

Land cover 2012



Portugal 

September 2017

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Portugal

Land cover 2012

Overview of land cover & change 2006-2012

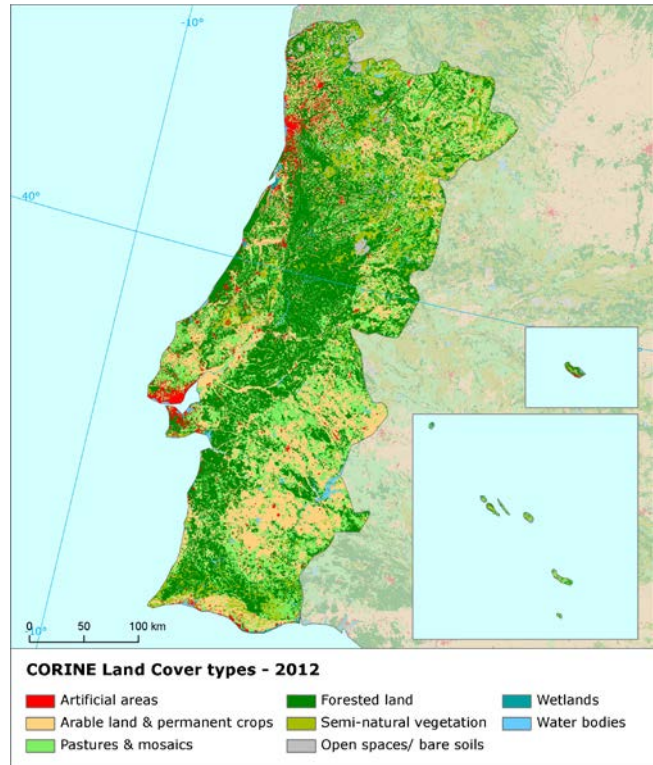
In the long term, Portugal is a country with the highest dynamics of land cover change in Europe. This is documented by very high annual land cover change rate – 0.92% of total area. However, the speed of landscape development was even much higher during the previous period, which was characterized by extremely high annual change rate – 1.43%.

Although its intensity significantly decreased, compared to the previous period 2000-2006, forest creation and management remains by far the most extensive land cover flow in the country. The second most intensive driver of land cover development in Portugal are internal agricultural conversions, which occur with more than doubled intensity, compared with the 2000-2006 period. This is caused mostly by rapid increase of conversion of arable land to olive groves, which was not very frequent during the previous period, but also exchanges between pasture and arable/crop land in both directions occur with significantly higher intensity in the period 2006-2012. On the other hand, conversions between agricultural and natural land, which were important drivers of the change during the previous periods, lost most of its intensity currently.

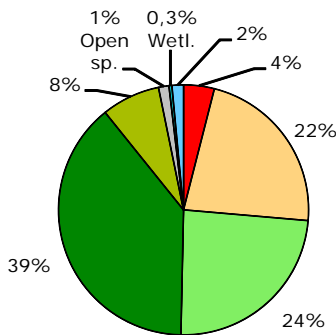
The net change balance shows very high consumption of open spaces/bare soils, which had not been observed during the previous period. This transition is caused by afforestation of burnt areas.

Compared to these extensive flows, artificial development in Portugal is less significant. However, with the annual land take rate 0.55%, it belongs to the fastest among European countries. It has to be mentioned, that the intensity of land take was even much stronger in the previous period (1.62%) and during the period 1990-2000 (2.17%). These numbers show that artificial development is currently rather in decline in Portugal.

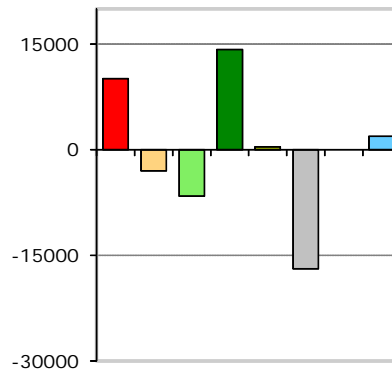
Note: The results presented here are based on a change analysis of 44 land cover types mapped consistently on a 1:100.000 scale across Europe over more than decade between 2000-2006-2012 - see Corine land cover (CLC) programme for details. The accounts for Azores and Madeira are not included into this analysis. Number of years between CLC2006-CLC2012 data for Portugal: 6



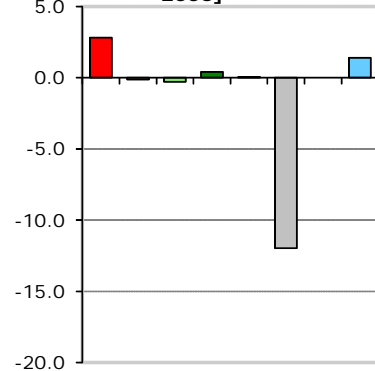
1.1. Land cover 2012 [% of total]



1.2. Net change in land cover 2006-2012 [ha]



1.3. Net change in land cover [% of initial year 2006]



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

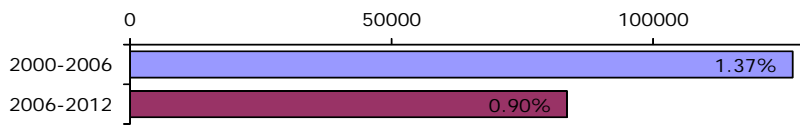
Summary balance table 2006-2012

	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 2006	3579	20731	22213	35800	6992	1413	353	1352	92432
Consumption of initial LC	69.7	653.6	126.6	3681.9	103.0	373.6	0.6	2.2	5011
Formation of new LC	170.4	623.4	60.8	3824.0	106.8	204.2	0.6	21.1	5011
Net Formation of LC	100.6	-30.2	-65.8	142.1	3.8	-169.4	0.0	18.9	0
Net formation as % of initial year	2.8	-0.1	-0.3	0.4	0.1	-12.0	0.0	1.4	
Total turnover of LC	240.1	1277.0	187.3	7505.9	209.8	577.8	1.2	23.3	10023
Total turnover as % of initial year	6.7	6.2	0.8	21.0	3.0	40.9	0.4	1.7	10.8
Land cover 2012	3679	20701	22148	35942	6996	1244	353	1371	92432

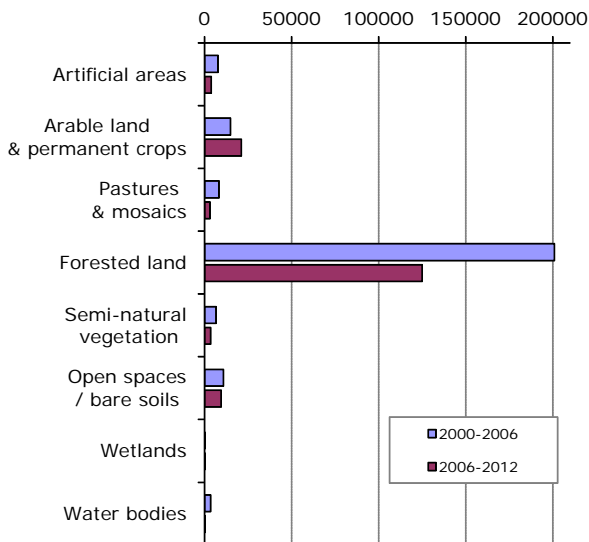
Portugal

Land cover trends comparison 2000-2006 vs. 2006-2012

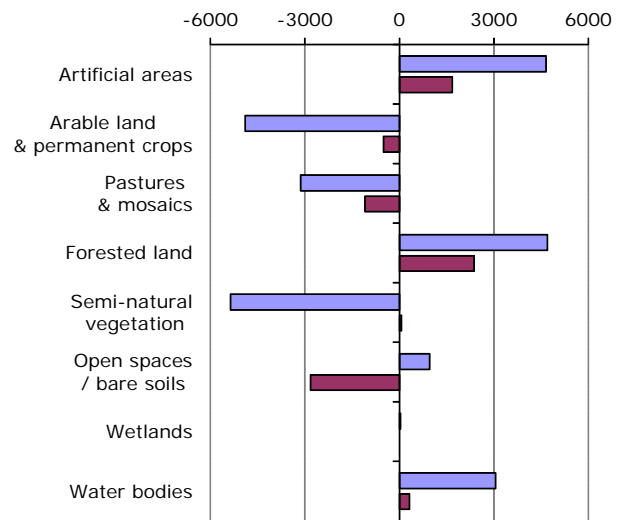
2.4. Annual land cover change
[ha/year, % of total area]



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

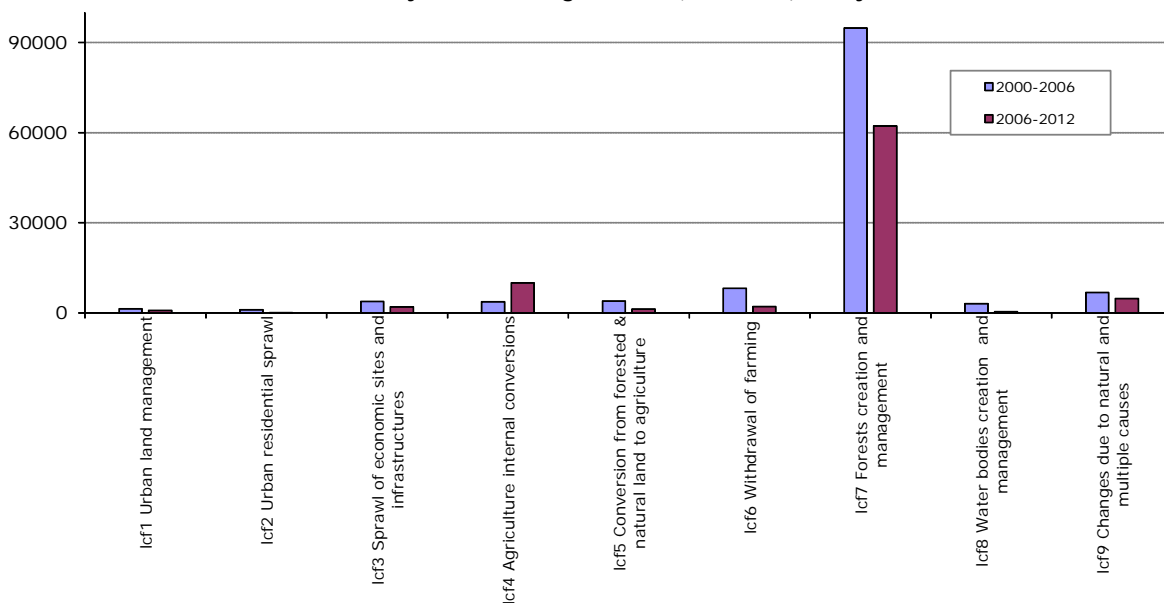


2.6. Net annual change of LC types [ha/year]

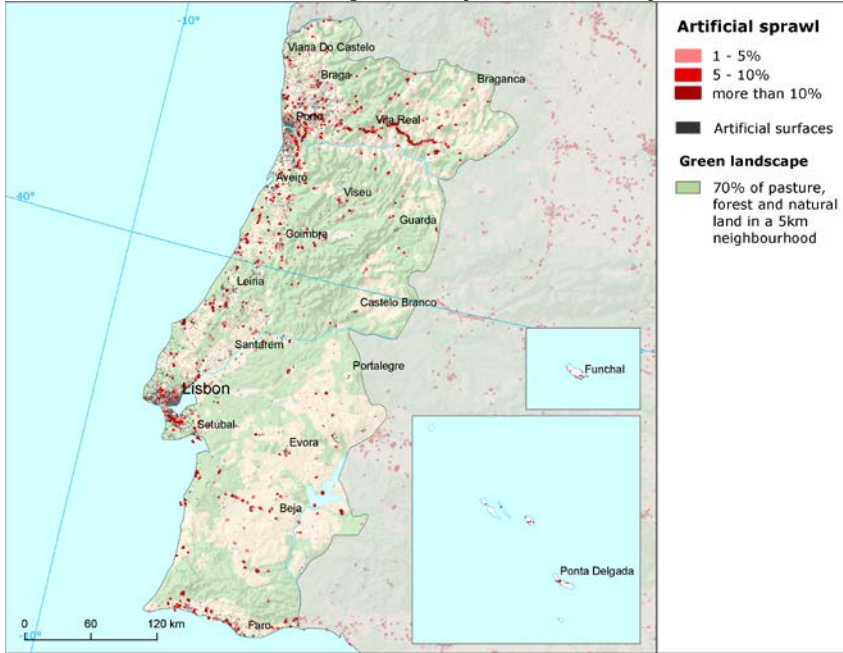


Summary trend figures		
	2000-2006	2006-2012
Annual land cover change [ha/year]	126627	83521
Annual land cover change as % of initial year	1.37%	0.90%
Land uptake by artificial development as mean annual change [ha/year]	4731	1853
Agricultural land uptake by urban and infrastructures development as mean annual change [ha/year]	3327	857
Net uptake of forests and semi-natural land by agriculture as mean annual change [ha/year]	-4319	-814
Net conversion from pasture to arable land and permanent crops as mean annual change [ha/year]	188	233
Forest & other woodland net formation as mean annual change [ha/year]	4701	2369
Dry semi-natural land cover net formation as mean annual change [ha/year]	-3455	-2557
Wetlands & water bodies net formation as mean annual change [ha/year]	3077	314

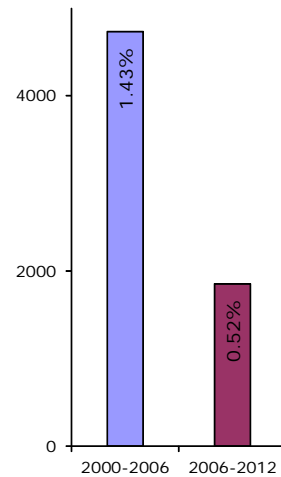
2.7. Intensity of main change drivers (LC FLOWS) [ha/year]



Artificial surfaces sprawl (2006-2012)



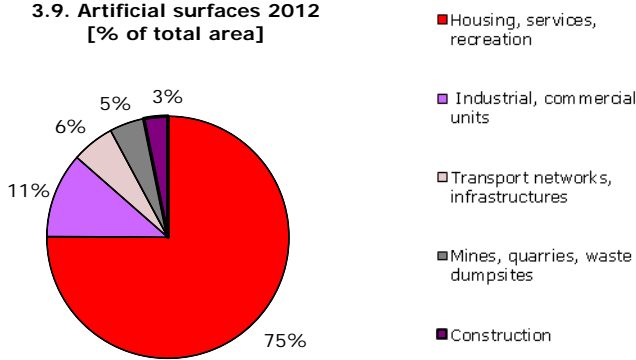
3.8. Artificial land take [ha/year, % of initial year]



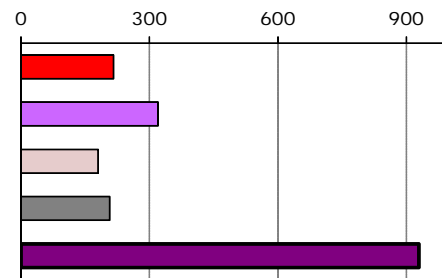
Despite rapid slowdown, artificial development is still strong

Compared to both previous periods, the pace of artificial development is much lower in the period 2006-2012. However, a comparison with other European countries shows that it still remains very intensive, considering the European context. It is driven mainly by construction, by the sprawl of sport and leisure facilities and industrial or commercial sites. There is also significant amount of recycling of developed urban land in Portugal, represented by conversion of sites which were under construction during the previous period into transportation, commercial/industrial or residential units. The residential sprawl, which was very intensive in Portugal, especially during the period 1990-2000, lost most of its intensity currently. Geographically, the sprawl shows similar pattern as in both previous periods, although with significantly lower density. Its major concentrations are situated in the surroundings of the capital city Lisbon, along the southern coast and especially around the city of Porto in the north. Also the construction of highway network in the northern part of the country started already during the previous period.

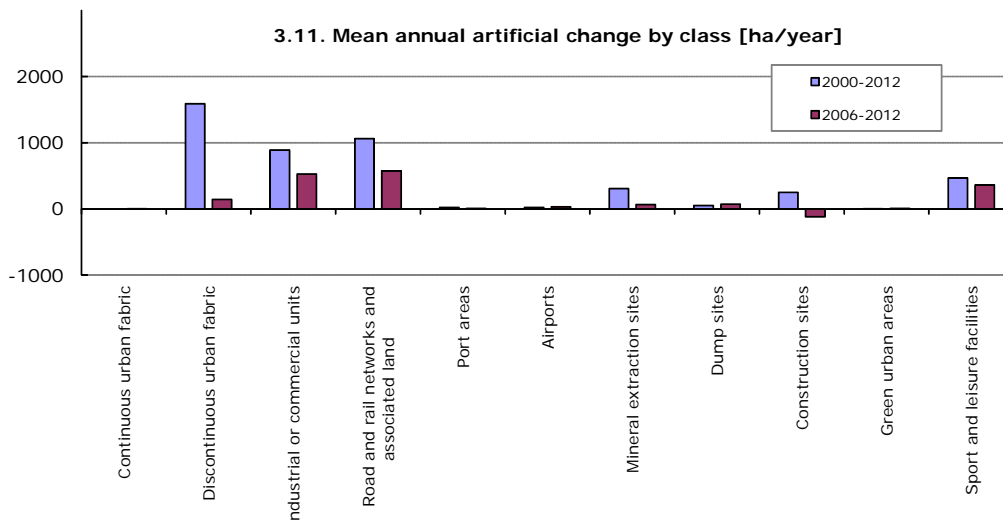
3.9. Artificial surfaces 2012 [% of total area]



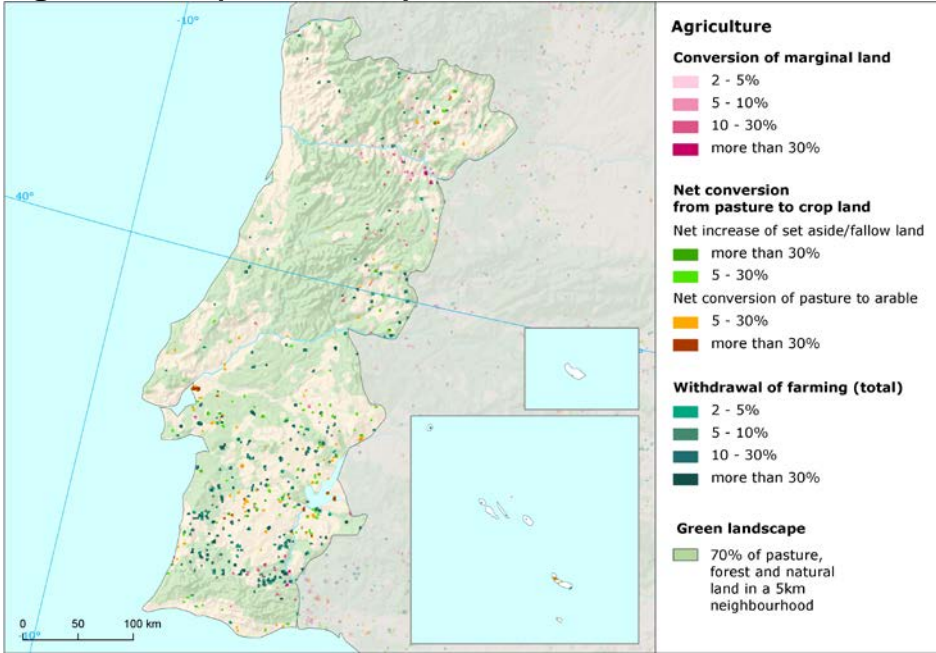
3.10. Artificial land take 2006-2012 [ha/year]



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



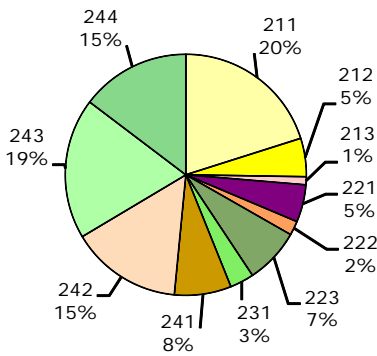
Agriculture (2006-2012)



Conversion from arable land to olive groves

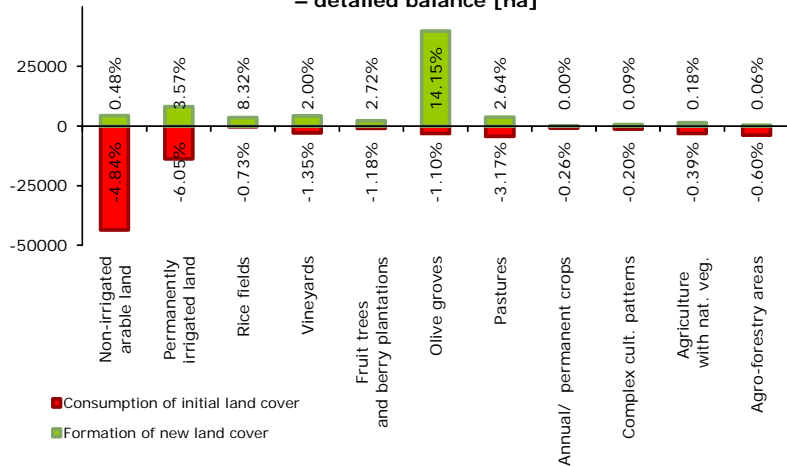
The agricultural development in Portugal is driven mostly by internal conversions, which appear with significantly higher intensity currently than in the previous period 2000-2006 and became the second major driver of the land cover development in the country. This increase is driven mainly by rapidly increased conversions from arable land to olive groves. But also the intensity of conversions between pasture and arable/crop land in both directions is much higher than in the period 2000-2006 (however, still lower than in 1990-2000). On the other hand, agro-natural conversions, in particular withdrawal of farming with woodland creation, which were quite frequent during both previous periods, lost most of its intensity in the period 2006-2012. Despite this slow down, withdrawal of farming with transitional woodland creation remains the main source of agricultural land consumption in Portugal. Geographically, this flow is concentrated in the southern part of the country.

4.12. Agricultural areas 2012 [% of total area]

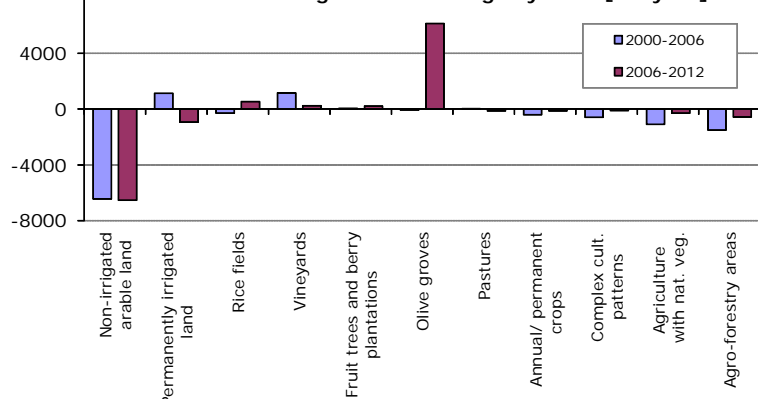


- 211 Non-irrigated arable land
- 212 Permanently irrigated land
- 213 Rice fields
- 214 Vineyards
- 215 Fruit trees and berry plantations
- 216 Olive groves
- 217 Pastures
- 218 Annual crops associated with permanent crops
- 219 Complex cultivation patterns
- 220 Agriculture land with significant areas of natural vegetation
- 221 Agro-forestry areas

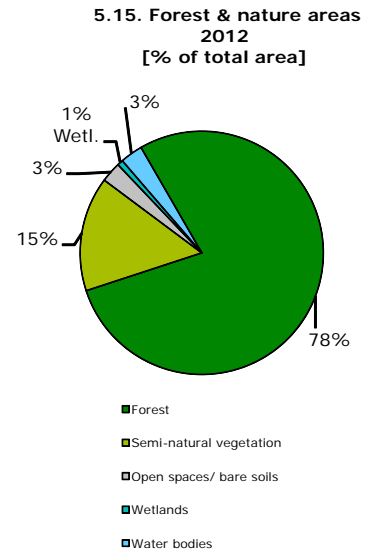
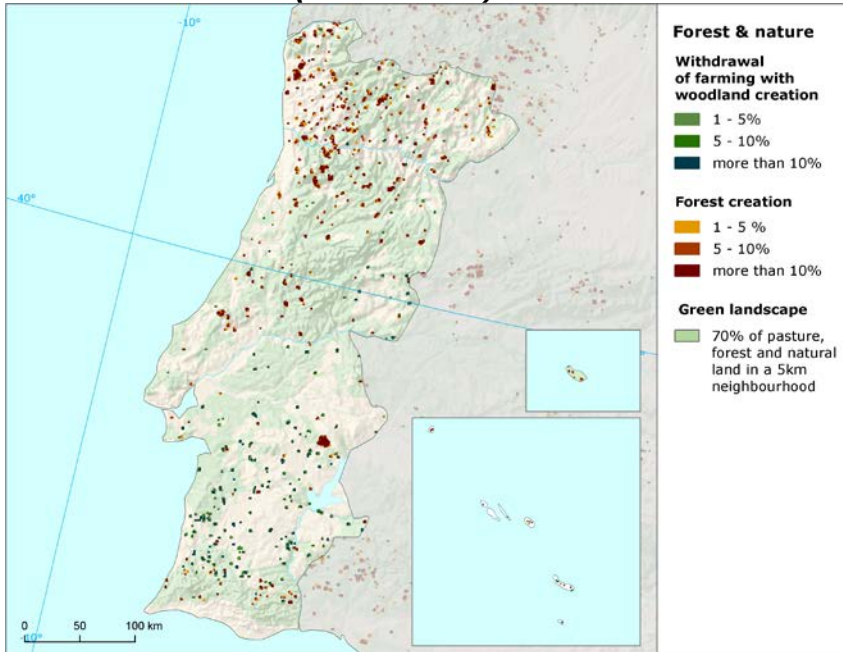
4.13. Development of agricultural areas 2006-2012 – detailed balance [ha]



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

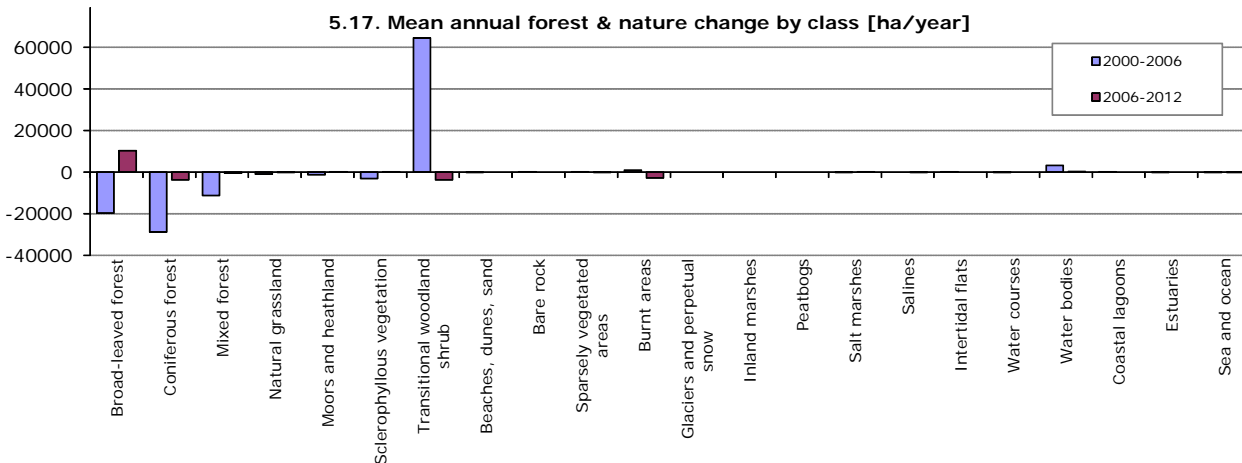
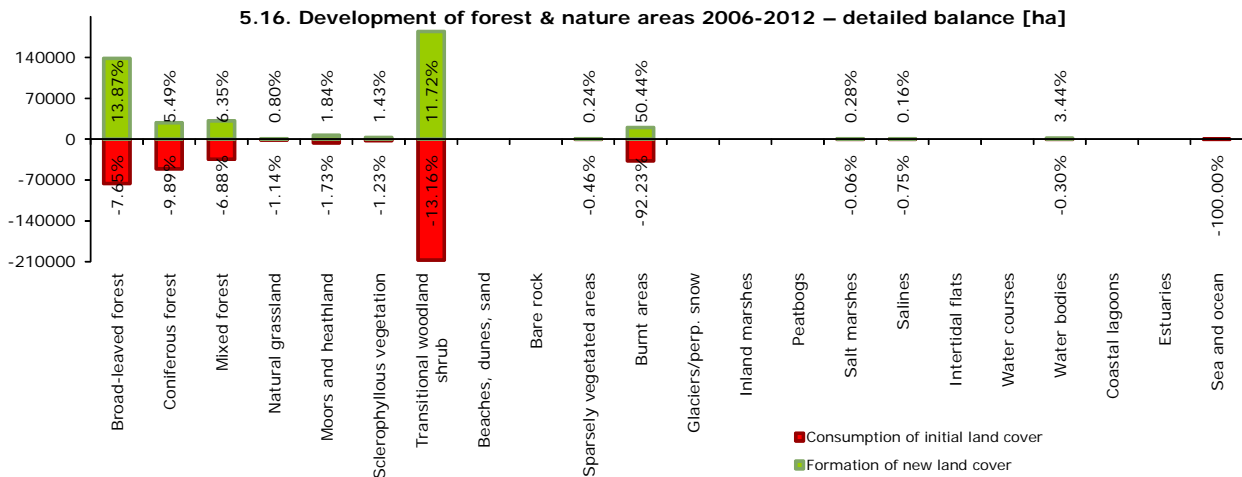


Forest & nature (2006-2012)



Internal forest conversions, recovery of burnt areas

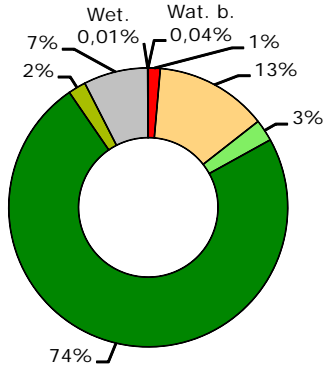
The main drivers of natural land development in Portugal, as well as of the landscape exchange in the country in general, are the internal forest conversions. After a culmination in the previous period 2000-2006, their intensity shows decreasing trend currently, however, they still remain by far the most extensive land cover flow in the country. Concerning their direction, the conversion from transitional woodland to forest is more frequent, which is opposite trend compared to both previous periods. The other extensive flow in Portuguese natural landscape is a transition of burnt areas into natural land cover – they are covered by transitional woodland and shrubs, moors and heathlands or sclerophyllous vegetation. On the other hand, there were also observed some cases of forest and shrub fires in the period 2006-2012; in particular in the northern part of the country, however, their extent was smaller than in the previous period.



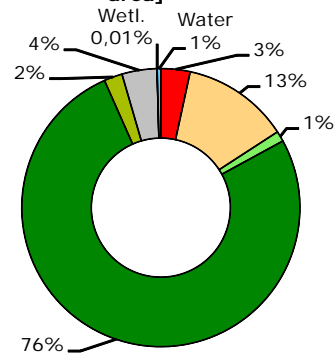
Annex: Land cover flows and trends

Land cover flows 2006-2012

6.18. Consumption of land cover 2006-2012 [% of total change area]

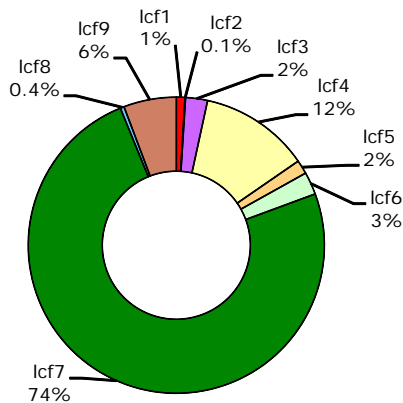


6.19. Formation of land cover 2006-2012 [% of total change area]



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

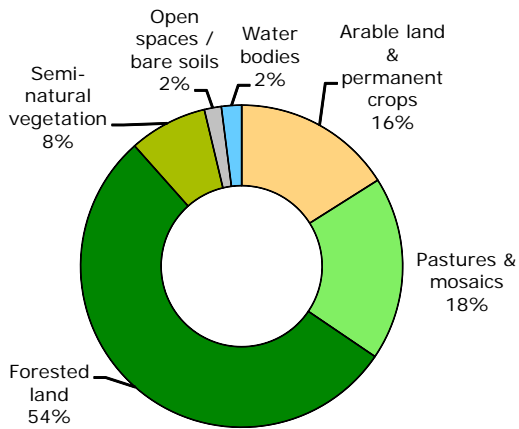
6.20. Drivers of change (LC FLOWS) 2006-2012 [% of total change area]



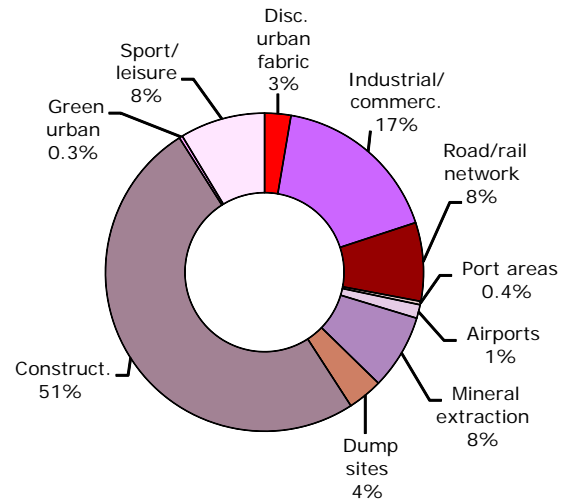
- Icf1 Urban land management
- Icf2 Urban residential sprawl
- Icf3 Sprawl of economic sites and infrastructures
- Icf4 Agriculture internal conversions
- Icf5 Conversion from forested & natural land to agriculture
- Icf6 Withdrawal of farming
- Icf7 Forests creation and management
- Icf8 Water bodies creation and management
- Icf9 Changes due to natural and multiple causes

Artificial areas

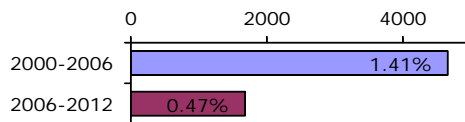
7.21. Consumption by artificial land take 2006-2012 [% of total]



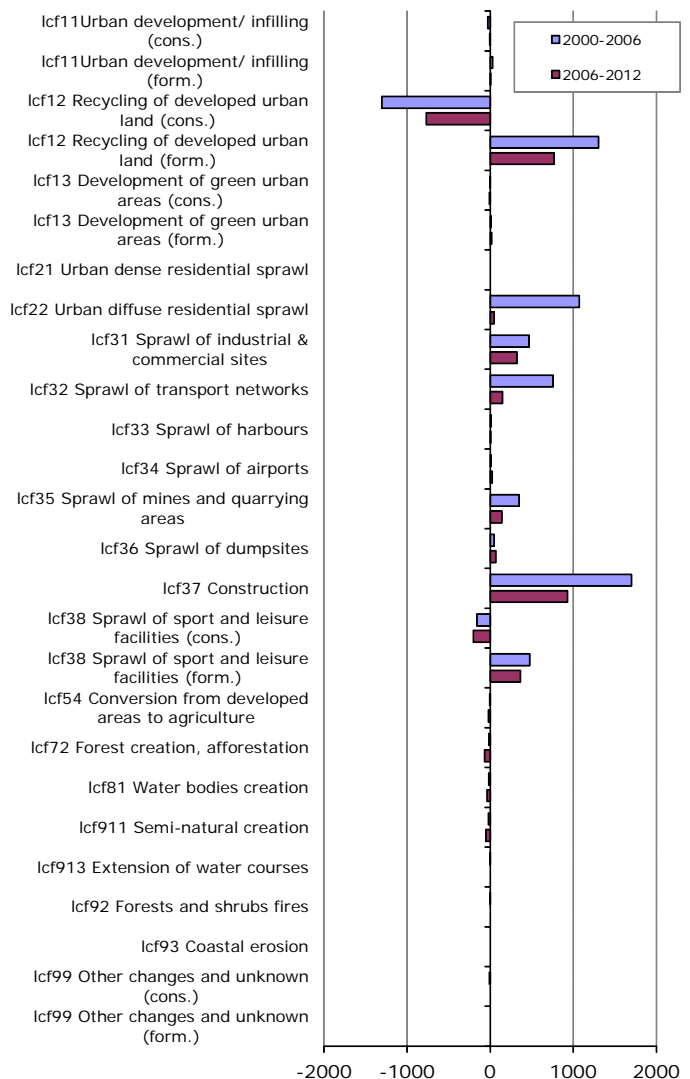
7.22. Formation by artificial land take 2006-2012 [% of total]



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

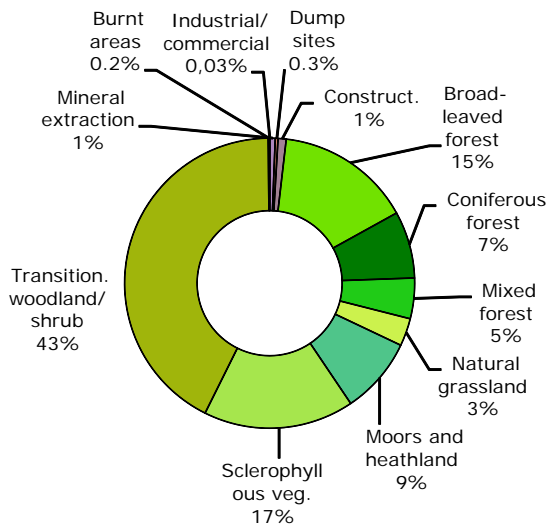


7.24. Artificial development by change drivers (LC FLOWS) [ha/year]

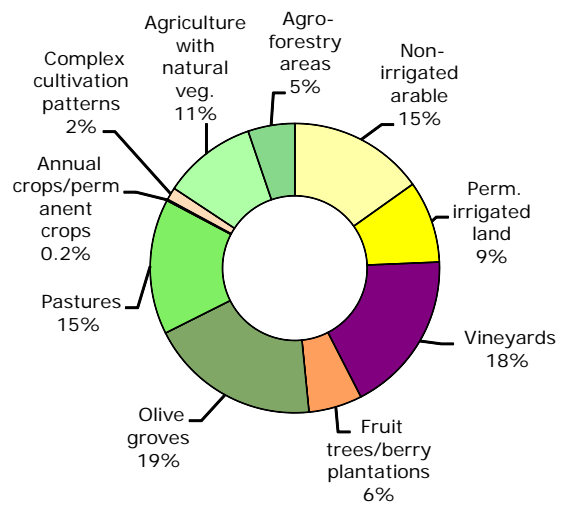


Agriculture

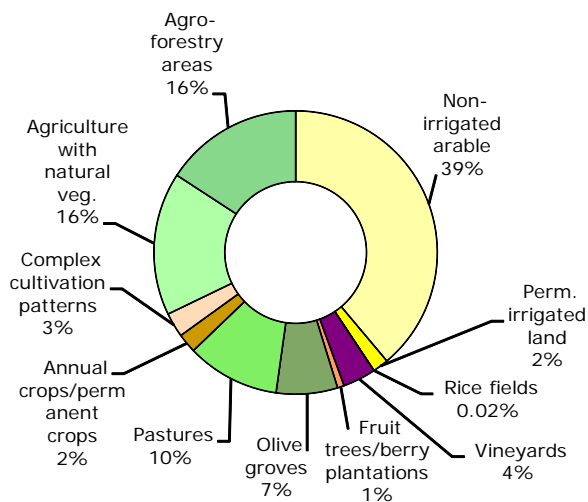
8.25. LC consumed by agriculture 2006-2012 [% of total]



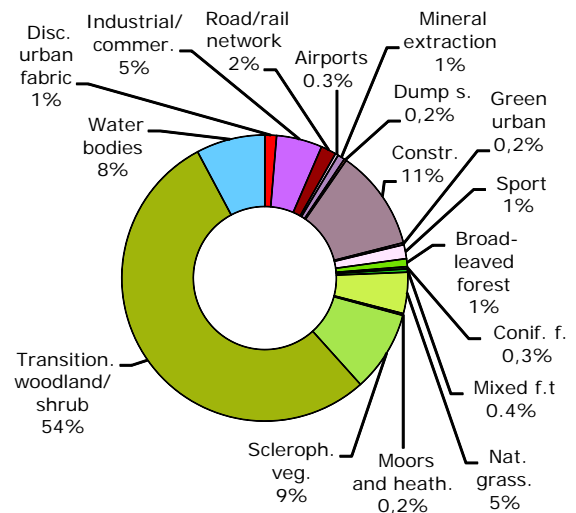
8.26. Formation of agricultural land from non-agriculture 2006-2012 [% of total]



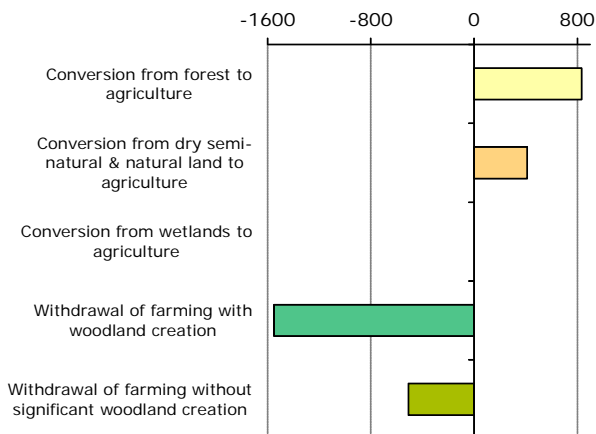
8.27. Consumption of agricultural land by non-agriculture 2006-2012 [% of total]



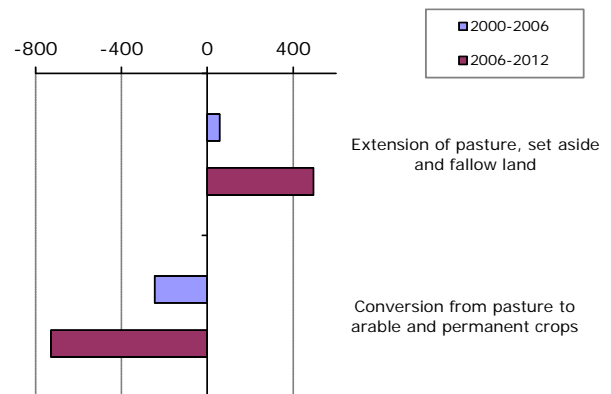
8.28. Formation of non-agricultural land from agriculture 2006-2012 [% of total]



8.29. Main annual conversions between agriculture and forests & semi-natural land 2006-2012 [ha/year]

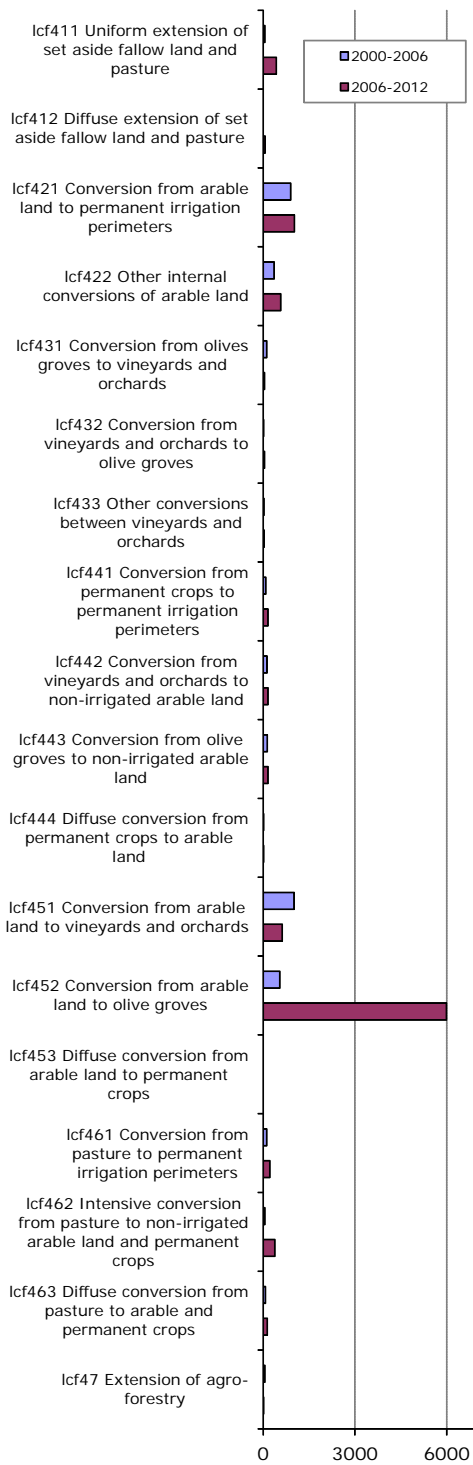


8.30. Mean annual conversion between arable land and pasture [ha/year]

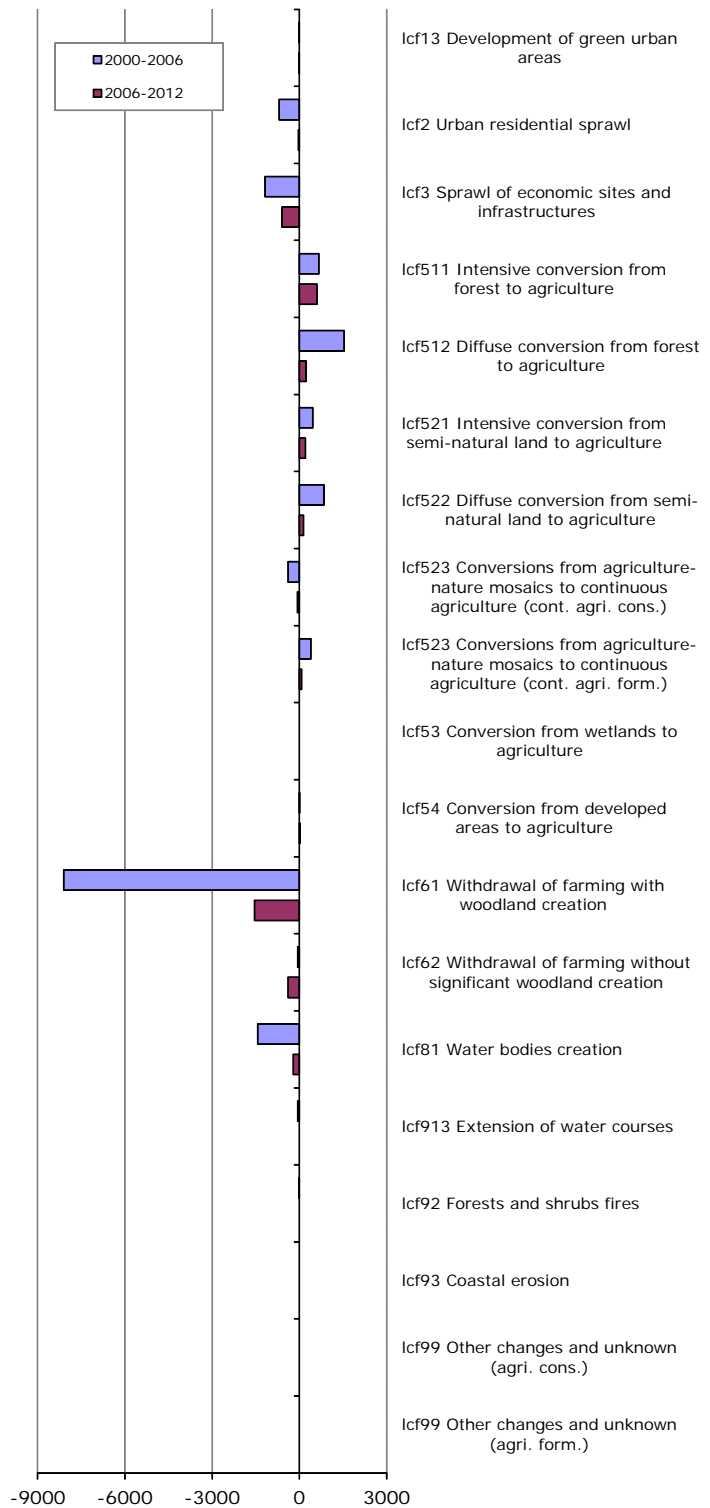


Portugal

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

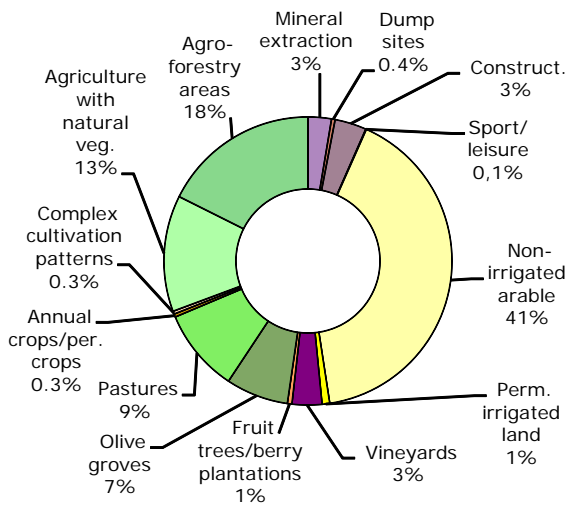


9.32. Mean annual conversions between agriculture and other LC types [ha/year]

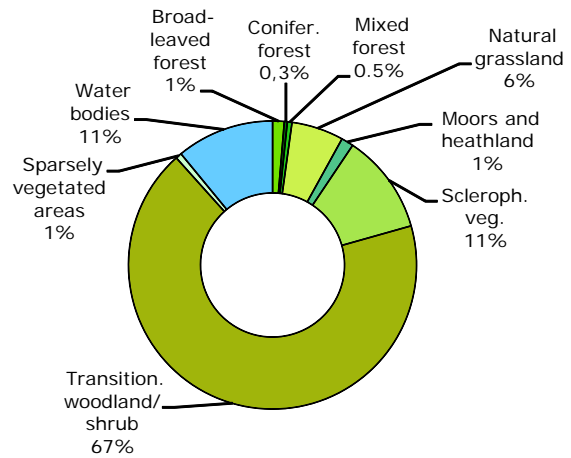


Forest & nature

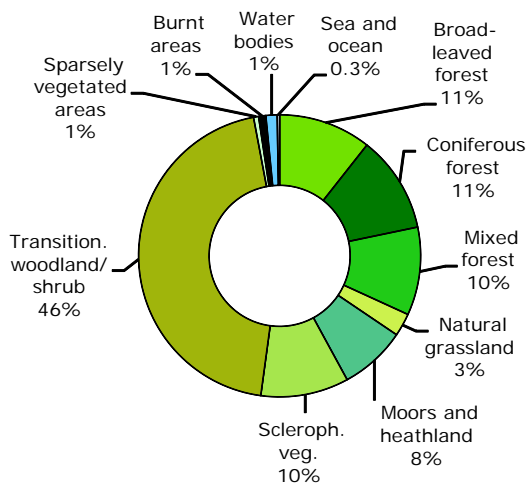
10.33. LC consumed by forest & nature 2006-2012 [% of total]



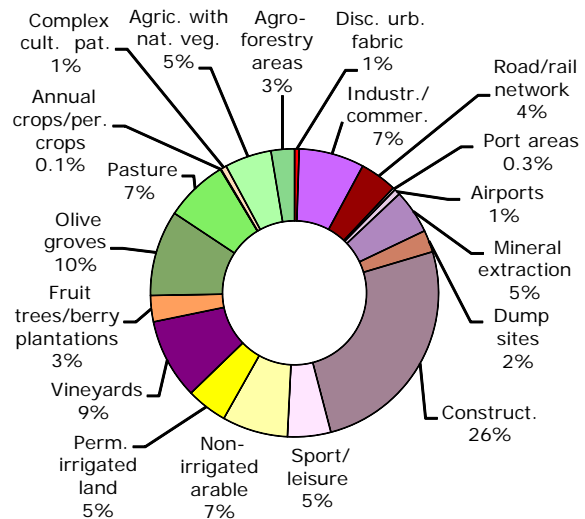
10.34. Formation of forest & nature land from non-forest /nature 2006-2012 [% of total]



10.35. Consumption of forest & nature land by non-forest/nature 2006-2012 [% of total]

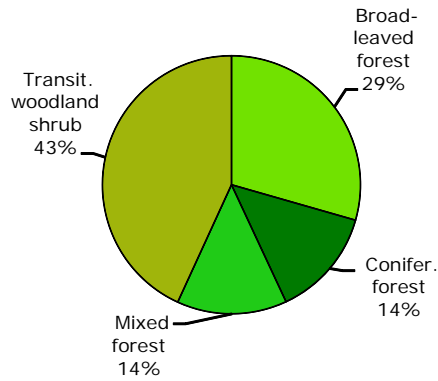


10.36. Formation of non-forest/nature land from forest & nature 2006-2012 [% of total]

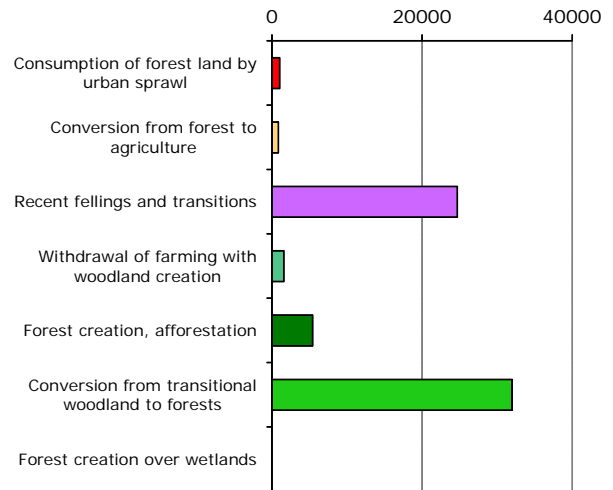


Portugal

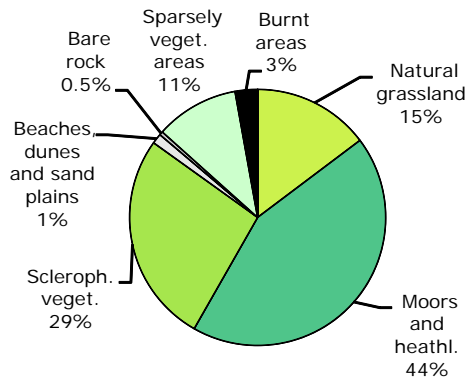
10.37. Forested land 2012
[% of total area]



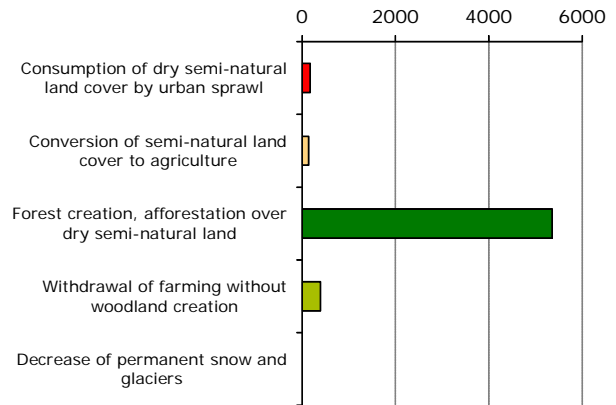
10.38. Main trends in woodland & forests consumption/formation 2006-2012
[ha/year]



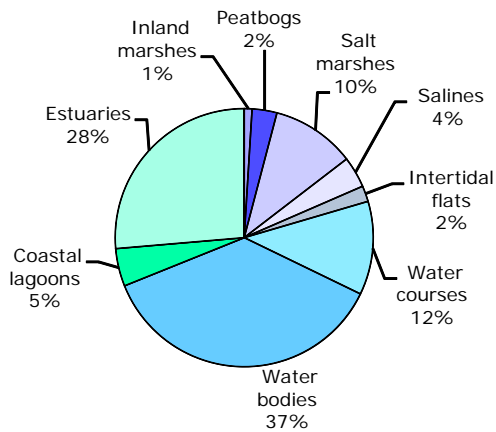
11.39. Dry semi-natural areas 2012
[% of total area]



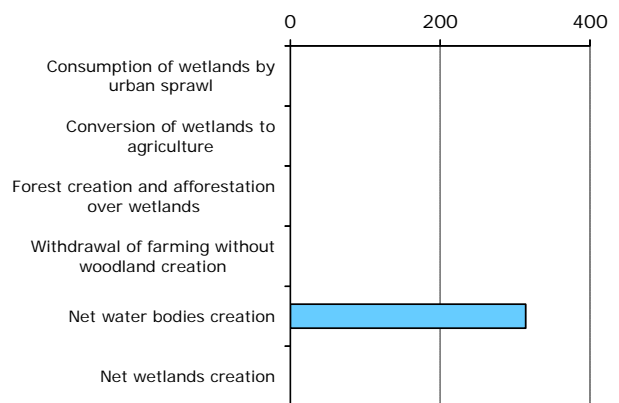
11.40. Main trends in dry semi-natural land consumption/formation 2006-2012
[ha/year]



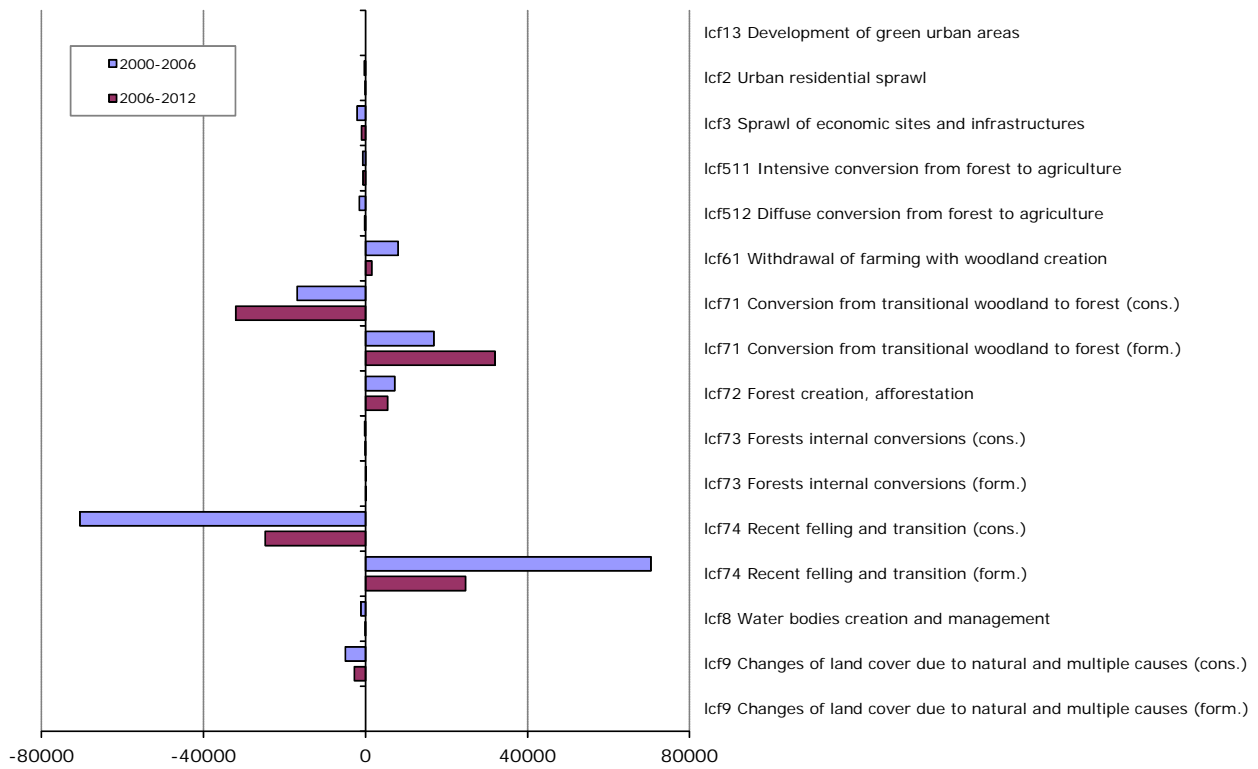
11.41. Wetlands & water 2012
[% of total area]



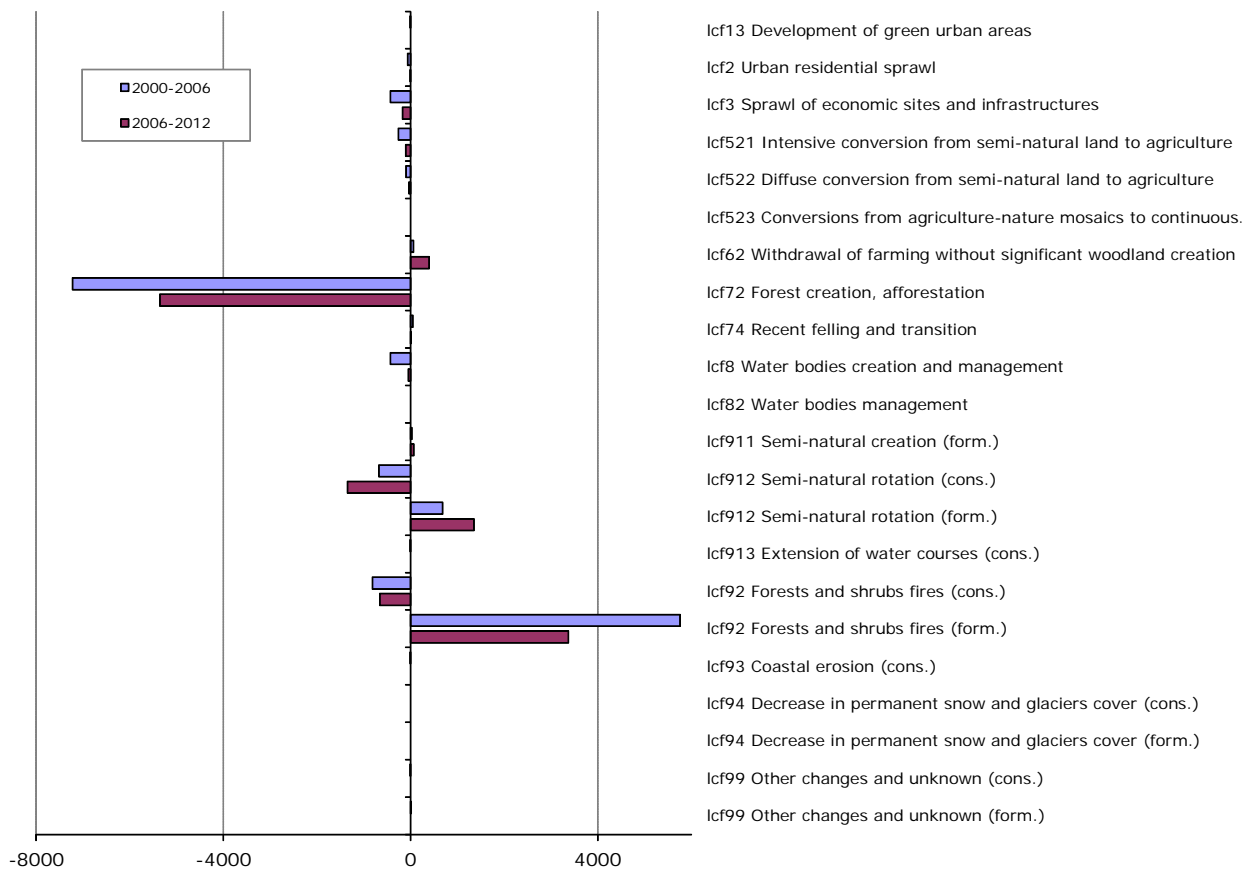
11.42. Main trends in wetlands & water consumption/formation 2006-2012
[ha/year]



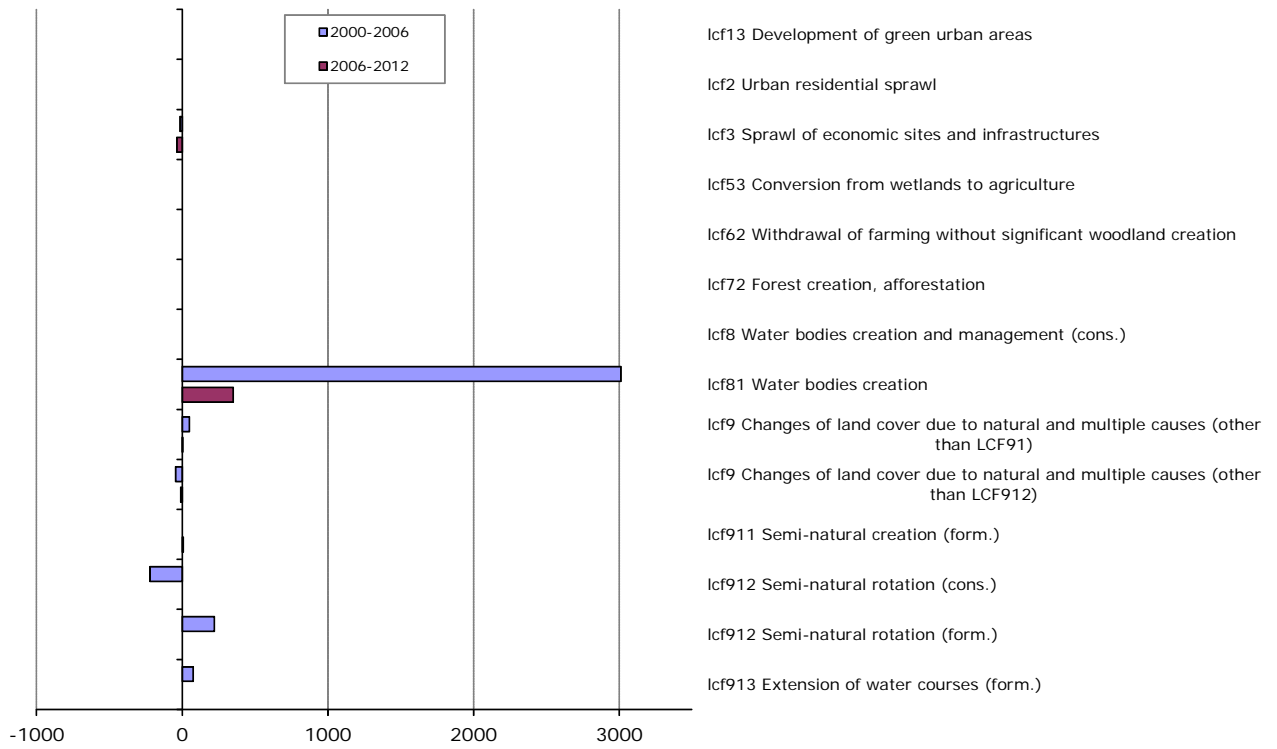
11.43. Mean annual conversions of forest & other woodland [ha/year]



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

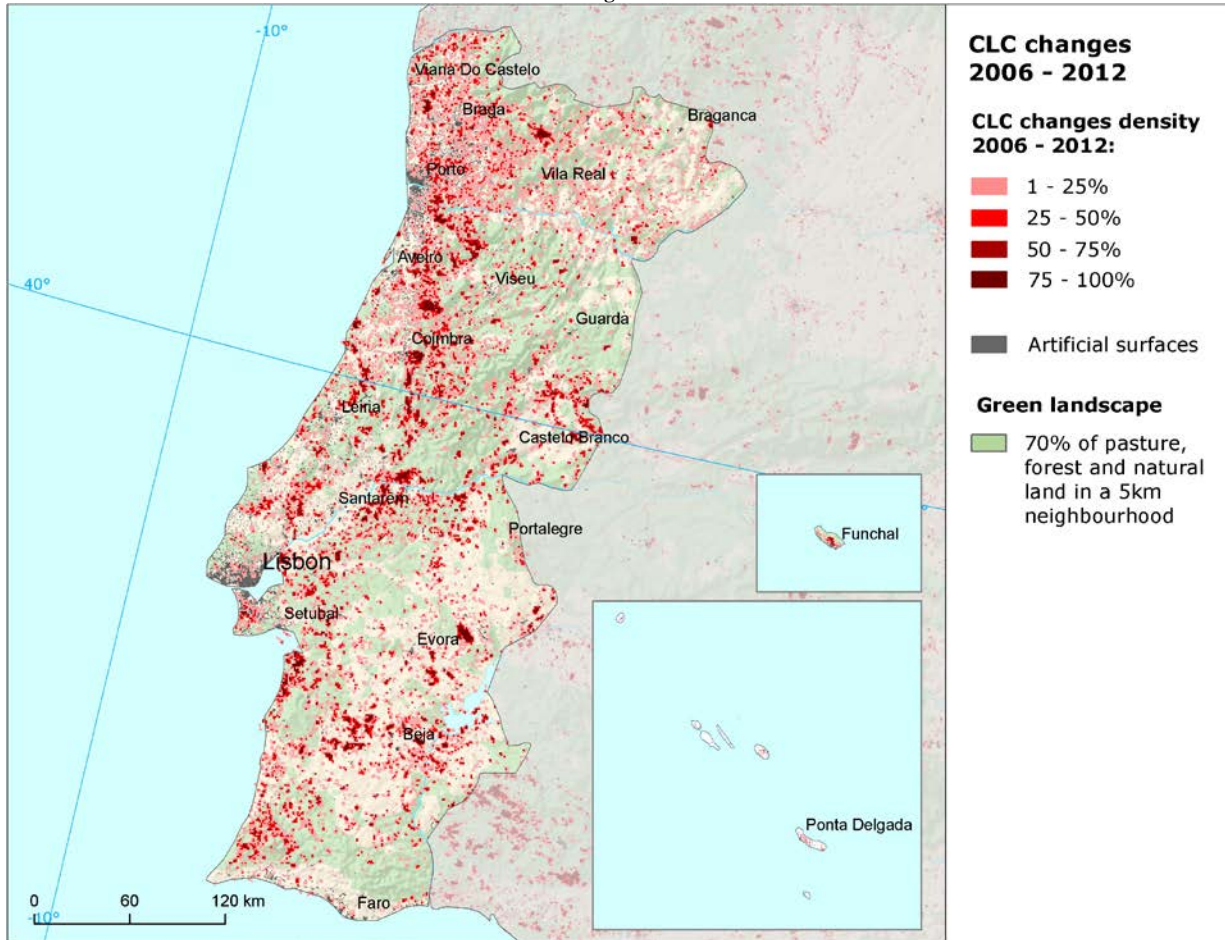


12.45. Mean annual conversions of wetlands and water LC [ha/year]

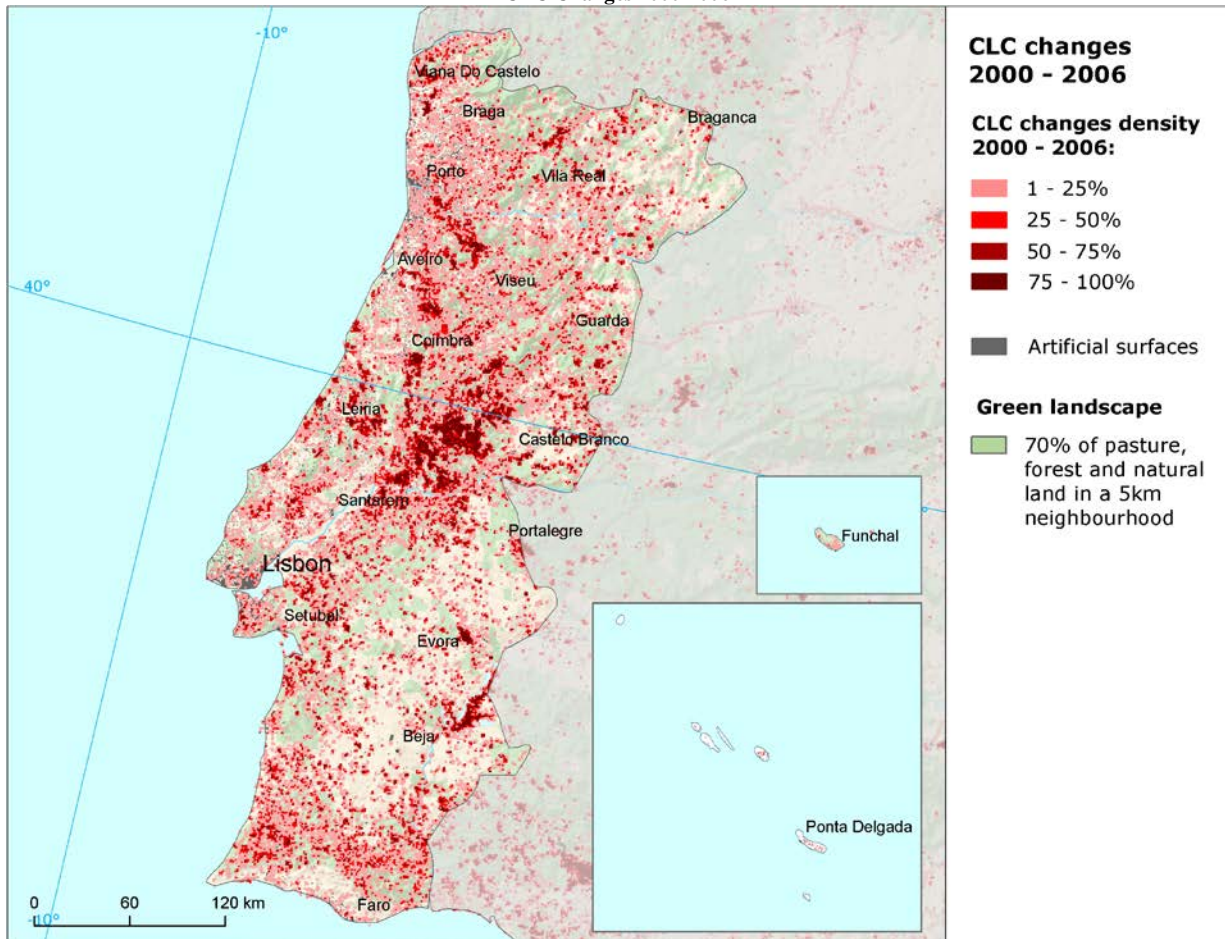


Portugal

CLC Changes 2006-2012

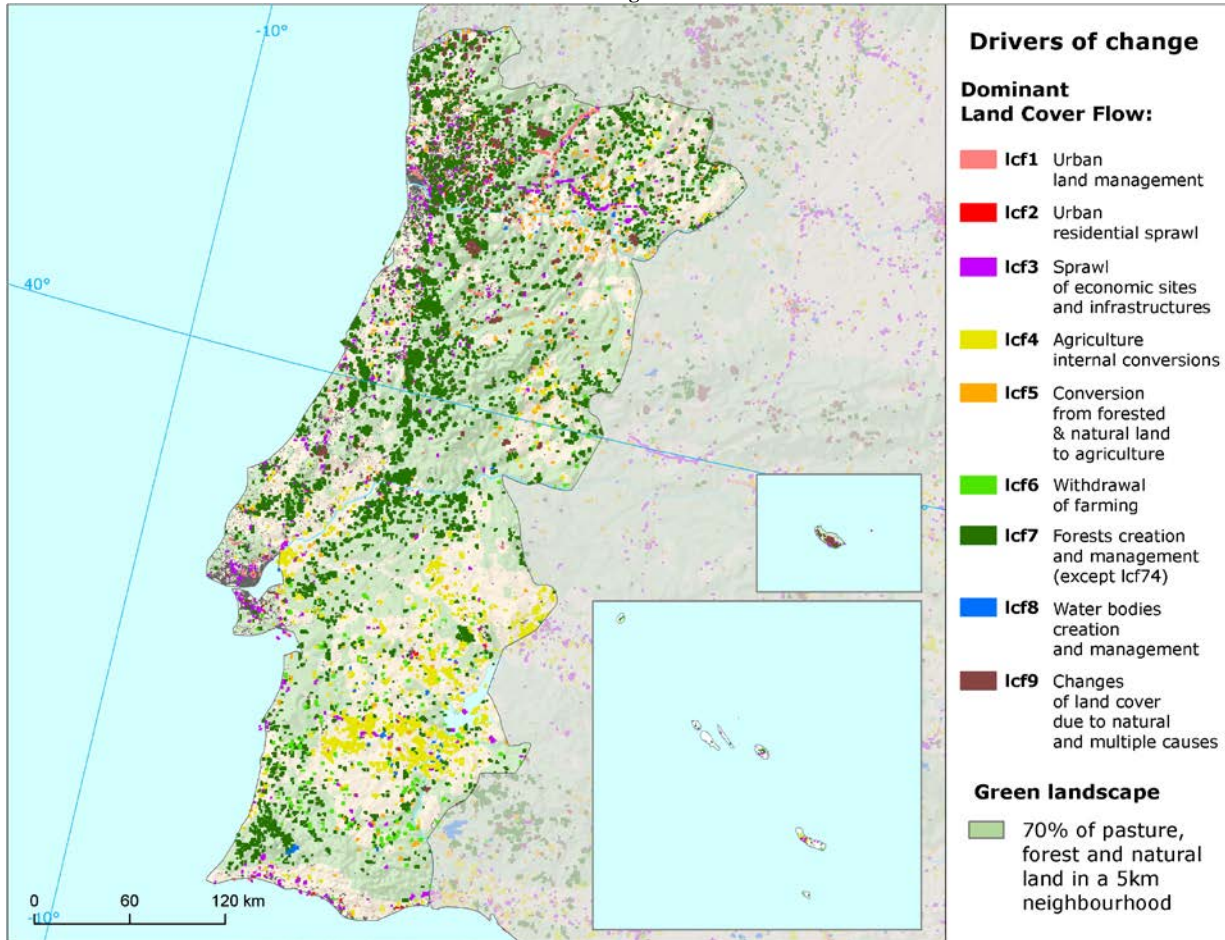


CLC Changes 2000-2006

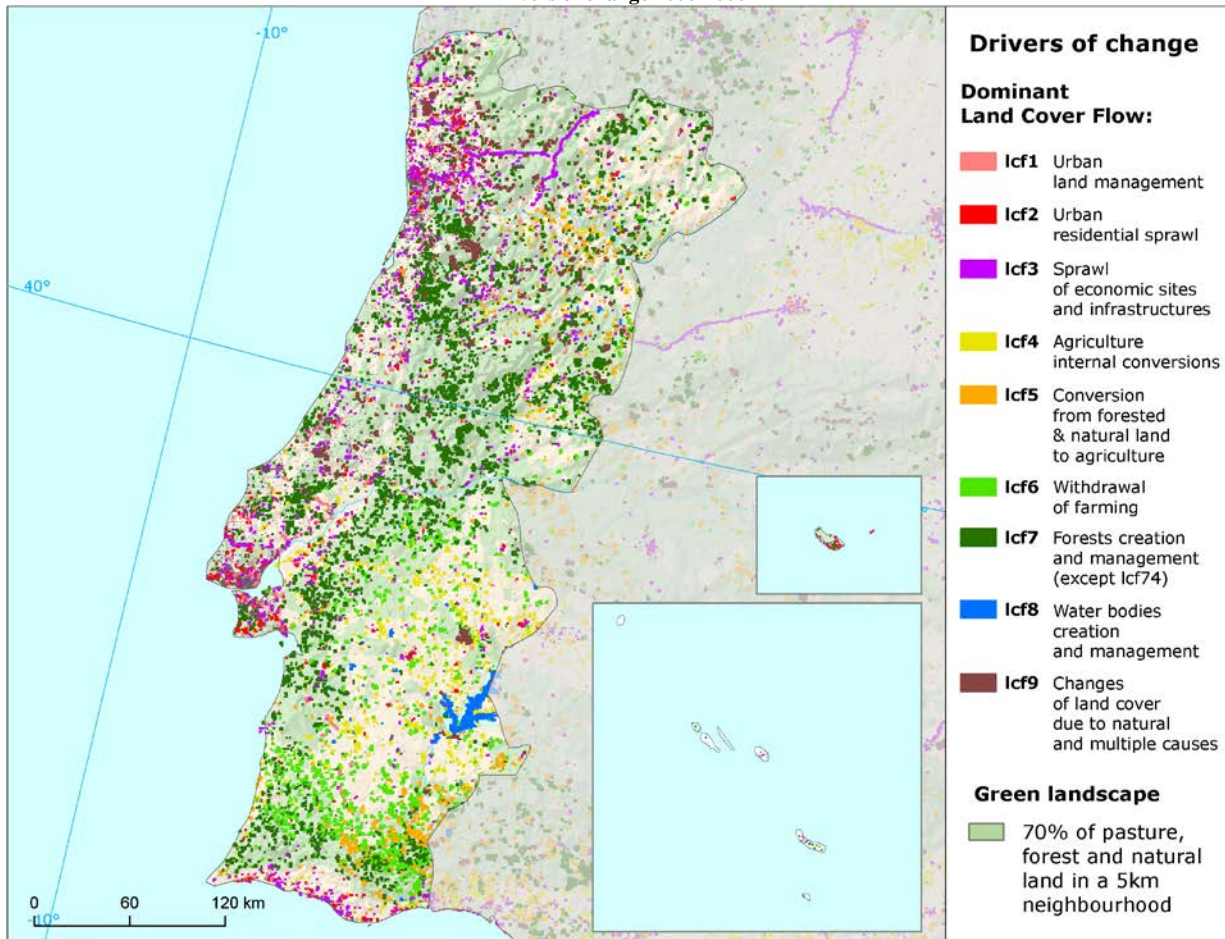


Portugal

Drivers of change 2006-2012

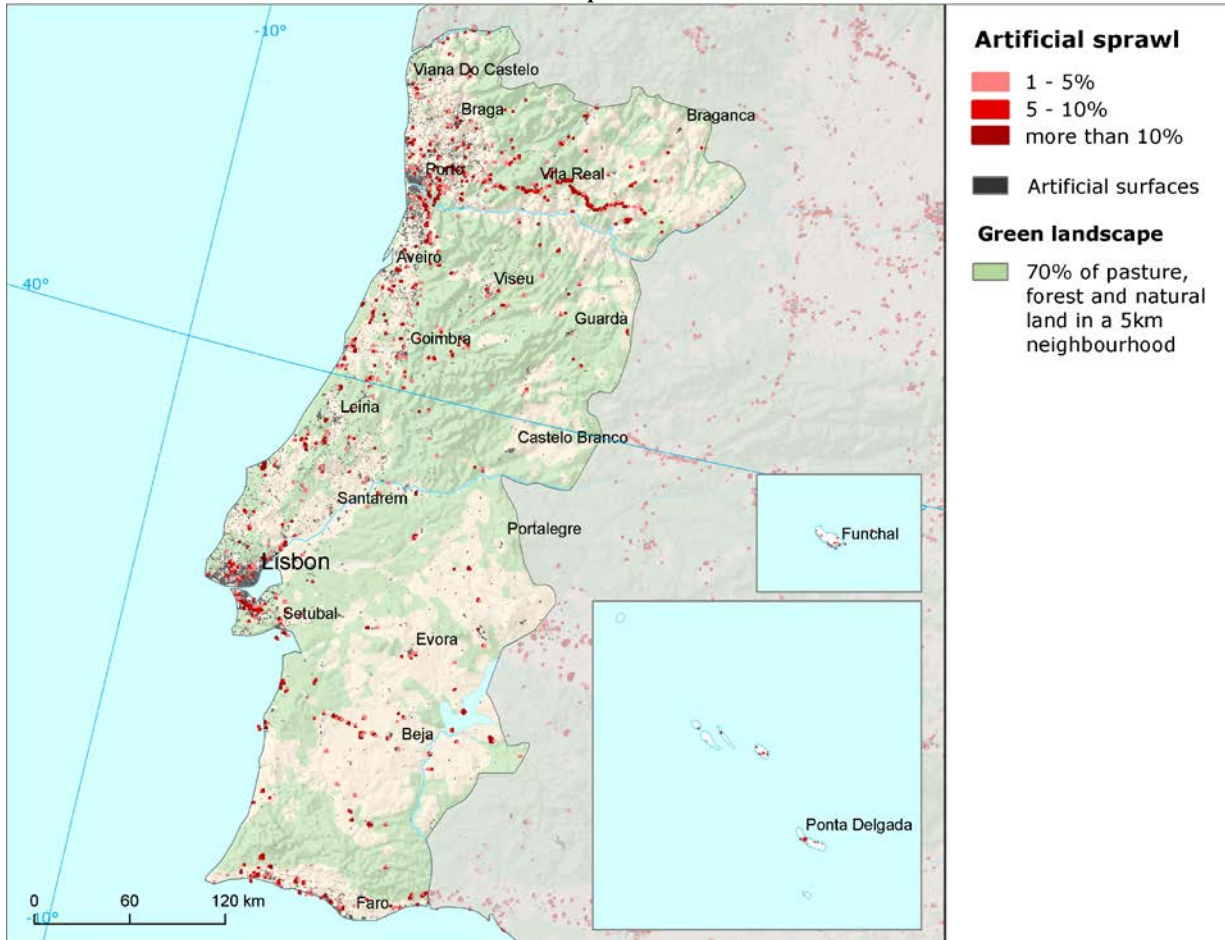


Drivers of change 2000-2006

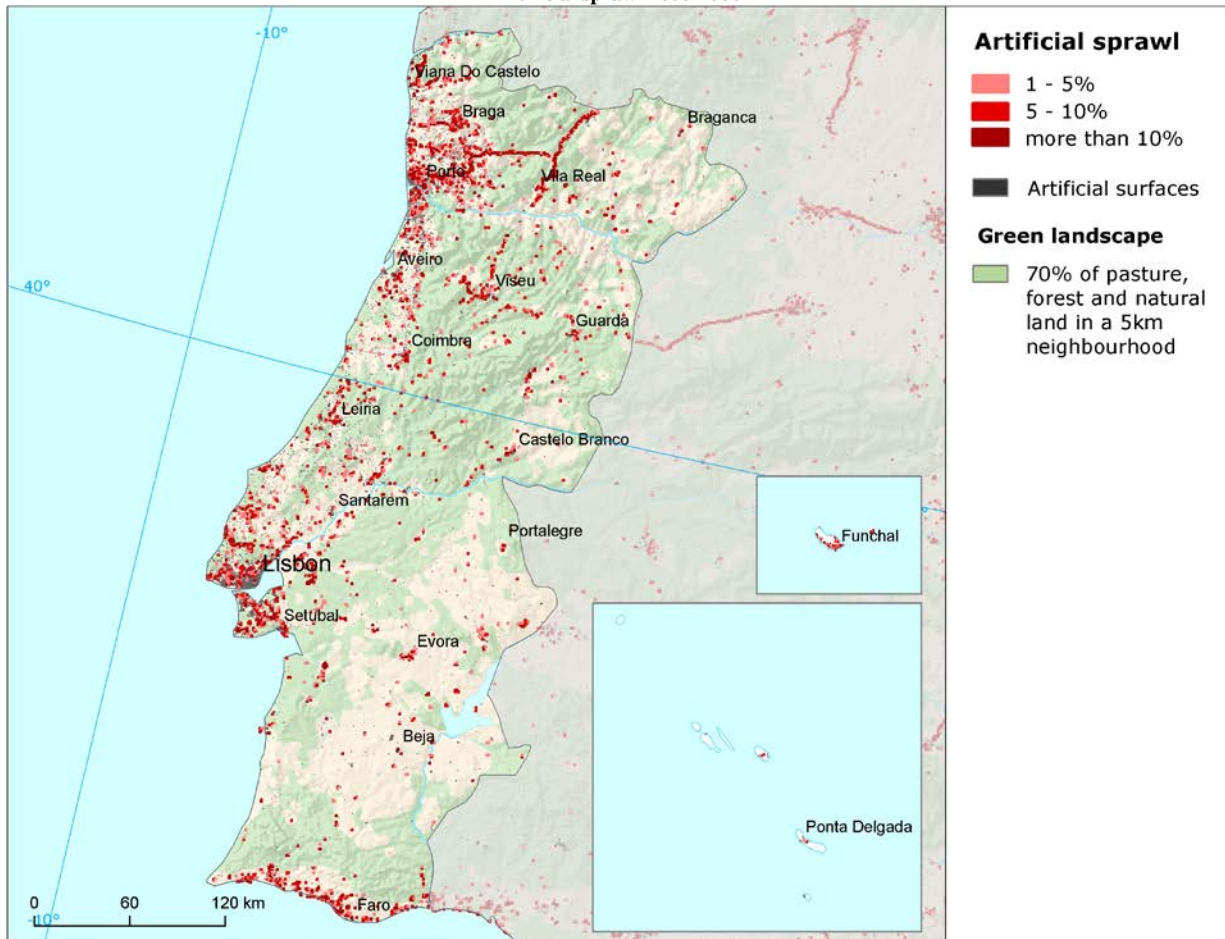


Portugal

Artificial sprawl 2006-2012

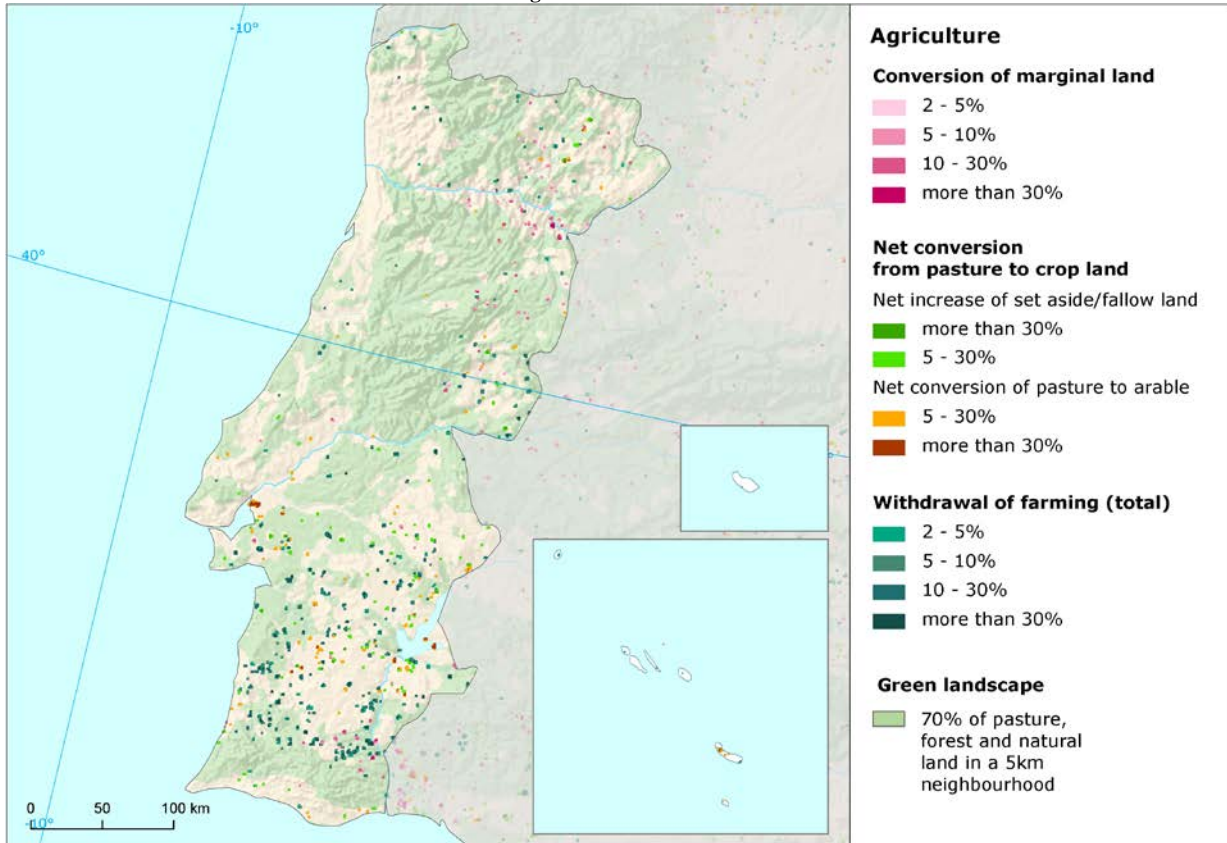


Artificial sprawl 2000-2006

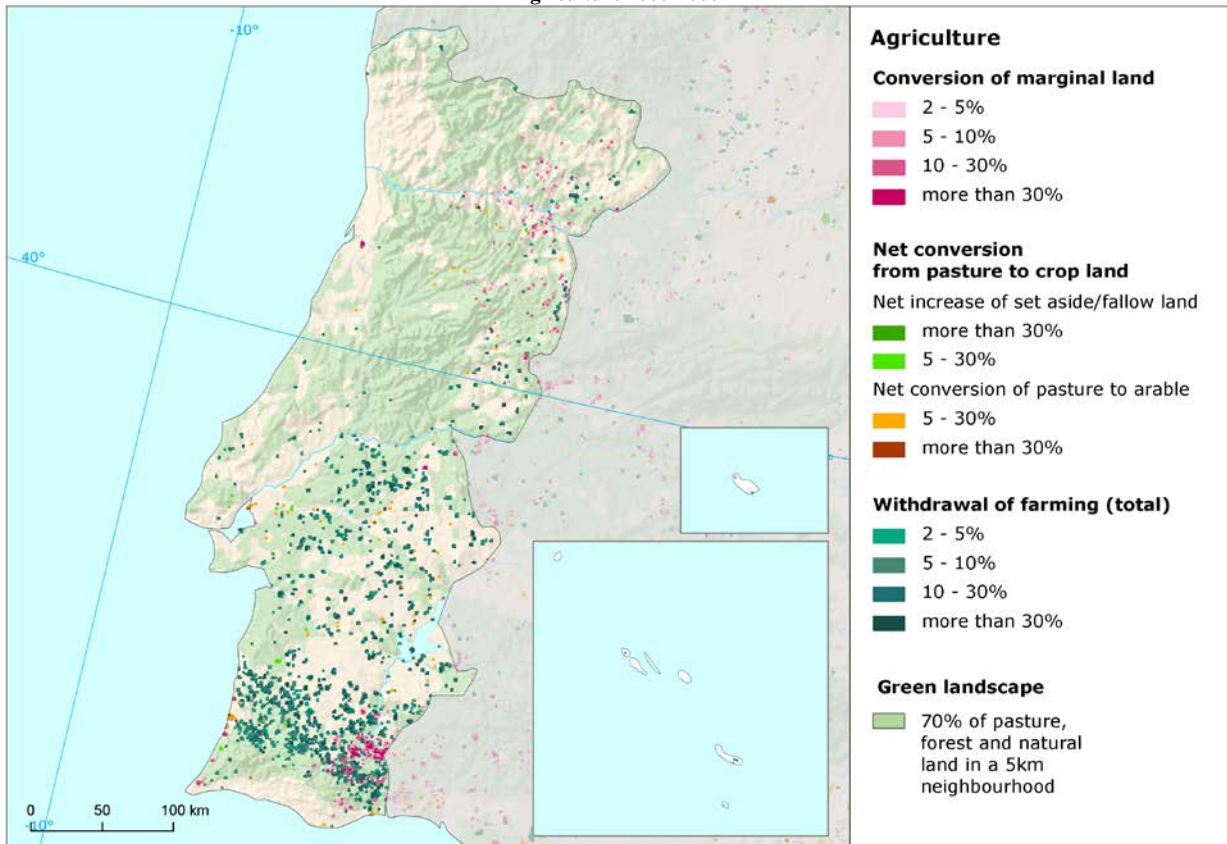


Portugal

Agriculture 2006-2012

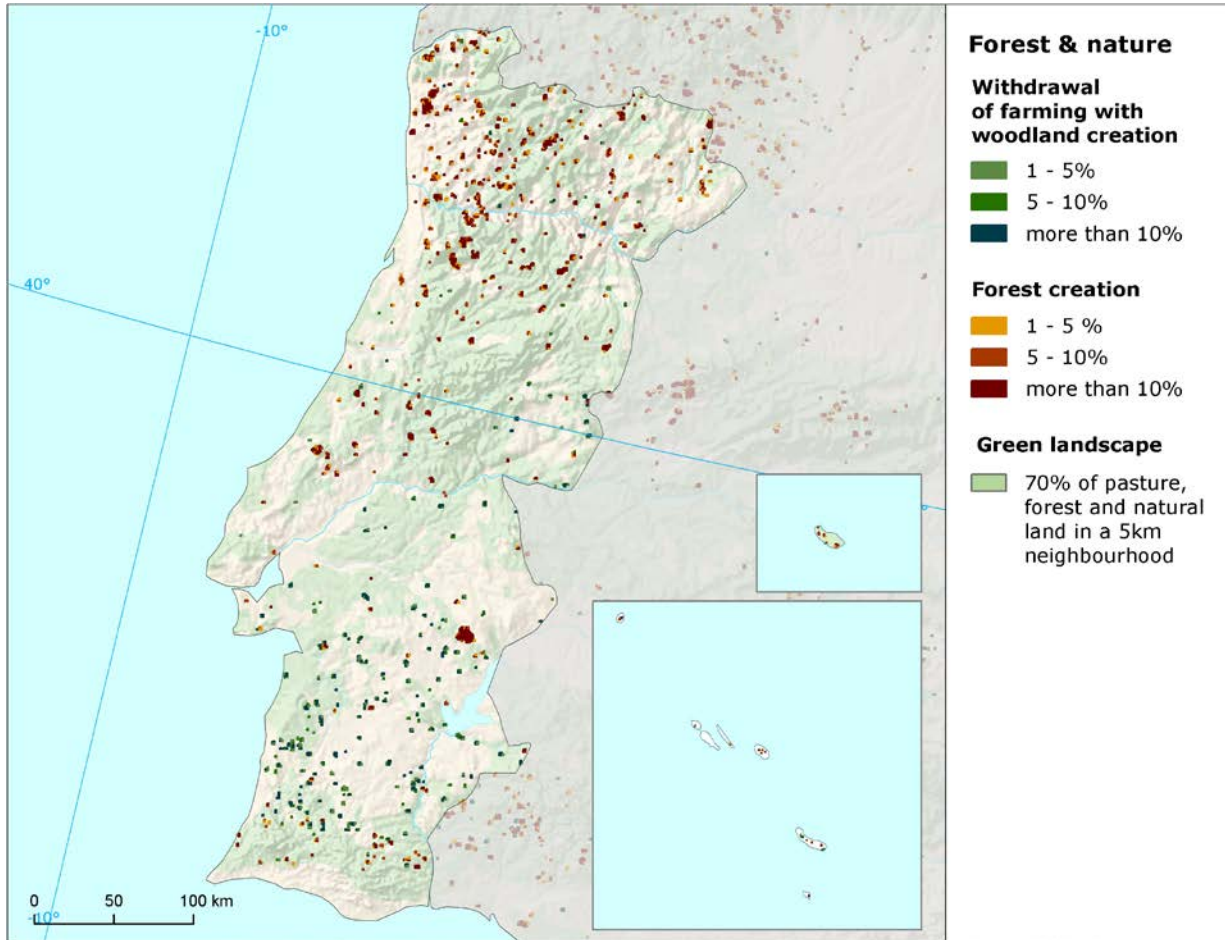


Agriculture 2000-2006



Portugal

Forest and nature 2006-2012



Forest and nature 2000-2006

