

# Land cover 2012



**Spain** 

September 2017

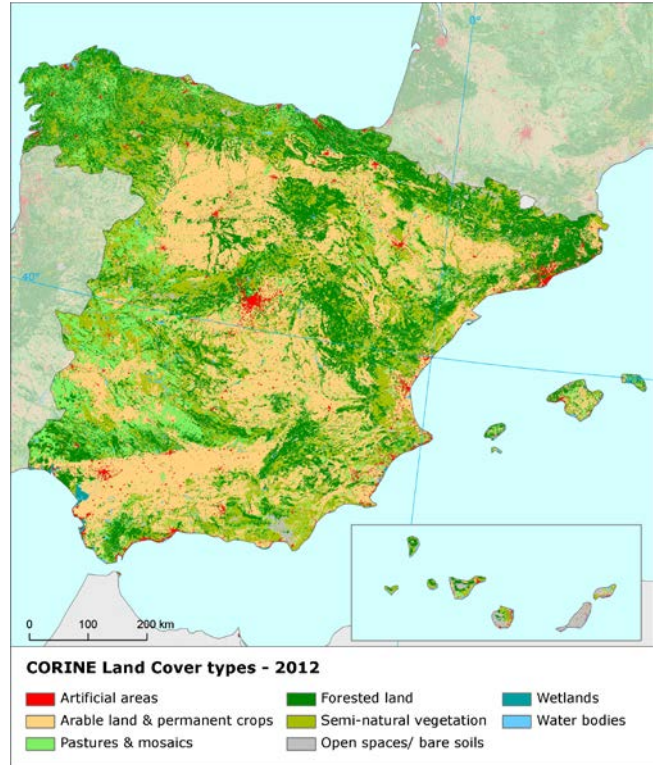
Photo: © Toni García, My City/EEA



## Land cover 2012

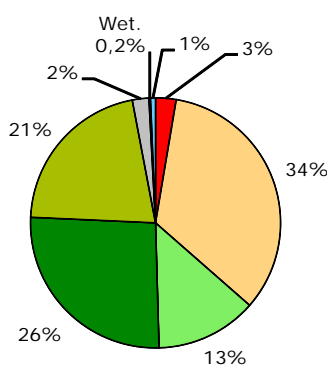
### Overview of land cover & change 2006-2012

The overall annual land cover change rate in Spain is 0,22%, which is just around the European average. The pace of landscape development has significantly decreased, compared with the previous period, which was characterized by a mean annual change rate of 0,33%. This decrease is distributed equally among all main land cover flows in the country – all of them showing significant decrease of intensity. The structure of land cover change is very similar to the previous period, with forest creation and management, agriculture internal conversions and sprawl of economic site infrastructures remaining the major drivers of change. Spain is a typical case for very intensive artificial sprawl, in particular extension of economic sites and infrastructures. Despite its significant decrease (caused by finalization of highway construction), compared to previous period, the annual land take rate - 1,47% - is still the highest in Europe. Also geographically, the pattern of change in Spain is very similar to the previous period – with major concentrations of sprawl around all major cities and also along the eastern coastline. Forest conversions are located mostly in the northern, northwest and southwest parts of Spain. There are three major differences – first, highway construction, which was very intensive in the Spanish inland in the period 2000-2006, has been finished. Second, there occurred a huge concentration of internal agricultural conversions located southeast from Madrid, which, to some extent, substituted the scattered internal agriculture conversions, which were observed in the period 2000-2006 in southern Spain. Thirdly, the conversions from forested and natural land to agriculture, which were very frequent in the southwest part of the country in the previous period, have almost disappeared.

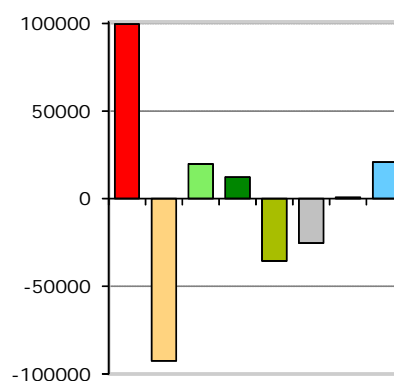


Note: The results presented here are based on a change analysis of 44 land cover types mapped consistently on a 1:100.000 scale across Europe over more than decade between 2000-2006-2012 - see Corine land cover (CLC) programme for details. The accounts for Azores and Madeira are not included into this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

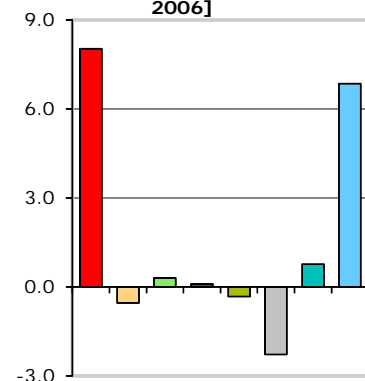
1.1. Land cover 2012 [% of total]



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

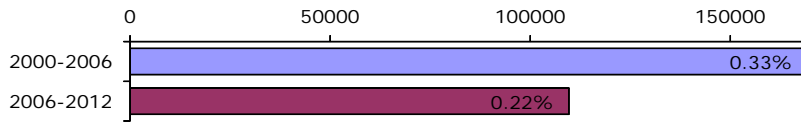
Summary balance table 2006-2012

	Artificial areas	Arable land & permanent crops	Pastures & mosaics	Forested land	Semi-natural vegetation	Open spaces/ bare soils	Wetlands	Water bodies	TOTAL [hundreds ha]
<b>Land cover 2006</b>	<b>12414</b>	<b>171859</b>	<b>66074</b>	<b>132140</b>	<b>108064</b>	<b>11095</b>	<b>993</b>	<b>3049</b>	<b>505687</b>
Consumption of initial LC	515.9	2320.7	439.7	1824.9	859.2	608.0	1.7	12.6	6583
Formation of new LC	1512.1	1394.7	638.4	1948.1	503.3	355.4	9.3	221.3	6583
<b>Net Formation of LC</b>	<b>996.3</b>	<b>-926.1</b>	<b>198.7</b>	<b>123.2</b>	<b>-355.9</b>	<b>-252.5</b>	<b>7.6</b>	<b>208.7</b>	<b>0</b>
Net formation as % of initial year	8.0	-0.5	0.3	0.1	-0.3	-2.3	0.8	6.8	
<b>Total turnover of LC</b>	<b>2028.0</b>	<b>3715.4</b>	<b>1078.2</b>	<b>3773.0</b>	<b>1362.5</b>	<b>963.4</b>	<b>11.0</b>	<b>233.9</b>	<b>13165</b>
Total turnover as % of initial year	16.3	2.2	1.6	2.9	1.3	8.7	1.1	7.7	2.6
<b>Land cover 2012</b>	<b>13410</b>	<b>170933</b>	<b>66272</b>	<b>132263</b>	<b>107708</b>	<b>10843</b>	<b>1001</b>	<b>3257</b>	<b>505687</b>

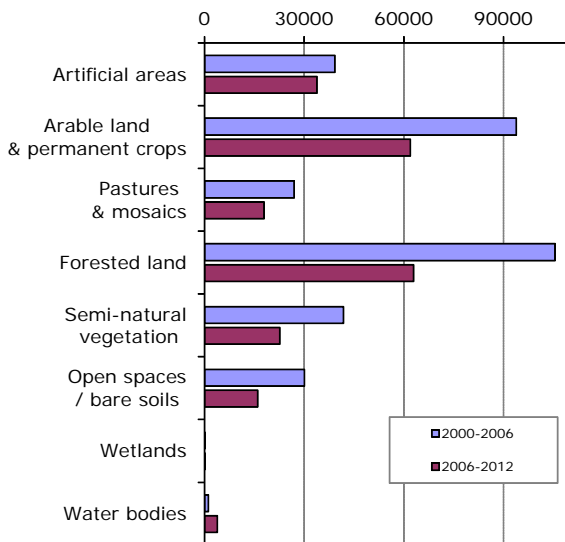
# Spain

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

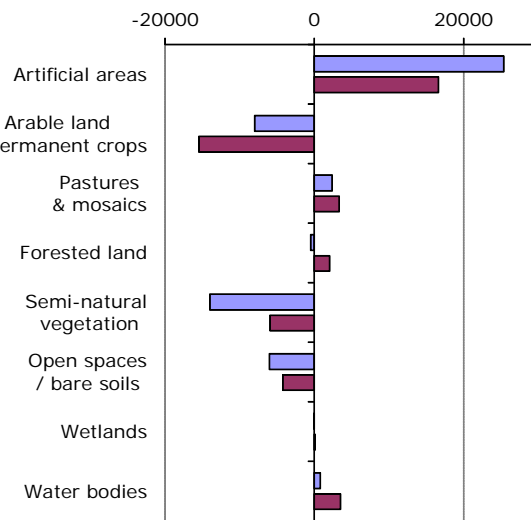
2.4. Annual land cover change  
[ha/year, % of total area]



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

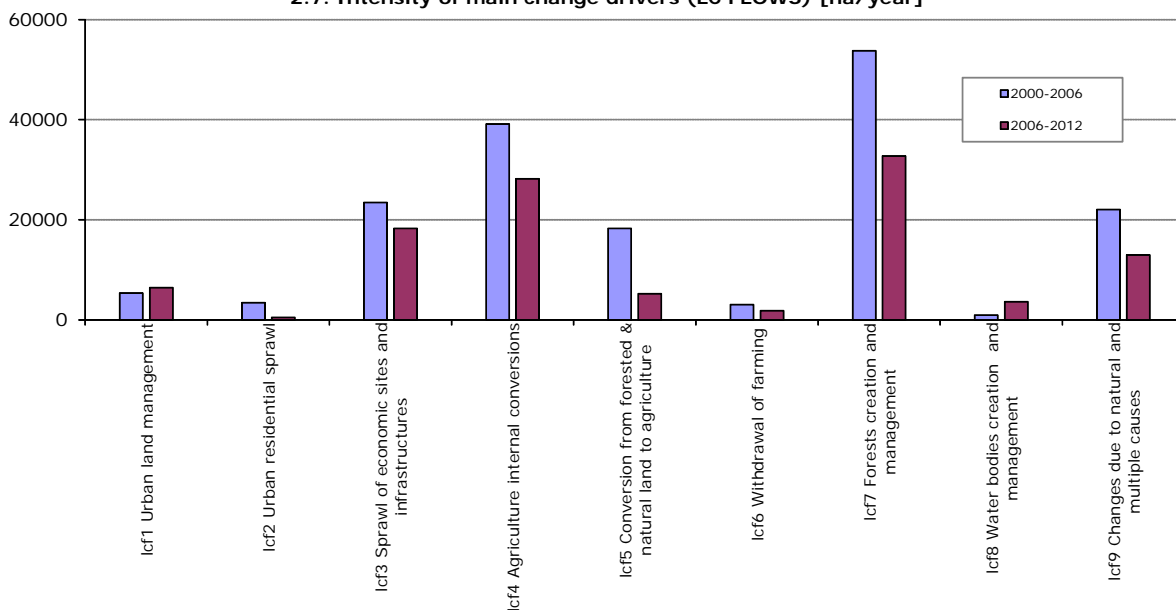


2.6. Net annual change of LC types [ha/year]

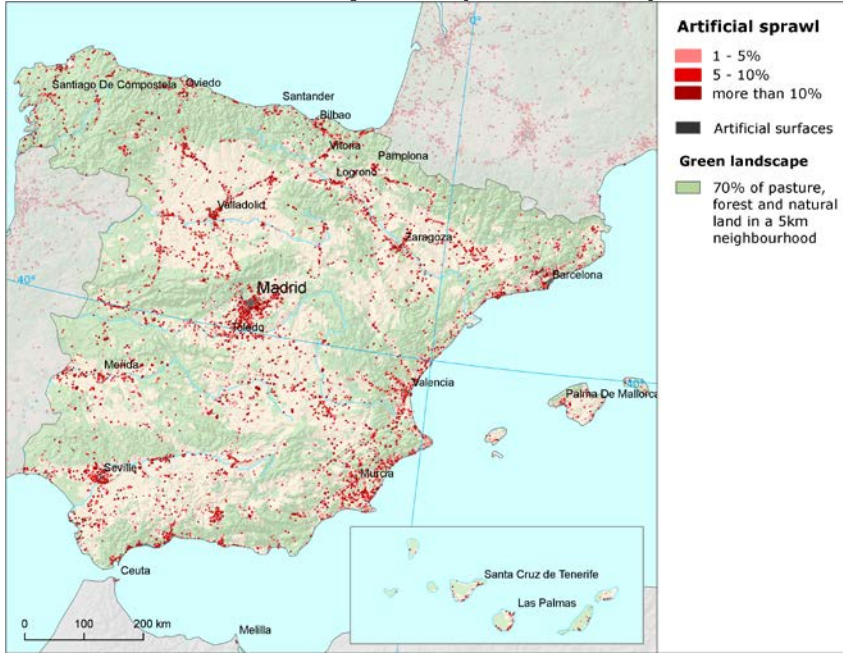


Summary trend figures		
	2000-2006	2006-2012
<b>Annual land cover change [ha/year]</b>	<b>169397</b>	<b>109710</b>
<b>Annual land cover change as % of initial year</b>	<b>0.33%</b>	<b>0.22%</b>
Land uptake by artificial development as mean annual change [ha/year]	26643	18298
Agricultural land uptake by urban and infrastructures development as mean annual change [ha/year]	19802	15570
Net uptake of forests and semi-natural land by agriculture as mean annual change [ha/year]	14827	2179
Net conversion from pasture to arable land and permanent crops as mean annual change [ha/year]	1147	-687
Forest & other woodland net formation as mean annual change [ha/year]	-506	2053
Dry semi-natural land cover net formation as mean annual change [ha/year]	-13833	-8988
Wetlands & water bodies net formation as mean annual change [ha/year]	749	3606

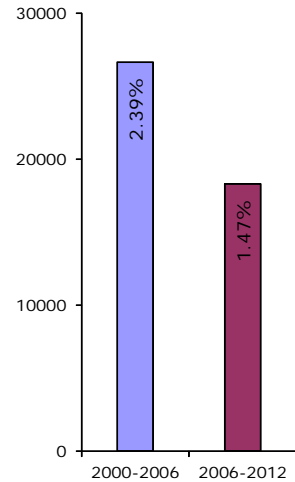
2.7. Intensity of main change drivers (LC FLOWS) [ha/year]



### Artificial surfaces sprawl (2006-2012)



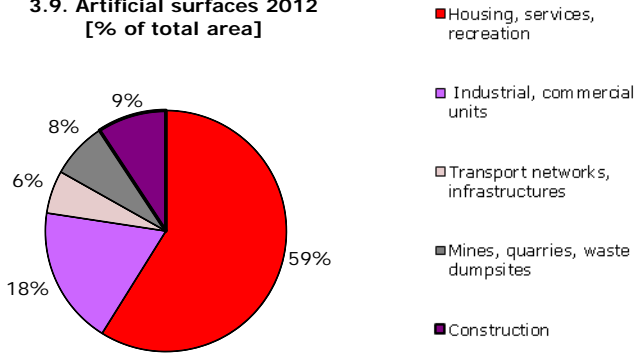
3.8. Artificial land take [ha/year, % of initial year]



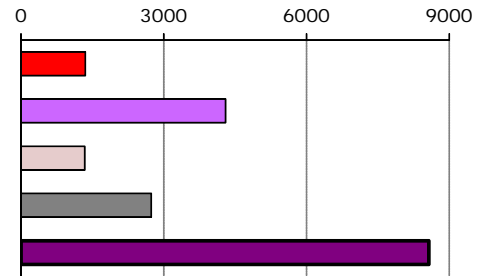
### Highway construction finished; sprawl driven by extension of commercial and industrial sites

As already highlighted, the artificial land take rate of Spain is the highest in Europe. It is still valid despite its significant decrease, compared to previous period – from 2,39% to 1,47% annually. This decrease is caused mostly by finalization of construction of highway networks inland, but also by significant decrease of the intensity of residential sprawl. On the other hand, the sprawl of commercial and industrial sites became significantly stronger in 2006-2012, comparing with the period 2000-2006. There is also significant amount of recycling of developed urban land in Spain, represented by the conversion of construction sites into residential or industrial and commercial areas. The spatial pattern of the artificial development is similar to the previous period, although the highway construction disappeared from the inland landscape. The major core of the artificial development is the capital city of Madrid – the surrounding areas are intensively consumed by sprawl – mainly arable land is taken by this development. The other major concentrations of sprawl are situated around Barcelona, Murcia, Valencia and Sevilla.

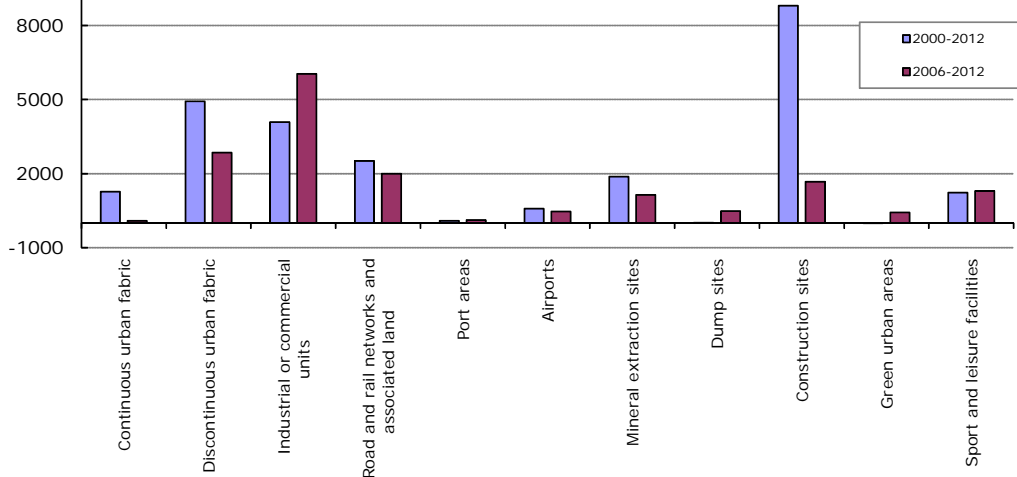
3.9. Artificial surfaces 2012 [% of total area]



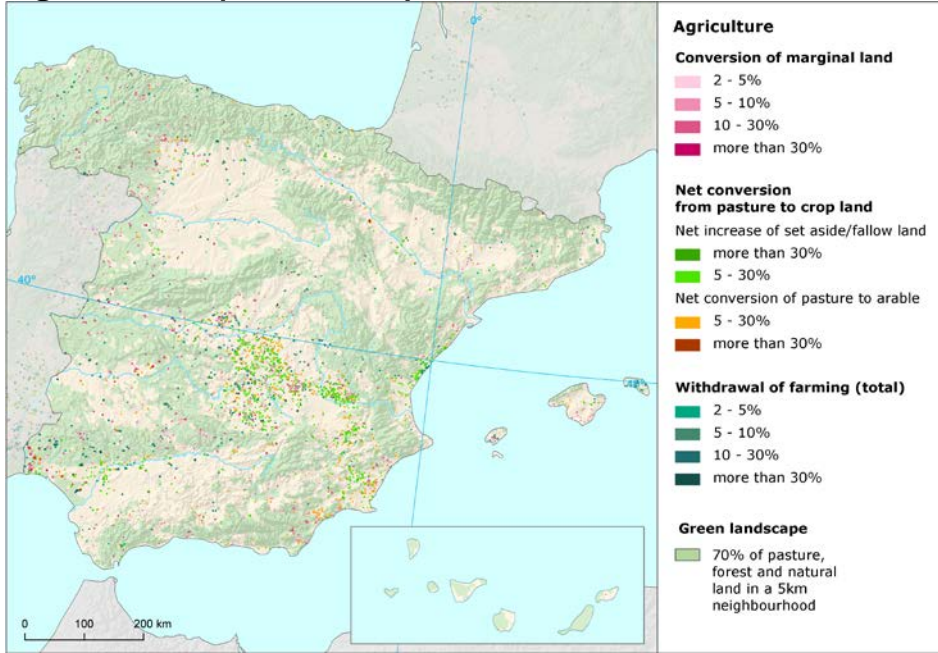
3.10. Artificial land take 2006-2012 [ha/year]



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



## Agriculture (2006-2012)

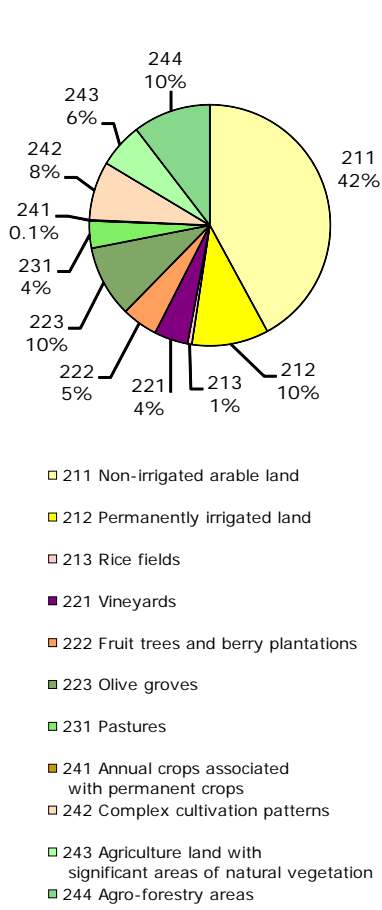


### Intensive conversions between arable and vineyards, orchards, olive groves and permanent crops

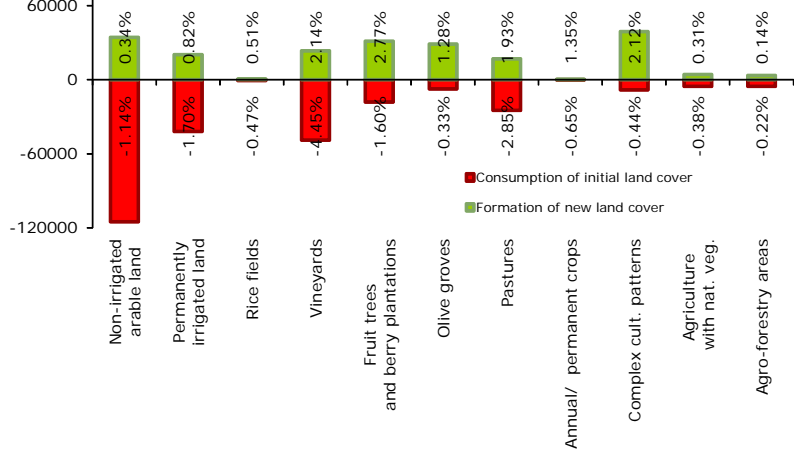
Despite their decreasing intensity, internal agriculture conversions are still the second major driver of change in the Spanish landscape. The most frequent internal agriculture flow is the conversion from arable land to vineyards and orchards. Beside it, arable land is also often converted to olive groves. However, both these flows are showing decreasing tendency, comparing with 2000-2006. Conversions from arable to permanent irrigation perimeters, which were very frequent in the previous period, almost disappeared from the landscape. On the other hand, there newly occurred frequent conversions to arable - from permanent crops or vineyards and orchards. These flows were almost not observed at all during the previous period.

From the exchange between arable and pasture land – which, however, is not so frequent in Spain as the above mentioned flows - extension of pasture set aside and fallow land occurs more often than the conversion from pasture to arable and permanent crops, which is the opposite trend comparing with previous period. From external flows, the consumption of land by urban sprawl is most frequent – on the other hand, conversions from natural land to agriculture lost most of their intensity in 2000-2006.

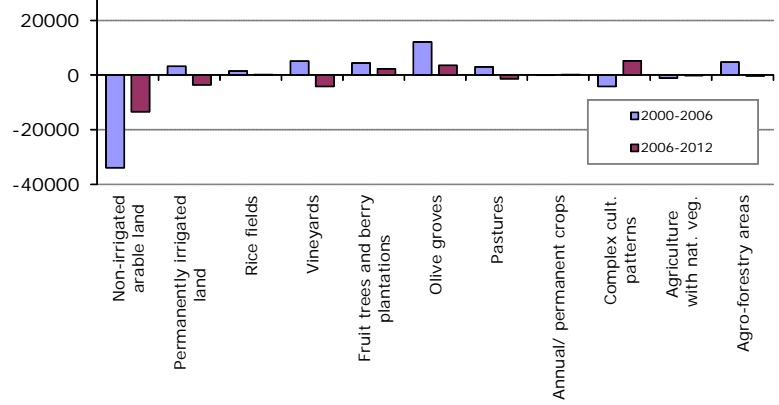
4.12. Agricultural areas 2012 [% of total area]



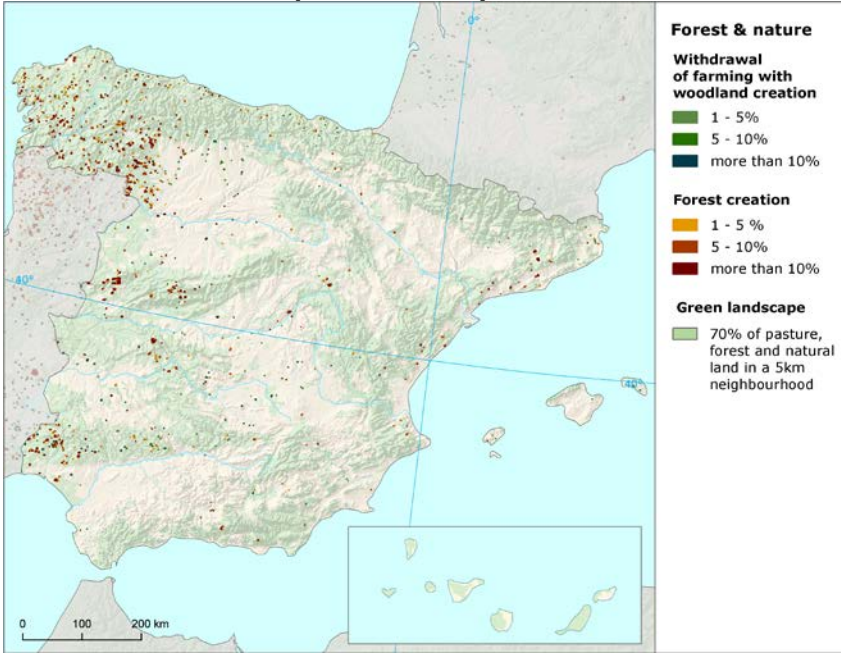
4.13. Development of agricultural areas 2006-2012 – detailed balance [ha]



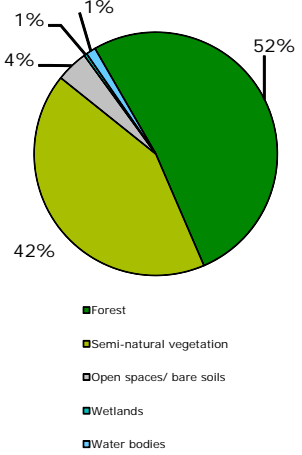
4.14. Mean annual agricultural change by class [ha/year]



**Forest & nature (2006-2012)**

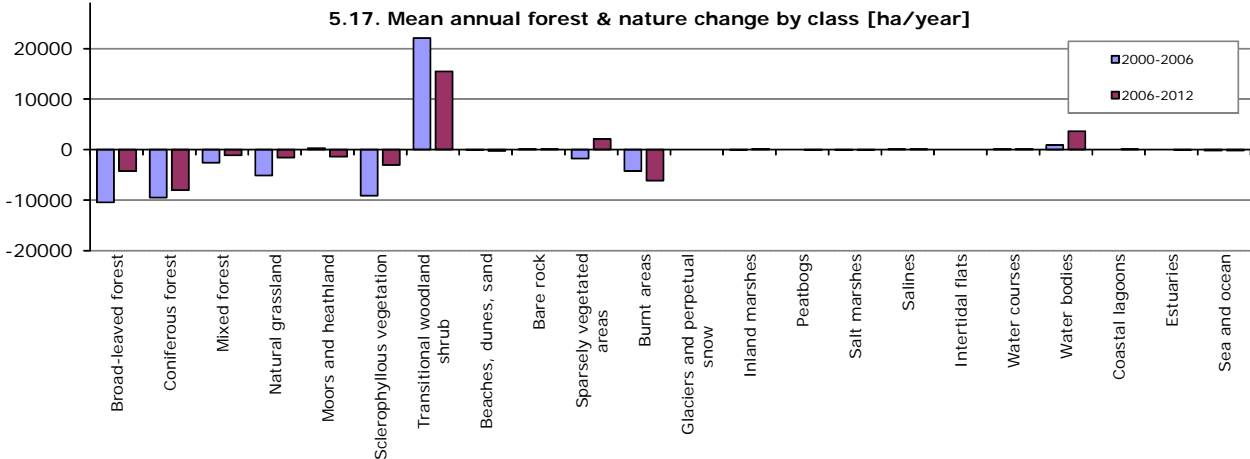
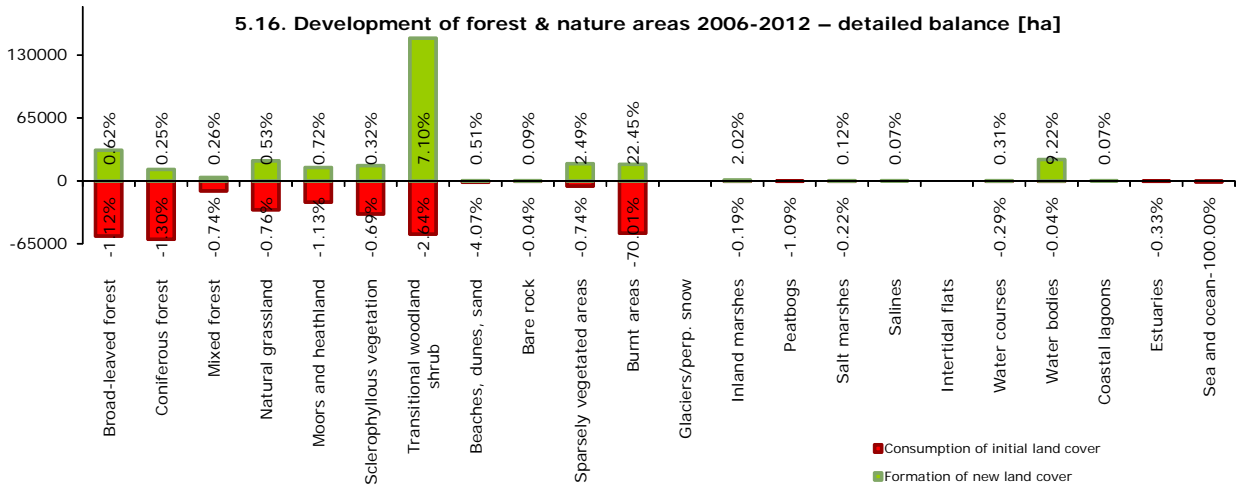


**5.15. Forest & nature areas 2012 [% of total area]**



**Afforestation still very frequent in Spain**

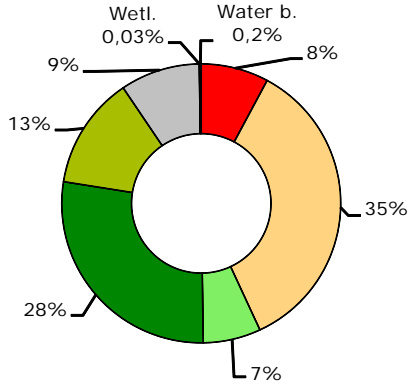
Although the intensity of these conversions decreased rapidly, compared with the previous period, forest creation and management remains the main driver of landscape change in Spain. The forest exchange is driven mostly by internal changes - prevailing recent felling and transition and opposite conversion from transitional woodland to forest, which has significantly lower intensity. Forest creation became much less frequent, compared to period 2000-2006, however, it is still a very powerful driver of change in Spain. This flow occurs mostly in the northwest part of the country and there is also big concentration of this type of changes in the southwest. The diffuse conversion from forest to agriculture, which was frequent in the previous period, almost disappeared from the Spanish landscape in the period 2006-2012. Waterbodies creation and management occurs quite often in the last period; these processes have been observed in the central and southern part of the country.



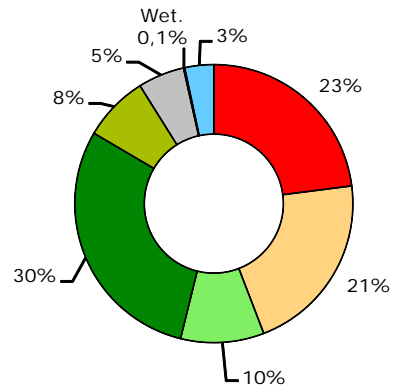
Annex: Land cover flows and trends

Land cover flows 2006-2012

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

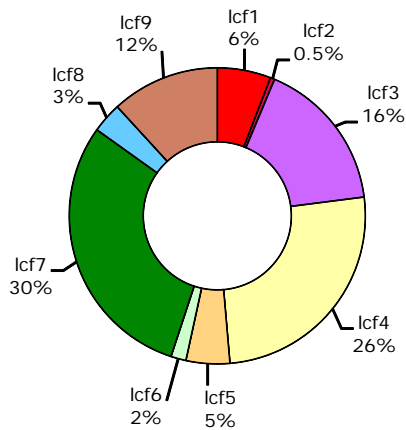


6.19. Formation of land cover 2006-2012 [% of total change area]



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

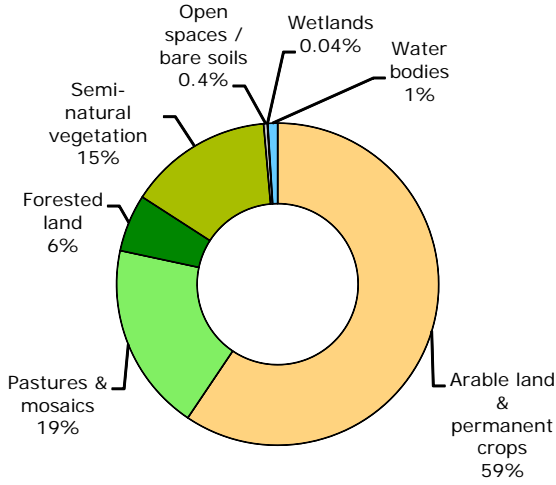
6.20. Drivers of change (LC FLOWS) 2006-2012 [% of total change area]



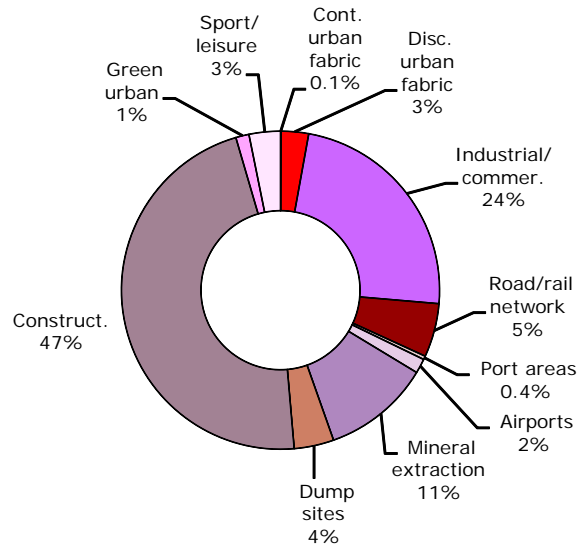
- Icf1 Urban land management
- Icf2 Urban residential sprawl
- Icf3 Sprawl of economic sites and infrastructures
- Icf4 Agriculture internal conversions
- Icf5 Conversion from forested & natural land to agriculture
- Icf6 Withdrawal of farming
- Icf7 Forests creation and management
- Icf8 Water bodies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

**Artificial areas**

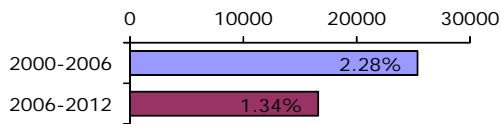
**7.21. Consumption by artificial land take 2006-2012 [% of total]**



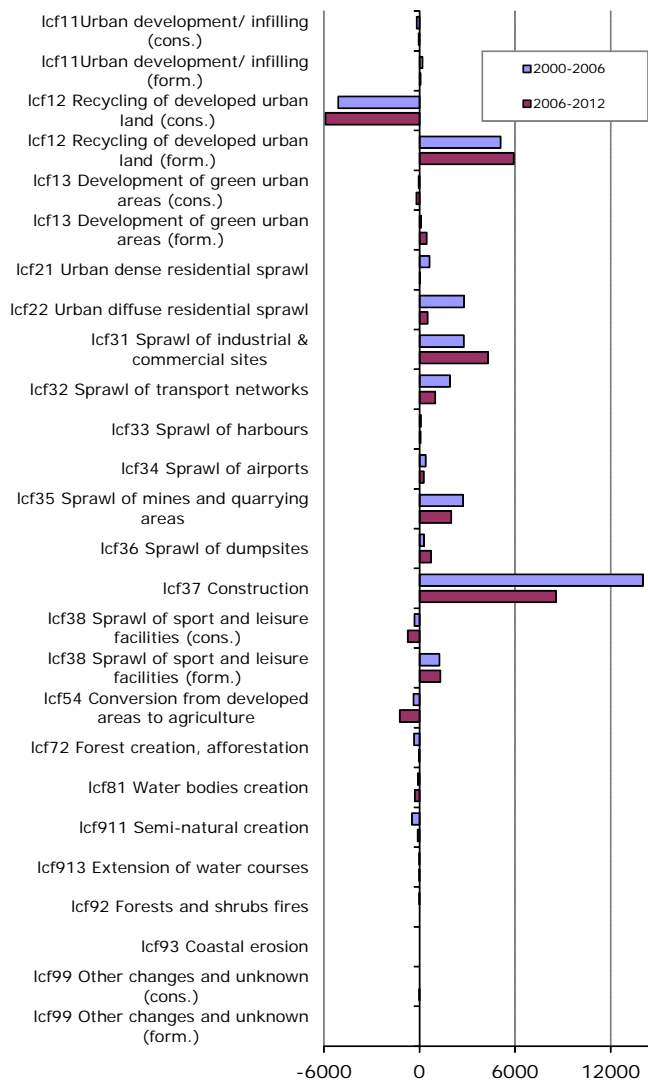
**7.22. Formation by artificial land take 2006-2012 [% of total]**



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



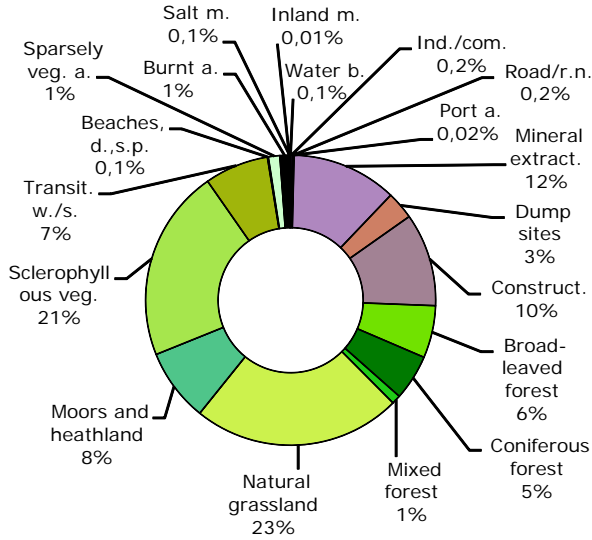
**7.24. Artificial development by change drivers (LC FLOWS) [ha/year]**



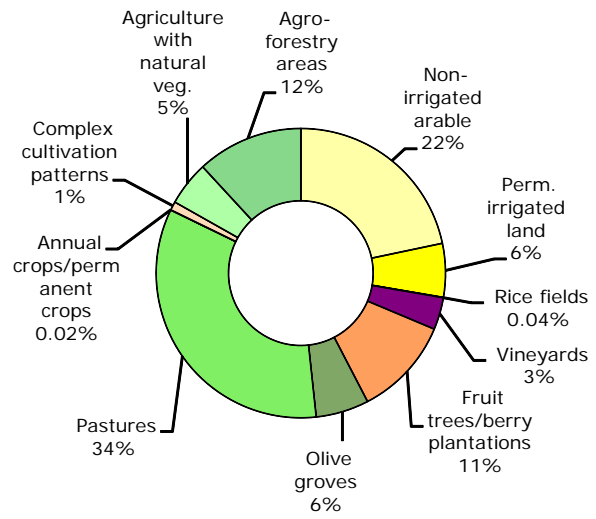


**Agriculture**

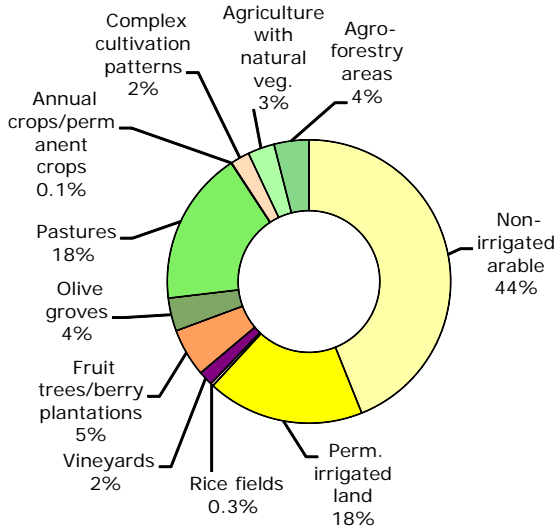
**8.25. LC consumed by agriculture 2006-2012 [% of total]**



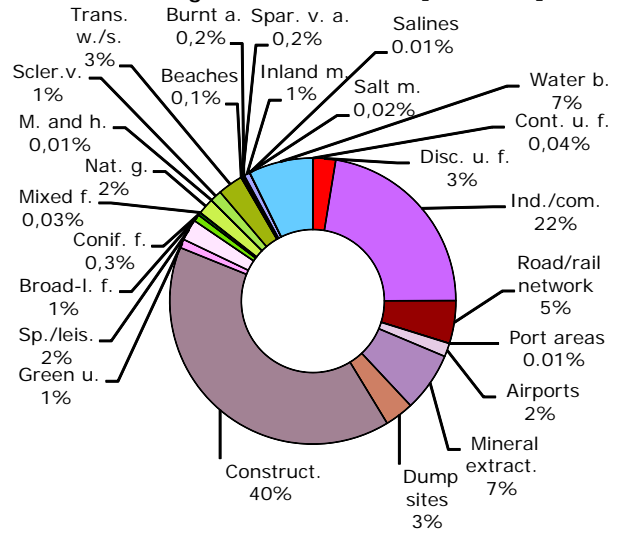
**8.26. Formation of agricultural land from non-agriculture 2006-2012 [% of total]**



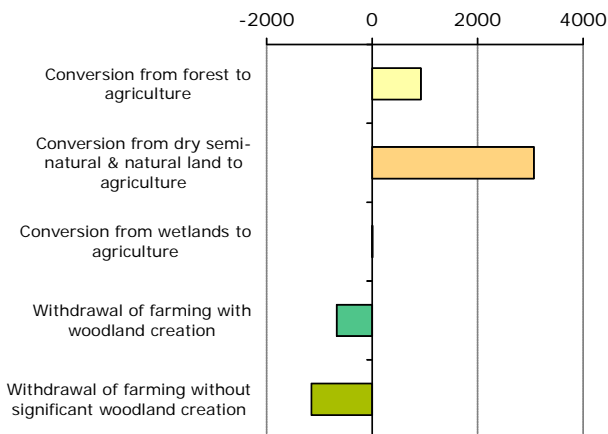
**8.27. Consumption of agricultural land by non-agriculture 2006-2012 [% of total]**



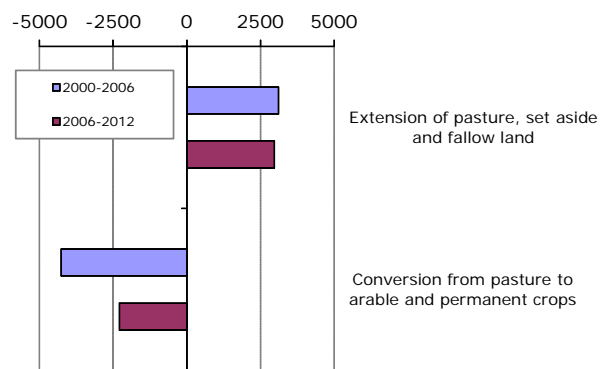
**8.28. Formation of non-agricultural land from agriculture 2006-2012 [% of total]**



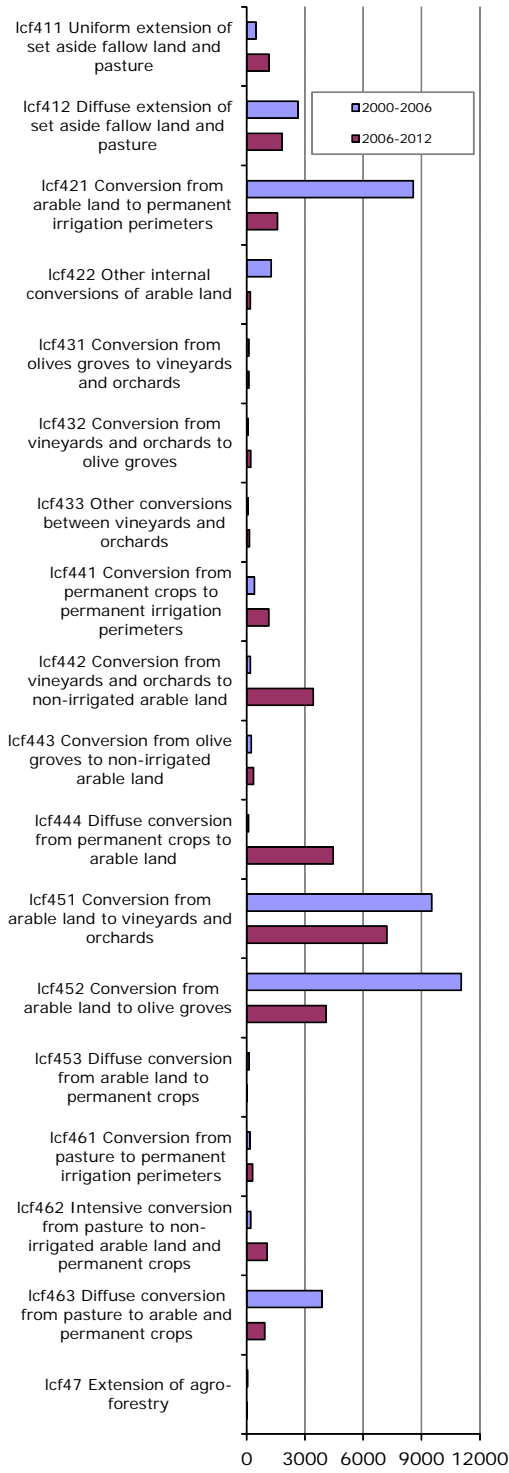
**8.29. Main annual conversions between agriculture and forests & semi-natural land 2006-2012 [ha/year]**



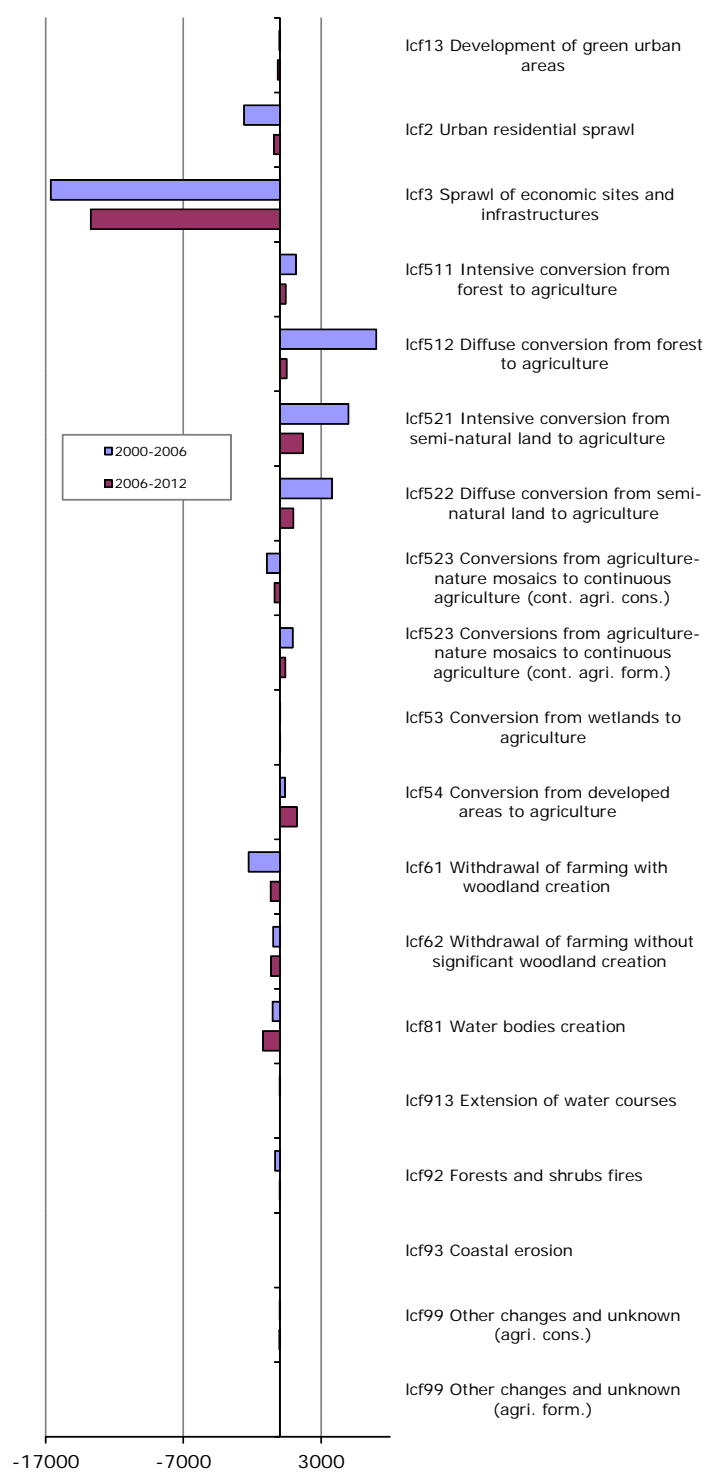
**8.30. Mean annual conversion between arable land and pasture [ha/year]**



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

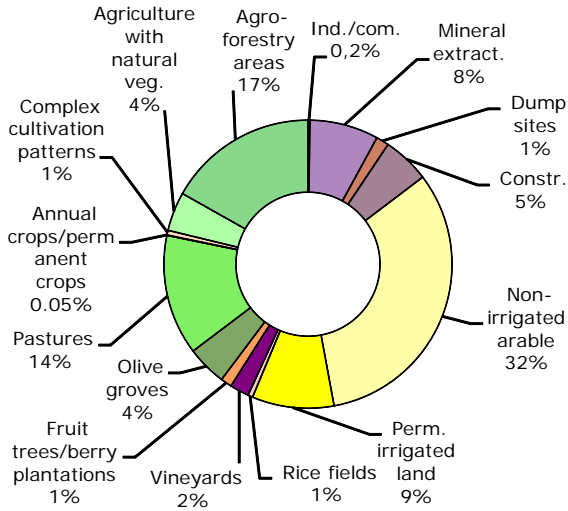


9.32. Mean annual conversions between agriculture and other LC types [ha/year]

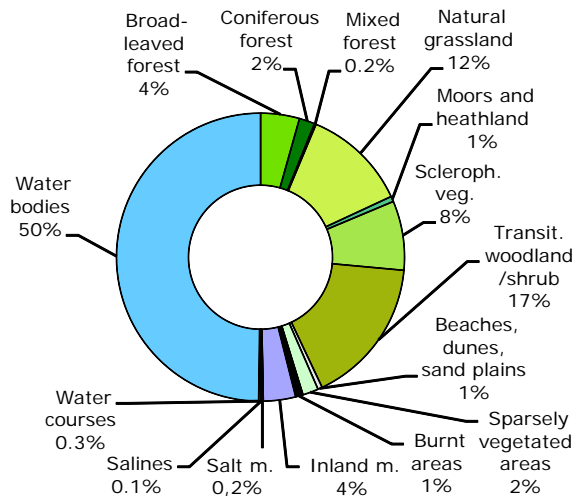


**Forest & nature**

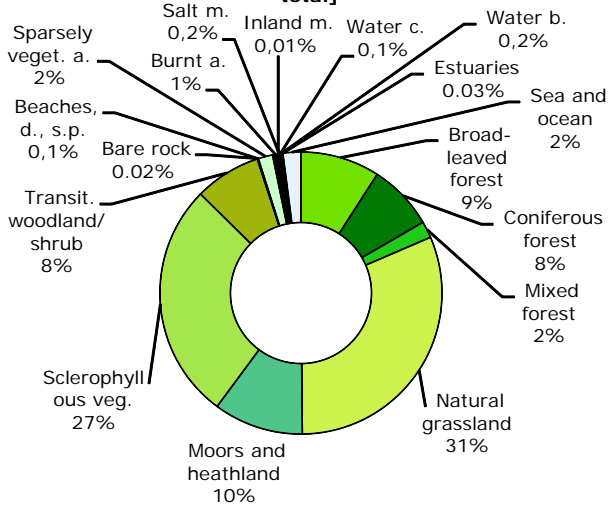
**10.33. LC consumed by forest & nature 2006-2012 [% of total]**



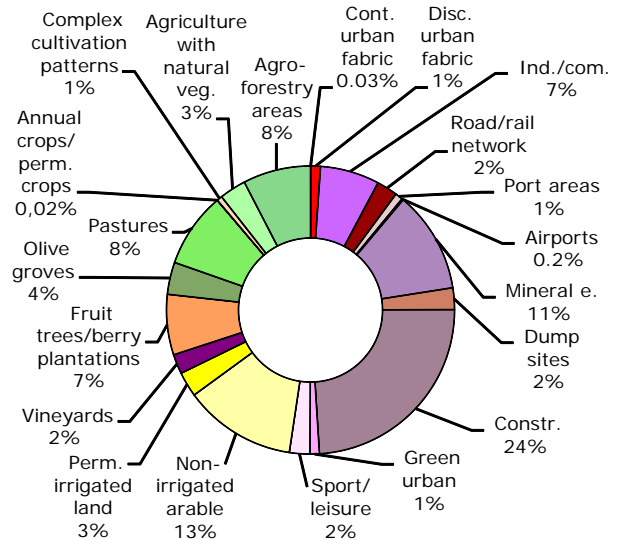
**10.34. Formation of forest & nature land from non-forest /nature 2006-2012 [% of total]**



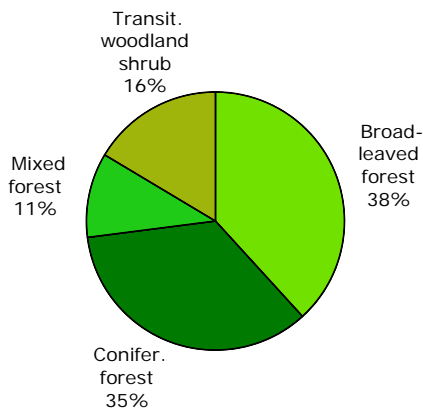
**10.35. Consumption of forest & nature land by non-forest/nature 2006-2012 [% of total]**



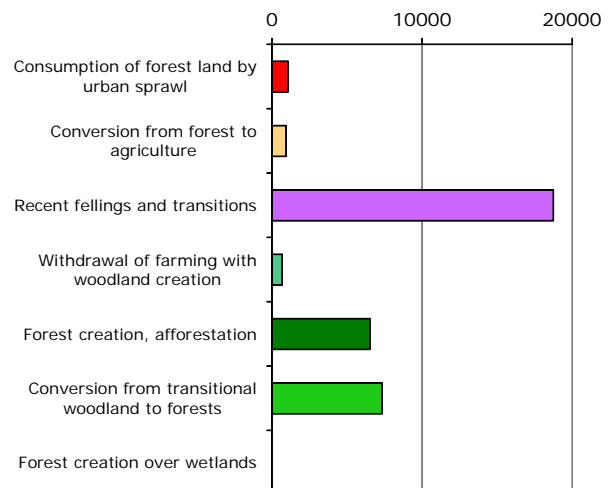
**10.36. Formation of non-forest/nature land from forest & nature 2006-2012 [% of total]**



**10.37. Forested land 2012 [% of total area]**

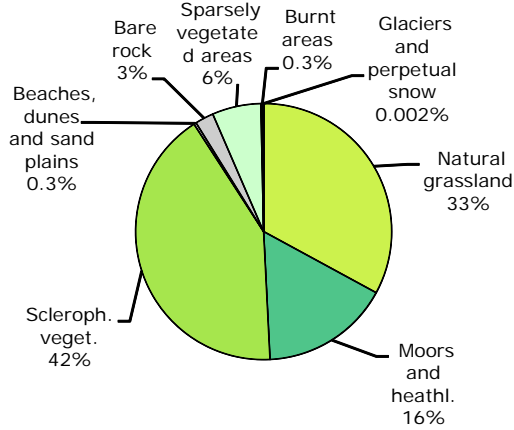


**10.38. Main trends in woodland & forests consumption/formation 2006-2012 [ha/year]**

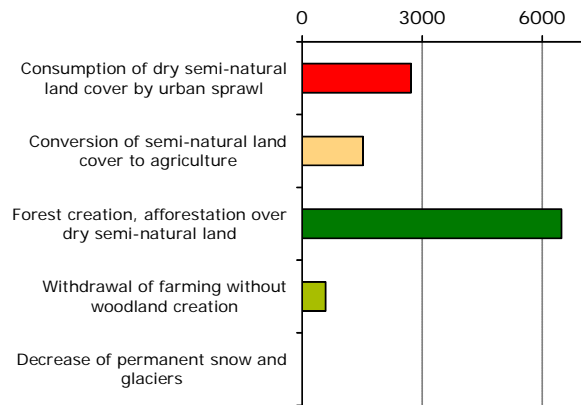


# Spain

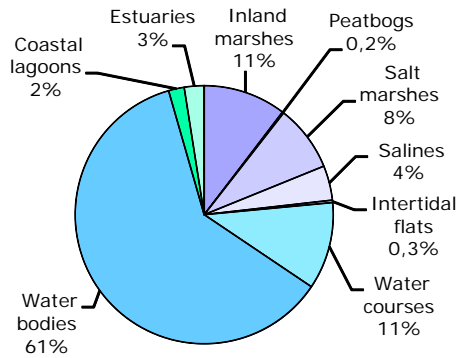
**11.39. Dry semi-natural areas 2012**  
[% of total area]



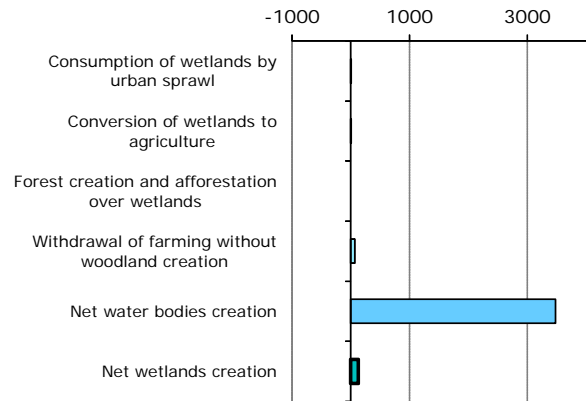
**11.40. Main trends in dry semi-natural land consumption/formation 2006-2012**  
[ha/year]



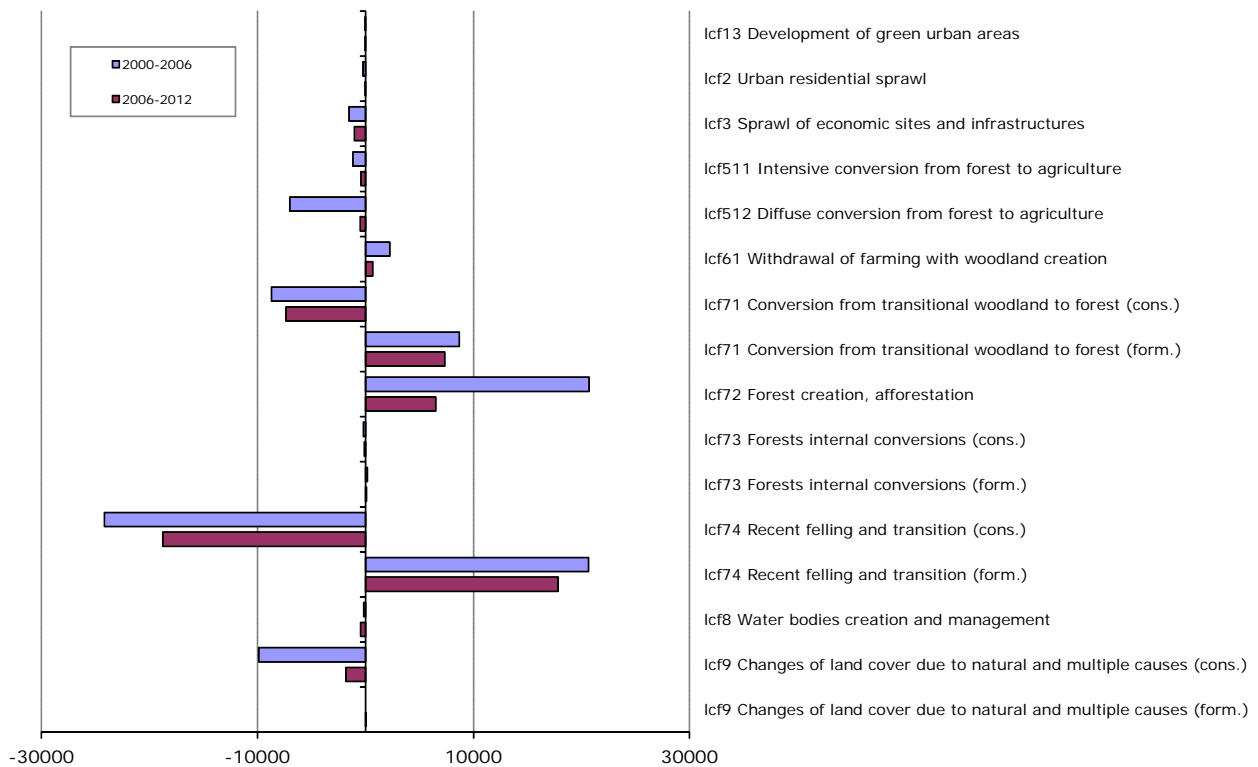
**11.41. Wetlands & water 2012**  
[% of total area]



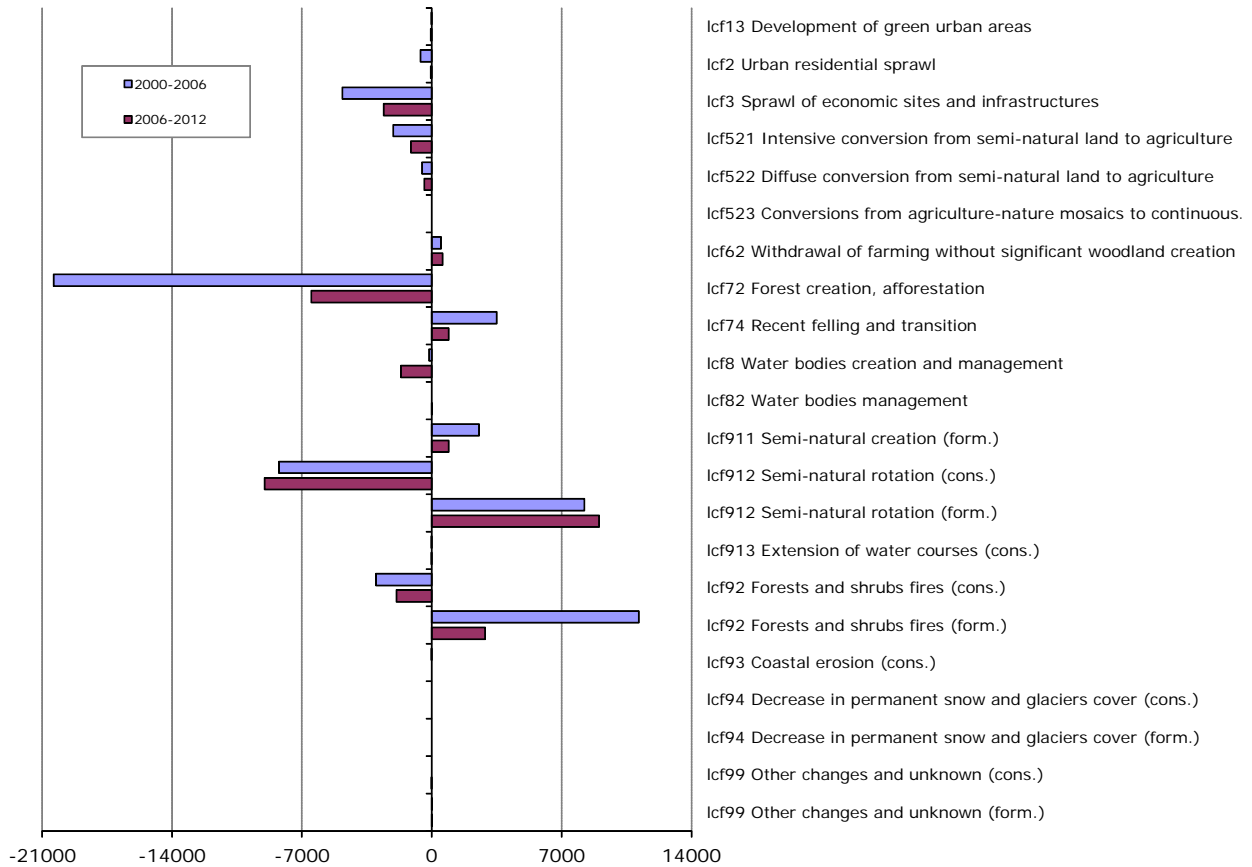
**11.42. Main trends in wetlands & water consumption/formation 2006-2012**  
[ha/year]



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



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

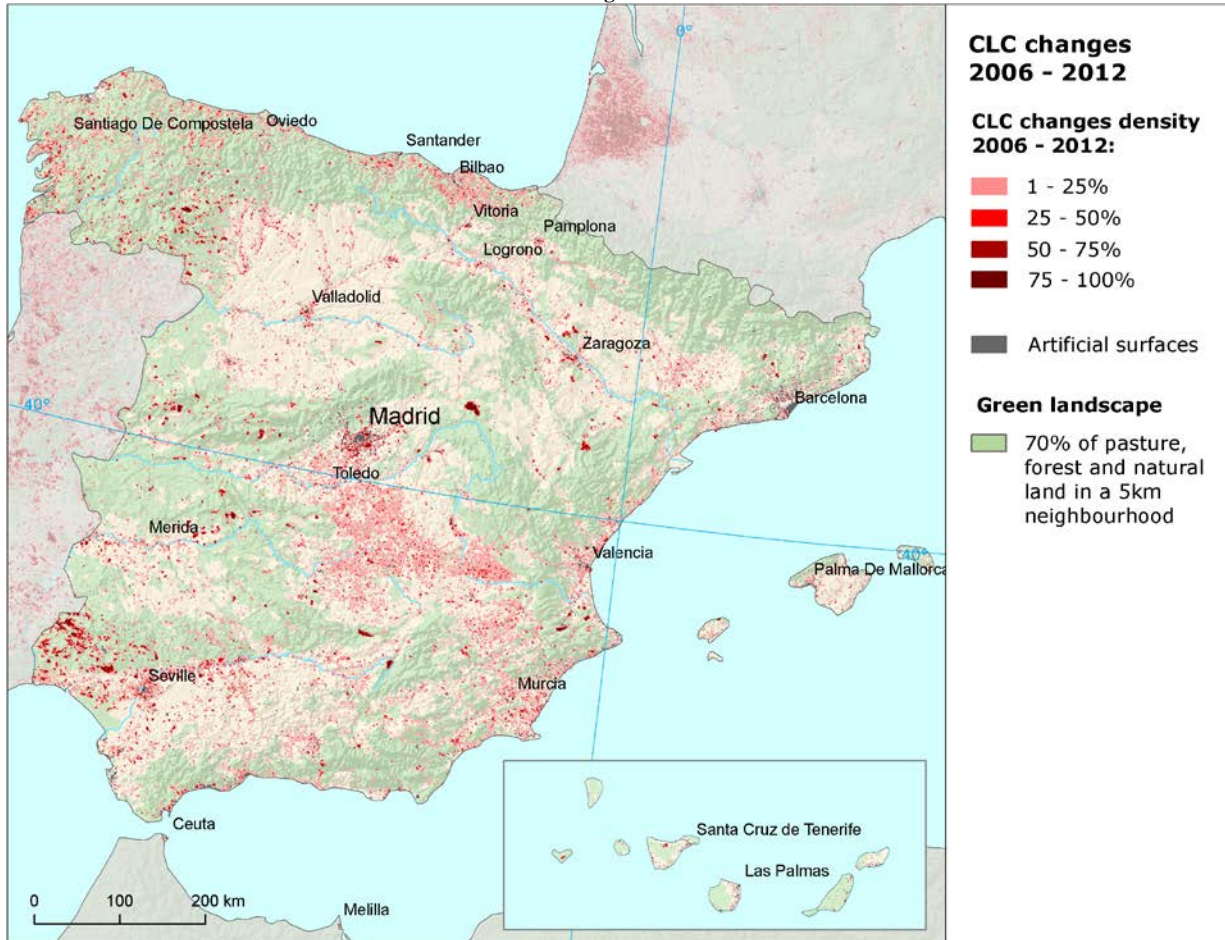


12.45. Mean annual conversions of wetlands and water LC [ha/year]

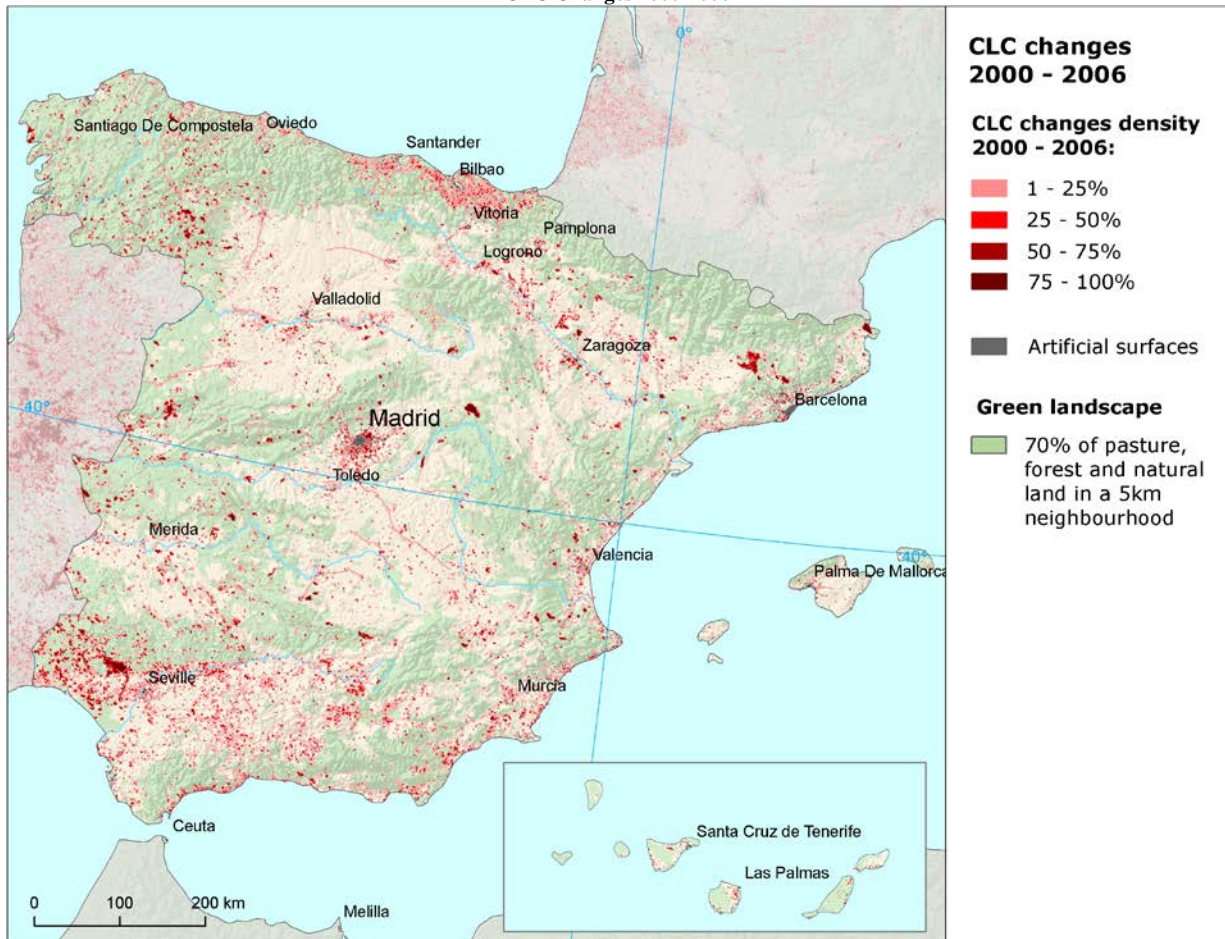


# Spain

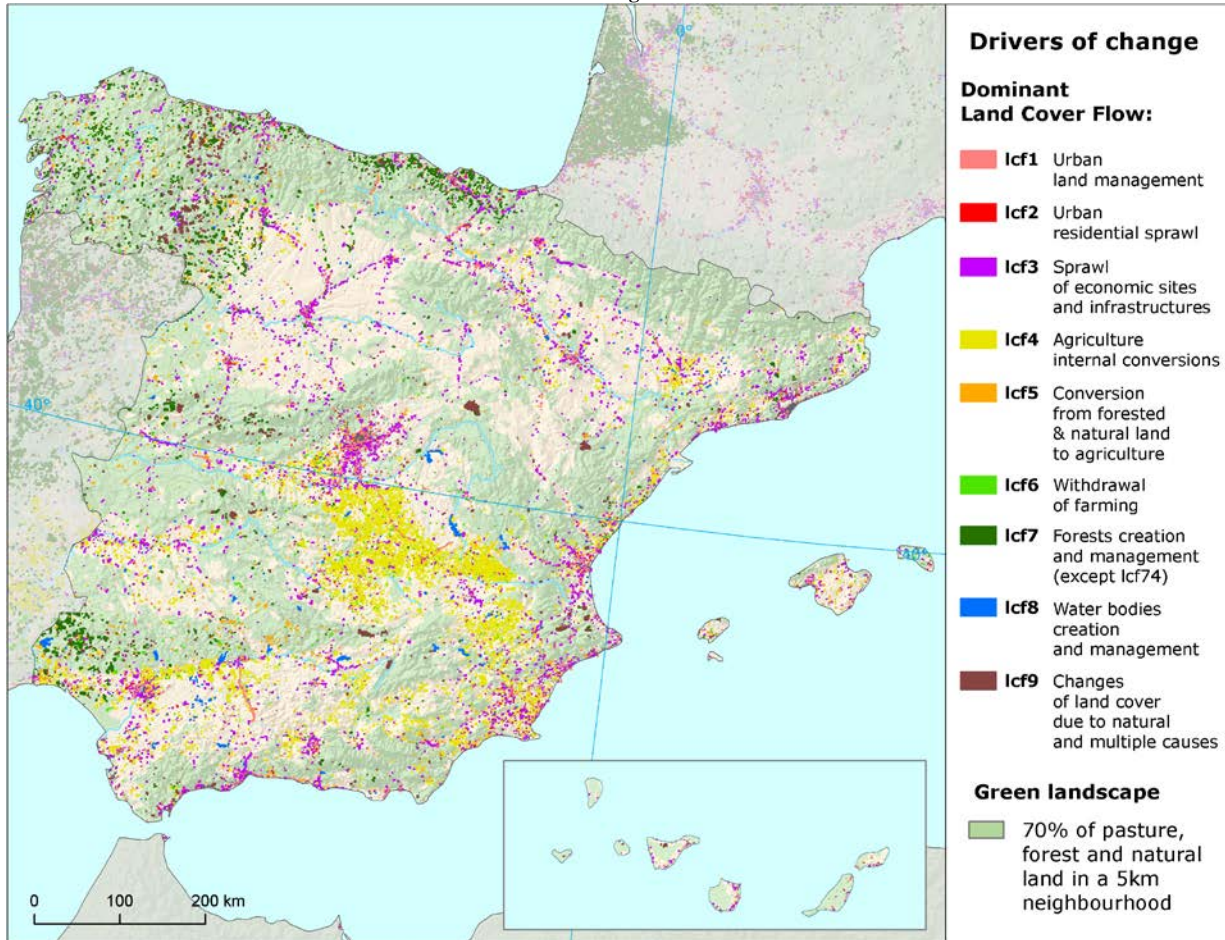
CLC Changes 2006-2012



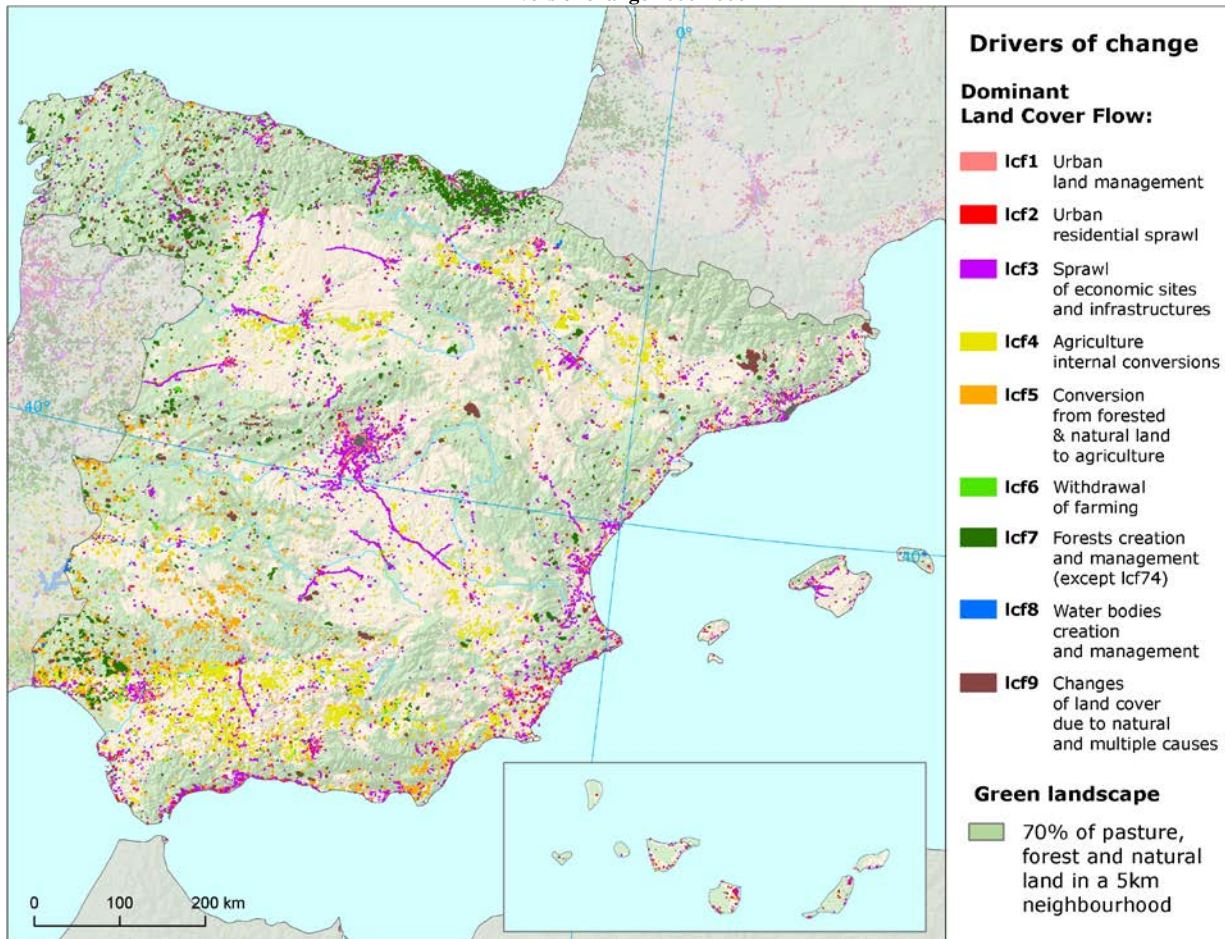
CLC Changes 2000-2006



Drivers of change 2006-2012

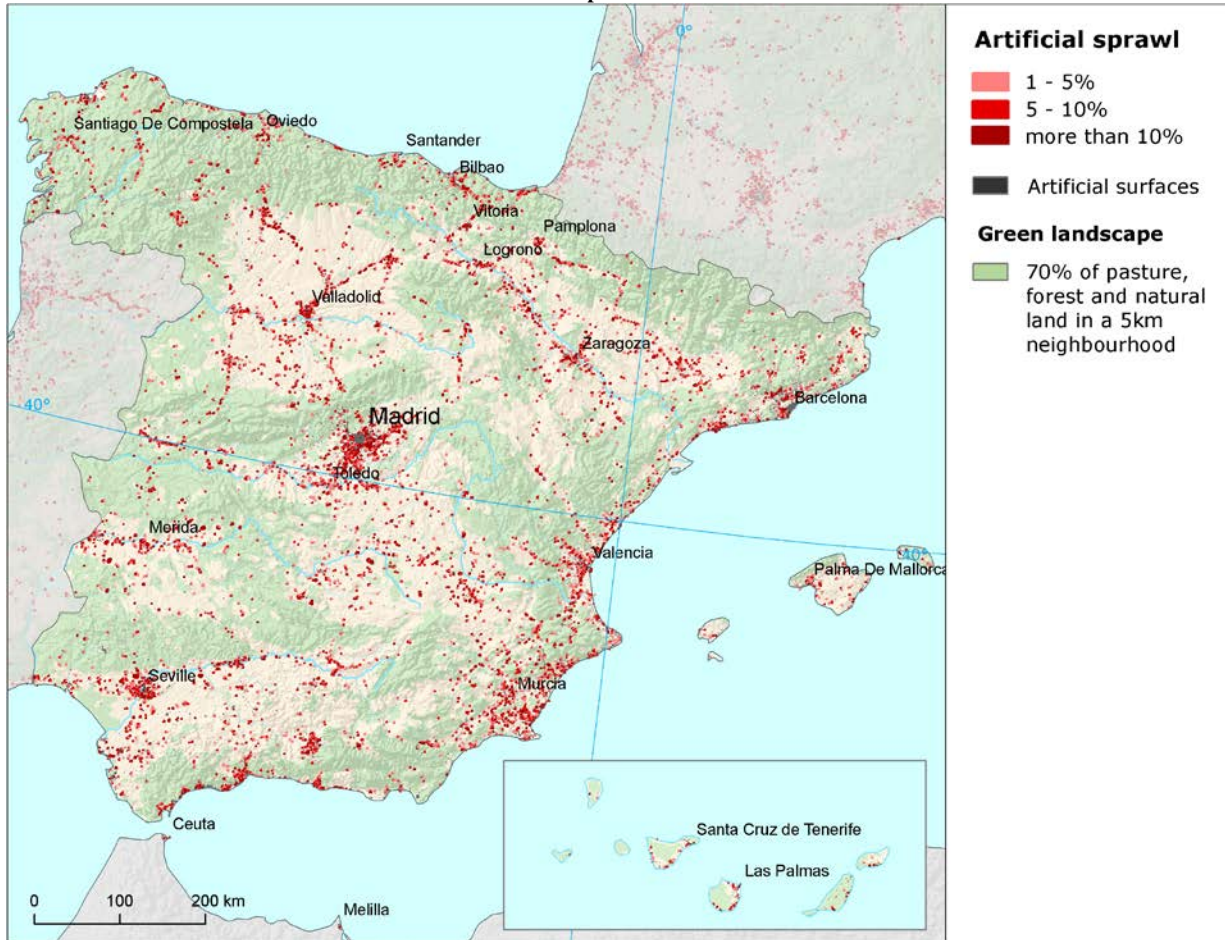


Drivers of change 2000-2006

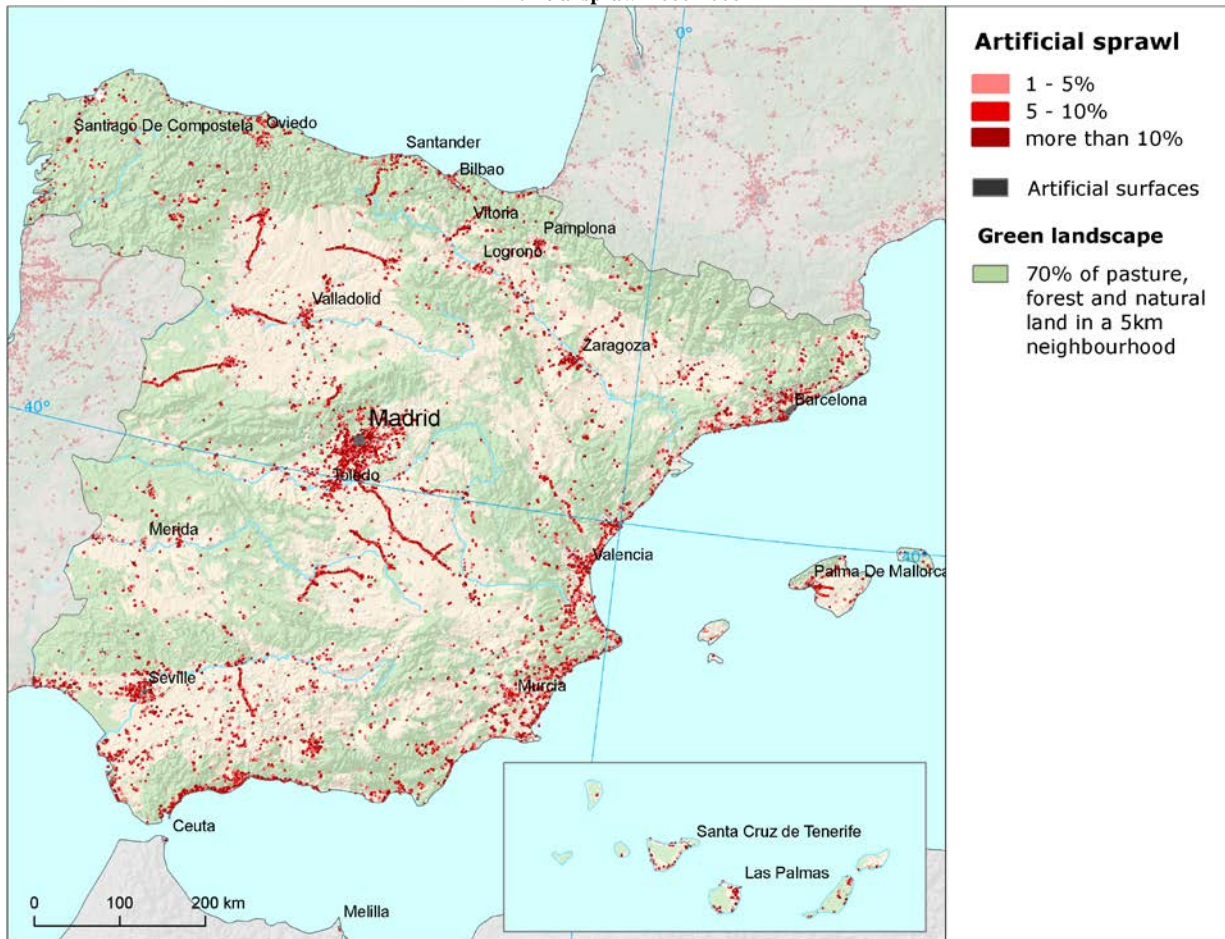


# Spain

Artificial sprawl 2006-2012



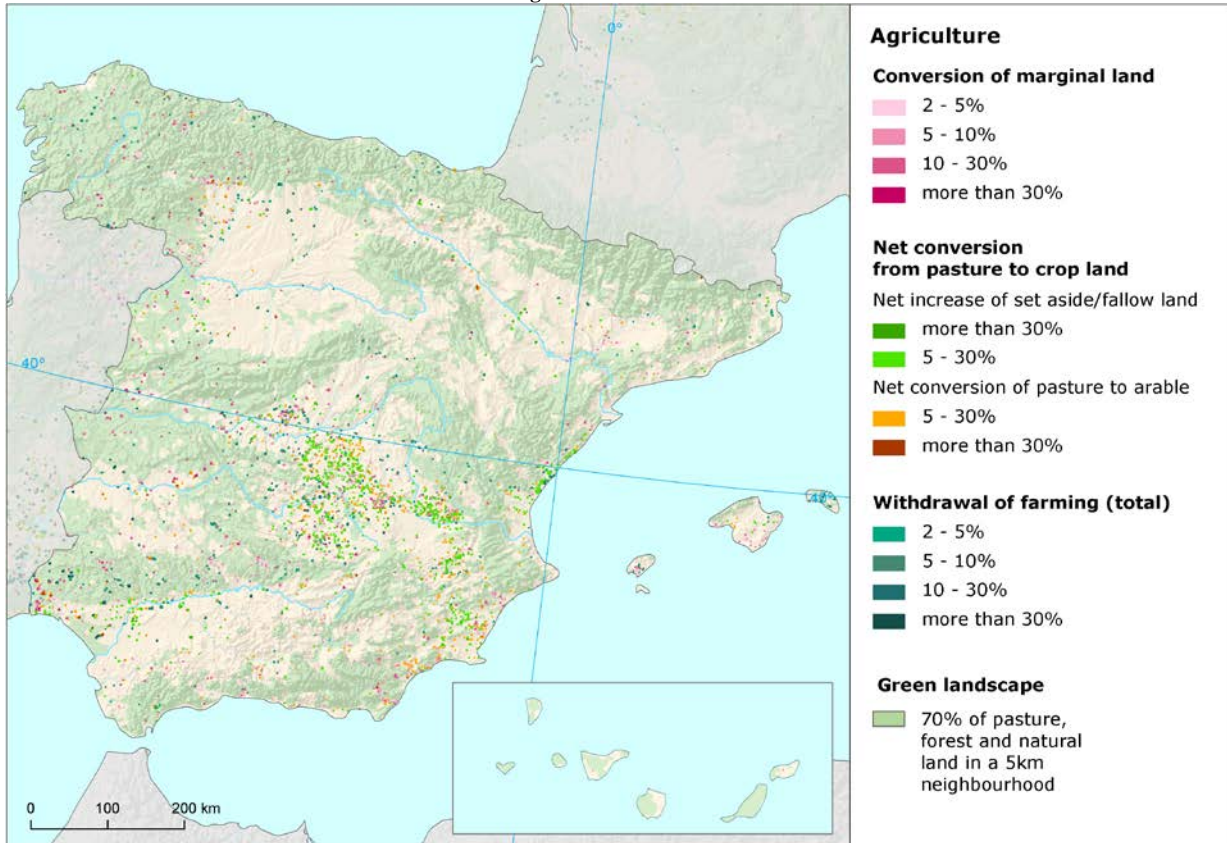
Artificial sprawl 2000-2006



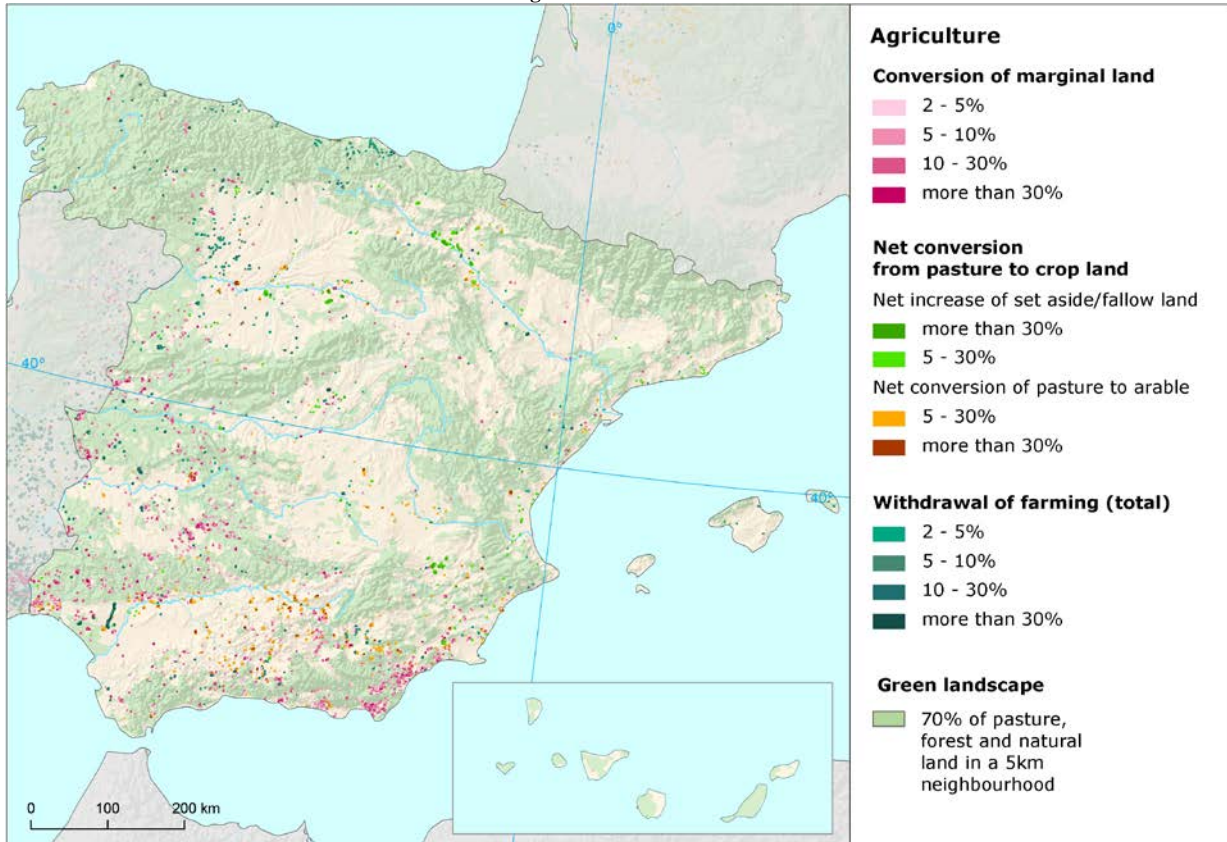


# Spain

Agriculture 2006-2012

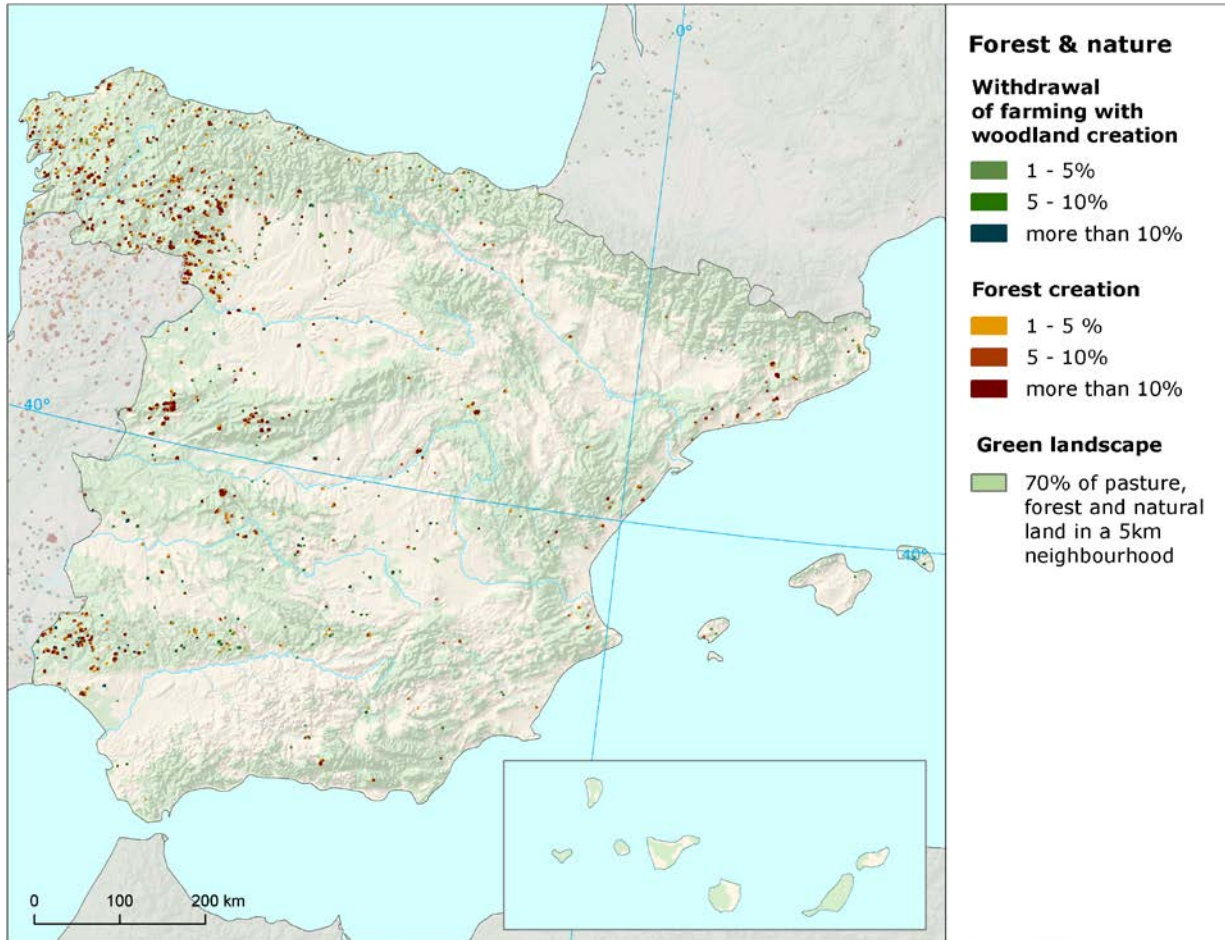


Agriculture 2000-2006



# Spain

Forest and nature 2006-2012



Forest and nature 2000-2006

