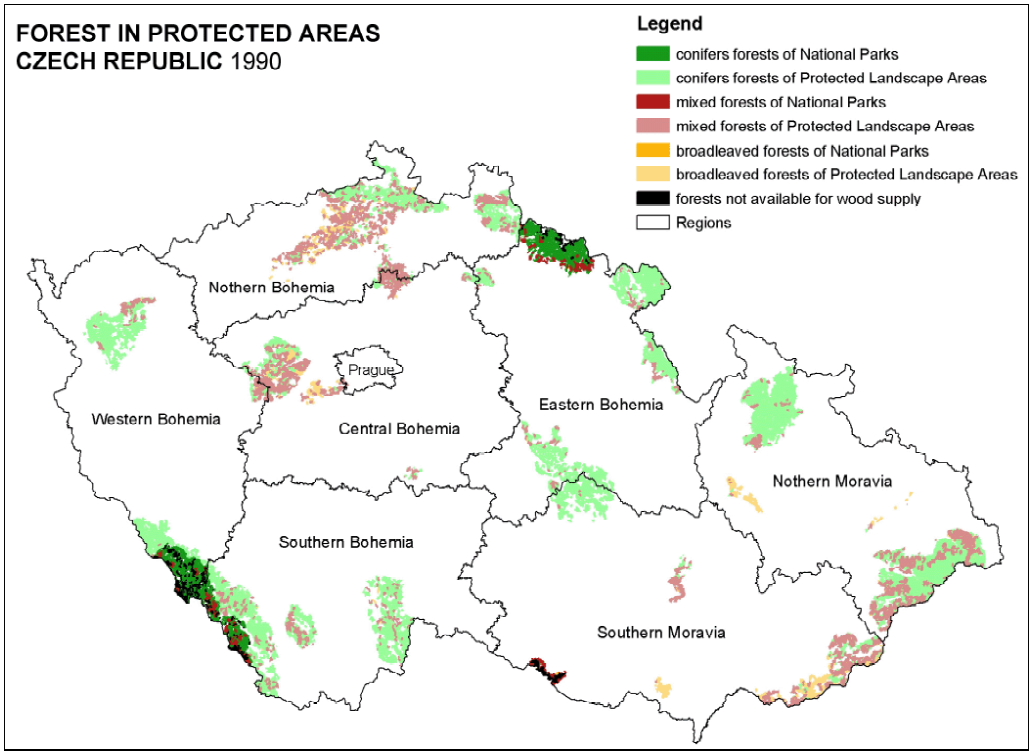


Figure 4.49: Forests of protected areas in the Czech Republic 1990



- Statistical data needs for forest protection accounts (by districts, regions, natural forest regions – NFR) – in ha

1) **areal extent of forested areas under various protection – nature, water, soil other protection, or spatial layers of protected areas**
2) **natural protection can be divided by national parks, protected landscape areas and other types of areas**
3) **forests can be divided in conifers, broadleaved, mixed, total, not available for wood supply, by age, tree species etc.**

- Theoretical proposal of account: Forests biodiversity and health by landscape types or regions or forest regions (Fig. 4.43)

construction remarks:

– construction depends on available data

factual remarks:

– biodiversity can be expressed using real current tree composition data and their comparison with natural composition

– forest health can be evaluate on special methods; CORINE data base can be used for this purpose

- Real tables

A) Forest diversity by tree species in the Czech Republic

construction remarks:

– percentage share of individual tree species on natural composition have been used to evaluate tree composition in 1975 and 1990

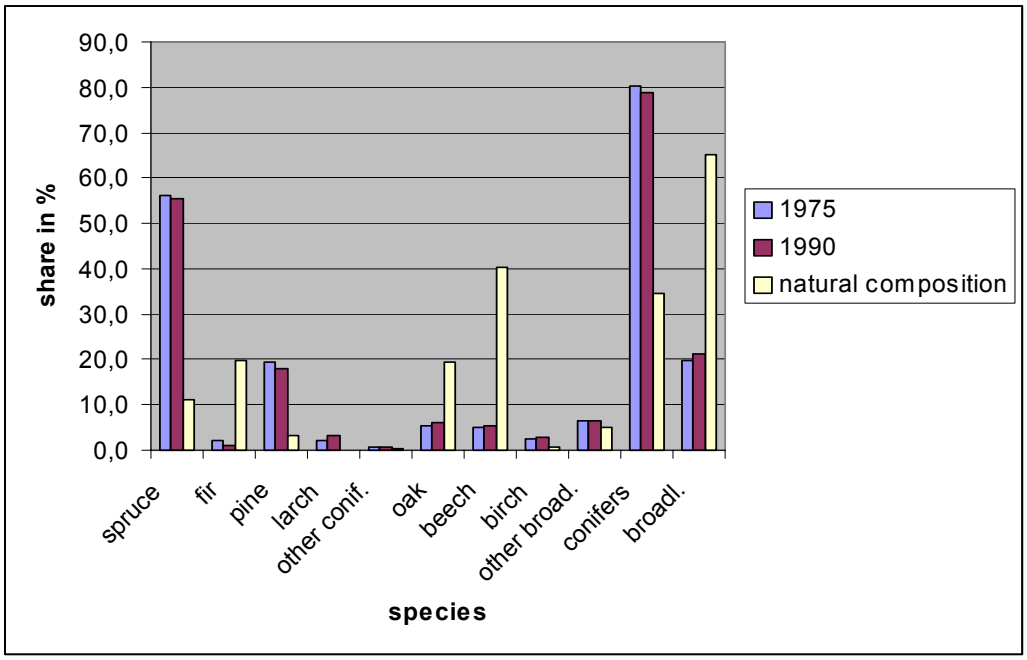
factual remarks:

– as following figure shows tree composition of forests in the Czech Republic is very far from natural composition

– the real share of conifers is much higher than their share in natural composition

– from 1975 until 1990 slight decrease of conifers and increase of broadleaved have been recorded

Figure 4.50: Comparison of forest tree composition in 1975 and 1990 with natural composition



B) Air pollution damage degree of coniferous forests in the Czech Republic

construction remarks:

– this account can be classified as a special account of forest health and forest protection because it shows the development of damage caused by air pollution – the results of the endeavour to improve the air quality and to reforest former forestland where the trees were damaged due to air pollution

factual remarks:

– in the period 1975 – 1995 the forest damage caused by air pollution continued; the development in the last decade (until 2000 or 2003) shows improvement and the decrease of forests in particular damage classes

- Statistical data needs for forests biodiversity and health accounts (by landscape types, regions, natural forest regions – NFR) – in ha

1) **real tree composition + natural tree composition**
2) **forest condition or damage data,**
3) **in the case of forest condition or damage the data can be in GIS layer format**
4) **CORINE LC data (satellite images) can be used for the evaluation (forest layer evaluation for condition or health)**

- Social accounts of forests (Fig. 4.44)

construction remarks:

– this account depends on statistical data

– because forests are irregularly dispersed in any administrative units for which social data like population or tourism income are published these statistics are hardly transferable into forest accounts

- Real tables

A) Employment by forestry in the Czech Republic

B) Export from the Czech Republic

C) Direct investments for 1 m^3 of wood

construction remarks:

– there are just very simple sporadic information available in Czech statistics for social accounts construction

factual remarks:

– the share of workers in forestry on total no. of employees is very marginal

– the Czech Republic still exports a big amount of wood just for economic benefit, it has negative influence on Czech forests

- Statistical data needs for forest composition and biodiversity accounts (by landscape types, regions, natural forest regions – NFR)

1) **employment by forestry (number of workers, share on total no. of workers)**
2) **income from forestry (by types of products, from export)**
3) **investments in forestry (by types of forest management activities)**
4) **population in forested areas (need to be recalculated from administrative units)**
5) **tourism and recreation frequentation (from special censuses)**
6) **tourism and recreation income (need to be recalculated from general tourism income for forests)**

4.4.5 List of forest statistical data that will be recorded in the Czech Republic in the future

As we mentioned above in the report there are two organizations that produce statistical data for forests in the Czech Republic – *Czech Statistical Office* and *Forest Management Institute*. We do not provide a list of forests statistics that will be published by *Czech Statistical Office.* The main reason is that these records are not at all of use for forest targeted accounting. *Czech Statistical Office* records only data for "forest land" not really "forested land" and the data are practically only on country level. There are several basic records for regional level (regions valid from 1993) but not suitable for accounting. Only interesting records in the Yearbooks of *Czech Statistical Office* are concerned with game hunting (see Fig. 4.41).

Valid and appropriate for forest accounting are forest statistics that are being produced and will be in the future produced by *Forest Management Institute*. These data will be produced

for *ntural forest regions – NFR* (see Fig. 4.31) and for administrative units on the level of *country* (NUTS 1), *groups of regions* (NUTS2), *regions* (NUTS 3 – see Fig. 4.29) and *districts* (NUTS 4 – Fig. 30).

In the following list we provide the information about data records that will be collected for different reporting units.

- Natural forest regions (from 1998 for each year)

Overview of areas (ha) – land destined for forest functions, forested land, cadastral area, % share of forests on total area of NFR, area of forest vegetation grades

Overview of areas by districts

Records about trees (48 species of trees + shrub)- representation – area (ha,%), stock (m^3 u.b., %)

Comparison of species composition (ha, %) (15 tree species + other broadleaved + other conifers + total) – real composition, targeted composition, natural composition

Composition of age groups (17 age groups) – area of age group (ha), share of age group area (%), normal distribution of age group, variance from normal composition (%)

Representation of stocks in age groups (17 age groups) – average stock (m^3/ha), share of conifers, broadleaved, total (%)

Development of anticipated growth of stocks – growth stocks (1000 m^3), average stocks (per 1 ha or m^3) in 2001, 2011 and 2021

Overview of annual increments – average clearing increment, total average increment, total increment (m^3/ha).

Overview of anticipated felling possibilities (m^3 u.b.) – 2001, 2011, 2021

Overview of forest functions in public interest (ha, %) – general protective function (4 categories), water protection (3 categories), nature preservation (6 types), health-recreational function, climatic function, landscape creation function, forests for education purpose, gene basis, territorial system of ecological stability forests, game breeding forests, other important public interest

Forests by air pollution damage classes (ha, %) – classes A, B, C, D

Overview of forests accessibility (m/1ha) – the density of road network

Representation of targeted management complexes – forested area (ha), share (%)

Basic records by forest categories

Species composition on forested land

Share of forested land and stocks on 1 inhabitant

- Administrative units – NUTS 1, 2, 3, 4 (from 1994 for each year)

Basic records by forest categories and forest functions – forested area (ha) and stocks (1000 m^3 and m^3/1 ha) for commercial forests, protection forests, special purpose forests (general protective function, water protection, nature preservation, health-recreational function, climatic function, biodiversity protection, forests for education purpose, game breeding forests, other important public interest)

Basic records by forest categories, management practice and sylvicultural system – forested area (ha), stocks – of conifers, broadleaved, total (1000 m^3)

Basic record by tree species (26 tree species + other conifers + other broadleaved + total) – forested area (ha), stocks (m^3), bonity, average age

Basic records by trees and age groups (22 tree species, 17 age groups) – forested area (ha), stocks (1000 m^3 u.b.)

Basic records by forest categories and age (17 age groups) – forested area (ha), stocks (1000 m^3 and m^3/1 ha), annual felling (1000 m^3 and m^3/1 ha), annual afforestation (ha) for commercial forests, protection forests, special purpose forests (general protective function, water protection, nature preservation, health-recreational function, climatic function, biodiversity protection, forests for education purpose, game breeding forests, other important public interest)

The list contents data that are published annually and available online on the internet. It is possible to order also other records and to pay for them. It is possible also to order spatial data (GIS layers) for natural forest regions. Suitable for forest accounting would be especially layers of NFR borders, borders of air pollution damage classes, spa forests, forests of schools, military forests, forests for research, forests near to cities and recreational forests, forests for animal breeding, protection forests, barrier forests, soil protection forests, areas of planned deforestation, productional potential of forests, index of the degree of forest naturalness from the available spatial data set.

Part 5: Contribution of forest accounting for forest indicators development

One important role of forest accounting is the use of forest stocks and flows as forest indicators. Forests indicators in general are a part of several environmental indicators sets and forest accounting can contribute to improve the ways of qualitative and quantitative forest indications used in these sets. In addition to the conventional forest accounts, the land accounts targeted to forestry integrate indicators in a broader vision of the dynamics of changes in land cover, on the one hand, and of the multiplicity of uses of the same territory (with the subsequent possible conflicts) on the other hand. Among the most developed sets of environmental indicators where forests indicators are presented belong European Environment Agency (EEA) indicators set[47], MCPFE (Ministerial Conference on the Protection of Forests in Europe) indicators set[48] and OECD indicators sets[49]. Connections of all these sets with outputs of forest accounting that are of importance for EUROSTAT are widely discussed in IEEAF (2002)[50].

IEEAF (2002) mentions that the description of other functions of forest requires the development of new statistics, in particular as concerns the classification of forests according to various criteria of quality (health, productivity, etc.) as well as ecological or recreational functions. To ensure consistency, such indicators should be based on accounting frameworks, such as material flow accounts, changes in quality accounts, etc

According to IEEAF (2002) through quantitative (or qualitative) changes in assets (and corresponding changes in value, when monetary values are assessed), accounting approach permits to relate opening and closing stocks of forest related assets with the pressures exerted by economic activities. It would thus allow linking forests indicators with the system of national accounts, giving them a coherent basis in order to identify and assess appropriate economic instruments and policies. Moreover some types of accounts could be necessary in order to assess the progress towards sustainable management of forests. For example some indicators from above mentioned sets refer to changes in the proportion of forest area

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47 EEA core set of indicators. Revised version, April 2003.Compiled by Peter Kristensen, European Environment Agency, 2003

48 Recommendations with regard to the pan-European descriptive indicators for sustainable forest management. Third MCPFE workshop on the improvement of pan-European indicators for sustainable forest management, Budapest, Hungary, 21 December 2001 (http://www.mcpfe.org)
Improved pan-European indicators for sustainable forest management. Adopted by the MCPFE Expert Level Meeting, 7-8 October 2002, Vienna, Austria (http://www.mcpfe.org)

49 OECD (1994): Core set of environmental indicators – Forest resources: measurement issues, ENV/EPOC/SE(94)5, working paper drafted by the Canadian Delegation.
OECD (1994): Indicators for the integration of environmental concerns into forestry policies, ENV/EPOC/SE(94)1.

50 The European Framework for Integrated Environmental and Economic Accounting for Forests- IEEAF. Luxembourg: Office for Official Publications of the European Communities, 2002, Cat. No. KS-BE-02-003-EN-N

managed primarily for soil and water protection or to changes in the area of forests protected by special management regime. And these are records that can be obtained from forest accounts (targeted accounts).

As an output from LEAC two main types of forest indicators can be constructed – indicators based on basic accounts or land cover flows (LCF) and indicators based on targeted forest accounts. As an output from our project we suggested some simple indicators based on LCF and targeted forest accounts and calculated their values for 4 CE studied countries, for regions in the Czech Republic and for districts in Northern Bohemia region. The differences in the results of these three levels show the importance of the reporting level unit selection for the regional differentiation of the indicated phenomenon.

5.1 Indicators based on basic accounts or LCF

- Change of forested area – **FA_{ch}** (in %)

Description: percentage change of forested area (CORINE LC category 31) in defined period.

Formula is like:

EQUATION $FA_{ch}=F_2/F_1*100$

where: F_1 is forested area in first year, F_2 is forested area in second year under observation.

Range of values: FA_{ch} – value 100 means no change, values below 100 mean decrease of forested land in the defined period, values over 100 mean increase of forested land.

Figure 5.1: FA_{ch} 1975-1990 in study areas

	Study area	FA_{ch} (%)
region in the Czech Republic	Prague	100.57
	Central Bohemia	95.70
	Southern Bohemia	93.68
	Western Bohemia	92.65
	Northern Bohemia	68.14
	Eastern Bohemia	97.74
	Southern Moravia	95.84
	Northern Moravia	97.62
district in Norther Bohemia	Chomutov – CV	60.85
	Louny – LN	94.23
	Most – MO	71.86
	Teplice – TP	75.80
	Litoměřice – LT	96.26
	Ústí nad Labem – UL	93.86
	Děčín – DE	92.53
	Česká Lípa – CL	93.90
	Liberec – LB	89.98
	Jablonec – JN	82.16
Country	The Czech Republic	94.55
	Slovakia	95.60
	Hungary	98.44
	Romania	98.48

Figure 5.2: FA_{ch} 1975-1990 in the Czech Republic, Hungary, Romania and Slovakia

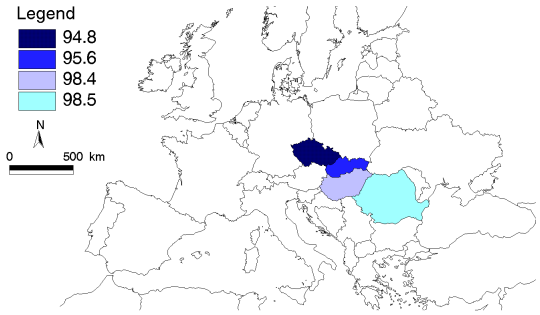


Figure 5.3: FA_{ch} 1975-1990 in regions of the Czech Republic

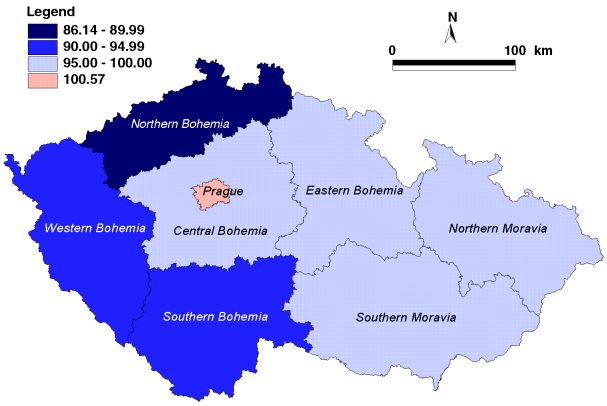
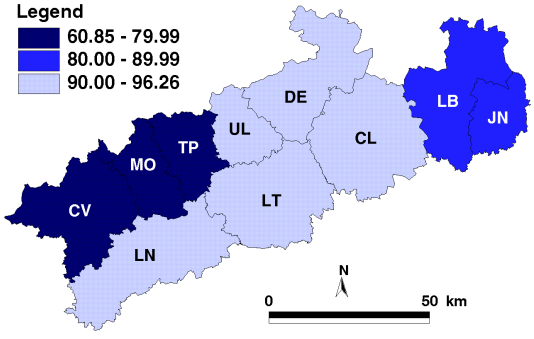


Figure 5.4: FA_{ch} 1975-1990 in the districts of Northern Bohemia



- Rate of afforestation due to agricultural extensification – **RAF** (in %)

Description: this indicator assets rate of afforestation due to agricultural extensification. If changes of forests into agriculture land are lower than changes of agricultural land into forests the value is negative (it means that the process is opposite – deforestation due to agricultural intensification). The indicator is concerned only with agricultural and forest land mutual changes, and it does not testify about total afforestation or deforestation, respectively about total extensification or intensification of agriculture.

Formula is like:

EQUATION $RAF= (C_1-C_2)/(A+F)*100$

where C_1 are changes (flows) of CORINE LC categories of agricultural land (21, 22, 23, 24) into forests (category 31), C_2 are changes (flows) of forests (31) into agricultural land categories during the period under observation, A is total area of agricultural land (21+22+23+24) in the first year of the period under observation and F is total area of forest land in the first year of the period under observation.

Range of values: from 100% until (–100%). Value 0 means that the same area of forests has been changed into agricultural land as the area of agricultural land that has been changed into forest, or no change. Values higher 0 mean afforestation due to agricultural extensification, values lower 0 mean deforestation due to agriculture intensification

This indicator will be very relevant for CEE countries in the period of their transformation because CE countries in comparison with WE countries have very high share of agricultural land (especially arable land) and a part of it has been determined for afforestation. Even state subsidies are provided for the purpose of agricultural land afforestation. So this indicator can follow the development of the process. It is important that the afforestation due to agricultural extensification (values higher 0) leads to the increase of area of more natural ecosystems – forest ecosystems – in the landscape and the condition and stability of landscape is increasing this way. This indicator can express direct results of current driving forces in CE countries in the last decade of 20^{th} century and further. Anyway for the period 1975-1990 RAF is mostly negative (it means deforestation due to agricultural intensification prevailed).

5.2 Indicators based on targeted forest accounts

Many of forest accounts proposed in SEEA2003[51] or in IEEAF (2002)[52] can be directly used for indication of forest state and development (quantitative and also qualitative). These are for example accounts concerned with forest age structure, biodiversity (tree composition), forests under individual types of protection, management practices of forests. Some of these accounts are also a part of our set of targeted accounts (see chapter 4). We used one of the proposed targeted accounts for the attempt to more improve and simplify the indication possibility (potential) of its phenomenon – of tree composition (see the following proposed indicator).

- Naturalness of forest tree composition – **NTC**

description: the indicator compares real tree composition in the certain year with potential natural composition on the level of country (region, forest type etc.)

Figure 5.6: Naturalness of forest tree composition in the Czech Republic 1975, 1990

	spruce	fir	pine	larch	other conifers	oak	beech	birch	other broadleaved	NATURALNESS in p.p.	conifers	broadleaved
natural composition (%)	11.2	19.8	3.4	0.0	0.3	19.4	40.2	0.8	4.9	100	34.7	65,3
share 1975 (%)	56.0	2.1	19.3	2.2	0.6	5.5	5.0	2.6	6.5		80.3	19.7
share1990 (%)	55.6	1.1	18.1	3.3	0.8	6.1	5.5	2.9	6.6		78.9	21.1
natural 1975	11.2	2.1	3.4	0.0	0.3	5.5	5.0	0.8	4.9	33.2		
natural 1990	11.2	1.1	3.4	0.0	0.3	6.1	5.5	0.8	4.9	33.3		

advantages of the indicator:

– easy calculable indicator when the data set is available

disadvantages of the indicator:

– the changes of total forested area during time

– changes in forest location – forests partly covered different areas in the past and the current tree composition can be to a certain level influenced by the changes in the location.

Basic accounts and LCF are good data sources for further development of environmental indicators in general (not indicators only for forests). There are some preliminary ideas but it is not a subject of this study. Using satellite images data (that are inputs for CORINE LC

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[51] Handbook of National Accounting.Integrated Environmental and Economic Accounting 2003, ST/ESA/STAT/SER.F/61/Rev.1 (Final Draft)

[52] The European Framework for Integrated Environmental and Economic Accounting for Forests- IEEAF. Luxembourg: Office for Official Publications of the European Communities, 2002, Cat. No. KS-BE-02-003-EN-N

classifications) it is also possible to develop in the future indicators of qualitative state of forests – forest condition or health. It means that with specific methods of classification can be CORINE LC database information potential further used for forest and other environmental indicators development.

Discussion and conclusions

The analysis of the data needed for LEAC has shown a number of data gaps or data limitations in available data sources.

First, in case of CORINE Land Cover data for 1975, the nomenclature was available on level 2 only. Although, surprisingly this was not such an issue during general basic accounts creation, where it didn't represent a serious limitation, the lost of internal rotation flows (in particular forest ones) caused a serious problem in construction of targeted accounts and made impossible to access certain processes related to tree composition development and its influence on biodiversity change. Therefore, some of the topics planned had to be modified and some outputs had to be simplified according to level 2 contents. In this line, the I&CLC 2000 update brings a new perspective, as this problem will be eliminated and comparisons of 1990 and 2000 are to be carried out on the level 3.

Still, the study has indicated that, in case of initial stock, the aggregated CLC classification on level 2, extended to several classes e.g. 213, 243 and forest classes 311, 312, 313 (CLC Level 2bis), would allow to trace most of the land cover flows, as defined in this study, completely. This finding can be interesting message for future planning of country or European wide retrospective CLC inventories. Retrospective CLC inventories usually demand extensive ancillary information support for interpretation of old satellite data or aerial photos, which represent a serious limitation due to restricted availability and cost of such information. Aggregated CLC nomenclature (e.g. from level 3 to level 2bis) could help reducing this demand.

Problems with availability of other types of data as NATURA2000, detailed administrative boundaries or European Grid have been discussed in the coastal study already.

As for statistical data significant problem that should be preferentially solved by EUROSTAT in co-operation with national statistical offices and other data collecting organizations in individual countries is the lack of statistical data suitable for forest targeted accounts, especially on regional and lower levels and for natural reporting units. The situation in the Czech Republic, where the case study concerned with forest targeted accounts has been processed, was in both studied years 1975 and 1995 very bad. The problem is not just in data lack on the regional and district levels but also in the thematic incompatibility of the data – different types of records, different units (ha x m^3) etc. Other serious problem is that especially in 1975 the statistical data in general level were often modified – misrepresented because of political reasons. For these reasons we were able to collect just several identical forest data records for 1975 and 1990 on country and regional levels and to construct simplified targeted accounts. Though the situation of forest statistical data collection has been improved, especially from 1994, there are still data gaps that should be solved. For the possible CORINE classifications from 2000 and targeted forest accounts constructed for the period 1990 – 2000 the problems with forest statistical data lack will partly continue because the new suitable data records has been stored only from 1994 for administrative units and even only from 1998 for natural forest regions.

Because forests ecosystems are “natural units” it is more appropriate to present forest accounts by some type of natural (relatively naturally defined) reporting units. In this study, we present accounts of forest flows by defined landscape types. In future, perspective reporting units in the Czech Republic seem to be natural forest regions (NFR) for which the forest statistics will be collected in the future. The advantage of these units is that they are directly connected with forests, so the statistical data need not to be redistributed (except population statistics that is not collected for NFR). Relation of NFR to dominant landscape types will be investigated, too. The redistribution of the social data into natural units is other methodological task, but the CLC data could serve as a mediator here. However, it couldn’t be proved in our study, due to the data lack on the appropriate reporting level used for the data redistribution (for example district level – the data for it are collected only from 1994).

Due to available land cover data, the study covered the period of 1975-1990 years. Almost at the end of this 15 years long period all studied CEE countries undergone significant political breakdown and immediately economic and social conditions started to change. Especially the conditions of market economy, private property and changes in land protection caused significant changes of land use and landscape cover on their territories. The main economic driving forces in the Czech Republic, Slovakia, Hungary and Romania before 1989 were an absence of private property, centrally governed national economy (5 years plans), socialistic regime oriented on communist propaganda (“economic wealth” as a result of socialism). Important driving force in the Czech Republic as for forestry and landscape management was also strict preservation of agricultural land that could not be used for constructions or changed for meadows and forests. Very important driving force that influenced forests in the Czech Republic was energy conception based on brown coal power plants that produced high amount of emissions that caused very extensive forest damage in Northern and Eastern Bohemia. As a main impacts of these driving forces in the Czech Republic can be mentioned poor forest management, maximalization of wood production on the sake of forest stability, die of forest weakened by air pollution or such a problem like poor and misrepresented forest statistics.

Poor forest management (collective property management is always worse than the care for private property) have resulted for example in very unfavourable age structure that testify targeted account – Fig. 4.38 A, further in very transformed adverse tree composition that is evident from targeted table – Fig. 4.43 A. This tree composition is not a result just of socialist period, the contrary changes started earlier but during the socialist period the production goals still prevailed and the interests of forest ecosystems stability and biodiversity preservation were not accepted. It is also confirmed in targeted account of forest protection (Fig. 4.42 A) that shows the big difference of the preserved forests area in 1975 and 1990. Clear felling practice in forest management is an example of low quality management practice. They have resulted in not stable and not resistant one-age even growths that could be easily damaged by wind or insect calamities. Special case where the impacts of poor management and socialistic energy conception without preservation of environment were cumulated resulted in the extensive forest decline due to air pollution. Targeted account concerned with damage of conifers forests (Fig. 4.43 B) is clear evidence how extensive areas of forests have been damaged. All mentioned impacts resulted in total area forest decline in the Czech Republic during the period under observation. Societal response on these alarming unfavourable changes in forest state and condition came only with the change of political system and economic transformation after 1989.

Despite of some problems with data resources and the specifics of the period selected for the 4 CEE countries study, as discussed above, number of interesting results have been achieved in contribution to further LEAC development, both on level of the basic and the targeted account.

The CORILIS based methodology for creation of dominant landscape types has been tested for four countries with distinct landscape pattern and the results have shown its feasibility and flexibility to support country or European wide LEAC creation. More complex elevation breakdown has been introduced into the landscape types to cover mountain areas to allow further assessment according EU regulations. Definition of land cover flows (LCF) has been revised and further enhanced to trace better land cover processes. Also LCF has been adapted and make compatible for the CLC data available with reduced nomenclature as discussed above. Based on these developments the most significant and interesting result is the full set of basic accounts prepared for the 4 CEE countries allowing future extensive analysis.

Concerning targeted forest accounts as the most significant and interesting result can be considered the presented tables including the theoretical proposals, remarks and comments for individual accounts, data needs lists and the list of the forest statistical data that will be recorded in the Czech Republic in the future. These outputs are a good base not only for further methodological and forest (influence of socio-economic development on forests) research but also for practical use in EUROSTAT future work and projects concerned with forest accounting. Especially the listings of statistical data needs for each proposed accounts are in general level applicable not only in the Czech Republic but the same data should be available for forest targeted accounting in any country or area of interest. Important finding is also that spatial GIS layers with forest statistical attributes (like layer of preserved areas) can be used with advantage for the accounting in different (especially natural) reporting units on various levels.

Proposed forest indicators can contribute for forest quantity (area development) and quality (forest composition) monitoring. In the next period, especially the RAF indicator (Rate of afforestation due to agricultural extensification) can be useful in the monitoring of agricultural extensification during the process of the studied countries accession with EU.

Future development in area of the basic accounts will concentrate on further development in result presentation and development of other “zoning” options. As for targeted accounting methodology it will be important to develop and improve methods of statistical data redistribution from administrative into natural units, to start wider discussion of Eurostat with national statistical offices and other organizations that record statistical data about forest data needs for targeted accounting, to develop further forest targeted accounts based on better statistical sources that will be more appropriate also for forest and biodiversity indicators construction.

Finally, we consider that, in all CEE countries, recent changes like return of private property (restitutions), market economy rules, agriculture extensification, new land preservation law (less strict) or new natural protection law are the main driving forces that govern the impacts on forests, forestry and landscape stability at all from 1990. It will be possible to testify their impacts during the last decade, when results from the I&CLC2000 project are available, by targeted forest accounts constructed for the period 1990–2000. Therefore, updated CORINE Land Cover data and proposed LEAC methodology can bring this way interesting comparison of the influence of socio-economic changes on the landscape during 1975-1990 and during 10

years of transformation in 1990-2000. In longer perspective it can serve as base for LEAC supported scenario development.

ANNEXES

ANNEX 1: Correspondence matrix between land cover changes (CLC level2 /level 3) and the land cover flows

ANNEX 2: Comparison of the LCF figures produced using level2/level3 and level3/level3 matrix based definitions
Note: based on the CLC1990/2000 data for the Netherlands

ANNEX 3: Basic Accounts for the Czech Republic

ANNEX 4: Basic Accounts for the 4 CEE countries
Note: selected set only for country accounts of Hungary, Romania and Slovakia. Full set is available in digital.

ANNEX 1: Correspondance matrix between land cover changes (clc level2 /level 3) and the land cover flows

CORRESPONDANCE BETWEEN LAND COVER CHANGES (CLC LEVEL2 vs. CLC LEVEL 3) AND THE LAND COVER FLOWS (LCFs)

level 2			11		12				13			14		21			22			23	24				31			32				33
			111	112	121	122	123	124	131	132	133	141	142	211	212	213	221	222	223	231	241	242	243	244	311	312	313	321	322	323	324	331
1975		1990	Continuous urban fabric	Discontinuous urban fabric	Industrial or commercial units	Road and rail networks and associated land	Port areas	Airports	Mineral extraction sites	Dump sites	Construction sites	Green urban areas	Sport and leisure facilities	Non-irrigated arable land	Permanently irrigated land	Rice fields	Vineyards	Fruit trees and berry plantations	Olive groves	Pastures	Annual crops associated with permanent crops	Complex cultivation patterns	Land principally occupied by agriculture with significant areas of natural vegetation	Agro-forestry areas	Broad-leaved forest	Coniferous forest	Mixed forest	Natural grassland	Moors and heathland	Sclerophyllous vegetation	Transitional woodland shrub	Beaches, dunes and sand plains
11	111	Continuous urban fabric		*LCF12*	LCF12	LCF12	LCF12	LCF12	LCF12	LCF12	LCF12	LCF13	LCF12	*LCF56*	*LCF56*	*LCF56*	*LCF56*	*LCF56*	*LCF56*	*LCF56*	*LCF56*	*LCF56*	*LCF56*	*LCF56*	LCF61	LCF61	LCF61	LCF84	LCF84	LCF84	LCF84	LCF84
	112	Discontinuous urban fabric	*LCF11*																													
12	121	Industrial or commercial units	LCF12	LCF12		*LCF12*	*LCF12*	*LCF12*	LCF12	LCF12	LCF12	LCF13	LCF12	*LCF56*	*LCF56*	*LCF56*	*LCF56*	*LCF56*	*LCF56*	*LCF56*	*LCF56*	*LCF56*	*LCF56*	*LCF56*	LCF61	LCF61	LCF61	LCF84	LCF84	LCF84	LCF84	LCF84
	122	Road and rail networks and associated land			*LCF12*		*LCF12*	*LCF12*																								
	123	Port areas			*LCF12*	*LCF12*		*LCF12*																								
	124	Airports			*LCF12*	*LCF12*	*LCF12*																									
13	131	Mineral extraction sites	LCF12	LCF12	LCF12	LCF12	LCF12	LCF12		*LCF12*	*LCF12*	LCF13	LCF12	*LCF56*	*LCF56*	*LCF56*	*LCF56*	*LCF56*	*LCF56*	*LCF56*	*LCF56*	*LCF56*	*LCF56*	*LCF56*	LCF61	LCF61	LCF61	LCF84	LCF84	LCF84	LCF84	LCF84
	132	Dump sites							*LCF12*		*LCF12*																					
	133	Construction sites							*LCF12*	*LCF12*																						
14	141	Green urban areas	LCF11	LCF11	LCF11	LCF11	LCF11	LCF11	LCF11	LCF11	LCF11		*LCF12*	*LCF56*	*LCF56*	*LCF56*	*LCF56*	*LCF56*	*LCF56*	*LCF56*	*LCF56*	*LCF56*	*LCF56*	*LCF56*	LCF61	LCF61	LCF61	LCF84	LCF84	LCF84	LCF84	LCF84
	142	Sport and leisure facilities										*LCF13*																				
21	211	Non-irrigated arable land	LCF21	LCF22	LCF31	LCF32	LCF33	LCF34	LCF35	LCF36	LCF37	LCF13	LCF38		*LCF45*	*LCF43*	LCF42	LCF42	LCF42	LCF41	LCF42	LCF41	LCF82	LCF61	LCF61	LCF61	LCF61	LCF82	LCF82	LCF82	LCF82	LCF82
	212	Permanently irrigated land												*LCF43*		*LCF43*																
	213	Rice fields												*LCF43*	*LCF43*																	
22	221	Vineyards	LCF21	LCF22	LCF31	LCF32	LCF33	LCF34	LCF35	LCF36	LCF37	LCF13	LCF38	LCF45	LCF45	LCF45		*LCF44*	*LCF44*	LCF41	LCF45	LCF45	LCF82	LCF61	LCF61	LCF61	LCF61	LCF82	LCF82	LCF82	LCF82	LCF82
	222	Fruit trees and berry plantations															*LCF44*		*LCF44*													
	223	Olive groves															*LCF44*	*LCF44*														
23	231	Pastures	LCF21	LCF22	LCF31	LCF32	LCF33	LCF34	LCF35	LCF36	LCF37	LCF13	LCF38	LCF45	LCF45	LCF45	LCF42	LCF42	LCF42		LCF45	LCF45	LCF82	LCF61	LCF83	LCF83	LCF83	LCF82	LCF82	LCF82	LCF82	LCF82
24	241	Annual crops associated with permanent crops	LCF21	LCF22	LCF31	LCF32	LCF33	LCF34	LCF35	LCF36	LCF37	LCF13	LCF38	LCF45	LCF45	LCF45	LCF42	LCF42	LCF42	LCF41		*LCF41*	*LCF82*	*LCF61*								
	242	Complex cultivation patterns																			*LCF45*		*LCF82*	*LCF61*								
	243	Land principally occupied by agriculture with significant areas of natural vegetation																			*LCF52*	*LCF54*		*LCF54*								
	244	Agro-forestry areas																			*LCF45*	*LCF45*	*LCF82*									
31	311	Broad-leaved forest	LCF21	LCF22	LCF31	LCF32	LCF33	LCF34	LCF35	LCF36	LCF37	LCF13	LCF38	LCF51	LCF51	LCF51	LCF51	LCF51	LCF51	LCF53	LCF51	LCF53	LCF53	LCF53		*LCF62*	*LCF62*	LCF63	LCF63	LCF63	LCF63	LCF63
	312	Coniferous forest																							*LCF62*		*LCF62*					
	313	Mixed forest																							*LCF62*	*LCF62*						
32	321	Natural grassland	LCF21	LCF22	LCF31	LCF32	LCF33	LCF34	LCF35	LCF36	LCF37	LCF13	LCF38	LCF52	LCF52	LCF52	LCF52	LCF52	LCF52	LCF54	LCF52	LCF54	LCF54	LCF54	LCF61	LCF61	LCF61		*LCF81*	*LCF81*	*LCF81*	LCF81
	322	Moors and heathland																										*LCF81*		*LCF81*	*LCF81*	
	323	Sclerophyllous vegetation																										*LCF81*	*LCF81*		*LCF81*	
	324	Transitional woodland shrub																										*LCF81*	*LCF81*	*LCF81*		
33	331	Beaches, dunes and sand plains	LCF21	LCF22	LCF31	LCF32	LCF33	LCF34	LCF35	LCF36	LCF37	LCF13	LCF38	LCF52	LCF52	LCF52	LCF52	LCF52	LCF52	LCF54	LCF52	LCF54	LCF54	LCF53	LCF61	LCF61	LCF61	LCF81	LCF81	LCF81	LCF81	
	332	Bare rock																														*LCF81*
	333	Sparsely vegetated areas																														*LCF81*
	334	Burnt areas																														*LCF89*
	335	Glaciers and perpetual snow																														*LCF89*
41	411	Inland marshes	LCF21	LCF22	LCF31	LCF32	LCF33	LCF34	LCF35	LCF36	LCF37	LCF13	LCF38	LCF55	LCF55	LCF55	LCF55	LCF55	LCF55	LCF55	LCF55	LCF55	LCF55	LCF55	LCF61	LCF61	LCF61	LCF81	LCF81	LCF81	LCF81	LCF89
	412	Peatbogs																														
42	421	Salt marshes	LCF21	LCF22	LCF31	LCF32	LCF33	LCF34	LCF35	LCF36	LCF37	LCF13	LCF38	LCF55	LCF55	LCF55	LCF55	LCF55	LCF55	LCF55	LCF55	LCF55	LCF55	LCF55	LCF61	LCF61	LCF61	LCF81	LCF81	LCF81	LCF81	LCF89
	422	Salines																														
	423	Intertidal flats																														
51	511	Water courses	LCF21	LCF22	LCF31	LCF32	LCF33	LCF34	LCF35	LCF36	LCF37	LCF13	LCF38	LCF55	LCF55	LCF55	LCF55	LCF55	LCF55	LCF55	LCF55	LCF55	LCF55	LCF55	LCF61	LCF61	LCF61	LCF89	LCF89	LCF89	LCF89	LCF89
	512	Water bodies																														
52	521	Coastal lagoons	LCF21	LCF22	LCF31	LCF32	LCF33	LCF34	LCF35	LCF36	LCF37	LCF13	LCF38	LCF55	LCF55	LCF55	LCF55	LCF55	LCF55	LCF55	LCF55	LCF55	LCF55	LCF55	LCF61	LCF61	LCF61	LCF89	LCF89	LCF89	LCF89	LCF89
	522	Estuaries																														
	523	Sea and ocean																														

			41			42			51		52			
332	333	334	335	411	412	421	422	423	511	512	521	522	523	
Bare rock	Sparsely vegetated areas	Burnt areas	Glaciers and perpetual snow	Inland marshes	Peatbogs	Salt marshes	Salines	Intertidal flats	Water courses	Water bodies	Coastal lagoons	Estuaries	Sea and ocean	
LCF84	LCF84	LCF85	LCF89	LCF89	LCF89	LCF89	LCF89	LCF86	LCF87	LCF89	LCF89	LCF86	LCF86	111
LCF84	LCF84	LCF85	LCF89	LCF89	LCF89	LCF89	LCF89	LCF86	LCF87	LCF89	LCF89	LCF86	LCF86	112
LCF84	LCF84	LCF85	LCF89	LCF89	LCF89	LCF89	LCF89	LCF86	LCF87	LCF71	LCF71	LCF86	LCF86	121
LCF84	LCF84	LCF85	LCF89	LCF89	LCF89	LCF89	LCF89	LCF86	LCF87	LCF71	LCF89	LCF86	LCF86	122
LCF82	LCF82	LCF85	LCF89	LCF89	LCF89	LCF89	LCF89	LCF86	LCF87	LCF71	LCF89	LCF86	LCF86	123
LCF82	LCF82	LCF85	LCF89	LCF89	LCF89	LCF89	LCF89	LCF86	LCF87	LCF71	LCF89	LCF86	LCF86	124
LCF82	LCF82	LCF85	LCF89	LCF82	LCF82	LCF82	LCF89	LCF86	LCF87	LCF71	LCF89	LCF86	LCF86	131
LCF82	LCF82	LCF85	LCF89	LCF82	LCF82	LCF82	LCF89	LCF86	LCF87	LCF71	LCF89	LCF86	LCF86	132
LCF63	LCF63	LCF85	LCF89	LCF89	LCF89	LCF89	LCF89	LCF86	LCF87	LCF71	LCF89	LCF86	LCF86	133
LCF81	LCF81	LCF85	LCF89	LCF81	LCF81	LCF81	LCF89	LCF86	LCF87	LCF71	LCF89	LCF86	LCF86	141
LCF81	*LCF81*	*LCF85*	*LCF89*	LCF81	LCF81	LCF81	LCF89	LCF86	LCF87	LCF71	LCF89	LCF86	LCF86	142
	LCF81	*LCF85*	*LCF81*											211
LCF81		*LCF85*	*LCF81*											212
LCF89	*LCF89*		*LCF81*											213
LCF89	*LCF89*	*LCF89*												221
LCF89	LCF89	LCF85	LCF89	*LCF81*		LCF89	LCF89	LCF86	LCF87	LCF81	LCF81	LCF86	LCF86	222
LCF89	LCF89	LCF89	LCF89	*LCF81*			*LCF81*	*LCF86*						223
LCF89	LCF89	LCF89	LCF89	LCF81	LCF81	*LCF84*		*LCF86*	LCF87	LCF89	LCF89	LCF86	LCF86	231
LCF89	LCF89	LCF89	LCF89	LCF81	LCF81	*LCF81*	*LCF89*							241
LCF89	LCF89	LCF89	LCF89	LCF81	LCF81	LCF81	LCF89	LCF86		*LCF81*	LCF81	LCF86	LCF86	242
LCF89	LCF89	LCF89	LCF89	LCF81	LCF81	LCF81	LCF89	LCF86	*LCF89*					243
LCF89	LCF89	LCF89	LCF89	LCF82	LCF82	LCF81	LCF89	LCF87	LCF89	LCF89		LCF86	LCF86	244
											LCF89		LCF86	311
											LCF81	*LCF81*		312
														313
														321
														322
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														523

ANNEX 2: Comparison of the LCF figures produced using level2/level3 and level3/level3 matrix based definitions *(based on the CLC1990/2000 data for the Netherlands)*

Comparison of the LCF figures produced using level 2/level 3 and level 3/level 3 matrix based definitions

based on CLC1990/2000 data for the Netherlands

		LCF definition - Level 2/Level 3					***LCF definition - Level 3/Level 3***						
		0	1	2	3	TOTAL	0	1	2	3	TOTAL	+/-	%
LCF1	***Urban land management***	***11870***	***0***	***0***	***0***	***11870***	***11870***	***67***	***0***	***0***	***11937***	***67***	***1%***
LCF11	Urban development/ infilling	790				790	790				790	0	0%
LCF12	Developped land recycling	9653				9653	9653	67			9720	67	1%
LCF13	Development of green urban areas	1427				1427	1427				1427	0	0%
LCF2	***Urban sprawl***	***40860***	***0***	***0***	***0***	***40860***	***40860***	***0***	***0***	***0***	***40860***	***0***	***0%***
LCF21	Urban continuous sprawl					0					0	0	0%
LCF22	Urban diffuse sprawl	40860				40860	40860				40860	0	0%
LCF3	***Extension of economic sites and infrastructures***	***44465***	***0***	***0***	***0***	***44465***	***44465***	***0***	***0***	***0***	***44465***	***0***	***0%***
LCF31	Extension of industrial & commercial sites	21021				21021	21021				21021	0	0%
LCF32	Extension of transport networks	456				456	456				456	0	0%
LCF33	Extension of habours	369				369	369				369	0	0%
LCF34	Extension of airports	164				164	164				164	0	0%
LCF35	Extension of mines and quarrying areas	1345				1345	1345				1345	0	0%
LCF36	Extension of dumpsites	473				473	473				473	0	0%
LCF37	Construction	9661				9661	9661				9661	0	0%
LCF38	Extension of sport and leisure facilities	10976				10976	10976				10976	0	0%
LCF4	***Agricultural rotation and intensification***	***30032***	***0***	***46***	***0***	***30078***	***30032***	***0***	***0***	***0***	***30032***	***-46***	***0%***
LCF41	Recent extension of pasture, fallow land, set aside	2357				2357	2357				2357	0	0%
LCF42	Planting of vineyards, fruit and olive trees over arable & pasture	1443				1443	1443				1443	0	0%
LCF43	Rotation of annual crops					0					0	0	0%
LCF44	Rotation of permanent crops					0					0	0	0%
LCF45	Intensification of agriculture	26231		46		26277	26231				26231	-46	0%
LCF5	***Conversion of land to agriculture***	***1327***	***0***	***0***	***0***	***1327***	***1327***	***0***	***46***	***0***	***1373***	***46***	***3%***
LCF51	Intensive conversion of forest to agriculture	97				97	97				97	0	0%
LCF52	Intensive conversion of marginal land to agriculture	5				5	5		46		51	46	90%
LCF53	Diffuse conversion of forest to agriculture	209				209	209				209	0	0%
LCF54	Diffuse conversion of marginal land to agriculture					0					0	0	0%
LCF55	Conversion of wetlands to agriculture	647				647	647				647	0	0%
LCF56	Conversion of developed areas to agriculture	369				369	369				369	0	0%
LCF6	***Forests creation and management***	***9095***	***0***	***0***	***0***	***9095***	***9095***	***38***	***0***	***0***	***9133***	***38***	***0%***
LCF61	Forests creation	8092				8092	8092				8092	0	0%
LCF62	Forests rotation					0		38			38	38	100%
LCF63	Recent felling and transition	1003				1003	1003				1003	0	0%
LCF7	***Water body creation and management***	***3711***	***0***	***0***	***0***	***3711***	***3711***	***0***	***0***	***0***	***3711***	***0***	***0%***
LCF71	Water body creation	3711				3711	3711				3711	0	0%
LCF72	Water body management					0					0	0	0%
LCF8	***Changes of land cover due to natural and multiple causes***	***28373***	***0***	***0***	***1409***	***29782***	***28373***	***287***	***0***	***1409***	***30070***	***287***	***1%***
LCF81	Semi-natural rotation	3299				3299	3299	139			3439	139	4%
LCF82	Farmland abandonment without significant woodland creation	11879				11879	11879	123			12002	123	1%
LCF83	Farmland abandonment with woodland creation	3369				3369	3369				3369	0	0%
LCF84	Other land abandonment (other than farmland)	872				872	872				872	0	0%
LCF85	Forests and shrubs fires					0					0	0	0%
LCF86	Coastal erosion	3919			1409	5328	3919	9			3928	-1400	-36%
LCF87	Impacts of storms, floods…	298				298	298				298	0	0%
LCF89	Other changes and unknown	4737				4737	4737	16		1409	6162	1425	23%
TOTAL		***169733***	***0***	***46***	***1409***	***171188***	***169733***	***392***	***46***	***1409***	***171580***	***392***	***0%***

ANNEX 3: Basic Accounts for the Czech Republic

LAND & ECOSYSTEMS ACCOUNTS - BASIC ACCOUNTS (CZECH REPUBLIC)

Matrix Of Land Cover Changes 1975-1990; CLC Level2/Level 3

FINAL YEAR ⇊ / OPENING YEAR ⇉		111 Continuous urban fabric	112 Discontinuous urban fabric	121 Industrial or commercial units	122 Road and rail networks and associated land	123 Port areas	124 Airports	131 Mineral extraction sites	132 Dump sites	133 Construction sites	141 Green urban areas	142 Sport and leisure facilities	211 Non-irrigated arable land	212 Permanently irrigated land	213 Rice fields	221 Vineyards	222 Fruit trees and berry plantations	223 Olive groves	231 Pastures	241 Annual crops associated with permanent crops	242 Complex cultivation patterns	243 Land principally occupied by agriculture with significant areas of natural vegetation	244 Agro-forestry areas	311 Broad-leaved forest	312 Coniferous forest	313 Mixed forest	321 Natural grassland	322 Moors and heathland	323 Sclerophyllous vegetation	324 Transitional woodland shrub	331 Beaches, dunes and sand plains	332 Bare rock	333 Sparsely vegetated areas	334 Burnt areas	335 Glaciers and perpetual snow	411 Inland marshes	412 Peatbogs	421 Salt marshes	422 Salines	423 Intertidal flats	511 Water courses	512 Water bodies	521 Coastal lagoons	522 Estuaries	523 Sea and ocean	TOTAL OPENING YEAR ~1975	*Increase (+)*	*Decrease (-)*	*Net Changes 1975-1990*	TOTAL FINAL YEAR ~1990
11	Urban fabric	1654	334093	124	43				73				567						43		34	364			108	28																			**337130**	*5911*	*1383*	*4528*	**341658**
12	Industrial, commercial and transport units	108	21	32149	2800	85	6069	27					49									13			15	7																	17				**41359**	*3560*	*256*	*3304*	**44664**
13	Mines, dump and construction sites		2083	899	262			9977	9686	399		87	1900			51	77		187		18	560		73	252	118				3976	25										1060				**31690**	*14550*	*11628*	*2922*	**34612**
14	Artificial non-agricultural vegetated areas		44	34						12	3079	5294	26						50		71	46			52	2																			**8708**	*387*	*335*	*52*	**8760**
21	Arable Land	32	2200	678	248		17	2922	867	1106	4	42	3645767			959	5582		5435	114	762	1870		215	947	389	10			771											906				**3671844**	*31746*	*26077*	*5669*	**3677513**
22	Permanent Crops		21					26					7440			13394	25364		35		77	56				6				17															**46437**	*8203*	*7678*	*524*	**46961**
23	Pastures		72	65	5			45					10291				9		200248		238	659		42	274	72	68			489											490				**213066**	*10887*	*12818*	*-1932*	**211135**
24	Heterogeneous agricultural areas		992	370	76			375	869	400		129	5361			2	1508		1521	1613	83067	624920		387	779	877	74			951											1786				**726057**	*15116*	*16457*	*-1341*	**724716**
31	Forests	16	248	497	60		30	1828	424	299		125	4665			11	3		3181		375	8021		193447	1692034	547937	2012	1700		138699	46		26	46		71	70				1247				**2597122**	*29237*	*163704*	*-134467*	**2462655**
32	Shrub and/or herbaceous vegetation associations		61	124	25			2434	2431	60			1078						338		40	1526		1299	16876	5689	24102	2074		97884	46			35		5	47				379				**156553**	*149113*	*32494*	*116619*	**273172**
33	Open spaces with little or no vegetation									55			43												44		51					97	953												**1243**	*223*	*194*	*29*	**1273**
41	Inland wetlands												187						13			2			350	11				130					4120	3157				1178				**9148**	*239*	*1871*	*-1632*	**7516**
42	Coastal wetlands																																												**0**	*0*	*0*	*0*	**0**
51	Inland waters		13		1			298					139						84			270		39	249	36				163					46					4978	41342				**47660**	*7063*	*1339*	*5723*	**53383**
52	Coastal waters																																												**0**	*0*	*0*	*0*	**0**
		1810	339849	34942	3521	85	6116	17931	14350	2331	3083	5677	3677513	0	0	14417	32543	0	211135	1726	84682	638308	0	195502	1711980	555172	26318	3774	0	243080	116	97	979	81	0	4242	3274	0	0	0	4978	48405	0	0	0	**7888016**	*276233*	*276233*	*0*	**7888016**

LAND & ECOSYSTEMS ACCOUNTS - BASIC ACCOUNTS (CZECH REPUBLIC)

Account of Land Cover Changes
(by Dominant Landscape Types)

Landscape types	A1 URBAN DENSE AREAS				A2 DISPERSED URBAN AREAS				B1 BROAD PATTERN INTENSIVE AGRICULTURE				*B11 LOWLAND BROAD PATTERN INTENSIVE AGRICULTURE*				*B12 UPLAND BROAD PATTERN INTENSIVE AGRICULTURE*				*B13 MOUNTAIN BROAD PATTERN INTENSIVE AGRICULTURE*				B2 COMPOSITE RURAL LANDSCAPE				*B21 LOWLAND COMPOSITE RURAL LANDSCAPE*				*B22 UPLAND COMPOSITE RURAL LANDSCAPE*				*B23 MONTAIN COMPOSITE RURAL LANDSCAPE*			
Land Cover (Corine Land Cover level 2)	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990
1. Artificial surfaces	**76559**	**7906**	**4662**	**79803**	**42981**	**2405**	**778**	**44609**	**74667**	**2641**	**901**	**76406**	**17050**	**954**	**237**	**17767**	**57617**	**1687**	**664**	**58640**	**0**	**0**	**0**	**0**	**601**	**17**	**0**	**618**	**0**	**0**	**0**	**0**	**386**	**17**	**0**	**402**	**215**	**0**	**0**	**215**
11 Urban fabric	53323	2527	176	55674	33631	354	77	33908	64999	737	263	65473	14081	112	43	14150	50918	625	220	51323					553	0	0	553					338			338	215			215
12 Industrial, commercial and transport units	9872	927	150	10649	5613	111	3	5721	7501	553	33	8020	2423	312	28	2707	5077	241	5	5313					0	0	0	0												
13 Mines, dump and construction sites	10829	4247	4229	10848	3153	1941	698	4395	1460	1309	606	2163	323	498	166	654	1137	811	439	1509					0	0	0	0												
14 Artificial non-agricultural vegetated areas	2534	205	107	2632	585			585	708	42	0	750	223	32		255	485	10		495					48	17	0	64					48	17		64				
2. Agricultural areas	**227182**	**4189**	**6023**	**225348**	**249324**	**1410**	**2712**	**248022**	**1119159**	**15345**	**16522**	**1117981**	**196097**	**5456**	**6483**	**195071**	**922961**	**9888**	**10039**	**922810**	**100**	**0**	**0**	**100**	**6799**	**553**	**492**	**6860**	**0**	**0**	**0**	**0**	**3517**	**392**	**398**	**3512**	**3282**	**160**	**94**	**3348**
21 Arable Land	181774	2243	3053	180963	207449	874	1146	207177	997051	8392	6958	998485	171132	3414	2574	171972	825819	4978	4384	826413	100			100	2538	431	0	2968					1770	389		2159	768	42		810
22 Permanent Crops	2593	418	663	2347	1530	98	336	1292	21469	3668	4093	21041	9238	1572	1976	8835	12231	2093	2118	12206					0	0	0	0												
23 Pastures	3823	243	289	3778	1312	95	82	1325	16389	944	1882	15452	2036	35	739	1332	14353	910	1143	14119					1825	106	428	1502					1115		381	734	709	105	47	768
24 Heterogeneous agricultural areas	38992	1286	2018	38260	39033	343	1148	38228	84250	2343	3598	83003	13691	435	1195	12931	70559	1908	2395	70072					2437	17	64	2390					632	3	17	619	1805	13	47	1771
3. Forest and semi-natural areas	**105454**	**5507**	**7025**	**103937**	**58606**	**2248**	**3082**	**57773**	**252147**	**12260**	**13973**	**250434**	**25224**	**1094**	**1812**	**24506**	**226824**	**11166**	**12161**	**225829**	**100**	**0**	**0**	**100**	**10997**	**422**	**499**	**10920**	**0**	**0**	**0**	**0**	**3594**	**231**	**243**	**3583**	**7403**	**191**	**257**	**7337**
31 Forests	97252	1042	3729	94565	54731	278	2046	52963	243869	1694	12932	232531	23882	320	1581	22626	219888	1274	11351	209810	100	0	0	100	10496	46	487	10055					3379	13	230	3162	7117	33	257	6893
32 Shrub and/or herbaceous vegetation associations	8085	4469	3296	9254	3875	1970	1036	4809	8218	10660	1048	17844	1282	774	230	1825	6936	9892	810	16018	0		0		502	376	13	865					215	218	13	421	286	157		444
33 Open spaces with little or no vegetation	118			118					60	0	0	60	60			60									0	0	0	0												
4. Wetlands	**62**	**0**	**38**	**23**	**77**	**0**	**74**	**3**	**956**	**0**	**701**	**255**	**742**	**0**	**670**	**72**	**215**	**0**	**31**	**184**	**0**	**0**	**0**	**0**	**8**	**0**	**0**	**8**	**0**	**0**	**0**	**0**	**8**	**0**	**0**	**8**	**0**	**0**	**0**	**0**
41 Inland wetlands	62		38	23	77		74	3	956	0	701	255	742		670	72	215		31	184					8	0	0	8					8			8	0			0
42 Coastal wetlands									0	0	0	0													0	0	0	0												
5. Water bodies	**2402**	**461**	**316**	**2547**	**2250**	**626**	**43**	**2832**	**5564**	**2143**	**291**	**7416**	**2637**	**1753**	**55**	**4335**	**2927**	**390**	**236**	**3081**	**0**	**0**	**0**	**0**	**26**	**0**	**0**	**26**	**0**	**0**	**0**	**0**	**26**	**0**	**0**	**26**	**0**	**0**	**0**	**0**
51 Inland waters	2402	461	316	2547	2250	626	43	2832	5564	2143	291	7416	2637	1753	55	4335	2927	390	236	3081					26	0	0	26					26			26				
52 Coastal waters									0	0	0	0													0	0	0	0												
TOTAL	**411658**	**18064**	**18064**	**411658**	**353239**	**6689**	**6689**	**353239**	**1452493**	**32388**	**32388**	**1452493**	**241750**	**9256**	**9256**	**241750**	**1210544**	**23131**	**23131**	**1210544**	**200**	**0**	**0**	**200**	**18432**	**991**	**991**	**18432**	**0**	**0**	**0**	**0**	**7532**	**640**	**640**	**7532**	**10900**	**351**	**351**	**10900**

Landscape types	C1 FORESTED LANDSCAPE				*C11 LOWLAND FORESTED LANDSCAPE*				*C12 UPLAND FORESTED LANDSCAPE*				*C13 MOUNTAIN FORESTED LANDSCAPE*				C2 OPEN SEMI-NATURAL OR NATURAL LANDSCAPE				*C21 LOWLAND OPEN SEMI-NATURAL OR NATURAL LANDSCAPE*				*C22 UPLAND OPEN SEMI-NATURAL OR NATURAL LANDSCAPE*				*C23 MOUNTAIN OPEN SEMI-NATURAL OR NATURAL LANDSCAPE*				C3 LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER				*C31 LOWLAND LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER*				*C32 UPLAND LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER*				*C33 MOUNTAIN LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER*				TOTAL				
Land Cover (Corine Land Cover level 2)	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	Net Changes	1990
1. Artificial surfaces	**44523**	**2784**	**1187**	**46120**	**133**	**0**	**0**	**133**	**36337**	**2667**	**869**	**38136**	**8053**	**116**	**319**	**7851**	**242**	**0**	**0**	**242**	**0**	**0**	**0**	**0**	**242**	**0**	**0**	**242**	**0**	**0**	**0**	**0**	**179313**	**8656**	**6073**	**181897**	**11779**	**955**	**591**	**12144**	**161087**	**7419**	**5387**	**163118**	**6448**	**282**	**95**	**6635**	**418887**	**24408**	**13602**	**10807**	**429694**
11 Urban fabric	35534	305	177	35661	133			133	28257	264	110	28411	7143	41	67	7117	242	0	0	242					242	0	0	242					148849	1988	690	150147	8598	83	10	8672	134524	1794	663	135655	5726	111	16	5821	337130	5911	1383	4528	341658
12 Industrial, commercial and transport units	4066	525	2	4588					3630	526		4155	436		2	434	0	0	0	0													14308	1445	68	15685	1791	262	10	2043	12164	1178	57	13285	352	5		357	41359	3560	256	3304	44664
13 Mines, dump and construction sites	3844	1954	976	4821					3502	1878	727	4653	342	75	249	168	0	0	0	0													12404	5099	5119	12384	982	606	596	1032	11123	4400	4485	11038	299	93	78	314	31690	14590	11628	2922	34612
14 Artificial non-agricultural vegetated areas	1080	0	31	1049					949		31	917	132			132	0	0	0	0													3753	123	196	3680	408	4	15	397	3275	47	182	3141	70	72		143	8708	387	335	52	8760
2. Agricultural areas	**495663**	**10663**	**8027**	**498299**	**149**	**12**	**12**	**149**	**339494**	**5392**	**4575**	**340312**	**156020**	**5259**	**3440**	**157839**	**6305**	**195**	**176**	**6324**	**0**	**0**	**0**	**0**	**5581**	**178**	**163**	**5595**	**724**	**17**	**13**	**729**	**2552972**	**33597**	**29078**	**2557490**	**79465**	**1875**	**2455**	**78885**	**2342920**	**29402**	**24733**	**2347589**	**130587**	**2319**	**1890**	**131016**	**4657404**	**65951**	**63030**	**2921**	**4660325**
21 Arable Land	299490	3800	2891	300399	41	12		53	239964	2119	1881	240202	59485	1670	1010	60145	713	0	0	713					713			713					1982829	16006	12028	1986806	64834	614	1320	64129	1849210	14807	10075	1853942	68785	585	633	68736	3671844	31748	26077	5669	3677513
22 Permanent Crops	599	215	0	814					563	215		779	35			35	190	0	0	190					190			190					20056	3807	2586	21277	4773	701	220	5254	15072	3106	2366	15812	211			211	45437	8203	7678	524	46961
23 Pastures	75887	3542	2936	76493					29981	1342	1243	30081	45906	2200	1694	46412	2616	133	101	2628					2254	116	101	2269	362	3		365	111215	5843	7101	109957	1876	338	364	1850	84298	4490	6045	82743	25040	1016	692	25364	213066	10887	12818	-1932	211135
24 Heterogeneous agricultural areas	119687	3105	2199	120593	108		12	97	68985	1716	1451	69250	50594	1389	737	51246	2786	82	75	2793					2423	68	62	2428	363	14	13	364	438872	7940	7363	439449	7981	222	552	7652	394340	6999	6247	395093	36551	719	565	36705	726057	15116	16457	-1341	724716
3. Forest and semi-natural areas	**764061**	**56514**	**61005**	**759571**	**218**	**43**	**43**	**218**	**415048**	**22389**	**25513**	**411934**	**348795**	**34072**	**35448**	**347419**	**22051**	**2526**	**2545**	**22032**	**0**	**0**	**0**	**0**	**18177**	**1015**	**1029**	**18163**	**3874**	**1511**	**1515**	**3870**	**1541600**	**99096**	**108264**	**1532432**	**30533**	**2359**	**3431**	**29462**	**1307101**	**71024**	**78453**	**1299672**	**203966**	**25713**	**26380**	**203299**	**2754918**	**178573**	**196391**	**-17818**	**2737099**
31 Forests	717375	11216	49750	678841	151	43		194	399941	4026	21087	382881	317282	7146	28664	295765	13032	314	2258	11088					9607	158	896	8868	3425	156	1362	2219	1460368	14747	92502	1382612	27962	415	2777	25600	1251720	9179	68323	1192576	180686	5152	21402	164437	2597122	29237	163704	-134467	2462655
32 Shrub and/or herbaceous vegetation associations	46042	45217	11155	80104	67		43	23	15107	18292	4427	28972	30868	26925	6685	51109	9020	2212	287	10945					8570	857	133	9294	450	1356	154	1651	80812	84207	15667	149351	2571	1874	654	3792	55087	61798	10035	106850	23153	20534	4978	38709	156553	149113	32494	116619	273172
33 Open spaces with little or no vegetation	644	81	100	626						81		81	644		100	545	0	0	0	0													421	143	94	469	0	70		70	294	46	94	245	127	26		153	1243	222	194	29	1273
4. Wetlands	**5474**	**164**	**441**	**5197**	**0**	**0**	**0**	**0**	**2321**	**130**	**65**	**2386**	**3153**	**34**	**376**	**2811**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2570**	**75**	**616**	**2029**	**443**	**0**	**443**	**0**	**1347**	**0**	**121**	**1226**	**781**	**75**	**52**	**803**	**9148**	**239**	**1871**	**-1632**	**7516**
41 Inland wetlands	5474	164	441	5197					2321	130	65	2386	3153	34	376	2811	0	0	0	0													2570	75	616	2029	443		443		1347		121	1226	781	75	52	803	9148	239	1871	-1632	7516
42 Coastal wetlands	0	0	0	0													0	0	0	0													0	0	0	0												0	0	0	0
5. Water bodies	**9792**	**659**	**123**	**10328**	**0**	**0**	**0**	**0**	**5101**	**555**	**122**	**5534**	**4691**	**104**	**2**	**4794**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**27626**	**3174**	**567**	**30233**	**2567**	**1729**	**0**	**4296**	**24081**	**1376**	**525**	**24932**	**977**	**69**	**41**	**1005**	**47660**	**7063**	**1339**	**5723**	**53383**
51 Inland waters	9792	659	123	10328					5101	555	122	5534	4691	104	2	4794	0	0	0	0													27626	3174	567	30233	2567	1729		4296	24081	1376	525	24932	977	69	41	1005	47660	7063	1339	5723	53383
52 Coastal waters	0	0	0	0													0	0	0	0													0	0	0	0												0	0	0	0
TOTAL	**1319514**	**70783**	**70783**	**1319514**	**500**	**55**	**55**	**500**	**798302**	**31143**	**31143**	**798302**	**520712**	**39585**	**39585**	**520712**	**28599**	**2721**	**2721**	**28599**	**0**	**0**	**0**	**0**	**24000**	**1192**	**1192**	**24000**	**4599**	**1528**	**1528**	**4599**	**4304081**	**144597**	**144597**	**4304081**	**124787**	**6920**	**6920**	**124787**	**3836536**	**109220**	**109220**	**3836536**	**342758**	**28458**	**28458**	**342758**	**7888016**	**276233**	**276233**	**0**	**7888016**

LAND & ECOSYSTEMS ACCOUNTS - BASIC ACCOUNTS (CZECH REPUBLIC)

Account of Formation of Land Cover - summary

Consumption of land cover									***Formation of land cover***								
1	2.1+2.2	2.3+2.4	3.1	3.2+3.3	4	5			1	2.1+2.2	2.3+2.4	3.1	3.2+3.3	4	5	
Artificial surfaces	Arable land & Permanent crops	Pastures & Mixed agricultural areas	Forests	Shrub and other semi-natural land	Wetlands	Water bodies	Total	Land cover flows	Artificial surfaces	Arable land & Permanent crops	Pastures & Mixed agricultural areas	Forests	Shrub and other semi-natural land	Wetlands	Water bodies	Total
3815	4	0	0	0	0	0	3819	LCF1 Urban land management	3819	0	0	0	0	0	0	3819
0	2253	1064	265	61	0	13	3656	LCF2 Urban sprawl	3656	0	0	0	0	0	0	3656
0	5907	2335	3263	5129	0	299	16933	LCF3 Extension of economic sites and infrastructures	16933	0	0	0	0	0	0	16933
0	20403	18929	0	0	0	0	39332	LCF4 Agricultural rotation and intensification	0	31152	8180	0	0	0	0	39332
4054	0	0	16258	3026	202	494	24033	LCF5 Conversion of land to agriculture	0	8797	15237	0	0	0	0	24033
655	1557	0	142484	23909	361	325	169291	LCF6 Forests creation and management	0	0	0	26807	142484	0	0	169291
1060	906	2276	1247	379	0	0	5868	LCF7 Water body creation and management	0	0	0	0	0	0	5868	5868
4018	2725	4672	187	184	1308	209	13302	LCF8 Changes of land cover due to natural and multiple causes	0	0	2586	2430	6852	239	1195	13302
13602	**33755**	**29275**	**163704**	**32688**	**1871**	**1339**	**276233**	**Sub/Total Flows**	**24408**	**39949**	**26002**	**29237**	**149336**	**239**	**7063**	**276233**
10807	***6194***	***-3273***	***-134467***	***116648***	***-1632***	***5723***		***Net Formation of Land Cover***								
24408	**39949**	**26002**	**29237**	**149336**	**239**	**7063**	**276233**	**TOTAL**	**24408**	**39949**	**26002**	**29237**	**149336**	**239**	**7063**	**276233**

Land Cover stock 1975	**418887**	**3718280**	**939123**	**2597122**	**157796**	**9148**	**47660**	**7888016**
Net Formation of Land Cover	*10807*	*6194*	*-3273*	*-134467*	*116648*	*-1632*	*5723*	
Land Cover stock 1990	**429694**	**3724474**	**935851**	**2462655**	**274444**	**7516**	**53383**	**7888016**

Account of Formation of Land Cover - detailed

			1	1.1	111	112	1.2	121	122	123	124	1.3	131	132	133	1.4	141	142	*2*	2.1	211	212	213	2.2	221	222	223	2.3	231	2.4	241	242	243	244	*3*	3.1	311
			ARTIFICIAL SURFACES	**Urban fabric**	Continuous urban fabric	Discontinuous urban fabric	**Industrial, commercial and transport units**	Industrial or commercial units	Road and rail networks and associated land	Port areas	Airports	**Mines, dump and construction sites**	Mineral extraction sites	Dump sites	Construction sites	**Artificial non-agricultural vegetated areas**	Green urban areas	Sport and leisure facilities	*AGRICULTURAL AREAS*	**Arable Land**	Non-irrigated arable land	Permanently irrigated land	Rice fields	**Permanent Crops**	Vineyards	Fruit trees and berry plantations	Olive groves	**Pastures**	Pastures	**Heterogeneous agricultural areas**	Annual crops associated with permanent crops	Complex cultivation patterns	Agriculture land with significant areas of natural vegetation	Agro-forestry areas	*FORESTS AND SEMI-NATURAL AREAS*	**Forests**	Broad-leaved forest
Consumption of land cover (-)																																					
LCF1	**Urban land management**		*3815*	*239*			*155*					*3332*				*89*			*4*	*4*				*0*				*0*		*0*					*0*	*0*	
	LCF11	Urban development/ infilling	*89*													*89*			*0*																*0*		
	LCF12	Developped land recycling	*3726*	*239*			*155*					*3332*							*0*																*0*		
	LCF13	Development of green urban areas	*0*																*4*	*4*															*0*		
LCF2	**Urban sprawl**		*0*	*0*			*0*					*0*				*0*			*3317*	*2232*				*21*				*72*		*992*					*326*	*265*	
	LCF21	Urban continuous sprawl	*0*																*32*	*32*															*16*	*16*	
	LCF22	Urban diffuse sprawl	*0*																*3286*	*2200*				*21*				*72*		*992*					*309*	*248*	
LCF3	**Extension of economic sites and infrastructures**		*0*	*0*			*0*					*0*				*0*			*8242*	*5881*				*26*				*115*		*2220*					*8393*	*3263*	
	LCF31	Extension of industrial & commercial sites	*0*																*1114*	*678*								*65*		*370*					*621*	*497*	
	LCF32	Extension of transport networks	*0*																*330*	*248*								*5*		*76*					*85*	*60*	
	LCF33	Extension of habours	*0*																*0*																*0*		
	LCF34	Extension of airports	*0*																*17*	*17*															*30*	*30*	
	LCF35	Extension of mines and quarrying areas	*0*																*3367*	*2922*				*26*				*45*		*375*					*4262*	*1828*	
	LCF36	Extension of dumpsites	*0*																*1736*	*867*										*869*					*2855*	*424*	
	LCF37	Construction	*0*																*1506*	*1106*										*400*					*414*	*299*	
	LCF38	Extension of sport and leisure facilities	*0*																*171*	*42*										*129*					*125*	*125*	
LCF4	**Agricultural rotation and intensification**		*0*	*0*			*0*					*0*				*0*			*39332*	*12852*				*7551*				*10537*		*8391*					*0*	*0*	
	LCF41	Recent extension of pasture, fallow land, set aside	*0*																*7752*	*6196*				*35*						*1521*					*0*		
	LCF42	Planting of vineyards, fruit and olive trees over arable & pasture	*0*																*8174*	*6655*								*9*		*1510*					*0*		
	LCF43	Rotation of annual crops	*0*																*0*																*0*		
	LCF44	Rotation of permanent crops	*0*																*0*																*0*		
	LCF45	Intensification of agriculture	*0*																*23406*					*7517*				*10529*		*5361*					*0*		
LCF5	**Conversion of land to agriculture**		*4054*	*1007*			*62*					*2792*				*192*			*0*	*0*				*0*				*0*		*0*					*19283*	*16258*	
	LCF51	Intensive conversion of forest to agriculture	*0*																*0*																*4679*	*4679*	
	LCF52	Intensive conversion of marginal land to agriculture	*0*																*0*																*1121*		
	LCF53	Diffuse conversion of forest to agriculture	*0*																*0*																*11578*	*11578*	
	LCF54	Diffuse conversion of marginal land to agriculture	*0*																*0*																*1905*		
	LCF55	Conversion of wetlands to agriculture	*0*																*0*																*0*		
	LCF56	Conversion of developed areas to agriculture	*4054*	*1007*			*62*					*2792*				*192*			*0*																*0*		
LCF6	**Forests creation and management**		*655*	*136*			*22*					*443*				*54*			*1557*	*1551*				*6*				*0*		*0*					*166393*	*142484*	
	LCF61	Forests creation	*655*	*136*			*22*					*443*				*54*			*1557*	*1551*				*6*											*23909*		
	LCF62	Forests rotation	*0*																*0*																*0*		
	LCF63	Recent felling and transition	*0*																*0*																*142484*	*142484*	
LCF7	**Water body creation and management**		*1060*	*0*			*0*					*1060*				*0*			*3182*	*906*				*0*				*490*		*1786*					*1626*	*1247*	
	LCF71	Water body creation	*1060*									*1060*							*3182*	*906*								*490*		*1786*					*1626*	*1247*	
	LCF72	Water body management	*0*																*0*																*0*		
LCF8	**Changes of land cover due to natural and multiple causes**		*4018*	*0*			*17*					*4001*				*0*			*7397*	*2651*				*73*				*1604*		*3068*					*370*	*187*	
	LCF81	Semi-natural rotation	*0*																*0*																*149*		
	LCF82	Farmland abandonment without significant woodland creation	*0*																*4966*	*2651*				*73*				*1217*		*1025*					*0*		
	LCF83	Farmland abandonment with woodland creation	*0*																*2430*									*387*		*2043*					*0*		
	LCF84	Other land abandonment (other than farmland)	*4001*									*4001*							*0*																*0*		
	LCF85	Forests and shrubs fires	*0*																*0*																*81*	*46*	
	LCF86	Coastal erosion	*0*																*0*																*0*		
	LCF87	Impacts of storms, floods…	*0*																*0*																*0*		
	LCF89	Other changes and unknown	*17*																*0*																*141*	*141*	
Total consumption of cover			*13602*	*1383*			*256*					*11628*				*335*			*63030*	*26077*				*7678*				*12818*		*16457*					*196391*	*163704*	
Formation of land cover (+)																																					
LCF1	**Urban land management**		*3819*	*2255*	*108*	*2148*	*1362*	*1057*	*305*	*0*	*0*	*111*	*27*	*73*	*12*	*91*	*4*	*87*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
	LCF11	Urban development/ infilling	*89*	*44*		*44*	*34*	*34*				*12*			*12*				*0*																	*0*		
	LCF12	Developped land recycling	*3726*	*2211*	*108*	*2104*	*1328*	*1023*	*305*			*99*	*27*	*73*		*87*		*87*	*0*																	*0*		
	LCF13	Development of green urban areas	*4*													*4*	*4*		*0*																	*0*		
LCF2	**Urban sprawl**		*3656*	*3656*	*48*	*3608*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
	LCF21	Urban continuous sprawl	*48*	*48*	*48*														*0*																	*0*		
	LCF22	Urban diffuse sprawl	*3608*	*3608*		*3608*													*0*																	*0*		
LCF3	**Extension of economic sites and infrastructures**		*16933*	*0*	*0*	*0*	*2198*	*1736*	*415*	*0*	*47*	*14439*	*7927*	*4591*	*1920*	*297*	*0*	*297*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
	LCF31	Extension of industrial & commercial sites	*1736*				*1736*	*1736*											*0*																	*0*		
	LCF32	Extension of transport networks	*415*				*415*		*415*										*0*																	*0*		
	LCF33	Extension of habours	*0*																*0*																	*0*		
	LCF34	Extension of airports	*47*				*47*				*47*								*0*																	*0*		
	LCF35	Extension of mines and quarrying areas	*7927*									*7927*	*7927*						*0*																	*0*		
	LCF36	Extension of dumpsites	*4591*									*4591*		*4591*					*0*																	*0*		
	LCF37	Construction	*1920*									*1920*			*1920*				*0*																	*0*		
	LCF38	Extension of sport and leisure facilities	*297*													*297*		*297*	*0*																	*0*		
LCF4	**Agricultural rotation and intensification**		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*39332*	*23092*	*23092*	*0*	*0*	*8061*	*962*	*7099*	*0*	*6990*	*6990*	*1190*	*114*	*1076*	*0*	*0*	*0*	*0*	*0*
	LCF41	Recent extension of pasture, fallow land, set aside	*0*																*7752*									*6990*	*6990*	*762*		*762*			*0*		
	LCF42	Planting of vineyards, fruit and olive trees over arable & pasture	*0*																*8174*					*8061*	*962*	*7099*				*114*	*114*				*0*		
	LCF43	Rotation of annual crops	*0*																*0*																*0*		
	LCF44	Rotation of permanent crops	*0*																*0*																*0*		
	LCF45	Intensification of agriculture	*0*	*0*															*23406*	*23092*	*23092*									*314*		*314*			*0*		
LCF5	**Conversion of land to agriculture**		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*24033*	*8654*	*8654*	*0*	*0*	*142*	*62*	*80*	*0*	*3897*	*3897*	*11340*	*0*	*538*	*10802*	*0*	*0*	*0*	*0*
	LCF51	Intensive conversion of forest to agriculture	*0*																*4679*	*4665*	*4665*			*15*	*11*	*3*									*0*		
	LCF52	Intensive conversion of marginal land to agriculture	*0*																*1121*	*1121*	*1121*														*0*		
	LCF53	Diffuse conversion of forest to agriculture	*0*																*11578*									*3181*	*3181*	*8397*		*375*	*8021*		*0*		
	LCF54	Diffuse conversion of marginal land to agriculture	*0*																*1905*									*338*	*338*	*1566*		*40*	*1526*		*0*		
	LCF55	Conversion of wetlands to agriculture	*0*																*696*	*327*	*327*							*97*	*97*	*272*			*272*		*0*		
	LCF56	Conversion of developed areas to agriculture	*0*																*4054*	*2542*	*2542*			*128*	*51*	*77*		*279*	*279*	*1105*		*123*	*983*		*0*		
LCF6	**Forests creation and management**		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*169291*	*26807*	*1627*
	LCF61	Forests creation	*0*																*0*																*26807*	*26807*	*1627*
	LCF62	Forests rotation	*0*																*0*																*0*		
	LCF63	Recent felling and transition	*0*																*0*																*142484*		
LCF7	**Water body creation and management**		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
	LCF71	Water body creation	*0*																*0*																*0*		
	LCF72	Water body management	*0*																*0*																*0*		
LCF8	**Changes of land cover due to natural and multiple causes**		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*2586*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*2586*	*0*	*0*	*2586*	*0*	*9282*	*2430*	*429*
	LCF81	Semi-natural rotation	*0*																*0*																*227*		
	LCF82	Farmland abandonment without significant woodland creation	*0*																*2586*											*2586*			*2586*		*2381*		
	LCF83	Farmland abandonment with woodland creation	*0*																*0*																*2430*	*2430*	*429*
	LCF84	Other land abandonment (other than farmland)	*0*																*0*																*4001*		
	LCF85	Forests and shrubs fires	*0*																*0*																*81*		
	LCF86	Coastal erosion	*0*																*0*																*0*		
	LCF87	Impacts of storms, floods…	*0*																*0*																*0*		
	LCF89	Other changes and unknown	*0*																*0*																*163*		
Total formation of cover			*24408*	*5911*	*156*	*5755*	*3560*	*2792*	*721*	*0*	*47*	*14550*	*7954*	*4664*	*1932*	*387*	*4*	*384*	*65951*	*31746*	*31746*	*0*	*0*	*8203*	*1024*	*7179*	*0*	*10887*	*10887*	*15116*	*114*	*1614*	*13388*	*0*	*178573*	*29237*	*2055*
Net formation of cover			*10807*	*4528*			*3304*					*2922*				*52*			*2921*	*5669*				*524*				*-1932*		*-1341*					*-17818*	*-134467*	

TOTAL OPENING YEAR ~ 1975			*418887*	337130			41359					31690				8708			***4657404***	3671844				46437				213066		726057					***2754918***	2597122	
TOTAL FINAL YEAR ~ 1990			*429694*	341658	1810	339849	44664	34942	3521	85	6116	34612	17931	14350	2331	8760	3083	5677	***4660325***	3677513	3677513			46961	14417	32543		211135	211135	724716	1726	84682	638308		***2737099***	2462655	195502

312	313	3.2	321	322	323	324	3.3	331	332	333	334	335	4	4.1	411	412	4.2	421	422	423	5	5.1	511	512	5.2	521	522	523	
Coniferous forest	Mixed forest	Shrub and/or herbaceous vegetation associations	Natural grassland	Moors and heathland	Sclerophyllous vegetation	Transitional woodland shrub	Open spaces with little or no vegetation	Beaches, dunes and sand plains	Bare rock	Sparsely vegetated areas	Burnt areas	Glaciers and perpetual snow	WETLANDS	Inland wetlands	Inland marshes	Peatbogs	Coastal wetlands	Salt marshes	Salines	Intertidal flats	WATER BODIES	Inland waters	Water courses	Water bodies	Coastal waters	Coastal lagoons	Estuaries	Sea and ocean	TOTAL
		0					0						0	0			0				0	0			0				3819
													0								0								89
													0								0								3726
													0								0								4
		61					0						0	0			0				13	13			0				3656
													0								0								48
		61											0								13	13							3608
		5074					55						0	0			0				299	299			0				16933
		124											0								0								1736
		25											0								1	1							415
													0								0								0
													0								0								47
		2434											0								298	298							7927
		2431											0								0								4591
		60					55						0								0								1920
													0								0								297
		0					0						0	0			0				0	0			0				39332
													0								0								7752
													0								0								8174
													0								0								0
													0								0								0
													0								0								23406
		2983					43						202	202			0				494	494			0				24033
													0								0								4679
		1078					43						0								0								1121
													0								0								11578
		1905											0								0								1905
													202	202							494	494							696
													0								0								4054
		23864					44						361	361			0				325	325			0				169291
		23864					44						361	361							325	325							26807
													0								0								0
													0								0								142484
		379					0						0	0			0				0	0			0				5868
		379											0								0								5868
													0								0								0
		133					51						1308	1308			0				209	209			0				13302
		98					51						1308	1308							46	46							1502
													0								0								4966
													0								0								2430
													0								0								4001
		35											0								0								81
													0								0								0
													0								0								0
													0								163	163							321
		32494					194						1871	1871			0				1339	1339			0				276233

0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3819
													0								0								89
													0								0								3726
													0								0								4
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3656
													0								0								48
													0								0								3608
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16933
													0								0								1736
													0								0								415
													0								0								0
													0								0								47
													0								0								7927
													0								0								4591
													0								0								1920
													0								0								297
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	39332
													0								0								7752
													0								0								8174
													0								0								0
													0								0								0
													0								0								23406
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24033
													0								0								4679
													0								0								1121
													0								0								11578
													0								0								1905
													0								0								696
													0								0								4054
18894	6286	142412	2012	1700	0	138699	72	46	0	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	169291
18894	6286												0								0								26807
													0								0								0
		142412	2012	1700		138699	72	46		26			0								0								142484
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5868	5868	0	5868	0	0	0	0	5868
													0								5868	5868		5868					5868
													0								0								0
1053	948	6701	204	0	0	6497	151	70	0	0	81	0	239	239	122	117	0	0	0	0	1195	1195	0	1195	0	0	0	0	13302
		181	51			130	46	46					98	98	51	47					1178	1178		1178					1502
1053	948	2381	153			2228							0								0								4966
		3976				3976	25	25					0								0								2430
							81				81		0								0								4001
													0								0								81
		163				163							141	141	71	70					17	17		17					321
19947	7235	149113	2217	1700	0	145196	223	116	0	26	81	0	239	239	122	117	0	0	0	0	7063	7063	0	7063	0	0	0	0	276233
		116619					29						-1632	-1632			0				5723	5723			0				0

		156553					1243						9148	9148							47660	47660							7888016
1711980	555172	273172	26318	3774		243080	1273	116	97	979	81		7516	7516	4242	3274	0				53383	53383	4978	48405	0				7888016

LAND & ECOSYSTEMS ACCOUNTS - BASIC ACCOUNT (CZECH REPUBLIC)

Land Cover Resource & Use Account - summary

(by Dominant Landscape Types)

Summary Account	A1 URBAN DENSE AREAS	A2 DISPERSED URBAN AREAS	B1 BROAD PATTERN INTENSIVE AGRICULTURE	B11 LOWLAND BROAD PATTERN INTENSIVE AGRICULTURE	B12 UPLAND BROAD PATTERN INTENSIVE AGRICULTURE	B13 MOUNTAIN BROAD PATTERN INTENSIVE AGRICULTURE	B2 COMPOSITE RURAL LANDSCAPE	B21 LOWLAND COMPOSITE RURAL LANDSCAPE	B22 UPLAND COMPOSITE RURAL LANDSCAPE	B23 MOUNTAIN COMPOSITE RURAL LANDSCAPE	C1 FORESTED LANDSCAPE	C11 LOWLAND FORESTED LANDSCAPE	C12 UPLAND FORESTED LANDSCAPE	C13 MOUNTAIN FORESTED LANDSCAPE	C2 OPEN SEMI-NATURAL OR NATURAL LANDSCAPE	C21 LOWLAND OPEN SEMI-NATURAL OR NATURAL LANDSCAPE	C22 UPLAND OPEN SEMI-NATURAL OR NATURAL LANDSCAPE	C23 MOUNTAIN OPEN SEMI-NATURAL OR NATURAL LANDSCAPE	C3 LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER	C31 LOWLAND LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER	C32 UPLAND LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER	C33 MOUNTAIN LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER	TOTAL
Initial Surface																								
1 Artificial surfaces	***76559***	***42981***	***74667***	***17050***	***57617***	***0***	***601***	***0***	***386***	***215***	***44523***	***133***	***36337***	***8053***	***242***	***0***	***242***	***0***	***179313***	***11779***	***161087***	***6448***	***418887***
2 Agricultural areas	***227182***	***249324***	***1119159***	***196097***	***922961***	***100***	***6799***	***0***	***3517***	***3282***	***495663***	***149***	***339494***	***156020***	***6305***	***0***	***5581***	***724***	***2552972***	***79465***	***2342920***	***130587***	***4657404***
2.1+2.2 Arable Land & Permanent Crops	184367	208979	1018519	180370	838049	100	2538	0	1770	768	300089	41	240528	59520	904	0	904	0	2002885	69607	1864282	68995	3718280
2.3+2.4 Pastures & Heterogeneous agricultural areas	42815	40345	100639	15727	84912	0	4262	0	1748	2514	195575	108	98966	96500	5401	0	4677	724	550087	9857	478638	61591	939123
3 Forests and semi-natural areas	***105454***	***58606***	***252147***	***25224***	***226824***	***100***	***10997***	***0***	***3594***	***7403***	***764061***	***218***	***415048***	***348795***	***22051***	***0***	***18177***	***3874***	***1541600***	***30533***	***1307101***	***203966***	***2754918***
3.1 Forests	97252	54731	243869	23882	219888	100	10496	0	3379	7117	717375	151	399941	317282	13032	0	9607	3425	1460368	27962	1251720	180686	2597122
3.2+3.3 Shrub and other semi-natural land	8203	3875	8279	1342	6936	0	502	0	215	286	46686	67	15107	31513	9020	0	8570	450	81232	2571	55381	23279	157796
4 Wetlands	***62***	***77***	***956***	***742***	***215***	***0***	***8***	***0***	***8***	***0***	***5474***	***0***	***2321***	***3153***	***0***	***0***	***0***	***0***	***2570***	***443***	***1347***	***781***	***9148***
5 Water bodies	***2402***	***2250***	***5564***	***2637***	***2927***	***0***	***26***	***0***	***26***	***0***	***9792***	***0***	***5101***	***4691***	***0***	***0***	***0***	***0***	***27626***	***2567***	***24081***	***977***	***47660***
A - TOTAL INITIAL SURFACE ~ 1975	***411658***	***353239***	***1452493***	***241750***	***1210544***	***200***	***18432***	***0***	***7532***	***10900***	***1319514***	***500***	***798302***	***520712***	***28599***	***0***	***24000***	***4599***	***4304081***	***124787***	***3836536***	***342758***	***7888016***
Consumption of Land Cover Resource (Supply by Land Cover)																							
1 Artificial surfaces	***4662***	***778***	***901***	***237***	***664***	***0***	***0***	***0***	***0***	***0***	***1187***	***0***	***869***	***319***	***0***	***0***	***0***	***0***	***6073***	***591***	***5387***	***95***	***13602***
2 Agricultural areas	***6023***	***2712***	***16522***	***6483***	***10039***	***0***	***492***	***0***	***398***	***94***	***8027***	***12***	***4575***	***3440***	***176***	***0***	***163***	***13***	***29078***	***2455***	***24733***	***1890***	***63030***
2.1+2.2 Arable Land & Permanent Crops	3716	1483	11051	4550	6501	0	0	0	0	0	2891	0	1881	1010	0	0	0	0	14614	1540	12441	633	33755
2.3+2.4 Pastures & Heterogeneous agricultural areas	2307	1229	5471	1933	3538	0	492	0	398	94	5136	12	2694	2431	176	0	163	13	14464	916	12292	1256	29275
3 Forests and semi-natural areas	***7025***	***3082***	***13973***	***1812***	***12161***	***0***	***499***	***0***	***243***	***257***	***61005***	***43***	***25513***	***35448***	***2545***	***0***	***1029***	***1515***	***108264***	***3431***	***78453***	***26380***	***196391***
3.1 Forests	3729	2046	12932	1581	11351		487	0	230	257	49750		21087	28664	2258	0	896	1362	92502	2777	68323	21402	163704
3.2+3.3 Shrub and other semi-natural land	3296	1036	1040	230	810	0	13	0	13	0	11254	43	4427	6784	287	0	133	154	15762	654	10130	4978	32688
4 Wetlands	***38***	***74***	***701***	***670***	***31***	***0***	***0***	***0***	***0***	***0***	***441***	***0***	***65***	***376***	***0***	***0***	***0***	***0***	***616***	***443***	***121***	***52***	***1871***
5 Water bodies	***316***	***43***	***291***	***55***	***236***	***0***	***0***	***0***	***0***	***0***	***123***	***0***	***122***	***2***	***0***	***0***	***0***	***0***	***567***	***0***	***525***	***41***	***1339***
B - TOTAL CONSUMPTION OF LAND COVER RESOURCE	***18064***	***6689***	***32388***	***9256***	***23131***	***0***	***991***	***0***	***640***	***351***	***70783***	***55***	***31143***	***39585***	***2721***	***0***	***1192***	***1528***	***144597***	***6920***	***109220***	***28458***	***276233***
Land Cover Flows resulting from Changes in the Uses of Land																							
LCF1 Urban land management	2158	129	184	0	184	0	0	0	0	0	137	0	134	2	0	0	0	0	1211	150	1061	0	3819
LCF2 Urban sprawl	889	298	674	112	562	0	0	0	0	0	296	0	257	39	0	0	0	0	1499	68	1320	111	3656
LCF3 Extension of economic sites and infrastructures	4859	1979	1782	842	940	0	17	0	17	0	2351	0	2276	75	0	0	0	0	5946	737	5037	171	16933
LCF4 Agricultural rotation and intensification	1936	785	11833	4641	7191	0	442	0	381	61	5461	12	2566	2883	20	0	20	0	18856	1293	16444	1120	39332
LCF5 Conversion of land to agriculture	2052	578	2832	712	2120	0	111	0	11	99	4843	0	2531	2313	175	0	157	17	13442	547	11786	1109	24033
LCF6 Forests creation and management	3497	1772	11725	1005	10720	0	389	0	231	157	55263	43	21661	33559	2370	0	872	1498	94276	2049	67021	25206	169291
LCF7 Water body creation and management	405	592	1562	1202	360	0	0	0	0	0	659	0	555	104	0	0	0	0	2650	1315	1265	69	5868
LCF8 Changes of Land Cover due to natural and multiple causes	2268	557	1796	742	1054	0	33	0	0	33	1774	0	1165	609	156	0	143	13	6718	761	5285	672	13302
C - TOTAL LAND COVER FLOWS 1975-1990	***18064***	***6689***	***32388***	***9256***	***23131***	***0***	***991***	***0***	***640***	***351***	***70783***	***55***	***31143***	***39585***	***2721***	***0***	***1192***	***1528***	***144597***	***6920***	***109220***	***28458***	***276233***
D - Final Surface ~ 1990 (D = A-B+C)	***411658***	***353239***	***1452493***	***241750***	***1210544***	***200***	***18432***	***0***	***7532***	***10900***	***1319514***	***500***	***798302***	***520712***	***28599***	***0***	***24000***	***4599***	***4304081***	***124787***	***3836536***	***342758***	***7888016***

Land Cover Resource & Use Account - detailed

(by Dominant Landscape Types)

Detailed Account	A1 URBAN DENSE AREAS	A2 DISPERSED URBAN AREAS	B1 BROAD PATTERN INTENSIVE AGRICULTURE	B11 LOWLAND BROAD PATTERN INTENSIVE AGRICULTURE	B12 UPLAND BROAD PATTERN INTENSIVE AGRICULTURE	B13 MOUNTAIN BROAD PATTERN INTENSIVE AGRICULTURE	B2 COMPOSITE RURAL LANDSCAPE	B21 LOWLAND COMPOSITE RURAL LANDSCAPE	B22 UPLAND COMPOSITE RURAL LANDSCAPE	B23 MOUNTAIN COMPOSITE RURAL LANDSCAPE	C1 FORESTED LANDSCAPE	C11 LOWLAND FORESTED LANDSCAPE	C12 UPLAND FORESTED LANDSCAPE	C13 MOUNTAIN FORESTED LANDSCAPE	C2 OPEN SEMI-NATURAL OR NATURAL LANDSCAPE	C21 LOWLAND OPEN SEMI-NATURAL OR NATURAL LANDSCAPE	C22 UPLAND, OPEN SEMI-NATURAL OR NATURAL LANDSCAPE	C23 MOUNTAIN OPEN SEMI-NATURAL OR NATURAL LANDSCAPE	C3 LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER	C31 LOWLAND LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER	C32 UPLAND LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER	C33 MOUNTAIN LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER	*TOTAL*
Initial Surface																								
1 Artificial surfaces	***76559***	***42981***	***74667***	***17050***	***57617***	***0***	***601***	***0***	***386***	***215***	***44523***	***133***	***36337***	***8053***	***242***	***0***	***242***	***0***	***179313***	***11779***	***161087***	***6448***	***418887***
1.1 Urban fabric	53323	33631	64999	14081	50918		553	0	338	215	35534	133	28257	7143	242	0	242		148849	8598	134524	5726	337130
1.2 Industrial, commercial and transport units	9872	5613	7501	2423	5077		0	0			4066		3630	436	0	0			14308	1791	12164	352	41359
1.3 Mines, dump and construction sites	10829	3153	1460	323	1137		0	0			3844		3502	342	0	0			12404	982	11123	299	31690
1.4 Artificial non-agricultural vegetated areas	2534	585	708	223	485		48	0	48		1080		949	132	0	0			3753	408	3275	70	8708
2 Agricultural areas	***227182***	***249324***	***1119159***	***196097***	***922961***	***100***	***6799***	***0***	***3517***	***3282***	***495663***	***149***	***339494***	***156020***	***6305***	***0***	***5581***	***724***	***2552972***	***79465***	***2342920***	***130587***	***4657404***
2.1 Arable Land	181774	207449	997051	171132	825819	100	2538	0	1770	768	299490	41	239964	59485	713	0	713		1982829	64834	1849210	68785	3671844
2.2 Permanent Crops	2593	1530	21469	9238	12231		0	0			599		563	35	190	0	190		20056	4773	15072	211	46437
2.3 Pastures	3823	1312	16389	2036	14353		1825	0	1115	709	75887		29981	45906	2616	0	2254	362	111215	1876	84298	25040	213066
2.4 Heterogeneous agricultural areas	38992	39033	84250	13691	70559		2437	0	632	1805	119687	108	68985	50594	2786	0	2423	363	438872	7981	394340	36551	726057
3 Forests and semi-natural areas	***105454***	***58606***	***252147***	***25224***	***226824***	***100***	***10997***	***0***	***3594***	***7403***	***764061***	***218***	***415048***	***348795***	***22051***	***0***	***18177***	***3874***	***1541600***	***30533***	***1307101***	***203966***	***2754918***
3.1 Forests	97252	54731	243869	23882	219888	100	10496	0	3379	7117	717375	151	399941	317282	13032	0	9607	3425	1460368	27962	1251720	180686	2597122
3.2 Shrub and/or herbaceous vegetation associations	8085	3875	8218	1282	6936	0	502	0	215	286	46042	67	15107	30868	9020	0	8570	450	80812	2571	55087	23153	156553
3.3 Open spaces with little or no vegetation	118		60	60			0	0			644			644	0	0			421	0	294	127	1243
4 Wetlands	***62***	***77***	***956***	***742***	***215***	***0***	***8***	***0***	***8***	***0***	***5474***	***0***	***2321***	***3153***	***0***	***0***	***0***	***0***	***2570***	***443***	***1347***	***781***	***9148***
4.1 Inland wetlands	62	77	956	742	215		8	0	8	0	5474		2321	3153	0	0			2570	443	1347	781	9148
4.2 Coastal wetlands			0				0	0			0				0	0			0				0
5 Water bodies	***2402***	***2250***	***5564***	***2637***	***2927***	***0***	***26***	***0***	***26***	***0***	***9792***	***0***	***5101***	***4691***	***0***	***0***	***0***	***0***	***27626***	***2567***	***24081***	***977***	***47660***
5.1 Inland waters	2402	2250	5564	2637	2927		26	0	26		9792		5101	4691	0	0			27626	2567	24081	977	47660
5.2 Coastal waters			0				0	0			0				0	0			0				0
A - TOTAL INITIAL SURFACE – 1975	***411658***	***353239***	***1452493***	***241750***	***1210544***	***200***	***18432***	***0***	***7532***	***10900***	***1319514***	***500***	***798302***	***520712***	***28599***	***0***	***24000***	***4599***	***4304081***	***124787***	***3836536***	***342758***	***7888016***
Consumption of Land Cover Resource (Supply by Land Cover)																							
1 Artificial surfaces	***4662***	***778***	***901***	***237***	***664***	***0***	***0***	***0***	***0***	***0***	***1187***	***0***	***869***	***319***	***0***	***0***	***0***	***0***	***6073***	***591***	***5387***	***95***	***13602***
1.1 Urban fabric	176	77	263	43	220		0	0			177		110	67	0	0			690	10	663	16	1383
1.2 Industrial, commercial and transport units	150	3	33	28	5		0	0			2			2	0	0			68	10	57		256
1.3 Mines, dump and construction sites	4229	698	606	166	439		0	0			976		727	249	0	0			5119	556	4485	78	11628
1.4 Artificial non-agricultural vegetated areas	107		0				0	0			31		31		0	0			196	15	182		335
2 Agricultural areas	***6023***	***2712***	***16522***	***6483***	***10039***	***0***	***492***	***0***	***398***	***94***	***8027***	***12***	***4575***	***3440***	***176***	***0***	***163***	***13***	***29078***	***2455***	***24733***	***1890***	***63030***
2.1 Arable Land	3053	1146	6958	2574	4384		0	0			2891		1881	1010	0	0			12028	1320	10075	633	26077
2.2 Permanent Crops	663	336	4093	1976	2118		0	0			0				0	0			2586	220	2366		7678
2.3 Pastures	289	82	1882	739	1143		428	0	381	47	2936		1243	1694	101	0	101		7101	364	6045	692	12818
2.4 Heterogeneous agricultural areas	2018	1148	3590	1195	2395		64	0	17	47	2199	12	1451	737	75	0	62	13	7363	552	6247	565	16457
3 Forests and semi-natural areas	***7025***	***3082***	***13973***	***1812***	***12161***	***0***	***499***	***0***	***243***	***257***	***61005***	***43***	***25513***	***35448***	***2545***	***0***	***1029***	***1515***	***108264***	***3431***	***78453***	***26380***	***196391***
3.1 Forests	3729	2046	12932	1581	11351		487	0	230	257	49750		21087	28664	2258	0	896	1362	92502	2777	68323	21402	163704
3.2 Shrub and/or herbaceous vegetation associations	3296	1036	1040	230	810	0	13	0	13		11155	43	4427	6685	287	0	133	154	15667	654	10035	4978	32494
3.3 Open spaces with little or no vegetation			0				0	0			100			100	0	0			94		94		194
4 Wetlands	***38***	***74***	***701***	***670***	***31***	***0***	***0***	***0***	***0***	***0***	***441***	***0***	***65***	***376***	***0***	***0***	***0***	***0***	***616***	***443***	***121***	***52***	***1871***
4.1 Inland wetlands	38	74	701	670	31		0	0			441		65	376	0	0			616	443	121	52	1871
4.2 Coastal wetlands			0				0	0			0				0	0			0				0
5 Water bodies	***316***	***43***	***291***	***55***	***236***	***0***	***0***	***0***	***0***	***0***	***123***	***0***	***122***	***2***	***0***	***0***	***0***	***0***	***567***	***0***	***525***	***41***	***1339***
5.1 Inland waters	316	43	291	55	236		0	0			123		122	2	0	0			567		525	41	1339
5.2 Coastal waters			0				0	0			0				0	0			0				0
B - TOTAL CONSUMPTION OF LAND COVER RESOURCE	***18064***	***6689***	***32388***	***9256***	***23131***	***0***	***991***	***0***	***640***	***351***	***70783***	***55***	***31143***	***39585***	***2721***	***0***	***1192***	***1528***	***144597***	***6920***	***109220***	***28458***	***276233***
Land Cover Flows resulting from Changes in the Uses of Land																							
LCF1 Urban land management	***2158***	***129***	***184***	***0***	***184***	***0***	***0***	***0***	***0***	***0***	***137***	***0***	***134***	***2***	***0***	***0***	***0***	***0***	***1211***	***150***	***1061***	***0***	***3819***
LCF11 Urban development/ infilling	65		0				0	0			0				0	0			24	15	9		89
LCF12 Developped land recycling	2093	129	184		184		0	0			137		134	2	0	0			1184	131	1053		3726
LCF13 Development of green urban areas			0				0	0			0				0	0			4	4			4
LCF2 Urban sprawl	***889***	***298***	***674***	***112***	***562***	***0***	***0***	***0***	***0***	***0***	***296***	***0***	***257***	***39***	***0***	***0***	***0***	***0***	***1499***	***68***	***1320***	***111***	***3656***
LCF21 Urban continuous sprawl	9		0				0	0			0				0	0			39		39		48
LCF22 Urban diffuse sprawl	880	298	674	112	562		0	0			296		257	39	0	0			1460	68	1281	111	3608
LCF3 Extension of economic sites and infrastructures	***4859***	***1979***	***1782***	***842***	***940***	***0***	***17***	***0***	***17***	***0***	***2351***	***0***	***2276***	***75***	***0***	***0***	***0***	***0***	***5946***	***737***	***5037***	***171***	***16933***
LCF31 Extension of industrial & commercial sites	431	93	286	167	119		0	0			322		322		0	0			603	83	515	5	1736
LCF32 Extension of transport networks	74		145	145			0	0			45		45		0	0			151	48	102		415
LCF33 Extension of habours			0				0	0			0				0	0			0				0
LCF34 Extension of airports		17	0				0	0			30		30		0	0			0				47
LCF35 Extension of mines and quarrying areas	2578	585	872	432	439		0	0			1080		1080		0	0			2812	501	2232	79	7927
LCF36 Extension of dumpsites	1270	1163	140	65	74		0	0			595		591	4	0	0			1423	105	1304	14	4591
LCF37 Construction	387	120	297		297		0	0			279		208	71	0	0			837		837		1920
LCF38 Extension of sport and leisure facilities	118		42	32	10		17	0	17		0				0	0			120		47	72	297
LCF4 Agricultural rotation and intensification	***1936***	***785***	***11833***	***4641***	***7191***	***0***	***442***	***0***	***381***	***61***	***5461***	***12***	***2566***	***2883***	***20***	***0***	***20***	***0***	***18856***	***1293***	***16444***	***1120***	***39332***
LCF41 Recent extension of pasture, fallow land, set aside	181	165	1145	110	1034		25	0		25	2134		788	1346	20	0	20		4082	150	3300	632	7752
LCF42 Planting of vineyards, fruit and olive trees over arable & pasture	367	98	3772	1572	2200		0	0			215		215		0	0			3722	705	3017		8174
LCF43 Rotation of annual crops			0				0	0			0				0	0			0				0
LCF44 Rotation of permanent crops			0				0	0			0				0	0			0				0
LCF45 Intensification of agriculture	1388	522	6916	2959	3957		417	0	381	36	3112	12	1562	1537	0	0			11052	438	10126	488	23406
LCF5 Conversion of land to agriculture	***2052***	***578***	***2832***	***712***	***2120***	***0***	***111***	***0***	***11***	***99***	***4843***	***0***	***2531***	***2313***	***175***	***0***	***157***	***17***	***13442***	***547***	***11786***	***1109***	***24033***
LCF51 Intensive conversion of forest to agriculture	203	107	632	72	560		14	0	8	6	697		496	201	0	0			3027	112	2802	113	4679
LCF52 Intensive conversion of marginal land to agriculture	307		60		60		0	0			78		76	2	0	0			676	8	668		1121
LCF53 Diffuse conversion of forest to agriculture	469	153	1193	235	959		97	0	3	93	3245		1519	1726	155	0	138	17	6266	271	5110	885	11578
LCF54 Diffuse conversion of marginal land to agriculture	375	20	25		25		0	0			428		237	191	20	0	20		1037	9	969	58	1905
LCF55 Conversion of wetlands to agriculture	12	78	221	168	52		0	0			26		26		0	0			360	29	314	17	696
LCF56 Conversion of developed areas to agriculture	686	220	701	237	464		0	0			369		176	192	0	0			2078	118	1924	36	4054
LCF6 Forests creation and management	***3497***	***1772***	***11725***	***1005***	***10720***	***0***	***389***	***0***	***231***	***157***	***55263***	***43***	***21661***	***33559***	***2370***	***0***	***872***	***1498***	***94276***	***2049***	***67021***	***25206***	***169291***
LCF61 Forests creation	888	247	1337	280	1057	0	13	0	13		10608	43	3687	6878	267	0	114	154	13446	397	8122	4927	26807
LCF62 Forests rotation			0				0	0			0				0	0			0				0
LCF63 Recent felling and transition	2609	1525	10387	724	9663		376	0	218	157	44655		17974	26681	2103	0	758	1344	80830	1652	58899	20279	142484
LCF7 Water body creation and management	***405***	***592***	***1562***	***1202***	***360***	***0***	***0***	***0***	***0***	***0***	***659***	***0***	***555***	***104***	***0***	***0***	***0***	***0***	***2650***	***1315***	***1265***	***69***	***5868***
LCF71 Water body creation	405	592	1562	1202	360		0	0			659		555	104	0	0			2650	1315	1265	69	5868
LCF72 Water body management			0				0	0			0				0	0			0				0
LCF8 Changes of land cover due to natural and multiple causes	***2268***	***557***	***1796***	***742***	***1054***	***0***	***33***	***0***	***0***	***33***	***1774***	***0***	***1165***	***609***	***156***	***0***	***143***	***13***	***6718***	***761***	***5285***	***672***	***13302***
LCF81 Semi-natural rotation	38	34	581	550	31		0	0			141		46	96	0	0			708	414	208	86	1502
LCF82 Farmland abandonment without significant woodland creation	487	135	931	152	779		0	0			598		370	228	109	0	99	11	2705	130	2279	297	4966
LCF83 Farmland abandonment with woodland creation	155	31	257	40	217		33	0		33	608		339	269	46	0	44	2	1300	18	1057	225	2430
LCF84 Other land abandonment (other than farmland)	1480	357	4		4		0	0			239		238	1	0	0			1921	199	1723		4001
LCF85 Forests and shrubs fires			0				0	0			81		81		0	0			0				81
LCF86 Coastal erosion			0				0	0			0				0	0			0				0
LCF87 Impacts of storms, floods…			0				0	0			0				0	0			0				0
LCF89 Other changes and unknown	108		23		23		0	0			107		91	16	0	0			83		19	65	321
C - TOTAL LAND COVER FLOWS 1975-1990	***18064***	***6689***	***32388***	***9256***	***23131***	***0***	***991***	***0***	***640***	***351***	***70783***	***55***	***31143***	***39585***	***2721***	***0***	***1192***	***1528***	***144597***	***6920***	***109220***	***28458***	***276233***
D - Final Surface – 1990 (D = A-B+C)	***411658***	***353239***	***1452493***	***241750***	***1210544***	***200***	***18432***	***0***	***7532***	***10900***	***1319514***	***500***	***798302***	***520712***	***28599***	***0***	***24000***	***4599***	***4304081***	***124787***	***3836536***	***342758***	***7888016***

LAND & ECOSYSTEMS ACCOUNTS - BASIC ACCOUNTS (CZECH REPUBLIC - REGIONS)

Account of Land Cover Changes
(by Regions)

	South Bohemia				*South Moravia*				*Prague*				*North Bohemia*				North Moravia				*Central Bohemia*				*East Bohemia*				*West Bohemia*				TOTAL				
Land Cover (Corine Land Cover level 2)	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	Net Changes	1990
1. Artificial surfaces	**30773**	**1498**	**533**	**31739**	**80046**	**2288**	**1564**	**80770**	**33399**	**2364**	**1668**	**34095**	**57840**	**8930**	**6061**	**60708**	**79362**	**1883**	**680**	**80565**	**47202**	**1726**	**641**	**48286**	**51272**	**1102**	**727**	**51647**	**38993**	**4617**	**1727**	**41883**	**418887**	**24498**	**13602**	**10807**	**429694**
11 Urban fabric	25637	473	57	26053	69712	1073	424	70360	25284	1556	86	26754	35062	563	90	35534	67928	577	183	68322	38788	304	213	38878	46170	524	156	46539	28550	840	173	29217	337130	5911	1383	4528	341658
12 Industrial, commercial and transport units	3439	61	38	3462	6606	433	160	6879	4220	226	23	4423	6631	1092	20	7704	8164	577	1	8740	5771	792	7	6556	3074	108	8	3173	3454	272		3726	41359	3560	256	3304	44664
13 Mines, dump and construction sites	1011	968	386	1590	1787	622	930	1479	1781	582	1409	953	15487	7183	5951	16719	2628	722	495	2854	1452	630	393	1689	1523	341	535	1329	6021	3504	1528	7997	31690	14584	11628	2922	34612
14 Artificial non-agricultural vegetated areas	687		53	634	1941	160	50	2052	2115		150	1965	660	91		751	641	8		649	1191		29	1162	505	129	28	606	968		26	943	8708	387	335	52	8760
2. Agricultural areas	**658976**	**8395**	**8317**	**659055**	**959163**	**13447**	**12820**	**959790**	**99194**	**479**	**1196**	**98476**	**417675**	**17029**	**16897**	**417807**	**587951**	**7168**	**6205**	**588914**	**646600**	**5119**	**5536**	**646183**	**711644**	**6208**	**5777**	**712074**	**576200**	**8108**	**6282**	**578025**	**4657404**	**65951**	**63030**	**2921**	**4660325**
21 Arable Land	487416	3280	3894	486802	810719	7676	4303	814092	86788	281	681	86388	293895	8771	7430	295236	425281	2849	2284	425846	553633	2066	3422	552277	574310	3287	1890	575706	439803	3536	2173	441166	3671844	31746	26077	5669	3677513
22 Permanent Crops	1373			1373	23314	2598	2969	22944	412	26	1	438	10470	3026	3428	10068	1680	210	495	1395	5995	1739	456	7278	2704	472	330	2846	489	131		619	46437	8203	7678	524	46961
23 Pastures	77149	3540	2938	77759	17249	623	2415	15457	463	75	49	490	26251	1515	1508	26258	19237	1310	1602	18945	7868	563	158	8273	23277	1216	1963	22530	41572	2036	2185	41423	213066	10887	12818	-1932	211135
24 Heterogeneous agricultural areas	93039	1568	1485	93120	107881	2550	3133	107298	11530	96	465	11161	87059	3716	4531	86244	141753	2798	1824	142728	79105	751	1502	78355	111353	1233	1583	110993	94337	2405	1925	94817	726057	15114	16457	-1341	724716
3. Forest and semi-natural areas	**422760**	**28910**	**30570**	**421100**	**456100**	**17250**	**21001**	**452349**	**32381**	**421**	**409**	**32393**	**296936**	**45117**	**48717**	**293337**	**435711**	**21142**	**23743**	**433111**	**284794**	**14451**	**15132**	**284113**	**358584**	**15425**	**16395**	**357615**	**467651**	**35856**	**40425**	**463082**	**2754918**	**178573**	**196391**	**-17818**	**2737099**
31 Forests	409623	2658	28500	383781	440213	1473	19793	421893	31642	352	171	31823	260428	7019	37315	230133	403813	7215	16722	394305	276821	1889	13811	264898	346242	4974	12126	339090	428340	3656	35265	396731	2597122	29237	163704	-134467	2462655
32 Shrub and/or herbaceous vegetation associations	13137	26252	2069	37319	15509	15707	1207	30009	739	69	239	569	36509	38017	11402	63123	31129	13855	6826	38158	7973	12563	1321	19215	12246	10451	4269	18427	39311	32200	5160	66351	156553	149113	32494	116619	273172
33 Open spaces with little or no vegetation					378	70		448						81		81	769	72	194	647					97			97					1243	223	194	29	1273
4. Wetlands	**4541**	**36**	**92**	**4484**	**1298**	**0**	**1258**	**40**	**0**	**0**	**0**	**0**	**1716**	**182**	**73**	**1825**	**26**	**0**	**0**	**26**	**73**	**0**	**26**	**47**	**267**	**0**	**66**	**201**	**1225**	**21**	**355**	**891**	**9148**	**239**	**1871**	**-1632**	**7516**
41 Inland wetlands	4541	36	92	4484	1298		1258	40					1716	182	73	1825	26			26	73		26	47	267		66	201	1225	21	355	891	9148	239	1871	-1632	7516
42 Coastal wetlands																																	0	0	0	0	0
5. Water bodies	**18933**	**948**	**275**	**19606**	**5809**	**3761**	**104**	**9466**	**1421**	**23**	**13**	**1431**	**5282**	**1019**	**528**	**5773**	**3288**	**493**	**58**	**3723**	**6076**	**218**	**179**	**6115**	**3094**	**382**	**151**	**3325**	**3757**	**219**	**32**	**3944**	**47660**	**7063**	**1339**	**5723**	**53383**
51 Inland waters	18933	948	275	19606	5809	3761	104	9466	1421	23	13	1431	5282	1019	528	5773	3288	493	58	3723	6076	218	179	6115	3094	382	151	3325	3757	219	32	3944	47660	7063	1339	5723	53383
52 Coastal waters																																	0	0	0	0	0
TOTAL	**1135984**	**39787**	**39787**	**1135984**	**1502416**	**36747**	**36747**	**1502416**	**166395**	**3286**	**3286**	**166395**	**779449**	**72276**	**72276**	**779449**	**1106338**	**30688**	**30686**	**1106338**	**984745**	**21514**	**21514**	**984745**	**1124862**	**23117**	**23117**	**1124862**	**1087826**	**48821**	**48821**	**1087826**	**7888016**	**276233**	**276233**	**0**	**7888016**

LAND & ECOSYSTEMS ACCOUNTS - BASIC ACCOUNTS (CZECH REPUBLIC - REGIONS)

Land Cover Resource & Use Account - summary

(by Regions)

Summary Account	South Bohemia	South Moravia	Prague	North Bohemia	North Moravia	Central Bohemia	East Bohemia	West Bohemia	TOTAL
Initial Surface									
1 Artificial surfaces	***30773***	***80046***	***33399***	***57840***	***79362***	***47202***	***51272***	***38993***	***418887***
2 Agricultural areas	***658976***	***959163***	***99194***	***417675***	***587951***	***646600***	***711644***	***576200***	***4657404***
2.1+2.2 Arable Land & Permanent Crops	488789	834032	87201	304365	426961	559627	577014	440291	3718280
2.3+2.4 Pastures & Heterogeneous agricultural areas	170188	125130	11993	113310	160990	86972	134631	135909	939123
3 Forests and semi-natural areas	***422760***	***456100***	***32381***	***296936***	***435711***	***284794***	***358584***	***467651***	***2754918***
3.1 Forests	409623	440213	31642	260428	403813	276821	346242	428340	2597122
3.2+3.3 Shrub and other semi-natural land	13137	15887	739	36509	31898	7973	12342	39311	157796
4 Wetlands	***4541***	***1298***	***0***	***1716***	***26***	***73***	***267***	***1225***	***9148***
5 Water bodies	***18933***	***5809***	***1421***	***5282***	***3288***	***6076***	***3094***	***3757***	***47660***
A - TOTAL INITIAL SURFACE ~ 1975	***1135984***	***1502416***	***166395***	***779449***	***1106338***	***984745***	***1124862***	***1087826***	***7888016***
Consumption of Land Cover Resource (Supply by Land Cover)									
1 Artificial surfaces	***533***	***1564***	***1668***	***6061***	***680***	***641***	***727***	***1727***	***13602***
2 Agricultural areas	***658976***	***12820***	***1196***	***16897***	***6205***	***5536***	***5777***	***6282***	***63030***
2.1+2.2 Arable Land & Permanent Crops	488789	7271	682	10858	2779	3877	2221	2173	33755
2.3+2.4 Pastures & Heterogeneous agricultural areas	170188	5548	514	6039	3426	1658	3557	4110	29275
3 Forests and semi-natural areas	***422760***	***21001***	***409***	***48717***	***23743***	***15132***	***16395***	***40425***	***196391***
3.1 Forests	409623	19793	171	37315	16722	13811	12126	35265	163704
3.2+3.3 Shrub and other semi-natural land	13137	1207	239	11402	7020	1321	4269	5160	32688
4 Wetlands	***92***	***1259***	***0***	***73***	***0***	***26***	***66***	***355***	***1871***
5 Water bodies	***275***	***104***	***13***	***528***	***58***	***179***	***151***	***32***	***1339***
B - TOTAL CONSUMPTION OF LAND COVER RESOURCE	***1082637***	***36747***	***3286***	***72276***	***30686***	***21514***	***23117***	***48821***	***276233***
Land Cover Flows resulting from Changes in the Uses of Land									
LCF1 Urban land management	72	693	1312	734	252	134	218	404	3819
LCF2 Urban sprawl	441	624	414	482	496	301	333	565	3656
LCF3 Extension of economic sites and infrastructures	986	971	638	7713	1136	1291	551	3648	16933
LCF4 Agricultural rotation and intensification	5962	8960	150	10270	3167	3469	3981	3373	39332
LCF5 Conversion of land to agriculture	2262	4048	320	5968	3367	1427	2057	4586	24033
LCF6 Forests creation and management	28456	16893	365	40103	20476	13964	14883	34150	169291
LCF7 Water body creation and management	920	2692	6	1019	493	192	327	219	5868
LCF8 Changes of Land Cover due to natural and multiple causes	688	1867	81	5987	1299	737	767	1876	13302
C - TOTAL LAND COVER FLOWS 1975-1990	***39787***	***36747***	***3286***	***72276***	***30686***	***21514***	***23117***	***48821***	***276233***
D - Final Surface ~ 1990 (D = A-B+C)	***93134***	***1502416***	***166395***	***779449***	***1106338***	***984745***	***1124862***	***1087826***	***7888016***

Land Cover Resource & Use Account - detailed
(by Regions)

Detailed Account		South Bohemia	South Moravia	Prague	North Bohemia	North Moravia	Central Bohemia	East Bohemia	West Bohemia	TOTAL
Initial Surface										
1 Artificial surfaces		***30773***	***80046***	***33399***	***57840***	***79362***	***47202***	***51272***	***38993***	***418887***
1.1	*Urban fabric*	25637	69712	25284	35062	67928	38788	46170	28550	337130
1.2	*Industrial, commercial and transport units*	3439	6606	4220	6631	8164	5771	3074	3454	41359
1.3	*Mines, dump and construction sites*	1011	1787	1781	15487	2628	1452	1523	6021	31690
1.4	*Artificial non-agricultural vegetated areas*	687	1941	2115	660	641	1191	505	968	8708
2 Agricultural areas		***658976***	***959163***	***99194***	***417675***	***587951***	***646600***	***711644***	***576200***	***4657404***
2.1	*Arable Land*	487416	810719	86788	293895	425281	553633	574310	439803	3671844
2.2	*Permanent Crops*	1373	23314	412	10470	1680	5995	2704	489	46437
2.3	*Pastures*	77149	17249	463	26251	19237	7868	23277	41572	213066
2.4	*Heterogeneous agricultural areas*	93039	107881	11530	87059	141753	79105	111353	94337	726057
3 Forests and semi-natural areas		***422760***	***456100***	***32381***	***296936***	***435711***	***284794***	***358584***	***467651***	***2754918***
3.1	*Forests*	409623	440213	31642	260428	403813	276821	346242	428340	2597122
3.2	*Shrub and/or herbaceous vegetation associations*	13137	15509	739	36509	31129	7973	12246	39311	156553
3.3	*Open spaces with little or no vegetation*	0	378	0	0	769	0	97	0	1243
4 Wetlands		***4541***	***1298***	***0***	***1716***	***26***	***73***	***267***	***1225***	***9148***
4.1	*Inland wetlands*	4541	1298	0	1716	26	73	267	1225	9148
4.2	*Coastal wetlands*	0	0	0	0	0	0	0	0	0
5 Water bodies		***18933***	***5809***	***1421***	***5282***	***3288***	***6076***	***3094***	***3757***	***47660***
5.1	*Inland waters*	18933	5809	1421	5282	3288	6076	3094	3757	47660
5.2	*Coastal waters*	0	0	0	0	0	0	0	0	0
A - TOTAL INITIAL SURFACE ~ 1975		***1135984***	***1502416***	***166395***	***779449***	***1106338***	***984745***	***1124862***	***1087826***	***7888016***
Consumption of Land Cover Resource (Supply by Land Cover)										
1 Artificial surfaces		***533***	***1564***	***1668***	***6061***	***680***	***641***	***727***	***1727***	***13602***
1.1	*Urban fabric*	57	424	86	90	183	213	156	173	1383
1.2	*Industrial, commercial and transport units*	38	160	23	20	1	7	8	0	256
1.3	*Mines, dump and construction sites*	386	930	1409	5951	495	393	535	1528	11628
1.4	*Artificial non-agricultural vegetated areas*	53	50	150	0	0	29	28	26	335
2 Agricultural areas		***8317***	***12820***	***1196***	***16897***	***6205***	***5536***	***5777***	***6282***	***63030***
2.1	*Arable Land*	3894	4303	681	7430	2284	3422	1890	2173	26077
2.2	*Permanent Crops*	0	2969	1	3428	495	456	330	0	7678
2.3	*Pastures*	2938	2415	49	1508	1602	158	1963	2185	12818
2.4	*Heterogeneous agricultural areas*	1485	3133	465	4531	1824	1500	1593	1925	16457
3 Forests and semi-natural areas		***30570***	***21001***	***409***	***48717***	***23743***	***15132***	***16395***	***40425***	***196391***
3.1	*Forests*	28500	19793	171	37315	16722	13811	12126	35265	163704
3.2	*Shrub and/or herbaceous vegetation associations*	2069	1207	239	11402	6826	1321	4269	5160	32494
3.3	*Open spaces with little or no vegetation*	0	0	0	0	194	0	0	0	194
4 Wetlands		***92***	***1259***	***0***	***73***	***0***	***26***	***66***	***355***	***1871***
4.1	*Inland wetlands*	92	1259	0	73	0	26	66	355	1871
4.2	*Coastal wetlands*	0	0	0	0	0	0	0	0	0
5 Water bodies		***275***	***104***	***13***	***528***	***58***	***179***	***151***	***32***	***1339***
5.1	*Inland waters*	275	104	13	528	58	179	151	32	1339
5.2	*Coastal waters*	0	0	0	0	0	0	0	0	0
B - TOTAL CONSUMPTION OF LAND COVER RESOURCE		***39787***	***36747***	***3286***	***72276***	***30686***	***21514***	***23117***	***48821***	***276233***
Land Cover Flows resulting from Changes in the Uses of Land										
LCF1	**Urban land management**	***72***	***693***	***1312***	***734***	***252***	***134***	***218***	***404***	***3819***
LCF11	*Urban development/ infilling*	8	50	30	0	0	0	1	0	89
LCF12	*Developped land recycling*	64	643	1282	731	252	134	217	404	3726
LCF13	*Development of green urban areas*	0	0	0	4	0	0	0	0	4
LCF2	**Urban sprawl**	***441***	***624***	***414***	***482***	***496***	***301***	***333***	***565***	***3656***
LCF21	*Urban continuous sprawl*	0	9	0	0	0	0	0	39	48
LCF22	*Urban diffuse sprawl*	441	615	414	482	496	301	333	526	3608
LCF3	**Extension of economic sites and infrastructures**	***986***	***971***	***638***	***7713***	***1136***	***1291***	***551***	***3648***	***16933***
LCF31	*Extension of industrial & commercial sites*	48	183	56	335	474	415	81	144	1736
LCF32	*Extension of transport networks*	0	0	0	165	5	246	0	0	415
LCF33	*Extension of habours*	0	0	0	0	0	0	0	0	0
LCF34	*Extension of airports*	0	17	0	30	0	0	0	0	47
LCF35	*Extension of mines and quarrying areas*	346	428	76	4345	210	417	252	1852	7927
LCF36	*Extension of dumpsites*	50	26		2662	226	182	14	1431	4591
LCF37	*Construction*	542	157	506	176	213	31	75	221	1920
LCF38	*Extension of sport and leisure facilities*	0	160	0	0	8	0	129		297
LCF4	**Agricultural rotation and intensification**	***5962***	***8960***	***150***	***10270***	***3167***	***3469***	***3981***	***3373***	***39332***
LCF41	*Recent extension of pasture, fallow land, set aside*	3041	461	42	851	972	493	891	999	7752
LCF42	*Planting of vineyards, fruit and olive trees over arable & pasture*	0	2587	26	3012	210	1736	472	131	8174
LCF43	*Rotation of annual crops*	0	0	0	0	0	0	0	0	0
LCF44	*Rotation of permanent crops*	0	0	0	0	0	0	0	0	0
LCF45	*Intensification of agriculture*	2921	5911	81	6407	1985	1240	2618	2243	23406
LCF5	**Conversion of land to agriculture**	***2262***	***4048***	***320***	***5968***	***3367***	***1427***	***2057***	***4586***	***24033***
LCF51	*Intensive conversion of forest to agriculture*	436	917	4	677	585	409	495	1156	4679
LCF52	*Intensive conversion of marginal land to agriculture*	5	119		666	105	92	75	59	1121
LCF53	*Diffuse conversion of forest to agriculture*	1442	1948	27	1919	2163	515	976	2588	11578
LCF54	*Diffuse conversion of marginal land to agriculture*	74	117		912	192		155	455	1905
LCF55	*Conversion of wetlands to agriculture*	139	266	13	42	40	82	88	26	696
LCF56	*Conversion of developed areas to agriculture*	165	681	275	1753	281	328	268	301	4054
LCF6	**Forests creation and management**	***28456***	***16893***	***365***	***40103***	***20476***	***13964***	***14883***	***34150***	***169291***
LCF61	*Forests creation*	2320	1280	296	6531	6888	1614	4500	3377	26807
LCF62	*Forests rotation*	0	0	0	0	0	0	0	0	0
LCF63	*Recent felling and transition*	26136	15613	69	33572	13588	12350	10383	30773	142484
LCF7	**Water body creation and management**	920	2692	6	1019	493	192	327	219	5868
LCF71	*Water body creation*	0	0	0	0	0	0	0	0	0
LCF72	*Water body management*	28	1070	0	166	97	26	55	61	1502
LCF8	**Changes of land cover due to natural and multiple causes**	***688***	***1867***	***81***	***5987***	***1299***	***737***	***767***	***1876***	***13302***
LCF81	*Semi-natural rotation*	28	1070	0	166	97	26	55	61	1502
LCF82	*Farmland abandonment without significant woodland creation*	264	579	9	2039	871	341	234	629	4966
LCF83	*Farmland abandonment with woodland creation*	338	193	55	488	327	275	475	279	2430
LCF84	*Other land abandonment (other than farmland)*	12	25	0	2981	0	95	3	885	4001
LCF85	*Forests and shrubs fires*	0	0	0	81	0	0	0	0	81
LCF86	*Coastal erosion*	0	0	0	0	0	0	0	0	0
LCF87	*Impacts of storms, floods…*	0	0	0	0	0	0	0	0	0
LCF89	*Other changes and unknown*	46	0	17	231	5	0	0	22	321
C - TOTAL LAND COVER FLOWS 1975-1990		***39787***	***36747***	***3286***	***72276***	***30686***	***21514***	***23117***	***48821***	***276233***
D - Final Surface ~ 1990 (D = A-B+C)		***1135984***	***1502416***	***166395***	***779449***	***1106338***	***984745***	***1124862***	***1087826***	***7888016***

ANNEX 4: Basic Accounts for the 4 CEE countries

LAND & ECOSYSTEMS ACCOUNTS - BASIC ACCOUNTS (4 CEEC)

Matrix Of Land Cover Changes 1975-1990; CLC Level2/Level 3

FINAL YEAR ⇊ OPENING YEAR ⇉		111 Continuous urban fabric	112 Discontinuous urban fabric	121 Industrial or commercial units	122 Road and rail networks and associated land	123 Port areas	124 Airports	131 Mineral extraction sites	132 Dump sites	133 Construction sites	141 Green urban areas	142 Sport and leisure facilities	211 Non-irrigated arable land	212 Permanently irrigated land	213 Rice fields	221 Vineyards	222 Fruit trees and berry plantations	223 Olive groves	231 Pastures	241 Annual crops associated with permanent crops	242 Complex cultivation patterns	243 Land principally occupied by agriculture with significant areas of natural vegetation	244 Agro-forestry areas	311 Broad-leaved forest	312 Coniferous forest	313 Mixed forest	321 Natural grassland	322 Moors and heathland	323 Sclerophyllous vegetation	324 Transitional woodland shrub	331 Beaches, dunes and sand plains	332 Bare rock	333 Sparsely vegetated areas	334 Burnt areas	335 Glaciers and perpetual snow	411 Inland marshes	412 Peatbogs	421 Salt marshes	422 Salines	423 Intertidal flats	511 Water courses	512 Water bodies	521 Coastal lagoons	522 Estuaries	523 Sea and ocean	**TOTAL OPENING YEAR ~1975**	***Increase (+)***	***Decrease (-)***	***Net Changes 1975-1990***	**TOTAL FINAL YEAR ~1990**
11	Urban fabric	21139	2143942	1584	152	0	19	12	99	95	93	24	2321		0	435	282		302	156	1290	1847		554	429	108	747	15		78	129	9				208						142	658				**2176868**	*31864*	*11788*	*20077*	**2196945**
12	Industrial, commercial and transport units	109	1183	185621	9305	1382	16866	163	0	73			2078			185	16		141	113	490	225		72	91	78	128			274	0	33				83						64	74				**218848**	*21523*	*5673*	*15850*	**234698**
13	Mines, dump and construction sites		3361	1454	289	37		29718	16718	4172		92	2510			122	77		509		48	1125		257	258	148	133			4245	25	97				61						245	1776			6	**67482**	*34997*	*16873*	*18124*	**85606**
14	Artificial non-agricultural vegetated areas	0	116	34						12	10666	33913	26			20			50		71	56		32	52	2	0			39						35							86				**45208**	*1231*	*629*	*602*	**45811**
21	Arable Land	85	12149	7797	720		721	7139	1784	4013	32	135	18636664		43790	48780	25442		66107	7492	241412	83816		22639	1991	1379	51312	631		7220	1891	164	161			3875						1708	11055			3	**19292110**	*327104*	*611656*	*-284552*	**19007558**
22	Permanent Crops	17	973	354		11		39	0	91			34463			409432	422390		435	1125	4738	5200		1809	51	27	2878	129		338	127	43				93						115	34	1			**884912**	*94570*	*53090*	*41480*	**926392**
23	Pastures		586	391	8	5		564	222				47574		56	404	162		1532410	124	2215	57735		4431	585	400	4275	7		4000	537		30			1482	21					221	4451				**1662897**	*163249*	*130487*	*32763*	**1695659**
24	Heterogeneous agricultural areas	49	5811	1772	193	26	0	1436	1013	819	37	211	69174		1	3605	4346		45975	93139	711282	3032747		14553	2305	3035	17172	1093		4607	274	428	102			594						331	3710			2	**4019844**	*525555*	*182676*	*342879*	**4362723**
31	Forests	24	3040	2005	163	51	30	4893	868	3236	55	261	45276		31	1449	1576		14048	252	2776	45354		6680764	3591566	2155349	86518	15329		384763	1060	1533	319	46		2594	70					2208	4658				**13052164**	*272642*	*624485*	*-351843*	**12700321**
32	Shrub and/or herbaceous vegetation associations	6	2904	1681	248	40		3405	2445	679	82	102	62578		266	4980	2206		25191	914	6873	53756		100978	57880	37464	2220413	214996		569637	2912	2080	2746	65		6669	47					1601	9484	30		9	**3395367**	*600286*	*390320*	*209966*	**3605332**
33	Open spaces with little or no vegetation	20	434	179	106			235	46	78			2907			88	94		127	40	361	1552		788	206	131	4216	277		1049	35754	19064	19574			761						907	3347	36		194	**92571**	*19884*	*18179*	*1705*	**94276**
41	Inland wetlands		180	392	0	4		19	65	142			44095		154	114	32		7894	371	250	988		12035	368	13	3933	7		1240	902		65			308500	5295					506	23490	946		196	**412196**	*32699*	*98401*	*-65702*	**346493**
42	Coastal wetlands																																														**0**	*0*	*0*	*0*	**0**
51	Inland waters		798	587	277	98		529	94	659	40	66	13566		1	120	29		2470	63	425	2300		7103	336	56	1588	137		1876	3877	4	9			14942					122573	264041	860		0	**439527**	*71271*	*52913*	*18358*	**457885**
52	Coastal waters		19	9		86		10	2	18			28			5											33				216					1164							400	63854		16822	**82666**	*2283*	*1990*	*293*	**82959**
		21451	2175494	203861	11461	1740	17636	48163	23355	14088	11006	34805	18963258	0	44299	469740	456652	0	1695659	103790	972232	3286701	0	6846013	3656118	2198189	2393345	232624	0	979364	47704	23454	23007	111	0	341061	5433	0	0	0	130622	327263	65726	0	17233	**45842658**	*2199158*	*2199158*	*0*	**45842658**

LAND & ECOSYSTEMS ACCOUNTS - BASIC ACCOUNTS (4 CEEC)

Account of Land Cover Changes
(by Dominant Landscape Types)

Landscape types	A1 URBAN DENSE AREAS				A2 DISPERSED URBAN AREAS				B1 BROAD PATTERN INTENSIVE AGRICULTURE				*B11 LOWLAND BROAD PATTERN INTENSIVE AGRICULTURE*				*B12 UPLAND BROAD PATTERN INTENSIVE AGRICULTURE*				*B13 MOUNTAIN BROAD PATTERN INTENSIVE AGRICULTURE*				B2 COMPOSITE RURAL LANDSCAPE				*B21 LOWLAND COMPOSITE RURAL LANDSCAPE*				*B22 UPLAND COMPOSITE RURAL LANDSCAPE*				*B23 MONTAIN COMPOSITE RURAL LANDSCAPE*			
Land Cover (Corine Land Cover level 2)	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990
1. Artificial surfaces	**508668**	**27195**	**10075**	**525787**	**197171**	**11131**	**3514**	**204788**	**613388**	**15935**	**6711**	**622611**	**541005**	**14035**	**5886**	**549154**	**72383**	**1900**	**826**	**73457**	**0**	**0**	**0**	**0**	**85588**	**806**	**147**	**86247**	**33022**	**178**	**30**	**33170**	**39945**	**459**	**58**	**40346**	**12621**	**169**	**58**	**12732**
11 Urban fabric	406938	8420	2561	412797	159438	2334	1018	160754	542201	6754	2786	546170	477451	6056	2507	481000	64751	698	279	65170					82534	424	107	82852	31465	55	18	31502	39134	221	58	39297	11936	149	30	12053
12 Industrial, commercial and transport units	63721	6589	1643	68666	24194	2535	366	26362	62431	5860	2585	65706	56632	5537	2518	59651	5799	323	67	6056					2438	178	1	2614	1339	122	1	1460	639	34		673	459	22	0	481
13 Mines, dump and construction sites	22870	11564	5705	28729	6568	6215	2046	10737	4205	3137	1337	6004	2961	2268	857	4372	1244	868	480	1632					297	187	39	445	76	0	11	66	121	187	0	308	100		28	72
14 Artificial non-agricultural vegetated areas	15140	622	166	15595	6971	47	84	6935	4551	183	3	4731	3962	173	3	4132	589	10		599					319	17	0	335	142			142	51	17		67	126			126
2. Agricultural areas	**2014053**	**86733**	**74833**	**2025953**	**1381346**	**33530**	**34497**	**1380380**	**9736222**	**272997**	**240084**	**9769135**	**8628147**	**259348**	**227061**	**8660433**	**1107976**	**13649**	**13023**	**1108602**	**100**	**0**	**0**	**100**	**1024426**	**162962**	**159661**	**1027727**	**516230**	**106187**	**103177**	**519240**	**356118**	**37913**	**38348**	**355683**	**152079**	**18862**	**18136**	**152804**
21 Arable Land	1390212	26847	43567	1373492	1169863	12751	24987	1157627	8708801	98703	177711	8629793	7718962	92061	171476	7639547	989739	6642	6235	990146	100			100	451418	11680	130596	332509	308227	4758	97121	215864	117904	4394	30361	91938	25287	2528	3108	24707
22 Permanent Crops	137951	11145	5650	143446	47784	3662	3504	47942	170795	34534	26329	179000	153690	31633	23819	161503	17105	2902	2510	17497					82131	821	468	82484	42137	404	170	42370	34192	331	296	34227	5802	86	1	5887
23 Pastures	88574	5959	7784	86749	40507	3400	2623	41285	467048	43654	18142	492559	446323	42172	16815	471680	20725	1481	1327	20879					117066	19256	10739	125584	83376	9416	3254	89538	13997	1878	881	14994	19693	7963	6604	21052
24 Heterogeneous agricultural areas	397317	42781	17833	422266	123192	13717	3383	133526	389578	96106	17901	467784	309172	93482	14951	387703	80406	2624	2950	80081					373810	131205	17864	487150	82489	91616	2632	171467	190024	31316	6816	214525	101296	8285	8423	101158
3. Forest and semi-natural areas	**1256853**	**55993**	**89399**	**1223448**	**282901**	**18627**	**27332**	**274196**	**1096953**	**116520**	**151278**	**1062195**	**825560**	**103524**	**136438**	**792646**	**271293**	**12995**	**14840**	**269449**	**100**	**0**	**0**	**100**	**574635**	**23366**	**28139**	**569863**	**130691**	**11349**	**14725**	**127315**	**276434**	**6551**	**7117**	**275867**	**167510**	**5467**	**6297**	**166680**
31 Forests	966949	25188	34629	957518	215520	6375	12948	208947	801150	39995	61967	779178	545961	38214	49541	534634	255090	1781	12426	244444	100	0		100	386686	9931	15361	383256	76777	7242	4806	79213	183679	2228	5111	180796	128229	463	5444	123247
32 Shrub and/or herbaceous vegetation associations	271731	29609	50311	251029	61090	11258	12288	60059	286732	70224	86152	270804	271569	59156	83789	246936	15163	11068	2363	23868	0		0		184626	13307	12532	185401	53408	4187	9926	47596	91937	4194	1758	94371	39281	5006	853	43434
33 Open spaces with little or no vegetation	18174	1186	4459	14901	6292	995	2096	5190	9071	6300	3159	12212	8031	6154	3109	11076	1040	147	50	1137					1324	126	247	1206	506	0		506	818	129	247	700				
4. Wetlands	**6034**	**1737**	**1096**	**6675**	**6762**	**682**	**2366**	**5079**	**57405**	**11937**	**23542**	**45799**	**57058**	**11924**	**23389**	**45592**	**347**	**13**	**153**	**207**	**0**	**0**	**0**	**0**	**6449**	**602**	**225**	**6826**	**6332**	**215**	**225**	**6322**	**116**	**387**	**0**	**503**	**0**	**0**	**0**	**0**
41 Inland wetlands	6034	1737	1096	6675	6762	682	2366	5079	57405	11937	23542	45799	57058	11924	23389	45592	347	13	153	207					6449	602	225	6826	6332	215	225	6322	116	387		503	0			0
42 Coastal wetlands									0	0	0	0													0	0	0	0												
5. Water bodies	**41159**	**7592**	**3847**	**44903**	**51644**	**6466**	**2727**	**55382**	**116422**	**20351**	**16124**	**120649**	**112933**	**19741**	**15797**	**116877**	**3489**	**611**	**327**	**3772**	**0**	**0**	**0**	**0**	**2481**	**775**	**340**	**2916**	**1858**	**558**	**330**	**2087**	**525**	**217**	**3**	**739**	**98**	**0**	**7**	**91**
51 Inland waters	40596	7576	3811	44354	50600	6423	2639	54384	116422	20351	16124	120649	112933	19741	15797	116877	3489	611	327	3772					2481	775	340	2916	1858	558	336	2087	525	217	3	739	98		7	91
52 Coastal waters	563	21	36	549	1044	42	88	998	0	0	0	0													0	0	0	0												
TOTAL	**3826767**	**179250**	**179250**	**3826767**	**1919825**	**70436**	**70436**	**1919825**	**11620390**	**437740**	**437740**	**11620390**	**10164703**	**408572**	**408572**	**10164703**	**1455488**	**29168**	**29168**	**1455488**	**200**	**0**	**0**	**200**	**1693580**	**188512**	**188512**	**1693580**	**688134**	**118487**	**118487**	**688134**	**673138**	**45527**	**45527**	**673138**	**332308**	**24498**	**24498**	**332308**

Landscape types	C1 FORESTED LANDSCAPE				*C11 LOWLAND FORESTED LANDSCAPE*				*C12 UPLAND FORESTED LANDSCAPE*				*C13 MOUNTAIN FORESTED LANDSCAPE*				C2 OPEN SEMI-NATURAL OR NATURAL				*C21 LOWLAND OPEN SEMI-NATURAL OR*				*C22 UPLAND OPEN SEMI-NATURAL OR*				*C23 MOUNTAIN OPEN SEMI-NATURAL OR*				C3 LANDSCAPE WITH NO DOMINANT LAND				*C31 LOWLAND LANDSCAPE WITH NO*				*C32 UPLAND LANDSCAPE WITH NO*				*C33 MOUNTAIN LANDSCAPE WITH NO*				TOTAL			
Land Cover (Corine Land Cover level 2)	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	net Changes	1990
1. Artificial surfaces	**179623**	**8421**	**3210**	**184834**	**3744**	**73**	**18**	**3799**	**87241**	**4358**	**1271**	**90328**	**88638**	**3991**	**1921**	**90708**	**71597**	**2787**	**1346**	**73039**	**23640**	**1626**	**942**	**24325**	**19847**	**227**	**102**	**19972**	**28111**	**934**	**302**	**28742**	**852371**	**23340**	**9959**	**865752**	**299168**	**7139**	**2224**	**304083**	**487657**	**13992**	**6833**	**494816**	**65547**	**2209**	**902**	**66854**	**2508406**	**89615**	**34962**	**54653**	**2563059**
11 Urban fabric	155072	3320	1565	156827	3529	17	0	3546	73541	990	335	74196	78002	2313	1230	79085	62758	1337	850	63245	18806	939	562	19183	18827	200	102	18925	25125	198	186	25138	767926	9274	2900	774300	272257	2865	1053	274069	436878	5282	1503	440657	58791	1127	344	59574	2176868	31864	11788	20077	2196945
12 Industrial, commercial and transport units	10882	1473	272	12083	150		18	131	7120	756	41	7835	3613	717	213	4117	3504	462	364	3602	1677	378	352	1703	930	28	0	958	896	57	12	941	51679	4426	441	55663	19875	1579	262	21191	28674	2215	169	30720	3130	632	10	3752	218848	21523	5673	15850	234698
13 Mines, dump and construction sites	9749	3616	1342	12024		56		56	4996	2600	864	6732	4753	960	478	5235	1663	988	105	2547	288	309		597	86			86	1289	679	105	1863	22130	9290	6300	25120	3799	2566	833	5532	16321	6347	4964	17703	2010	378	503	1885	67482	34997	16873	18124	85606
14 Artificial non-agricultural vegetated areas	3919	12	31	3900	66			66	1583	12	31	1564	2270			2270	3672	0	27	3645	2869		27	2842	3			3	800			800	10637	349	317	10670	3238	129	75	3292	5783	148	196	5735	1616	72	45	1643	45208	1231	629	602	45811
2. Agricultural areas	**1343632**	**101725**	**91462**	**1353895**	**33065**	**1179**	**1165**	**33079**	**697964**	**37330**	**36083**	**699211**	**612603**	**63216**	**54214**	**621605**	**768247**	**70425**	**39613**	**799059**	**302643**	**52027**	**16359**	**338312**	**237329**	**6565**	**11689**	**232214**	**228275**	**11833**	**11575**	**228533**	**9591835**	**382106**	**337758**	**9636182**	**3629910**	**194378**	**163156**	**3661132**	**5319379**	**139196**	**129211**	**5329363**	**642545**	**48533**	**45391**	**645687**	**25859762**	**1110478**	**977908**	**132570**	**25992332**
21 Arable Land	494365	17699	17664	494401	15561	179	879	14861	363873	8686	12575	359984	114931	8835	4210	119555	450916	40954	26477	465393	243442	38313	12983	268772	133968	1713	6590	129092	73506	928	6904	67530	6626535	118469	190660	6554344	2728222	56394	120639	2663977	3629178	51121	59018	3621279	269137	10954	11004	269088	19292110	327104	611656	-284552	19007558
22 Permanent Crops	52105	1460	785	52781	2053	1	0	2054	25972	881	318	26535	24081	578	466	24192	34656	8406	956	42106	15239	7704	757	22186	9788	296	189	9895	9629	406	16	10026	359489	34541	15398	378632	173067	24644	9647	188064	162747	9273	5664	166357	23675	624	88	24211	884912	94570	53090	41480	926392
23 Pastures	181860	19885	34815	166930	1278	132	121	1290	68443	8573	9298	67718	112138	11179	25396	97922	60196	4787	3360	61624	31554	3503	2458	32599	13554	717	266	14005	15088	567	636	15019	707646	66307	53024	720929	320164	24413	15897	328680	294950	26290	21324	299916	92531	15605	15803	92333	1662897	163249	130487	32763	1695659
24 Heterogeneous agricultural areas	615302	62686	38199	639783	14174	866	166	14874	239676	19190	13892	244974	361452	42624	24141	379935	222479	16277	8820	229936	12408	2508	161	14755	80019	3838	4634	79223	130052	9931	4025	135958	1898165	162788	78678	1982277	408458	68922	16974	480411	1232506	52511	43205	1241811	257202	21350	18497	260055	4018944	525555	182676	342879	4362723
3. Forest and semi-natural areas	**5823139**	**304371**	**321362**	**5806148**	**38132**	**1058**	**1230**	**37960**	**1392727**	**48087**	**53143**	**1387671**	**4392280**	**255226**	**266988**	**4380518**	**1357868**	**75851**	**65875**	**1367845**	**178377**	**20163**	**13854**	**184686**	**286541**	**13206**	**8196**	**291551**	**892950**	**42482**	**43825**	**891608**	**6147750**	**298083**	**349600**	**6096234**	**1269206**	**87235**	**112761**	**1243679**	**3807220**	**146593**	**167691**	**3786121**	**1071325**	**64256**	**69147**	**1066433**	**16540102**	**892812**	**1032984**	**-140172**	**16399929**
31 Forests	4929909	83132	231287	4781754	30129	213	1046	29296	1274762	10826	41983	1243604	3625018	72093	188257	3508854	702838	24427	37874	689390	44624	11731	3942	52412	137731	2435	4967	135199	520483	10262	28966	501779	5047114	83585	230420	4900279	967356	39584	50619	956120	3217845	32187	125978	3124054	861913	11813	53622	820104	13052164	272642	624485	-351843	12700321
32 Shrub and/or herbaceous vegetation associations	875934	218883	89309	1005508	8003	845	184	8664	116425	37122	11021	142526	751506	180916	78104	854318	637306	48666	25866	660106	126516	6943	9478	123981	148270	10771	3157	155885	362521	30951	13232	380241	1077948	208339	113862	1172425	292318	42826	59611	275533	581576	113549	39745	655380	204055	51964	14506	241512	3395367	600286	390320	209966	3605333
33 Open spaces with little or no vegetation	17297	2356	766	18887					1540	135	139	1541	15756	2216	627	17346	17724	2759	2134	18349	7238	1489	435	8293	541		73	468	9945	1269	1627	9588	22688	6159	5317	23530	9532	4825	2331	12025	7799	856	1968	6688	5357	478	1018	4817	92571	19884	18179	1705	94276
4. Wetlands	**5640**	**164**	**441**	**5363**	**0**	**0**	**0**	**0**	**2321**	**130**	**65**	**2386**	**3319**	**34**	**376**	**2977**	**273196**	**11393**	**52912**	**231677**	**272747**	**11354**	**52766**	**231335**	**273**	**38**	**5**	**306**	**176**	**0**	**141**	**35**	**56709**	**6184**	**17816**	**45074**	**51841**	**3877**	**16983**	**38735**	**3890**	**835**	**784**	**3940**	**979**	**1473**	**52**	**2399**	**412196**	**32699**	**98401**	**-65702**	**346493**
41 Inland wetlands	5640	164	441	5363					2321	130	65	2386	3319	34	376	2977	273196	11393	52912	231677	272747	11354	52766	231335	273	38	5	306	176	0	141	35	56709	6184	17816	45074	51841	3877	16983	38735	3890	835	784	3940	979	1473	52	2399	412196	32699	98401	-65702	346493
42 Coastal wetlands	0	0	0	0									0	0	0	0																	0	0	0	0											0	0	0	0	0	0
5. Water bodies	**23909**	**2758**	**964**	**25703**	**1005**	**105**	**2**	**1108**	**12659**	**1058**	**400**	**13317**	**10245**	**1595**	**562**	**11278**	**168720**	**15193**	**15904**	**168009**	**167108**	**14474**	**15725**	**165858**	**1152**	**79**	**132**	**1099**	**460**	**640**	**47**	**1053**	**117859**	**20419**	**14997**	**123282**	**65996**	**12624**	**10129**	**68492**	**45031**	**7459**	**3554**	**48936**	**6831**	**336**	**1314**	**5854**	**522193**	**73554**	**54903**	**18651**	**540844**
51 Inland waters	23909	2758	964	25703	1005	105	2	1108	12659	1058	400	13317	10245	1595	562	11278	87661	12974	14037	86597	86050	12255	13858	84446	1152	79	132	1099	460	640	47	1053	117859	20419	14997	123282	65996	12624	10129	68492	45031	7459	3554	48936	6831	336	1314	5854	439527	71271	52913	18358	457885
52 Coastal waters	0	0	0	0													81059	2219	1867	81412	81059	2219	1867	81412									0	0	0	0											82666	2283	1990	293	82959
TOTAL	**7375943**	**417438**	**417438**	**7375943**	**75946**	**2415**	**2415**	**75946**	**2192913**	**90963**	**90963**	**2192913**	**5107085**	**324061**	**324061**	**5107085**	**2639629**	**175650**	**175650**	**2639629**	**944515**	**99845**	**99645**	**944515**	**545142**	**20116**	**20116**	**545142**	**1149971**	**55896**	**55896**	**1149971**	**16766525**	**730132**	**730132**	**16766525**	**5316121**	**305256**	**305256**	**5316121**	**9663176**	**308078**	**308073**	**9663176**	**1787227**	**116807**	**116807**	**1787227**	**45842658**	**2199158**	**2199158**	**0**	**45842658**

LAND & ECOSYSTEMS ACCOUNTS - BASIC ACCOUNTS (4 CEEC)

Account of Formation of Land Cover - summary

Consumption of land cover										***Formation of land cover***							
1	2.1+2.2	2.3+2.4	3.1	3.2+3.3	4	5				1	2.1+2.2	2.3+2.4	3.1	3.2+3.3	4	5	
Artificial surfaces	Arable land & Permanent crops	Pastures & Mixed agricultural areas	Forests	Shrub and other semi-natural land	Wetlands	Water bodies	Total		Land cover flows	Artificial surfaces	Arable land & Permanent crops	Pastures & Mixed agricultural areas	Forests	Shrub and other semi-natural land	Wetlands	Water bodies	Total
9001	32	37	55	82	0	40	9247	LCF1	Urban land management	9247	0	0	0	0	0	0	9247
0	13224	6446	3064	3365	180	817	27095	LCF2	Urban sprawl	27095	0	0	0	0	0	0	27095
0	22805	6661	11506	9244	621	2436	53273	LCF3	Extension of economic sites and infrastructures	53273	0	0	0	0	0	0	53273
0	429994	173637	0	0	0	0	603631	LCF4	Agricultural rotation and intensification	0	234007	369624	0	0	0	0	603631
14493	0	0	110762	161935	53898	19007	360096	LCF5	Conversion of land to agriculture	0	187667	172429	0	0	0	0	360096
2080	27897	0	489522	197446	12416	7495	736856	LCF6	Forests creation and management	0	0	0	247333	489522	0	0	736856
1861	11089	8161	4658	12831	0	0	38600	LCF7	Water body creation and management	0	0	0	0	0	0	38600	38600
7527	159705	118220	4918	23598	31286	25108	370361	LCF8	Changes of land cover due to natural and multiple causes	0	0	146751	25309	130648	32699	34954	370361
34962	**664746**	**313162**	**624485**	**408499**	**98401**	**54903**	**2199158**		**Sub/Total Flows**	**89615**	**421674**	**688804**	**272642**	**620170**	**32699**	**73554**	**2199158**
54653	***-243072***	***375642***	***-351843***	***211671***	***-65702***	***18651***			***Net Formation of Land Cover***								
89615	**421674**	**688804**	**272642**	**620170**	**32699**	**73554**	**2199158**		**TOTAL**	**89615**	**421674**	**688804**	**272642**	**620170**	**32699**	**73554**	**2199158**

Land Cover stock 1975	**2508406**	**20177021**	**5682740**	**13052164**	**3487938**	**412196**	**522193**	**45842658**
Net Formation of Land Cover	*54653*	*-243072*	*375642*	*-351843*	*211671*	*-65702*	*18651*	
Land Cover stock 1990	**2563059**	**19933950**	**6058382**	**12700321**	**3699609**	**346493**	**540844**	**45842658**

LAND & ECOSYSTEMS ACCOUNTS - BASIC ACCOUNTS (4 CEEC)

Account of Formation of Land Cover - detailed

			1	1.1	111	112	1.2	121	122	123	124	1.3	131	132	133	1.4	141	142	*2*	2.1	211	212	213	2.2	221	222	223	2.3	231	2.4	241	242	243	244	*3*	3.1	311
			ARTIFICIAL SURFACES	**Urban fabric**	Continuous urban fabric	Discontinuous urban fabric	**Industrial, commercial and transport units**	Industrial or commercial units	Road and rail networks and associated land	Port areas	Airports	**Mines, dump and construction sites**	Mineral extraction sites	Dump sites	Construction sites	**Artificial non-agricultural vegetated areas**	Green urban areas	Sport and leisure facilities	*AGRICULTURAL AREAS*	**Arable Land**	Non-irrigated arable land	Permanently irrigated land	Rice fields	**Permanent Crops**	Vineyards	Fruit trees and berry plantations	Olive groves	**Pastures**	Pastures	**Heterogeneous agricultural areas**	Annual crops associated with permanent crops	Complex cultivation patterns	Agriculture land with significant areas of natural vegetation	Agro-forestry areas	*FORESTS AND SEMI-NATURAL AREAS*	**Forests**	Broad-leaved forest
Consumption of land cover (-)																																				
LCF1	**Urban land management**		*9001*	2078			1528					5233				161			*70*	32				0				0		37					*137*	55	
	LCF11	Urban development/ infilling	*161*													161			*0*																*0*		
	LCF12	Developped land recycling	*8746*	1985			1528					5233							*0*																*0*		
	LCF13	Development of green urban areas	*93*	93															*70*	32										37					*137*	55	
LCF2	**Urban sprawl**		*0*	0			0					0				0			*19670*	12234				990				586		5860					*6429*	3064	
	LCF21	Urban continuous sprawl	*0*																*152*	85				17						49					*51*	24	
	LCF22	Urban diffuse sprawl	*0*																*19518*	12149				973				586		5811					*6378*	3040	
LCF3	**Extension of economic sites and infrastructures**		*0*	0			0					0				0			*29466*	22310				495				1190		5471					*20750*	11506	
	LCF31	Extension of industrial & commercial sites	*0*																*10314*	7797				354				391		1772					*3865*	2005	
	LCF32	Extension of transport networks	*0*																*921*	720								8		193					*517*	163	
	LCF33	Extension of habours	*0*																*42*					11				5		26					*91*	51	
	LCF34	Extension of airports	*0*																*721*	721										0					*30*	30	
	LCF35	Extension of mines and quarrying areas	*0*																*9178*	7139				39				564		1436					*8533*	4893	
	LCF36	Extension of dumpsites	*0*																*3019*	1784				0				222		1013					*3359*	868	
	LCF37	Construction	*0*																*4924*	4013				91						819					*3993*	3236	
	LCF38	Extension of sport and leisure facilities	*0*																*346*	135										211					*363*	261	
LCF4	**Agricultural rotation and intensification**		*0*	0			0					0				0			*603631*	389233				40762				50536		123101					*0*	0	
	LCF41	Recent extension of pasture, fallow land, set aside	*0*																*353929*	307519				435						45975					*0*		
	LCF42	Planting of vineyards, fruit and olive trees over arable & pasture	*0*																*90231*	81714								565		7952					*0*		
	LCF43	Rotation of annual crops	*0*																*0*																*0*		
	LCF44	Rotation of permanent crops	*0*																*0*																*0*		
	LCF45	Intensification of agriculture	*0*																*159472*					40326				49970		69175					*0*		
LCF5	**Conversion of land to agriculture**		*14493*	6633			3247					4391				222			*0*	0				0				0		0					*272697*	110762	
	LCF51	Intensive conversion of forest to agriculture	*0*																*0*																*48584*	48584	
	LCF52	Intensive conversion of marginal land to agriculture	*0*																*0*																*74073*		
	LCF53	Diffuse conversion of forest to agriculture	*0*																*0*																*62178*	62178	
	LCF54	Diffuse conversion of marginal land to agriculture	*0*																*0*																*87861*		
	LCF55	Conversion of wetlands to agriculture	*0*																*0*																*0*		
	LCF56	Conversion of developed areas to agriculture	*14493*	6633			3247					4391				222			*0*																*0*		
LCF6	**Forests creation and management**		*2080*	1091			241					663				86			*27897*	26010				1887				0		0					*686968*	489522	
	LCF61	Forests creation	*2080*	1091			241					663				86			*27897*	26010				1887											*197446*		
	LCF62	Forests rotation	*0*																*0*																*0*		
	LCF63	Recent felling and transition	*0*																*0*																*489522*	489522	
LCF7	**Water body creation and management**		*1861*	0			0					1776				86			*19250*	11055				34				4451		3710					*17488*	4658	
	LCF71	Water body creation	*1861*									1776				86			*19250*	11055				34				4451		3710					*17488*	4658	
	LCF72	Water body management	*0*																*0*																*0*		
LCF8	**Changes of land cover due to natural and multiple causes**		*7527*	1985			657					4811				74			*277925*	150782				8922				73724		44496					*28516*	4918	
	LCF81	Semi-natural rotation	*0*																*0*																*20757*		
	LCF82	Farmland abandonment without significant woodland creation	*0*																*246268*	145196				8714				68088		24269					*0*		
	LCF83	Farmland abandonment with woodland creation	*0*																*25309*									5416		19893					*0*		
	LCF84	Other land abandonment (other than farmland)	*5949*	977			435					4499				39			*0*																*0*		
	LCF85	Forests and shrubs fires	*0*																*0*																*111*	46	
	LCF86	Coastal erosion	*6*									6							*5*	3										2					*203*		
	LCF87	Impacts of storms, floods…	*452*	142			64					245							*2375*	1708				115				221		331					*4716*	2208	
	LCF89	Other changes and unknown	*1120*	866			158					61				35			*3968*	3875				93											*2729*	2664	
Total consumption of cover			*34962*	*11788*			*5673*					*16873*				*629*			*977908*	*611656*				*53090*				*130487*		*182676*					*1032984*	*624485*	
Formation of land cover (+)																																				
LCF1	**Urban land management**		*9247*	4769	109	4660	3569	3072	441	37	19	454	175	99	180	455	339	116	*0*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*0*	0	0
	LCF11	Urban development/ infilling	*161*	116	0	116	34	34				12			12				*0*																*0*		
	LCF12	Developped land recycling	*8746*	4653	109	4544	3535	3038	441	37	19	442	175	99	168	116		116	*0*																*0*		
	LCF13	Development of green urban areas	*339*													339	339		*0*																*0*		
LCF2	**Urban sprawl**		*27095*	27095	203	26893	0	0	0	0	0	0	0	0	0	0	0	0	*0*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*0*	0	0
	LCF21	Urban continuous sprawl	*203*	203	203														*0*																*0*		
	LCF22	Urban diffuse sprawl	*26893*	26893		26893													*0*																*0*		
LCF3	**Extension of economic sites and infrastructures**		*53273*	0	0	0	17954	15168	1715	321	751	34543	18270	6538	9735	776	0	776	*0*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*0*	0	0
	LCF31	Extension of industrial & commercial sites	*15168*				15168	15168											*0*																*0*		
	LCF32	Extension of transport networks	*1715*				1715		1715										*0*																*0*		
	LCF33	Extension of habours	*321*				321			321									*0*																*0*		
	LCF34	Extension of airports	*751*				751				751								*0*																*0*		
	LCF35	Extension of mines and quarrying areas	*18270*									18270	18270						*0*																*0*		
	LCF36	Extension of dumpsites	*6538*									6538		6538					*0*																*0*		
	LCF37	Construction	*9735*									9735			9735				*0*																*0*		
	LCF38	Extension of sport and leisure facilities	*776*													776		776	*0*																*0*		
LCF4	**Agricultural rotation and intensification**		*0*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*603631*	151269	151211	0	57	82739	52789	29950	0	112517	112517	257107	8742	248366	0	0	*0*	0	0
	LCF41	Recent extension of pasture, fallow land, set aside	*0*																*353929*									112517	112517	241412		241412			*0*		
	LCF42	Planting of vineyards, fruit and olive trees over arable & pasture	*0*																*90231*					82739	52789	29950				7492	7492				*0*		
	LCF43	Rotation of annual crops	*0*																*0*																*0*		
	LCF44	Rotation of permanent crops	*0*																*0*																*0*		
	LCF45	Intensification of agriculture	*0*																*159472*	151269	151211		57							8203	1250	6954			*0*		
LCF5	**Conversion of land to agriculture**		*0*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*360096*	175836	175383	0	452	11831	7520	4311	0	50733	50733	121696	1909	12584	107203	0	*0*	0	0
	LCF51	Intensive conversion of forest to agriculture	*0*																*48584*	45307	45276		31	3025	1449	1576				252	252					*0*		
	LCF52	Intensive conversion of marginal land to agriculture	*0*																*74073*	65751	65485		266	7369	5068	2300				954	954					*0*		
	LCF53	Diffuse conversion of forest to agriculture	*0*																*62178*									14048	14048	48130		2776	45354			*0*		
	LCF54	Diffuse conversion of marginal land to agriculture	*0*																*87861*									25319	25319	62543		7234	55308			*0*		
	LCF55	Conversion of wetlands to agriculture	*0*																*72905*	57844	57689		155	300	239	61		10364	10364	4397	434	675	3288			*0*		
	LCF56	Conversion of developed areas to agriculture	*0*																*14493*	6934	6934		0	1137	763	374		1002	1002	5421	269	1899	3253			*0*		
LCF6	**Forests creation and management**		*0*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*0*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*736856*	247333	146266
	LCF61	Forests creation	*0*																*0*																*247333*	247333	146266
	LCF62	Forests rotation	*0*																*0*																*0*		
	LCF63	Recent felling and transition	*0*																*0*																*489522*		
LCF7	**Water body creation and management**		*0*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*0*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*0*	0	0
	LCF71	Water body creation	*0*																*0*																*0*		
	LCF72	Water body management	*0*																*0*																*0*		
LCF8	**Changes of land cover due to natural and multiple causes**		*0*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*146751*	0	0	0	0	0	0	0	0	0	0	146751	0	0	146751	0	*155957*	25309	18984
	LCF81	Semi-natural rotation	*0*																*0*																*18459*		
	LCF82	Farmland abandonment without significant woodland creation	*0*																*146751*											146751			146751		*97419*		
	LCF83	Farmland abandonment with woodland creation	*0*																*0*																*25309*	25309	18984
	LCF84	Other land abandonment (other than farmland)	*0*																*0*																*5949*		
	LCF85	Forests and shrubs fires	*0*																*0*																*111*		
	LCF86	Coastal erosion	*0*																*0*																*0*		
	LCF87	Impacts of storms, floods…	*0*																*0*																*0*		
	LCF89	Other changes and unknown	*0*																*0*																*8709*		
Total formation of cover			*89615*	*31864*	*312*	*31553*	*21523*	*18240*	*2156*	*358*	*770*	*34997*	*18445*	*6637*	*9915*	*1231*	*339*	*892*	*1110478*	*327104*	*326595*	*0*	*509*	*94570*	*60308*	*34262*	*0*	*163249*	*163249*	*525555*	*10650*	*260950*	*253954*	*0*	*892812*	*272642*	*165250*
Net formation of cover			*54653*	*20077*			*15850*					*18124*				*602*			*132570*	*-284552*				*41480*				*32763*		*342879*					*-140172*	*-351843*	

TOTAL OPENING YEAR ~ 1975			*2508406*	2176868			218848					67482				45208			***25859762***	19292110				884912				1662897		4019844					***16540102***	13052164	
TOTAL FINAL YEAR ~ 1990			*2563059*	2196945	21451	2175494	234698	203861	11461	1740	17636	85606	48163	23355	14088	45811	11006	34805	***25992332***	19007558	18963258		44299	926392	469740	456652		1695659	1695659	4362723	103790	972232	3286701		***16399929***	12700321	6846013

312 Coniferous forest	313 Mixed forest	3.2 Shrub and/or herbaceous vegetation associations	321 Natural grassland	322 Moors and heathland	323 Sclerophyllous vegetation	324 Transitional woodland shrub	3.3 Open spaces with little or no vegetation	331 Beaches, dunes and sand plains	332 Bare rock	333 Sparsely vegetated areas	334 Burnt areas	335 Glaciers and perpetual snow	4 WETLANDS	4.1 Inland wetlands	411 Inland marshes	412 Peatbogs	4.2 Coastal wetlands	421 Salt marshes	422 Salines	423 Intertidal flats	5 WATER BODIES	5.1 Inland waters	511 Water courses	512 Water bodies	5.2 Coastal waters	521 Coastal lagoons	522 Estuaries	523 Sea and ocean	TOTAL
		82					0						0	0			0				40	40			0				9247
													0								0								161
													0								0								8746
		82											0								40	40							339
		2910					454						180	180			0				817	798			19				27095
		6					20						0								0								203
		2904					434						180	180							817	798			19				26893
		8599					645						621	621			0				2436	2311			125				53273
		1681					179						392	392							596	587			9				15168
		248					106						0	0							277	277							1715
		40											4	4							184	98			86				321
													0								0								751
		3405					235						19	19							540	529			10				18270
		2445					46						65	65							95	94			2				6538
		679					78						142	142							677	659			18				9735
		102											0								66	66							776
		0					0						0	0			0				0	0			0				603631
													0								0								353929
													0								0								90231
													0								0								0
													0								0								0
													0								0								159472
		156766					5169						53898	53898			0				19007	18974			33				360096
													0								0								48584
		70945					3129						0								0								74073
													0								0								62178
		85821					2041						0								0								87861
													53898	53898							19007	18974			33				72905
													0								0								14493
		196321					1124						12416	12416			0				7495	7495			0				736856
		196321					1124						12416	12416							7495	7495							247333
													0								0								0
													0								0								489522
		9484					3347						0	0			0				0	0			0				38600
		9484					3347						0								0								38600
													0								0								0
		16158					7440						31286	31286			0				25108	23295			1813				370361
		14454					6303						29616	29616							15803	15803							66176
													0								1164				1164				247431
													0								0								25309
													0								0								5949
		65											0								0								111
		9					194						196	196							0	0							410
		1601					907						506	506							0								8049
		30					36						968	968							8141	7492			649				16926
		390320					18179						98401	98401			0				54903	52913			1990				2199158
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9247
													0								0								161
													0								0								8746
													0								0								339
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27095
													0								0								203
													0								0								26893
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	53273
													0								0								15168
													0								0								1715
													0								0								321
													0								0								751
													0								0								18270
													0								0								6538
													0								0								9735
													0								0								776
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	603631
													0								0								353929
													0								0								90231
													0								0								0
													0								0								0
													0								0								159472
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	360096
													0								0								48584
													0								0								74073
													0								0								62178
													0								0								87861
													0								0								72905
													0								0								14493
61662	39405	486610	86518	15329	0	384763	2912	1060	1533	319	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	736856
61662	39405												0								0								247333
													0								0								0
		486610	86518	15329		384763	2912	1060	1533	319			0								0								489522
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	38600	38600	0	38600	0	0	0	0	38600
													0								38600	38600		38600					38600
													0								0								0
2890	3435	113676	86414	2298	0	24964	16972	10890	2857	3113	111	0	32699	32699	32561	138	0	0	0	0	34954	32671	8049	24623	2283	1873	0	410	370361
		10721	8149	284		2288	7738	2912	2080	2746			22419	22419	22372	47					25297	23490		23490	1807	1807			66176
		93662	75636	1861		16165	3757	2829	634	293			3261	3261	3240	21					0								247431
2890	3435												0								0								25309
		5658	1008	15		4635	291	153	138				0								0								5949
							111				111		0								0								111
													0								410				410			410	410
													0								8049	8049	8049						8049
		3635	1621	137		1876	5075	4996	4	74			7018	7018	6949	70					1199	1132		1132	66	66			16926
64552	42840	600286	172932	17627	0	409727	19884	11951	4390	3432	111	0	32699	32699	32561	138	0	0	0	0	73554	71271	8049	63222	2283	1873	0	410	2199158
		209966					1705						-65702	-65702			0				18651	18358			293				0
		3395367					92571						412196	412196							522193	439527			82666				45842658
3656118	2198189	3605333	2393345	232624		979364	94276	47704	23454	23007	111		346493	346493	341061	5433	0				540844	457885	130622	327263	82959	65726		17233	45842658

LAND & ECOSYSTEMS ACCOUNTS - BASIC ACCOUNTS (4 CEEC)

Land Cover Resource & Use Account - summary

(by Dominant Landscape Types)

Summary Account	A1 URBAN DENSE AREAS	A2 DISPERSED URBAN AREAS	B1 BROAD PATTERN INTENSIVE AGRICULTURE	*B11 LOWLAND BROAD PATTERN INTENSIVE AGRICULTURE*	*B12 UPLAND BROAD PATTERN INTENSIVE AGRICULTURE*	*B13 MOUNTAIN BROAD PATTERN INTENSIVE AGRICULTURE*	B2 COMPOSITE RURAL LANDSCAPE	*B21 LOWLAND COMPOSITE RURAL LANDSCAPE*	*B22 UPLAND COMPOSITE RURAL LANDSCAPE*	*B23 MOUNTAIN COMPOSITE RURAL LANDSCAPE*	C1 FORESTED LANDSCAPE	*C11 LOWLAND FORESTED LANDSCAPE*	*C12 UPLAND FORESTED LANDSCAPE*	*C13 MOUNTAIN FORESTED LANDSCAPE*	C2 OPEN SEMI-NATURAL OR NATURAL LANDSCAPE	*C21 LOWLAND OPEN SEMI-NATURAL OR NATURAL LANDSCAPE*	*C22 UPLAND OPEN SEMI-NATURAL OR NATURAL LANDSCAPE*	*C23 MOUNTAIN OPEN SEMI-NATURAL OR NATURAL LANDSCAPE*	C3 LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER	*C31 LOWLAND LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER*	*C32 UPLAND LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER*	*C33 MOUNTAIN LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER*	*TOTAL*
Initial Surface																								
1 Artificial surfaces	***508668***	***197171***	***613388***	***541005***	***72383***	***0***	***85588***	***33022***	***39945***	***12621***	***179623***	***3744***	***87241***	***88638***	***71597***	***23640***	***19847***	***28111***	***852371***	***299168***	***487657***	***65547***	***2508406***
2 Agricultural areas	***2014053***	***1381346***	***9736222***	***8628147***	***1107976***	***100***	***1024426***	***516230***	***356118***	***152079***	***1343632***	***33065***	***697964***	***612603***	***768247***	***302643***	***237329***	***228275***	***9591835***	***3629910***	***5319379***	***642545***	***25859762***
2.1+2.2 Arable Land & Permanent Crops	1528162	1217647	8879596	7872651	1006845	100	533550	350364	152096	31089	546470	17614	389845	139012	485572	258681	143756	83135	6986024	2901289	3791923	292812	20177021
2.3+2.4 Pastures & Heterogeneous agricultural areas	485891	163699	856626	755495	101131	0	490877	165865	204022	120990	797162	15452	308119	473591	282675	43961	93573	145140	2605811	728622	1527456	349733	5682740
3 Forests and semi-natural areas	***1256853***	***282901***	***1096953***	***825560***	***271293***	***100***	***574635***	***130691***	***276434***	***167510***	***5823139***	***38132***	***1392727***	***4392280***	***1357868***	***178377***	***286541***	***892950***	***6147750***	***1269206***	***3807220***	***1071325***	***16540102***
3.1 Forests	966949	215520	801150	545961	255090	100	388686	76777	183679	128229	4929909	30129	1274762	3625018	702838	44624	137731	520483	5047114	967356	3217845	861913	13052164
3.2+3.3 Shrub and other semi-natural land	289905	67382	295803	279600	16203	0	185950	53914	92755	39281	893231	8003	117966	767262	655031	133754	148810	372467	1100637	301850	589375	209412	3487938
4 Wetlands	***6034***	***6762***	***57405***	***57058***	***347***	***0***	***6449***	***6332***	***116***	***0***	***5640***	***0***	***2321***	***3319***	***273196***	***272747***	***273***	***176***	***56709***	***51841***	***3890***	***979***	***412196***
5 Water bodies	***41159***	***51644***	***116422***	***112933***	***3489***	***0***	***2481***	***1858***	***525***	***98***	***23909***	***1005***	***12659***	***10245***	***168720***	***167108***	***1152***	***460***	***117859***	***65996***	***45031***	***6831***	***522193***
A - TOTAL INITIAL SURFACE ~ 1975	***3826767***	***1919825***	***11620390***	***10164703***	***1455488***	***200***	***1693580***	***688134***	***673138***	***332308***	***7375943***	***75946***	***2192913***	***5107085***	***2639629***	***944515***	***545142***	***1149971***	***16766525***	***5316121***	***9663176***	***1787227***	***45842658***
Consumption of Land Cover Resource (Supply by Land Cover)																								
1 Artificial surfaces	***10075***	***3514***	***6711***	***5886***	***826***	***0***	***147***	***30***	***58***	***58***	***3210***	***18***	***1271***	***1921***	***1346***	***942***	***102***	***302***	***9959***	***2224***	***6833***	***902***	***34962***
2 Agricultural areas	***74833***	***34497***	***240084***	***227061***	***13023***	***0***	***159661***	***103177***	***38348***	***18136***	***91462***	***1165***	***36083***	***54214***	***39613***	***16359***	***11680***	***11575***	***337758***	***163156***	***129211***	***45391***	***977908***
2.1+2.2 Arable Land & Permanent Crops	49217	28491	204041	195295	8746	0	131058	97292	30657	3110	18448	879	12893	4677	27433	13740	6779	6914	206058	130285	64681	11091	664746
2.3+2.4 Pastures & Heterogeneous agricultural areas	25616	6006	36043	31766	4277	0	28603	5886	7691	15026	73014	286	23190	49537	12180	2618	4900	4661	131700	32871	64529	34300	313162
3 Forests and semi-natural areas	***89399***	***27332***	***151278***	***136438***	***14840***	***0***	***28139***	***14725***	***7117***	***6297***	***321362***	***1230***	***53143***	***266988***	***65875***	***13854***	***8196***	***43825***	***349600***	***112761***	***167691***	***69147***	***1032984***
3.1 Forests	34629	12948	61967	49541	12426		15361	4806	5111	5444	231287	1046	41983	188257	37874	3942	4967	28966	230420	50819	125978	53622	624485
3.2+3.3 Shrub and other semi-natural land	54770	14385	89311	86897	2414	0	12778	9920	2006	853	90075	184	11160	78731	28000	9912	3229	14859	119180	61942	41713	15525	408499
4 Wetlands	***1096***	***2366***	***23542***	***23389***	***153***	***0***	***225***	***225***	***0***	***0***	***441***	***0***	***65***	***376***	***52912***	***52766***	***5***	***141***	***17819***	***16983***	***784***	***52***	***98401***
5 Water bodies	***3847***	***2727***	***16124***	***15797***	***327***	***0***	***340***	***330***	***3***	***7***	***964***	***2***	***400***	***562***	***15904***	***15725***	***132***	***47***	***14997***	***10129***	***3554***	***1314***	***54903***
B - TOTAL CONSUMPTION OF LAND COVER RESOURCE	***179250***	***70436***	***437740***	***408572***	***29168***	***0***	***188512***	***118487***	***45527***	***24498***	***417438***	***2415***	***90963***	***324061***	***175650***	***99645***	***20116***	***55890***	***730132***	***305252***	***308073***	***116807***	***2199158***
Land Cover Flows resulting from Changes in the Uses of Land																								
LCF1 Urban land management	4636	890	1128	901	228	0	28	0	0	28	315	18	154	144	256	205	0	51	1994	260	1501	233	9247
LCF2 Urban sprawl	5623	1863	6330	5695	636	0	397	55	221	120	3284	17	983	2284	1190	800	200	190	8409	2817	4606	985	27095
LCF3 Extension of economic sites and infrastructures	16936	8378	8477	7440	1037	0	382	122	237	22	4822	38	3221	1563	1341	621	28	692	12937	4062	7884	991	53273
LCF4 Agricultural rotation and intensification	36990	16681	154071	145158	8913	0	127077	94365	22252	10460	38605	916	19416	18274	11460	8503	1524	1432	218748	121159	72607	24982	603631
LCF5 Conversion of land to agriculture	42505	14358	97918	93965	3952	0	11269	7308	2528	1433	28244	177	6536	21531	49725	42814	2501	4410	116077	63956	42362	9759	360096
LCF6 Forests creation and management	40806	11573	73808	62103	11705	0	17699	8312	4483	4905	289351	1037	45099	243216	54226	12155	6007	36064	249392	63957	127260	58175	736856
LCF7 Water body creation and management	5934	4864	9931	9452	479	0	641	424	217	0	2364	0	875	1489	2461	1857	66	537	12405	5401	6668	336	38600
LCF8 Changes of Land Cover due to natural and multiple causes	25820	11828	86078	83859	2218	0	31019	7901	15587	7531	50453	212	14679	35562	54992	32690	9791	12512	110171	43641	45184	21347	370361
C - TOTAL LAND COVER FLOWS 1975-1990	***179250***	***70436***	***437740***	***408572***	***29168***	***0***	***188512***	***118487***	***45527***	***24498***	***417438***	***2415***	***90963***	***324061***	***175650***	***99645***	***20116***	***55890***	***730132***	***305252***	***308073***	***116807***	***2199158***
D - Final Surface ~ 1990 (D = A-B+C)	***3826767***	***1919825***	***11620390***	***10164703***	***1455488***	***200***	***1693580***	***688134***	***673138***	***332308***	***7375943***	***75946***	***2192913***	***5107085***	***2639629***	***944515***	***545142***	***1149971***	***16766525***	***5316121***	***9663176***	***1787227***	***45842658***

Land Cover Resource & Use Account - detailed

(by Dominant Landscape Types)

Detailed Account	A1 URBAN DENSE AREAS	A2 DISPERSED URBAN AREAS	B1 BROAD PATTERN INTENSIVE AGRICULTURE	*B11 LOWLAND BROAD PATTERN INTENSIVE AGRICULTURE*	*B12 UPLAND BROAD PATTERN INTENSIVE AGRICULTURE*	*B13 MOUNTAIN BROAD PATTERN INTENSIVE AGRICULTURE*	B2 COMPOSITE RURAL LANDSCAPE	*B21 LOWLAND COMPOSITE RURAL LANDSCAPE*	*B22 UPLAND COMPOSITE RURAL LANDSCAPE*	*B23 MOUNTAIN COMPOSITE RURAL LANDSCAPE*	C1 FORESTED LANDSCAPE	*C11 LOWLAND FORESTED LANDSCAPE*	*C12 UPLAND FORESTED LANDSCAPE*	*C13 MOUNTAIN FORESTED LANDSCAPE*	C2 OPEN SEMI-NATURAL OR NATURAL LANDSCAPE	*C21 LOWLAND OPEN SEMI-NATURAL OR NATURAL LANDSCAPE*	*C22 UPLAND OPEN SEMI-NATURAL OR NATURAL LANDSCAPE*	*C23 MOUNTAIN OPEN SEMI-NATURAL OR NATURAL LANDSCAPE*	C3 LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER	*C31 LOWLAND LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER*	*C32 UPLAND LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER*	*C33 MOUNTAIN LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER*	*TOTAL*
Initial Surface																								
1 Artificial surfaces	***508668***	***197171***	***613388***	***541005***	***72383***	***0***	***85588***	***33022***	***39945***	***12621***	***179623***	***3744***	***87241***	***88638***	***71597***	***23640***	***19847***	***28111***	***852371***	***299168***	***487657***	***65547***	***2508406***
1.1 Urban fabric	406938	159438	542201	477451	64751		82534	31465	39134	11936	155072	3529	73541	78002	62758	18806	18827	25125	767926	272257	436878	58791	2176868
1.2 Industrial, commercial and transport units	63721	24194	62431	56632	5799		2438	1339	639	459	10882	150	7120	3613	3504	1677	930	896	51679	19875	28674	3130	218848
1.3 Mines, dump and construction sites	22870	6568	4205	2961	1244		297	76	121	100	9749		4996	4753	1663	288	86	1289	22130	3799	16321	2010	67482
1.4 Artificial non-agricultural vegetated areas	15140	6971	4551	3962	589		319	142	51	126	3919	66	1583	2270	3672	2869	3	800	10637	3238	5783	1616	45208
2 Agricultural areas	***2014053***	***1381346***	***9736222***	***8628147***	***1107976***	***100***	***1024426***	***516230***	***356118***	***152079***	***1343632***	***33065***	***697964***	***612603***	***768247***	***302643***	***237329***	***228275***	***9591835***	***3629910***	***5319379***	***642545***	***25859762***
2.1 Arable Land	1390212	1169863	8708801	7718962	989739	100	451418	308227	117904	25287	494365	15561	363873	114931	450916	243442	133968	73506	6626535	2728222	3629176	269137	19292110
2.2 Permanent Crops	137951	47784	170795	153690	17105		82131	42137	34192	5802	52105	2053	25972	24081	34656	15239	9788	9629	359489	173067	162747	23675	884912
2.3 Pastures	88574	40507	467048	446323	20725		117066	83376	13997	19693	181860	1278	68443	112138	60196	31554	13554	15088	707646	320164	294950	92531	1662897
2.4 Heterogeneous agricultural areas	397317	123192	389578	309172	80406		373810	82489	190024	101296	615302	14174	239676	361452	222479	12408	80019	130052	1898165	408458	1232506	257202	4019844
3 Forests and semi-natural areas	***1256853***	***282901***	***1096953***	***825560***	***271293***	***100***	***574635***	***130691***	***276434***	***167510***	***5823139***	***38132***	***1392727***	***4392280***	***1357868***	***178377***	***286541***	***892950***	***6147750***	***1269206***	***3807220***	***1071325***	***16540102***
3.1 Forests	966949	215520	801150	545961	255090	100	388686	76777	183679	128229	4929909	30129	1274762	3625018	702838	44624	137731	520483	5047114	967356	3217845	861913	13052164
3.2 Shrub and/or herbaceous vegetation associations	271731	61090	286732	271569	15163	0	184626	53408	91937	39281	875934	8003	116425	751506	637306	126516	148270	362521	1077948	292318	581576	204055	3395367
3.3 Open spaces with little or no vegetation	18174	6292	9071	8031	1040	0	1324	506	818		17297		1540	15756	17724	7238	541	9945	22688	9532	7799	5357	92571
4 Wetlands	***6034***	***6762***	***57405***	***57058***	***347***	***0***	***6449***	***6332***	***116***	***0***	***5640***	***0***	***2321***	***3319***	***273196***	***272747***	***273***	***176***	***56709***	***51841***	***3890***	***979***	***412196***
4.1 Inland wetlands	6034	6762	57405	57058	347		6449	6332	116	0	5640		2321	3319	273196	272747	273	176	56709	51841	3890	979	412196
4.2 Coastal wetlands	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 Water bodies	***41159***	***51644***	***116422***	***112933***	***3489***	***0***	***2481***	***1858***	***525***	***98***	***23909***	***1005***	***12659***	***10245***	***168720***	***167108***	***1152***	***460***	***117859***	***65996***	***45031***	***6831***	***522193***
5.1 Inland waters	40596	50600	116422	112933	3489		2481	1858	525	98	23909	1005	12659	10245	87661	86050	1152	460	117859	65996	45031	6831	439527
5.2 Coastal waters	563	1044	0				0				0				81059	81059			0				82666
A - TOTAL INITIAL SURFACE ~ 1975	***3826767***	***1919825***	***11620390***	***10164703***	***1455488***	***200***	***1693580***	***688134***	***673138***	***332308***	***7375943***	***75946***	***2192913***	***5107085***	***2639629***	***944515***	***545142***	***1149971***	***16766525***	***5316121***	***9663176***	***1787227***	***45842658***
Consumption of Land Cover Resource (Supply by Land Cover)																							
1 Artificial surfaces	***10075***	***3514***	***6711***	***5886***	***826***	***0***	***147***	***30***	***58***	***58***	***3210***	***18***	***1271***	***1921***	***1346***	***942***	***102***	***302***	***9959***	***2224***	***6833***	***902***	***34962***
1.1 Urban fabric	2561	1018	2786	2507	279		107	18	58	30	1565	0	335	1230	850	562	102	186	2900	1053	1503	344	11788
1.2 Industrial, commercial and transport units	1643	366	2585	2518	67		1	1		0	272	18	41	213	364	352	0	12	441	262	169	10	5673
1.3 Mines, dump and construction sites	5705	2046	1337	857	480		39	11	0	28	1342		864	478	105			105	6300	833	4964	503	16873
1.4 Artificial non-agricultural vegetated areas	166	84	3	3			31				31		27		27				317	75	196	45	629
2 Agricultural areas	***74833***	***34497***	***240084***	***227061***	***13023***	***0***	***159661***	***103177***	***38348***	***18136***	***91462***	***1165***	***36083***	***54214***	***39613***	***16359***	***11680***	***11575***	***337758***	***163156***	***129211***	***45391***	***977908***
2.1 Arable Land	43567	24987	177711	171476	6235		130590	97121	30361	3108	17664	879	12575	4210	26477	12983	6590	6904	190660	120639	59018	11004	611656
2.2 Permanent Crops	5650	3504	26329	23819	2510		468	170	296	1	785	0	318	466	956	757	189	10	15398	9647	5664	88	53090
2.3 Pastures	7784	2623	18142	16815	1327		10739	3254	881	6604	34815	121	9298	25396	3360	2458	266	636	53024	15897	21324	15803	130487
2.4 Heterogeneous agricultural areas	17833	3383	17901	14951	2950		17864	2632	6810	8423	38199	166	13892	24141	8820	161	4634	4025	78676	16974	43205	18497	182676
3 Forests and semi-natural areas	***89399***	***27332***	***151278***	***136438***	***14840***	***0***	***28139***	***14725***	***7117***	***6297***	***321362***	***1230***	***53143***	***266988***	***65875***	***13854***	***8196***	***43825***	***349600***	***112761***	***167691***	***69147***	***1032984***
3.1 Forests	34629	12948	61967	49541	12426		15361	4806	5111	5444	231287	1046	41983	188257	37874	3942	4967	28966	230420	50819	125978	53622	624485
3.2 Shrub and/or herbaceous vegetation associations	50311	12288	86152	83789	2363	0	12532	9920	1759	853	89309	184	11021	78104	25866	9478	3157	13232	113862	59611	39745	14506	390320
3.3 Open spaces with little or no vegetation	4459	2096	3159	3109	50		247		247		766		139	627	2134	435	73	1627	5317	2331	1968	1018	18179
4 Wetlands	***1096***	***2366***	***23542***	***23389***	***153***	***0***	***225***	***225***	***0***	***0***	***441***	***0***	***65***	***376***	***52912***	***52766***	***5***	***141***	***17819***	***16983***	***784***	***52***	***98401***
4.1 Inland wetlands	1096	2366	23542	23389	153		225	225			441		65	376	52912	52766	5	141	17819	16983	784	52	98401
4.2 Coastal wetlands	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 Water bodies	***3847***	***2727***	***16124***	***15797***	***327***	***0***	***340***	***330***	***3***	***7***	***964***	***2***	***400***	***562***	***15904***	***15725***	***132***	***47***	***14997***	***10129***	***3554***	***1314***	***54903***
5.1 Inland waters	3811	2639	16124	15797	327		340	330	3	7	964	2	400	562	14037	13858	132	47	14997	10129	3554	1314	52913
5.2 Coastal waters	36	88	0				0				0				1867	1867			0				1990
B - TOTAL CONSUMPTION OF LAND COVER RESOURCE	***179250***	***70436***	***437740***	***408572***	***29168***	***0***	***188512***	***118487***	***45527***	***24498***	***417438***	***2415***	***90963***	***324061***	***175650***	***99645***	***20116***	***55890***	***730132***	***305252***	***308073***	***116807***	***2199158***
Land Cover Flows resulting from Changes in the Uses of Land																							
LCF1 Urban land management	***4636***	***890***	***1128***	***901***	***228***	***0***	***28***	***0***	***0***	***28***	***315***	***18***	***154***	***144***	***256***	***205***	***0***	***51***	***1994***	***260***	***1501***	***233***	***9247***
LCF11 Urban development/ infilling	124	10	0			0	0				0				0				28	15	13		161
LCF12 Developped land recycling	4302	833	1050	822	228	0	28	0		28	315	18	154	144	256	205	0	51	1962	241	1488	233	8746
LCF13 Development of green urban areas	210	47	78	78		0	0				0				0				4	4			339
LCF2 Urban sprawl	***5623***	***1863***	***6330***	***5695***	***636***	***0***	***397***	***55***	***221***	***120***	***3284***	***17***	***983***	***2284***	***1190***	***800***	***200***	***190***	***8409***	***2817***	***4606***	***985***	***27095***
LCF21 Urban continuous sprawl	44	49	60	60		0	0				0				0				50		50	0	203
LCF22 Urban diffuse sprawl	5579	1814	6271	5635	636	0	397	55	221	120	3284	17	983	2284	1190	800	200	190	8358	2817	4556	985	26893
LCF3 Extension of economic sites and infrastructures	***16936***	***8378***	***8477***	***7440***	***1037***	***0***	***382***	***122***	***237***	***22***	***4822***	***38***	***3221***	***1563***	***1341***	***621***	***28***	***692***	***12937***	***4062***	***7884***	***991***	***53273***
LCF31 Extension of industrial & commercial sites	4294	1794	4384	4225	158		144	122		22	1175		506	670	353	312	28	13	3024	1309	1186	528	15168
LCF32 Extension of transport networks	178	346	816	816			34		34		45		45		0				296	48	234	13	1715
LCF33 Extension of habours	66	108	81	81			0				28		28		0				38	38			321
LCF34 Extension of airports	622	17	33	33			0				30		30		0				48	0	48		751
LCF35 Extension of mines and quarrying areas	6675	1088	1677	1180	497		187	0	187		1892	3	1628	261	759	164		595	5991	2176	3495	321	18270
LCF36 Extension of dumpsites	1788	1584	467	392	74		0				730		694	36	21	21		0	1949	211	1714	24	6538
LCF37 Construction	2989	3440	939	642	297		0				910	35	278	597	209	124		85	1250	159	1058	33	9735
LCF38 Extension of sport and leisure facilities	325		81	71	10		17		17		12		12		0				341	121	148	72	776
LCF4 Agricultural rotation and intensification	***36990***	***16681***	***154071***	***145158***	***8913***	***0***	***127077***	***94365***	***22252***	***10460***	***38605***	***916***	***19416***	***18274***	***11460***	***8503***	***1524***	***1432***	***218748***	***121159***	***72607***	***24982***	***603631***
LCF41 Recent extension of pasture, fallow land, set aside	15484	8243	74729	73532	1196		115283	89731	17684	7868	21629	788	10948	9894	2979	1338	894	747	115583	71747	29794	14042	353929
LCF42 Planting of vineyards, fruit and olive trees over arable & pasture	9949	3281	35834	32828	3006		2052	1216	750	86	865		827	38	6443	5988	110	345	31807	22827	8315	665	90231
LCF43 Rotation of annual crops			0				0				0				0				0				0
LCF44 Rotation of permanent crops			0				0				0				0				0				0
LCF45 Intensification of agriculture	11557	5157	43509	38797	4711		9743	3418	3818	2506	16111	128	7641	8342	2038	1178	520	340	71358	26585	34499	10275	159472
LCF5 Conversion of land to agriculture	***42505***	***14358***	***97918***	***93965***	***3952***	***0***	***11269***	***7308***	***2528***	***1433***	***28244***	***177***	***6536***	***21531***	***49725***	***42814***	***2501***	***4410***	***116077***	***63956***	***42362***	***9759***	***360096***
LCF51 Intensive conversion of forest to agriculture	4734	2811	14752	13784	968		1572	1130	416	26	1396	50	895	450	1147	563	488	96	22171	13040	8674	457	48584
LCF52 Intensive conversion of marginal land to agriculture	11170	4400	32392	31887	506		896	653	242	0	1014	0	266	748	4987	3698	808	481	19215	12308	6414	493	74073
LCF53 Diffuse conversion of forest to agriculture	6369	1659	6688	5659	1030		3342	1075	1510	756	14833	125	3634	11074	2512	570	522	1419	26775	7463	14266	5047	62178
LCF54 Diffuse conversion of marginal land to agriculture	16470	2765	22876	22128	748		5056	4116	327	613	9520	0	1306	8215	3683	918	487	2279	27491	16123	8069	3299	87861
LCF55 Conversion of wetlands to agriculture	1246	1537	16496	16345	151		331	324		7	214	2	94	118	36797	36632	92	73	16284	13999	2235	50	72905
LCF56 Conversion of developed areas to agriculture	2517	1186	4712	4163	550		72	9	33	30	1267	0	342	925	598	433	102	63	4141	1022	2705	414	14493
LCF6 Forests creation and management	***40806***	***11573***	***73808***	***62103***	***11705***	***0***	***17699***	***8312***	***4483***	***4905***	***289351***	***1037***	***45099***	***243216***	***54226***	***12155***	***6007***	***36064***	***249392***	***63957***	***127260***	***58175***	***736856***
LCF61 Forests creation	21756	5751	37897	36396	1501	0	7472	5737	1485	250	78441	201	9394	68846	21612	10113	2097	9402	74403	36709	27247	10447	247333
LCF62 Forests rotation			0				0				0				0				0				0
LCF63 Recent felling and transition	19050	5822	35911	25707	10204		10227	2575	2997	4655	210910	836	35705	174369	32614	2042	3910	26662	174989	27249	100013	47727	489522
LCF7 Water body creation and management	***5934***	***4864***	***9931***	***9452***	***479***	***0***	***641***	***424***	***217***	***0***	***2364***	***0***	***875***	***1489***	***2461***	***1857***	***66***	***537***	***12405***	***5401***	***6668***	***336***	***38600***
LCF71 Water body creation	5934	4864	9931	9452	479		641	424	217		2364		875	1489	2461	1857	66	537	12405	5401	6668	336	38600
LCF72 Water body management			0				0				0				0				0				0
LCF8 Changes of land cover due to natural and multiple causes	***25820***	***11828***	***86078***	***83859***	***2218***	***0***	***31019***	***7901***	***15587***	***7531***	***50453***	***212***	***14679***	***35562***	***54992***	***32690***	***9791***	***12512***	***110171***	***43641***	***45184***	***21347***	***370361***
LCF81 Semi-natural rotation	2833	2265	19501	19214	287		343	210	133		888		144	744	24720	22142	84	2494	15627	11469	1682	2475	66176
LCF82 Farmland abandonment without significant woodland creation	15367	6731	53738	52124	1614		27888	6054	14514	7320	43576	95	12487	30994	23274	4920	9336	9018	76857	23819	35699	17339	247431
LCF83 Farmland abandonment with woodland creation	3442	624	2098	1819	279		2458	1505	743	211	4691	12	1432	3247	2815	1617	338	859	9182	2875	4941	1366	25309
LCF84 Other land abandonment (other than farmland)	1941	603	284	271	14		30	5	25	0	563	0	241	322	129	20	0	109	2400	513	1792	94	5949
LCF85 Forests and shrubs fires			0				0				81		81		0				30	13	16		111
LCF86 Coastal erosion	21	42	0				0				0				347	347			0				410
LCF87 Impacts of storms, floods…	995	818	3220	3220			0				246	105	123	18	494	485	9		2275	1843	432	0	8049
LCF89 Other changes and unknown	1220	746	7237	7213	24		300	128	172		408		171	237	3213	3157	23	33	3801	3108	621	72	16926
C - TOTAL LAND COVER FLOWS 1975-1990	***179250***	***70436***	***437740***	***408572***	***29168***	***0***	***188512***	***118487***	***45527***	***24498***	***417438***	***2415***	***90963***	***324061***	***175650***	***99645***	***20116***	***55890***	***730132***	***305252***	***308073***	***116807***	***2199158***
D - Final Surface ~ 1990 (D = A-B+C)	***3826767***	***1919825***	***11620390***	***10164703***	***1455488***	***200***	***1693580***	***688134***	***673138***	***332308***	***7375943***	***75946***	***2192913***	***5107085***	***2639629***	***944515***	***545142***	***1149971***	***16766525***	***5316121***	***9663176***	***1787227***	***45842658***

LAND & ECOSYSTEMS ACCOUNTS - BASIC ACCOUNTS (HUNGARY)

Matrix Of Land Cover Changes 1975-1990; CLC Level2/Level 3

	FINAL YEAR ⇊ OPENING YEAR ⇉	111 Continuous urban fabric	112 Discontinuous urban fabric	121 Industrial or commercial units	122 Road and rail networks and associated land	123 Port areas	124 Airports	131 Mineral extraction sites	132 Dump sites	133 Construction sites	141 Green urban areas	142 Sport and leisure facilities	211 Non-irrigated arable land	212 Permanently irrigated land	213 Rice fields	221 Vineyards	222 Fruit trees and berry plantations	223 Olive groves	231 Pastures	241 Annual crops associated with permanent crops	242 Complex cultivation patterns	243 Land principally occupied by agriculture with significant areas of natural vegetation	244 Agro-forestry areas	311 Broad-leaved forest	312 Coniferous forest	313 Mixed forest	321 Natural grassland	322 Moors and heathland	323 Sclerophyllous vegetation	324 Transitional woodland shrub	331 Beaches, dunes and sand plains	332 Bare rock	333 Sparsely vegetated areas	334 Burnt areas	335 Glaciers and perpetual snow	411 Inland marshes	412 Peatbogs	421 Salt marshes	422 Salines	423 Intertidal flats	511 Water courses	512 Water bodies	521 Coastal lagoons	522 Estuaries	523 Sea and ocean	TOTAL OPENING YEAR ~1975	*Increase (+)*	*Decrease (-)*	*Net Changes 1975-1990*	TOTAL FINAL YEAR ~1990
11	Urban fabric	2065	447407																																									**449472**	*1991*	*0*	*1991*	**451463**
12	Industrial, commercial and transport units			46009	1550	212	5622						15																																**53407**	*2285*	*15*	*2271*	**55678**
13	Mines, dump and construction sites		11					5246	3359	167			44						213		11			71		2				51														**9174**	*5078*	*403*	*4674*	**13849**
14	Artificial non-agricultural vegetated areas										2677	17889																																**20597**	*78*	*31*	*46*	**20644**
21	Arable Land		1353	1331	77		570	2489	368	329	23	42	5270844		9351	4840	3389		17203		1155	767		7123	946	954	381			1513						143					151	1981				**5327323**	*33302*	*47127*	*-13825*	**5313497**
22	Permanent Crops		23					8		27			2142			116859	59815		52		27	39		29	32																25					**179079**	*9060*	*2405*	*6656*	**185735**
23	Pastures		130	44				75	120				8201		56	35			708631			171		1044	116	260	1646			124						33	21					1443				**722151**	*26226*	*13520*	*12705*	**734856**
24	Heterogeneous agricultural areas		189	21				95	82	142			1653			34			277		212771	192027		989	181	304				21											14	8				**408810**	*6963*	*4011*	*2951*	**411761**
31	Forests		268	217				799	147	124			19129			489	173		7759		628	3942		1332913	82666	211815	1172			33403						159					228	549				**1696580**	*42758*	*69186*	*-26428*	**1670152**
32	Shrub and/or herbaceous vegetation associations		16	10				79		131			1146			73			272			32		14039	7423	8412	135443			54434						34					100	90				**221733**	*38535*	*31856*	*6679*	**228412**
33	Open spaces with little or no vegetation																																													**0**	*0*	*0*	*0*	**0**
41	Inland wetlands												369			26			156			22		153		2										64952	1941					7969				**75591**	*1556*	*8699*	*-7143*	**68448**
42	Coastal wetlands																																													**0**	*0*	*0*	*0*	**0**
51	Inland waters			17				5	17	40		12	547						292		62	107		679			43			179						1165					32901	99542				**135609**	*12589*	*3166*	*9423*	**145032**
52	Coastal waters																																													**0**	*0*	*0*	*0*	**0**
		2065	449397	47648	1627	212	6192	8796	4093	960	2701	17943	5304090	0	9407	122357	63377	0	734856	0	214653	197108	0	1357039	91364	221749	138685	0	0	89726	0	0	0	0	0	66486	1962	0	0	0	33419	111614	0	0	0	**9299527**	*180419*	*180419*	*0*	**9299527**

LAND & ECOSYSTEMS ACCOUNTS - BASIC ACCOUNTS (HUNGARY)

Account of Land Cover Changes
(by Dominant Landscape Types)

Landscape types	A1				A2				B1				B11				B12				B13				B2				B21				B22				B23			
	URBAN DENSE AREAS				DISPERSED URBAN AREAS				BROAD PATTERN INTENSIVE AGRICULTURE				*LOWLAND BROAD PATTERN INTENSIVE AGRICULTURE*				*UPLAND BROAD PATTERN INTENSIVE AGRICULTURE*				*MOUNTAIN BROAD PATTERN INTENSIVE AGRICULTURE*				COMPOSITE RURAL LANDSCAPE				*LOWLAND COMPOSITE RURAL LANDSCAPE*				*UPLAND COMPOSITE RURAL LANDSCAPE*				*MONTAIN COMPOSITE RURAL LANDSCAPE*			
Land Cover (Corine Land Cover level 2)	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990
1. Artificial surfaces	**111339**	3414	158	**114595**	**34643**	644	37	**35250**	**209615**	1985	109	**211491**	**206658**	1984	109	**208533**	**2957**	1	0	**2958**	**0**	0	0	**0**	**6583**	0	0	**6583**	**6554**	0	0	**6554**	**29**	0	0	**29**	**0**	0	0	**0**
11 Urban fabric	84640	484		85124	24089	198		24287	184397	807	0	185204	181777	807		182585	2619			2619					6275	0	0	6275	6254			6254	21			21				
12 Industrial, commercial and transport units	16367	848	8	17207	4945	178		5123	21055	863	6	21911	20834	862	6	21689	221	1		222					204	0	0	204	204			204								
13 Mines, dump and construction sites	3207	2082	150	5138	396	268	6	658	1102	254	102	1254	1090	254	102	1241	13			13					8	0	0	8		8										
14 Artificial non-agricultural vegetated areas	7126			7126	5212		31	5181	3061	61	0	3122	2957	61		3018	104			104					96	0	0	96	96			96								
2. Agricultural areas	**364161**	4230	6016	**362376**	**289771**	2710	3237	**289244**	**3526889**	30796	32162	**3525522**	**3487901**	30401	31957	**3486346**	**38988**	395	206	**39177**	**0**	0	0	**0**	**196143**	2476	1920	**196699**	**195772**	2476	1920	**196328**	**371**	0	0	**371**	**0**	0	0	**0**
21 Arable Land	271454	1626	4549	268731	247696	1694	2416	246975	3059495	11838	23459	3047873	3026636	11571	23337	3014870	32859	266	123	33003					81877	1094	861	82110	81877	1094	861	82110								
22 Permanent Crops	15434	991	333	16092	7561	210	134	7637	45042	4274	952	48364	43621	4195	912	46904	1421	79	41	1459					32605	264	19	32850	32261	264	19	32506	344			344				
23 Pastures	32283	1046	489	32840	22128	675	674	22130	302420	12417	6575	308262	299091	12388	6532	304947	3329	29	43	3315					43881	341	281	43941	43881	341	281	43941								
24 Heterogeneous agricultural areas	44990	368	645	44712	12386	130	14	12502	119932	2267	1176	121024	118553	2246	1176	119624	1379	21		1400					37780	777	759	37798	37753	777	759	37771	27			27				
3. Forest and semi-natural areas	**146466**	3532	5470	**144527**	**38050**	1982	2530	**37502**	**339629**	25758	27097	**338290**	**319893**	25458	26606	**318745**	**19736**	300	491	**19545**	**0**	0	0	**0**	**58499**	8880	9333	**58046**	**58499**	8880	9333	**58046**	**0**	0	0	**0**	**0**	0	0	**0**
31 Forests	139588	956	4875	135672	35258	1323	1849	34731	303614	12632	19056	297191	284248	12580	18691	278137	19366	52	365	19054					34320	6287	4287	36321	34320	6287	4287	36321								
32 Shrub and/or herbaceous vegetation associations	6877	2573	595	8855	2792	659	681	2771	36015	13126	8041	41099	35645	12877	7915	40608	370	248	126	492					24179	2594	5047	21725	24179	2594	5047	21725								
33 Open spaces with little or no vegetation					0	0	0	0																	0	0	0	0												
4. Wetlands	**3503**	36	298	**3240**	**3995**	23	568	**3450**	**19217**	673	3517	**16373**	**19171**	673	3470	**16373**	**47**	0	46	**0**	**0**	0	0	**0**	**5268**	92	176	**5183**	**5268**	92	176	**5183**	**0**	0	0	**0**	**0**	0	0	**0**
41 Inland wetlands	3503	36	298	3240	3995	23	568	3450	19217	673	3517	16373	19171	673	3470	16373	47	0	46	0					5268	92	176	5183	5268	92	176	5183								
42 Coastal wetlands					0	0	0	0																	0	0	0	0												
5. Water bodies	**15712**	871	140	**16443**	**36648**	1193	180	**37661**	**34211**	5270	1597	**37884**	**34211**	5224	1597	**37838**	**0**	46	0	**46**	**0**	0	0	**0**	**291**	80	99	**273**	**291**	80	99	**273**	**0**	0	0	**0**	**0**	0	0	**0**
51 Inland waters	15712	871	140	16443	36648	1193	180	37661	34211	5270	1597	37884	34211	5224	1597	37838		46		46					291	80	99	273	291	80	99	273								
52 Coastal waters					0	0	0	0																	0	0	0	0												
TOTAL	**641181**	12083	12083	**641181**	**403106**	6552	6552	**403106**	**4129561**	64482	64482	**4129561**	**4067834**	63739	63739	**4067834**	**61727**	743	743	**61727**	**0**	0	0	**0**	**266783**	11528	11528	**266783**	**266383**	11528	11528	**266383**	**400**	0	0	**400**	**0**	0	0	**0**

Landscape types	C1				C11				C12				C13				C2				C21				C22				C23				C3				C31			
	FORESTED LANDSCAPE				*LOWLAND FORESTED LANDSCAPE*				*UPLAND FORESTED LANDSCAPE*				*MOUNTAIN FORESTED LANDSCAPE*				OPEN SEMI-NATURAL OR NATURAL				*LOWLAND OPEN SEMI-NATURAL OR*				*UPLAND OPEN SEMI-NATURAL OR*				*MOUNTAIN OPEN SEMI-NATURAL OR*				LANDSCAPE WITH NO DOMINANT LAND				*LOWLAND LANDSCAPE WITH NO*			
Land Cover (Corine Land Cover level 2)	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990
1. Artificial surfaces	**7977**	453	10	**8419**	**493**	0	0	**493**	**7484**	453	10	**7926**	**0**	0	0	**0**	**9543**	16	0	**9559**	**9442**	16	0	**9458**	**101**	0	0	**101**	**0**	0	0	**0**	**152951**	2920	135	**155737**	**113397**	1947	94	**115250**
11 Urban fabric	7106	45	0	7151	428			428	6678	45		6723					5901	16	0	5901	5822	16	0	5822	79			79					137063	457	0	137520	102258	399		102657
12 Industrial, commercial and transport units	275	0	0	275					275			275					720	0	0	720	720			720									9842	397	0	10239	7745	293		8038
13 Mines, dump and construction sites	335	396	10	720					335	396	10	720					77	16	0	93	57	16		73	20			20					4050	2063	135	5978	1856	1251	94	3012
14 Artificial non-agricultural vegetated areas	262	12	0	274	66			66	196	12		208					2845	0	0	2845	2842			2842	3			3					1996	4	0	2000	1538	4		1542
2. Agricultural areas	**54913**	1152	715	**55350**	**4587**	0	114	**4472**	**50326**	1152	600	**50878**	**0**	0	0	**0**	**128803**	996	1108	**128692**	**125974**	942	1072	**125844**	**2829**	54	36	**2847**	**0**	0	0	**0**	**2076682**	33190	21906	**2087966**	**1595863**	25076	17942	**1602996**
21 Arable Land	33845	324	578	33590	3361		114	3247	30483	324	464	30343					90777	339	868	90248	89636	327	832	89132	1140	11	36	1116					1542179	16187	14396	1543971	1199781	12953	11810	1200923
22 Permanent Crops	1534	55	75	1514	91			91	1443	55	75	1423					9637	225	31	9832	8590	182	31	8741	1047	43		1090					67266	3042	861	69446	56205	2797	752	58250
23 Pastures	11696	588	35	12250	604			604	11093	588	35	11646					24161	416	210	24368	23650	416	210	23857	511			511					285582	10742	5258	291066	210557	7041	4393	213205
24 Heterogeneous agricultural areas	7838	186	27	7997	531			531	7307	186	27	7466					4229	16	0	4244	4099	16		4114	130			130					181655	3220	1392	183483	129320	2285	987	130618
3. Forest and semi-natural areas	**162665**	1099	2146	**161607**	**3871**	42	33	**3880**	**158329**	1052	2109	**157272**	**455**	5	5	**455**	**83248**	627	733	**83142**	**81778**	582	669	**81691**	**1470**	46	64	**1451**	**0**	0	0	**0**	**1089768**	39414	53732	**1075450**	**578402**	30903	39969	**569336**
31 Forests	156640	411	1806	155245	3547		33	3515	152643	407	1774	151276	450	5		455	18685	363	601	18448	17300	363	536	17127	1386		64	1321					1008475	20783	36712	992545	519847	17548	25354	512041
32 Shrub and/or herbaceous vegetation associations	6015	687	340	6362	324	42		366	5686	646	335	5997	5		5		64562	264	132	64694	64478	218	132	64564	84	48		130					81293	18632	17026	82905	58555	13355	14616	57295
33 Open spaces with little or no vegetation	0	0	0	0													0	0	0	0													0	0	0	0				
4. Wetlands	**0**	0	0	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**17764**	261	352	**17672**	**17764**	261	352	**17672**	**0**	0	0	**0**	**0**	0	0	**0**	**25845**	472	3787	**22530**	**25012**	472	3688	**21795**
41 Inland wetlands	0	0	0	0													17764	261	352	17672	17764	261	352	17672									25845	472	3787	22530	25012	472	3688	21795
42 Coastal wetlands	0	0	0	0													0	0	0	0													0	0	0	0				
5. Water bodies	**644**	221	54	**811**	**365**	105	0	**470**	**279**	116	54	**341**	**0**	0	0	**0**	**29453**	368	75	**29746**	**29453**	368	75	**29746**	**0**	0	0	**0**	**0**	0	0	**0**	**18651**	4585	1021	**22215**	**17992**	4311	1014	**21289**
51 Inland waters	644	221	54	811	365	105		470	279	116	54	341					29453	368	75	29746	29453	368	75	29746									18651	4585	1021	22215	17992	4311	1014	21289
52 Coastal waters	0	0	0	0													0	0	0	0													0	0	0	0				
TOTAL	**226188**	2925	2925	**226188**	**9316**	147	147	**9316**	**216417**	2774	2774	**216417**	**455**	5	5	**455**	**268811**	2268	2268	**268811**	**264411**	2168	2168	**264411**	**4400**	100	100	**4400**	**0**	0	0	**0**	**3363897**	80581	80581	**3363897**	**2330666**	62708	62708	**2330666**

Landscape types	C32				C33				TOTAL				
	UPLAND LANDSCAPE WITH NO				*MOUNTAIN LANDSCAPE WITH NO*								
Land Cover (Corine Land Cover level 2)	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	et Changes	1990
1. Artificial surfaces	**39554**	973	40	**40487**	**0**	0	0	**0**	**532651**	9431	449	**8982**	**541634**
11 Urban fabric	34805	58		34863					449472	1991	0	1991	451463
12 Industrial, commercial and transport units	2097	103		2201					53407	2285	15	2271	55678
13 Mines, dump and construction sites	2194	812	40	2966					9174	5078	403	4674	13849
14 Artificial non-agricultural vegetated areas	458			458					20597	78	31	46	20644
2. Agricultural areas	**480819**	8115	3964	**484970**	**0**	0	0	**0**	**6637362**	75551	67064	**8487**	**6645849**
21 Arable Land	81877	1094	861	82110					5327323	33300	47127	-13825	5313497
22 Permanent Crops	11061	246	110	11196					179079	9066	2405	6656	185735
23 Pastures	75025	3701	864	77861					722151	26226	13520	12705	734856
24 Heterogeneous agricultural areas	52335	935	404	52866					408810	6963	4011	2951	411761
3. Forest and semi-natural areas	**511365**	8511	13763	**506113**	**0**	0	0	**0**	**1918313**	81292	101042	**-19749**	**1898564**
31 Forests	488628	3234	11359	480504					1696580	42758	69186	-26428	1670152
32 Shrub and/or herbaceous vegetation associations	22737	5277	2404	25610					221733	38535	31856	6679	228412
33 Open spaces with little or no vegetation									0	0	0	0	0
4. Wetlands	**834**	0	99	**735**	**0**	0	0	**0**	**75591**	1556	8699	**-7143**	**68448**
41 Inland wetlands	834		99	735					75591	1556	8699	-7143	68448
42 Coastal wetlands									0	0	0	0	0
5. Water bodies	**659**	274	7	**926**	**0**	0	0	**0**	**135609**	12589	3166	**9423**	**145032**
51 Inland waters	659	274	7	926					135609	12589	3166	9423	145032
52 Coastal waters									0	0	0	0	0
TOTAL	**1033232**	17873	17873	**1033232**	**0**	0	0	**0**	**9299527**	180419	180419	**0**	**9299527**

LAND & ECOSYSTEMS ACCOUNTS - BASIC ACCOUNTS (HUNGARY)

Account of Formation of Land Cover - summary

Consumption of land cover										***Formation of land cover***							
1	2.1+2.2	2.3+2.4	3.1	3.2+3.3	4	5			Land cover flows	1	2.1+2.2	2.3+2.4	3.1	3.2+3.3	4	5	
Artificial surfaces	Arable land & Permanent crops	Pastures & Mixed agricultural areas	Forests	Shrub and other semi-natural land	Wetlands	Water bodies	Total			Artificial surfaces	Arable land & Permanent crops	Pastures & Mixed agricultural areas	Forests	Shrub and other semi-natural land	Wetlands	Water bodies	Total
11	23	0	0	0	0	0	35	LCF1	Urban land management	35	0	0	0	0	0	0	35
0	1376	320	268	16	0	0	1979	LCF2	Urban sprawl	1979	0	0	0	0	0	0	1979
0	5241	580	1286	220	0	91	7417	LCF3	Extension of economic sites and infrastructures	7417	0	0	0	0	0	0	7417
0	28809	10257	0	0	0	0	39066	LCF4	Agricultural rotation and intensification	0	20351	18715	0	0	0	0	39066
283	0	0	32119	1523	574	1008	35507	LCF5	Conversion of land to agriculture	0	22011	13496	0	0	0	0	35507
73	9084	0	34576	29874	155	679	74440	LCF6	Forests creation and management	0	0	0	39864	34576	0	0	74440
31	1981	1451	549	90	0	0	4102	LCF7	Water body creation and management	0	0	0	0	0	0	4102	4102
51	3018	4924	388	134	7969	1388	17872	LCF8	Changes of land cover due to natural and multiple causes	0	0	977	2893	3959	1556	8487	17872
449	**49532**	**17532**	**69186**	**31856**	**8699**	**3166**	**180419**		**Sub/Total Flows**	**9431**	**42362**	**33188**	**42758**	**38535**	**1556**	**12589**	**180419**
8982	***-7170***	***15657***	***-26428***	***6679***	***-7143***	***9423***			***Net Formation of Land Cover***								
9431	**42362**	**33188**	**42758**	**38535**	**1556**	**12589**	**180419**		**TOTAL**	**9431**	**42362**	**33188**	**42758**	**38535**	**1556**	**12589**	**180419**

Land Cover stock 1975	**532651**	**5506402**	**1130961**	**1696580**	**221733**	**75591**	**135609**	**9299527**
Net Formation of Land Cover	*8982*	*-7170*	*15657*	*-26428*	*6679*	*-7143*	*9423*	
Land Cover stock 1990	**541634**	**5499232**	**1146617**	**1670152**	**228412**	**68448**	**145032**	**9299527**

LAND & ECOSYSTEMS ACCOUNTS - BASIC ACCOUNTS (HUNGARY)

Account of Formation of Land Cover - detailed

			1	1.1	111	112	1.2	121	122	123	124	1.3	131	132	133	1.4	141	142	*2*	2.1	211	212	213	2.2	221	222	223	2.3	231	2.4	241	242	243	244	*3*	3.1	311
			ARTIFICIAL SURFACES	Urban fabric	Continuous urban fabric	Discontinuous urban fabric	Industrial, commercial and transport units	Industrial or commercial units	Road and rail networks and associated land	Port areas	Airports	Mines, dump and construction sites	Mineral extraction sites	Dump sites	Construction sites	Artificial non-agricultural vegetated areas	Green urban areas	Sport and leisure facilities	*AGRICULTURAL AREAS*	Arable Land	Non-irrigated arable land	Permanently irrigated land	Rice fields	Permanent Crops	Vineyards	Fruit trees and berry plantations	Olive groves	Pastures	Pastures	Heterogeneous agricultural areas	Annual crops associated with permanent crops	Complex cultivation patterns	Agriculture land with significant areas of natural vegetation	Agro-forestry areas	*FORESTS AND SEMI-NATURAL AREAS*	Forests	Broad-leaved forest
Consumption of land cover (-)																																					
LCF1	**Urban land management**		*11*	0			0					11				0			*23*	23				0				0		0					*0*	0	
	LCF11	Urban development/ infilling	*0*																*0*																*0*		
	LCF12	Developped land recycling	*11*									11							*0*																*0*		
	LCF13	Development of green urban areas	*0*																*23*	23															*0*		
LCF2	**Urban sprawl**		*0*	0			0					0				0			*1696*	1353				23				130		189					*284*	268	
	LCF21	Urban continuous sprawl	*0*																*0*																*0*		
	LCF22	Urban diffuse sprawl	*0*																*1696*	1353				23				130		189					*284*	268	
LCF3	**Extension of economic sites and infrastructures**		*0*	0			0					0				0			*5821*	5206				35				240		340					*1506*	1286	
	LCF31	Extension of industrial & commercial sites	*0*																*1395*	1331								44		21					*227*	217	
	LCF32	Extension of transport networks	*0*																*77*	77															*0*		
	LCF33	Extension of habours	*0*																*0*																*0*		
	LCF34	Extension of airports	*0*																*570*	570															*0*		
	LCF35	Extension of mines and quarrying areas	*0*																*2667*	2489				8				75		95					*877*	799	
	LCF36	Extension of dumpsites	*0*																*570*	368								120		82					*147*	147	
	LCF37	Construction	*0*																*499*	329				27						142					*255*	124	
	LCF38	Extension of sport and leisure facilities	*0*																*42*	42															*0*		
LCF4	**Agricultural rotation and intensification**		*0*	0			0					0				0			*39066*	26587				2222				8292		1965					*0*	0	
	LCF41	Recent extension of pasture, fallow land, set aside	*0*																*18688*	18358				52						277					*0*		
	LCF42	Planting of vineyards, fruit and olive trees over arable & pasture	*0*																*8299*	8230								35		34					*0*		
	LCF43	Rotation of annual crops	*0*																*0*																*0*		
	LCF44	Rotation of permanent crops	*0*																*0*																*0*		
	LCF45	Intensification of agriculture	*0*																*12080*					2170				8257		1653					*0*		
LCF5	**Conversion of land to agriculture**		*283*	0			15					268				0			*0*	0				0				0		0					*33642*	32119	
	LCF51	Intensive conversion of forest to agriculture	*0*																*0*																*19791*	19791	
	LCF52	Intensive conversion of marginal land to agriculture	*0*																*0*																*1220*		
	LCF53	Diffuse conversion of forest to agriculture	*0*																*0*																*12329*	12329	
	LCF54	Diffuse conversion of marginal land to agriculture	*0*																*0*																*304*		
	LCF55	Conversion of wetlands to agriculture	*0*																*0*																*0*		
	LCF56	Conversion of developed areas to agriculture	*283*				15					268							*0*																*0*		
LCF6	**Forests creation and management**		*73*	0			0					73				0			*9084*	9023				61				0		0					*64450*	34576	
	LCF61	Forests creation	*73*									73							*9084*	9023				61											*29874*		
	LCF62	Forests rotation	*0*																*0*																*0*		
	LCF63	Recent felling and transition	*0*																*0*																*34576*	34576	
LCF7	**Water body creation and management**		*31*	0			0					0				31			*3432*	1981				0				1443		8					*639*	549	
	LCF71	Water body creation	*31*													31			*3432*	1981								1443		8					*639*	549	
	LCF72	Water body management	*0*																*0*																*0*		
LCF8	**Changes of land cover due to natural and multiple causes**		*51*	0			0					51				0			*7942*	2954				64				3415		1509					*522*	388	
	LCF81	Semi-natural rotation	*0*																*0*																*34*		
	LCF82	Farmland abandonment without significant woodland creation	*0*																*4717*	2661				39				1996		21					*0*		
	LCF83	Farmland abandonment with woodland creation	*0*																*2893*									1419		1474					*0*		
	LCF84	Other land abandonment (other than farmland)	*51*									51							*0*																*0*		
	LCF85	Forests and shrubs fires	*0*																*0*																*0*		
	LCF86	Coastal erosion	*0*																*0*																*0*		
	LCF87	Impacts of storms, floods…	*0*																*190*	151				25						14					*328*	228	
	LCF89	Other changes and unknown	*0*																*143*	143															*159*	159	
Total consumption of cover			*449*	*0*			*15*					*403*				*31*			*67064*	*47127*				*2405*				*13520*		*4011*					*101042*	*69186*	
Formation of land cover (+)																																					
LCF1	**Urban land management**		*35*	11	0	11	0	0	0	0	0	0	0	0	0	23	23	0	*0*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*0*	0	0
	LCF11	Urban development/ infilling	*0*																*0*																*0*		
	LCF12	Developped land recycling	*11*	11		11													*0*																*0*		
	LCF13	Development of green urban areas	*23*													23	23		*0*																*0*		
LCF2	**Urban sprawl**		*1979*	1979	0	1979	0	0	0	0	0	0	0	0	0	0	0	0	*0*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*0*	0	0
	LCF21	Urban continuous sprawl	*0*																*0*																*0*		
	LCF22	Urban diffuse sprawl	*1979*	1979		1979													*0*																*0*		
LCF3	**Extension of economic sites and infrastructures**		*7417*	0	0	0	2285	1639	77	0	570	5078	3550	734	794	54	0	54	*0*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*0*	0	0
	LCF31	Extension of industrial & commercial sites	*1639*				1639	1639											*0*																*0*		
	LCF32	Extension of transport networks	*77*				77		77										*0*																*0*		
	LCF33	Extension of habours	*0*																*0*																*0*		
	LCF34	Extension of airports	*570*				570				570								*0*																*0*		
	LCF35	Extension of mines and quarrying areas	*3550*									3550	3550						*0*																*0*		
	LCF36	Extension of dumpsites	*734*									734		734					*0*																*0*		
	LCF37	Construction	*794*									794			794				*0*																*0*		
	LCF38	Extension of sport and leisure facilities	*54*													54		54	*0*																*0*		
LCF4	**Agricultural rotation and intensification**		*0*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*39066*	12052	11996	0	56	8299	4910	3389	0	17533	17533	1182	0	1182	0	0	*0*	0	0
	LCF41	Recent extension of pasture, fallow land, set aside	*0*																*18688*									17533	17533	1155		1155			*0*		
	LCF42	Planting of vineyards, fruit and olive trees over arable & pasture	*0*																*8299*					8299	4910	3389									*0*		
	LCF43	Rotation of annual crops	*0*																*0*																*0*		
	LCF44	Rotation of permanent crops	*0*																*0*																*0*		
	LCF45	Intensification of agriculture	*0*																*12080*	12052	11996		56							27		27			*0*		
LCF5	**Conversion of land to agriculture**		*0*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*35507*	21250	21250	0	0	761	588	173	0	8693	8693	4803	0	700	4103	0	*0*	0	0
	LCF51	Intensive conversion of forest to agriculture	*0*																*19791*	19129	19129			662	489	173									*0*		
	LCF52	Intensive conversion of marginal land to agriculture	*0*																*1220*	1146	1146			73	73										*0*		
	LCF53	Diffuse conversion of forest to agriculture	*0*																*12329*									7759	7759	4569		628	3942		*0*		
	LCF54	Diffuse conversion of marginal land to agriculture	*0*																*304*									272	272	32			32		*0*		
	LCF55	Conversion of wetlands to agriculture	*0*																*1582*	916	916			26	26			448	448	192		62	130		*0*		
	LCF56	Conversion of developed areas to agriculture	*0*																*283*	59	59							213	213	11		11			*0*		
LCF6	**Forests creation and management**		*0*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*0*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*74440*	39864	22094
	LCF61	Forests creation	*0*																*0*																*39864*	39864	22094
	LCF62	Forests rotation	*0*																*0*																*0*		
	LCF63	Recent felling and transition	*0*																*0*																*34576*		
LCF7	**Water body creation and management**		*0*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*0*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*0*	0	0
	LCF71	Water body creation	*0*																*0*																*0*		
	LCF72	Water body management	*0*																*0*																*0*		
LCF8	**Changes of land cover due to natural and multiple causes**		*0*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*977*	0	0	0	0	0	0	0	0	0	0	977	0	0	977	0	*6852*	2893	2032
	LCF81	Semi-natural rotation	*0*																*0*																*0*		
	LCF82	Farmland abandonment without significant woodland creation	*0*																*977*											977			977		*3685*		
	LCF83	Farmland abandonment with woodland creation	*0*																*0*																*2893*	2893	2032
	LCF84	Other land abandonment (other than farmland)	*0*																*0*																*51*		
	LCF85	Forests and shrubs fires	*0*																*0*																*0*		
	LCF86	Coastal erosion	*0*																*0*																*0*		
	LCF87	Impacts of storms, floods…	*0*																*0*																*0*		
	LCF89	Other changes and unknown	*0*																*0*																*223*		
Total formation of cover			*9431*	*1991*	*0*	*1991*	*2285*	*1639*	*77*	*0*	*570*	*5078*	*3550*	*734*	*794*	*78*	*23*	*54*	*75551*	*33302*	*33246*	*0*	*56*	*9060*	*5498*	*3562*	*0*	*26226*	*26226*	*6963*	*0*	*1882*	*5081*	*0*	*81292*	*42758*	*24126*
Net formation of cover			*8982*	*1991*			*2271*					*4674*				*46*			*8487*	*-13825*				*6656*				*12705*		*2951*					*-19749*	*-26428*	
TOTAL OPENING YEAR ~ 1975			*532651*	449472			53407					9174				20597			***6637362***	5327323				179079				722151		408810					***1918313***	1696580	
TOTAL FINAL YEAR ~ 1990			*541634*	451463	2065	449397	55678	47648	1627	212	6192	13849	8796	4093	960	20644	2701	17943	***6645849***	5313497	5304090		9407	185735	122357	63377		734856	734856	411761		214653	197108		***1898564***	1670152	1357039

312	313	3.2	321	322	323	324	3.3	331	332	333	334	335	4	4.1	411	412	4.2	421	422	423	5	5.1	511	512	5.2	521	522	523	
Coniferous forest	Mixed forest	Shrub and/or herbaceous vegetation associations	Natural grassland	Moors and heathland	Sclerophyllous vegetation	Transitional woodland shrub	Open spaces with little or no vegetation	Beaches, dunes and sand plains	Bare rock	Sparsely vegetated areas	Burnt areas	Glaciers and perpetual snow	WETLANDS	Inland wetlands	Inland marshes	Peatbogs	Coastal wetlands	Salt marshes	Salines	Intertidal flats	WATER BODIES	Inland waters	Water courses	Water bodies	Coastal waters	Coastal lagoons	Estuaries	Sea and ocean	TOTAL
		0					0						0	0			0				0	0			0				35
													0								0								0
													0								0								11
													0								0								23
		16					0						0	0			0				0	0			0				1979
													0								0								0
		16											0								0								1979
		220					0						0	0			0				91	91			0				7417
		10											0								17	17							1639
													0								0								77
													0								0								0
													0								0								570
		79											0								5	5							3550
													0								17	17							734
		131											0								40	40							794
													0								12	12							54
		0					0						0	0			0				0	0			0				39066
													0								0								18688
													0								0								8299
													0								0								0
													0								0								0
													0								0								12080
		1523					0						574	574			0				1008	1008			0				35507
													0								0								19791
		1220											0								0								1220
													0								0								12329
		304											0								0								304
													574	574							1008	1008							1582
													0								0								283
		29874					0						155	155			0				679	679			0				74440
		29874											155	155							679	679							39864
													0								0								0
													0								0								34576
		90					0						0	0			0				0	0			0				4102
		90											0								0								4102
													0								0								0
		134					0						7969	7969			0				1388	1388			0				17872
		34											7969	7969							1165	1165							9169
													0								0								4717
													0								0								2893
													0								0								51
													0								0								0
													0								0								0
		100											0								0								518
													0								223	223							525
		31856					0						8699	8699			0				3166	3166			0				180419

0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	35
													0								0								0
													0								0								11
													0								0								23
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1979
													0								0								0
													0								0								1979
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7417
													0								0								1639
													0								0								77
													0								0								0
													0								0								570
													0								0								3550
													0								0								734
													0								0								794
													0								0								54
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	39066
													0								0								18688
													0								0								8299
													0								0								0
													0								0								0
													0								0								12080
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	35507
													0								0								19791
													0								0								1220
													0								0								12329
													0								0								304
													0								0								1582
													0								0								283
8401	9370	34576	1172	0	0	33403	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	74440
8401	9370												0								0								39864
		34576	1172			33403							0								0								0
													0								0								34576
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4102	4102	0	4102	0	0	0	4102
													0								4102	4102		4102					4102
													0								0								0
297	564	3959	2070	0	0	1889	0	0	0	0	0	0	1556	1556	1535	21	0	0	0	0	8487	8487	518	7969	0	0	0	0	17872
													1199	1199	1199						7969	7969		7969					9169
		3685	2027			1659							54	54	33	21					0								4717
297	564												0								0								2893
		51				51							0								0								51
													0								0								0
													0								0								0
													0								518	518	518						518
		223	43			179							302	302	302						0								525
8698	9934	38535	3242	0	0	35293	0	0	0	0	0	0	1556	1556	1535	21	0	0	0	0	12589	12589	518	12071	0	0	0	0	180419
		6679					0						-7143	-7143			0				9423	9423			0				0

		221733											75591	75591							135609	135609							9299527
91364	221749	228412	138685			89726	0						68448	68448	66486	1962	0				145032	145032	33419	111614	0				9299527

Land Cover Resource & Use Account - summary

(by Dominant Landscape Types)

Summary Account	A1 URBAN DENSE AREAS	A2 DISPERSED URBAN AREAS	B1 BROAD PATTERN INTENSIVE AGRICULTURE	*B11 LOWLAND BROAD PATTERN INTENSIVE AGRICULTURE*	*B12 UPLAND BROAD PATTERN INTENSIVE AGRICULTURE*	*B13 MOUNTAIN BROAD PATTERN INTENSIVE AGRICULTURE*	B2 COMPOSITE RURAL LANDSCAPE	*B21 LOWLAND COMPOSITE RURAL LANDSCAPE*	*B22 UPLAND COMPOSITE RURAL LANDSCAPE*	*B23 MOUNTAIN COMPOSITE RURAL LANDSCAPE*	C1 FORESTED LANDSCAPE	*C11 LOWLAND FORESTED LANDSCAPE*	*C12 UPLAND FORESTED LANDSCAPE*	*C13 MOUNTAIN FORESTED LANDSCAPE*	C2 OPEN SEMI-NATURAL OR NATURAL LANDSCAPE	*C21 LOWLAND OPEN SEMI-NATURAL OR NATURAL LANDSCAPE*	*C22 UPLAND OPEN SEMI-NATURAL OR NATURAL LANDSCAPE*	*C23 MOUNTAIN OPEN SEMI-NATURAL OR NATURAL LANDSCAPE*	C3 LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER	*C31 LOWLAND LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER*	*C32 UPLAND LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER*	*C33 MOUNTAIN LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER*	***TOTAL***
Initial Surface																								
1 Artificial surfaces	***111339***	***34643***	***209615***	***206658***	***2957***	***0***	***6583***	***6554***	***29***	***0***	***7977***	***493***	***7484***	***0***	***9543***	***9442***	***101***	***0***	***152951***	***113397***	***39554***	***0***	***532651***
2 Agricultural areas	***364161***	***289771***	***3526889***	***3487901***	***38988***	***0***	***196143***	***195772***	***371***	***0***	***54913***	***4587***	***50326***	***0***	***128803***	***125974***	***2829***	***0***	***2076682***	***1595863***	***480819***	***0***	***6637362***
2.1+2.2 Arable Land & Permanent Crops	286889	255256	3104536	3070257	34280	0	114482	114138	344	0	35379	3452	31927	0	100414	98226	2188	0	1609445	1255986	353459	0	5506402
2.3+2.4 Pastures & Heterogeneous agricultural areas	77273	34515	422352	417644	4708	0	81661	81634	27	0	19534	1134	18399	0	28390	27749	641	0	467237	339877	127360	0	1130961
3 Forests and semi-natural areas	***146466***	***38050***	***339629***	***319893***	***19736***	***0***	***58499***	***58499***	***0***	***0***	***162655***	***3871***	***158329***	***455***	***83248***	***81778***	***1470***	***0***	***1089768***	***578402***	***511365***	***0***	***1918313***
3.1 Forests	139588	35258	303614	284248	19366	0	34320	34320		0	156640	3547	152643	450	18685	17300	1386	0	1008475	519847	488628	0	1696580
3.2+3.3 Shrub and other semi-natural land	6877	2792	36015	35645	370	0	24179	24179	0	0	6015	324	5686	5	64562	64478	84	0	81293	58555	22737	0	221733
4 Wetlands	***3503***	***3995***	***19217***	***19171***	***47***	***0***	***5268***	***5268***	***0***	***0***	***0***	***0***	***0***	***0***	***17764***	***17764***	***0***	***0***	***25845***	***25012***	***834***	***0***	***75591***
5 Water bodies	***15712***	***36648***	***34211***	***34211***	***0***	***0***	***291***	***291***	***0***	***0***	***644***	***365***	***279***	***0***	***29453***	***29453***	***0***	***0***	***18651***	***17992***	***659***	***0***	***135609***
A - TOTAL INITIAL SURFACE ~ 1975	***641181***	***403106***	***4129561***	***4067834***	***61727***	***0***	***266783***	***266383***	***400***	***0***	***226188***	***9316***	***216417***	***455***	***268811***	***264411***	***4400***	***0***	***3363897***	***2330666***	***1033232***	***0***	***9299527***
Consumption of Land Cover Resource (Supply by Land Cover)																							
1 Artificial surfaces	***158***	***37***	***109***	***109***	***0***	***0***	***0***	***0***	***0***	***0***	***10***	***0***	***10***	***0***	***0***	***0***	***0***	***0***	***135***	***94***	***40***	***0***	***449***
2 Agricultural areas	***6016***	***3237***	***32162***	***31957***	***206***	***0***	***1920***	***1920***	***0***	***0***	***715***	***114***	***600***	***0***	***1108***	***1072***	***36***	***0***	***21906***	***17942***	***3964***	***0***	***67064***
2.1+2.2 Arable Land & Permanent Crops	4882	2550	24412	24249	163	0	880	880	0	0	653	114	539	0	898	863	36	0	15257	12562	2695	0	49532
2.3+2.4 Pastures & Heterogeneous agricultural areas	1134	687	7751	7708	43	0	1040	1040	0	0	62	0	62	0	210	210	0	0	6649	5380	1269	0	17532
3 Forests and semi-natural areas	***5470***	***2530***	***27097***	***26606***	***491***	***0***	***9333***	***9333***	***0***	***0***	***2146***	***33***	***2109***	***5***	***733***	***669***	***64***	***0***	***53732***	***39969***	***13763***	***0***	***101042***
3.1 Forests	4875	1849	19056	18691	365	0	4287	4287	0	0	1806	33	1774		601	536	64	0	36712	25354	11359	0	69186
3.2+3.3 Shrub and other semi-natural land	595	681	8041	7915	126	0	5047	5047	0	0	340	0	335	5	132	132	0	0	17020	14616	2404	0	31856
4 Wetlands	***298***	***568***	***3517***	***3470***	***46***	***0***	***176***	***176***	***0***	***0***	***0***	***0***	***0***	***0***	***352***	***352***	***0***	***0***	***3787***	***3688***	***99***	***0***	***8699***
5 Water bodies	***140***	***180***	***1597***	***1597***	***0***	***0***	***99***	***99***	***0***	***0***	***54***	***0***	***54***	***0***	***75***	***75***	***0***	***0***	***1021***	***1014***	***7***	***0***	***3166***
B - TOTAL CONSUMPTION OF LAND COVER RESOURCE	***12083***	***6552***	***64482***	***63739***	***743***	***0***	***11528***	***11528***	***0***	***0***	***2925***	***147***	***2774***	***5***	***2268***	***2168***	***100***	***0***	***80581***	***62708***	***17873***	***0***	***180419***
Land Cover Flows resulting from Changes in the Uses of Land																							
LCF1 Urban land management	11	0	23	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	35
LCF2 Urban sprawl	472	198	807	807	0	0	0	0	0	0	45	0	45	0	0	0	0	0	457	399	58	0	1979
LCF3 Extension of economic sites and infrastructures	2930	445	1154	1153	1	0	0	0	0	0	408	0	408	0	16	16	0	0	2463	1548	916	0	7417
LCF4 Agricultural rotation and intensification	2099	1106	20748	20563	184	0	530	530	0	0	311	0	311	0	509	474	36	0	13764	11449	2315	0	39066
LCF5 Conversion of land to agriculture	2108	1567	9492	9302	190	0	1900	1900	0	0	839	0	839	0	487	468	18	0	19115	13405	5710	0	35507
LCF6 Forests creation and management	3355	1466	22496	22196	300	0	8095	8095	0	0	1041	33	1003	5	396	350	46	0	37592	29604	7988	0	74440
LCF7 Water body creation and management	521	518	1690	1690	0	0	0	0	0	0	76	0	76	0	67	67	0	0	1230	1054	175	0	4102
LCF8 Changes of Land Cover due to natural and multiple causes	587	1252	8071	8004	67	0	1004	1004	0	0	206	114	92	0	794	794	0	0	5960	5249	711	0	17872
C - TOTAL LAND COVER FLOWS 1975-1990	***12083***	***6552***	***64482***	***63739***	***743***	***0***	***11528***	***11528***	***0***	***0***	***2925***	***147***	***2774***	***5***	***2268***	***2168***	***100***	***0***	***80581***	***62708***	***17873***	***0***	***180419***
D - Final Surface ~ 1990 (D = A-B+C)	***641181***	***403106***	***4129561***	***4067834***	***61727***	***0***	***266783***	***266383***	***400***	***0***	***226188***	***9316***	***216417***	***455***	***268811***	***264411***	***4400***	***0***	***3363897***	***2330666***	***1033232***	***0***	***9299527***

Land Cover Resource & Use Account - detailed

(by Dominant Landscape Types)

Detailed Account	A1 URBAN DENSE AREAS	A2 DISPERSED URBAN AREAS	B1 BROAD PATTERN INTENSIVE AGRICULTURE	B11 LOWLAND BROAD PATTERN INTENSIVE AGRICULTURE	B12 UPLAND BROAD PATTERN INTENSIVE AGRICULTURE	B13 MOUNTAIN BROAD PATTERN INTENSIVE AGRICULTURE	B2 COMPOSITE RURAL LANDSCAPE	B21 LOWLAND COMPOSITE RURAL LANDSCAPE	B22 UPLAND COMPOSITE RURAL LANDSCAPE	B23 MOUNTAIN COMPOSITE RURAL LANDSCAPE	C1 FORESTED LANDSCAPE	C11 LOWLAND FORESTED LANDSCAPE	C12 UPLAND FORESTED LANDSCAPE	C13 MOUNTAIN FORESTED LANDSCAPE	C2 OPEN SEMI-NATURAL OR NATURAL LANDSCAPE	C21 LOWLAND OPEN SEMI-NATURAL OR NATURAL LANDSCAPE	C22 UPLAND OPEN SEMI-NATURAL OR NATURAL LANDSCAPE	C23 MOUNTAIN OPEN SEMI-NATURAL OR NATURAL LANDSCAPE	C3 LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER	C31 LOWLAND LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER	C32 UPLAND LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER	C33 MOUNTAIN LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER	TOTAL
Initial Surface																								
1 Artificial surfaces	***111339***	***34643***	***209615***	***206658***	***2957***	***0***	***6583***	***6554***	***29***	***0***	***7977***	***493***	***7484***	***0***	***9543***	***9442***	***101***	***0***	***152951***	***113397***	***39554***	***0***	***532651***
1.1 Urban fabric	84640	24089	184397	181777	2619	0	6275	6254	21	0	7106	428	6678		5901	5822	79	0	137063	102258	34805	0	449472
1.2 Industrial, commercial and transport units	16367	4945	21055	20834	221	0	204	204		0	275		275		720	720		0	9842	7745	2097	0	53407
1.3 Mines, dump and construction sites	3207	396	1102	1090	13	0	8		8	0	335		335		77	57	20	0	4050	1856	2194	0	9174
1.4 Artificial non-agricultural vegetated areas	7126	5212	3061	2957	104	0	96	96		0	262	66	196		2845	2842	3	0	1996	1538	458	0	20597
2 Agricultural areas	***364161***	***289771***	***3526889***	***3487901***	***38988***	***0***	***196143***	***195772***	***371***	***0***	***54913***	***4587***	***50326***	***0***	***128803***	***125974***	***2829***	***0***	***2076682***	***1595863***	***480819***	***0***	***6637362***
2.1 Arable Land	271454	247696	3059495	3026636	32859	0	81877	81877		0	33845	3361	30483		90777	89636	1140	0	1542179	1199781	342399	0	5327323
2.2 Permanent Crops	15434	7561	45042	43621	1421	0	32605	32261	344	0	1534	91	1443		9637	8590	1047	0	67266	56205	11061	0	179079
2.3 Pastures	32283	22128	302420	299091	3329	0	43881	43881		0	11696	604	11093		24161	23650	511	0	285582	210557	75025	0	722151
2.4 Heterogeneous agricultural areas	44990	12386	119932	118953	1379	0	37780	37753	27	0	7838	531	7307		4229	4099	130	0	181655	129320	52335	0	408810
3 Forests and semi-natural areas	***146466***	***38050***	***339629***	***319893***	***19736***	***0***	***58499***	***58499***	***0***	***0***	***162655***	***3871***	***158329***	***455***	***83248***	***81778***	***1470***	***0***	***1089768***	***578402***	***511365***	***0***	***1918313***
3.1 Forests	139588	35258	303614	284248	19366	0	34320	34320		0	156640	3547	152643	450	18685	17300	1386	0	1008475	519847	488628	0	1696580
3.2 Shrub and/or herbaceous vegetation associations	6877	2792	36015	35645	370	0	24179	24179		0	6015	324	5686	5	64562	64478	84	0	81293	58555	22737	0	221733
3.3 Open spaces with little or no vegetation			0			0	0			0	0				0			0	0			0	0
4 Wetlands	***3503***	***3995***	***19217***	***19171***	***47***	***0***	***5268***	***5268***	***0***	***0***	***0***	***0***	***0***	***0***	***17764***	***17764***	***0***	***0***	***25845***	***25012***	***834***	***0***	***75591***
4.1 Inland wetlands	3503	3995	19217	19171	47	0	5268	5268		0	0				17764	17764		0	25845	25012	834	0	75591
4.2 Coastal wetlands			0			0	0			0	0				0			0	0			0	0
5 Water bodies	***15712***	***36648***	***34211***	***34211***	***0***	***0***	***291***	***291***	***0***	***0***	***644***	***365***	***279***	***0***	***29453***	***29453***	***0***	***0***	***18651***	***17992***	***659***	***0***	***135609***
5.1 Inland waters	15712	36648	34211	34211		0	291	291		0	644	365	279		29453	29453		0	18651	17992	659	0	135609
5.2 Coastal waters			0			0	0			0	0				0			0	0			0	0
A - TOTAL INITIAL SURFACE – 1975	***641181***	***403106***	***4129561***	***4067834***	***61727***	***0***	***266783***	***266383***	***400***	***0***	***226188***	***9316***	***216417***	***455***	***268811***	***264411***	***4400***	***0***	***3363897***	***2330666***	***1033232***	***0***	***9299527***
Consumption of Land Cover Resource (Supply by Land Cover)																							
1 Artificial surfaces	***158***	***37***	***109***	***109***	***0***	***0***	***0***	***0***	***0***	***0***	***10***	***0***	***10***	***0***	***0***	***0***	***0***	***0***	***135***	***94***	***40***	***0***	***449***
1.1 Urban fabric	0		0	0		0	0		0	0	0				0			0	0			0	0
1.2 Industrial, commercial and transport units	8		6	6		0	0		0	0	0				0			0	0			0	15
1.3 Mines, dump and construction sites	150	6	102	102		0	0		0	0	10		10		0			0	135	94	40	0	403
1.4 Artificial non-agricultural vegetated areas		31	0			0	0		0	0	0				0			0	0			0	31
2 Agricultural areas	***6016***	***3237***	***32162***	***31957***	***206***	***0***	***1920***	***1920***	***0***	***0***	***715***	***114***	***600***	***0***	***1108***	***1072***	***36***	***0***	***21906***	***17942***	***3964***	***0***	***67064***
2.1 Arable Land	4549	2416	23459	23337	122	0	861	861	0	0	578	114	464		868	832	36	0	14396	11810	2585	0	47127
2.2 Permanent Crops	333	134	952	912	41	0	19	19	0	0	75		75		31	31		0	861	752	110	0	2405
2.3 Pastures	489	674	6575	6532	43	0	281	281	0	0	35		35		210	210		0	5258	4393	864	0	13520
2.4 Heterogeneous agricultural areas	645	14	1176	1176		0	759	759	0	0	27		27		0			0	1392	987	404	0	4011
3 Forests and semi-natural areas	***5470***	***2530***	***27097***	***26606***	***491***	***0***	***9333***	***9333***	***0***	***0***	***2146***	***33***	***2109***	***5***	***733***	***669***	***64***	***0***	***53732***	***39969***	***13763***	***0***	***101042***
3.1 Forests	4875	1849	19056	18691	365	0	4287	4287	0	0	1806	33	1774		601	536	64	0	36712	25354	11359	0	69186
3.2 Shrub and/or herbaceous vegetation associations	595	681	8041	7915	126	0	5047	5047	0	0	340		335	5	132	132		0	17020	14616	2404	0	31856
3.3 Open spaces with little or no vegetation			0			0	0		0	0	0				0			0	0			0	0
4 Wetlands	***298***	***568***	***3517***	***3470***	***46***	***0***	***176***	***176***	***0***	***0***	***0***	***0***	***0***	***0***	***352***	***352***	***0***	***0***	***3787***	***3688***	***99***	***0***	***8699***
4.1 Inland wetlands	298	568	3517	3470	46	0	176	176	0	0	0				352	352		0	3787	3688	99	0	8699
4.2 Coastal wetlands			0			0	0		0	0	0				0			0	0			0	0
5 Water bodies	***140***	***180***	***1597***	***1597***	***0***	***0***	***99***	***99***	***0***	***0***	***54***	***0***	***54***	***0***	***75***	***75***	***0***	***0***	***1021***	***1014***	***7***	***0***	***3166***
5.1 Inland waters	140	180	1597	1597		0	99	99	0	0	54		54		75	75		0	1021	1014	7	0	3166
5.2 Coastal waters			0			0	0		0	0	0				0			0	0			0	0
B - TOTAL CONSUMPTION OF LAND COVER RESOURCE	***12083***	***6552***	***64482***	***63739***	***743***	***0***	***11528***	***11528***	***0***	***0***	***2925***	***147***	***2774***	***5***	***2268***	***2168***	***100***	***0***	***80581***	***62708***	***17873***	***0***	***180419***
Land Cover Flows resulting from Changes in the Uses of Land																							
LCF1 Urban land management	***11***	***0***	***23***	***23***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***35***
LCF11 Urban development/ infilling			0			0	0			0	0				0			0	0			0	0
LCF12 Developped land recycling	11		0			0	0			0	0				0			0	0			0	11
LCF13 Development of green urban areas			23	23		0	0			0	0				0			0	0			0	23
LCF2 Urban sprawl	***472***	***198***	***807***	***807***	***0***	***0***	***0***	***0***	***0***	***0***	***45***	***0***	***45***	***0***	***0***	***0***	***0***	***0***	***457***	***399***	***58***	***0***	***1979***
LCF21 Urban continuous sprawl			0			0	0			0	0				0			0	0			0	0
LCF22 Urban diffuse sprawl	472	198	807	807		0	0			0	45		45		0			0	457	399	58	0	1979
LCF3 Extension of economic sites and infrastructures	***2930***	***445***	***1154***	***1153***	***1***	***0***	***0***	***0***	***0***	***0***	***408***	***0***	***408***	***0***	***16***	***16***	***0***	***0***	***2463***	***1548***	***916***	***0***	***7417***
LCF31 Extension of industrial & commercial sites	279	168	796	795	1	0	0			0	0				0			0	397	293	103	0	1639
LCF32 Extension of transport networks		10	67	67		0	0			0	0				0			0	0			0	77
LCF33 Extension of habours			0			0	0			0	0				0			0	0			0	0
LCF34 Extension of airports	570		0			0	0			0	0				0			0	0			0	570
LCF35 Extension of mines and quarrying areas	1303	41	157	157		0	0			0	355		355		16	16		0	1678	1141	537	0	3550
LCF36 Extension of dumpsites	198	47	97	97		0	0			0	41		41		0			0	351	76	275	0	734
LCF37 Construction	581	180	0			0	0			0	0				0			0	33	33		0	794
LCF38 Extension of sport and leisure facilities			38	38		0	0			0	12		12		0			0	4	4		0	54
LCF4 Agricultural rotation and intensification	***2099***	***1106***	***20748***	***20563***	***184***	***0***	***530***	***530***	***0***	***0***	***311***	***0***	***311***	***0***	***509***	***474***	***36***	***0***	***13764***	***11449***	***2315***	***0***	***39068***
LCF41 Recent extension of pasture, fallow land, set aside	475	406	11747	11725	22	0	163	163		0	149		149		158	158		0	5590	4150	1440	0	18688
LCF42 Planting of vineyards, fruit and olive trees over arable & pasture	940	189	4184	4105	79	0	92	92		0	55		55		198	162	36	0	2642	2424	217	0	8299
LCF43 Rotation of annual crops			0			0	0			0	0				0			0	0			0	0
LCF44 Rotation of permanent crops			0			0	0			0	0				0			0	0			0	0
LCF45 Intensification of agriculture	683	512	4817	4733	84	0	275	275		0	107		107		153	153		0	5533	4875	658	0	12080
LCF5 Conversion of land to agriculture	***2108***	***1567***	***9492***	***9302***	***190***	***0***	***1900***	***1900***	***0***	***0***	***839***	***0***	***839***	***0***	***487***	***468***	***18***	***0***	***19115***	***13405***	***5710***	***0***	***35507***
LCF51 Intensive conversion of forest to agriculture	1125	1075	6266	6157	109	0	893	893		0	215		215		162	143	18	0	10055	7509	2545	0	19791
LCF52 Intensive conversion of marginal land to agriculture	20		558	484	74	0	0			0	0				0			0	642	583	59	0	1220
LCF53 Diffuse conversion of forest to agriculture	833	362	1984	1977	7	0	888	888		0	586		586		274	274		0	7401	4306	3095	0	12329
LCF54 Diffuse conversion of marginal land to agriculture	11		164	164		0	3	3		0	0				0			0	126	126		0	304
LCF55 Conversion of wetlands to agriculture	32	124	411	411		0	115	115		0	38		38		51	51		0	812	804	7	0	1582
LCF56 Conversion of developed areas to agriculture	87	6	109	109		0	0			0	0				0			0	81	77	4	0	283
LCF6 Forests creation and management	***3355***	***1466***	***22496***	***22196***	***300***	***0***	***8095***	***8095***	***0***	***0***	***1041***	***33***	***1003***	***5***	***396***	***350***	***46***	***0***	***37592***	***29604***	***7988***	***0***	***74440***
LCF61 Forests creation	938	1157	11889	11837	52	0	5590	5590		0	385		380	5	300	300		0	19605	16843	2762	0	39864
LCF62 Forests rotation			0			0	0			0	0				0			0	0			0	0
LCF63 Recent felling and transition	2416	310	10607	10359	248	0	2505	2505		0	656	33	624		96	50	46	0	17986	12761	5225	0	34576
LCF7 Water body creation and management	***521***	***518***	***1690***	***1690***	***0***	***0***	***0***	***0***	***0***	***0***	***76***	***0***	***76***	***0***	***67***	***67***	***0***	***0***	***1230***	***1054***	***175***	***0***	***4102***
LCF71 Water body creation	521	518	1690	1690		0	0			0	76		76		67	67		0	1230	1054	175	0	4102
LCF72 Water body management			0			0	0			0	0				0			0	0			0	0
LCF8 Changes of land cover due to natural and multiple causes	***587***	***1252***	***8071***	***8004***	***67***	***0***	***1004***	***1004***	***0***	***0***	***206***	***114***	***92***	***0***	***794***	***794***	***0***	***0***	***5960***	***5249***	***711***	***0***	***17872***
LCF81 Semi-natural rotation	334	572	3997	3951	46	0	160	160		0	0				410	410		0	3695	3596	99	0	9169
LCF82 Farmland abandonment without significant woodland creation	130	387	2908	2887	21	0	147	147		0	34	9	25		168	168		0	943	802	141	0	4717
LCF83 Farmland abandonment with woodland creation	20	166	743	743		0	697	697		0	27		27		63	63		0	1177	705	472	0	2893
LCF84 Other land abandonment (other than farmland)	51		0			0	0			0	0				0			0	0			0	51
LCF85 Forests and shrubs fires			0			0	0			0	0				0			0	0			0	0
LCF86 Coastal erosion			0			0	0			0	0				0			0	0			0	0
LCF87 Impacts of storms, floods…	52	107	172	172		0	0			0	145	105	40		0			0	42	42		0	518
LCF89 Other changes and unknown		20	250	250		0	0			0	0				152	152		0	103	103		0	525
C - TOTAL LAND COVER FLOWS 1975-1990	***12083***	***6552***	***64482***	***63739***	***743***	***0***	***11528***	***11528***	***0***	***0***	***2925***	***147***	***2774***	***5***	***2268***	***2168***	***100***	***0***	***80581***	***62708***	***17873***	***0***	***180419***
D - Final Surface – 1990 (D = A-B+C)	***641181***	***403106***	***4129561***	***4067834***	***61727***	***0***	***266783***	***266383***	***400***	***0***	***226188***	***9316***	***216417***	***455***	***268811***	***264411***	***4400***	***0***	***3363897***	***2330666***	***1033232***	***0***	***9299527***

LAND & ECOSYSTEMS ACCOUNTS - BASIC ACCOUNTS (ROMANIA)

Matrix Of Land Cover Changes 1975-1990; CLC Level2/Level 3

	FINAL YEAR ⇊ OPENING YEAR ⇉	111 Continuous urban fabric	112 Discontinuous urban fabric	121 Industrial or commercial units	122 Road and rail networks and associated land	123 Port areas	124 Airports	131 Mineral extraction sites	132 Dump sites	133 Construction sites	141 Green urban areas	142 Sport and leisure facilities	211 Non-irrigated arable land	212 Permanently irrigated land	213 Rice fields	221 Vineyards	222 Fruit trees and berry plantations	223 Olive groves	231 Pastures	241 Annual crops associated with permanent crops	242 Complex cultivation patterns	243 Land principally occupied by agriculture with significant areas of natural vegetation	244 Agro-forestry areas	311 Broad-leaved forest	312 Coniferous forest	313 Mixed forest	321 Natural grassland	322 Moors and heathland	323 Sclerophyllous vegetation	324 Transitional woodland shrub	331 Beaches, dunes and sand plains	332 Bare rock	333 Sparsely vegetated areas	334 Burnt areas	335 Glaciers and perpetual snow	411 Inland marshes	412 Peatbogs	421 Salt marshes	422 Salines	423 Intertidal flats	511 Water courses	512 Water bodies	521 Coastal lagoons	522 Estuaries	523 Sea and ocean	**TOTAL OPENING YEAR ~1975**	***Increase (+)***	***Decrease (-)***	***Net Changes 1975-1990***	**TOTAL FINAL YEAR ~1990**
11	Urban fabric	16482	1148808	1219	109	0	19	12		95	93	24	1634			0	435	282		260	156	1179	1312		463	70	80	747	15		78	129	9				208					142	607				**1174664**	*16244*	*9374*	*6869*	**1181533**
12	Industrial, commercial and transport units	1	1133	83234	3667	818	2844	137	0	7			1996			185	16		141	113	490	206		72	75	72	128			252	0	33				83					64	48				**95815**	*12523*	*5252*	*7271*	**103086**
13	Mines, dump and construction sites		11	273		37		12118	2866	3597			379			67			18		7	237		90	2	28	133			76		97				7					231	104			6	**20383**	*8414*	*1802*	*6612*	**26996**
14	Artificial non-agricultural vegetated areas	0	62	0							3745	2009	0			20						0		32			0									27						12				**5907**	*363*	*153*	*210*	**6117**
21	Arable Land	53	4693	4105	269		122	1562	362	409	5	0	8102924		34439	39056	13864		30454	7378	238688	63646		14793	88	4	50908	631		4287	1891	164	161			3691					1262	7825			3	**8627740**	*204694*	*490377*	*-285683*	**8342057**
22	Permanent Crops	17	906	290		11		5	0	64			23356			257067	327659		326	1125	4570	4741		1780	19	21	2878	129		321	127	43				93					89	34	1			**625672**	*68393*	*40946*	*27447*	**653119**
23	Pastures		235	262	3	5		341					12885			363	48		462700	124	1753	1841		3298	52	0	2290	7		1210	537		4			1449					221	2146				**491774**	*69819*	*29074*	*40745*	**532518**
24	Heterogeneous agricultural areas	49	2501	960	117	26	0	814	0	38			24992		1	2288	1860		2542	91527	396679	1773262		12001	1252	1625	16904	1093		2500	274	428	102			476					288	1037			2	**2335638**	*419201*	*74171*	*345031*	**2680669**
31	Forests	8	2378	1120	97	51		1673	123	491	55		19858		31	939	1400		2170	252	1720	28033		4149354	1248752	1049918	82888	13629		127699	1015	1533	211			2154					1945	2580				**6742079**	*191735*	*294054*	*-102319*	**6639760**
32	Shrub and/or herbaceous vegetation associations	6	2770	1482	218	40		887	0	372	82	48	60017		266	4907	2206		24108	914	6775	48654		83134	31989	22047	2030540	199817		375511	2866	1847	1959			6624					1501	8917	30		9	**2920545**	*319411*	*314677*	*4735*	**2925279**
33	Open spaces with little or no vegetation	20	434	179	106			235	38	23			2864			88	94		127	40	361	1541		788	161	44	1574	116		988	35754	13571	14849			761					907	3258	36		194	**79152**	*18503*	*14978*	*3525*	**82677**
41	Inland wetlands		160	373	0	4		19	65	83			43360		154	88	32		7586	371	250	729		11562	18		3853	7		948	902		65			236850					506	13989	946		196	**323116**	*28891*	*86265*	*-57375*	**265741**
42	Coastal wetlands																																														**0**	*0*	*0*	*0*	**0**
51	Inland waters		785	557	276	98		226	77	225	40	16	12873		1	120	29		2087	63	363	1569		5998	57	20	1545	137		1407	3876	4	9			12154					78177	110758	860		0	**234408**	*48111*	*45473*	*2638*	**237046**
52	Coastal waters		19	9		86		10	2	18			28			5											33				216					1164						400	63854		16822	**82666**	*2283*	*1990*	*293*	**82959**
		16638	1164895	94064	4862	1176	2985	18040	3533	5422	4020	2097	8307165	0	34892	305629	347490	0	532518	102064	652835	1925770	0	4283366	1282536	1073858	2194419	215583	0	515277	47587	17728	17362	0	0	265741	0	0	0	0	85333	151713	65726	0	17233	23759558	*1408587*	*1408587*	*0*	**23759558**

LAND & ECOSYSTEMS ACCOUNTS - BASIC ACCOUNTS (ROMANIA)

Account of Land Cover Changes
(by Dominant Landscape Types)

Landscape types	A1				A2				B1				*B11*				*B12*				*B13*				B2				*B21*				*B22*				*B23*			
	URBAN DENSE AREAS				DISPERSED URBAN AREAS				BROAD PATTERN INTENSIVE AGRICULTURE				*LOWLAND BROAD PATTERN INTENSIVE AGRICULTURE*				*UPLAND BROAD PATTERN INTENSIVE AGRICULTURE*				*MOUNTAIN BROAD PATTERN INTENSIVE AGRICULTURE*				COMPOSITE RURAL LANDSCAPE				*LOWLAND COMPOSITE RURAL LANDSCAPE*				*UPLAND COMPOSITE RURAL LANDSCAPE*				*MONTAIN COMPOSITE RURAL LANDSCAPE*			
Land Cover (Corine Land Cover level 2)	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990
1. Artificial surfaces	**283323**	**10742**	**3953**	**290111**	**89842**	**4053**	**1895**	**92001**	**287567**	**9322**	**5146**	**291742**	**278522**	**9300**	**5057**	**282765**	**9045**	**22**	**90**	**8977**	**0**	**0**	**0**	**0**	**71211**	**590**	**89**	**71713**	**26468**	**178**	**30**	**26616**	**38108**	**413**	**58**	**38462**	**6635**	**0**	**0**	**6635**
11 Urban fabric	243410	3326	2134	244603	76764	1114	719	77159	255749	4576	2452	257873	247071	4557	2424	249203	8679	19	28	8670					69105	250	76	69279	25210	55	18	25248	37476	194	58	37613	6418	0	0	6418
12 Industrial, commercial and transport units	29434	4214	1485	32163	9899	1747	352	11294	30310	3726	2526	31510	29972	3723	2464	31230	339	3	62	280					1796	156	1	1951	1135	122	1	1256	515	34		550	145		0	145
13 Mines, dump and construction sites	7183	3028	281	9930	2305	1145	814	2636	1024	940	165	1799	997	940	165	1772	27			27					261	184	11	434	76	0	13	66	113	184	0	297	71			71
14 Artificial non-agricultural vegetated areas	3296	172	53	3416	874	47	10	911	483	80	3	560	483	80	3	560									49	0	0	49	46			46	3			3				
2. Agricultural areas	**1265409**	**71459**	**54360**	**1282508**	**592393**	**25857**	**22485**	**595766**	**4580822**	**214636**	**177779**	**4617679**	**4467579**	**212330**	**176097**	**4503812**	**113243**	**2306**	**1682**	**113867**	**0**	**0**	**0**	**0**	**732527**	**138225**	**135991**	**734761**	**320458**	**103712**	**101258**	**322912**	**335815**	**33897**	**34284**	**335429**	**76254**	**617**	**450**	**76421**
21 Arable Land	816306	20726	32811	804215	480732	9056	17305	472483	4191450	74325	140081	4125694	4088703	73540	138809	4023434	102747	785	1273	102260					345073	6141	126371	224843	226350	3664	96266	133754	112189	2452	30075	84566	6533	25	35	6524
22 Permanent Crops	115129	9211	4491	119850	34471	2611	2963	34119	96147	23041	20846	98342	93670	22567	20700	95537	2476	475	146	2805					49431	481	449	49463	9876	146	151	9865	33784	331	296	33819	5771	10	1	5780
23 Pastures	46450	3143	4993	44600	15081	2368	982	16467	139363	28786	6937	161212	136679	28252	6920	158011	2684	534	17	3201					52265	9338	3108	58494	39495	9075	2973	45597	11568	262	135	11695	1201			1201
24 Heterogeneous agricultural areas	287524	38385	12066	313844	62110	11822	1235	72697	153862	88484	9915	232431	148526	87972	9669	226830	5336	512	246	5602					285759	122266	6063	401962	44737	90833	1873	133696	178274	30852	3777	205349	62748	582	413	62916
3. Forest and semi-natural areas	**897100**	**42428**	**70628**	**868900**	**166846**	**12027**	**18115**	**160758**	**464702**	**73312**	**104624**	**433390**	**448671**	**72084**	**102858**	**417896**	**16032**	**1229**	**1766**	**15494**	**0**	**0**	**0**	**0**	**414433**	**10057**	**13708**	**410782**	**72193**	**2468**	**5392**	**69269**	**263439**	**5858**	**6426**	**262871**	**78801**	**1731**	**1891**	**78642**
31 Forests	624774	22242	20585	626430	107253	4401	5625	106029	215367	25209	24846	215926	207919	24810	24357	208372	7448	395	289	7554					256671	3322	6819	253173	42457	955	518	42893	171731	2046	4634	169144	42483	321	1666	41137
32 Shrub and/or herbaceous vegetation associations	254467	19006	45746	227722	53301	6631	10394	49538	240324	41902	76819	205407	232781	41215	75392	198604	7543	687	1427	6803					156439	6606	6642	156402	29229	1514	4873	25870	90890	3683	1545	93028	36319	1410	224	37504
33 Open spaces with little or no vegetation	17859	1186	4297	14748	6292	995	2096	5190	9011	6205	3159	12057	7971	6058	3109	10920	1040	147	50	1137					1324	126	247	1206	506	0		506	818	129	247	700				
4. Wetlands	**2255**	**1701**	**696**	**3260**	**2170**	**541**	**1497**	**1214**	**35225**	**10737**	**18478**	**27484**	**35215**	**10737**	**18478**	**27474**	**11**	**0**	**0**	**11**	**0**	**0**	**0**	**0**	**1173**	**510**	**48**	**1635**	**1065**	**123**	**48**	**1140**	**108**	**387**	**0**	**495**	**0**	**0**	**0**	**0**
41 Inland wetlands	2255	1701	696	3260	2170	541	1497	1214	35225	10737	18478	27484	35215	10737	18478	27474	11			11					1173	510	48	1635	1065	123	48	1140	108	387		495				
42 Coastal wetlands					0	0	0	0	0	0	0	0													0	0	0	0												
5. Water bodies	**20196**	**6132**	**2824**	**23504**	**11103**	**3506**	**1993**	**12616**	**73108**	**11787**	**13767**	**71128**	**72693**	**11759**	**13721**	**70732**	**415**	**28**	**46**	**396**	**0**	**0**	**0**	**0**	**2140**	**695**	**242**	**2594**	**1567**	**478**	**231**	**1814**	**498**	**217**	**3**	**712**	**75**	**0**	**7**	**68**
51 Inland waters	19633	6111	2789	22956	10059	3464	1905	11618	73108	11787	13767	71128	72693	11759	13721	70732	415	28	46	396					2140	695	242	2594	1567	478	231	1814	498	217	3	712	75		7	68
52 Coastal waters	563	21	36	549	1044	42	88	998	0	0	0	0													0	0	0	0												
TOTAL	**2468285**	**132462**	**132462**	**2468285**	**862355**	**45985**	**45985**	**862355**	**5441423**	**319795**	**319795**	**5441423**	**5302679**	**316210**	**316210**	**5302679**	**138745**	**3585**	**3585**	**138745**	**0**	**0**	**0**	**0**	**1221485**	**150078**	**150078**	**1221485**	**421751**	**106958**	**106958**	**421751**	**637970**	**40771**	**40771**	**637970**	**161765**	**2347**	**2347**	**161765**

Landscape types	C1				*C11*				*C12*				*C13*				C2				*C21*				*C22*				*C23*				C3				*C31*				*C32*				*C33*				TOTAL			
	FORESTED LANDSCAPE				*LOWLAND FORESTED LANDSCAPE*				*UPLAND FORESTED LANDSCAPE*				*MOUNTAIN FORESTED LANDSCAPE*				OPEN SEMI-NATURAL OR NATURAL				*LOWLAND OPEN SEMI-NATURAL OR*				*UPLAND OPEN SEMI-NATURAL OR*				*MOUNTAIN OPEN SEMI-NATURAL OR*				LANDSCAPE WITH NO DOMINANT LAND				*LOWLAND LANDSCAPE WITH NO*				*UPLAND LANDSCAPE WITH NO*				*MOUNTAIN LANDSCAPE WITH NO*							
Land Cover (Corine Land Cover level 2)	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	(-)t Changes	1990
1. Artificial surfaces	**91660**	**3808**	**1518**	**93949**	**2867**	**38**	**0**	**2904**	**25200**	**411**	**243**	**25368**	**63593**	**3359**	**1276**	**65677**	**60975**	**2772**	**1346**	**62401**	**14198**	**1610**	**942**	**14867**	**19504**	**227**	**102**	**19628**	**27274**	**934**	**302**	**27906**	**412191**	**6259**	**2634**	**415815**	**147888**	**3269**	**1400**	**149757**	**226906**	**2184**	**930**	**228160**	**37397**	**805**	**304**	**37898**	**1296769**	**37545**	**16582**	**20963**	**1317732**
11 Urban fabric	82852	2148	1181	83820	2735	0	0	2735	23050	219	173	23096	57068	1929	1008	57989	56558	1337	850	57045	12983	939	562	13360	18507	200	102	18604	25068	198	186	25081	390225	3492	1962	391754	138991	1910	1002	139900	215555	1178	699	216035	35678	403	261	35820	1174664	16244	9374	6869	1181533
12 Industrial, commercial and transport units	3714	671	251	4133	131			131	1507	47	41	1513	2075	624	210	2488	2784	462	364	2882	957	378	352	983	930	28	0	958	896	57	12	941	17878	1547	272	19153	7890	763	218	8435	9269	515	44	9740	719	269	10	978	95815	12523	5252	7271	103088
13 Mines, dump and construction sites	4497	989	87	5399		38		38	593	144	29	708	3904	807	58	4653	1586	972	105	2454	231	293		524	66			66	1289	679	105	1863	3528	1156	340	4344	716	533	120	1129	1912	491	187	2215	900	133	33	1000	20383	8414	1802	6612	26996
14 Artificial non-agricultural vegetated areas	598	0	0	598					51			51	547			547	47	0	27	20	27		27						20			20	560	64	60	563	291	64	60	294	170			170	100			100	5907	363	153	210	6117
2. Agricultural areas	**439556**	**26534**	**19559**	**446530**	**24761**	**764**	**714**	**24811**	**150326**	**8528**	**7711**	**151142**	**264469**	**17242**	**11134**	**270577**	**631662**	**68730**	**37935**	**662457**	**176668**	**51086**	**15286**	**212467**	**228919**	**6333**	**11481**	**223772**	**226074**	**11311**	**11168**	**226218**	**3838454**	**216666**	**186459**	**3868662**	**1683189**	**156283**	**130644**	**1708828**	**1860662**	**51314**	**48467**	**1863509**	**294603**	**9069**	**7348**	**296325**	**12080824**	**762107**	**634568**	**127540**	**12208363**
21 Arable Land	56501	1134	7159	50476	9658	48	666	9040	28397	445	5897	22945	18447	640	595	18492	359272	40603	25589	374285	153806	37985	12151	179640	132114	1702	6554	127262	73352	915	6884	67383	2378407	52715	141062	2290060	1244685	37802	103245	1179242	1030401	13702	33656	1010447	103321	1211	4161	100371	8627740	204694	490377	-285683	8342057
22 Permanent Crops	48643	816	605	48854	1962	1	0	1963	22804	258	139	22922	23877	557	466	23968	24829	8181	925	32085	6650	7521	727	13444	8550	253	189	8615	9629	406	16	10026	257022	24052	10666	270407	105649	19623	8241	117031	128383	3896	2392	129887	22990	533	34	23490	625672	68393	40946	27447	653119
23 Pastures	5554	422	51	5924	468	0	46	422	2000	123	4	2118	3085	301	1	3385	32207	4231	2675	33763	7904	3087	2248	8742	10789	607	165	11231	13514	537	262	13790	200855	21531	10328	212058	94378	14795	7101	102064	93760	5425	2392	96793	12724	1311	835	13201	491774	69819	29074	40745	532518
24 Heterogeneous agricultural areas	328858	24163	11744	341275	12673	719	2	13386	97125	7703	1671	103157	219059	15744	10071	224732	215354	15715	8745	222324	8309	2493	161	10641	77466	3735	4572	76664	129579	9453	4012	135019	1002171	118368	24403	1096136	238485	84063	12057	310491	608118	28291	10027	626382	155568	6013	2318	159263	2335638	419201	74171	345031	2680669
3. Forest and semi-natural areas	**3955872**	**206548**	**216514**	**3945906**	**25896**	**283**	**369**	**25810**	**541638**	**13499**	**14411**	**540726**	**3388338**	**192766**	**201734**	**3379370**	**1216224**	**70443**	**60232**	**1226435**	**96600**	**19582**	**13185**	**102996**	**266894**	**12145**	**7103**	**271937**	**852730**	**38716**	**39944**	**851502**	**2626598**	**114834**	**139887**	**2601545**	**595540**	**49542**	**64935**	**580148**	**1446813**	**43311**	**50425**	**1439700**	**584244**	**21981**	**24528**	**581696**	**9741775**	**529648**	**623709**	**-94059**	**9647716**
31 Forests	3159099	68366	142050	3085409	19490	126	254	19362	450842	5134	9266	446718	2688767	63101	132531	2619337	653165	23745	34824	642086	27324	11367	3406	35286	126738	2277	4006	125009	499103	10181	27412	481791	1725750	44459	59504	1710705	357214	21145	18617	359742	952508	17738	23692	946556	416027	5575	17195	404407	6742079	191735	294054	-102319	6639760
32 Shrub and/or herbaceous vegetation associations	781178	136015	73884	843308	6406	158	116	6448	89827	8361	5092	93095	684945	127496	68676	743765	551175	44628	24752	571052	62037	6725	9345	59417	139615	9868	3023	146460	349523	28035	12383	365174	883661	64625	76440	871850	228942	23657	44012	208587	487721	24777	25121	487378	166998	16195	7308	175885	2920545	319411	314677	4735	2925279
33 Open spaces with little or no vegetation	15595	2173	580	17188					970	4	53	921	14626	2169	527	16267	11884	2070	656	13297	7238	1489	435	8293	541		73	468	4105	581	149	4536	17187	5746	3943	18990	9384	4741	2306	11819	6584	794	1612	5766	1219	211	25	1405	79152	18503	14978	3525	82677
4. Wetlands	**166**	**0**	**0**	**166**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**166**	**0**	**0**	**166**	**255433**	**11132**	**52560**	**214005**	**254983**	**11094**	**52414**	**213663**	**273**	**38**	**5**	**306**	**176**	**0**	**141**	**35**	**26693**	**4269**	**12985**	**17977**	**25402**	**3317**	**12714**	**16005**	**1290**	**802**	**271**	**1821**	**1**	**150**	**0**	**151**	**323116**	**28891**	**86265**	**-57375**	**265741**
41 Inland wetlands	166	0	0	166									166		0	166	255433	11132	52560	214005	254983	11094	52414	213663	273	38	5	306	176		141	35	26693	4269	12985	17977	25402	3317	12714	16005	1290	802	271	1821	1	150		151	323116	28891	86265	-57375	265741
42 Coastal wetlands	0	0	0	0													0	0	0	0													0	0	0	0													0	0	0	0	0
5. Water bodies	**12603**	**1489**	**786**	**13306**	**576**	**0**	**2**	**574**	**7051**	**152**	**224**	**6979**	**4976**	**1337**	**560**	**5753**	**139242**	**14825**	**15829**	**138238**	**137656**	**14106**	**15650**	**136112**	**1152**	**79**	**132**	**1099**	**434**	**640**	**47**	**1028**	**58681**	**11960**	**12022**	**58619**	**40367**	**6362**	**9081**	**37648**	**17716**	**5407**	**2925**	**20197**	**599**	**191**	**17**	**773**	**317074**	**50394**	**47463**	**2931**	**320005**
51 Inland waters	12603	1489	786	13306	576	0	2	574	7051	152	224	6979	4976	1337	560	5753	58183	12606	13963	56826	56597	11887	13784	54700	1152	79	132	1099	434	640	47	1028	58681	11960	12022	58619	40367	6362	9081	37648	17716	5407	2925	20197	599	191	17	773	234408	48111	45473	2638	237046
52 Coastal waters	0	0	0	0													81059	2219	1867	81412	81059	2219	1867	81412									0	0	0	0													82666	2283	1990	293	82959
TOTAL	**4499857**	**238378**	**238378**	**4499857**	**54100**	**1085**	**1085**	**54100**	**724215**	**22589**	**22589**	**724215**	**3721542**	**214703**	**214703**	**3721542**	**2303536**	**167902**	**167902**	**2303536**	**680105**	**97477**	**97477**	**680105**	**516742**	**18823**	**18823**	**516742**	**1106689**	**51602**	**51602**	**1106689**	**6962617**	**353988**	**353988**	**6962617**	**2492387**	**218774**	**218774**	**2492387**	**3553387**	**103018**	**103018**	**3553387**	**916844**	**32197**	**32197**	**916844**	**23759558**	**1408587**	**1408587**	**0**	**23759558**

LAND & ECOSYSTEMS ACCOUNTS - BASIC ACCOUNTS (ROMANIA)

Account of Formation of Land Cover - summary

Consumption of land cover										***Formation of land cover***							
1	2.1+2.2	2.3+2.4	3.1	3.2+3.3	4	5				1	2.1+2.2	2.3+2.4	3.1	3.2+3.3	4	5	
Artificial surfaces	Arable land & Permanent crops	Pastures & Mixed agricultural areas	Forests	Shrub and other semi-natural land	Wetlands	Water bodies	Total		Land cover flows	Artificial surfaces	Arable land & Permanent crops	Pastures & Mixed agricultural areas	Forests	Shrub and other semi-natural land	Wetlands	Water bodies	Total
3232	5	0	55	82	0	40	3414	LCF1	Urban land management	3414	0	0	0	0	0	0	3414
0	5670	2785	2387	3230	160	804	15036	LCF2	Urban sprawl	15036	0	0	0	0	0	0	15036
0	7199	2566	3555	3630	544	1600	19095	LCF3	Extension of economic sites and infrastructures	19095	0	0	0	0	0	0	19095
0	358818	46856	0	0	0	0	405674	LCF4	Agricultural rotation and intensification	0	118713	286961	0	0	0	0	405674
9132	0	0	54402	152963	52569	17139	286206	LCF5	Conversion of land to agriculture	0	154374	131832	0	0	0	0	286206
983	16706	0	226974	138163	11580	6074	400481	LCF6	Forests creation and management	0	0	0	173506	226974	0	0	400481
116	7859	3183	2580	12174	0	0	25912	LCF7	Water body creation and management	0	0	0	0	0	0	25912	25912
3118	135065	47855	4099	19412	21413	21806	252769	LCF8	Changes of land cover due to natural and multiple causes	0	0	70227	18228	110940	28891	24482	252769
16582	**531323**	**103245**	**294054**	**329655**	**86265**	**47463**	**1408587**		**Sub/Total Flows**	**37545**	**273087**	**489020**	**191735**	**337915**	**28891**	**50394**	**1408587**
20963	***-258236***	***385775***	***-102319***	***8260***	***-57375***	***2931***			***Net Formation of Land Cover***								
37545	**273087**	**489020**	**191735**	**337915**	**28891**	**50394**	**1408587**		**TOTAL**	**37545**	**273087**	**489020**	**191735**	**337915**	**28891**	**50394**	**1408587**

Land Cover stock 1975	**1296769**	**9253412**	**2827412**	**6742079**	**2999697**	**323116**	**317074**	**23759558**
Net Formation of Land Cover	*20963*	*-258236*	*385775*	*-102319*	*8260*	*-57375*	*2931*	
Land Cover stock 1990	**1317732**	**8995176**	**3213187**	**6639760**	**3007956**	**265741**	**320005**	**23759558**

Account of Formation of Land Cover - detailed

			1	1.1	111	112	1.2	121	122	123	124	1.3	131	132	133	1.4	141	142	*2*	2.1	211	212	213	2.2	221	222	223	2.3	231	2.4	241	242	243	244	*3*	3.1	311
			ARTIFICIAL SURFACES	**Urban fabric**	Continuous urban fabric	Discontinuous urban fabric	**Industrial, commercial and transport units**	Industrial or commercial units	Road and rail networks and associated land	Port areas	Airports	**Mines, dump and construction sites**	Mineral extraction sites	Dump sites	Construction sites	**Artificial non-agricultural vegetated areas**	Green urban areas	Sport and leisure facilities	*AGRICULTURAL AREAS*	**Arable Land**	Non-irrigated arable land	Permanently irrigated land	Rice fields	**Permanent Crops**	Vineyards	Fruit trees and berry plantations	Olive groves	**Pastures**	Pastures	**Heterogeneous agricultural areas**	Annual crops associated with permanent crops	Complex cultivation patterns	Agriculture land with significant areas of natural vegetation	Agro-forestry areas	*FORESTS AND SEMI-NATURAL AREAS*	**Forests**	Broad-leaved forest
Consumption of land cover (-)																																					
LCF1	**Urban land management**		*3232*	**1571**			**1278**					**321**				**62**			*5*	**5**				**0**				**0**		**0**					*137*	**55**	
	LCF11	Urban development/ infilling	*62*													*62*			*0*																*0*		
	LCF12	Developped land recycling	*3077*	**1478**			**1278**					**321**							*0*																*0*		
	LCF13	Development of green urban areas	*93*	**93**															*5*	**5**															*137*	**55**	
LCF2	**Urban sprawl**		*0*	**0**			**0**					**0**				**0**			*8455*	**4747**				**923**				**235**		**2550**					*5617*	**2387**	
	LCF21	Urban continuous sprawl	*0*																*120*	**53**				**17**						**49**					*34*	**8**	
	LCF22	Urban diffuse sprawl	*0*																*8335*	**4693**				**906**				**235**		**2501**					*5582*	**2378**	
LCF3	**Extension of economic sites and infrastructures**		*0*	**0**			**0**					**0**				**0**			*9765*	**6829**				**370**				**611**		**1955**					*7186*	**3555**	
	LCF31	Extension of industrial & commercial sites	*0*																*5617*	**4105**				**290**				**262**		**960**					*2782*	**1120**	
	LCF32	Extension of transport networks	*0*																*388*	**269**								**3**		**117**					*422*	**97**	
	LCF33	Extension of habours	*0*																*42*					**11**				**5**		**26**					*91*	**51**	
	LCF34	Extension of airports	*0*																*122*	**122**										**0**					*0*		
	LCF35	Extension of mines and quarrying areas	*0*																*2722*	**1562**				**5**				**341**		**814**					*2796*	**1673**	
	LCF36	Extension of dumpsites	*0*																*362*	**362**				**0**						**0**					*161*	**123**	
	LCF37	Construction	*0*																*511*	**409**				**64**						**38**					*887*	**491**	
	LCF38	Extension of sport and leisure facilities	*0*																*0*	**0**															*48*		
LCF4	**Agricultural rotation and intensification**		*0*	**0**			**0**					**0**				**0**			*405674*	**329441**				**29378**				**15173**		**31682**					*0*	**0**	
	LCF41	Recent extension of pasture, fallow land, set aside	*0*																*272010*	**269142**				**326**						**2542**					*0*		
	LCF42	Planting of vineyards, fruit and olive trees over arable & pasture	*0*																*64858*	**60299**								**411**		**4148**					*0*		
	LCF43	Rotation of annual crops	*0*																*0*																*0*		
	LCF44	Rotation of permanent crops	*0*																*0*																*0*		
	LCF45	Intensification of agriculture	*0*																*68806*					**29051**				**14762**		**24993**					*0*		
LCF5	**Conversion of land to agriculture**		*9132*	**5256**			**3147**					**709**				**20**			*0*	**0**				**0**				**0**		**0**					*207365*	**54402**	
	LCF51	Intensive conversion of forest to agriculture	*0*																*0*																*22480*	**22480**	
	LCF52	Intensive conversion of marginal land to agriculture	*0*																*0*																*71396*		
	LCF53	Diffuse conversion of forest to agriculture	*0*																*0*																*31922*	**31922**	
	LCF54	Diffuse conversion of marginal land to agriculture	*0*																*0*																*81567*		
	LCF55	Conversion of wetlands to agriculture	*0*																*0*																*0*		
	LCF56	Conversion of developed areas to agriculture	*9132*	**5256**			**3147**					**709**				**20**			*0*																*0*		
LCF6	**Forests creation and management**		*983*	**614**			**219**					**119**				**32**			*16706*	**14886**				**1820**				**0**		**0**					*365138*	**226974**	
	LCF61	Forests creation	*983*	**614**			**219**					**119**				**32**			*16706*	**14886**				**1820**											*138163*		
	LCF62	Forests rotation	*0*																*0*																*0*		
	LCF63	Recent felling and transition	*0*																*0*																*226974*	**226974**	
LCF7	**Water body creation and management**		*116*	**0**			**0**					**104**				**12**			*11042*	**7825**				**34**				**2146**		**1037**					*14755*	**2580**	
	LCF71	Water body creation	*116*									**104**				**12**			*11042*	**7825**				**34**				**2146**		**1037**					*14755*	**2580**	
	LCF72	Water body management	*0*																*0*																*0*		
LCF8	**Changes of land cover due to natural and multiple causes**		*3118*	**1933**			**608**					**549**				**27**			*182921*	**126644**				**8421**				**10910**		**36945**					*23511*	**4099**	
	LCF81	Semi-natural rotation	*0*																*0*																*16736*		
	LCF82	Farmland abandonment without significant woodland creation	*0*																*159043*	**121689**				**8238**				**7339**		**21777**					*0*		
	LCF83	Farmland abandonment with woodland creation	*0*																*18228*									**3350**		**14878**					*0*		
	LCF84	Other land abandonment (other than farmland)	*1696*	**977**			**413**					**306**				**0**			*0*																*0*		
	LCF85	Forests and shrubs fires	*0*																*0*																*0*		
	LCF86	Coastal erosion	*6*									**6**							*5*	**3**										**2**					*203*		
	LCF87	Impacts of storms, floods…	*437*	**142**			**64**					**231**							*1860*	**1262**				**89**				**221**		**288**					*4353*	**1945**	
	LCF89	Other changes and unknown	*979*	**814**			**131**					**7**				**27**			*3784*	**3691**				**93**											*2220*	**2154**	
Total consumption of cover			*16582*	**9374**			**5252**					**1802**				**153**			*634568*	**490377**				*40946*				*29074*		*74171*					*623709*	**294054**	
Formation of land cover (+)																																					
LCF1	**Urban land management**		*3414*	**1208**	2	1206	**1656**	1491	109	37	19	**251**	149	0	102	**299**	275	24	*0*	**0**	0	0	0	**0**	0	0	0	**0**	0	**0**	0	0	0	0	*0*	**0**	0
	LCF11	Urban development/ infilling	*62*	**62**	0	62	**0**	0											*0*																*0*		
	LCF12	Developped land recycling	*3077*	**1145**	1	1144	**1656**	1491	109	37	19	**251**	149	0	102	**24**		24	*0*																*0*		
	LCF13	Development of green urban areas	*275*													**275**	275		*0*																*0*		
LCF2	**Urban sprawl**		*15036*	**15036**	154	14882	**0**	0	0	0	0	**0**	0	0	0	**0**	0	0	*0*	**0**	0	0	0	**0**	0	0	0	**0**	0	**0**	0	0	0	0	*0*	**0**	0
	LCF21	Urban continuous sprawl	*154*	**154**	154														*0*																*0*		
	LCF22	Urban diffuse sprawl	*14882*	**14882**		14882													*0*																*0*		
LCF3	**Extension of economic sites and infrastructures**		*19095*	**0**	0	0	**10867**	9338	1086	321	122	**8163**	5773	667	1723	**64**	0	64	*0*	**0**	0	0	0	**0**	0	0	0	**0**	0	**0**	0	0	0	0	*0*	**0**	0
	LCF31	Extension of industrial & commercial sites	*9338*				**9338**	9338											*0*																*0*		
	LCF32	Extension of transport networks	*1086*				**1086**		1086										*0*																*0*		
	LCF33	Extension of habours	*321*				**321**			321									*0*																*0*		
	LCF34	Extension of airports	*122*				**122**				122								*0*																*0*		
	LCF35	Extension of mines and quarrying areas	*5773*									**5773**	5773						*0*																*0*		
	LCF36	Extension of dumpsites	*667*									**667**		667					*0*																*0*		
	LCF37	Construction	*1723*									**1723**			1723				*0*																*0*		
	LCF38	Extension of sport and leisure facilities	*64*													**64**		64	*0*																*0*		
LCF4	**Agricultural rotation and intensification**		*0*	**0**	0	0	**0**	0	0	0	0	**0**	0	0	0	**0**	0	0	*405674*	**61233**	61233	0	1	**57480**	41707	15773	0	**33322**	33322	**253639**	8629	245011	0	0	*0*	**0**	0
	LCF41	Recent extension of pasture, fallow land, set aside	*0*																*272010*									**33322**	33322	**238688**		238688			*0*		
	LCF42	Planting of vineyards, fruit and olive trees over arable & pasture	*0*																*64858*					**57480**	41707	15773				**7378**	7378				*0*		
	LCF43	Rotation of annual crops	*0*																*0*																*0*		
	LCF44	Rotation of permanent crops	*0*																*0*																*0*		
	LCF45	Intensification of agriculture	*0*																*68806*	**61233**	61233		1							**7573**	1250	6323			*0*		
LCF5	**Conversion of land to agriculture**		*0*	**0**	0	0	**0**	0	0	0	0	**0**	0	0	0	**0**	0	0	*286206*	**143461**	143009	0	452	**10913**	6855	4058	0	**36497**	36497	**95335**	1909	11145	82281	0	*0*	**0**	0
	LCF51	Intensive conversion of forest to agriculture	*0*																*22480*	**19889**	19858		31	**2339**	939	1400				**252**	252					*0*		
	LCF52	Intensive conversion of marginal land to agriculture	*0*																*71396*	**63147**	62881		266	**7295**	4995	2300				**954**	954					*0*		
	LCF53	Diffuse conversion of forest to agriculture	*0*																*31922*									**2170**	2170	**29752**		1720	28033		*0*		
	LCF54	Diffuse conversion of marginal land to agriculture	*0*																*81567*									**24235**	24235	**57331**		7136	50195		*0*		
	LCF55	Conversion of wetlands to agriculture	*0*																*69709*	**56416**	56261		155	**274**	213	61		**9673**	9673	**3346**	434	613	2298		*0*		
	LCF56	Conversion of developed areas to agriculture	*0*																*9132*	**4009**	4009		0	**1005**	708	297		**418**	418	**3700**	269	1676	1755		*0*		
LCF6	**Forests creation and management**		*0*	**0**	0	0	**0**	0	0	0	0	**0**	0	0	0	**0**	0	0	*0*	**0**	0	0	0	**0**	0	0	0	**0**	0	**0**	0	0	0	0	*400481*	**173506**	118712
	LCF61	Forests creation	*0*																*0*																*173506*	**173506**	**118712**
	LCF62	Forests rotation	*0*																*0*																*0*		
	LCF63	Recent felling and transition	*0*																*0*																*226974*		
LCF7	**Water body creation and management**		*0*	**0**	0	0	**0**	0	0	0	0	**0**	0	0	0	**0**	0	0	*0*	**0**	0	0	0	**0**	0	0	0	**0**	0	**0**	0	0	0	0	*0*	**0**	0
	LCF71	Water body creation	*0*																*0*																*0*		
	LCF72	Water body management	*0*																*0*																*0*		
LCF8	**Changes of land cover due to natural and multiple causes**		*0*	**0**	0	0	**0**	0	0	0	0	**0**	0	0	0	**0**	0	0	*70227*	**0**	0	0	0	**0**	0	0	0	**0**	0	**70227**	0	0	70227	0	*129169*	**18228**	15300
	LCF81	Semi-natural rotation	*0*																*0*																*14158*		
	LCF82	Farmland abandonment without significant woodland creation	*0*																*70227*											**70227**			70227		*86890*		
	LCF83	Farmland abandonment with woodland creation	*0*																*0*																*18228*	**18228**	15300
	LCF84	Other land abandonment (other than farmland)	*0*																*0*																*1696*		
	LCF85	Forests and shrubs fires	*0*																*0*																*0*		
	LCF86	Coastal erosion	*0*																*0*																*0*		
	LCF87	Impacts of storms, floods…	*0*																*0*																*0*		
	LCF89	Other changes and unknown	*0*																*0*																*8196*		
Total formation of cover			*37545*	*16244*	*156*	*16088*	*12523*	*10829*	*1195*	*358*	*141*	*8414*	*5922*	*667*	*1825*	*363*	*275*	*89*	*762107*	*204694*	*204241*	*0*	*453*	*68393*	*48562*	*19831*	*0*	*69819*	*69819*	*419201*	*10537*	*256156*	*152508*	*0*	*529649*	*191735*	*134011*
Net formation of cover			***20963***	***6869***			***7271***					***6612***				***210***			***127540***	***-285683***				***27447***				***40745***		***345031***					***-94059***	***-102319***	

TOTAL OPENING YEAR ~ 1975			*1296769*	1174664			95815					20383				5907			***12080824***	8627740				625672				491774		2335638					***9741775***	6742079	
TOTAL FINAL YEAR ~ 1990			*1317732*	1181533	16638	1164895	103086	94064	4862	1176	2985	26996	18040	3533	5422	6117	4020	2097	***12208363***	8342057	8307165		34892	653119	305629	347490		532518	532518	2680669	102064	652835	1925770		***9647716***	6639760	4283366

312	313	3.2	321	322	323	324	3.3	331	332	333	334	335	4	4.1	411	412	4.2	421	422	423	5	5.1	511	512	5.2	521	522	523	
Coniferous forest	Mixed forest	**Shrub and/or herbaceous vegetation associations**	Natural grassland	Moors and heathland	Sclerophyllous vegetation	Transitional woodland shrub	**Open spaces with little or no vegetation**	Beaches, dunes and sand plains	Bare rock	Sparsely vegetated areas	Burnt areas	Glaciers and perpetual snow	***WETLANDS***	**Inland wetlands**	Inland marshes	Peatbogs	**Coastal wetlands**	Salt marshes	Salines	Intertidal flats	***WATER BODIES***	**Inland waters**	Water courses	Water bodies	**Coastal waters**	Coastal lagoons	Estuaries	Sea and ocean	TOTAL
		82					0						0	0			0				40	40			0				3414
													0								0								62
													0								0								3077
		82											0								40	40							275
		2776					454						160	160			0				804	785			19				15036
		6					20						0								0								154
		2770					434						160	160							804	785			19				14882
		3048					582						544	544			0				1600	1475			125				19095
		1482					179						373	373							566	557			9				9338
		218					106						0	0							276	276							1086
		40											4	4							184	98			86				321
													0								0								122
		887					235						19	19							236	226			10				5773
		0					38						65	65							79	77			2				667
		372					23						83	83							242	225			18				1723
		48											0								16	16							64
		0					0						0	0			0				0	0			0				405674
													0								0								272010
													0								0								64858
													0								0								0
													0								0								0
													0								0								68806
		147848					5115						52569	52569			0				17139	17106			33				286206
													0								0								22480
		68311					3085						0								0								71396
													0								0								31922
		79537					2030						0								0								81567
													52569	52569							17139	17106			33				69709
													0								0								9132
		137170					994						11580	11580			0				6074	6074			0				400481
		137170					994						11580	11580							6074	6074							173506
													0								0								0
													0								0								226974
		8917					3258						0	0			0				0	0			0				25912
		8917					3258						0								0								25912
													0								0								0
		14837					4575						21413	21413			0				21806	19993			1813				252769
		13297					3439						19743	19743							13014	13014							49492
													0								1164				1164				160207
													0								0								18228
													0								0								1696
													0								0								0
		9					194						196	196							0	0							410
		1501					907						506	506							0								7156
		30					36						968	968							7628	6979			649				15579
		314677					14978						86265	86265			0				47463	45473			1990				1408587
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3414
													0								0								62
													0								0								3077
													0								0								275
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15036
													0								0								154
													0								0								14882
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19095
													0								0								9338
													0								0								1086
													0								0								321
													0								0								122
													0								0								5773
													0								0								667
													0								0								1723
													0								0								64
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	405674
													0								0								272010
													0								0								64858
													0								0								0
													0								0								0
													0								0								68806
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	286206
													0								0								22480
													0								0								71396
													0								0								31922
													0								0								81567
													0								0								69709
													0								0								9132
32479	22315	224216	82888	13629	0	127699	2759	1015	1533	211	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	400481
32479	22315												0								0								173506
													0								0								0
		224216	82888	13629		127699	2759	1015	1533	211			0								0								226974
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25912	25912	0	25912	0	0	0	0	25912
													0								25912	25912		25912					25912
													0								0								0
1304	1625	95196	80991	2137	0	12067	15745	10819	2624	2301	0	0	28891	28891	28891	0	0	0	0	0	24482	22199	7156	15043	2283	1873	0	410	252769
		7486	5426	123		1936	6672	2866	1847	1959			19539	19539	19539						15795	13989		13989	1807	1807			49492
		83158	72979	1861		8317	3732	2829	634	268			3089	3089	3089						0								160207
1304	1625												0								0								18228
		1429	1008	15		406	267	129	138				0								0								1696
													0								0								0
													0								410				410			410	410
													0								7156	7156	7156						7156
		3122	1578	137		1407	5074	4995	4	74			6262	6262	6262						1120	1054		1054	66	66			15579
33783	23940	319411	163879	15766	0	139766	18503	11834	4157	2512	0	0	28891	28891	28891	0	0	0	0	0	50394	48111	7156	40955	2283	1873	0	410	1408587
		4735					3525						-57375	-57375			0				2931	2638			293				0
		2920545					79152						323116	323116							317074	234408			82666				23759558
1282536	1073858	2925279	2194419	215583		515277	82677	47587	17728	17362			265741	265741	265741		0				320005	237046	85333	151713	82959	65726		17233	23759558

Land Cover Resource & Use Account - summary

(by Dominant Landscape Types)

Summary Account	A1 URBAN DENSE AREAS	A2 DISPERSED URBAN AREAS	B1 BROAD PATTERN INTENSIVE AGRICULTURE	*B11 LOWLAND BROAD PATTERN INTENSIVE AGRICULTURE*	*B12 UPLAND BROAD PATTERN INTENSIVE AGRICULTURE*	*B13 MOUNTAIN BROAD PATTERN INTENSIVE AGRICULTURE*	B2 COMPOSITE RURAL LANDSCAPE	*B21 LOWLAND COMPOSITE RURAL LANDSCAPE*	*B22 UPLAND COMPOSITE RURAL LANDSCAPE*	*B23 MOUNTAIN COMPOSITE RURAL LANDSCAPE*	C1 FORESTED LANDSCAPE	*C11 LOWLAND FORESTED LANDSCAPE*	*C12 UPLAND FORESTED LANDSCAPE*	*C13 MOUNTAIN FORESTED LANDSCAPE*	C2 OPEN SEMI-NATURAL OR NATURAL LANDSCAPE	*C21 LOWLAND OPEN SEMI-NATURAL OR NATURAL LANDSCAPE*	*C22 UPLAND OPEN SEMI-NATURAL OR NATURAL LANDSCAPE*	*C23 MOUNTAIN OPEN SEMI-NATURAL OR NATURAL LANDSCAPE*	C3 LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER	*C31 LOWLAND LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER*	*C32 UPLAND LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER*	*C33 MOUNTAIN LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER*	***TOTAL***
Initial Surface																								
1 Artificial surfaces	***283323***	***89842***	***287567***	***278522***	***9045***	***0***	***71211***	***26468***	***38108***	***6635***	***91660***	***2867***	***25200***	***63593***	***60975***	***14198***	***19504***	***27274***	***412191***	***147888***	***226906***	***37397***	***1296769***
2 Agricultural areas	***1265409***	***592393***	***4580822***	***4467579***	***113243***	***0***	***732527***	***320458***	***335815***	***76254***	***439556***	***24761***	***150326***	***264469***	***631662***	***176668***	***228919***	***226074***	***3838454***	***1683189***	***1860662***	***294603***	***12080824***
2.1+2.2 Arable Land & Permanent Crops	931435	515203	4287596	4182373	105223	0	394504	236227	145973	12305	105144	11620	51200	42324	384101	160455	140664	82981	2635429	1350334	1158784	126311	9253412
2.3+2.4 Pastures & Heterogeneous agricultural areas	333974	77190	293225	285206	8020	0	338024	84232	189843	63949	334412	13141	99126	222145	247561	16213	88255	143093	1203026	332855	701878	168292	2827412
3 Forests and semi-natural areas	***897100***	***166846***	***464702***	***448671***	***16032***	***0***	***414433***	***72193***	***263439***	***78801***	***3955872***	***25896***	***541638***	***3388338***	***1216224***	***96600***	***266894***	***852730***	***2626598***	***595540***	***1446813***	***584244***	***9741775***
3.1 Forests	624774	107253	215367	207919	7448	0	256671	42457	171731	42483	3159099	19490	450842	2688767	653165	27324	126738	499103	1725750	357214	952508	416027	6742079
3.2+3.3 Shrub and other semi-natural land	272326	59593	249335	240752	8584	0	157763	29736	91708	36319	796773	6406	90796	699571	563059	69276	140156	353627	900848	238326	494305	168217	2999697
4 Wetlands	***2255***	***2170***	***35225***	***35215***	***11***	***0***	***1173***	***1065***	***108***	***0***	***166***	***0***	***0***	***166***	***255433***	***254983***	***273***	***176***	***26693***	***25402***	***1290***	***1***	***323116***
5 Water bodies	***20196***	***11103***	***73108***	***72693***	***415***	***0***	***2140***	***1567***	***498***	***75***	***12603***	***576***	***7051***	***4976***	***139242***	***137656***	***1152***	***434***	***58681***	***40367***	***17716***	***599***	***317074***
A - TOTAL INITIAL SURFACE ~ 1975	***2468285***	***862355***	***5441423***	***5302679***	***138745***	***0***	***1221485***	***421751***	***637970***	***161765***	***4499857***	***54100***	***724215***	***3721542***	***2303536***	***680105***	***516742***	***1106689***	***6962617***	***2492387***	***3553387***	***916844***	***23759558***
Consumption of Land Cover Resource (Supply by Land Cover)																							
1 Artificial surfaces	***3953***	***1895***	***5146***	***5057***	***90***	***0***	***89***	***30***	***58***	***0***	***1518***	***0***	***243***	***1276***	***1346***	***942***	***102***	***302***	***2634***	***1400***	***930***	***304***	***16582***
2 Agricultural areas	***54360***	***22485***	***177779***	***176097***	***1682***	***0***	***135991***	***101258***	***34284***	***450***	***19559***	***714***	***7711***	***11134***	***37935***	***15286***	***11481***	***11168***	***186459***	***130644***	***48467***	***7348***	***634568***
2.1+2.2 Arable Land & Permanent Crops	37301	20268	160927	159508	1419	0	126820	96412	30371	36	7764	666	6036	1062	26514	12878	6743	6893	151728	111486	36048	4194	531323
2.3+2.4 Pastures & Heterogeneous agricultural areas	17059	2216	16852	16589	263	0	9172	4846	3912	413	11796	48	1676	10072	11420	2409	4737	4274	34730	19158	12419	3153	103245
3 Forests and semi-natural areas	***70628***	***18115***	***104624***	***102858***	***1766***	***0***	***13708***	***5392***	***6426***	***1891***	***216514***	***369***	***14411***	***201734***	***60232***	***13185***	***7103***	***39944***	***139887***	***64935***	***50425***	***24528***	***623709***
3.1 Forests	20585	5625	24646	24357	289	0	6819	519	4634	1666	142050	254	9266	132531	34824	3406	4006	27412	59504	18617	23692	17195	294054
3.2+3.3 Shrub and other semi-natural land	50042	12490	79979	78501	1478	0	6889	4873	1792	224	74464	116	5145	69203	25408	9780	3096	12532	80384	46318	26733	7333	329655
4 Wetlands	***696***	***1497***	***18478***	***18478***	***0***	***0***	***48***	***48***	***0***	***0***	***0***	***0***	***0***	***0***	***52560***	***52414***	***5***	***141***	***12985***	***12714***	***271***	***0***	***86265***
5 Water bodies	***2824***	***1993***	***13767***	***13721***	***46***	***0***	***242***	***231***	***3***	***7***	***786***	***2***	***224***	***560***	***15829***	***15650***	***132***	***47***	***12022***	***9081***	***2925***	***17***	***47463***
B - TOTAL CONSUMPTION OF LAND COVER RESOURCE	***132462***	***45985***	***319795***	***316210***	***3585***	***0***	***150078***	***106959***	***40771***	***2347***	***238378***	***1085***	***22589***	***214703***	***167902***	***97477***	***18823***	***51602***	***353988***	***218774***	***103018***	***32197***	***1408587***
Land Cover Flows resulting from Changes in the Uses of Land																							
LCF1 Urban land management	1593	489	752	752	0	0	0	0	0	0	143	0	20	123	256	205	0	51	182	59	122	0	3414
LCF2 Urban sprawl	2838	927	4225	4206	19	0	250	55	194	0	2121	0	219	1902	1190	800	200	190	3484	1903	1178	403	15036
LCF3 Extension of economic sites and infrastructures	6311	2637	4345	4343	3	0	341	122	218	0	1544	38	172	1334	1325	605	28	692	2592	1307	883	402	19095
LCF4 Agricultural rotation and intensification	29137	12826	112507	111705	802	0	112582	93835	18735	12	5266	655	4122	488	10926	8030	1468	1429	122430	99667	20819	1944	405674
LCF5 Conversion of land to agriculture	37564	11442	83978	82564	1414	0	8463	5408	2485	570	18732	63	2439	16230	48953	42346	2325	4283	77074	49494	21791	5789	286206
LCF6 Forests creation and management	29899	6198	35355	34903	451	0	5383	217	3837	1329	194993	281	12153	182559	51372	11805	5089	34478	77282	28368	30275	18639	400481
LCF7 Water body creation and management	4880	2658	6066	6038	28	0	641	424	217	0	1292	0	61	1231	2394	1790	66	537	7982	2836	4954	191	25912
LCF8 Changes of Land Cover due to natural and multiple causes	20241	8808	72568	71700	868	0	22418	6898	15084	436	14287	48	3403	10837	51485	31896	9648	9942	62961	35139	22993	4829	252769
C - TOTAL LAND COVER FLOWS 1975-1990	***132462***	***45985***	***319795***	***316210***	***3585***	***0***	***150078***	***106959***	***40771***	***2347***	***238378***	***1085***	***22589***	***214703***	***167902***	***97477***	***18823***	***51602***	***353988***	***218774***	***103018***	***32197***	***1408587***
D - Final Surface ~ 1990 (D = A-B+C)	***2468285***	***862355***	***5441423***	***5302679***	***138745***	***0***	***1221485***	***421751***	***637970***	***161765***	***4499857***	***54100***	***724215***	***3721542***	***2303536***	***680105***	***516742***	***1106689***	***6962617***	***2492387***	***3553387***	***916844***	***23759558***

Land Cover Resource & Use Account - detailed

(by Dominant Landscape Types)

Detailed Account	A1 URBAN DENSE AREAS	A2 DISPERSED URBAN AREAS	B1 BROAD PATTERN INTENSIVE AGRICULTURE	B11 LOWLAND BROAD PATTERN INTENSIVE AGRICULTURE	B12 UPLAND BROAD PATTERN INTENSIVE AGRICULTURE	B13 MOUNTAIN BROAD PATTERN INTENSIVE AGRICULTURE	B2 COMPOSITE RURAL LANDSCAPE	B21 LOWLAND COMPOSITE RURAL LANDSCAPE	B22 UPLAND COMPOSITE RURAL LANDSCAPE	B23 MOUNTAIN COMPOSITE RURAL LANDSCAPE	C1 FORESTED LANDSCAPE	C11 LOWLAND FORESTED LANDSCAPE	C12 UPLAND FORESTED LANDSCAPE	C13 MOUNTAIN FORESTED LANDSCAPE	C2 OPEN SEMI-NATURAL OR NATURAL LANDSCAPE	C21 LOWLAND OPEN, SEMI-NATURAL OR NATURAL LANDSCAPE	C22 UPLAND, OPEN, SEMI-NATURAL OR NATURAL LANDSCAPE	C23 MOUNTAIN OPEN SEMI-NATURAL OR NATURAL LANDSCAPE	C3 LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER	C31 LOWLAND LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER	C32 UPLAND LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER	C33 MOUNTAIN LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER	TOTAL
Initial Surface																								
1 Artificial surfaces	***283323***	***89842***	***287567***	***278522***	***9045***	***0***	***71211***	***26468***	***38108***	***6635***	***91660***	***2867***	***25200***	***63593***	***60975***	***14198***	***19504***	***27274***	***412191***	***147888***	***226906***	***37397***	***1296769***
1.1 Urban fabric	243410	76764	255749	247071	8679	0	69105	25210	37476	6418	82852	2735	23050	57068	56558	12983	18507	25068	390225	138991	215555	35678	1174664
1.2 Industrial, commercial and transport units	29434	9899	30310	29972	339	0	1796	1135	515	145	3714	131	1507	2075	2784	957	930	896	17878	7890	9269	719	95815
1.3 Mines, dump and construction sites	7183	2305	1024	997	27	0	261	76	113	71	4497		593	3904	1586	231	66	1289	3528	716	1912	900	20383
1.4 Artificial non-agricultural vegetated areas	3296	874	483	483		0	49	46	3		598		51	547	47	27		20	560	291	170	100	5907
2 Agricultural areas	***1265409***	***592393***	***4580822***	***4467579***	***113243***	***0***	***732527***	***320458***	***335815***	***76254***	***439556***	***24761***	***150326***	***264469***	***631662***	***176668***	***228919***	***226074***	***3838454***	***1683189***	***1860662***	***294603***	***12080824***
2.1 Arable Land	816306	480732	4191450	4088703	102747	0	345073	226350	112189	6533	56501	9658	28397	18447	359272	153806	132114	73352	2378407	1244685	1030401	103321	8627740
2.2 Permanent Crops	115129	34471	96147	93670	2476	0	49431	9876	33784	5771	48643	1962	22804	23877	24829	6650	8550	9629	257022	105649	128383	22990	625672
2.3 Pastures	46450	15081	139363	136679	2684	0	52265	39495	11568	1201	5554	468	2000	3085	32207	7904	10789	13514	200855	94370	93760	12724	491774
2.4 Heterogeneous agricultural areas	287524	62110	153862	148526	5336	0	285759	44737	178274	62748	328858	12673	97125	219059	215354	8309	77466	129579	1002171	238485	608118	155568	2335638
3 Forests and semi-natural areas	***897100***	***166846***	***464702***	***448671***	***16032***	***0***	***414433***	***72193***	***263439***	***78801***	***3955872***	***25896***	***541638***	***3388338***	***1216224***	***96600***	***266894***	***852730***	***2626598***	***595540***	***1446813***	***584244***	***9741775***
3.1 Forests	624774	107253	215367	207919	7448	0	256671	42457	171731	42483	3159099	19490	450842	2688767	653165	27324	126738	499103	1725750	357214	952508	416027	6742079
3.2 Shrub and/or herbaceous vegetation associations	254467	53301	240324	232781	7543	0	156439	29229	90890	36319	781178	6406	89827	684945	551175	62037	139615	349523	883661	228942	487721	166998	2920545
3.3 Open spaces with little or no vegetation	17859	6292	9011	7971	1040	0	1324	506	818		15595		970	14626	11884	7238	541	4105	17187	9384	6584	1219	79152
4 Wetlands	***2255***	***2170***	***35225***	***35215***	***11***	***0***	***1173***	***1065***	***108***	***0***	***166***	***0***	***0***	***166***	***255433***	***254983***	***273***	***176***	***26693***	***25402***	***1290***	***1***	***323116***
4.1 Inland wetlands	2255	2170	35225	35215	11	0	1173	1065	108		166			166	255433	254983	273	176	26693	25402	1290	1	323116
4.2 Coastal wetlands			0			0	0				0				0				0				0
5 Water bodies	***20196***	***11103***	***73108***	***72693***	***415***	***0***	***2140***	***1567***	***498***	***75***	***12603***	***576***	***7051***	***4976***	***139242***	***137656***	***1152***	***434***	***58681***	***40367***	***17716***	***599***	***317074***
5.1 Inland waters	19633	10059	73108	72693	415	0	2140	1567	498	75	12603	576	7051	4976	58183	56597	1152	434	58681	40367	17716	599	234408
5.2 Coastal waters	563	1044	0			0	0				0				81059	81059			0				82666
A - TOTAL INITIAL SURFACE ~ 1975	***2468285***	***862355***	***5441423***	***5302679***	***138745***	***0***	***1221485***	***421751***	***637970***	***161765***	***4499857***	***54100***	***724215***	***3721542***	***2303536***	***680105***	***516742***	***1106689***	***6962617***	***2492387***	***3553387***	***916844***	***23759558***
Consumption of Land Cover Resource (Supply by Land Cover)																							
1 Artificial surfaces	***3953***	***1895***	***5146***	***5057***	***90***	***0***	***89***	***30***	***58***	***0***	***1518***	***0***	***243***	***1276***	***1346***	***942***	***102***	***302***	***2634***	***1400***	***930***	***304***	***16582***
1.1 Urban fabric	2134	719	2452	2424	28	0	76	18	58	0	1181	0	173	1008	850	562	102	186	1962	1002	699	261	9374
1.2 Industrial, commercial and transport units	1485	352	2526	2464	62	0	1	1		0	251		41	210	364	352	0	12	272	218	44	10	5252
1.3 Mines, dump and construction sites	281	814	165	165		0	11	11	0		87		29	58	105			105	340	120	187	33	1802
1.4 Artificial non-agricultural vegetated areas	53	10	3	3		0	0				27				27	27			60	60			153
2 Agricultural areas	***54360***	***22485***	***177779***	***176097***	***1682***	***0***	***135991***	***101258***	***34284***	***450***	***19559***	***714***	***7711***	***11134***	***37935***	***15286***	***11481***	***11168***	***186459***	***130644***	***48467***	***7348***	***634568***
2.1 Arable Land	32811	17305	140081	138809	1273	0	126371	96260	30075	36	7159	666	5897	595	25589	12151	6554	6884	141062	103245	33656	4161	490377
2.2 Permanent Crops	4491	2963	20846	20700	146	0	449	151	296	1	605	0	139	466	925	727	189	10	10666	8241	2392	34	40946
2.3 Pastures	4993	982	6937	6920	17	0	3108	2973	135		51	46	4	1	2675	2248	165	262	10328	7101	2392	835	29074
2.4 Heterogeneous agricultural areas	12066	1235	9915	9669	246	0	6063	1873	3777	413	11744	2	1671	10071	8745	161	4572	4012	24403	12057	10027	2318	74171
3 Forests and semi-natural areas	***70628***	***18115***	***104624***	***102858***	***1766***	***0***	***13708***	***5392***	***6426***	***1891***	***216514***	***369***	***14411***	***201734***	***60232***	***13185***	***7103***	***39944***	***139887***	***64935***	***50425***	***24528***	***623709***
3.1 Forests	20585	5625	24646	24357	289	0	6819	519	4634	1666	142050	254	9266	132531	34824	3406	4006	27412	59504	18617	23692	17195	294054
3.2 Shrub and/or herbaceous vegetation associations	45746	10394	76819	75392	1427	0	6642	4873	1545	224	73884	116	5092	68676	24752	9345	3023	12383	76440	44012	25121	7308	314677
3.3 Open spaces with little or no vegetation	4297	2096	3159	3109	50	0	247		247		580		53	527	656	435	73	149	3943	2306	1612	25	14978
4 Wetlands	***696***	***1497***	***18478***	***18478***	***0***	***0***	***48***	***48***	***0***	***0***	***0***	***0***	***0***	***0***	***52560***	***52414***	***5***	***141***	***12985***	***12714***	***271***	***0***	***86265***
4.1 Inland wetlands	696	1497	18478	18478		0	48	48			0			0	52560	52414	5	141	12985	12714	271		86265
4.2 Coastal wetlands			0			0	0				0				0				0				0
5 Water bodies	***2824***	***1993***	***13767***	***13721***	***46***	***0***	***242***	***231***	***3***	***7***	***786***	***2***	***224***	***560***	***15829***	***15650***	***132***	***47***	***12022***	***9081***	***2925***	***17***	***47463***
5.1 Inland waters	2789	1905	13767	13721	46	0	242	231	3	7	786	2	224	560	13963	13784	132	47	12022	9081	2925	17	45473
5.2 Coastal waters	36	88	0			0	0				0				1867	1867			0				1990
B - TOTAL CONSUMPTION OF LAND COVER RESOURCE	***132462***	***45985***	***319795***	***316210***	***3585***	***0***	***150078***	***106959***	***40771***	***2347***	***238378***	***1085***	***22589***	***214703***	***167902***	***97477***	***18823***	***51602***	***353988***	***218774***	***103018***	***32197***	***1408587***
Land Cover Flows resulting from Changes in the Uses of Land																							
LCF1 Urban land management	***1593***	***489***	***752***	***752***	***0***	***0***	***0***	***0***	***0***	***0***	***143***	***0***	***20***	***123***	***256***	***205***	***0***	***51***	***182***	***59***	***122***	***0***	***3414***
LCF11 Urban development/ infilling	53	10	0			0	0				0				0				0	0			62
LCF12 Developped land recycling	1368	432	697	697		0	0	0			143		20	123	256	205	0	51	182	59	122	0	3077
LCF13 Development of green urban areas	172	47	55	55		0	0				0				0				0				275
LCF2 Urban sprawl	***2838***	***927***	***4225***	***4206***	***19***	***0***	***250***	***55***	***194***	***0***	***2121***	***0***	***219***	***1902***	***1190***	***800***	***200***	***190***	***3484***	***1903***	***1178***	***403***	***15036***
LCF21 Urban continuous sprawl	35	49	60	60		0	0				0				0				11		11	0	154
LCF22 Urban diffuse sprawl	2803	879	4165	4146	19	0	250	55	194	0	2121	0	219	1902	1190	800	200	190	3473	1903	1167	403	14882
LCF3 Extension of economic sites and infrastructures	***6311***	***2637***	***4345***	***4343***	***3***	***0***	***341***	***122***	***218***	***0***	***1544***	***38***	***172***	***1334***	***1325***	***605***	***28***	***692***	***2592***	***1307***	***883***	***402***	***19095***
LCF31 Extension of industrial & commercial sites	3258	1122	2749	2747	3	0	122	122			594		0	594	353	312	28	13	1141	672	212	256	9338
LCF32 Extension of transport networks	19	293	596	596		0	34		34		0				0				145		132	13	1086
LCF33 Extension of habours	66	108	81	81		0	0				28		28		0				38	38			321
LCF34 Extension of airports	41	0	33	33		0	0				0				0				48	0	48		122
LCF35 Extension of mines and quarrying areas	2616	406	579	579		0	184	0	184		291	3	74	214	743	148		595	954	453	369	132	5773
LCF36 Extension of dumpsites	249	265	52	52		0	0				0			0	21	21		0	80	7	72	1	667
LCF37 Construction	62	444	255	255		0	0				631	35	70	526	209	124		85	122	73	49		1723
LCF38 Extension of sport and leisure facilities			0	0		0	0				0				0				64	64			64
LCF4 Agricultural rotation and intensification	***29137***	***12826***	***112507***	***111705***	***802***	***0***	***112582***	***93835***	***18735***	***12***	***5266***	***655***	***4122***	***488***	***10926***	***8030***	***1468***	***1429***	***122430***	***99667***	***20819***	***1944***	***405674***
LCF41 Recent extension of pasture, fallow land, set aside	13321	7391	60081	59949	132	0	105669	89568	16101	0	4482	655	3627	200	2797	1179	874	743	78269	65120	12619	531	272010
LCF42 Planting of vineyards, fruit and olive trees over arable & pasture	8116	2256	24324	23852	472	0	1883	1124	750	10	221		203	18	6245	5826	74	345	21812	18184	3054	574	64858
LCF43 Rotation of annual crops			0			0	0				0				0				0				0
LCF44 Rotation of permanent crops			0			0	0				0				0				0				0
LCF45 Intensification of agriculture	7699	3179	28102	27904	198	0	5030	3143	1884	3	563	0	293	270	1885	1025	520	340	22349	16363	5147	840	68806
LCF5 Conversion of land to agriculture	***37564***	***11442***	***83978***	***82564***	***1414***	***0***	***8463***	***5408***	***2485***	***570***	***18732***	***63***	***2439***	***16230***	***48953***	***42346***	***2325***	***4283***	***77074***	***49494***	***21791***	***5789***	***286206***
LCF51 Intensive conversion of forest to agriculture	3206	1540	7483	7351	132	0	665	237	408	21	379	48	86	246	972	420	470	83	8235	5357	2764	113	22480
LCF52 Intensive conversion of marginal land to agriculture	10760	4400	31743	31372	372	0	896	653	242	0	874	0	128	746	4987	3698	808	481	17737	11718	5526	493	71396
LCF53 Diffuse conversion of forest to agriculture	4711	861	2967	2903	64	0	2200	187	1507	507	9062	13	1143	7906	1988	297	385	1306	10134	2570	4727	2837	31922
LCF54 Diffuse conversion of marginal land to agriculture	16085	2686	22604	21882	722	0	4443	4113	295	36	7704	0	985	6719	3662	918	467	2277	24383	15988	6250	2145	81567
LCF55 Conversion of wetlands to agriculture	1202	1156	15307	15262	46	0	216	209		7	150	2	30	118	36746	36581	92	73	14932	13089	1843		69709
LCF56 Conversion of developed areas to agriculture	1600	801	3873	3795	78	0	42	9	33	0	563	0	68	495	598	433	102	63	1654	772	682	200	9132
LCF6 Forests creation and management	***29899***	***6198***	***35355***	***34903***	***451***	***0***	***5383***	***217***	***3837***	***1329***	***194993***	***281***	***12153***	***182559***	***51372***	***11805***	***5089***	***34478***	***77282***	***28368***	***30275***	***18639***	***400481***
LCF61 Forests creation	19016	4085	24423	24042	381	0	1639	147	1303	189	64836	124	4310	60402	21040	9813	1983	9244	38466	19113	14773	4581	173506
LCF62 Forests rotation			0			0	0				0				0				0				0
LCF63 Recent felling and transition	10883	2112	10932	10861	70	0	3743	70	2534	1139	130157	158	7843	122157	30332	1992	3106	25234	38816	9256	15503	14058	226974
LCF7 Water body creation and management	***4880***	***2658***	***6066***	***6038***	***28***	***0***	***641***	***424***	***217***	***0***	***1292***	***0***	***61***	***1231***	***2394***	***1790***	***66***	***537***	***7982***	***2836***	***4954***	***191***	***25912***
LCF71 Water body creation	4880	2658	6066	6038	28	0	641	424	217		1292		61	1231	2394	1790	66	537	7982	2836	4954	191	25912
LCF72 Water body management			0			0	0				0				0				0				0
LCF8 Changes of land cover due to natural and multiple causes	***20241***	***8808***	***72568***	***71700***	***868***	***0***	***22418***	***6898***	***15084***	***436***	***14287***	***48***	***3403***	***10837***	***51485***	***31896***	***9648***	***9942***	***62961***	***35139***	***22993***	***4829***	***252769***
LCF81 Semi-natural rotation	2284	1490	14272	14129	143	0	183	49	133		667		19	648	22143	21732	84	327	8453	7403	1050	0	49492
LCF82 Farmland abandonment without significant woodland creation	12376	5376	47859	47160	700	0	20223	5907	14011	304	9425	46	2445	6934	22606	4752	9237	8616	42342	20635	17896	3811	160207
LCF83 Farmland abandonment with woodland creation	3225	316	782	768	14	0	1683	808	743	132	3524	2	824	2699	2705	1554	294	857	5993	2032	2967	994	18228
LCF84 Other land abandonment (other than farmland)	339	246	281	271	10	0	30	5	25	0	319	0	3	316	129	20	0	109	353	282	47	24	1696
LCF85 Forests and shrubs fires			0			0	0				0				0				0				0
LCF86 Coastal erosion	21	42	0			0	0				0				347	347			0				410
LCF87 Impacts of storms, floods…	943	679	2705	2705		0	0				101	0	83	18	494	485	9		2233	1801	432	0	7156
LCF89 Other changes and unknown	1052	658	6669	6668	1	0	300	128	172		250		29	221	3061	3006	23	33	3588	2985	602	0	15579
C - TOTAL LAND COVER FLOWS 1975-1990	***132462***	***45985***	***319795***	***316210***	***3585***	***0***	***150078***	***106959***	***40771***	***2347***	***238378***	***1085***	***22589***	***214703***	***167902***	***97477***	***18823***	***51602***	***353988***	***218774***	***103018***	***32197***	***1408587***
D - Final Surface ~ 1990 (D = A-B+C)	***2468285***	***862355***	***5441423***	***5302679***	***138745***	***0***	***1221485***	***421751***	***637970***	***161765***	***4499857***	***54100***	***724215***	***3721542***	***2303536***	***680105***	***516742***	***1106689***	***6962617***	***2492387***	***3553387***	***916844***	***23759558***

LAND & ECOSYSTEMS ACCOUNTS - BASIC ACCOUNTS (SLOVAKIA)

Matrix Of Land Cover Changes 1975-1990; CLC Level2/Level 3

FINAL YEAR ⇊ / OPENING YEAR ⇉		111 Continuous urban fabric	112 Discontinuous urban fabric	121 Industrial or commercial units	122 Road and rail networks and associated land	123 Port areas	124 Airports	131 Mineral extraction sites	132 Dump sites	133 Construction sites	141 Green urban areas	142 Sport and leisure facilities	211 Non-irrigated arable land	212 Permanently irrigated land	213 Rice fields	221 Vineyards	222 Fruit trees and berry plantations	223 Olive groves	231 Pastures	241 Annual crops associated wth permanent crops	242 Complex cultivation patterns	243 Land principally occupied by agriculture with significant areas of natural vegetation	244 Agro-forestry areas	311 Broad-leaved forest	312 Coniferous forest	313 Mixed forest	321 Natural grassland	322 Moors and heathland	323 Sclerophyllous vegetation	324 Transitional woodland shrub	331 Beaches, dunes and sand plains	332 Bare rock	333 Sparsely vegetated areas	334 Burnt areas	335 Glaciers and perpetual snow	411 Inland marshes	412 Peatbogs	421 Salt marshes	422 Salines	423 Intertidal flats	511 Water courses	512 Water bodies	521 Coastal lagoons	522 Estuaries	523 Sea and ocean	TOTAL OPENING YEAR –1975	*Increase (+)*	*Decrease (-)*	*Net Changes 1975-1990*	TOTAL FINAL YEAR –1990
11	Urban fabric	938	213634	242					26				120								77	172		91	251																	52				**215602**	*7719*	*1030*	*6689*	**222291**
12	Industrial, commercial and transport units		29	24229	1288	266	2332			66			18									6							22												10				**28266**	*3154*	*150*	*3004*	**31269**
13	Mines, dump and construction sites		1255	282	27			2377	808	9		5	187			4			91		13	328		23	5				141						54					15	612				**6235**	*6955*	*3040*	*3915*	**10150**
14	Artificial non-agricultural vegetated areas		10								1165	8722										9							39						8						43				**9996**	*403*	*109*	*294*	**10290**
21	Arable Land		3902	1683	127		12	167	187	2169		50	1617128			3924	2607		13015		808	17533		507	10	32	12		650						42					296	343				**1665203**	*57362*	*48075*	*9287*	**1674490**
22	Permanent Crops		23	64									1525			22112	9551		21		64	364																							**33724**	*8914*	*2060*	*6853*	**40577**
23	Pastures		148	20				103	102				16198			6	105		160832		225	55064		47	144	68	271		2176			25									372				**235905**	*56318*	*75073*	*-18755*	**217150**
24	Heterogeneous agricultural areas		2129	421				152	62	238	37	83	37169			1281	978		41635		18765	442537		1176	93	229	194		1135						118					29	878				**549339**	*84275*	*88037*	*-3762*	**545577**
31	Forests		145	171	6			593	174	2322		135	1624			10			937		54	5359		1005050	568113	345678	445		84961			81			209					35	281				**2016384**	*8913*	*97542*	*-88629*	**1927754**
32	Shrub and/or herbaceous vegetation associations		58	64	4			5	14	116		54	336						473		58	3544		2506	1592	1316	30329	13106	41809		233	787	30		5						98				**96536**	*93227*	*11293*	*81933*	**178469**
33	Open spaces with little or no vegetation								8													11			86	2591	161		61		5397	3772									90				**12176**	*1158*	*3007*	*-1849*	**10327**
41	Inland wetlands		20	19						59			179						139			235		320			80		162					2578	197					354				**4341**	*2014*	*1566*	*448*	**4789**
42	Coastal wetlands																																													**0**	*0*	*0*	*0*	**0**
51	Inland waters			13						394		38	7						6		0	353		387	30				126	1				1578					6518	12398				**21850**	*3508*	*2934*	*574*	**22424**
52	Coastal waters																																													**0**	*0*	*0*	*0*	**0**
		938	221353	27208	1452	266	2344	3396	1380	5374	1203	9087	1674490	0	0	27336	13241	0	217150	0	20063	525515	0	1010107	570237	347410	33922	13267	0	131281	1	5630	4666	30	0	4591	197	0	0	0	6892	15531	0	0	0	*4895557*	*333919*	*333919*	*0*	**4895557**

LAND & ECOSYSTEMS ACCOUNTS - BASIC ACCOUNTS (SLOVAKIA)

Account of Land Cover Changes
(by Dominant Landscape Types)

Landscape types	A1 URBAN DENSE AREAS				A2 DISPERSED URBAN AREAS				B1 BROAD PATTERN INTENSIVE AGRICULTURE				*B11 LOWLAND BROAD PATTERN INTENSIVE AGRICULTURE*				*B12 UPLAND BROAD PATTERN INTENSIVE AGRICULTURE*				*B13 MOUNTAIN BROAD PATTERN INTENSIVE AGRICULTURE*				B2 COMPOSITE RURAL LANDSCAPE				*B21 LOWLAND COMPOSITE RURAL LANDSCAPE*				*B22 UPLAND COMPOSITE RURAL LANDSCAPE*				*B23 MONTAIN COMPOSITE RURAL LANDSCAPE*			
Land Cover (Corine Land Cover level 2)	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990
1. Artificial surfaces	**37447**	5133	1301	**41278**	**29705**	4029	805	**32929**	**41539**	1987	555	**42972**	**38775**	1797	483	**40089**	**2764**	190	72	**2882**	**0**	0	0	**0**	**7193**	199	58	**7334**	**0**	0	0	**0**	**1423**	30	0	**1452**	**5771**	169	58	**5882**
11 Urban fabric	25564	2083	251	27397	24954	668	222	25399	37057	634	71	37619	34522	580	40	35062	2535	54	31	2558					6601	175	30	6745					1299	27		1326	5302	148	30	5420
12 Industrial, commercial and transport units	8048	599		8647	3737	500	11	4225	3565	719	19	4265	3403	641	19	4024	162	79		241					438	22	0	460					124			124	314	22		336
13 Mines, dump and construction sites	1651	2206	1045	2813	714	2861	528	3047	618	634	464	788	551	577	424	705	67	57	40	84					29	3	28	4						3		3	29		28	1
14 Artificial non-agricultural vegetated areas	2184	244	6	2422	300		43	257	299	0	0	299	299			299									126	0	0	126									126			126
2. Agricultural areas	**157300**	6854	8433	**155721**	**249858**	3553	6063	**247348**	**509354**	12220	13620	**507954**	**476570**	11161	12525	**475206**	**32784**	1059	1095	**32748**	**0**	0	0	**0**	**88957**	21708	21258	**89407**	**0**	0	0	**0**	**16414**	3624	3666	**16371**	**72543**	18085	17592	**73035**
21 Arable Land	120678	2059	3153	119583	233986	1126	4120	230992	460806	4148	7213	457741	432491	3536	6757	429270	28315	613	457	28471					21931	4014	3358	22587					3946	1553	285	5214	17986	2461	3073	17374
22 Permanent Crops	4794	526	163	5156	4223	742	70	4895	8138	3553	438	11254	7161	3298	232	10227	977	255	206	1027					95	76	0	171					64			64	31	79		108
23 Pastures	6018	1527	2013	5532	1986	261	886	1362	8876	1506	2749	7633	8516	1498	2624	7390	360	8	125	243					19096	9473	6921	21647					1314	1616	365	2564	17782	7857	6556	19083
24 Heterogeneous agricultural areas	25811	2743	3104	25450	9663	1423	987	10099	31533	3012	3220	31325	28402	2829	2912	28318	3132	184	308	3007					47834	8145	10979	45001					11091	456	3016	8530	36744	7696	7962	36471
3. Forest and semi-natural areas	**107833**	4527	6276	**106083**	**19399**	2370	3605	**18164**	**40475**	5190	5585	**40080**	**31773**	4889	5163	**31499**	**8702**	300	422	**8581**	**0**	0	0	**0**	**90706**	4007	4598	**90115**	**0**	0	0	**0**	**9400**	462	449	**9413**	**81306**	3545	4149	**80702**
31 Forests	105334	956	5440	100850	18278	373	3427	15223	38301	563	5333	33530	29913	504	4912	25505	8388	59	422	8026					87199	276	3768	83706					8569	169	248	8491	78630	107	3521	75216
32 Shrub and/or herbaceous vegetation associations	2301	3571	674	5198	1121	1997	178	2941	2174	4531	251	6454	1860	4290	251	5899	314	241	0	555					3507	3731	830	6408					831	293	201	922	2676	3439	629	5486
33 Open spaces with little or no vegetation	198		163	35					0	99	0	95		95		95									0	0	0	0												
4. Wetlands	**214**	0	63	**151**	**520**	118	225	**412**	**2006**	527	847	**1686**	**1931**	514	771	**1673**	**76**	13	76	**13**	**0**	0	0	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**	0	0	**0**
41 Inland wetlands	214		63	151	520	118	225	412	2006	527	847	1686	1931	514	771	1673	76	13	76	13					0	0	0	0												
42 Coastal wetlands									0	0	0	0													0	0	0	0												
5. Water bodies	**2849**	127	567	**2409**	**1644**	1140	512	**2272**	**3539**	1152	469	**4221**	**3392**	1005	425	**3972**	**147**	146	44	**249**	**0**	0	0	**0**	**23**	0	0	**23**	**0**	0	0	**0**	**0**	0	0	**0**	**23**	0	0	**23**
51 Inland waters	2849	127	567	2409	1644	1140	512	2272	3539	1152	469	4221	3392	1005	425	3972	147	146	44	249					23	0	0	23									23			23
52 Coastal waters					0	0	0	0																	0	0	0	0												
TOTAL	**305644**	16641	16641	**305644**	**301125**	11210	11210	**301125**	**596913**	21075	21075	**596913**	**552440**	19366	19366	**552440**	**44473**	1709	1709	**44473**	**0**	0	0	**0**	**186879**	25915	25915	**186879**	**0**	0	0	**0**	**27236**	4115	4115	**27236**	**159643**	21799	21799	**159643**

Landscape types	C1 FORESTED LANDSCAPE				*C11 LOWLAND FORESTED LANDSCAPE*				*C12 UPLAND FORESTED LANDSCAPE*				*C13 MOUNTAIN FORESTED LANDSCAPE*				C2 OPEN SEMI-NATURAL OR NATURAL LANDSCAPE				*C21 LOWLAND OPEN SEMI-NATURAL OR NATURAL LANDSCAPE*				*C22 UPLAND OPEN SEMI-NATURAL OR NATURAL LANDSCAPE*				*C23 MOUNTAIN OPEN SEMI-NATURAL OR NATURAL LANDSCAPE*				C3 LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER				*C31 LOWLAND LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER*				*C32 UPLAND LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER*				*C33 MOUNTAIN LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER*				**TOTAL**				
Land Cover (Corine Land Cover level 2)	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	1990	1975	(+)	(-)	Net Changes	1990
1. Artificial surfaces	**35462**	1377	494	**36346**	**251**	35	18	**268**	**18219**	827	149	**18898**	**16992**	515	327	**17180**	**837**	0	0	**837**	**0**	0	0	**0**	**0**	0	0	**0**	**837**	0	0	**837**	**107916**	5506	1117	**112304**	**26103**	967	139	**26932**	**60110**	3416	475	**63051**	**21702**	1122	504	**22321**	**260099**	18231	4330	**13901**	**273999**
11 Urban fabric	29580	822	207	30195	233	17		250	15556	462	52	15966	13791	343	155	13979	57	0	0	57									57			57	91789	3338	249	94878	22409	473	42	22840	51993	2252	141	54105	17387	613	67	17933	215602	7719	1030	6689	222291
12 Industrial, commercial and transport units	2828	277	18	3087	18		18		1708	183		1892	1102	93		1195	0	0	0	0													9650	1037	102	10586	2448	261	34	2675	5143	418	67	5495	2059	358		2417	28266	3154	150	3004	31269
13 Mines, dump and construction sites	1074	278	269	1084		18		18	567	182	97	652	507	78	171	414	0	0	0	0													2149	972	707	2414	245	179	63	359	1092	644	252	1485	811	152	392	571	6235	6955	3040	3915	10150
14 Artificial non-agricultural vegetated areas	1979	0	0	1979					388			388	1592			1592	780	0	0	780													4328	158	60	4426	1001	58		1059	1881	101	15	1967	1446		45	1400	9996	403	109	294	10290
2. Agricultural areas	**353500**	63378	63161	**353715**	**3569**	402	324	**3647**	**157818**	22258	23197	**156879**	**192113**	40716	39640	**193189**	**1476**	504	394	**1586**	**0**	0	0	**0**	**0**	0	0	**0**	**1476**	504	394	**1586**	**1123727**	98653	100315	**1122064**	**271394**	11144	12114	**270423**	**634977**	50368	52047	**633295**	**217355**	37144	36154	**218346**	**2484172**	206869	213246	**-6377**	**2477795**
21 Arable Land	104529	12442	7038	109935	2501	119	98	2522	65029	5798	4332	66494	36999	6629	2605	40919	154	13	20	146									154	13	26	146	723120	33560	23174	733506	218921	9025	4263	219683	407167	19378	12701	413843	97032	9158	6210	99980	1665203	57362	48075	9287	1674490
22 Permanent Crops	1329	375	109	1599					1162	354	105	1411	168	21		189	0	0	0	0													15145	3641	1285	17502	6440	1524	435	7529	8231	2026	796	9462	474	91	54	511	33724	8914	2066	6853	40577
23 Pastures	88723	15333	31792	72263	207	132	75	264	25369	6522	8017	23874	63147	8679	23701	48125	1212	27	374	865									1212	27	374	865	109994	28191	30338	107848	13361	2238	4039	11560	41867	12675	12023	42520	54767	13278	14276	53768	235905	56318	75073	-18755	217150
24 Heterogeneous agricultural areas	158919	35227	24228	169918	861	151	152	861	66259	9584	10743	65100	91799	25492	13333	103957	110	464	0	575									110	464		575	275467	33265	45519	263209	32672	2357	3378	31651	177712	16285	26527	167471	65083	14618	15614	64086	549339	84275	88037	-3762	545577
3. Forest and semi-natural areas	**940552**	40216	41697	**939065**	**8146**	690	785	**8051**	**277713**	11136	11110	**277739**	**654693**	28384	29802	**653275**	**36346**	2255	2365	**36236**	**0**	0	0	**0**	**0**	0	0	**0**	**36346**	2255	2365	**36236**	**889785**	44739	47716	**886808**	**64730**	4430	4426	**64733**	**541940**	23747	25051	**540636**	**283115**	16562	18239	**281438**	**2125096**	103297	111843	**-8545**	**2116551**
31 Forests	896795	3145	37680	862259	6940	44	760	6225	271336	1259	9857	262738	618519	1841	27063	593297	17956	5	192	17768									17956	5	192	17768	852522	3596	41702	814416	62333	476	4072	58737	524989	2034	22605	504418	265200	1086	15025	251261	2016384	8913	97542	-88629	1927754
32 Shrub and/or herbaceous vegetation associations	42700	36963	3930	75733	1206	646	25	1827	5806	9823	1167	14462	35688	26495	2739	59444	12549	1562	695	13415									12549	1562	695	13415	32183	40872	4735	68320	2249	3941	329	5860	16030	21697	2185	35541	13905	15235	2221	26918	96536	93227	11293	81933	178469
33 Open spaces with little or no vegetation	1057	102	87	1073					571	55	87	539	486	48		534	5841	689	1478	5052									5841	689	1478	5052	5081	273	1280	4072	148	13	25	136	921	16	261	677	4011	241	993	3259	12176	1158	3007	-1849	10327
4. Wetlands	**0**	0	0	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**0**	0	0	**0**	**1601**	1369	431	**2539**	**984**	88	137	**935**	**420**	33	294	**159**	**197**	1248	0	**1445**	**4341**	2014	1566	**448**	**4789**
41 Inland wetlands	0	0	0	0																													1601	1369	431	2539	984	88	137	935	420	33	294	159	197	1248		1445	4341	2014	1566	448	4789
42 Coastal wetlands	0	0	0	0													0	0	0	0													0	0	0	0													0	0	0	0	0
5. Water bodies	**869**	388	0	**1258**	**63**	0	0	**63**	**228**	235	0	**463**	**578**	154	0	**731**	**25**	0	0	**25**	**0**	0	0	**0**	**0**	0	0	**0**	**25**	0	0	**25**	**12901**	700	1387	**12215**	**5071**	222	34	**5258**	**2575**	403	97	**2881**	**5255**	76	1256	**4075**	**21850**	3508	2934	**574**	**22424**
51 Inland waters	869	388	0	1258	63			63	228	235		463	578	154		731	25	0	0	25									25			25	12901	700	1387	12215	5071	222	34	5258	2575	403	97	2881	5255	76	1256	4075	21850	3508	2934	574	22424
52 Coastal waters	0	0	0	0													0	0	0	0													0	0	0	0													0	0	0	0	0
TOTAL	**1330384**	105282	105352	**1330384**	**12029**	1128	1128	**12029**	**453979**	34458	34458	**453979**	**864375**	69768	69768	**864375**	**38684**	2759	2759	**38684**	**0**	0	0	**0**	**0**	0	0	**0**	**38684**	2759	2759	**38684**	**2135929**	150967	150967	**2135929**	**368282**	16851	16851	**368282**	**1240022**	77963	77963	**1240022**	**527626**	56153	56153	**527626**	**4895557**	333919	333919	**0**	**4895557**

LAND & ECOSYSTEMS ACCOUNTS - BASIC ACCOUNTS (SLOVAKIA)

Account of Formation of Land Cover - summary

Consumption of land cover										***Formation of land cover***							
1	2.1+2.2	2.3+2.4	3.1	3.2+3.3	4	5			Land cover flows	1	2.1+2.2	2.3+2.4	3.1	3.2+3.3	4	5	
Artificial surfaces	Arable land & Permanent crops	Pastures & Mixed agricultural areas	Forests	Shrub and other semi-natural land	Wetlands	Water bodies	Total			Artificial surfaces	Arable land & Permanent crops	Pastures & Mixed agricultural areas	Forests	Shrub and other semi-natural land	Wetlands	Water bodies	Total
1942	0	37	0	0	0	0	1979	LCF1	Urban land management	1979	0	0	0	0	0	0	1979
0	3925	2277	145	58	20	0	6424	LCF2	Urban sprawl	6424	0	0	0	0	0	0	6424
0	4458	1180	3401	265	77	446	9828	LCF3	Extension of economic sites and infrastructures	9828	0	0	0	0	0	0	9828
0	21963	97596	0	0	0	0	119559	LCF4	Agricultural rotation and intensification	0	63791	55768	0	0	0	0	119559
1024	0	0	7983	4423	553	366	14349	LCF5	Conversion of land to agriculture	0	2485	11864	0	0	0	0	14349
370	550	0	85488	5500	320	417	92644	LCF6	Forests creation and management	0	0	0	7156	85488	0	0	92644
655	343	1251	281	188	0	0	2718	LCF7	Water body creation and management	0	0	0	0	0	0	2718	2718
339	18896	60769	244	3868	596	1705	86418	LCF8	Changes of land cover due to natural and multiple causes	0	0	72961	1757	8896	2014	790	86418
4330	**50136**	**163110**	**97542**	**14300**	**1566**	**2934**	**333919**		**Sub/Total Flows**	**18231**	**66276**	**140593**	**8913**	**94384**	**2014**	**3508**	**333919**
13901	***16140***	***-22517***	***-88629***	***80084***	***448***	***574***			***Net Formation of Land Cover***								
18231	**66276**	**140593**	**8913**	**94384**	**2014**	**3508**	**333919**		**TOTAL**	**18231**	**66276**	**140593**	**8913**	**94384**	**2014**	**3508**	**333919**

Land Cover stock 1975	**260099**	**1698927**	**785245**	**2016384**	**108712**	**4341**	**21850**	**4895557**
Net Formation of Land Cover	*13901*	*16140*	*-22517*	*-88629*	*80084*	*448*	*574*	
Land Cover stock 1990	**273999**	**1715068**	**762727**	**1927754**	**188796**	**4789**	**22424**	**4895557**

LAND & ECOSYSTEMS ACCOUNTS - BASIC ACCOUNTS (SLOVAKIA)

Account of Formation of Land Cover - detailed

			1	1.1	111	112	1.2	121	122	123	124	1.3	131	132	133	1.4	141	142	*2*	2.1	211	212	213	2.2	221	222	223	2.3	231	2.4	241	242	243	244	*3*	3.1	311
			ARTIFICIAL SURFACES	**Urban fabric**	Continuous urban fabric	Discontinuous urban fabric	**Industrial, commercial and transport units**	Industrial or commercial units	Road and rail networks and associated land	Port areas	Airports	**Mines, dump and construction sites**	Mineral extraction sites	Dump sites	Construction sites	**Artificial non-agricultural vegetated areas**	Green urban areas	Sport and leisure facilities	*AGRICULTURAL AREAS*	**Arable Land**	Non-irrigated arable land	Permanently irrigated land	Rice fields	**Permanent Crops**	Vineyards	Fruit trees and berry plantations	Olive groves	**Pastures**	Pastures	**Heterogeneous agricultural areas**	Annual crops associated with permanent crops	Complex cultivation patterns	Agriculture land with significant areas of natural vegetation	Agro-forestry areas	*FORESTS AND SEMI-NATURAL AREAS*	**Forests**	Broad-leaved forest
Consumption of land cover (-)																																					
LCF1	**Urban land management**		*1942*	*268*			*95*					*1568*				*10*			*37*	*0*				*0*				*0*		*37*					*0*	*0*	
	LCF11	Urban development/ infilling	*10*													*10*			*0*																*0*		
	LCF12	Developped land recycling	*1931*	*268*			*95*					*1568*							*0*																*0*		
	LCF13	Development of green urban areas	*0*																*37*											*37*					*0*		
LCF2	**Urban sprawl**		*0*	*0*			*0*					*0*				*0*			*6202*	*3902*				*23*				*148*		*2129*					*202*	*145*	
	LCF21	Urban continuous sprawl	*0*																*0*																*0*		
	LCF22	Urban diffuse sprawl	*0*																*6202*	*3902*				*23*				*148*		*2129*					*202*	*145*	
LCF3	**Extension of economic sites and infrastructures**		*0*	*0*			*0*					*0*				*0*			*5639*	*4394*				*64*				*225*		*956*					*3666*	*3401*	
	LCF31	Extension of industrial & commercial sites	*0*																*2188*	*1683*				*64*				*20*		*421*					*235*	*171*	
	LCF32	Extension of transport networks	*0*																*127*	*127*															*10*	*6*	
	LCF33	Extension of habours	*0*																*0*																*0*		
	LCF34	Extension of airports	*0*																*12*	*12*															*0*		
	LCF35	Extension of mines and quarrying areas	*0*																*421*	*167*								*103*		*152*					*598*	*593*	
	LCF36	Extension of dumpsites	*0*																*350*	*187*								*102*		*62*					*195*	*174*	
	LCF37	Construction	*0*																*2408*	*2169*										*238*					*2438*	*2322*	
	LCF38	Extension of sport and leisure facilities	*0*																*133*	*50*										*83*					*190*	*135*	
LCF4	**Agricultural rotation and intensification**		*0*	*0*			*0*					*0*				*0*			*119559*	*20353*				*1610*				*16533*		*81063*					*0*	*0*	
	LCF41	Recent extension of pasture, fallow land, set aside	*0*																*55479*	*13823*				*21*						*41635*					*0*		
	LCF42	Planting of vineyards, fruit and olive trees over arable & pasture	*0*																*8900*	*6530*								*110*		*2259*					*0*		
	LCF43	Rotation of annual crops	*0*																*0*																*0*		
	LCF44	Rotation of permanent crops	*0*																*0*																*0*		
	LCF45	Intensification of agriculture	*0*																*55180*					*1589*				*16423*		*37169*					*0*		
LCF5	**Conversion of land to agriculture**		*1024*	*369*			*24*					*622*				*9*			*0*	*0*				*0*				*0*		*0*					*12406*	*7983*	
	LCF51	Intensive conversion of forest to agriculture	*0*																*0*																*1634*	*1634*	
	LCF52	Intensive conversion of marginal land to agriculture	*0*																*0*																*336*		
	LCF53	Diffuse conversion of forest to agriculture	*0*																*0*																*6349*	*6349*	
	LCF54	Diffuse conversion of marginal land to agriculture	*0*																*0*																*4086*		
	LCF55	Conversion of wetlands to agriculture	*0*																*0*																*0*		
	LCF56	Conversion of developed areas to agriculture	*1024*	*369*			*24*					*622*				*9*			*0*																*0*		
LCF6	**Forests creation and management**		*370*	*341*			*0*					*28*				*0*			*550*	*550*				*0*				*0*		*0*					*90988*	*85488*	
	LCF61	Forests creation	*370*	*341*								*28*							*550*	*550*															*5500*		
	LCF62	Forests rotation	*0*																*0*																*0*		
	LCF63	Recent felling and transition	*0*																*0*																*85488*	*85488*	
LCF7	**Water body creation and management**		*655*	*0*			*0*					*612*				*43*			*1594*	*343*				*0*				*372*		*878*					*469*	*281*	
	LCF71	Water body creation	*655*									*612*				*43*			*1594*	*343*								*372*		*878*					*469*	*281*	
	LCF72	Water body management	*0*																*0*																*0*		
LCF8	**Changes of land cover due to natural and multiple causes**		*339*	*52*			*31*					*210*				*47*			*79665*	*18532*				*364*				*57796*		*2974*					*4112*	*244*	
	LCF81	Semi-natural rotation	*0*																*0*																*3838*		
	LCF82	Farmland abandonment without significant woodland creation	*0*																*77542*	*18195*				*364*				*57536*		*1447*					*0*		
	LCF83	Farmland abandonment with woodland creation	*0*																*1757*									*259*		*1498*					*0*		
	LCF84	Other land abandonment (other than farmland)	*201*				*22*					*141*				*39*			*0*																*0*		
	LCF85	Forests and shrubs fires	*0*																*0*																*30*		
	LCF86	Coastal erosion	*0*																*0*																*0*		
	LCF87	Impacts of storms, floods…	*15*									*15*							*325*	*296*										*29*					*35*	*35*	
	LCF89	Other changes and unknown	*123*	*52*			*10*					*54*				*8*			*42*	*42*															*209*	*209*	
Total consumption of cover			*4330*	*1030*			*150*					*3040*				*109*			*213246*	*48075*				*2060*				*75073*		*88037*					*111843*	*97542*	
Formation of land cover (+)																																					
LCF1	**Urban land management**		*1979*	*1295*	0	1295	*551*	524	27	0	0	*92*	0	26	66	*42*	37	5	*0*	*0*	0	0	0	*0*	0	0	0	*0*	0	*0*	0	0	0	0	*0*	*0*	0
	LCF11	Urban development/ infilling	*10*	*10*		10													*0*																*0*		
	LCF12	Developped land recycling	*1931*	*1284*		1284	*551*	524	27			*92*		26	66	*5*		5	*0*																*0*		
	LCF13	Development of green urban areas	*37*													*37*	37		*0*																*0*		
LCF2	**Urban sprawl**		*6424*	*6424*	0	6424	*0*	0	0	0	0	*0*	0	0	0	*0*	0	0	*0*	0	0	0	0	*0*	0	0	0	*0*	0	*0*	0	0	0	0	*0*	*0*	0
	LCF21	Urban continuous sprawl	*0*																*0*																*0*		
	LCF22	Urban diffuse sprawl	*6424*	*6424*		6424													*0*																*0*		
LCF3	**Extension of economic sites and infrastructures**		*9828*	0	0	0	*2603*	2455	137	0	12	*6863*	1019	546	5298	*361*	0	361	*0*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*0*	0	0
	LCF31	Extension of industrial & commercial sites	*2455*				*2455*	2455											*0*																*0*		
	LCF32	Extension of transport networks	*137*				*137*		137										*0*																*0*		
	LCF33	Extension of habours	*0*																*0*																*0*		
	LCF34	Extension of airports	*12*				*12*				12								*0*																*0*		
	LCF35	Extension of mines and quarrying areas	*1019*									*1019*	1019						*0*																*0*		
	LCF36	Extension of dumpsites	*546*									*546*		546					*0*																*0*		
	LCF37	Construction	*5298*									*5298*			5298				*0*																*0*		
	LCF38	Extension of sport and leisure facilities	*361*													*361*		361	*0*																*0*		
LCF4	**Agricultural rotation and intensification**		*0*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*119559*	*54891*	*54891*	0	0	8900	5210	3690	0	54672	54672	1097	0	1097	0	0	*0*	0	0
	LCF41	Recent extension of pasture, fallow land, set aside	*0*																*55479*									54672	54672	808		808			*0*		
	LCF42	Planting of vineyards, fruit and olive trees over arable & pasture	*0*																*8900*					8900	5210	3690									*0*		
	LCF43	Rotation of annual crops	*0*																*0*																*0*		
	LCF44	Rotation of permanent crops	*0*																*0*																*0*		
	LCF45	Intensification of agriculture	*0*																*55180*	*54891*	*54891*									289		289			*0*		
LCF5	**Conversion of land to agriculture**		*0*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*14349*	*2471*	2471	0	0	14	14	0	0	1646	1646	10218	0	201	10017	0	*0*	0	0
	LCF51	Intensive conversion of forest to agriculture	*0*																*1634*	*1624*	1624			10	10										*0*		
	LCF52	Intensive conversion of marginal land to agriculture	*0*																*336*	336	336														*0*		
	LCF53	Diffuse conversion of forest to agriculture	*0*																*6349*									937	937	5412		54	5359		*0*		
	LCF54	Diffuse conversion of marginal land to agriculture	*0*																*4086*									473	473	3613		58	3555		*0*		
	LCF55	Conversion of wetlands to agriculture	*0*																*919*	185	185							145	145	588		0	588		*0*		
	LCF56	Conversion of developed areas to agriculture	*0*																*1024*	325	325			4	4			91	91	605		90	515		*0*		
LCF6	**Forests creation and management**		*0*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*0*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*92644*	7156	3834
	LCF61	Forests creation	*0*																*0*																*7156*	7156	3834
	LCF62	Forests rotation	*0*																*0*																*0*		
	LCF63	Recent felling and transition	*0*																*0*																*85488*		
LCF7	**Water body creation and management**		*0*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*0*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*0*	0	0
	LCF71	Water body creation	*0*																*0*																*0*		
	LCF72	Water body management	*0*																*0*																*0*		
LCF8	**Changes of land cover due to natural and multiple causes**		*0*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*72961*	0	0	0	0	0	0	0	0	0	0	72961	0	0	72961	0	*10653*	1757	1223
	LCF81	Semi-natural rotation	*0*																*0*																*4074*		
	LCF82	Farmland abandonment without significant woodland creation	*0*																*72961*											72961			72961		*4463*		
	LCF83	Farmland abandonment with woodland creation	*0*																*0*																*1757*	1757	1223
	LCF84	Other land abandonment (other than farmland)	*0*																*0*																*201*		
	LCF85	Forests and shrubs fires	*0*																*0*																*30*		
	LCF86	Coastal erosion	*0*																*0*																*0*		
	LCF87	Impacts of storms, floods…	*0*																*0*																*0*		
	LCF89	Other changes and unknown	*0*																*0*																*127*		
Total formation of cover			*18231*	*7719*	*0*	*7719*	*3154*	*2979*	*164*	*0*	*12*	*6955*	*1019*	*572*	*5364*	*403*	*37*	*365*	*206869*	*57362*	*57362*	*0*	*0*	*8914*	*5224*	*3690*	*0*	*56318*	*56318*	*84275*	*0*	*1297*	*82978*	*0*	*103297*	*8913*	*5057*
Net formation of cover			*13901*	*6689*			*3004*					*3915*				*294*			*-6377*	*9287*				*6853*				*-18755*		*-3762*					*-8545*	*-88629*	
TOTAL OPENING YEAR ~ 1975			*260099*	215602			28266					6235				9996			***2484172***	1665203				33724				235905		549339					***2125096***	2016384	
TOTAL FINAL YEAR ~ 1990			*273999*	222291	938	221353	31269	27208	1452	266	2344	10150	3396	1380	5374	10290	1203	9087	***2477795***	1674490	1674490			40577	27336	13241		217150	217150	545577		20063	525515		***2116551***	1927754	1010107

312	313	3.2	321	322	323	324	3.3	331	332	333	334	335	4	4.1	411	412	4.2	421	422	423	5	5.1	511	512	5.2	521	522	523	
Coniferous forest	Mixed forest	**Shrub and/or herbaceous vegetation associations**	Natural grassland	Moors and heathland	Sclerophyllous vegetation	Transitional woodland shrub	**Open spaces with little or no vegetation**	Beaches, dunes and sand plains	Bare rock	Sparsely vegetated areas	Burnt areas	Glaciers and perpetual snow	***WETLANDS***	**Inland wetlands**	Inland marshes	Peatbogs	**Coastal wetlands**	Salt marshes	Salines	Intertidal flats	***WATER BODIES***	**Inland waters**	Water courses	Water bodies	**Coastal waters**	Coastal lagoons	Estuaries	Sea and ocean	TOTAL
		0					0						0	0			0				0	0			0				1979
													0								0								10
													0								0								1931
													0								0								37
		58					0						20	20			0				0	0			0				6424
													0								0								0
		58											20	20							0								6424
		257					8						77	77			0				446	446			0				9828
		64											19	19							13	13							2455
		4											0								0								137
													0								0								0
													0								0								12
		5											0								0								1019
		14					8						0								0								546
		116											59	59							394	394							5298
		54											0								38	38							361
		0					0						0	0			0				0	0			0				119559
													0								0								55479
													0								0								8900
													0								0								0
													0								0								0
													0								0								55180
		4412					11						553	553			0				366	366			0				14349
													0								0								1634
		336											0								0								336
													0								0								6349
		4075					11						0								0								4086
													553	553							366	366							919
													0								0								1024
		5414					86						320	320			0				417	417			0				92644
		5414					86						320	320							417	417							7156
													0								0								0
													0								0								85488
		98					90						0	0			0				0	0			0				2718
		98					90						0								0								2718
													0								0								0
		1055					2813						596	596			0				1705	1705			0				86418
		1025					2813						596	596							1578	1578							6012
													0								0								77542
													0								0								1757
													0								0								201
		30											0								0								30
													0								0								0
													0								0								375
													0								127	127							502
		11293					3007						1566	1566			0				2934	2934			0				333919
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1979
													0								0								10
													0								0								1931
													0								0								37
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6424
													0								0								0
													0								0								6424
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9828
													0								0								2455
													0								0								137
													0								0								0
													0								0								12
													0								0								1019
													0								0								546
													0								0								5298
													0								0								361
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	119559
													0								0								55479
													0								0								8900
													0								0								0
													0								0								0
													0								0								55180
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14349
													0								0								1634
													0								0								336
													0								0								6349
													0								0								4086
													0								0								919
													0								0								1024
1888	1434	85407	445	0	0	84961	81	0	0	81	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	92644
1888	1434												0								0								7156
													0								0								0
		85407	445			84961	81			81			0								0								85488
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2718	2718	0	2718	0	0	0	0	2718
													0								2718	2718		2718					2718
													0								0								0
237	298	7820	3148	161	0	4511	1076	1	233	812	30	0	2014	2014	2014	0	0	0	0	0	790	790	375	416	0	0	0	0	86418
		3055	2671	161		222	1020		233	787			1583	1583	1583						354	354		354					6012
		4438	477			3961	25			25			118	118	118						0								77542
237	298												0								0								1757
		201				201							0								0								201
							30				30		0								0								30
													0								0								0
													0								375	375	375						375
		126				126	1	1					313	313	313						61	61		61					502
2124	1732	93227	3593	161	0	89472	1158	1	233	894	30	0	2014	2014	2014	0	0	0	0	0	3508	3508	375	3133	0	0	0	0	333919
		81933					-1849						448	448			0				574	574			0				0
		96536					12176						4341	4341							21850	21850							4895557
570237	347410	178469	33922	13267		131281	10327	1	5630	4666	30		4789	4789	4591	197	0				22424	22424	6892	15531	0				4895557

Land Cover Resource & Use Account - summary

(by Dominant Landscape Types)

Summary Account	A1 URBAN DENSE AREAS	A2 DISPERSED URBAN AREAS	B1 BROAD PATTERN INTENSIVE AGRICULTURE	*B11 LOWLAND BROAD PATTERN INTENSIVE AGRICULTURE*	*B12 UPLAND BROAD PATTERN INTENSIVE AGRICULTURE*	*B13 MOUNTAIN BROAD PATTERN INTENSIVE AGRICULTURE*	B2 COMPOSITE RURAL LANDSCAPE	*B21 LOWLAND COMPOSITE RURAL LANDSCAPE*	*B22 UPLAND COMPOSITE RURAL LANDSCAPE*	*B23 MOUNTAIN COMPOSITE RURAL LANDSCAPE*	C1 FORESTED LANDSCAPE	*C11 LOWLAND FORESTED LANDSCAPE*	*C12 UPLAND FORESTED LANDSCAPE*	*C13 MOUNTAIN FORESTED LANDSCAPE*	C2 OPEN SEMI-NATURAL OR NATURAL LANDSCAPE	*C21 LOWLAND OPEN SEMI-NATURAL OR NATURAL LANDSCAPE*	*C22 UPLAND OPEN SEMI-NATURAL OR NATURAL LANDSCAPE*	*C23 MOUNTAIN OPEN SEMI-NATURAL OR NATURAL LANDSCAPE*	C3 LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER	*C31 LOWLAND LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER*	*C32 UPLAND LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER*	*C33 MOUNTAIN LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER*	***TOTAL***
Initial Surface																							
1 Artificial surfaces	***37447***	***29705***	***41539***	***38775***	***2764***	***0***	***7193***	***0***	***1423***	***5771***	***35462***	***251***	***18219***	***16992***	***837***	***0***	***0***	***837***	***107916***	***26103***	***60110***	***21702***	***260099***
2 Agricultural areas	***157300***	***249858***	***509354***	***476570***	***32784***	***0***	***88957***	***0***	***16414***	***72543***	***353500***	***3569***	***157818***	***192113***	***1476***	***0***	***0***	***1476***	***1123727***	***271394***	***634977***	***217355***	***2484172***
2.1+2.2 Arable Land & Permanent Crops	125471	238208	468944	439652	29292	0	22026	0	4010	18017	105858	2501	66190	37167	154	0	0	154	738265	225361	415398	97506	1698927
2.3+2.4 Pastures & Heterogeneous agricultural areas	31829	11649	40409	36918	3492	0	66930	0	12404	54526	247642	1068	91628	154946	1322	0	0	1322	385462	46033	219580	119850	785245
3 Forests and semi-natural areas	***107833***	***19399***	***40475***	***31773***	***8702***	***0***	***90706***	***0***	***9400***	***81306***	***940552***	***8146***	***277713***	***654693***	***36346***	***0***	***0***	***36346***	***889785***	***64730***	***541940***	***283115***	***2125096***
3.1 Forests	105334	18278	38301	29913	8388	0	87199	0	8569	78630	896795	6940	271336	618519	17956	0	0	17956	852522	62333	524989	265200	2016384
3.2+3.3 Shrub and other semi-natural land	2499	1121	2174	1860	314	0	3507	0	831	2676	43757	1206	6377	36174	18390	0	0	18390	37264	2397	16951	17915	108712
4 Wetlands	***214***	***520***	***2006***	***1931***	***76***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***1601***	***984***	***420***	***197***	***4341***
5 Water bodies	***2849***	***1644***	***3539***	***3392***	***147***	***0***	***23***	***0***	***0***	***23***	***869***	***63***	***228***	***578***	***25***	***0***	***0***	***25***	***12901***	***5071***	***2575***	***5255***	***21850***
A - TOTAL INITIAL SURFACE ~ 1975	***305644***	***301125***	***596913***	***552440***	***44473***	***0***	***186879***	***0***	***27236***	***159643***	***1330384***	***12029***	***453979***	***864375***	***38684***	***0***	***0***	***38684***	***2135929***	***368282***	***1240022***	***527626***	***4895557***
Consumption of Land Cover Resource (Supply by Land Cover)																							
1 Artificial surfaces	***1301***	***805***	***555***	***483***	***72***	***0***	***58***	***0***	***0***	***58***	***494***	***18***	***149***	***327***	***0***	***0***	***0***	***0***	***1117***	***139***	***475***	***504***	***4330***
2 Agricultural areas	***8433***	***6063***	***13620***	***12525***	***1095***	***0***	***21258***	***0***	***3666***	***17592***	***63161***	***324***	***23197***	***39640***	***394***	***0***	***0***	***394***	***100315***	***12114***	***52047***	***36154***	***213246***
2.1+2.2 Arable Land & Permanent Crops	3316	4190	7651	6989	662	0	3358	0	285	3073	7141	98	4437	2605	20	0	0	20	24459	4698	13498	6264	50136
2.3+2.4 Pastures & Heterogeneous agricultural areas	5117	1873	5969	5536	433	0	17900	0	3381	14519	56021	226	18760	37034	374	0	0	374	75857	7417	38549	29890	163110
3 Forests and semi-natural areas	***6276***	***3605***	***5585***	***5163***	***422***	***0***	***4598***	***0***	***449***	***4149***	***41697***	***785***	***11110***	***29802***	***2365***	***0***	***0***	***2365***	***47716***	***4426***	***25051***	***18239***	***111843***
3.1 Forests	5440	3427	5333	4912	422	0	3768	0	248	3521	37680	760	9857	27063	192	0	0	192	41702	4072	22605	15025	97542
3.2+3.3 Shrub and other semi-natural land	837	178	251	251	0	0	830	0	201	629	4017	25	1253	2739	2173	0	0	2173	6015	355	2446	3214	14300
4 Wetlands	***63***	***225***	***847***	***771***	***76***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***431***	***137***	***294***	***0***	***1566***
5 Water bodies	***567***	***512***	***469***	***425***	***44***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***1387***	***34***	***97***	***1256***	***2934***
B - TOTAL CONSUMPTION OF LAND COVER RESOURCE	***16641***	***11210***	***21075***	***19366***	***1709***	***0***	***25915***	***0***	***4115***	***21799***	***105352***	***1128***	***34456***	***69768***	***2759***	***0***	***0***	***2759***	***150967***	***16851***	***77963***	***56153***	***333919***
Land Cover Flows resulting from Changes in the Uses of Land																							
LCF1 Urban land management	873	273	169	125	43	0	28	0	0	28	36	18	0	18	0	0	0	0	601	51	317	232	1979
LCF2 Urban sprawl	1424	439	624	570	54	0	147	0	27	120	822	17	462	343	0	0	0	0	2969	447	2051	471	6424
LCF3 Extension of economic sites and infrastructures	2836	3317	1195	1102	93	0	25	0	3	22	519	0	365	154	0	0	0	0	1936	469	1048	419	9828
LCF4 Agricultural rotation and intensification	3819	1964	8984	8248	736	0	13523	0	3136	10386	27568	249	12417	14902	4	0	0	4	63698	8750	33030	21918	119559
LCF5 Conversion of land to agriculture	782	771	1616	1387	228	0	795	0	32	763	3830	114	727	2988	110	0	0	110	6445	511	3074	2861	14349
LCF6 Forests creation and management	4055	2138	4233	3999	234	0	3833	0	414	3419	38055	680	10282	27093	88	0	0	88	40242	3936	21976	14330	92644
LCF7 Water body creation and management	127	1097	613	521	92	0	0	0	0	0	337	0	183	153	0	0	0	0	544	195	273	76	2718
LCF8 Changes of Land Cover due to natural and multiple causes	2724	1212	3643	3414	229	0	7564	0	503	7061	34186	49	10020	24116	2557	0	0	2557	34532	2492	16195	15846	86418
C - TOTAL LAND COVER FLOWS 1975-1990	***16641***	***11210***	***21075***	***19366***	***1709***	***0***	***25915***	***0***	***4115***	***21799***	***105352***	***1128***	***34456***	***69768***	***2759***	***0***	***0***	***2759***	***150967***	***16851***	***77963***	***56153***	***333919***
D - Final Surface ~ 1990 (D = A-B+C)	***305644***	***301125***	***596913***	***552440***	***44473***	***0***	***186879***	***0***	***27236***	***159643***	***1330384***	***12029***	***453979***	***864375***	***38684***	***0***	***0***	***38684***	***2135929***	***368282***	***1240022***	***527626***	***4895557***

Land Cover Resource & Use Account - detailed

(by Dominant Landscape Types)

Detailed Account	A1 URBAN DENSE AREAS	A2 DISPERSED URBAN AREAS	B1 BROAD PATTERN INTENSIVE AGRICULTURE	B11 LOWLAND BROAD PATTERN INTENSIVE AGRICULTURE	B12 UPLAND BROAD PATTERN INTENSIVE AGRICULTURE	B13 MOUNTAIN BROAD PATTERN INTENSIVE AGRICULTURE	B2 COMPOSITE RURAL LANDSCAPE	B21 LOWLAND COMPOSITE RURAL LANDSCAPE	B22 UPLAND COMPOSITE RURAL LANDSCAPE	B23 MOUNTAIN COMPOSITE RURAL LANDSCAPE	C1 FORESTED LANDSCAPE	C11 LOWLAND FORESTED LANDSCAPE	C12 UPLAND FORESTED LANDSCAPE	C13 MOUNTAIN FORESTED LANDSCAPE	C2 OPEN SEMI-NATURAL OR NATURAL LANDSCAPE	C21 LOWLAND OPEN SEMI-NATURAL OR NATURAL LANDSCAPE	C22 UPLAND OPEN SEMI-NATURAL OR NATURAL LANDSCAPE	C23 MOUNTAIN OPEN SEMI-NATURAL OR NATURAL LANDSCAPE	C3 LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER	C31 LOWLAND LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER	C32 UPLAND LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER	C33 MOUNTAIN LANDSCAPE WITH NO DOMINANT LAND COVER CHARACTER	TOTAL
Initial Surface																								
1 Artificial surfaces	***37447***	***29705***	***41539***	***38775***	***2764***	***0***	***7193***	***0***	***1423***	***5771***	***35462***	***251***	***18219***	***16992***	***837***	***0***	***0***	***837***	***107916***	***26103***	***60110***	***21702***	***260099***
1.1 Urban fabric	25564	24954	37057	34522	2535	0	6601	0	1299	5302	29580	233	15556	13791	57	0	0	57	91789	22409	51993	17387	215602
1.2 Industrial, commercial and transport units	8048	3737	3565	3403	162	0	438	0	124	314	2828	18	1708	1102	0	0	0	0	9650	2448	5143	2059	28266
1.3 Mines, dump and construction sites	1651	714	618	551	67	0	29	0		29	1074		567	507	0	0	0	0	2149	245	1092	811	6235
1.4 Artificial non-agricultural vegetated areas	2184	300	299	299		0	126	0		126	1979		388	1592	780	0	0	780	4328	1001	1881	1446	9996
2 Agricultural areas	***157300***	***249858***	***509354***	***476570***	***32784***	***0***	***88957***	***0***	***16414***	***72543***	***353500***	***3569***	***157818***	***192113***	***1476***	***0***	***0***	***1476***	***1123727***	***271394***	***634977***	***217355***	***2484172***
2.1 Arable Land	120678	233986	460806	432491	28315	0	21931	0	3946	17986	104529	2501	65029	36999	154	0	0	154	723120	218921	407167	97032	1665203
2.2 Permanent Crops	4794	4223	8138	7161	977	0	95	0	64	31	1329		1162	168	0	0	0		15145	6440	8231	474	33724
2.3 Pastures	6018	1986	8876	8516	360	0	19096	0	1314	17782	88723	207	25369	63147	1212	0	0	1212	109994	13361	41867	54767	235905
2.4 Heterogeneous agricultural areas	25811	9663	31533	28402	3132	0	47834	0	11091	36744	158919	861	66259	91799	110	0	0	110	275467	32672	177712	65083	549339
3 Forests and semi-natural areas	***107833***	***19399***	***40475***	***31773***	***8702***	***0***	***90706***	***0***	***9400***	***81306***	***940552***	***8146***	***277713***	***654693***	***36346***	***0***	***0***	***36346***	***889785***	***64730***	***541940***	***283115***	***2125096***
3.1 Forests	105334	18278	38301	29913	8388	0	87199	0	8569	78630	896795	6940	271336	618519	17956	0	0	17956	852522	62333	524989	265200	2016384
3.2 Shrub and/or herbaceous vegetation associations	2301	1121	2174	1860	314	0	3507	0	831	2676	42700	1206	5806	35688	12549	0	0	12549	32183	2249	16030	13905	96536
3.3 Open spaces with little or no vegetation	198		0			0	0	0			1057		571	486	5841	0	0	5841	5081	148	921	4011	12176
4 Wetlands	***214***	***520***	***2006***	***1931***	***76***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***1601***	***984***	***420***	***197***	***4341***
4.1 Inland wetlands	214	520	2006	1931	76	0	0	0			0				0	0	0		1601	984	420	197	4341
4.2 Coastal wetlands			0			0	0	0			0				0	0	0		0				0
5 Water bodies	***2849***	***1644***	***3539***	***3392***	***147***	***0***	***23***	***0***	***0***	***23***	***869***	***63***	***228***	***578***	***25***	***0***	***0***	***25***	***12901***	***5071***	***2575***	***5255***	***21850***
5.1 Inland waters	2849	1644	3539	3392	147	0	23	0		23	869	63	228	578	25	0	0	25	12901	5071	2575	5255	21850
5.2 Coastal waters			0			0	0	0			0				0	0	0		0				0
A - TOTAL INITIAL SURFACE ~ 1975	***305644***	***301125***	***596913***	***552440***	***44473***	***0***	***186879***	***0***	***27236***	***159643***	***1330384***	***12029***	***453979***	***864375***	***38684***	***0***	***0***	***38684***	***2135929***	***368282***	***1240022***	***527626***	***4895557***
Consumption of Land Cover Resource (Supply by Land Cover)																							
1 Artificial surfaces	***1301***	***805***	***555***	***483***	***72***	***0***	***58***	***0***	***0***	***58***	***494***	***18***	***149***	***327***	***0***	***0***	***0***	***0***	***1117***	***139***	***475***	***504***	***4330***
1.1 Urban fabric	251	222	71	40	31	0	30	0		30	207		52	155	0	0	0		249	42	141	67	1030
1.2 Industrial, commercial and transport units		11	19	19		0	0	0			18	18			0	0	0		102	34	67		150
1.3 Mines, dump and construction sites	1045	528	464	424	40	0	28	0		28	269		97	171	0	0	0		707	63	252	392	3040
1.4 Artificial non-agricultural vegetated areas	6	43	0			0	0	0			0				0	0	0		60		15	45	109
2 Agricultural areas	***8433***	***6063***	***13620***	***12525***	***1095***	***0***	***21258***	***0***	***3666***	***17592***	***63161***	***324***	***23197***	***39640***	***394***	***0***	***0***	***394***	***100315***	***12114***	***52047***	***36154***	***213246***
2.1 Arable Land	3153	4120	7213	6757	457	0	3358	0	285	3073	7036	98	4332	2605	20	0	0	20	23174	4263	12701	6210	48075
2.2 Permanent Crops	163	70	438	232	206	0	0	0			105		105		0	0	0		1285	435	796	54	2060
2.3 Pastures	2013	886	2749	2624	125	0	6921	0	365	6556	31792	75	8017	23701	374	0	0	374	30338	4039	12023	14276	75073
2.4 Heterogeneous agricultural areas	3104	987	3220	2912	308	0	10979	0	3016	7962	24228	152	10743	13333	0	0	0		45519	3378	26527	15614	88037
3 Forests and semi-natural areas	***6276***	***3605***	***5585***	***5163***	***422***	***0***	***4598***	***0***	***449***	***4149***	***41697***	***785***	***11110***	***29802***	***2365***	***0***	***0***	***2365***	***47716***	***4426***	***25051***	***18239***	***111843***
3.1 Forests	5440	3427	5333	4912	422	0	3768	0	248	3521	37680	760	9857	27063	192	0	0	192	41702	4072	22605	15025	97542
3.2 Shrub and/or herbaceous vegetation associations	674	178	251	251	0	0	830	0	201	629	3930	25	1167	2739	695	0	0	695	4735	329	2185	2221	11293
3.3 Open spaces with little or no vegetation	163		0			0	0	0			87		87		1478	0	0	1478	1280	25	261	993	3007
4 Wetlands	***63***	***225***	***847***	***771***	***76***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***431***	***137***	***294***	***0***	***1566***
4.1 Inland wetlands	63	225	847	771	76	0	0	0			0				0	0	0		431	137	294		1566
4.2 Coastal wetlands			0			0	0	0			0				0	0	0		0				0
5 Water bodies	***567***	***512***	***469***	***425***	***44***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***0***	***1387***	***34***	***97***	***1256***	***2934***
5.1 Inland waters	567	512	469	425	44	0	0	0			0				0	0	0		1387	34	97	1256	2934
5.2 Coastal waters			0			0	0	0			0				0	0	0		0				0
B - TOTAL CONSUMPTION OF LAND COVER RESOURCE	***16641***	***11210***	***21075***	***19366***	***1709***	***0***	***25915***	***0***	***4115***	***21799***	***105352***	***1128***	***34456***	***69768***	***2759***	***0***	***0***	***2759***	***150967***	***16851***	***77963***	***56153***	***333919***
Land Cover Flows resulting from Changes in the Uses of Land																							
LCF1 Urban land management	***873***	***273***	***169***	***125***	***43***	***0***	***28***	***0***	***0***	***28***	***36***	***18***	***0***	***18***	***0***	***0***	***0***	***0***	***601***	***51***	***317***	***232***	***1979***
LCF11 Urban development/ infilling	6		0			0	0	0			0				0	0	0		4		4		10
LCF12 Developped land recycling	830	273	169	125	43	0	28	0		28	36	18		18	0	0	0		597	51	313	232	1931
LCF13 Development of green urban areas	37		0			0	0	0			0				0	0	0		0				37
LCF2 Urban sprawl	***1424***	***439***	***624***	***570***	***54***	***0***	***147***	***0***	***27***	***120***	***822***	***17***	***462***	***343***	***0***	***0***	***0***	***0***	***2969***	***447***	***2051***	***471***	***6424***
LCF21 Urban continuous sprawl			0			0	0	0			0				0	0	0		0				0
LCF22 Urban diffuse sprawl	1424	439	624	570	54	0	147	0	27	120	822	17	462	343	0	0	0		2969	447	2051	471	6424
LCF3 Extension of economic sites and infrastructures	***2836***	***3317***	***1195***	***1102***	***93***	***0***	***25***	***0***	***3***	***22***	***519***	***0***	***365***	***154***	***0***	***0***	***0***	***0***	***1936***	***469***	***1048***	***419***	***9828***
LCF31 Extension of industrial & commercial sites	326	412	553	517	35	0	22	0		22	259		183	76	0	0	0		884	261	356	267	2455
LCF32 Extension of transport networks	85	44	8	8		0	0	0			0				0	0	0		0				137
LCF33 Extension of habours			0			0	0	0			0				0	0	0		0				0
LCF34 Extension of airports	12		0			0	0	0			0				0	0	0		0				12
LCF35 Extension of mines and quarrying areas	178	57	69	12	57	0	3	0	3		166		119	47	0	0	0		547	80	357	110	1019
LCF36 Extension of dumpsites	71	109	178	178		0	0	0			94		63	31	0	0	0		94	23	63	9	546
LCF37 Construction	1958	2696	387	387		0	0	0			0				0	0	0		257	53	172	33	5298
LCF38 Extension of sport and leisure facilities	207		0			0	0	0			0				0	0	0		154	53	101		361
LCF4 Agricultural rotation and intensification	***3819***	***1964***	***8984***	***8248***	***736***	***0***	***13523***	***0***	***3136***	***10386***	***27568***	***249***	***12417***	***14902***	***4***	***0***	***0***	***4***	***63698***	***8750***	***33030***	***21918***	***119559***
LCF41 Recent extension of pasture, fallow land, set aside	1507	281	1756	1748	8	0	9426	0	1584	7842	14864	132	6384	8348	4	0	0	4	27642	2326	12436	12880	55479
LCF42 Planting of vineyards, fruit and olive trees over arable & pasture	526	738	3553	3298	255	0	76	0		76	375		354	21	0	0	0		3631	1514	2026	91	8900
LCF43 Rotation of annual crops			0			0	0	0			0				0	0	0		0				0
LCF44 Rotation of permanent crops			0			0	0	0			0				0	0	0		0				0
LCF45 Intensification of agriculture	1787	945	3674	3202	472	0	4021	0	1553	2468	12329	116	5679	6534	0	0	0		32424	4909	18568	8947	55180
LCF5 Conversion of land to agriculture	***782***	***771***	***1616***	***1387***	***228***	***0***	***795***	***0***	***32***	***763***	***3830***	***114***	***727***	***2988***	***110***	***0***	***0***	***110***	***6445***	***511***	***3074***	***2861***	***14349***
LCF51 Intensive conversion of forest to agriculture	201	90	371	204	168	0	0	0			105	3	99	4	13	0	0	13	855	61	563	231	1634
LCF52 Intensive conversion of marginal land to agriculture	83		31	31		0	0	0			62		62		0	0	0		161		161		336
LCF53 Diffuse conversion of forest to agriculture	355	283	544	544		0	156	0		156	1941	112	386	1442	95	0	0	95	2975	317	1334	1324	6349
LCF54 Diffuse conversion of marginal land to agriculture		59	83	83		0	609	0	32	577	1388		83	1305	2	0	0	2	1946		850	1096	4086
LCF55 Conversion of wetlands to agriculture		180	557	504	53	0	0	0			0				0	0	0		181	77	72	32	919
LCF56 Conversion of developed areas to agriculture	143	159	29	22	8	0	30	0		30	335		97	237	0	0	0		327	55	95	177	1024
LCF6 Forests creation and management	***4055***	***2138***	***4233***	***3999***	***234***	***0***	***3833***	***0***	***414***	***3419***	***38055***	***680***	***10282***	***27093***	***88***	***0***	***0***	***88***	***40242***	***3936***	***21976***	***14330***	***92644***
LCF61 Forests creation	914	262	248	236	12	0	230	0	169	61	2612	34	1016	1562	5	0	0	5	2885	356	1590	939	7156
LCF62 Forests rotation			0			0	0	0			0				0	0	0		0				0
LCF63 Recent felling and transition	3142	1876	3985	3763	222	0	3603	0	245	3358	35442	646	9265	25531	84	0	0	84	37357	3580	20386	13391	85488
LCF7 Water body creation and management	***127***	***1097***	***613***	***521***	***92***	***0***	***0***	***0***	***0***	***0***	***337***	***0***	***183***	***153***	***0***	***0***	***0***	***0***	***544***	***195***	***273***	***76***	***2718***
LCF71 Water body creation	127	1097	613	521	92	0	0	0			337		183	153	0	0	0		544	195	273	76	2718
LCF72 Water body management			0			0	0	0			0				0	0	0		0				0
LCF8 Changes of land cover due to natural and multiple causes	***2724***	***1212***	***3643***	***3414***	***229***	***0***	***7564***	***0***	***503***	***7061***	***34186***	***49***	***10020***	***24116***	***2557***	***0***	***0***	***2557***	***34532***	***2492***	***16195***	***15846***	***86418***
LCF81 Semi-natural rotation	176	169	650	583	67	0	0	0			79		79		2167	0	0	2167	2771	55	326	2389	6012
LCF82 Farmland abandonment without significant woodland creation	2374	833	2040	1925	114	0	7518	0	503	7015	33519	39	9647	23832	391	0	0	391	30867	2251	15384	13231	77542
LCF83 Farmland abandonment with woodland creation	42	111	315	268	48	0	46	0		46	532	10	243	280	0	0	0		711	120	444	147	1757
LCF84 Other land abandonment (other than farmland)	71		0			0	0	0			4			4	0	0	0		125	32	23	70	201
LCF85 Forests and shrubs fires			0			0	0	0			0				0	0	0		30	13	16		30
LCF86 Coastal erosion			0			0	0	0			0				0	0	0		0				0
LCF87 Impacts of storms, floods…		31	343	343		0	0	0			0				0	0	0		0				375
LCF89 Other changes and unknown	61	68	294	294		0	0	0			52		52	0	0	0	0		28	20		8	502
C - TOTAL LAND COVER FLOWS 1975-1990	***16641***	***11210***	***21075***	***19366***	***1709***	***0***	***25915***	***0***	***4115***	***21799***	***105352***	***1128***	***34456***	***69768***	***2759***	***0***	***0***	***2759***	***150967***	***16851***	***77963***	***56153***	***333919***
D - Final Surface ~ 1990 (D = A-B+C)	***305644***	***301125***	***596913***	***552440***	***44473***	***0***	***186879***	***0***	***27236***	***159643***	***1330384***	***12029***	***453979***	***864375***	***38684***	***0***	***0***	***38684***	***2135929***	***368282***	***1240022***	***527626***	***4895557***