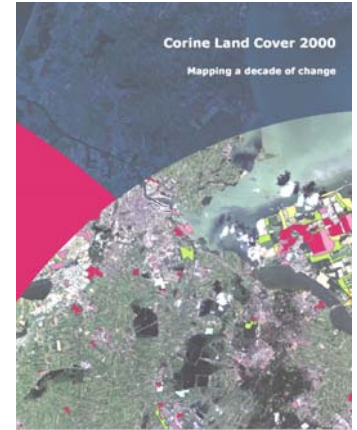


Use of CORINE Land Cover in delivering the EEA strategy

**Prof. Jacqueline McGlade
Executive Director**

Acknowledgements

- EIONET Member Countries
 - ✓ national teams / co-funding
- Commission Services:
 - ✓ JRC: joint coordination of the project (IMAGE2000)
 - ✓ DGs Agriculture, Environment, Regional Policy (co-funding)
 - ✓ Others: Research, Eurostat
- Eurimage, Swedish Space Corporation, Metria
 - ✓ multiple use satellite data
- European Topic Centre on Terrestrial Environment
 - ✓ technical coordination



CORINE* Land Cover (CLC): A European transboundary land cover database



*CORINE: Coordination of Information on the Environment

A tool for monitoring Europe's changing landscape



1989

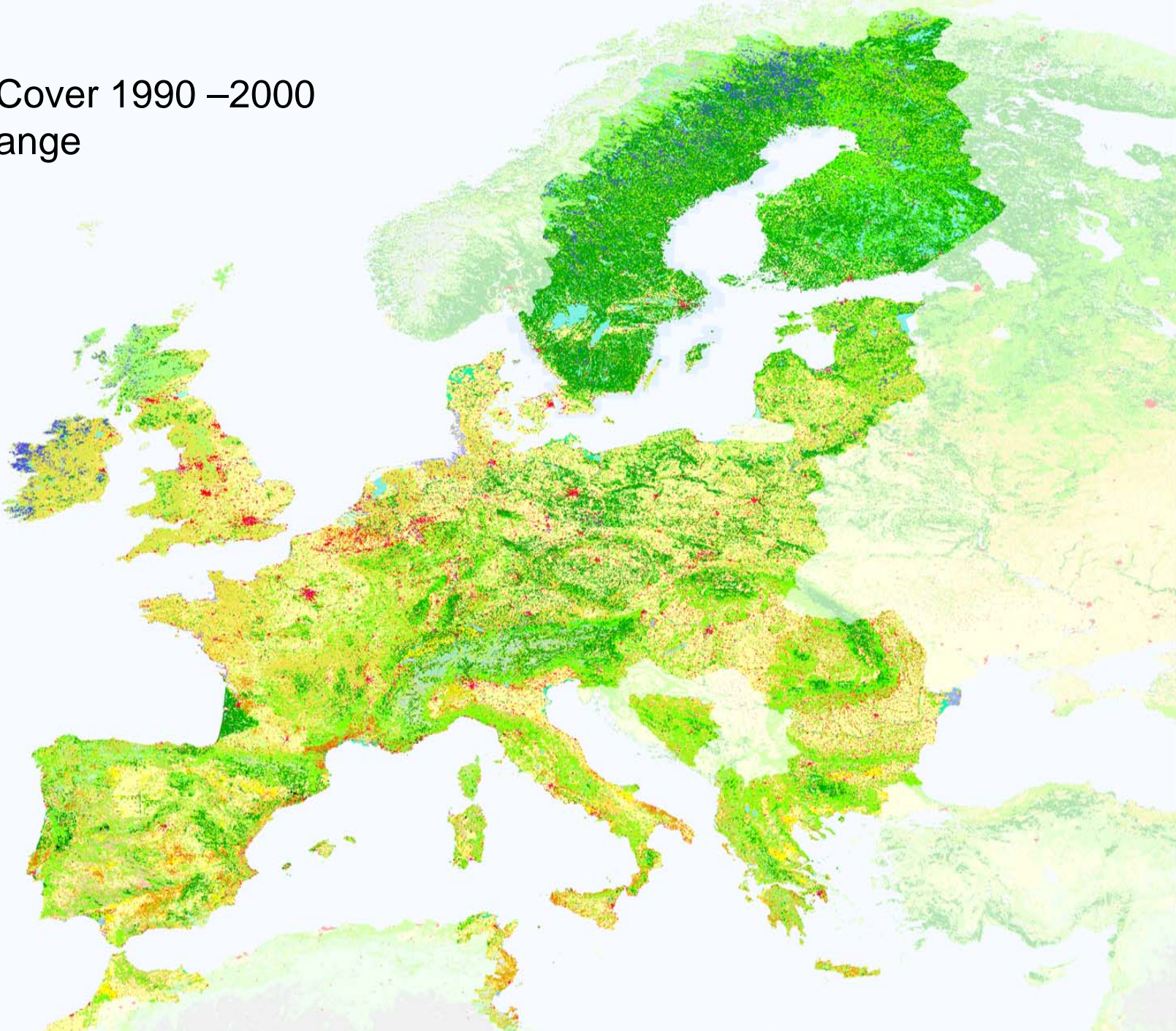


1956

Source: J. Jaeger 2004

CORINE Land Cover 1990 – 2000

A decade of change



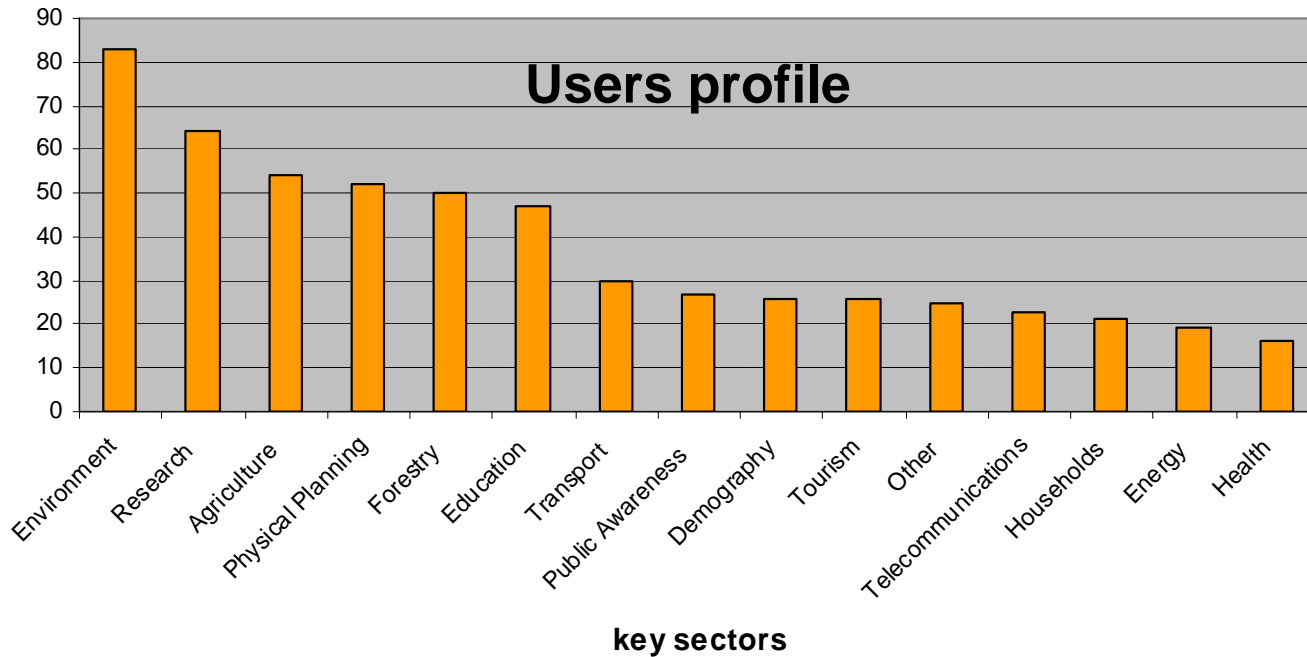
Some facts and figures about the project

- 29+ participating European countries
 - Involvement of local, regional and national expertise
- > 100 participating organisations (public/private)
- > 150 person-years for production of the database
- 13 Meuro based on co-funding 50/50 shared costs
- Updated every 10 years
- High number of users (first CLC1990 >10 000 users)
- Large volume data freely accessible:
 - IMAGE2000: 150 Gb / CLC2000: 2 Gb

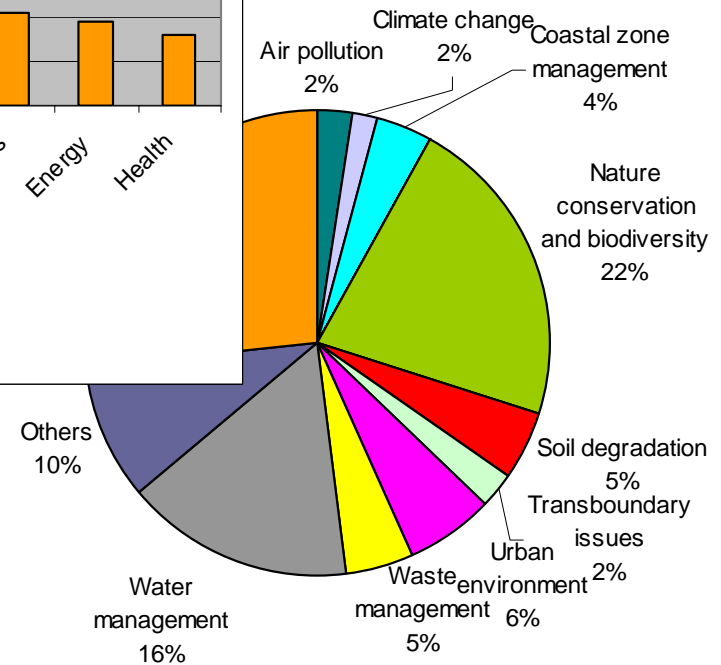
A multi-purpose product

number of requests (2004)

Users profile



Environmental topics:

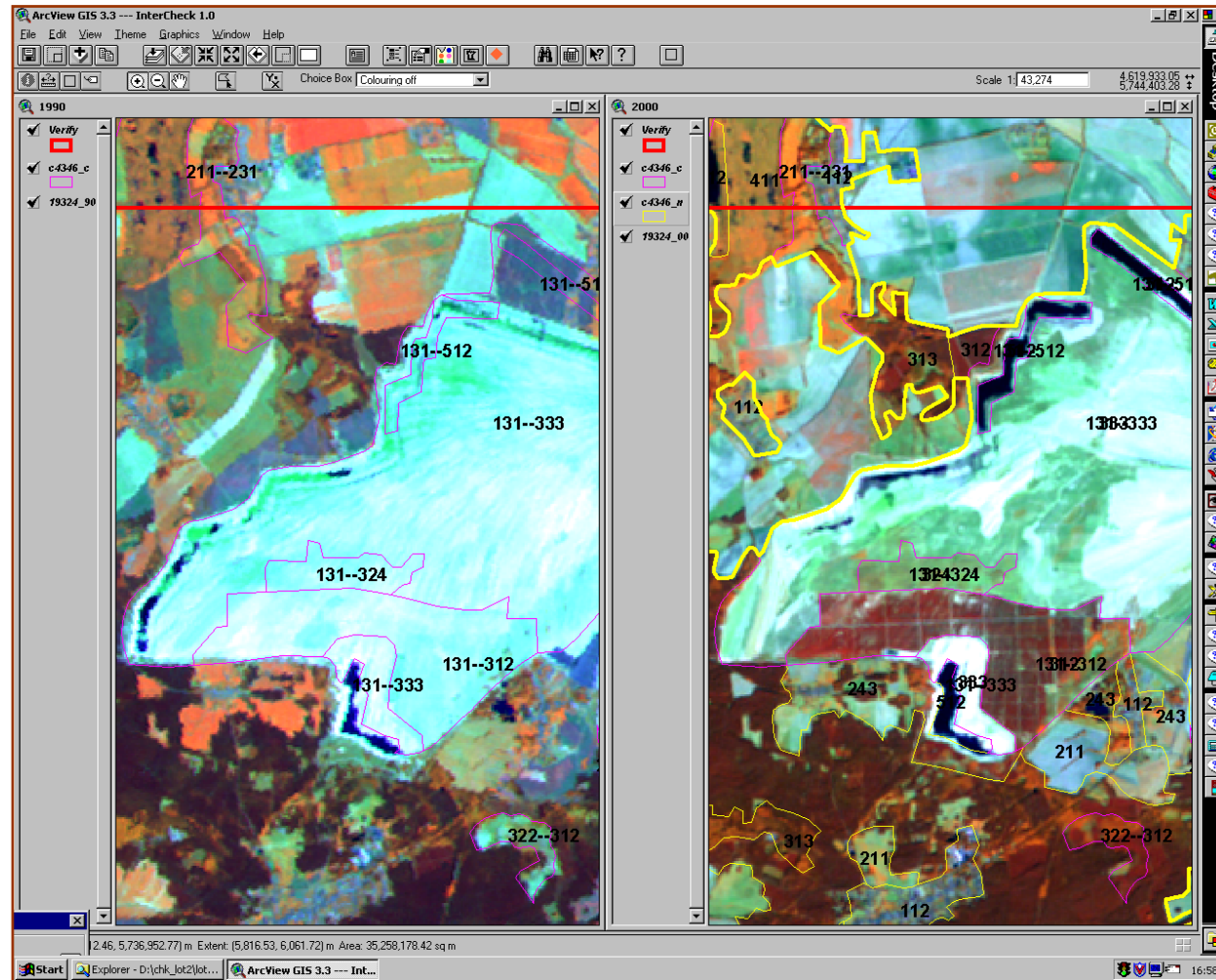


Based on satellite images – IMAGE2000

- 500 Ortho-rectified scenes
- 29 Countries covered
- 1 Pan-European Mosaic

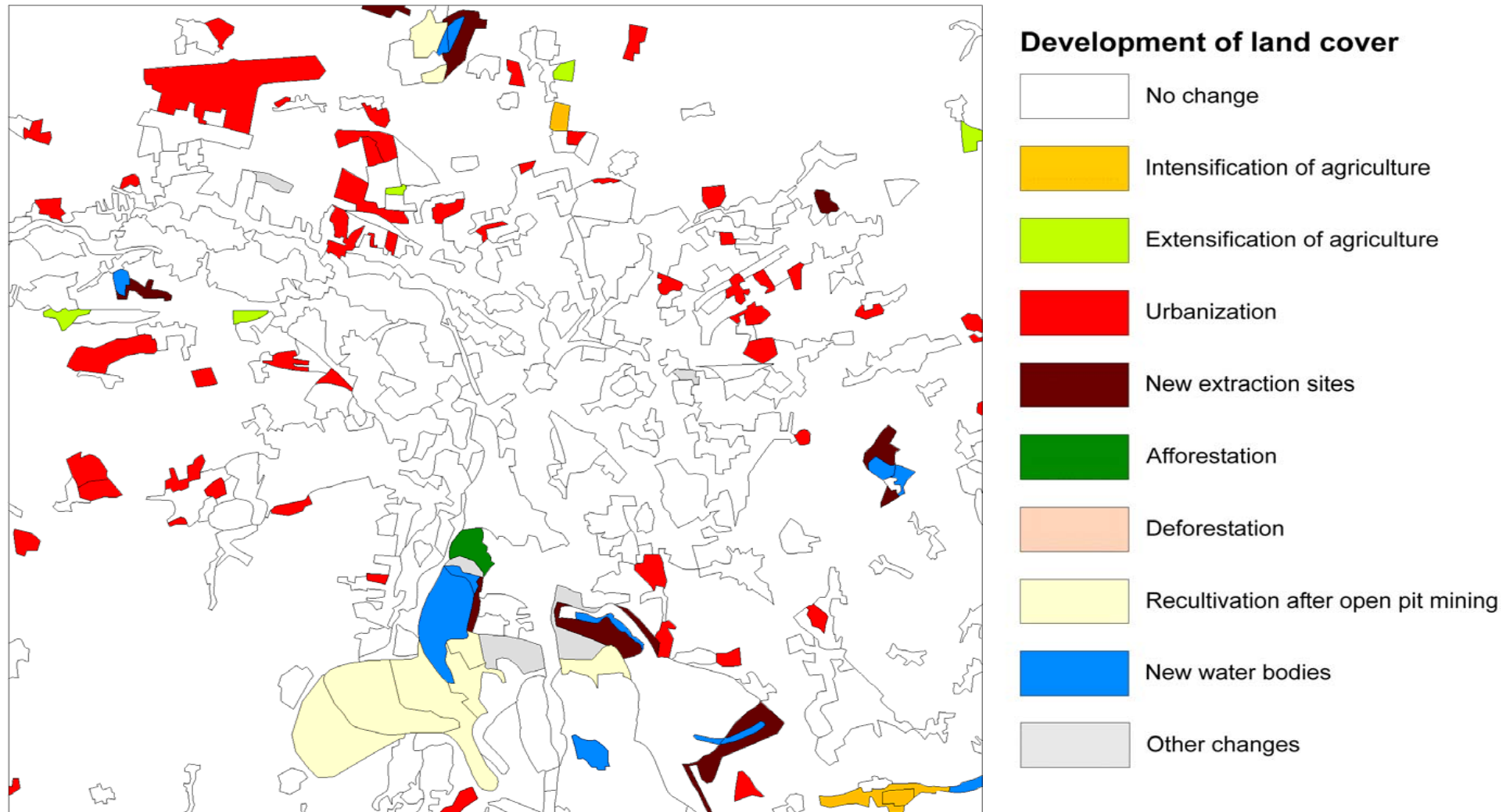
A standard European methodology for mapping land cover changes 1990 - 2000

1990



2000

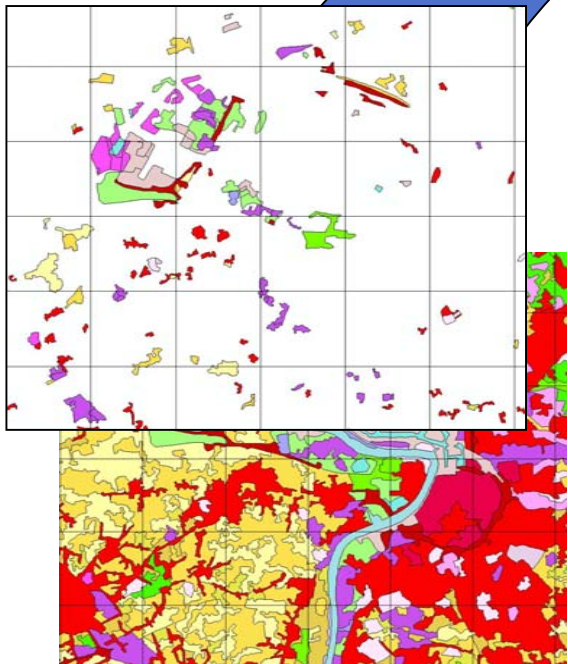
Example of mapping land use changes (Region of Leipzig)



Development of land use / land cover from 1990 to 2000 in 9 grouped change classes

Methodology of land cover accounting

Map of change



Map of land cover

Account of consumption and formation of land cover

CORRESPONDANCE BETWEEN LAND COVER CHANGES (CLC LEVEL 3) AND THE LAND COVER FLOWS

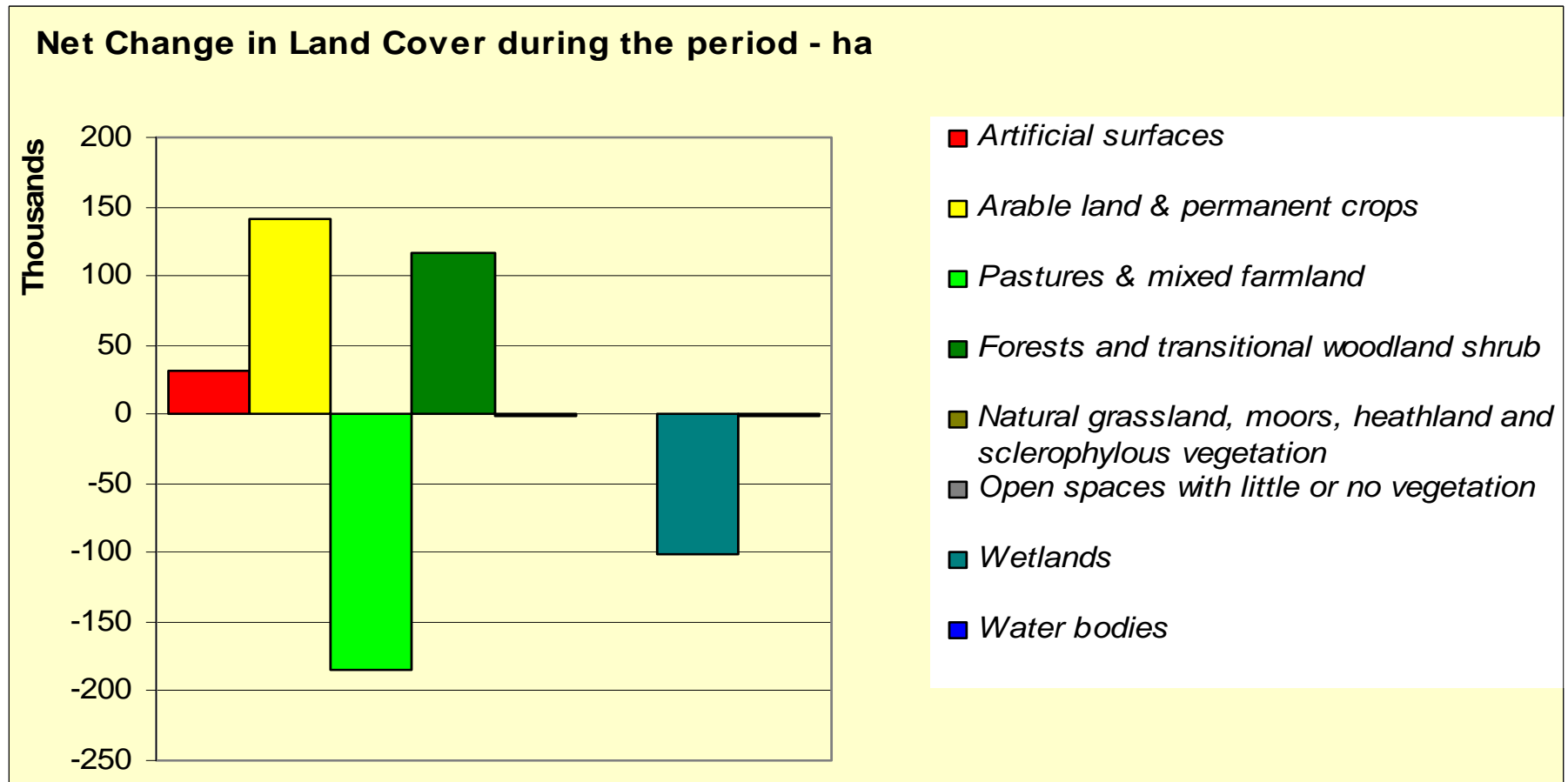
	132	133	141	142	211	212	213	221	222	223
	Dump sites	Construction sites	Green urban areas	Sport and leisure facilities	Non-irrigated arable land	Permanently irrigated land	Rice fields	Vineyards	Fruit trees and berry plantations	Olive groves
243	Conversion of agricultural land to urban areas	Construction	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	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	Extension of dumpsites	Construction	Development of green urban areas	Extension of forest 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	Extension of dumpsites	Construction	Development of green urban areas	Extension of forest 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	Extension of dumpsites	Construction	Development of green urban areas	Extension of forest 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	Extension of dumpsites	Construction	Development of green urban areas	Extension of forest 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	Extension of dumpsites	Construction	Development of green urban areas	Extension of forest 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

Matrix of change

Consumption of Land Cover										Formation of Land Cover									
f	2A	2B	3A	3B	3C	4	5	TOTAL		f	2A	2B	3A	3B	3C	4	5	TOTAL	
Artificial surfaces	Arable land & permanent crops	Pastures & mixed farmland	Forests and semi-natural areas	Mixed grassland, meadows and pastures	Open spaces with little or no vegetation	Wetlands	Water bodies			Artificial surfaces	Arable land & permanent crops	Pastures & mixed farmland	Forests and semi-natural areas	Mixed grassland, meadows and pastures	Open spaces with little or no vegetation	Wetlands	Water bodies		
1576		56						1632	LCF1 Urban land management	1632								1632	
	23113	24703	742	1104	105		0	49847	LCF2 Urban residential sprawl	49847								49847	
31	22208	8216	1019	905	81	67	453	34069	LCF3 Sprawl of economic sites and infrastructures	34069								34069	
	46236	10146						65382	LCF4 Agriculture internal conversions		34128	21266						65382	
78		3968	2658	3146	37	76	160	10124	LCF5 Conversion from other land cover to agriculture		7749	2375						10124	
	26308	50028						84336	LCF6 Withdrawal of farming			18030	28993	41248	13	64		84336	
500			101859	24494	1985		18	128854	LCF7 Forests creation and management				124175	4479	200			128854	
258	1288	122	175	14	137		431	2399	LCF8 Water bodies creation and management						431		1989	2399	
474	340	143	8589	17442	1633	532	761	27914	LCF9 Changes of Land Cover due to natural and multiple causes				25	10569	8072	623	624	27914	
2915	118549	106393	113042	47184	3969	676	1821	394557	TOTAL	95548	41876	30660	151184	64294	8715	698	2593	394557	

	134BU14	134BU15	134BU16	134BU17	134BU18	134BU19	134BU20	134BU21	134BU22	134BU23	134BU24	134BU25	134BU26
Land Cover 1990, ha	1348014	4831508	8818218	2678858	1088023	80104	808812						
Consumption of initial land cover	2915	118549	106393	113042	47184	3988	676	1821					
Formation of new land cover	85548	41876	30660	151184	64204	8715	698	2593					
Net Formation of Land Cover	82634	-76672	-66724	38142	17110	4726	12	772					
Land cover 2000, ha	1430617	4854836	8884542	2695968	1070748	80118	808584						

Example of result of land cover accounts: Ireland, Net Change in Land Cover 1990-2000, 1000 hectares



Ireland

Urban sprawl (1990-2000) develops in the remote countryside

Total urban & activities sprawl

less than 2%

2 to 5 %

5 to 10 %

more than 10%

Urban morphological zones, pop. > 50000

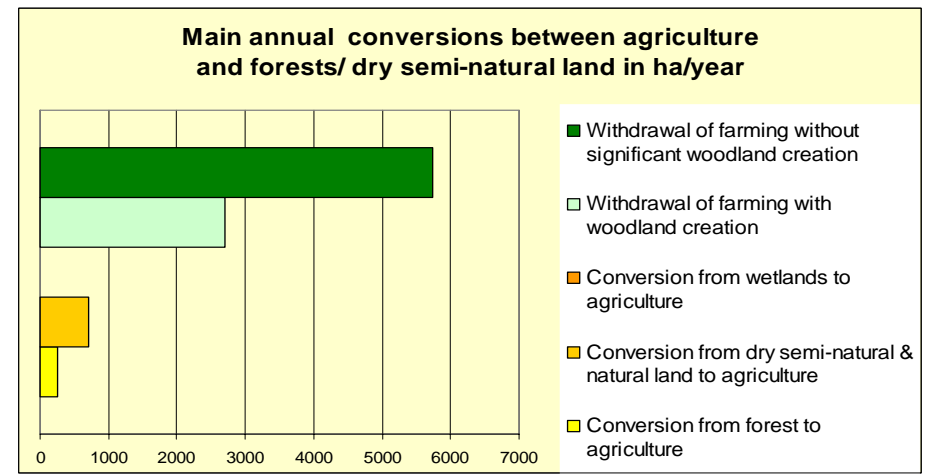
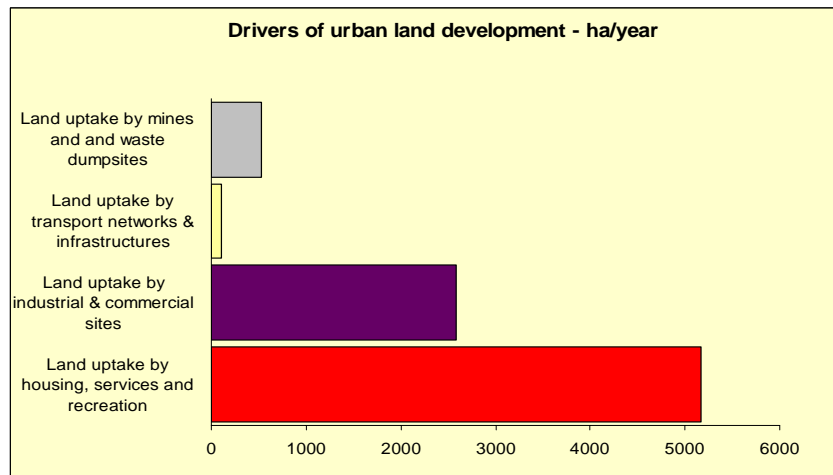
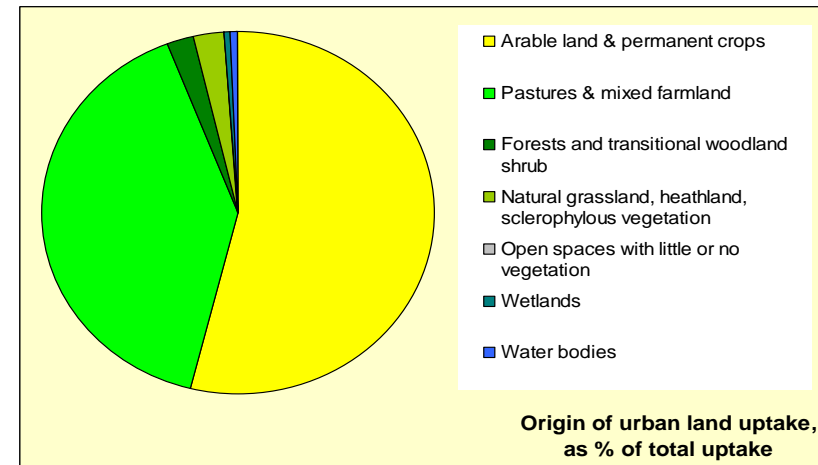
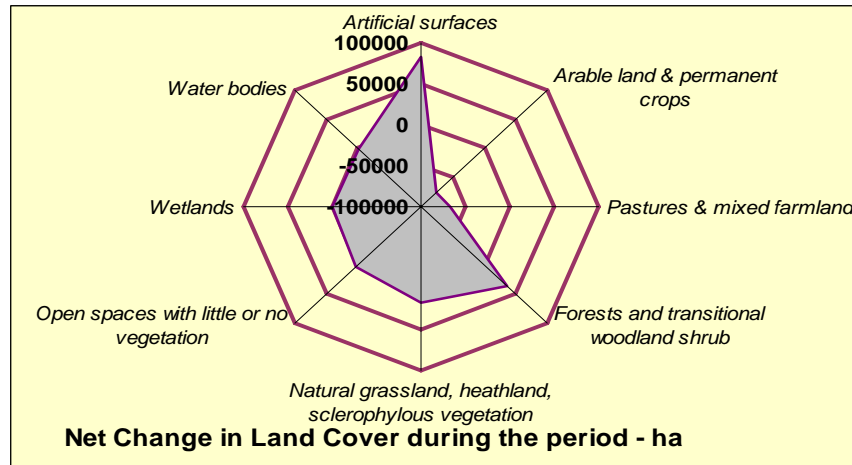
Dominant landscape types

- A1 Dominant urban landscape
- A2 Dispersed urban landscape
- B1 Broad pattern intensive agriculture
- B2 Rural mosaic and pasture
- C1 Forested landscape
- C2 Open semi-natural & natural landscape
- D1 Composite landscape



Indicators derived from land accounts

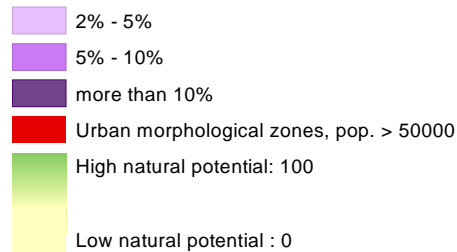
Italy 1990-2000



Analysis of urban sprawl 1990-2000 in the Mediterranean area

Legend

Total urban sprawl



Supporting major EU policies

- Environment Policy

- ✓ Habitat Directive, Biodiversity convention

- reference layers NATURA2000 GIS

- ✓ Water Framework Directive

- characterisations of water catchments

- ✓ Integrated Coastal Zone Management

- interim evaluation European coastal strategy

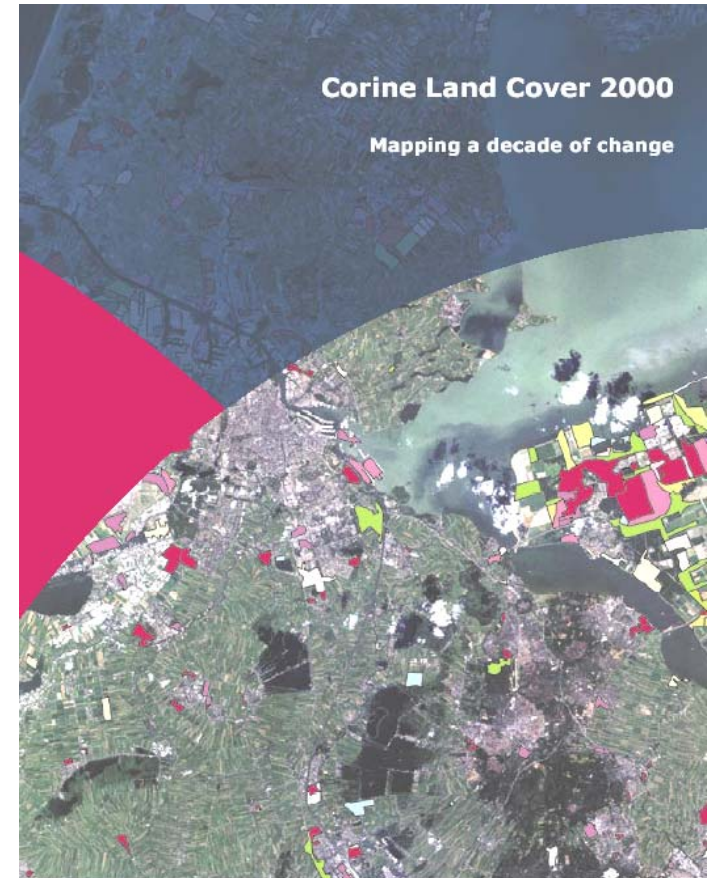
- ✓ Climate change

- Rural Development

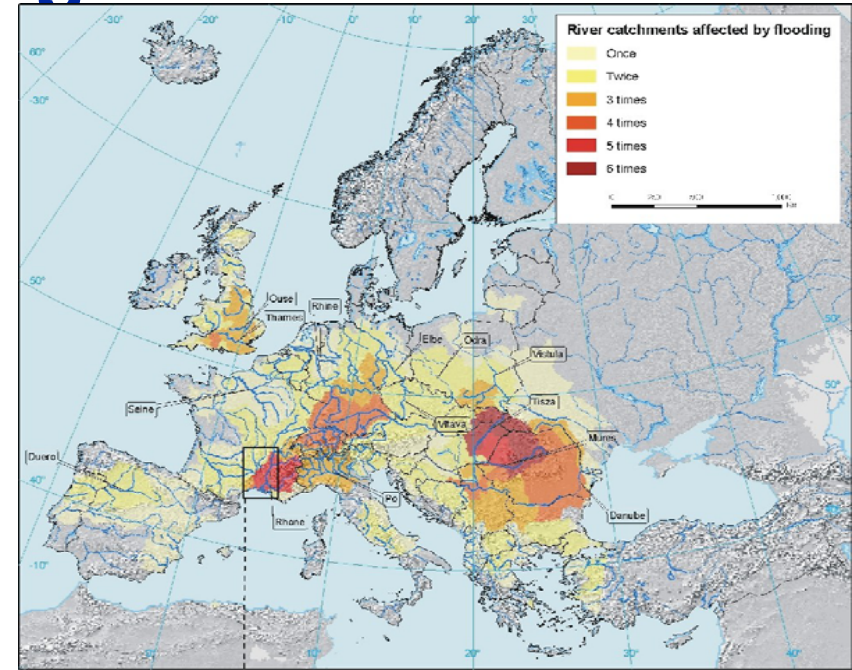
- Regional Policy

- ✓ territorial indicators

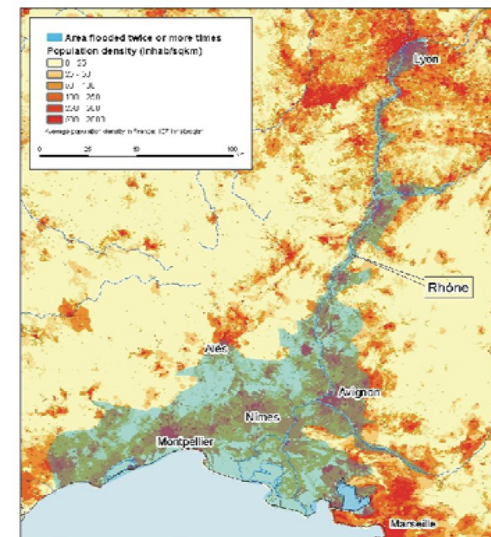
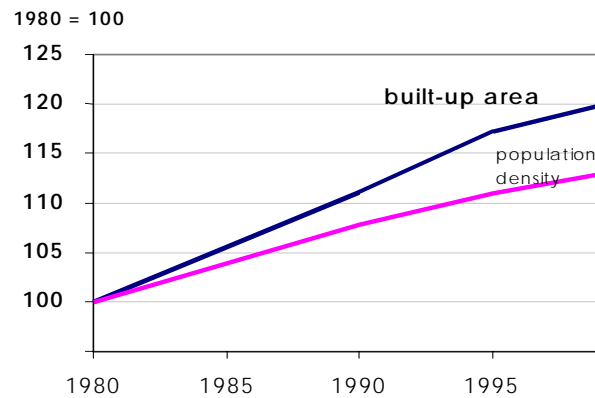
- Research Policy



Flood risk management

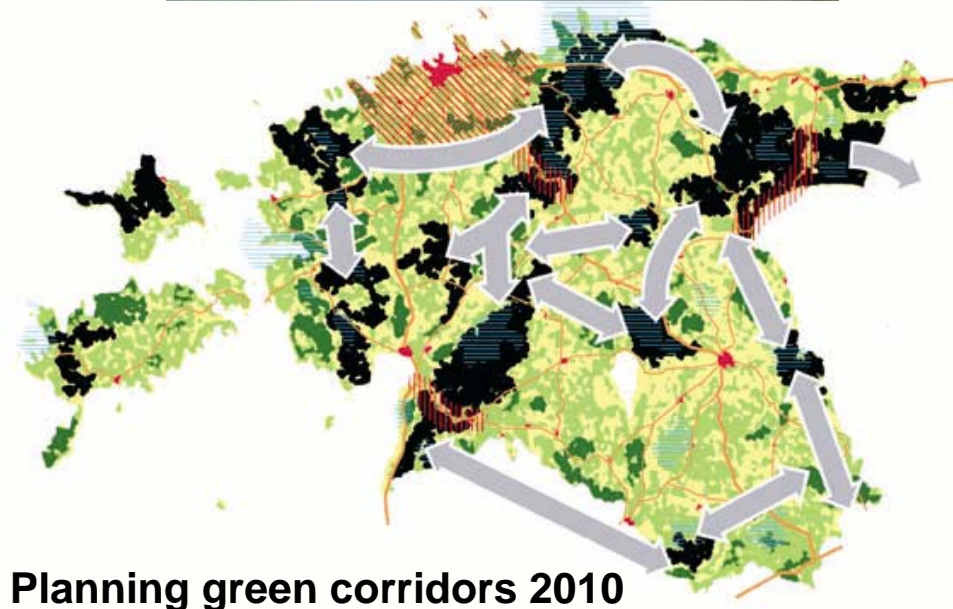


EU average built-up area in 2000 :
90 m² / person



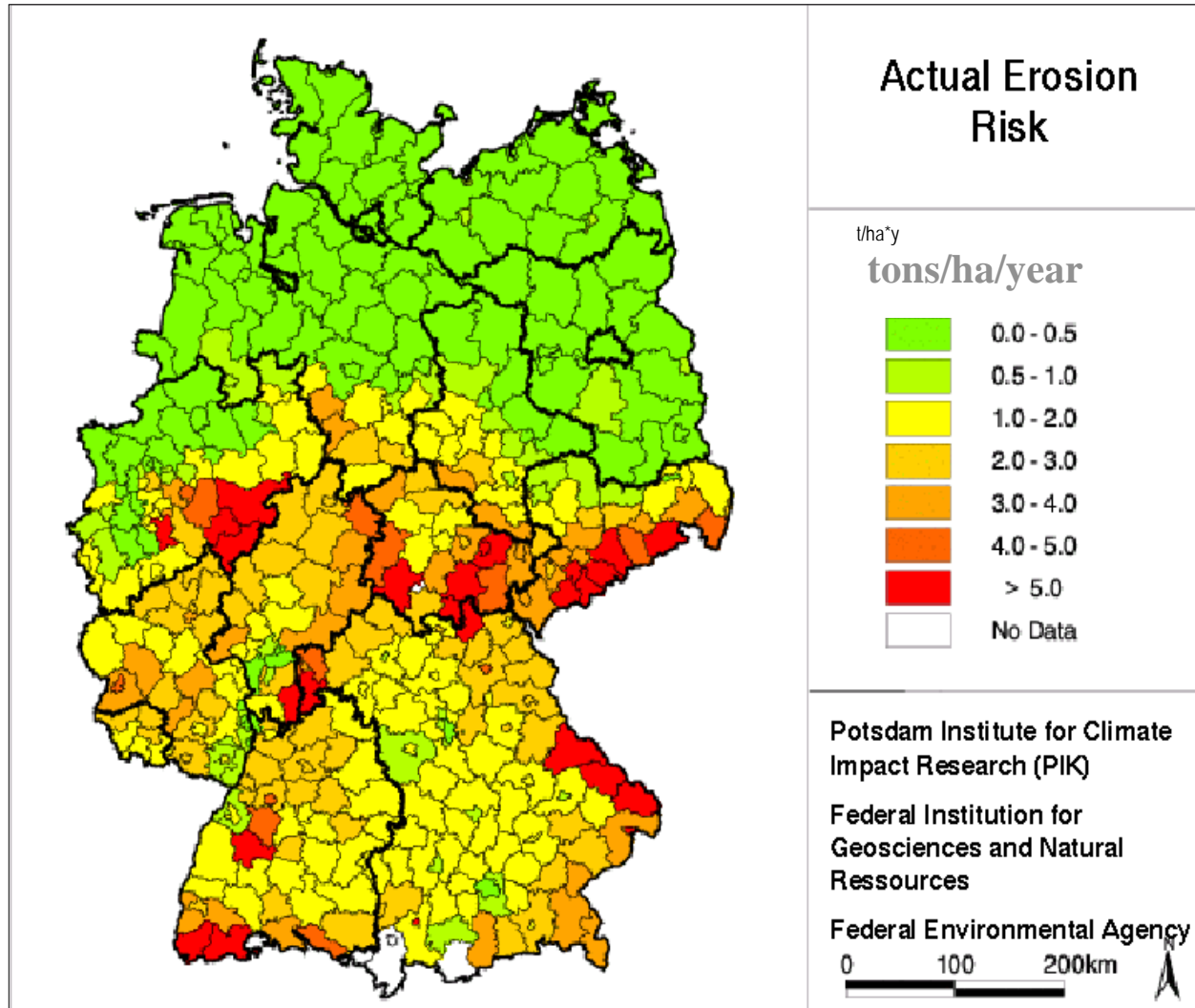
Halting loss of biodiversity – Example Estonia

Points of possible conflict 2000

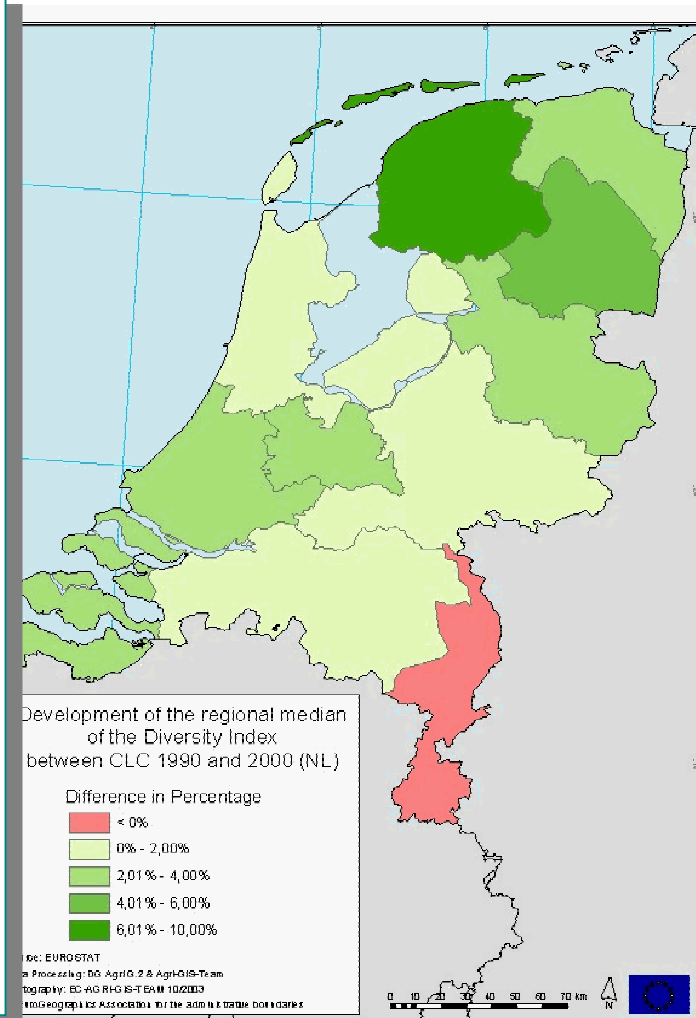
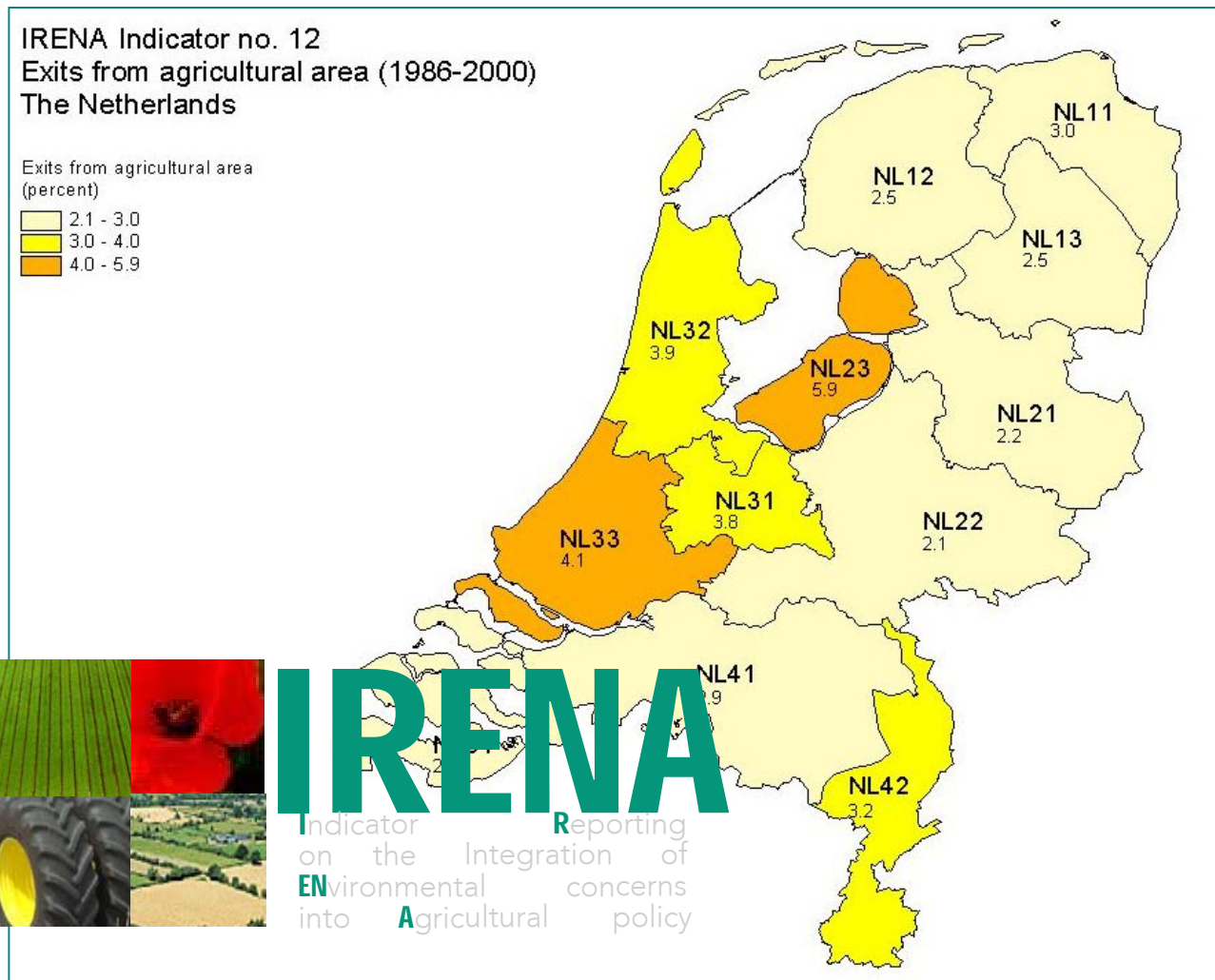


Planning green corridors 2010




Modelling soil erosion risk – example Germany

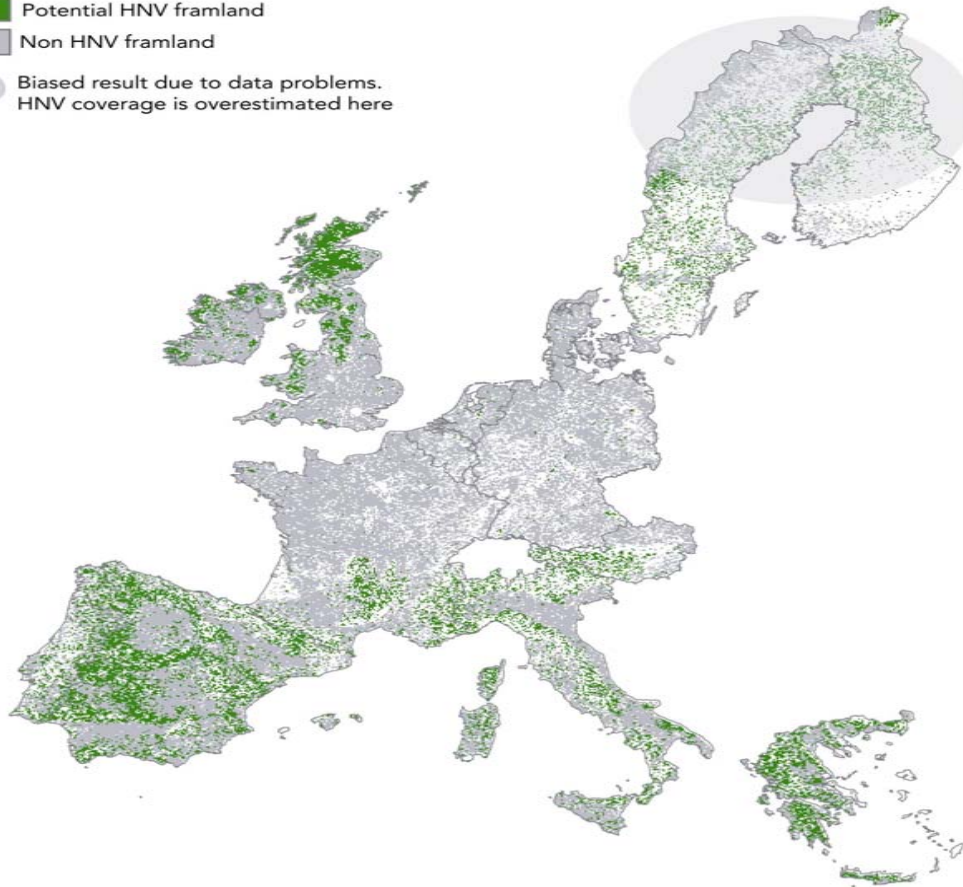


Agri-environment indicators – example Netherlands



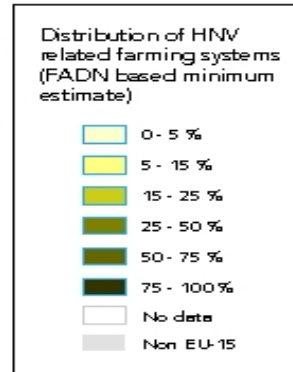
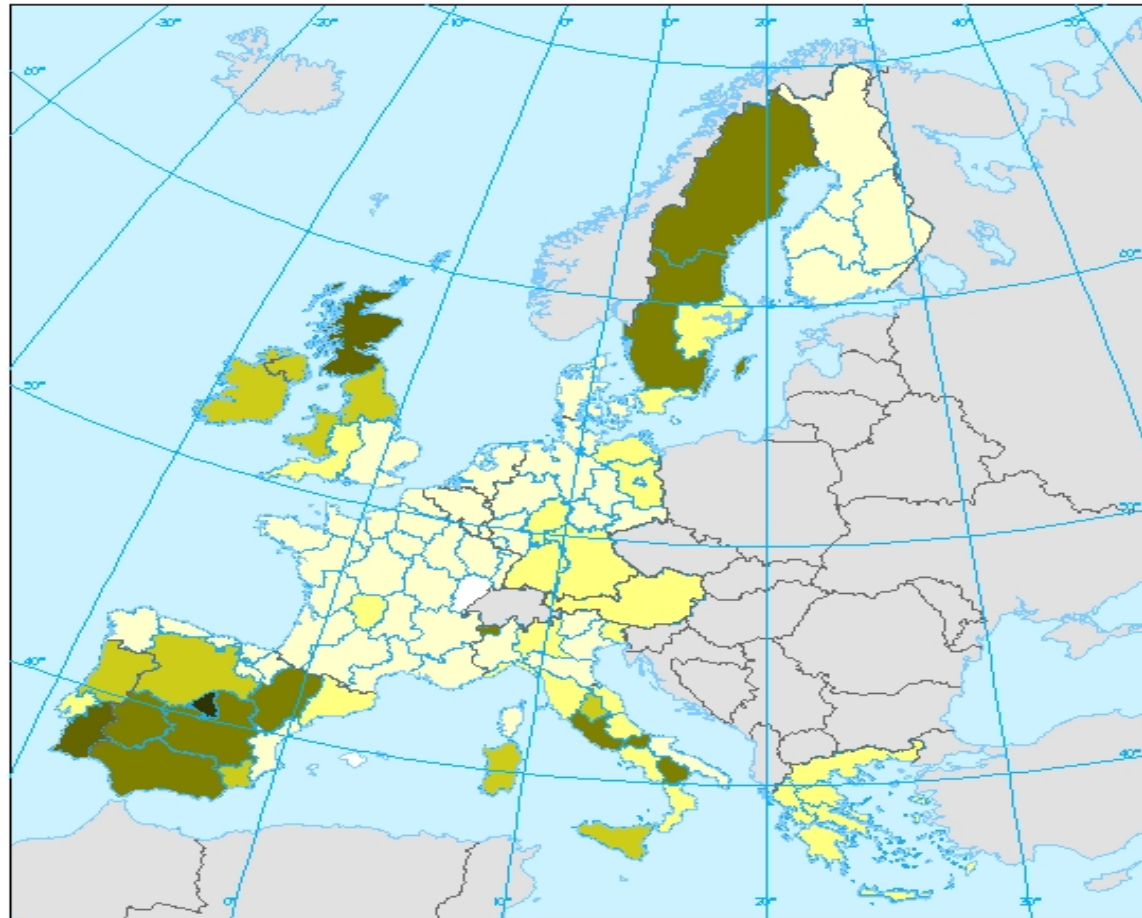
IRENA Distribution

-  Potential HNV farmland
-  Non HNV farmland
-  Biased result due to data problems. HNV coverage is overestimated here



Land cover based
estimate

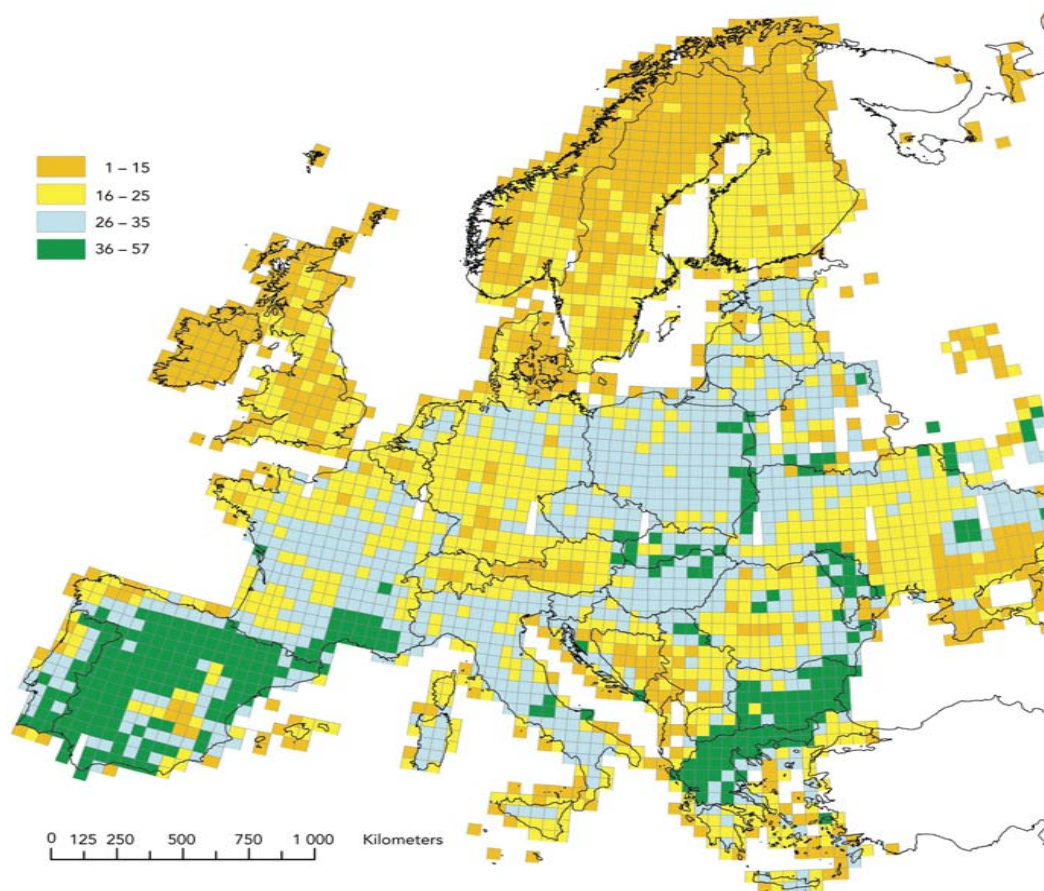
IRENA Distribution



Farm system based estimate

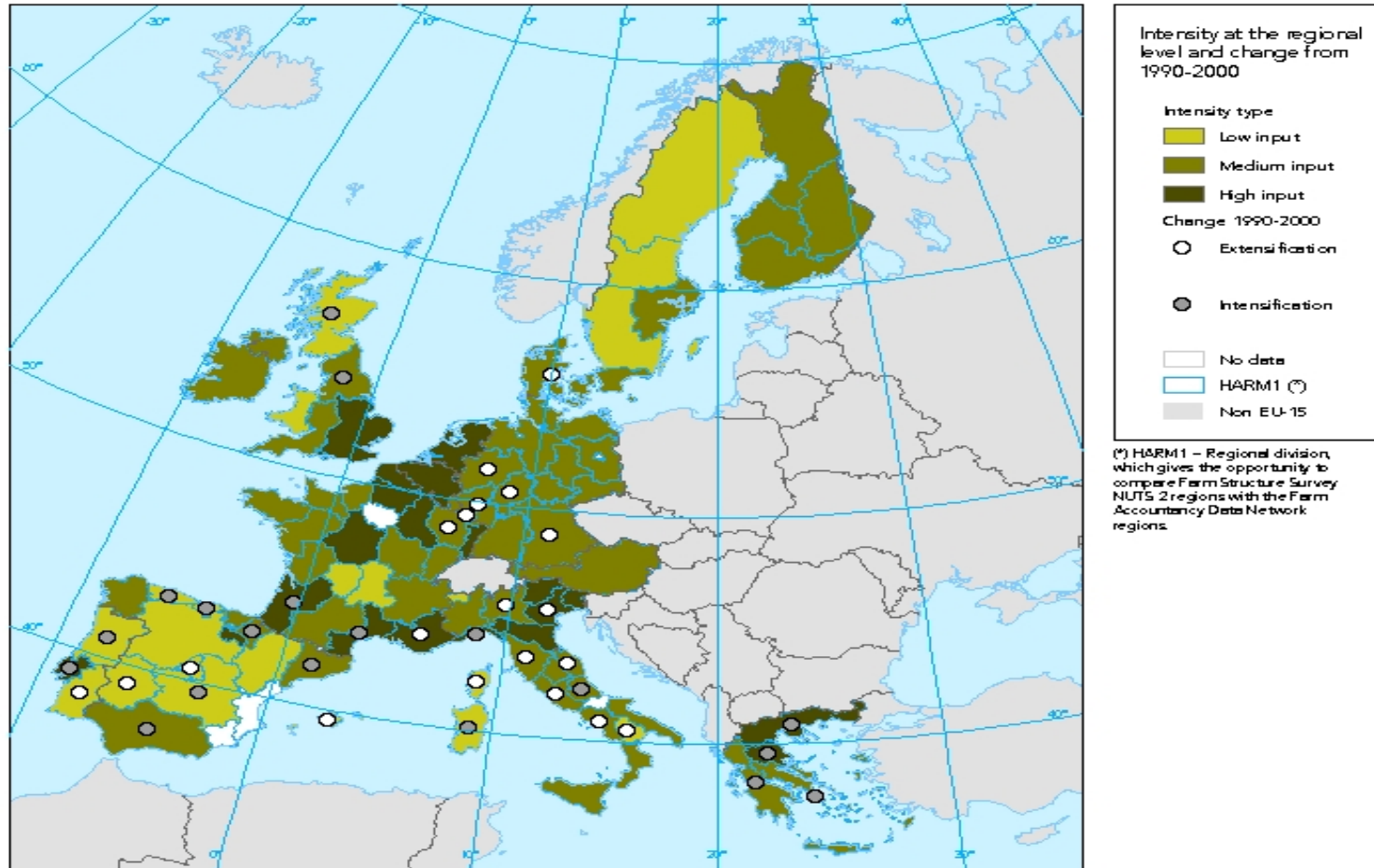
IRENA Distribution

Species based
estimate



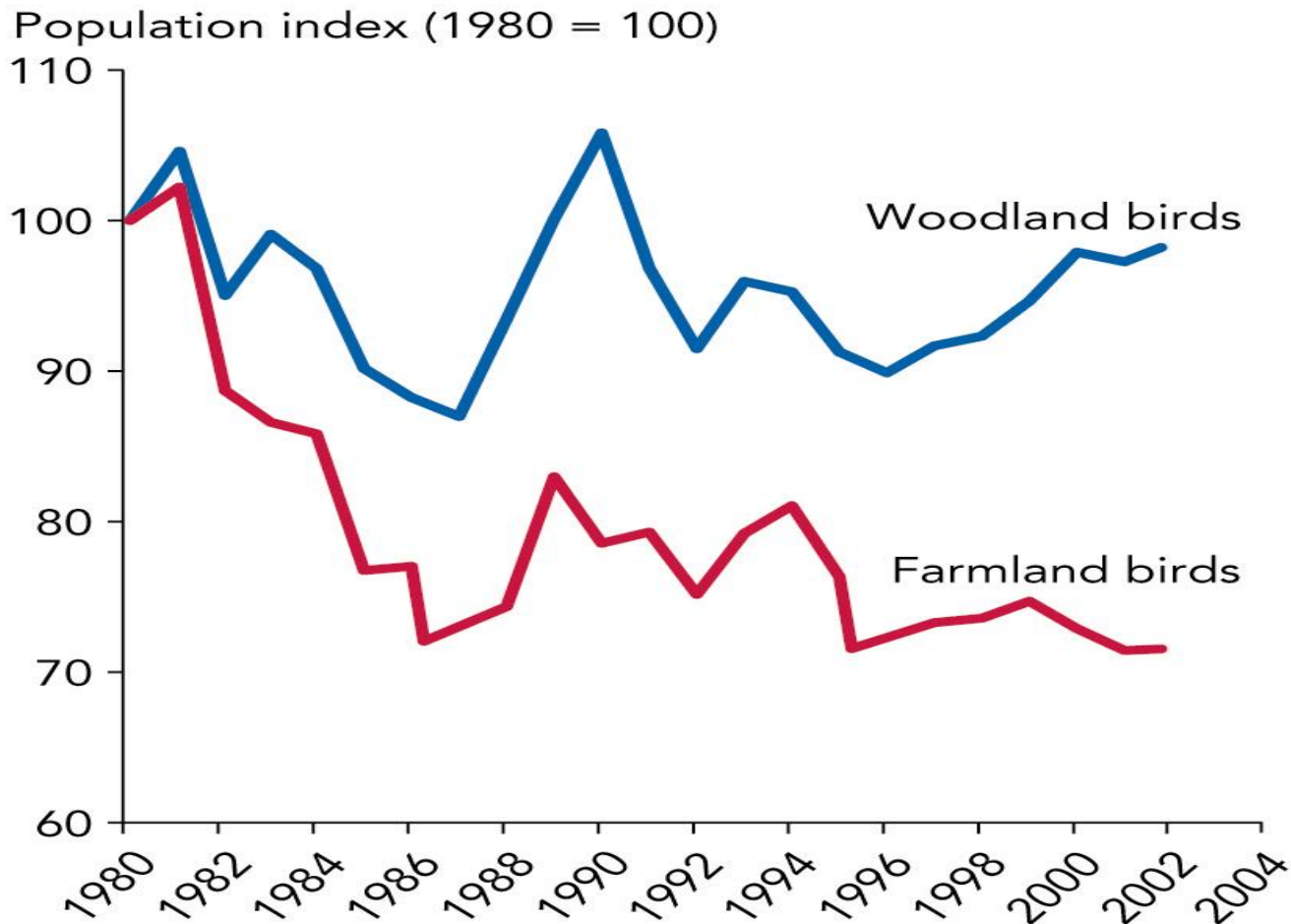
IRENA

Farming intensity trends



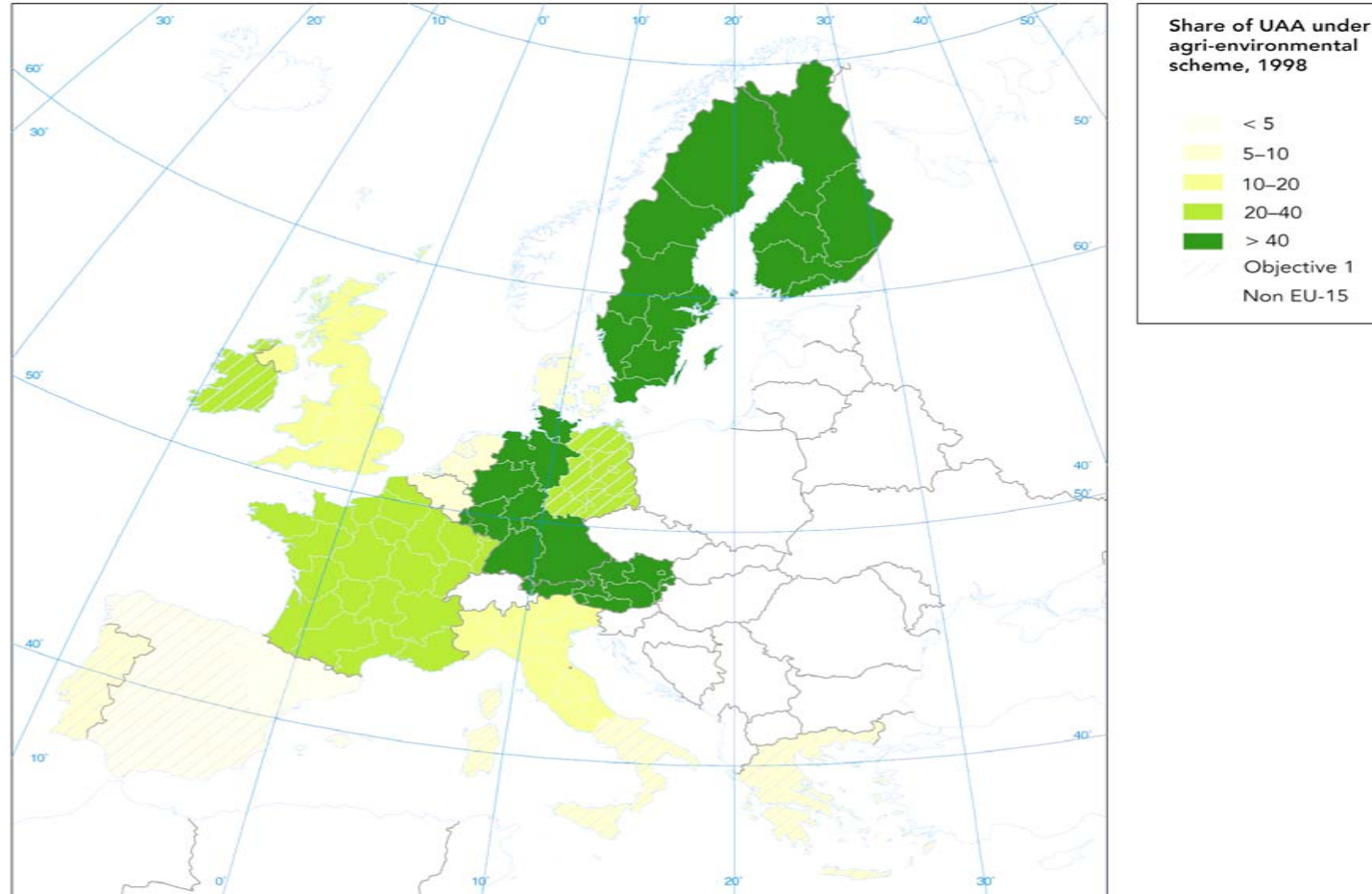
IRENA

Species richness

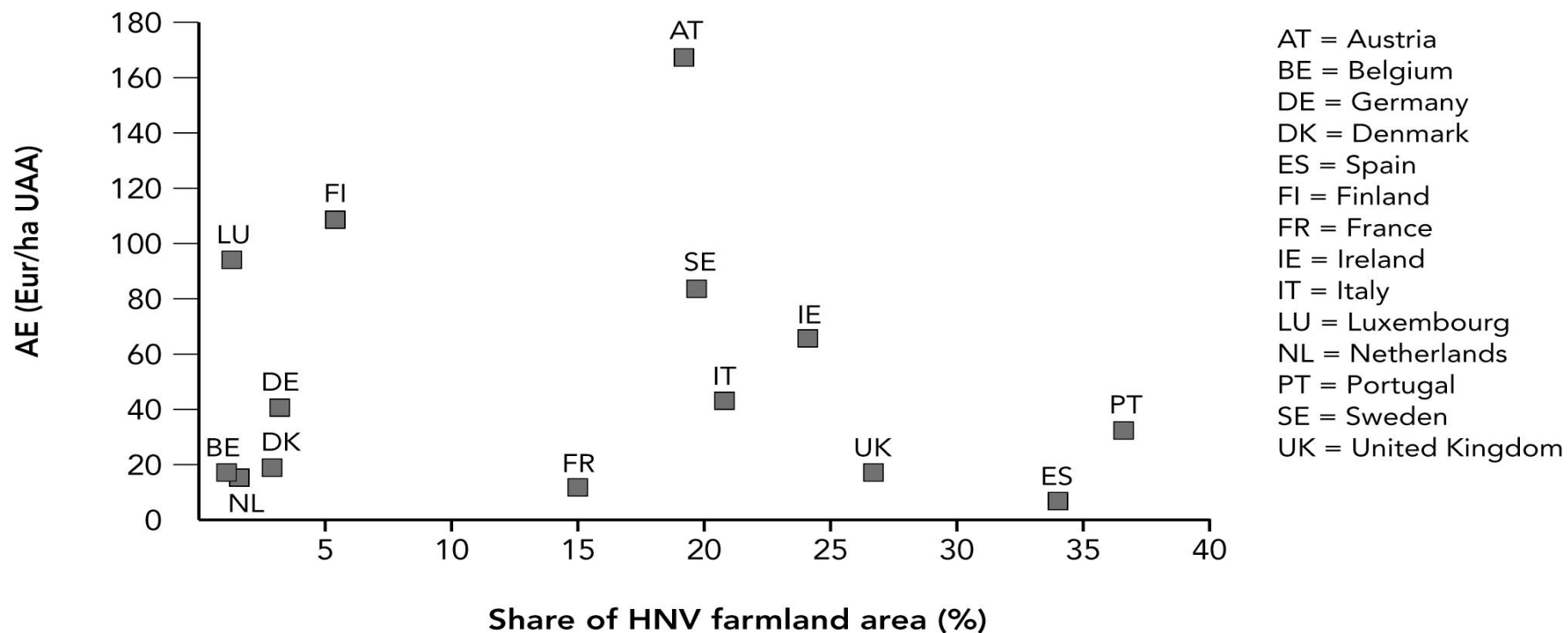


IRENA

Agri-environment schemes

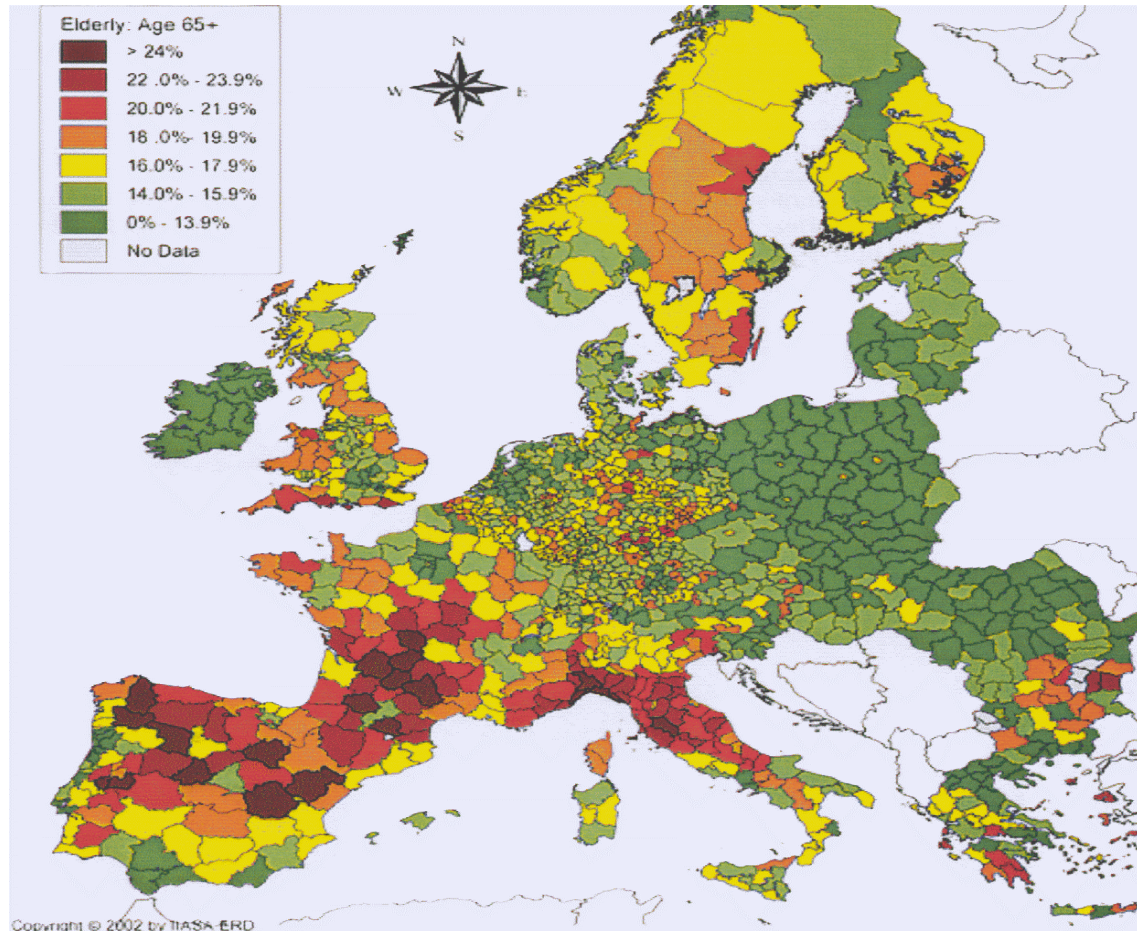


IRENA Targeting




PRELUDE

Context: demography



Aging and depopulation

Data dissemination from 17 Nov 2004 onwards:



<http://dataservice.eea.eu.int/>

- Widest possible dissemination - results are available free of charge
- A first step towards building a European Spatial Data Infrastructure (INSPIRE)

Data dissemination from 17 Nov 2004 onwards:

Image 2000 Database - Microsoft Internet Explorer

JRC

Country Zoom: EU

User:

no image selected

request

select all clear

delete selected

<http://image2000.jrc.it/>

Image2000 - Landsat 7 ETM+ (Q) ESA 1999-2002 distributed by Eurimage, Orthorectification (Q) Metria 2001-3/(Q) GSAT

Selected Images with acquisition date:

IT16_187033 (Mon, 3 Jul 2000 09:17:19)
IT23_188033 (Wed, 26 Jul 2000 09:23:20)
IT24_188034 (Wed, 26 Jul 2000 09:23:44)
IT25_188035 (Mon, 11 Jun 2001 09:24:17)
IT26_189033 (Thu, 17 May 2001 09:29:40)
IT27_189034 (Tue, 30 May 2000 09:30:00)
IT28_189035 (Fri, 20 Jul 2001 09:30:33)
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Both

Add

Reload Map with selection highlighted

Image Detail: IT27_189034

Date : Tue, 30 May 2000 09:30:00

Path : 189

Row : 034

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EC

Contractor

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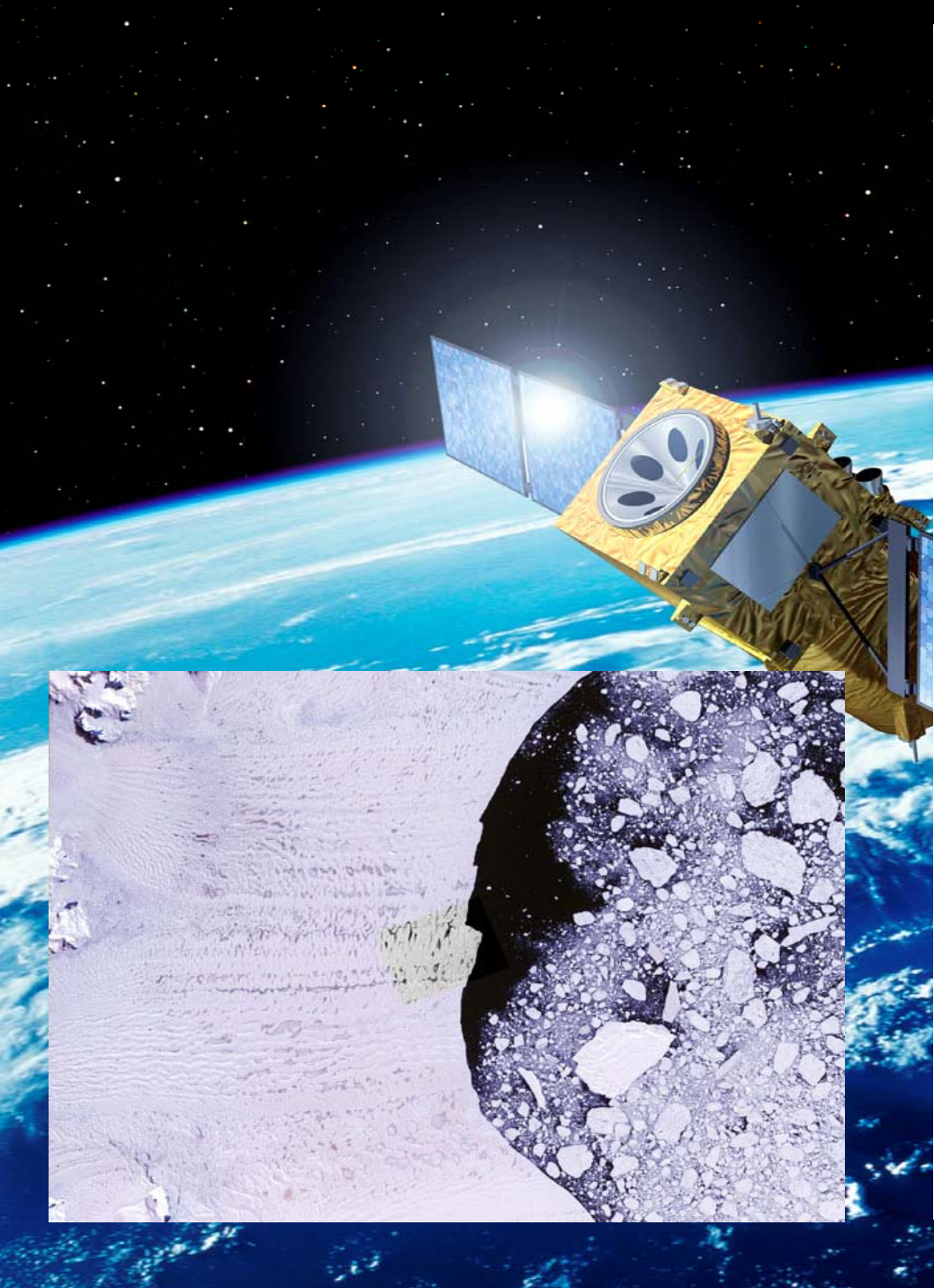
Contact us

Help

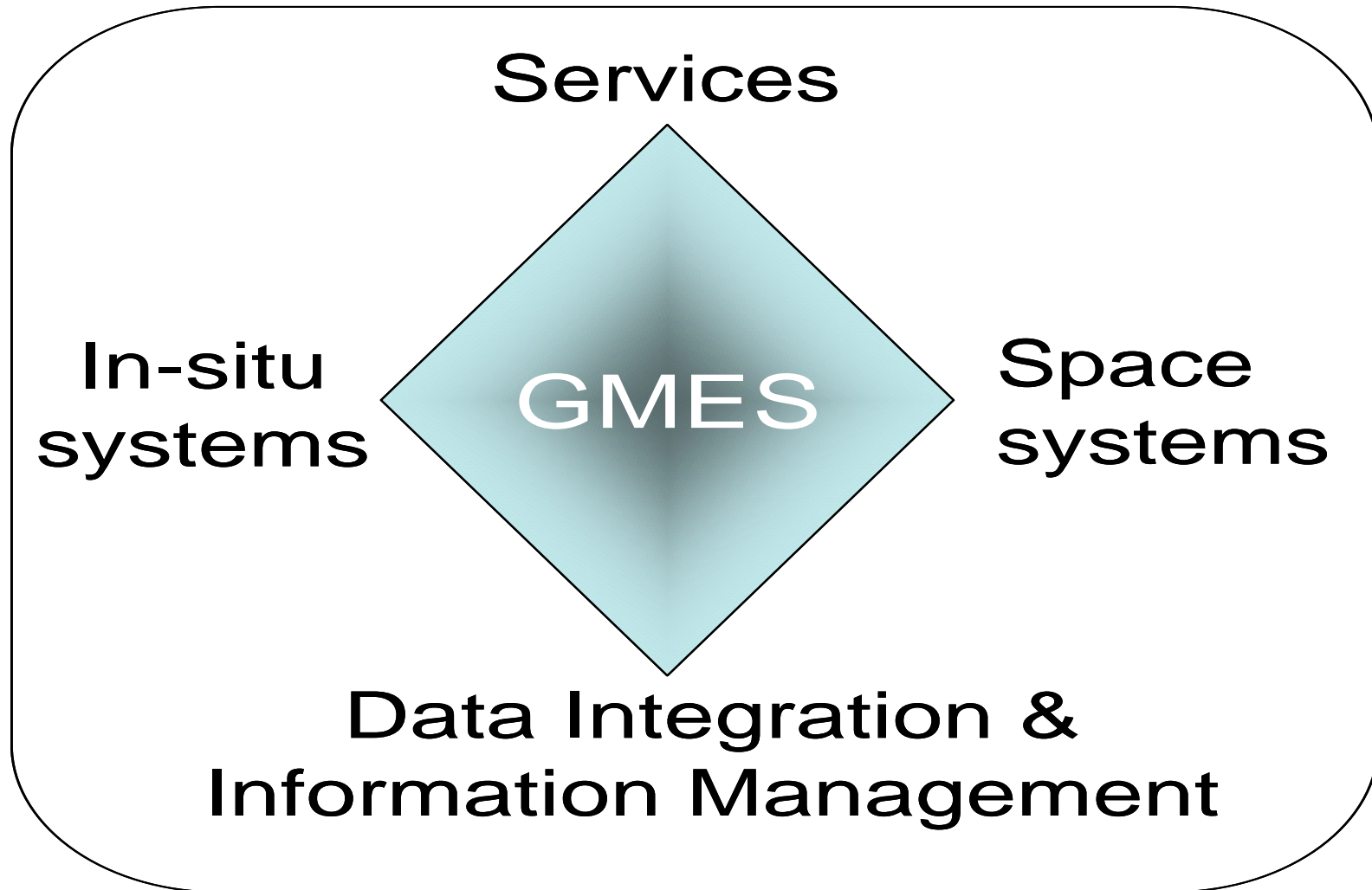
FAQ







Global Monitoring for Environment and Security



Benefits Focus



Natural & Human Induced Disasters



Water Resources



Terrestrial, Coastal & Marine Ecosystems



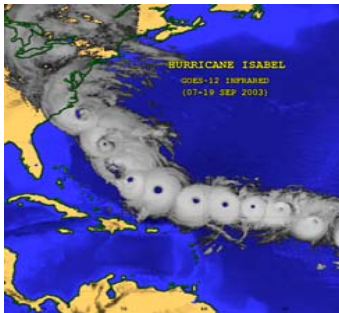
Human Health & Well-Being



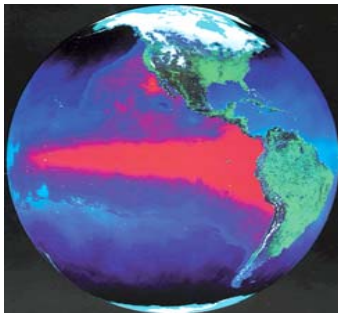
Energy Resources



Sustainable Agriculture & Desertification



Weather Information, Forecasting & Warning

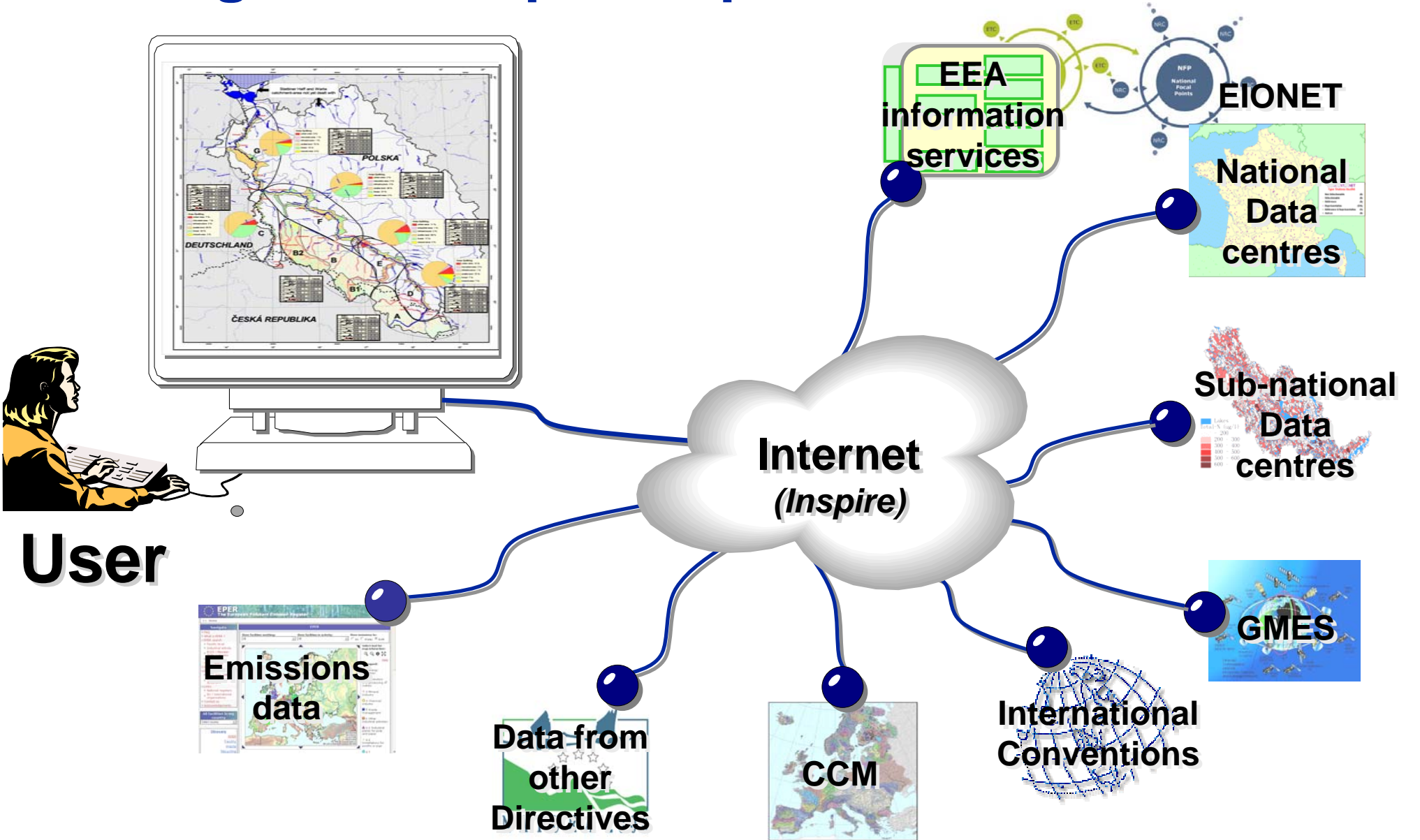


Climate Variability & Change

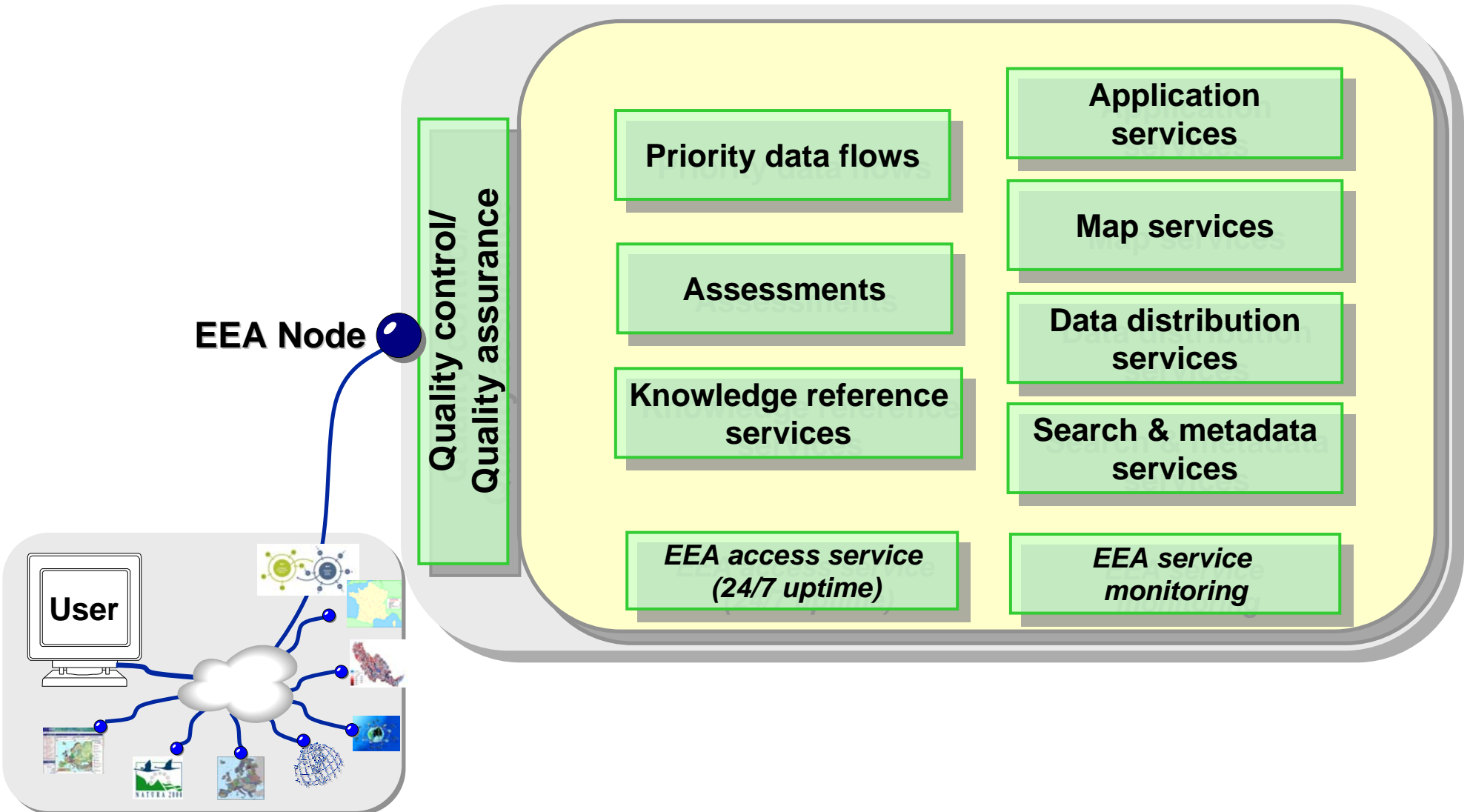


Biodiversity

Building the European Spatial Data Infrastructure



EEA information services



Thank you for your attention!



<http://www.eea.eu.int>