

Spain

Land cover 2006

Overview of land cover & change 2000-2006

Compared to previous period 1990-2000, the overall intensity of change in landscape in Spain slightly decreased. The development of land cover is characterized by accelerated extension of artificial surfaces over agricultural areas and, to a lesser extent, over natural land. Besides, conversions of both agricultural and forested land are the most powerful drivers of land cover exchange (although the intensity of these conversions decreased, compared to the previous period) followed by natural land conversions mostly driven by forest and shrub fires.

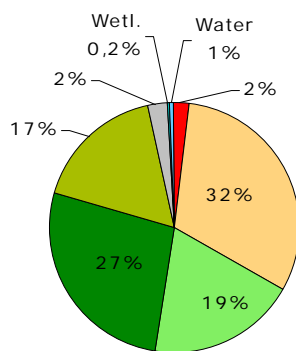
Concerning the net change, beside already mentioned artificial surfaces, only pastures/mosaics and water bodies have slightly positive balance. In contrast, arable land, semi-natural vegetation and open spaces/bare soils have negative net change balance, with prevailing consumption of land cover. Development of forested land is characterized by equal share of formation and consumption, with steady net change balance.

Concerning the spatial distribution of changes in Spain, change areas are densely distributed over the whole country. Artificial sprawl, mostly sprawl of economic sites and infrastructures, is concentrated around the capital city Madrid and other major cities as well as along the Mediterranean coast. Besides, sprawl of infrastructures is also represented by several linear features indicating highway construction. The biggest amount of agricultural changes is situated in southern half of Spain and also in Aragón and Castilla-León regions in the northern part of the country. There are three major concentrations of internal agricultural conversions in Spain, located in Andalusia (especially along Guadalquivir river), along Ebro river in Aragón (near Zaragoza city) and in the valley of river Duero in Castilla-León. Conversion from forested and natural land to agriculture occurs mostly in Extremadura region in the west of the country and in surroundings of Almería city in the south. Changes of forested land are concentrated mostly in the north of the country (with highest density in Bilbao region) and also in the south-western corner of Spain in Andalusia.

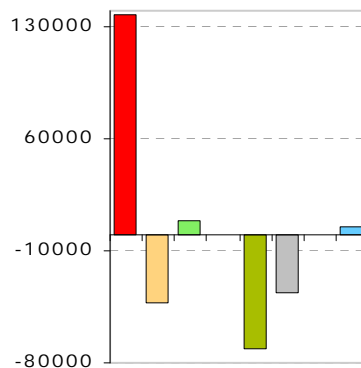
Note: The results presented here are based on a change analysis of 44 land cover types mapped consistently on a 1:100.000 scale across Europe over almost two decades 1990-2006 - see Corine land cover (CLC) programme for details. Number of years between CLC2000-CLC2006 data for Spain: 6



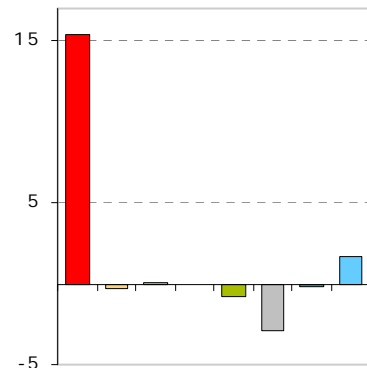
1.1. Land cover 2006 [% of total]



1.2. Net change in land cover 2000-2006 [ha]



1.3. Net change in land cover [% of initial year 2000]



- Artificial areas
- Arable land & permanent crops
- Pastures & mosaics
- Forested land
- Semi-natural vegetation
- Open spaces/ bare soils
- Wetlands
- Water bodies

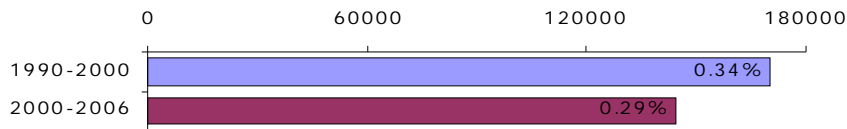
Summary balance table 2000-2006

	Artificial areas	Arable land & permanent crops	Pastures & mosaics	Forested land	Semi-natural vegetation	Open spaces/ bare soils	Wetlands	Water bodies	TOTAL [hundreds ha]
Land cover 2000	8935	158707	95047	137877	88540	12758	1111	3236	506210
Consumption of initial LC	367	2609	629	2722	1420	905	5	4	8661
Formation of new LC	1740	2186	710	2717	705	540	2	60	8661
Net Formation of LC	1373	-423	81	-4	-715	-365	-3	56	0
Net formation as % of initial year	15.4	-0.3	0.1	0.0	-0.8	-2.9	-0.2	1.7	
Total turnover of LC	2107	4795	1338	5439	2125	1445	7	64	17321
Total turnover as % of initial year	23.6	3.0	1.4	3.9	2.4	11.3	0.6	2.0	3.4
Land cover 2006	10308	158285	95128	137873	87824	12393	1108	3292	506210

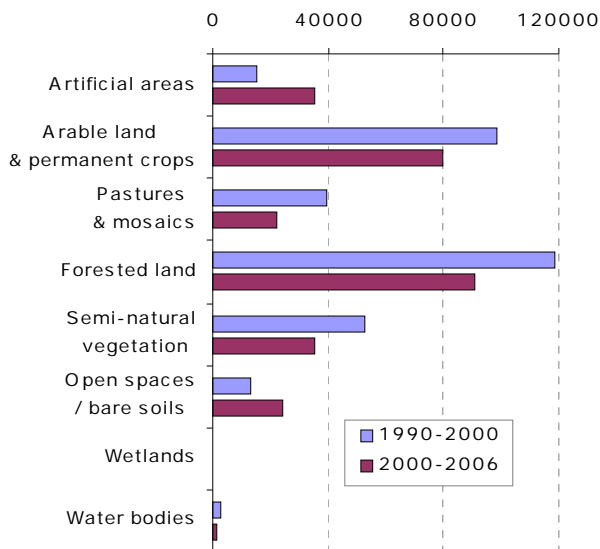
Spain

Land cover trends comparison 1990-2000 vs. 2000-2006

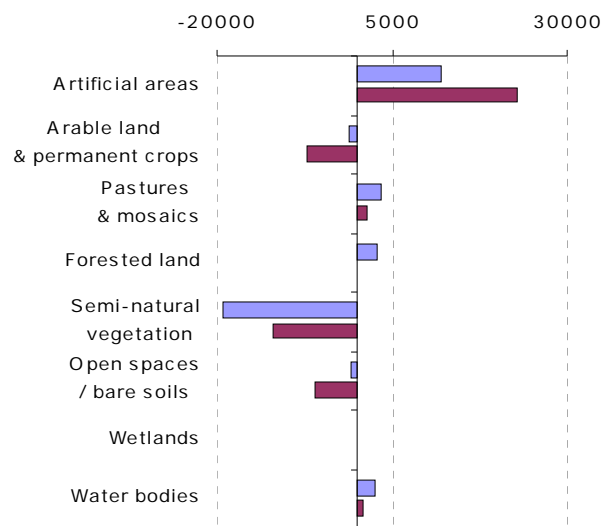
2.4. Annual land cover change
[ha/year, % of total area]



2.5. Annual turnover of LC types
[ha/year]

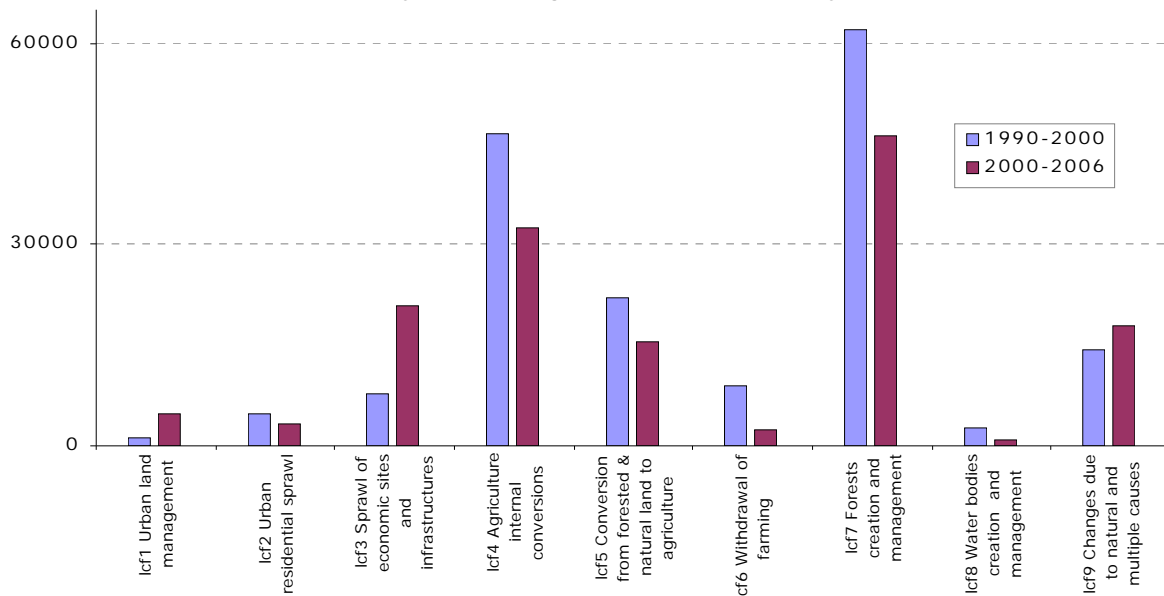


2.6. Net annual change of LC types [ha/year]

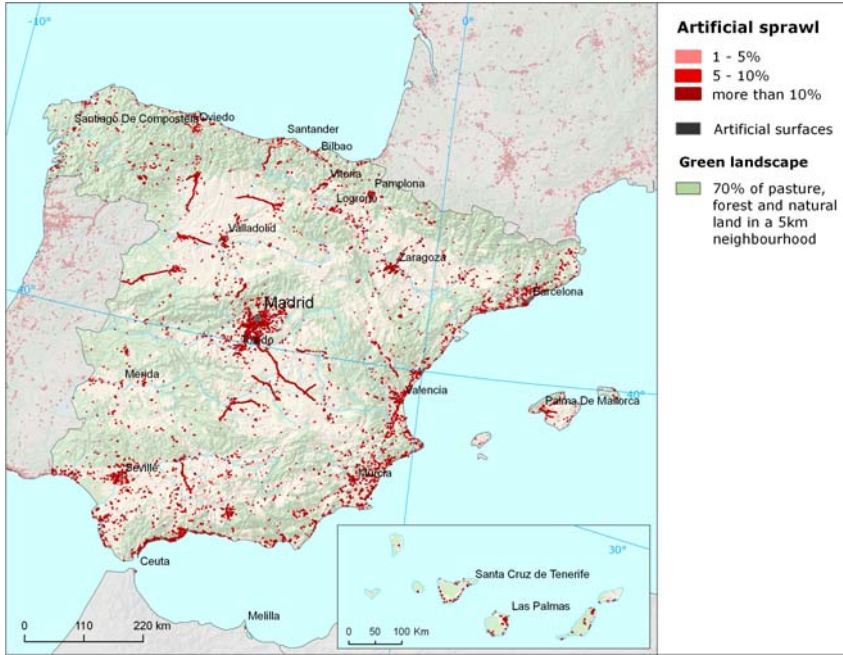


Summary trend figures		1990-2000	2000-2006
Annual land cover change [ha/year]		170184	144342
Annual land cover change as % of initial year		0.34%	0.29%
Land uptake by artificial development as mean annual change [ha/year]		12448	23933
Agricultural land uptake by urban and infrastructures development as mean annual change [ha/year]		9550	17970
Net uptake of forests and semi-natural land by agriculture as mean annual change [ha/year]		12994	12820
Net conversion from pasture to arable land and permanent crops as mean annual change [ha/year]		1697	1276
Forest & other woodland net formation as mean annual change [ha/year]		2885	-72
Dry semi-natural land cover net formation as mean annual change [ha/year]		-14347	-12800
Wetlands & water bodies net formation as mean annual change [ha/year]		2635	889

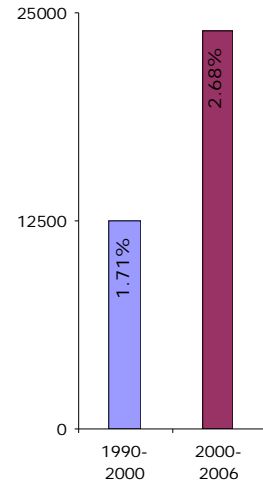
2.7. Intensity of main change drivers (LC FLOWS) [ha/year]



Artificial areas



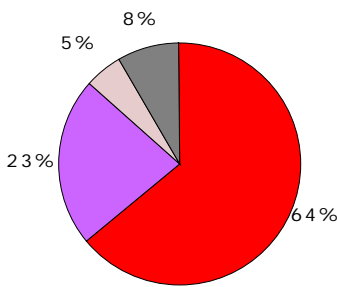
3.8. Artificial land take [ha/year, % of initial year]



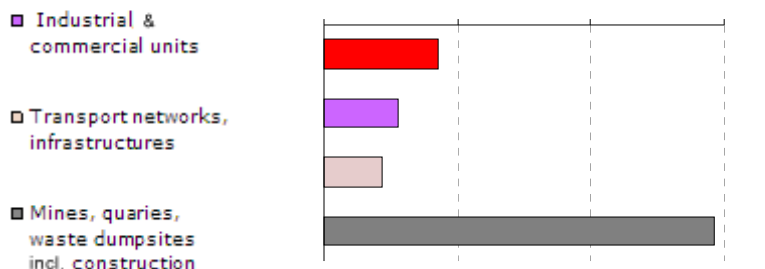
Overall increase, accelerated sprawl of construction

Compared to previous period 1990/2000, artificial land take rapidly accelerated to 2,68%/year. This acceleration is driven mostly by development of construction sites (about 50% share on total taken area), by residential (13%) and industrial/commercial (12%) sprawl and sprawl of mines and quarrying areas (12%). Rapid increase, compared to the previous period, occurs in sprawl of transportation networks (currently 7% share on total taken area). In general, the intensity of artificial sprawl increased in all categories (with few exceptions like continuous urban fabric, port areas and dump sites. Mainly agricultural areas (73%), with prevailing share of arable and crop land (54%) has been taken by artificial sprawl, followed by semi-natural areas (17%) and forest land (7%). Besides the sprawl over non-artificial land, also recycling of developed urban land (represented mostly by transformation of former construction sites into urban fabric, industrial/commercial units or transportation networks) has been important contributor of artificial development. Spatial distribution of artificial sprawl areas is concentrated around the capital city Madrid and other major cities as well as along the Mediterranean coast. Besides, sprawl of infrastructures is clearly visible by several linear features indicating highway construction.

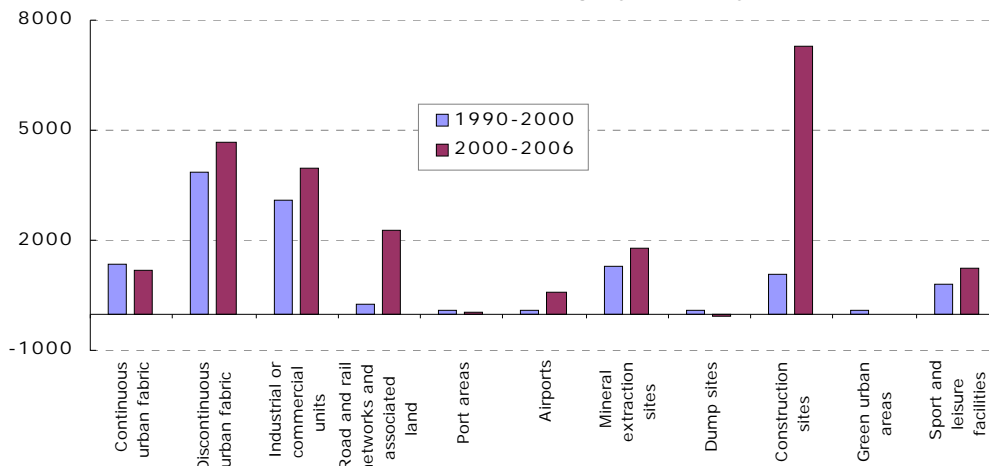
3.9. Artificial surfaces 2006 [% of total area]



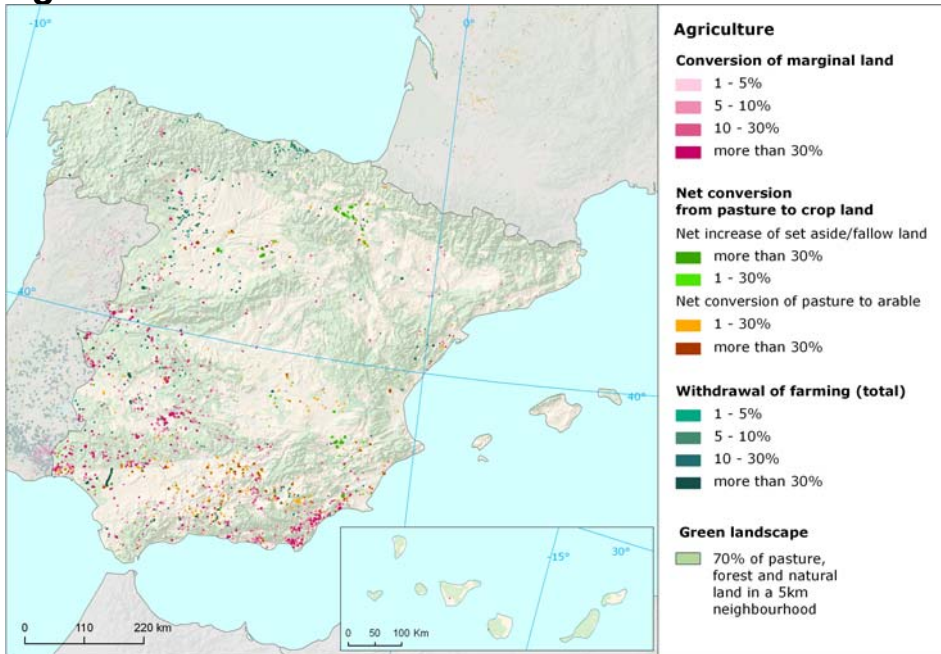
3.10. Artificial land take 2000-2006 [ha/year]



3.11. Mean annual artificial change by class [ha/year]



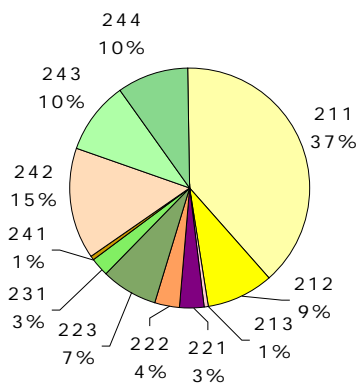
Agriculture



Consumption by construction, conversion of arable to olive groves, vineyards and orchards

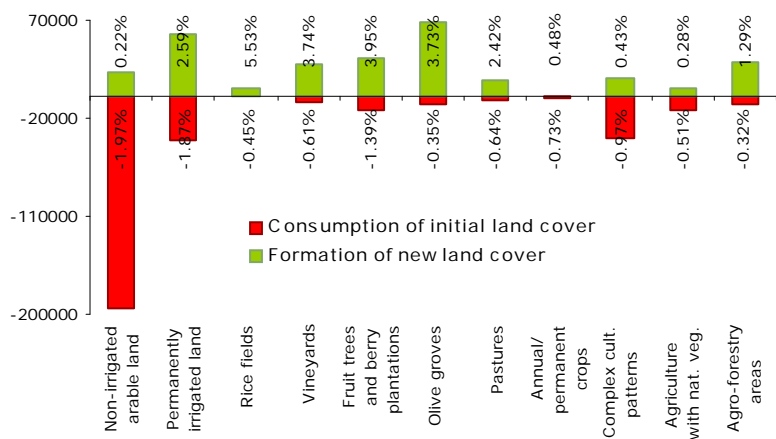
Although the overall intensity of agricultural development decreased, compared to previous period 1990/2000, conversions of agricultural surfaces in Spain are still very intensive and remain an important driver of land cover change in the country. Considering two main agricultural land cover types, arable land has significantly negative balance of net change, in contrast, the balance of pastures and mosaics is slightly positive. The most significant driver of agricultural change is the consumption of agricultural land (with prevailing share of arable/crop land) by artificial (mainly construction) sprawl. The further decrease of agricultural surfaces occurs due to withdrawal of farming with woodland creation. In contrast, new agricultural land has been formed through conversion from forest or semi-natural land to agriculture (with prevailing share of pastures and mosaics). Internal development of agricultural land is characterized by significant decrease of intensity of conversion from arable land to permanently irrigated land (which was the major internal agricultural flow in the previous period) and also decrease of conversions between pasture and arable land. In contrast, accelerated conversions from arable land to olive groves and vineyards/orchards became the most significant internal agricultural changes.

4.12. Agricultural areas 2006 [% of total area]



- 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 Agriculture land with significant areas of natural vegetation
- 244 Agro-forestry areas

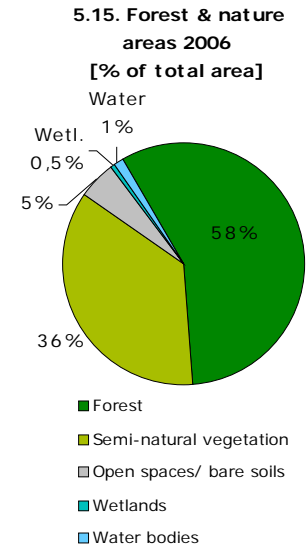
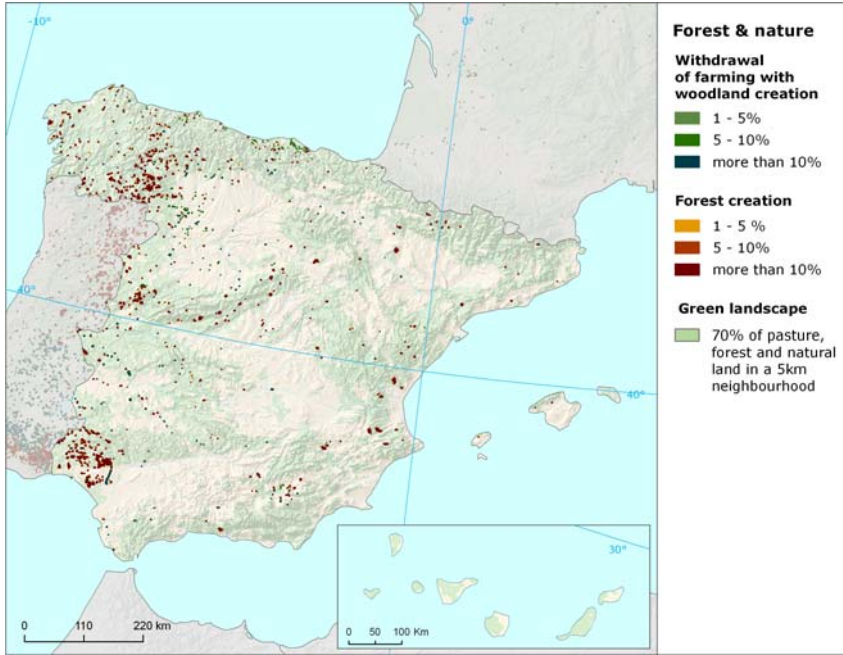
4.13. Development of agricultural areas 2000-2006 - detailed balance [ha]



4.14. Mean annual agricultural change by class [ha/year]



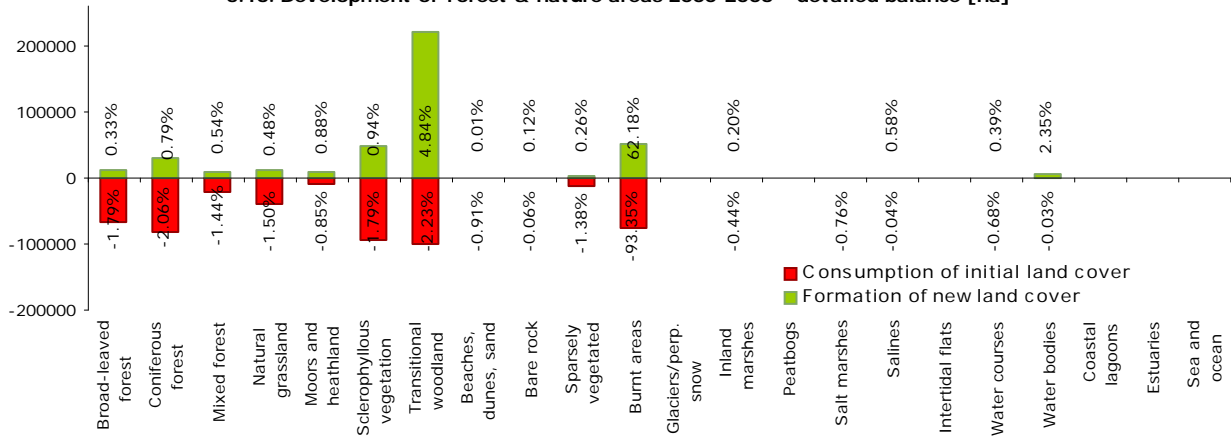
Forest & nature



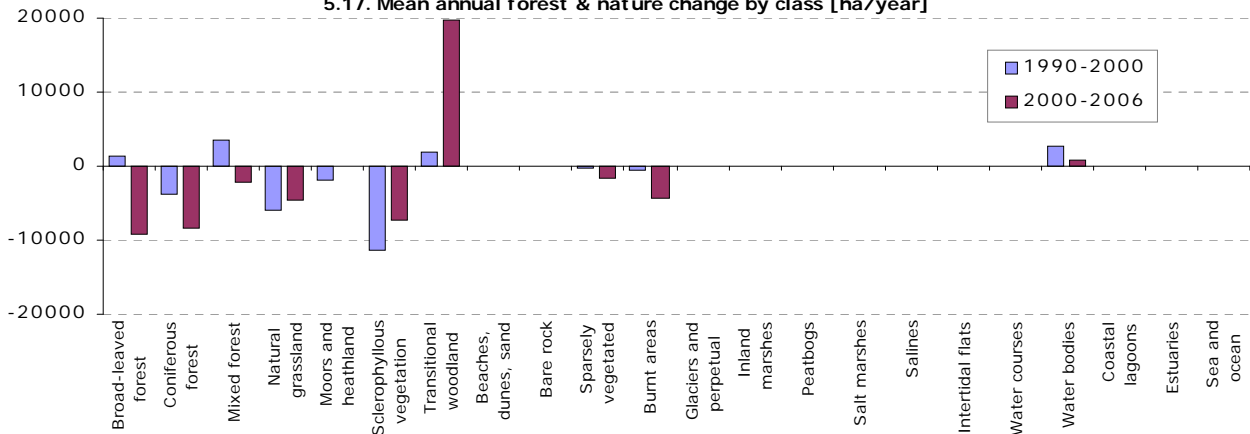
Forest and shrub fires

Natural surfaces in Spain consist mainly of forested land (with significant share of transitional woodland), sclerophyllous vegetation cover and natural grasslands. Besides the forest internal conversions, afforestation of dry semi-natural surfaces is the major driver of natural land development (represented mainly by creation of transitional woodland over sclerophyllous vegetation areas, natural grasslands and also over recently burnt areas). On the other side, this formation of forested land has been compensated through forest and shrub fires and through diffuse conversion from forest to agriculture. Dry-semi natural land cover has been also consumed by sprawl of economic sites and infrastructures. The other significant driver of natural surfaces exchange is semi-natural rotation between dry semi-natural land and burnt areas.

5.16. Development of forest & nature areas 2000-2006 – detailed balance [ha]



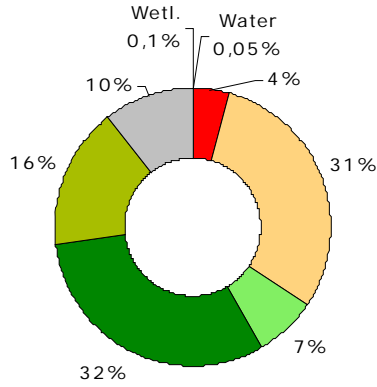
5.17. Mean annual forest & nature change by class [ha/year]



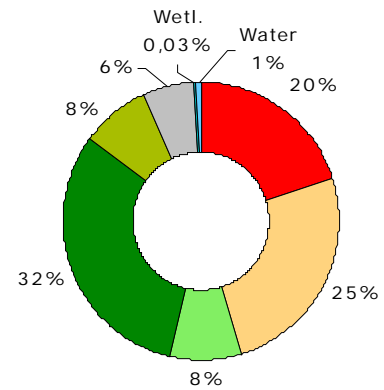
Annex: Land cover flows and trends

Land cover flows 2000-2006

6.18. Consumption of land cover 2000-2006 [% of total change area]

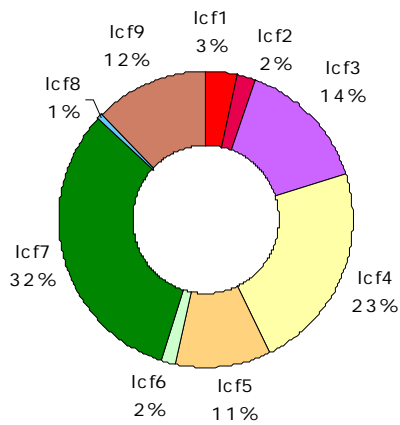


6.19. Formation of land cover 2000-2006 [% of total change area]



- Artificial areas
- Arable land & permanent crops
- Pastures & mosaics
- Forested land
- Semi-natural vegetation
- Open spaces / bare soils
- Wetlands
- Water bodies

6.20. Drivers of change (LC FLOWS) 2000-2006 [% of total change area]

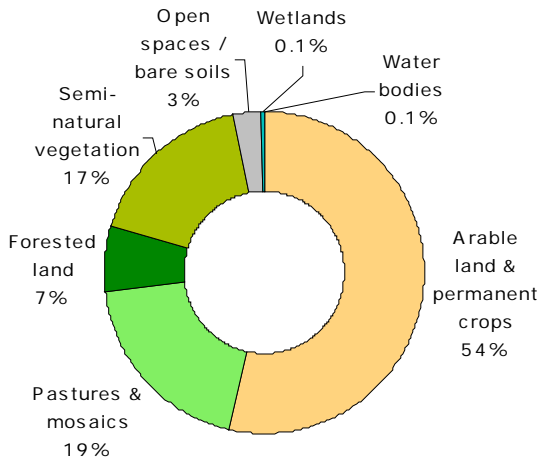


- lcf1 Urban land management
- lcf2 Urban residential sprawl
- lcf3 Sprawl of economic sites and infrastructures
- lcf4 Agriculture internal conversions
- lcf5 Conversion from forested & natural land to agriculture
- lcf6 Withdrawal of farming
- lcf7 Forests creation and management
- lcf8 Water bodies creation and management
- lcf9 Changes due to natural and multiple causes

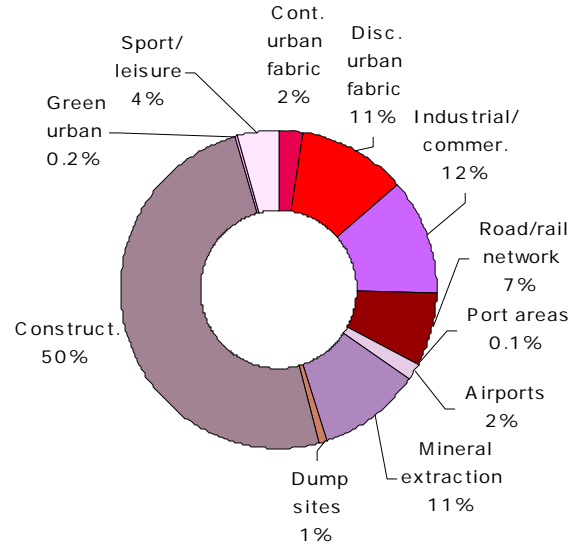
Spain

Artificial areas

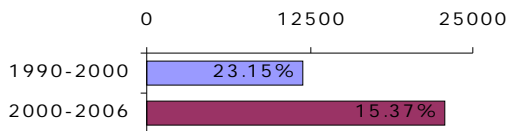
7.21. Consumption by artificial land take 2000-2006 [% of total]



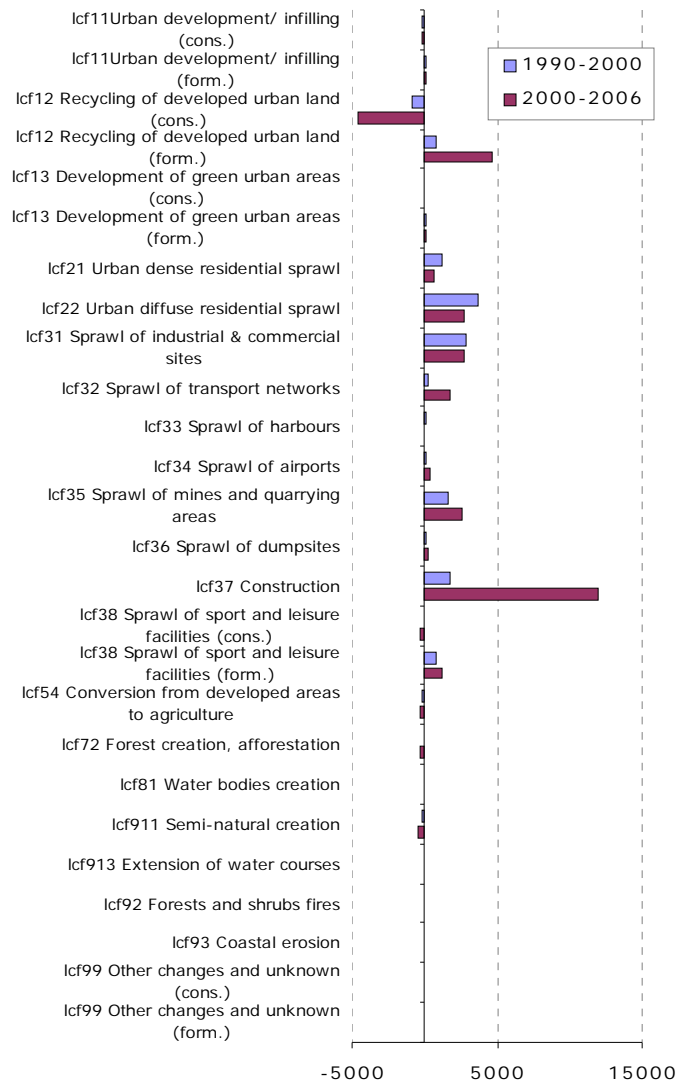
7.22. Formation by artificial land take 2000-2006 [% of total]



7.23. Net formation of artificial area [ha/year, % of initial year]



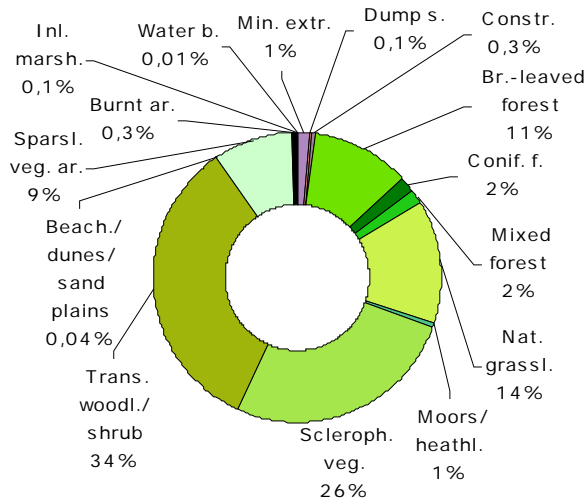
7.24. Artificial development by change drivers (LC FLOWS) [ha/year]



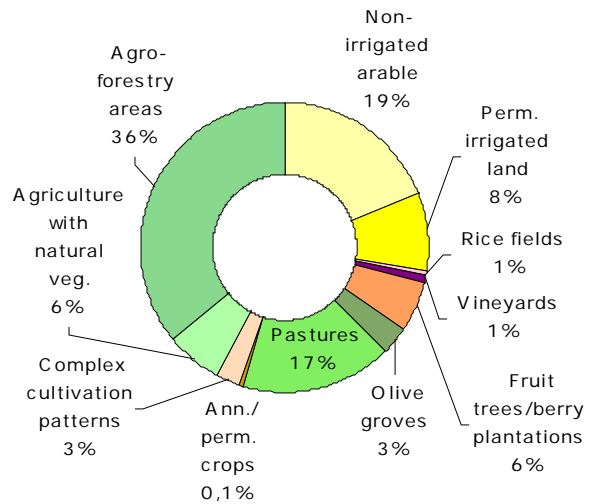
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Agriculture

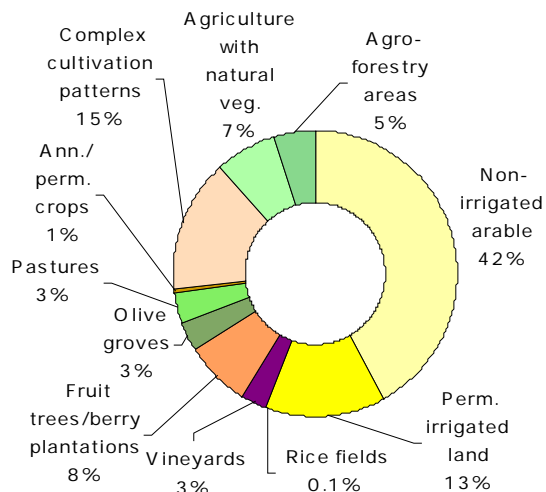
8.25. LC consumed by agriculture 2000-2006 [% of total]



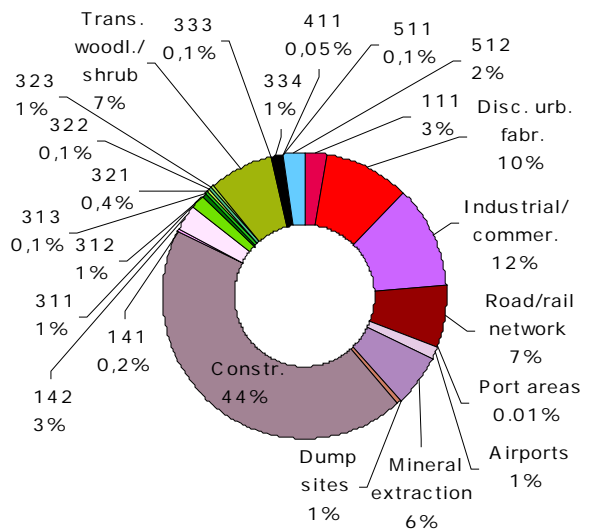
8.26. Formation of agricultural land from non-agriculture 2000-2006 [% of total]



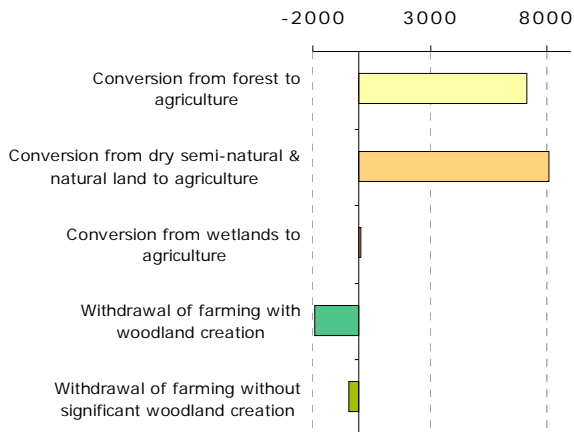
8.27. Consumption of agricultural land by non-agriculture 2000-2006 [% of total]



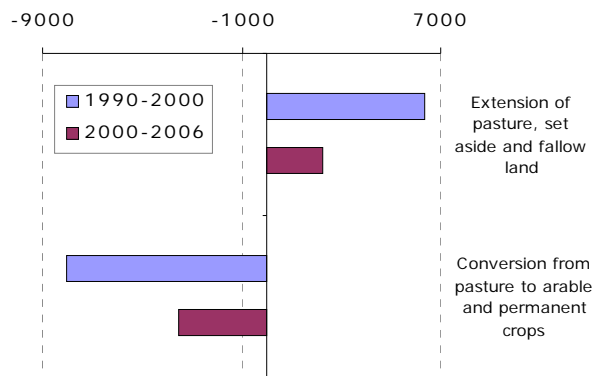
8.28. Formation of non-agricultural land from agriculture 2000-2006 [% of total]



8.29. Main annual conversions between agriculture and forests & semi-natural land 2000-2006 [ha/year]

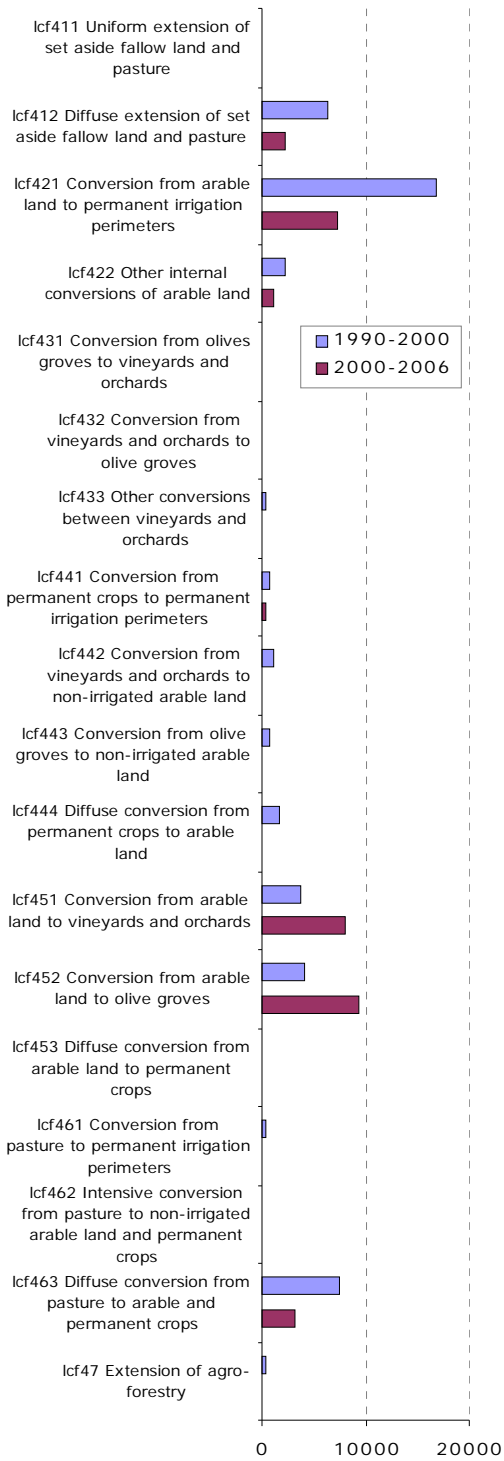


8.30. Mean annual conversion between arable land and pasture [ha/year]

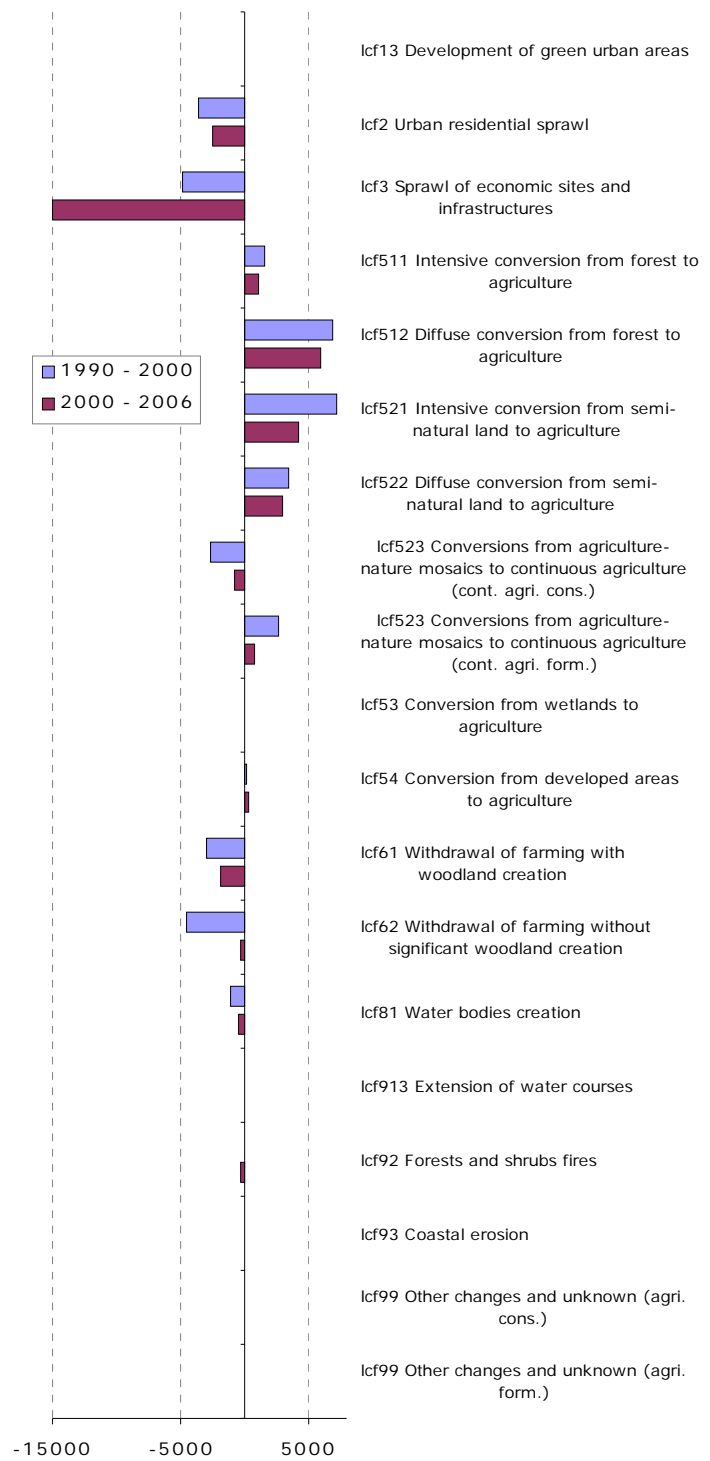


Spain

9.31. Mean annual agriculture internal conversions [ha/year]

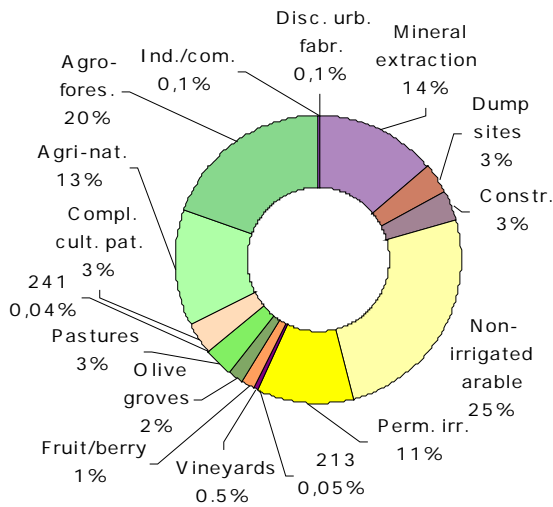


9.32. Mean annual conversions between agriculture and other LC types [ha/year]

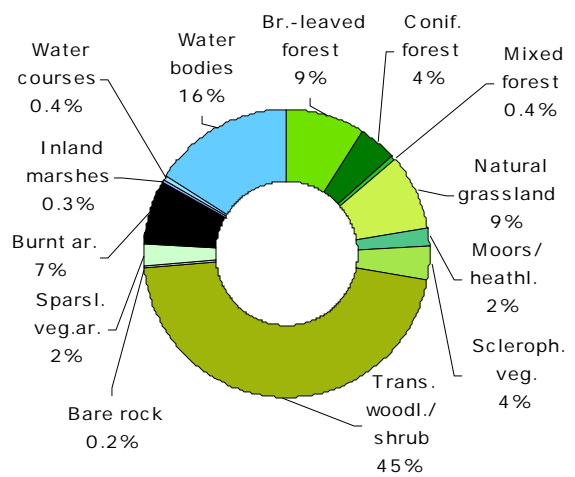


Forest & nature

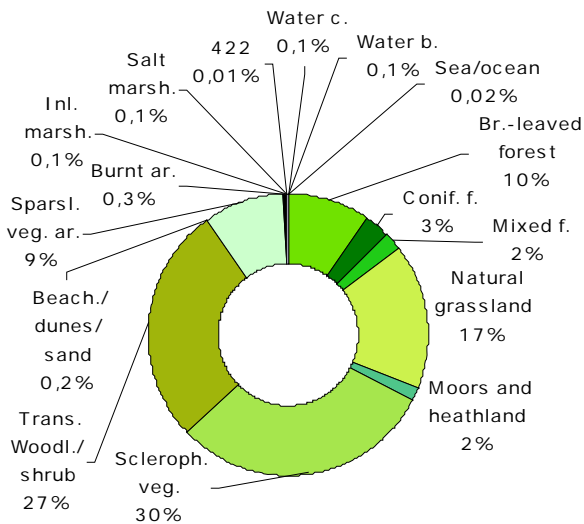
10.33. LC consumed by forest & nature 2000-2006 [% of total]



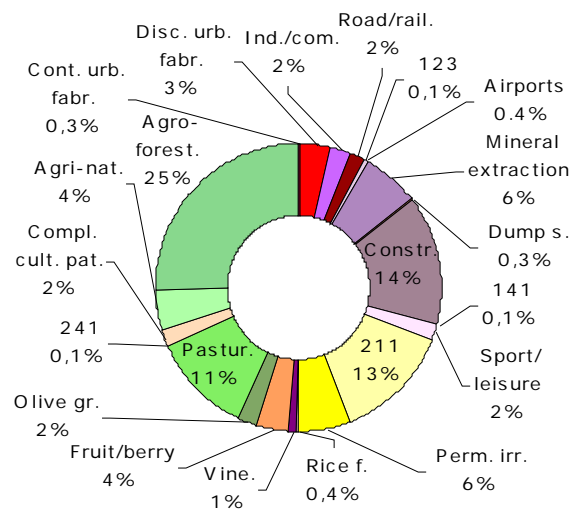
10.34. Formation of forest & nature land from non-forest /nature 2000-2006 [% of total]



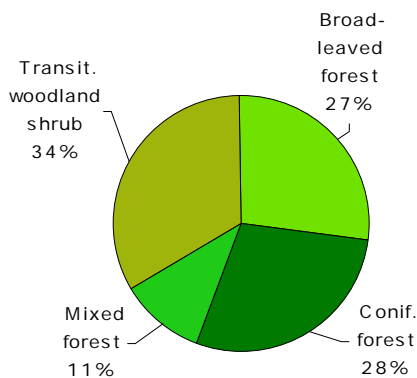
10.35. Consumption of forest & nature land by non-forest/nature 2000-2006 [% of total]



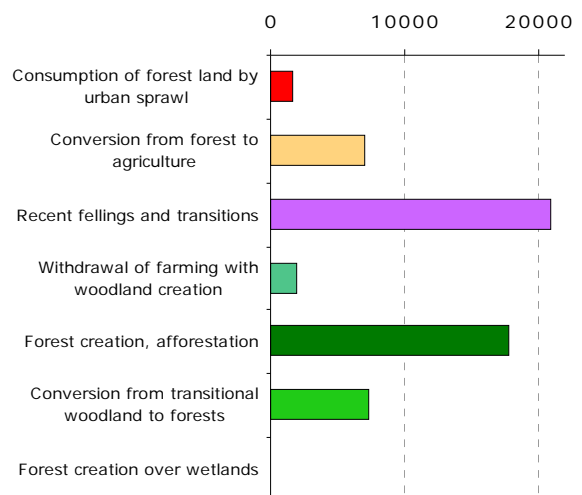
10.36. Formation of non-forest/nature land from forest & nature 2000-2006 [% of total]



10.37. Forested land 2006 [% of total area]

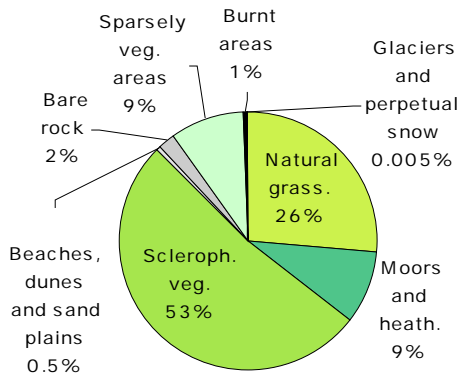


10.38. Main trends in woodland & forests consumption/formation 2000-2006 [ha/year]

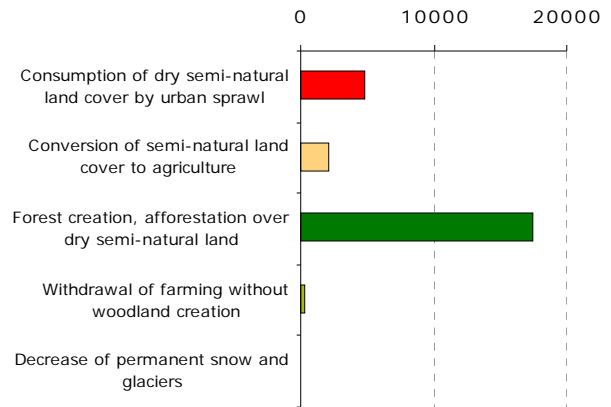


Spain

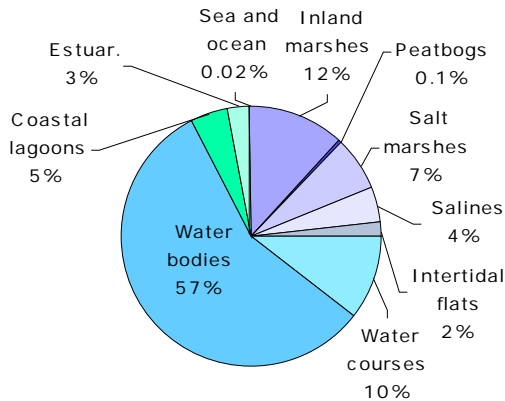
11.39. Dry semi-natural areas 2006
[% of total area]



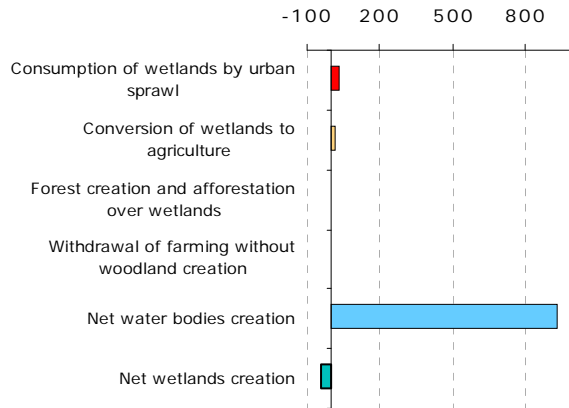
11.40. Main trends in dry semi-natural land consumption/formation 2000-2006 [ha/year]



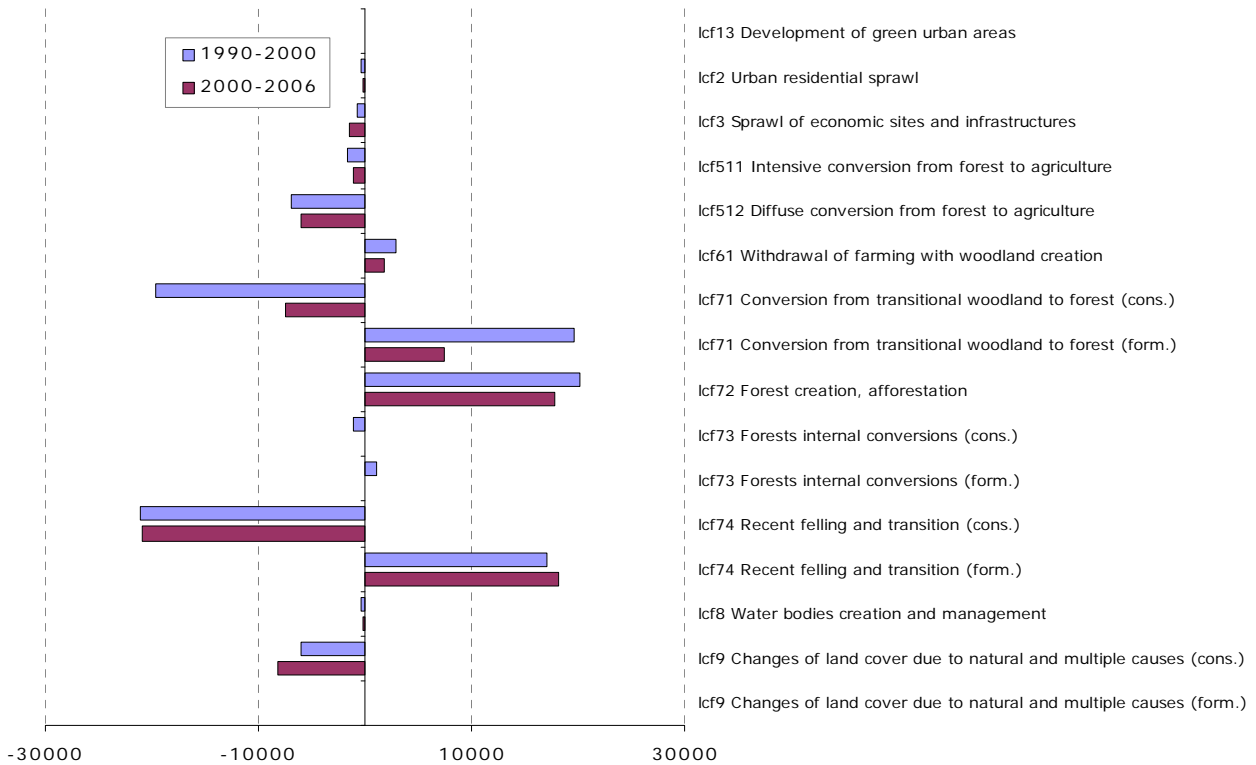
11.41. Wetlands & water 2006
[% of total area]



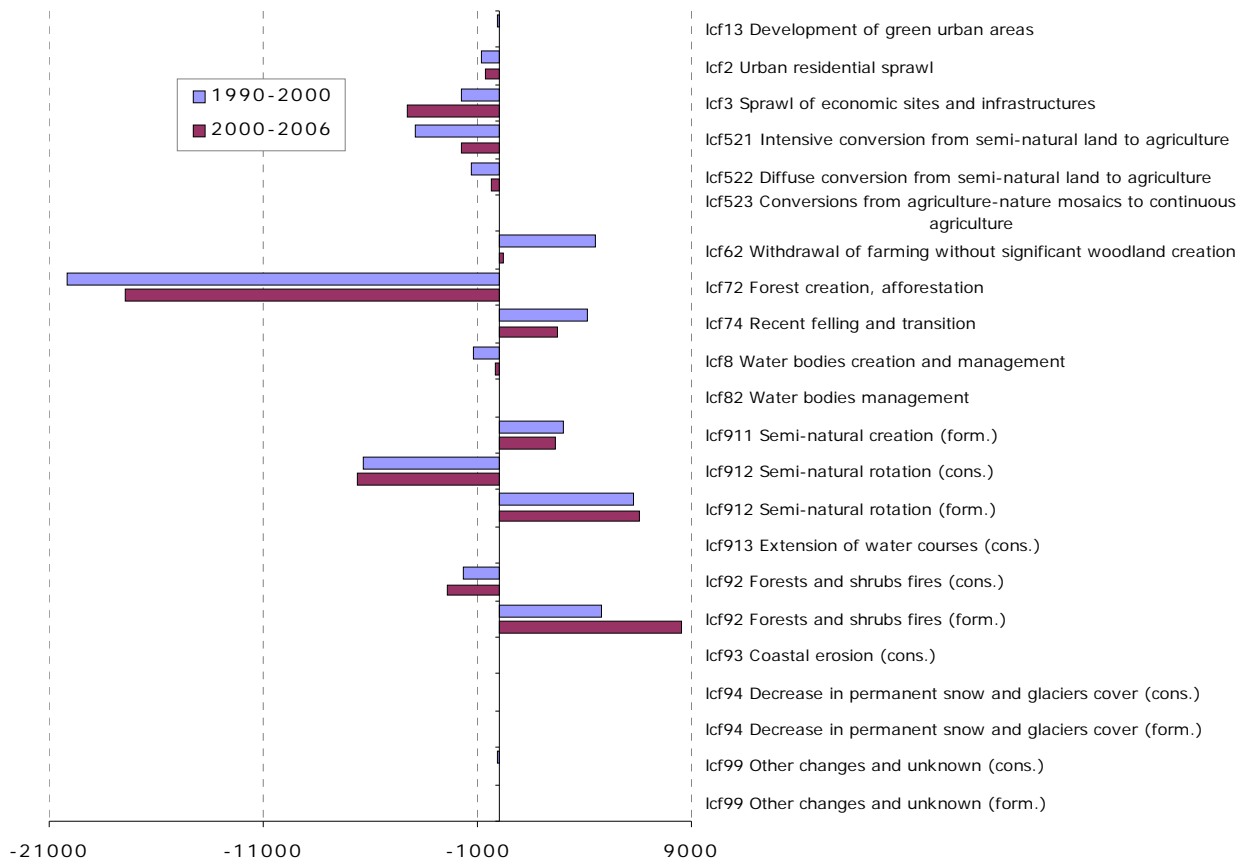
11.42. Main trends in wetlands & water consumption/formation 2000-2006 [ha/year]



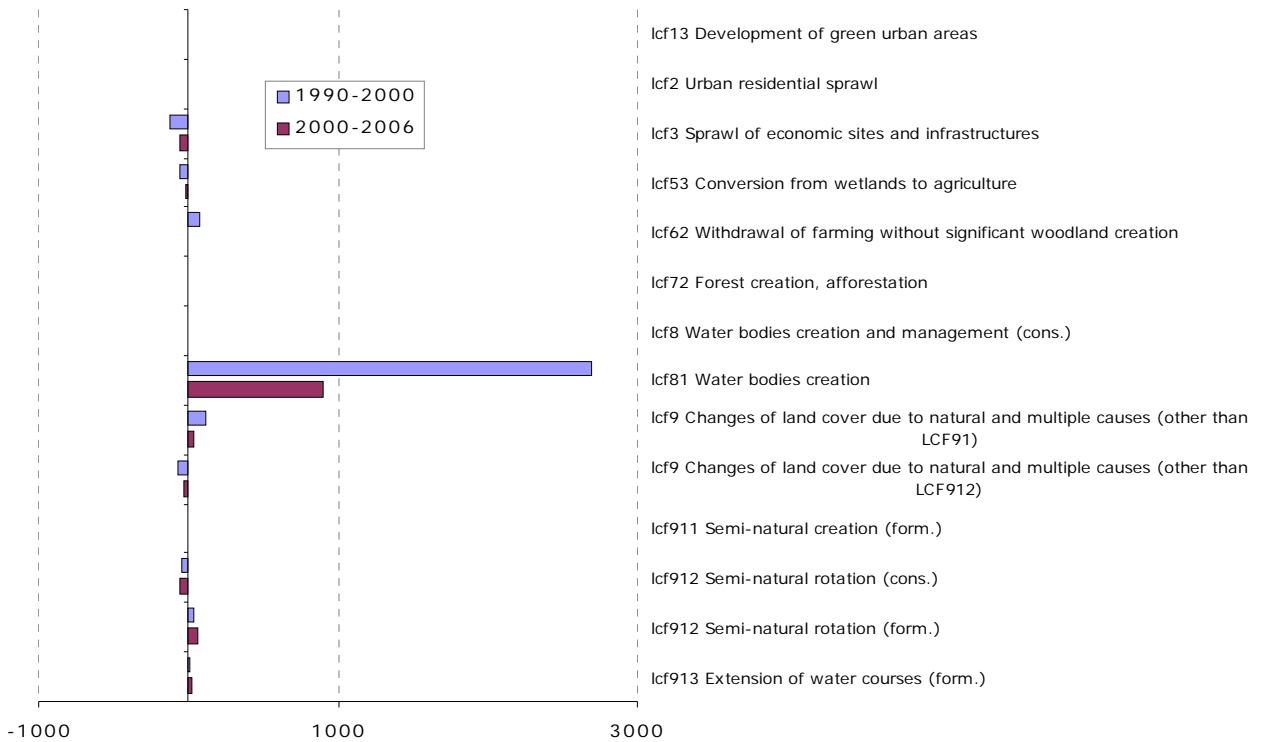
11.43. Mean annual conversions of forest & other woodland
[ha/year]



12.44. Mean annual conversions of dry semi-natural LC [ha/year]

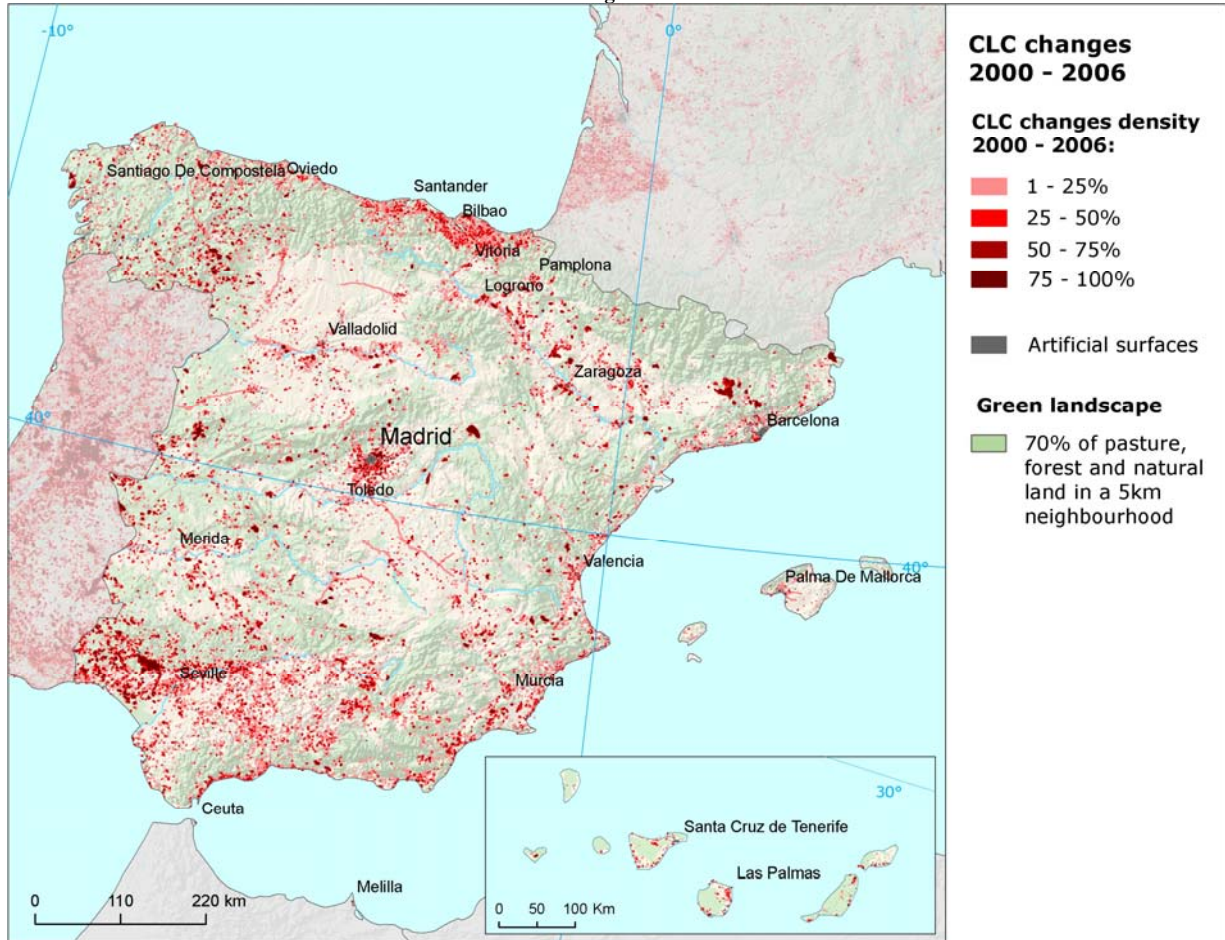


12.45. Mean annual conversions of wet lands and water LC [ha/year]

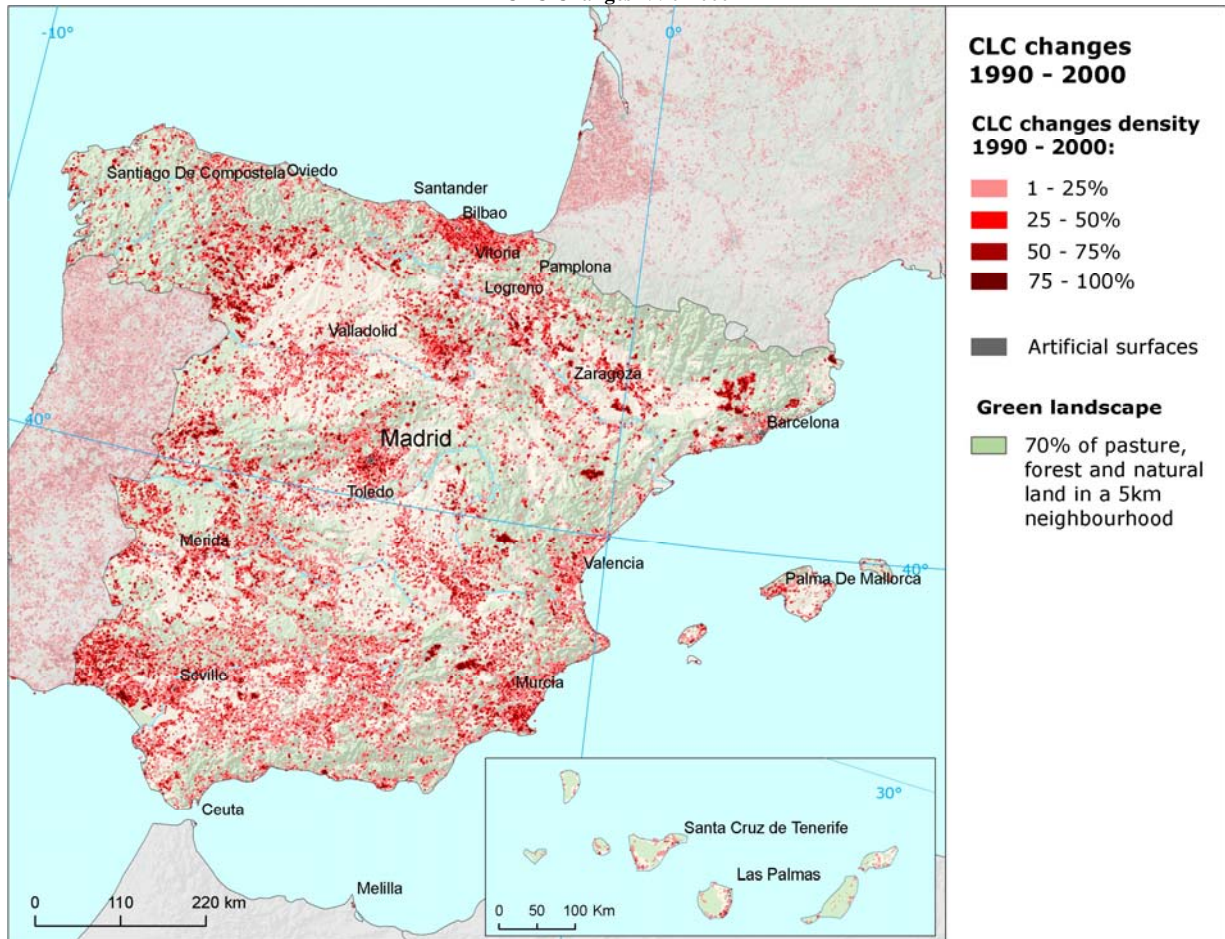


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CLC Changes 2000-2006

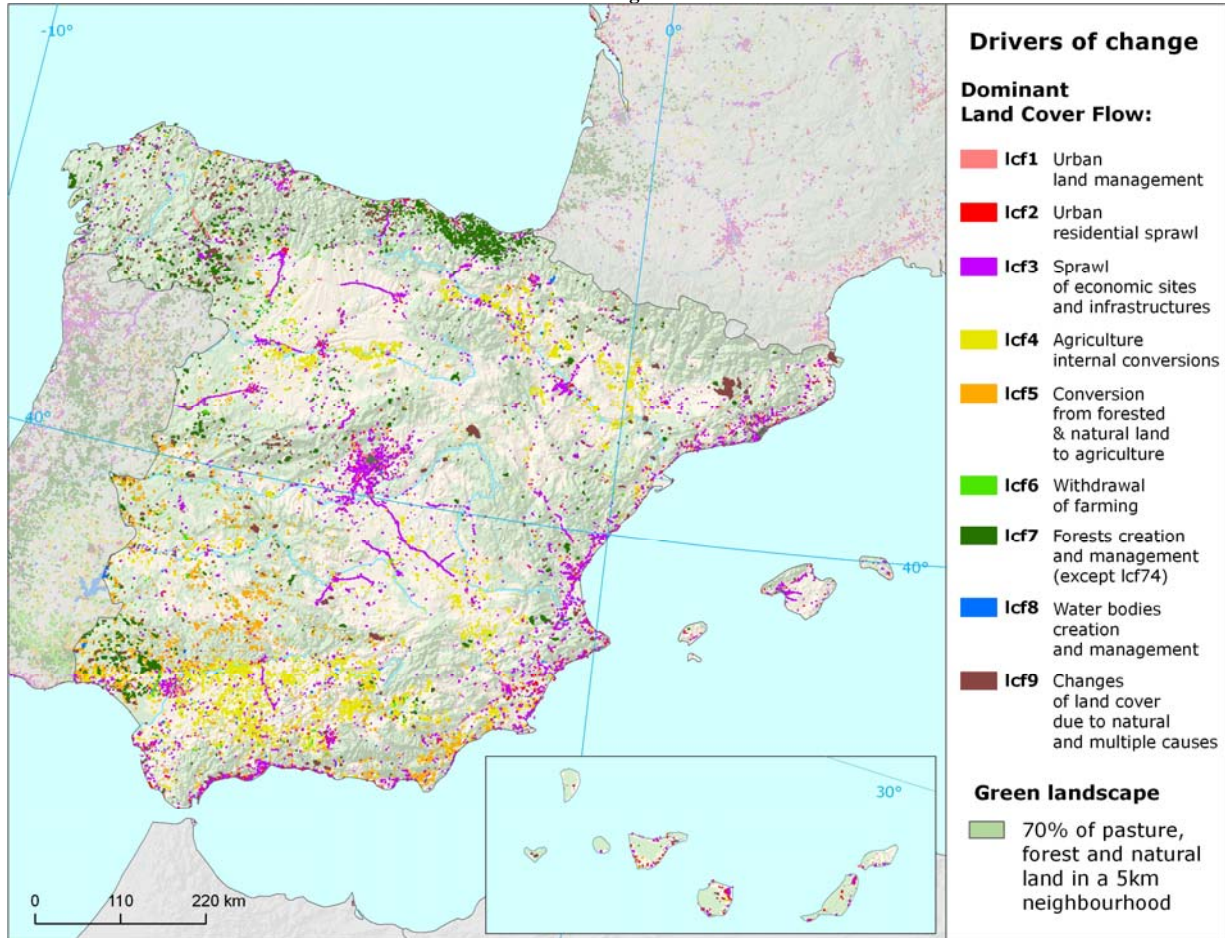


CLC Changes 1990-2000

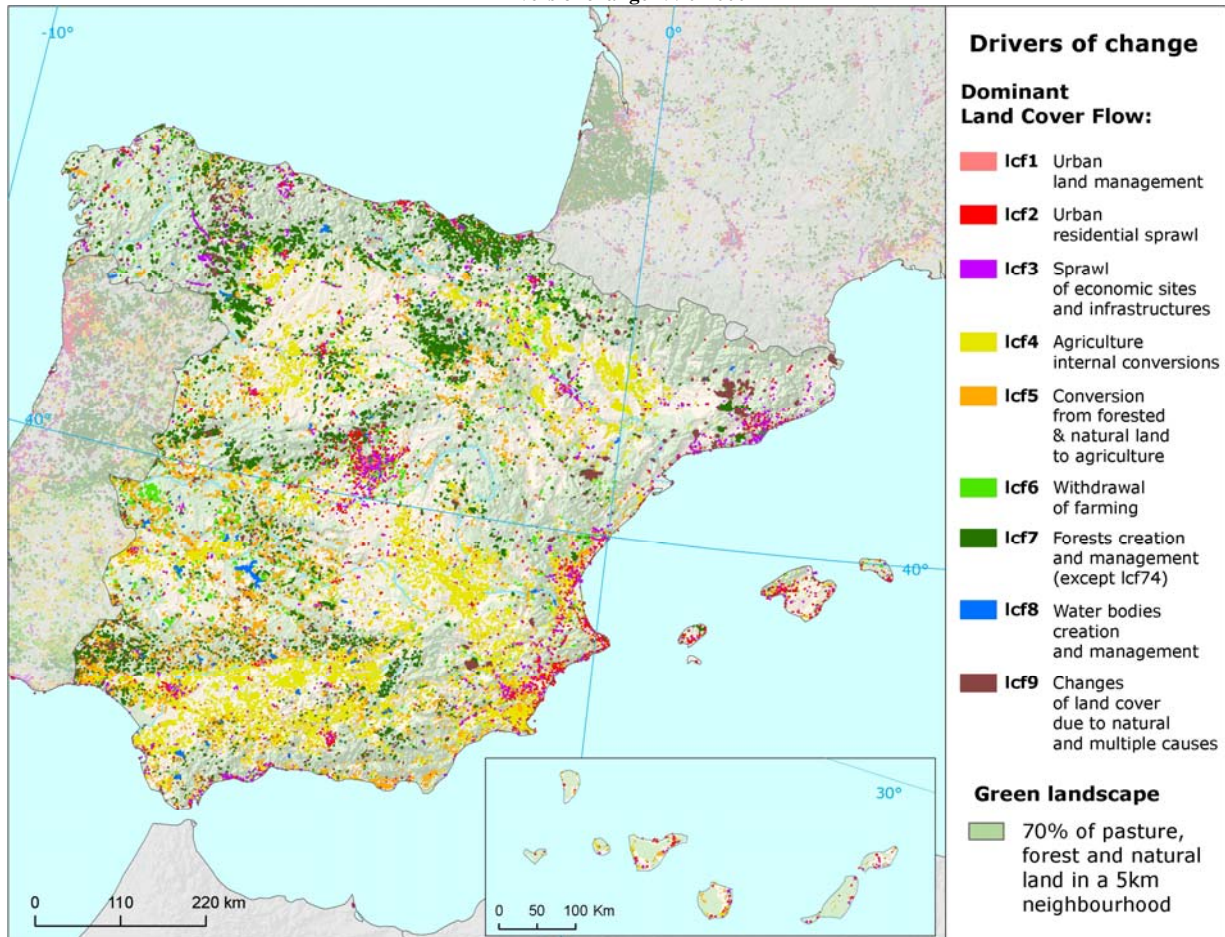


Spain

Drivers of change 2000-2006

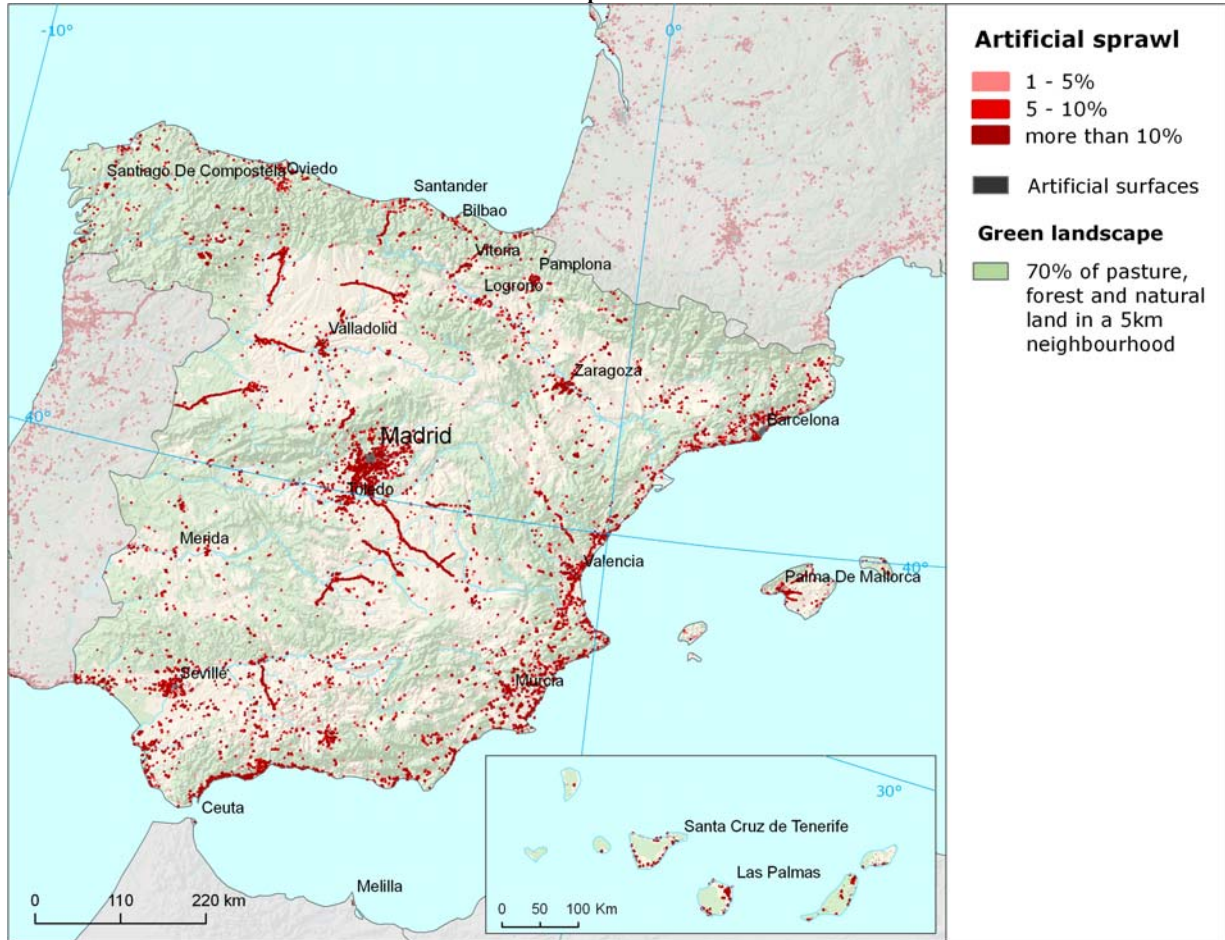


Drivers of change 1990-2000

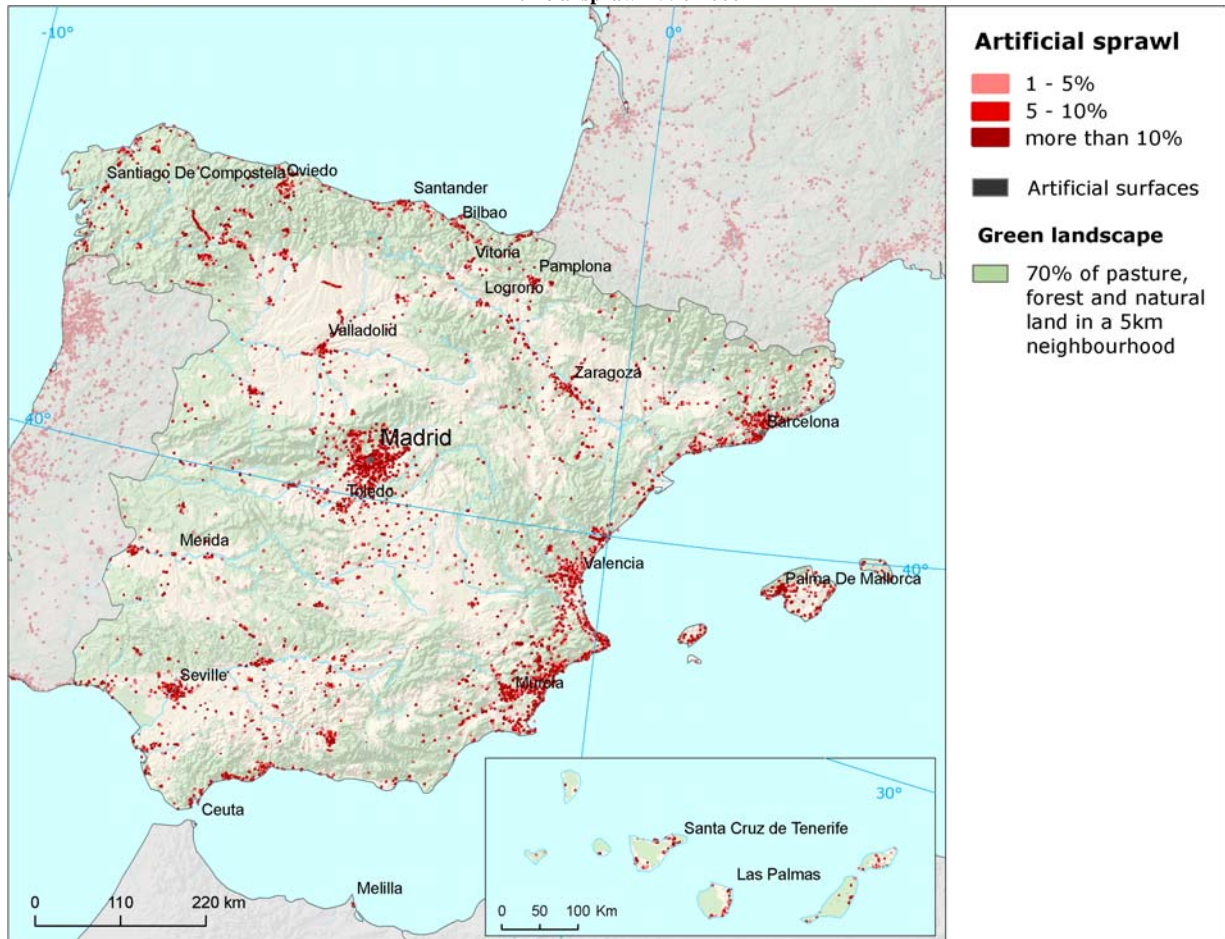


Spain

Artificial sprawl 2000-2006

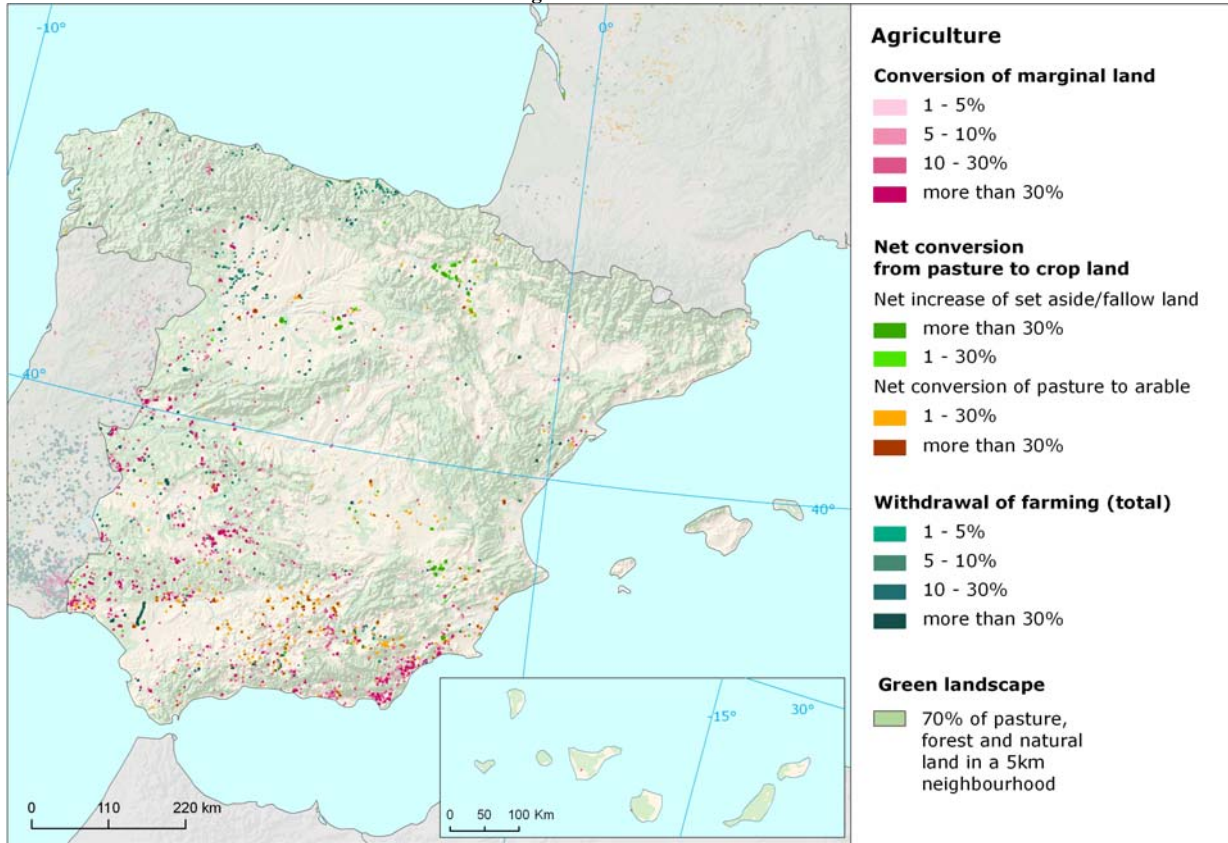


Artificial sprawl 1990-2000

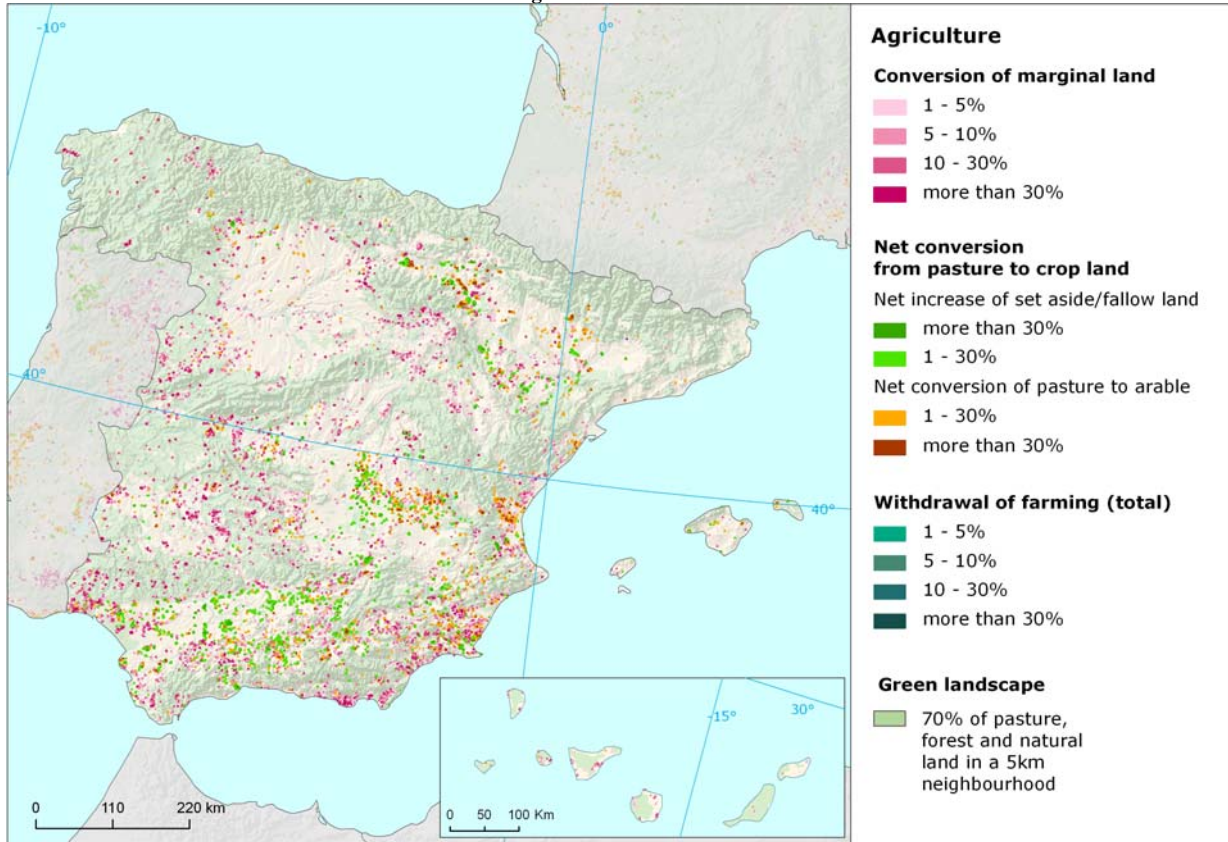


Spain

Agriculture 2000-2006

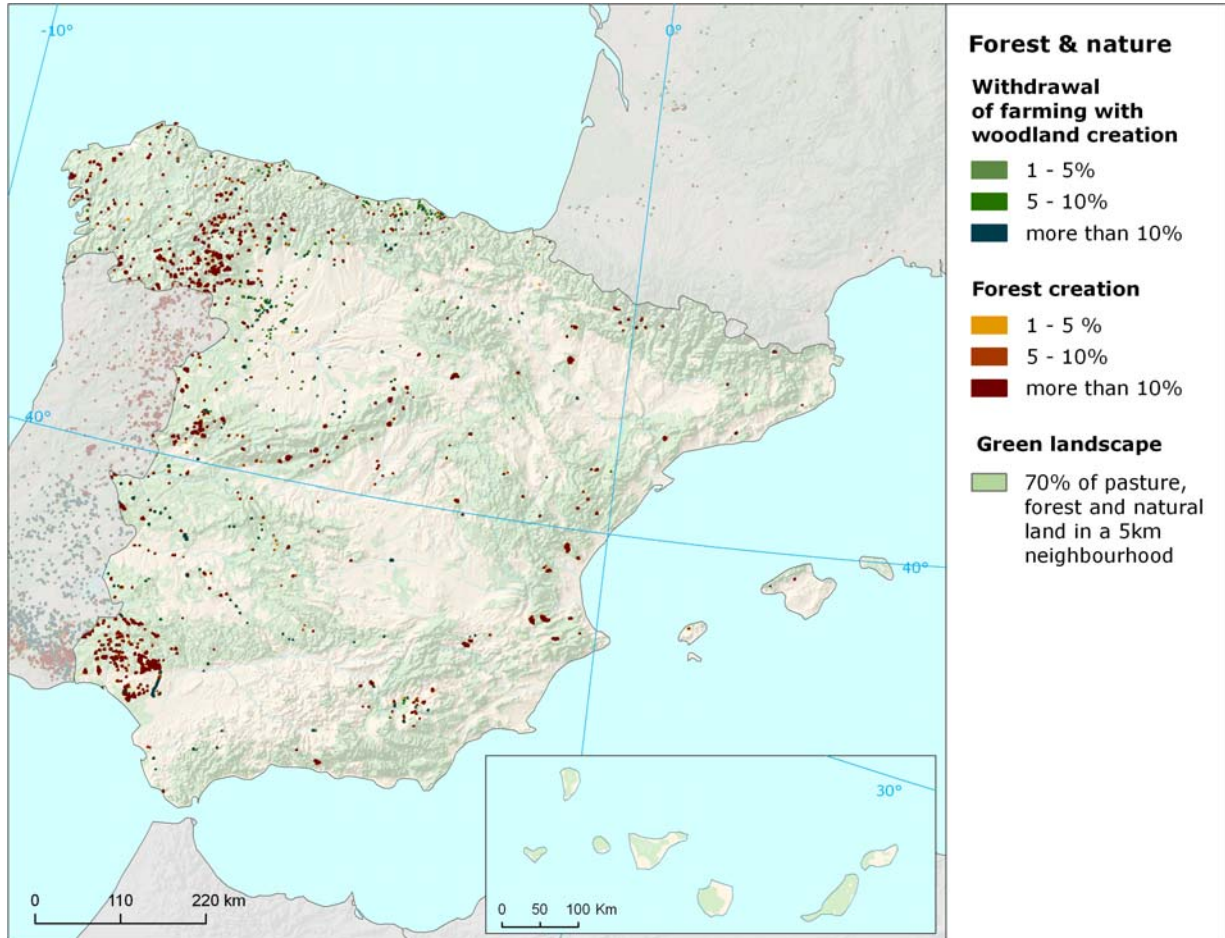


Agriculture 1990-2000



Spain

Forest and nature 2000-2006



Forest and nature 1990-2000

