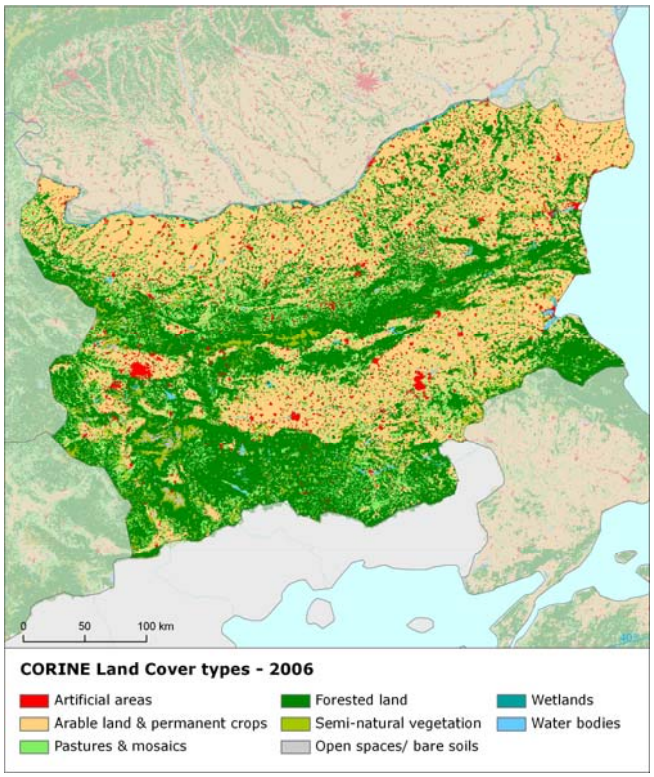
Bulgaria

Land cover 2006

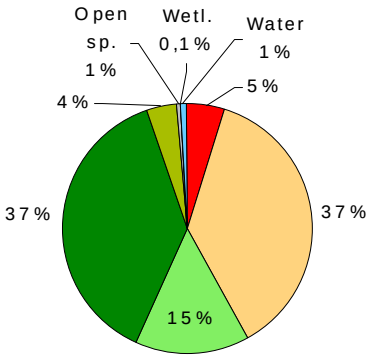
Overview of land cover & change 2000-2006

This period in Bulgaria is characterised by land cover stabilization as the intensity of changes due to main drivers - forest creation and management and agricultural internal conversions – slightly decreased compared to the previous period. In contrast, intensity of changes due to urban developments is much more significant during this period. Annual land uptake by artificial areas doubled compared to previous period and it occurs mainly at the expense of agriculture (79%). Besides artificial surfaces, also forests and wetlands have positive balance of net change; however, the intensity of their formation is significantly lower, compared to previous period. Both arable/crop land and pastures are decreasing on area – with more than three times higher decrease of pastures compared with period 1990-2000. Also, semi-natural vegetation areas and open spaces/bare soils are still decreasing, with comparable intensity as in 1990-2000.
Changes in forested and agricultural land are uniformly scattered over whole country. On the contrary, artificial sprawl is concentrated mostly in the surroundings of the capital city Sofiya and Plovdiv, along the Black Sea coast (especially near Burgas) and also in the mining region near Radnevo.

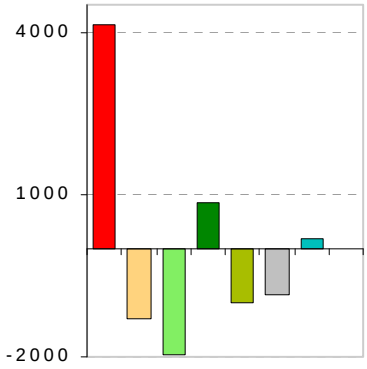


Note: The results presented here are based on a change analysis of 44 land cover types mapped consistently on a 1:100.000 scale across Europe over almost two decades 1990-2006 - see Corine land cover (CLC) programme for details.
Number of years between CLC2000-CLC2006 data for Bulgaria: 6

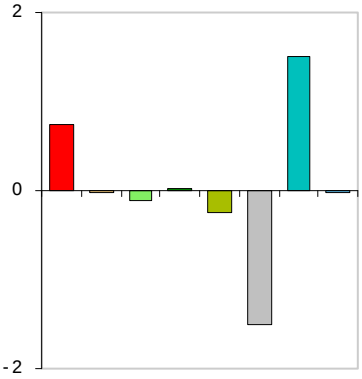
1.1. Land cover 2006 [% of total]



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

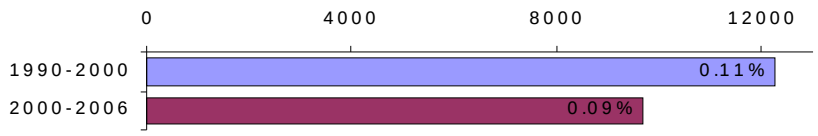
Summary balance table 2000-2006

	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	**5534**	**41147**	**16259**	**42194**	**4251**	**566**	**110**	**954**	**111015**
Consumption of initial LC	4	58	23	471	11	13	0	0	580
Formation of new LC	45	45	4	480	0	4	2	0	580
Net Formation of LC	**41**	**-13**	**-20**	**8**	**-10**	**-8**	**2**	**0**	**0**
Net formation as % of initial year	*0.7*	*0.0*	*-0.1*	*0.0*	*-0.2*	*-1.5*	*1.5*	*0.0*	
Total turnover of LC	**49**	**104**	**27**	**951**	**11**	**17**	**2**	**0**	**1161**
Total turnover as % of initial year	*0.9*	*0.3*	*0.2*	*2.3*	*0.3*	*3.0*	*1.5*	*0.0*	*1.0*
Land cover 2006	**5575**	**41134**	**16239**	**42202**	**4241**	**558**	**111**	**954**	**111015**

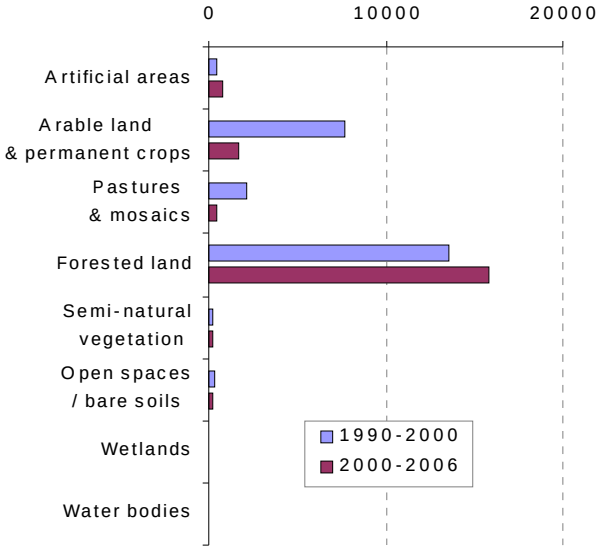
Bulgaria

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

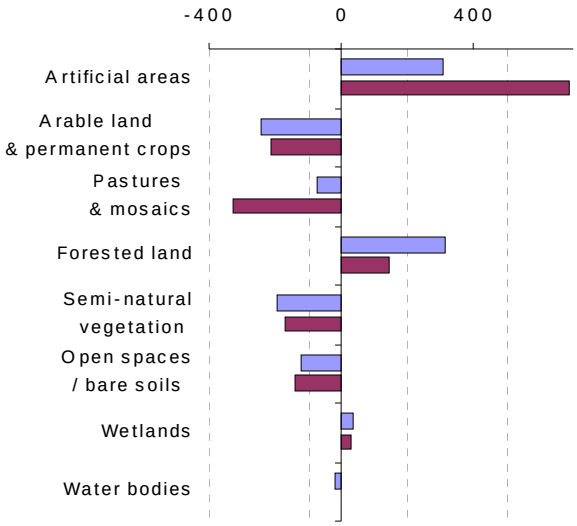
2.4. Annual land cover change [ha/year, % of total area]



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

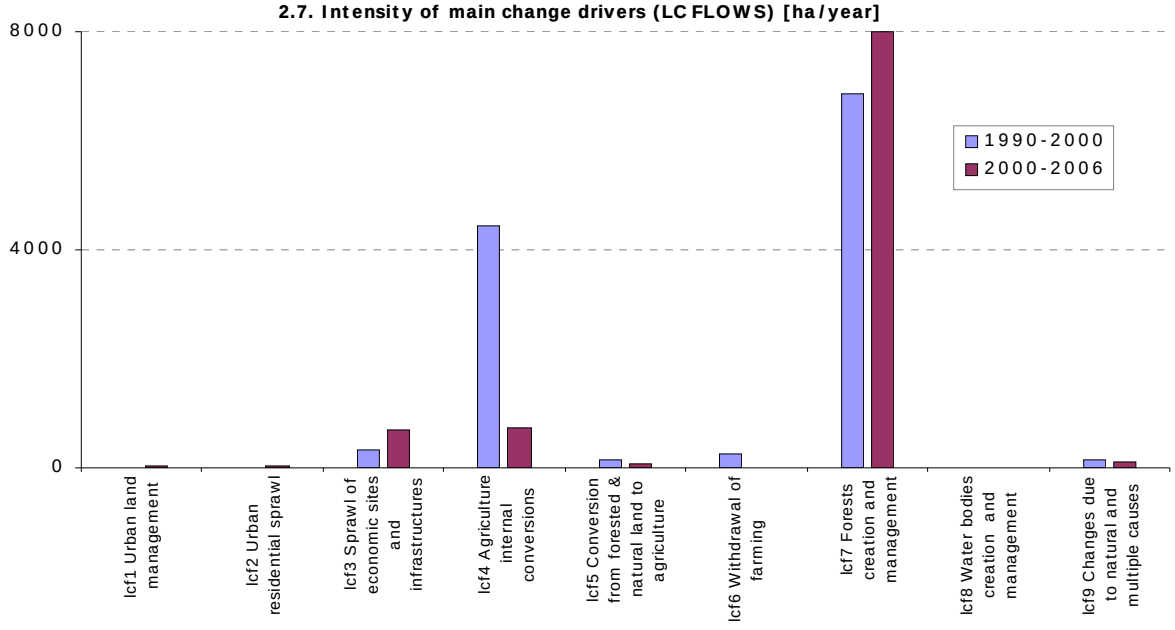


2.6. Net annual change of LC types [ha/year]



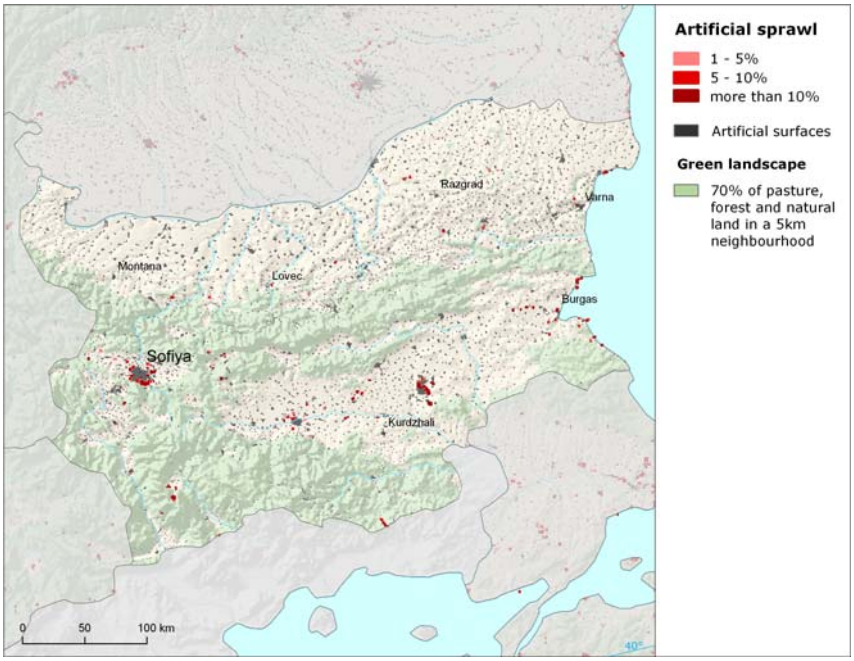
Summary trend figures	1990-2000	2000-2006
Annual land cover change [ha/year]	**12254**	**9672**
Annual land cover change as % of initial year	**0.11%**	**0.09%**
Land uptake by artificial development as mean annual change [ha/year]	352	719
Agricultural land uptake by urban and infrastructures development as mean annual change [ha/year]	290	569
Net uptake of forests and semi-natural land by agriculture as mean annual change [ha/year]	-144	32
Net conversion from pasture to arable land and permanent crops as mean annual change [ha/year]	73	91
Forest & other woodland net formation as mean annual change [ha/year]	311	141
Dry semi-natural land cover net formation as mean annual change [ha/year]	-311	-311
Wetlands & water bodies net formation as mean annual change [ha/year]	11	25

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

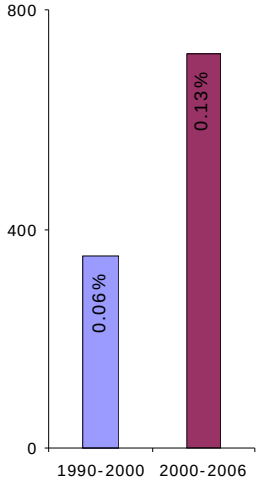


Bulgaria

Artificial areas



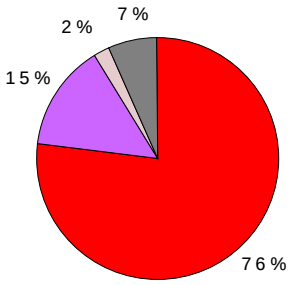
3.8. Artificial land take [ha/year, % of initial year]



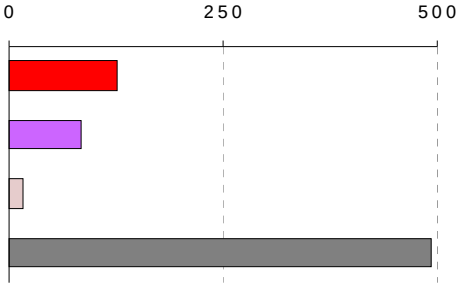
Urban sprawl accelerates

Comparing to previous period, there occurs significant increase of overall intensity of artificial land uptake. Land uptake doubled driven by new artificial sprawl with negligible share of interior urban development and infilling on total artificial change. The uptake occurred mainly at the expense of agricultural areas with almost equal share of pastures and arable land, followed by forest and natural grassland areas to a lesser extent. The main driver - sprawl of mines and querying areas, with almost 50% share on total land uptake, is comparable to previous period with only slightly increased intensity. On the contrary, contribution of other classes has rapidly increased: mainly development of construction sites and sports and leisure facilities (which have not been observed in previous period), followed by accelerated development of industrial and commercial units and discontinuous urban fabric (which already started in 1990-2000). Increase of construction sites indicates that this process is going to continue.

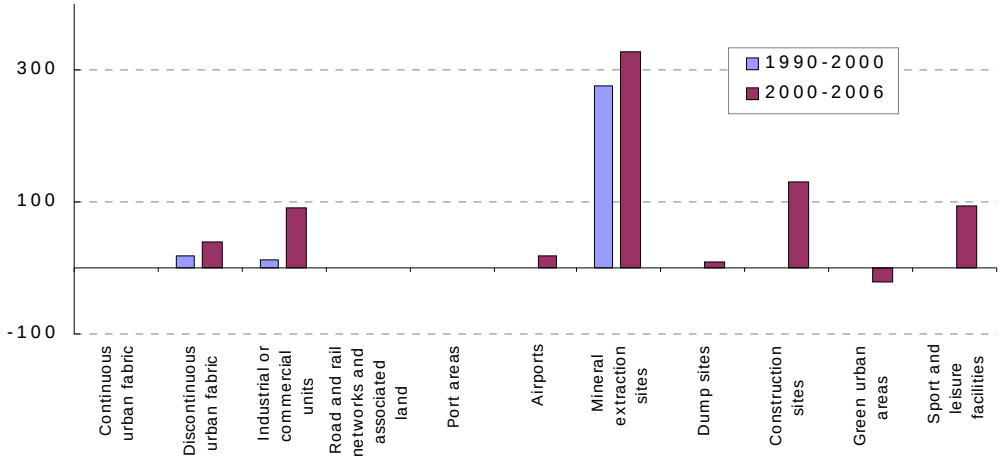
3.9. Artificial surfaces 2006 [% of total area]



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

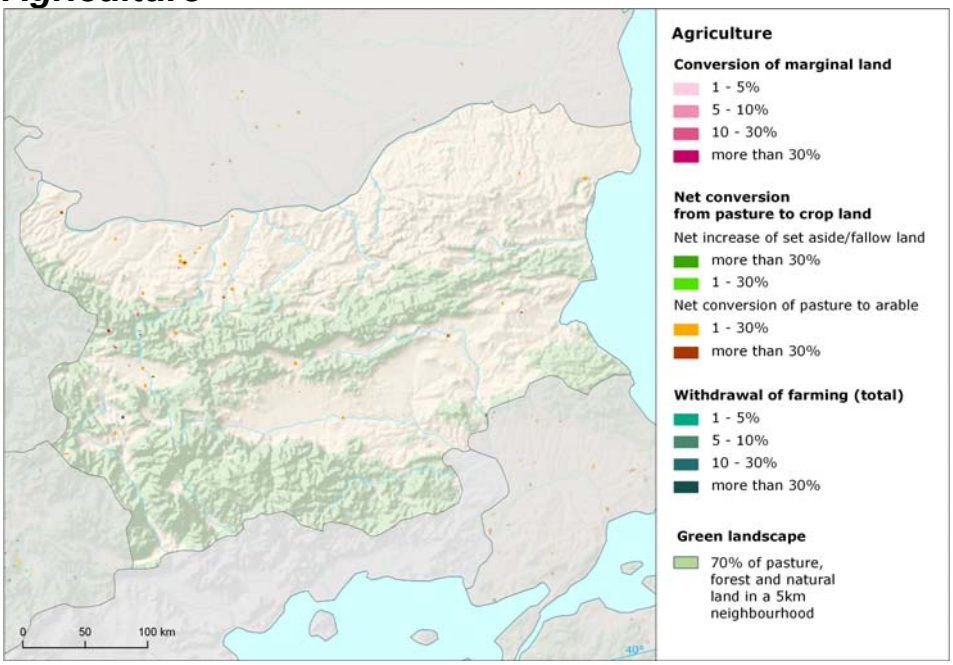


3.11. Mean annual artificial change by class [ha/year]



Bulgaria

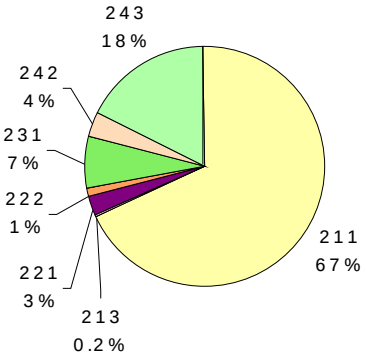
Agriculture



Agricultural management stabilisation

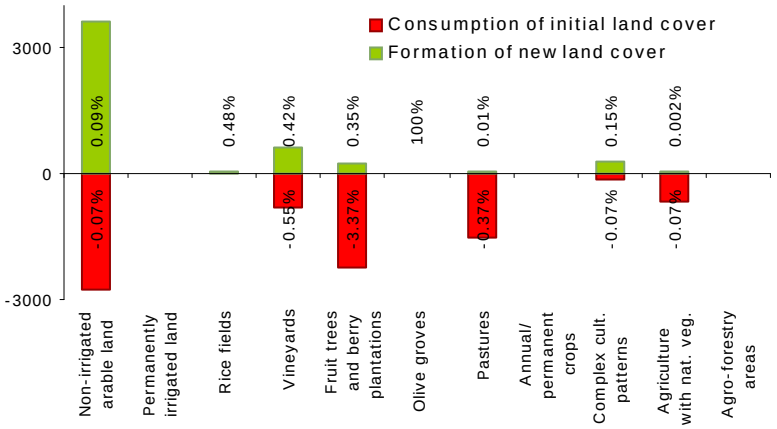
In agriculture land, internal agricultural conversions rapidly decreased compared to the previous period 1990-2000, especially between arable land and pastures. Concerning the net change balance of particular agriculture classes, both pastures and mosaics are characterized only by consumption of area. On the contrary, arable land has both formation and consumption of land, with slightly positive balance of net change. It is caused mainly by most remarkable internal agriculture conversions which occur between vineyards and orchards and arable land (mainly in favour of arable land).
In general, total area of agriculture land is decreasing mostly due to urban sprawl over agricultural land driven mainly by sprawl of economic sites and infrastructures (with largest share of mineral extraction sites, construction sites and industrial and commercial units). In contrast to 1990-2000, there is no significant amount of withdrawal of farming (with or without woodland creation). Main agriculture land formation flows are represented by conversions from semi-natural land (mainly natural grassland) and from developed areas (mineral extraction sites) as part of restoration work.

4.12. Agricultural areas 2006 [% of total area]

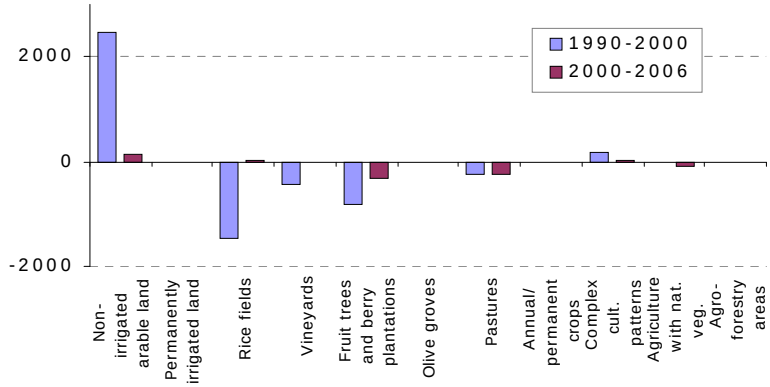


211 Non-irrigated arable land
212 Permanently irrigated land
213 Rice fields
221 Vineyards
222 Fruit trees and berry plantations
223 Olive groves
231 Pastures
241 Annual crops associated with permanent crops
242 Complex cultivation patterns
243 Agriculture land with significant areas of natural vegetation
244 Agro-forestry areas

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

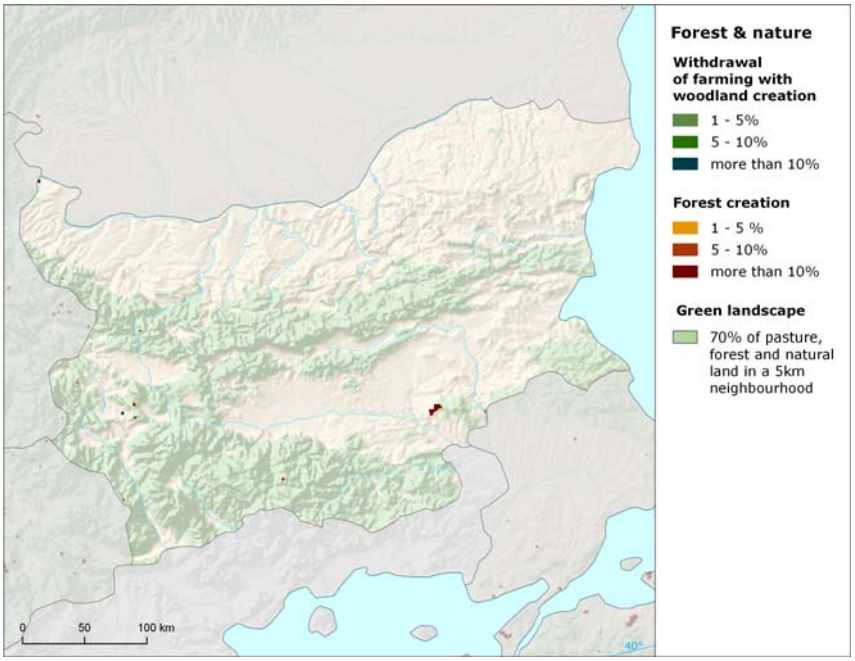


4.14. Mean annual agricultural change by class [ha/year]

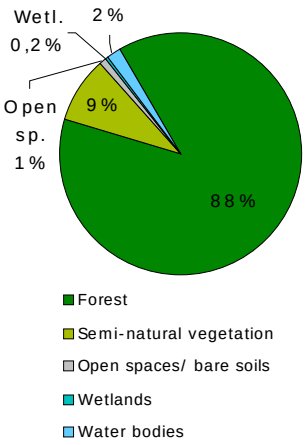


Bulgaria

Forest & nature



5.15. Forest & nature areas 2006 [% of total area]



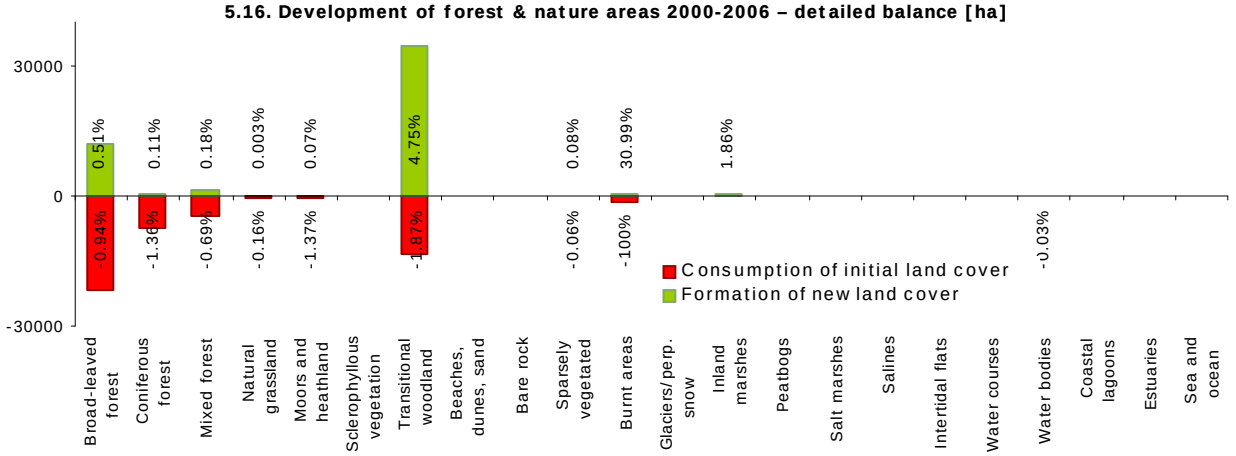
Forest land formation slow down

Forest and other woodland net formation is significantly lower comparing to previous period 1990-2000 ((to $^{1}/_{2}$). All broad-leaved (most significant), coniferous and mixed forests have negative balance during 6 years illustrated. However, consumption of forests is driven mostly by recent felling (which has almost doubled comparing to previous period 1990-2000) and is the dominant flow in forest development. On the contrary, formation of forests due to conversion from transitional woodland to forest, which was the main driver of forest formation in previous period, lost a lot of its intensity.

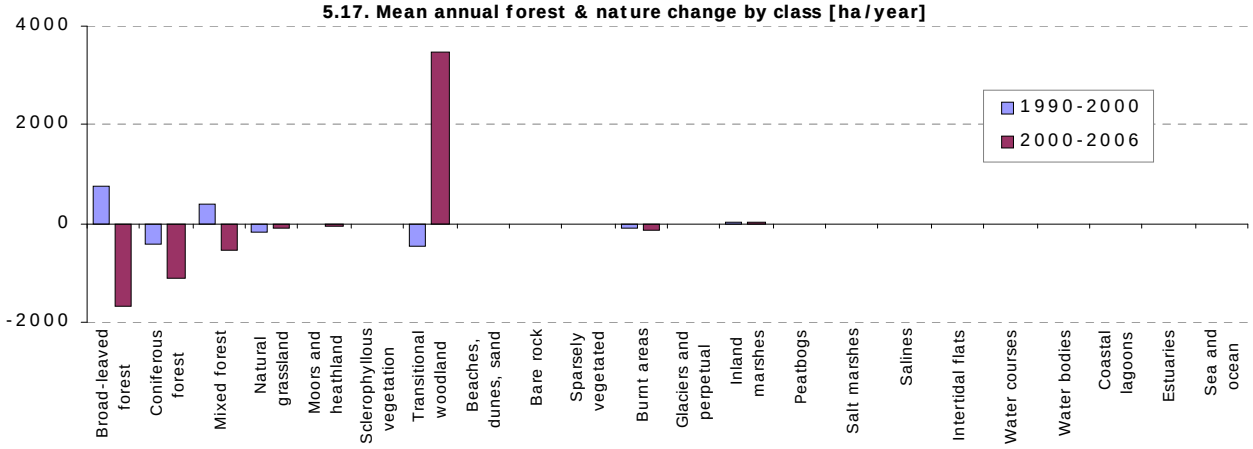
Development of dry semi-natural vegetation is characterized by overall consumption of land cover which is caused by sprawl of economic sites and infrastructures (with prevailing share of mineral extraction sites and sport and leisure facilities extension) and also by conversion to agriculture. Internal changes of natural land are driven mainly by transitional woodland creation over burnt areas.

Compared to other natural changes, area exchange of wetlands and water bodies is quite low. Moreover, there also occurs significant stabilisation of development of these land cover types in this period. The only changes in water/wetlands development are represented by formation of inland marches over former arable land and by consumption of water bodies by sprawl of airports and mineral extraction sites.

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



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



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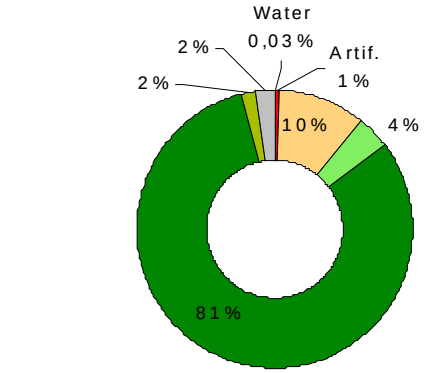
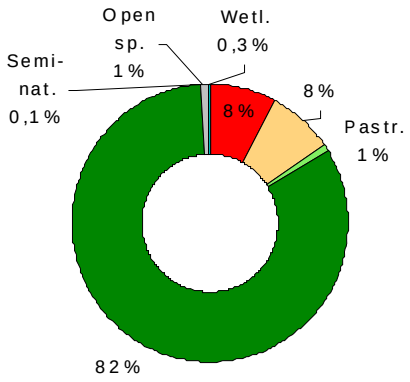
Annex: Land cover flows and trends

Land cover flows 2000-2006

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

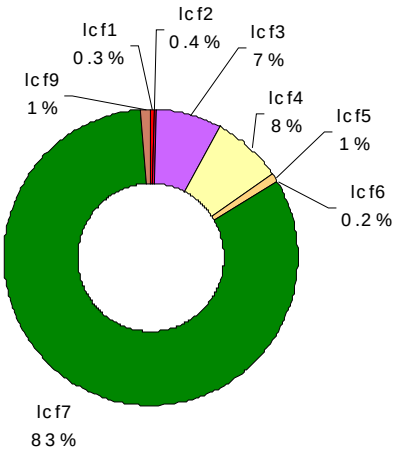


6.19. Formation of land cover 2000-2006 [% of total change area]



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]

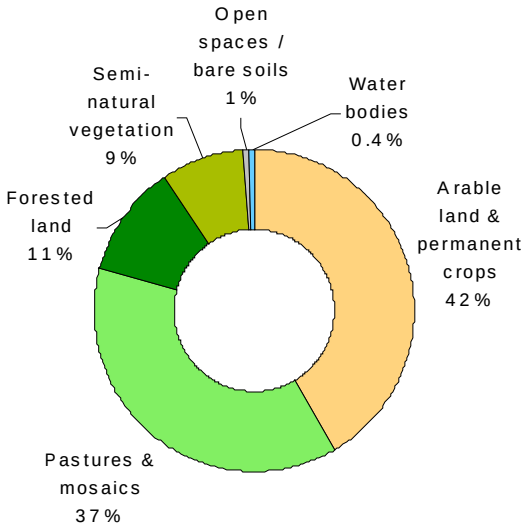


lcf1 Urban land management
lcf2 Urban residential sprawl
lcf3 Sprawl of economic sites and infrastructures
lcf4 Agriculture internal conversions
lcf5 Conversion from forested & natural land to agriculture
lcf6 Withdrawal of farming
lcf7 Forests creation and management
lcf8 Water bodies creation and management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

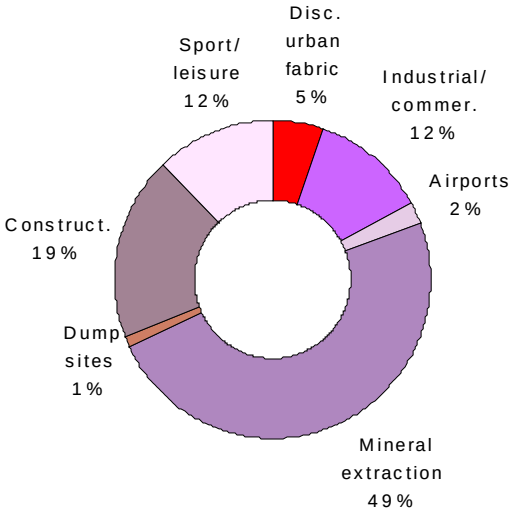
Bulgaria

Artificial areas

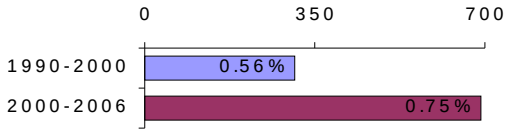
7.21. Consumption by artificial land take 2000-2006 [% of total]



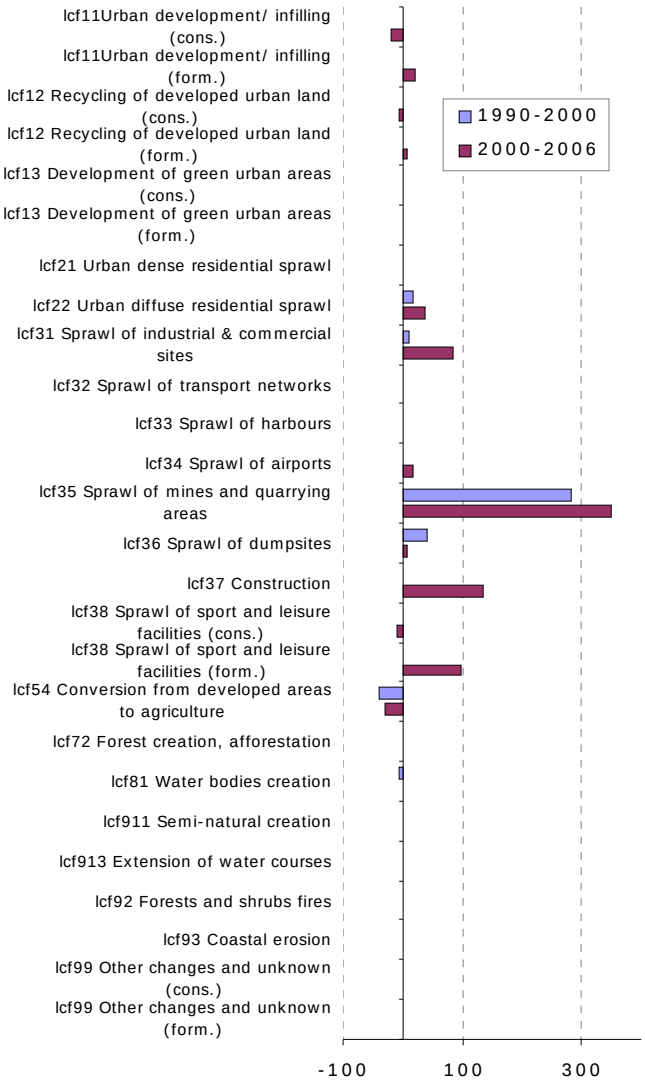
7.22. Formation by artificial land take 2000-2006 [% of total]



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



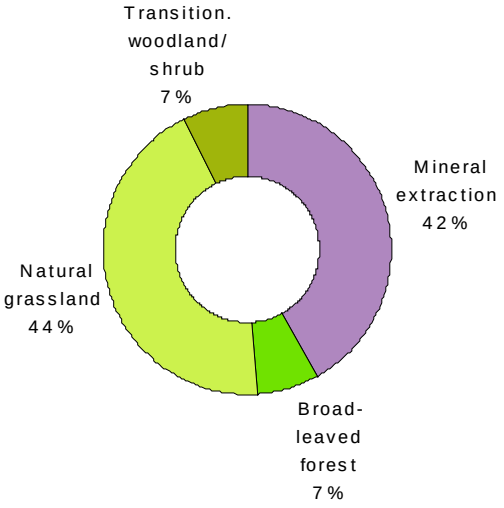
7.24. Artificial development by change drivers (LC FLOWS) [ha/year]



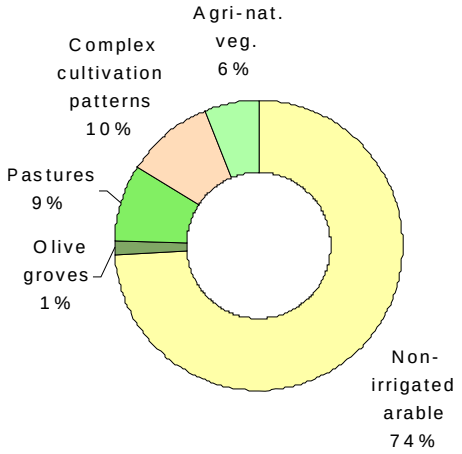
Bulgaria

Agriculture

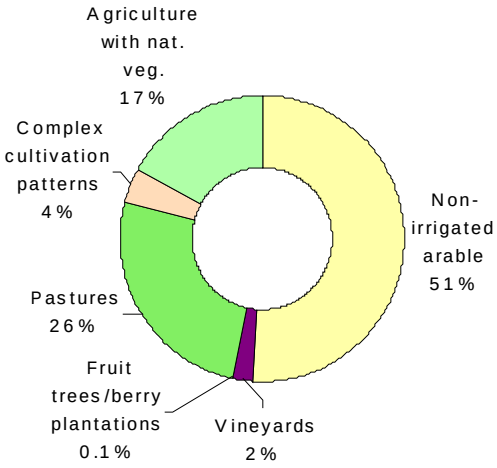
8.25. LC consumed by agriculture 2000-2006 [% of total]



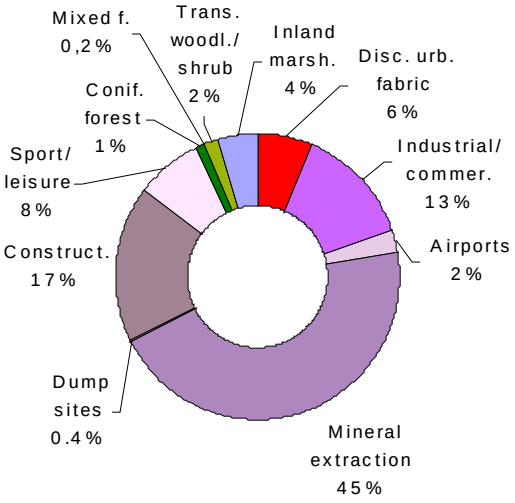
8.26. Formation of agricultural land from non-agriculture 2000-2006 [% of total]



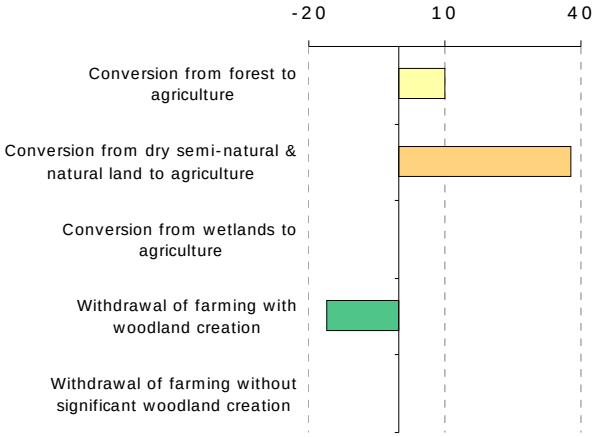
8.27. Consumption of agricultural land by non-agriculture 2000-2006 [% of total]



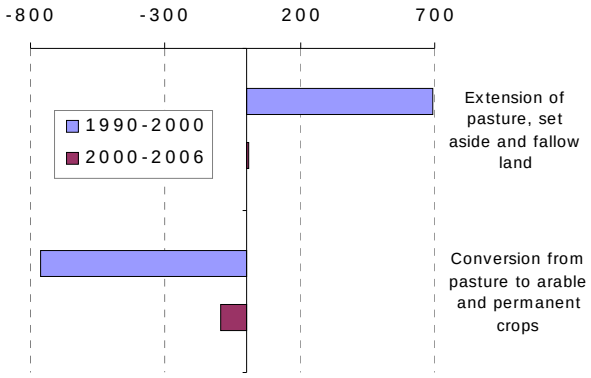
8.28. Formation of non-agricultural land from agriculture 2000-2006 [% of total]



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]



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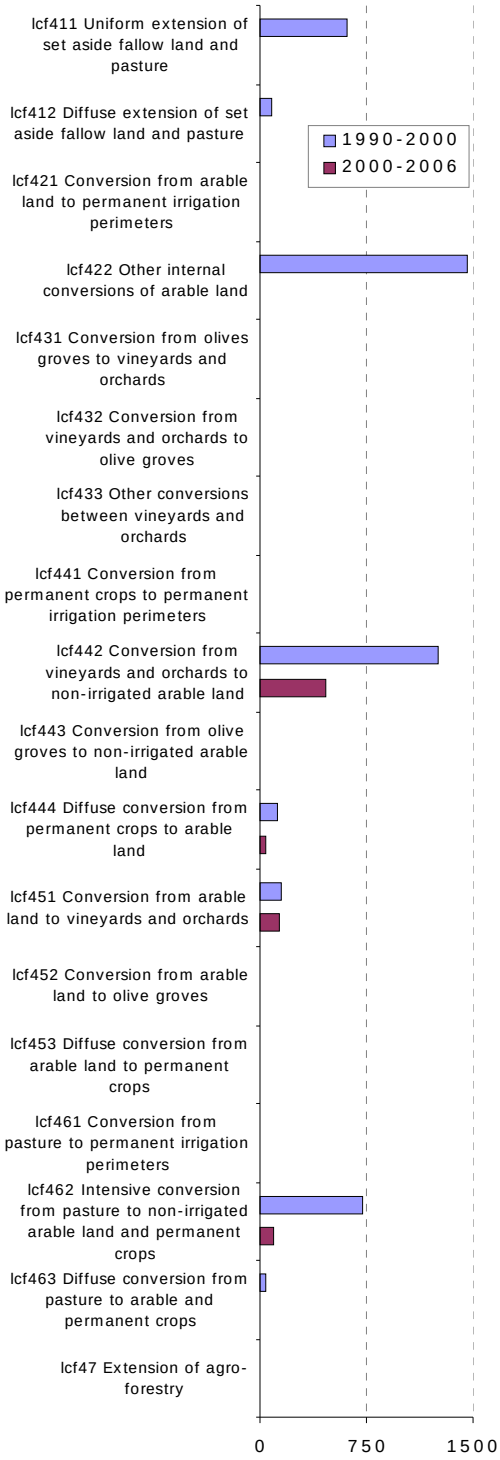
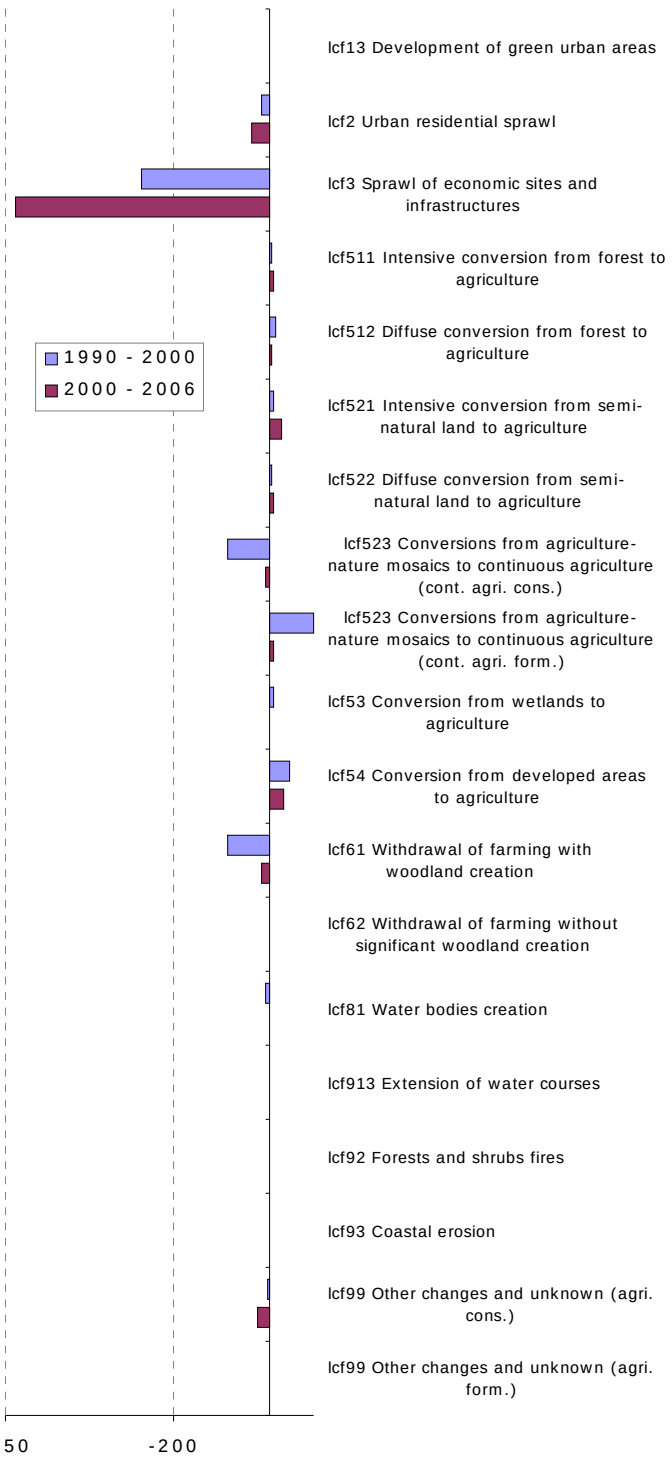
9.31. Mean annual agriculture internal conversions [ha/year]



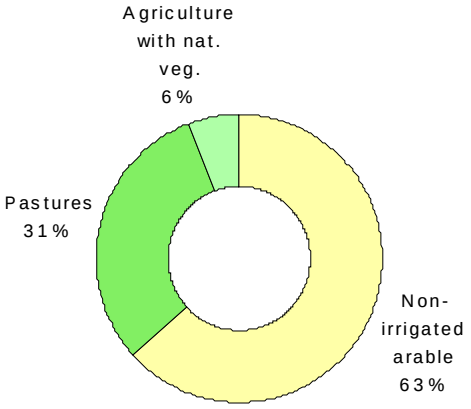
9.32. Mean annual conversions between agriculture and other LC types [ha/year]



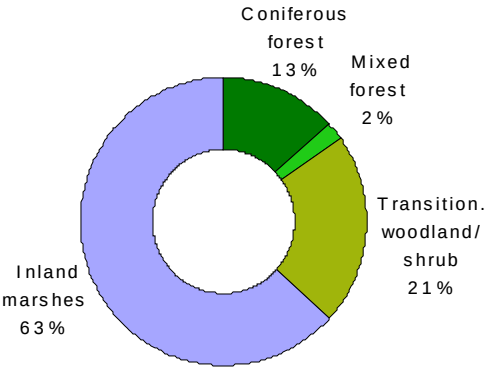
Bulgaria

Forest & nature

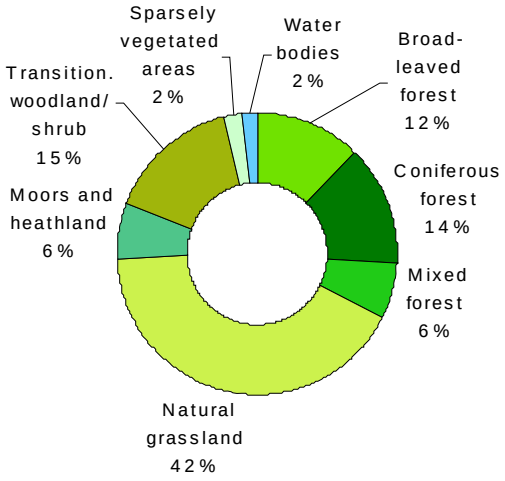
10.33. LC consumed by forest & nature 2000-2006 [% of total]



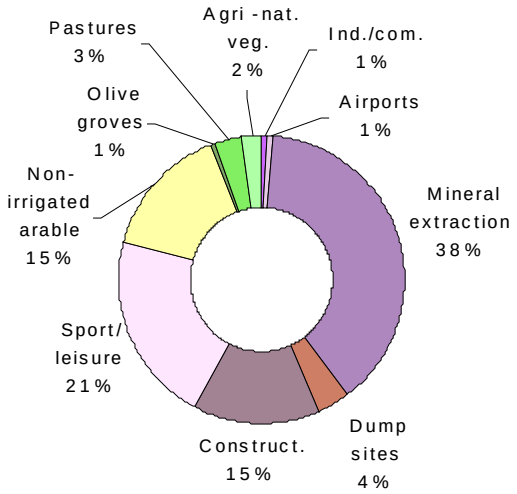
10.34. Formation of forest & nature land from non-forest /nature 2000-2006 [% of total]



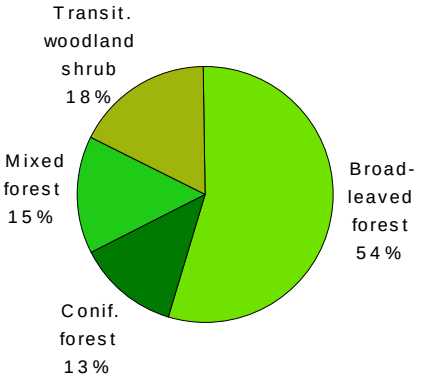
10.35. Consumption of forest & nature land by non-forest /nature 2000-2006 [% of total]



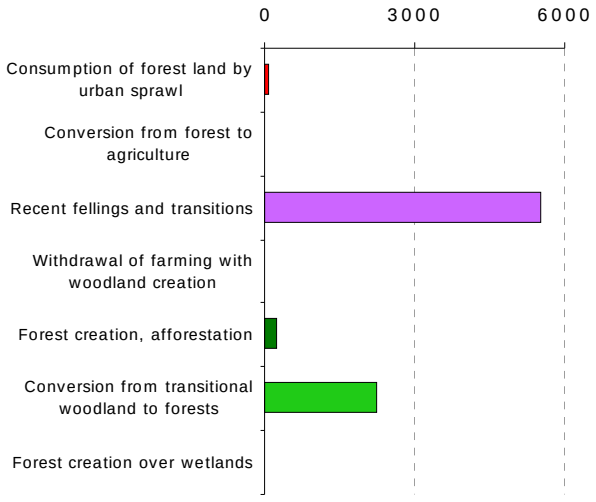
10.36. Formation of non-forest /nature land from forest & nature 2000-2006 [% of total]



10.37. Forested land 2006 [% of total area]

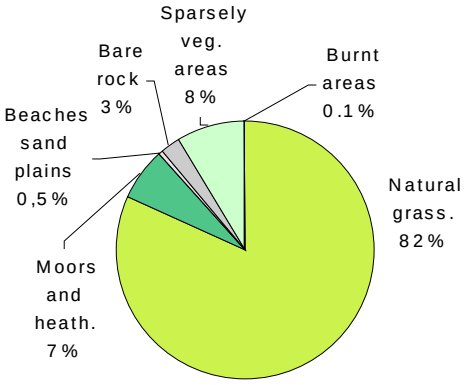


10.38. Main trends in woodland & forests consumption/formation 2000-2006 [ha/year]

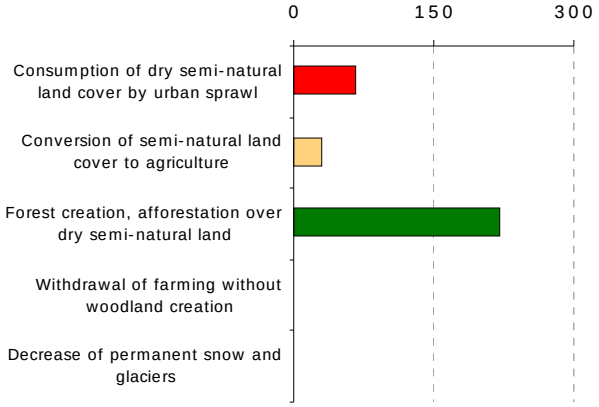


Bulgaria

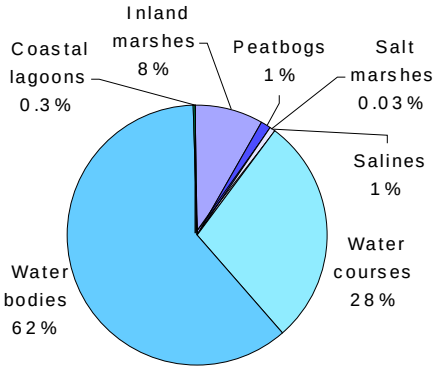
11.39. Dry semi-natural areas 2006 [% of total area]



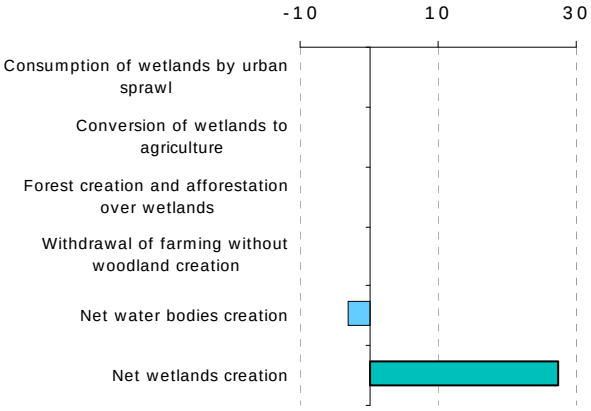
11.40. Main trends in dry semi-natural land consumption/formation 2000-2006 [ha/year]



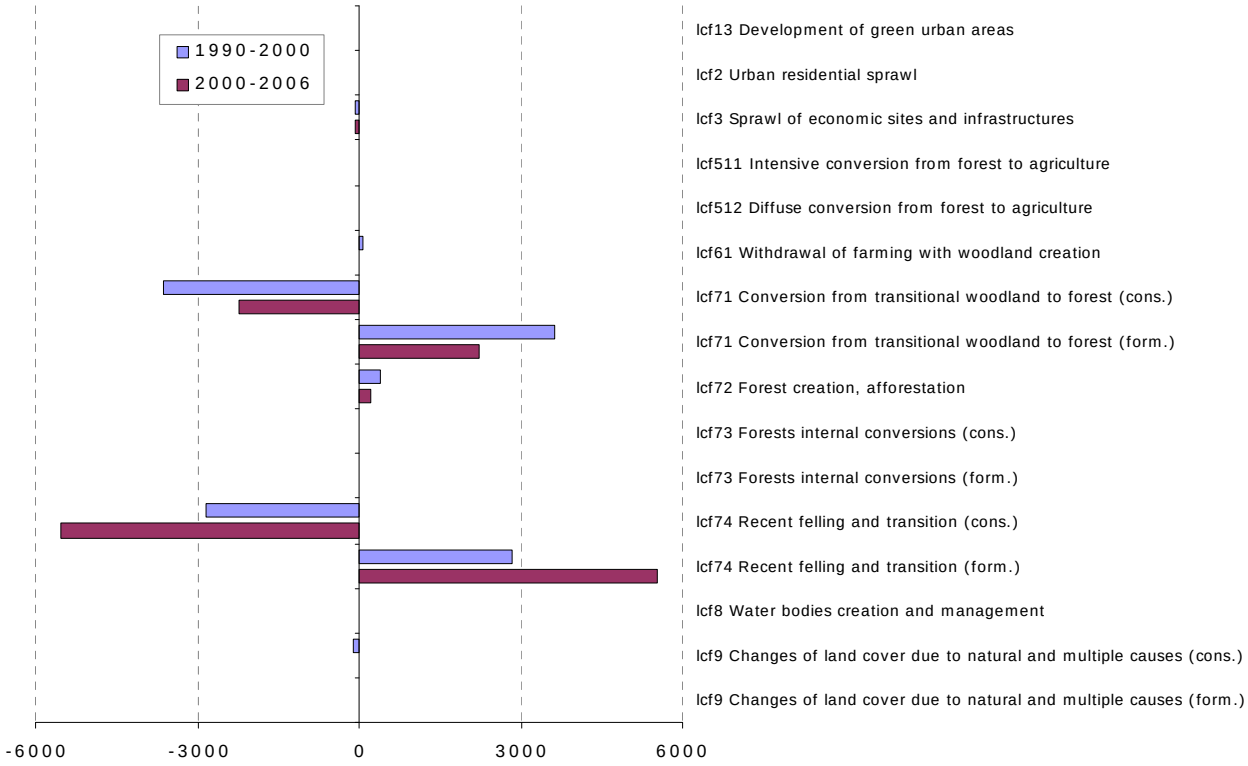
11.41. Wetlands & water 2006 [% of total area]



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



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



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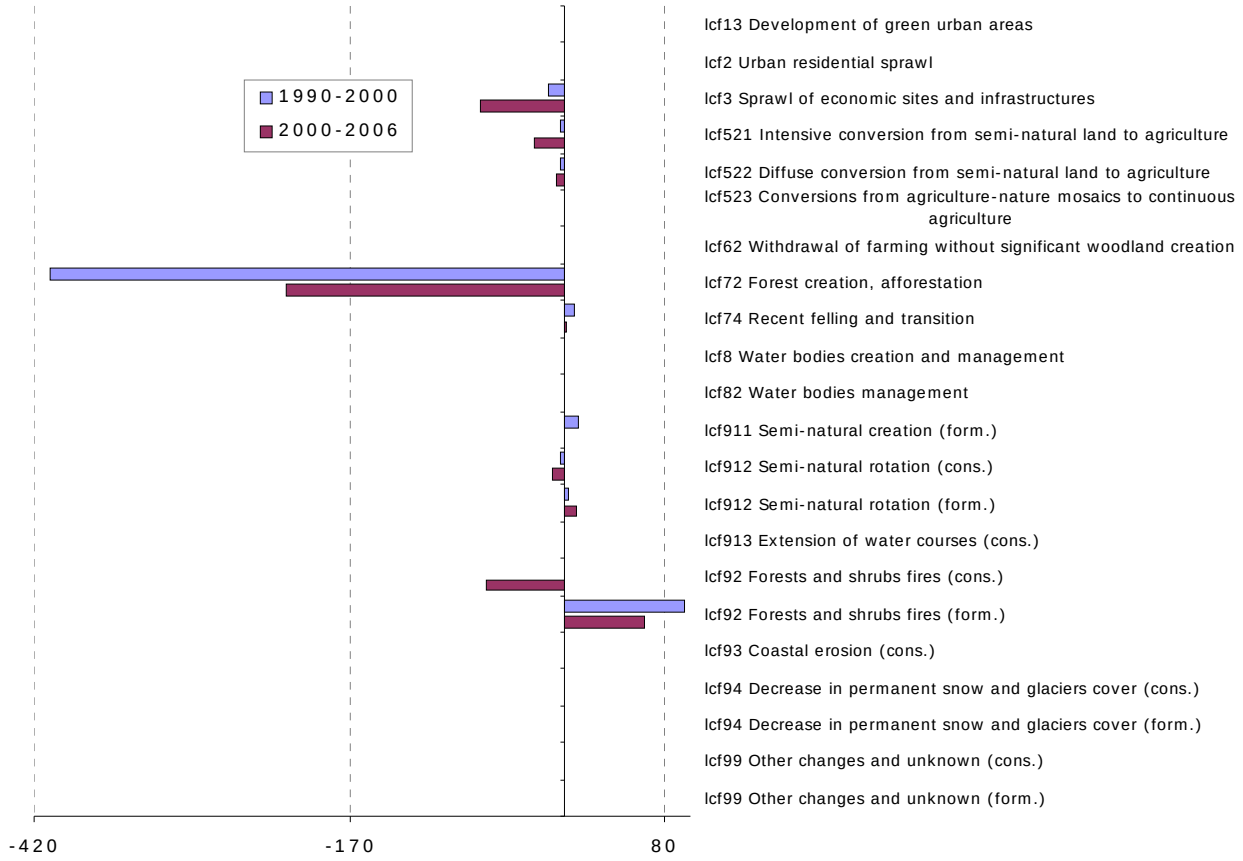
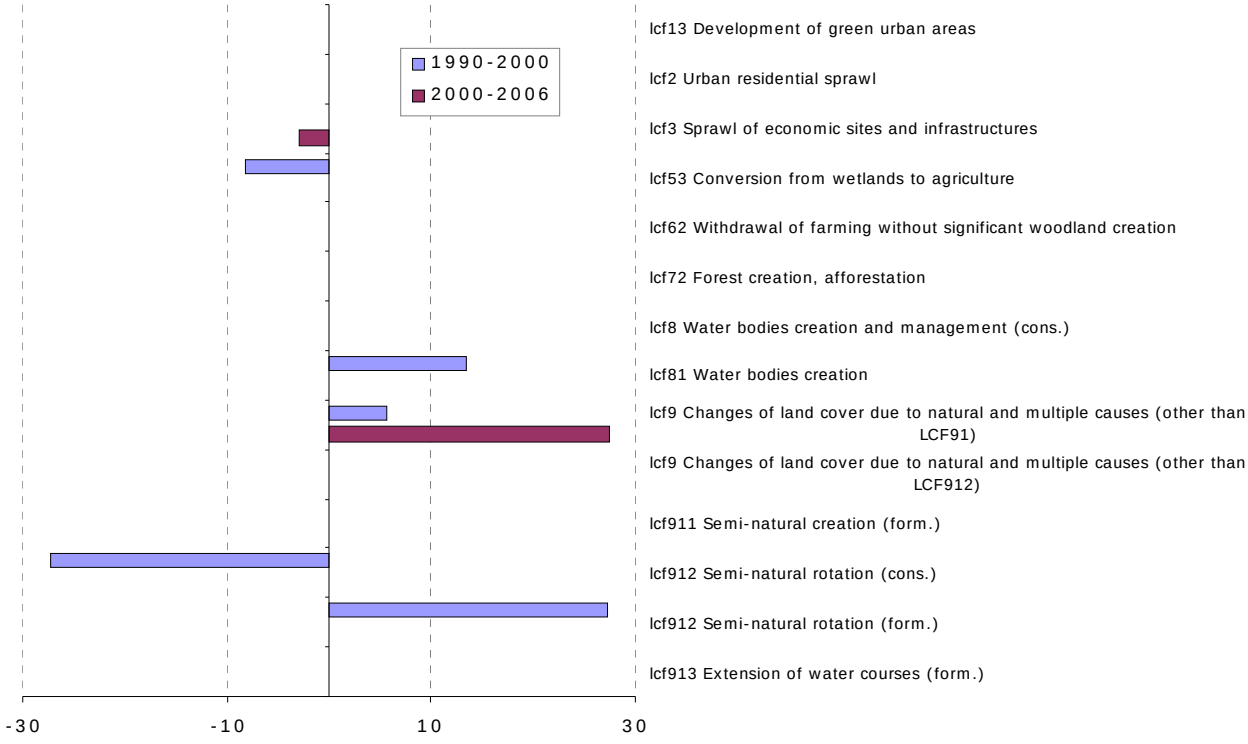
12.44. Mean annual conversions of dry semi-natural LC [ha/year]



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



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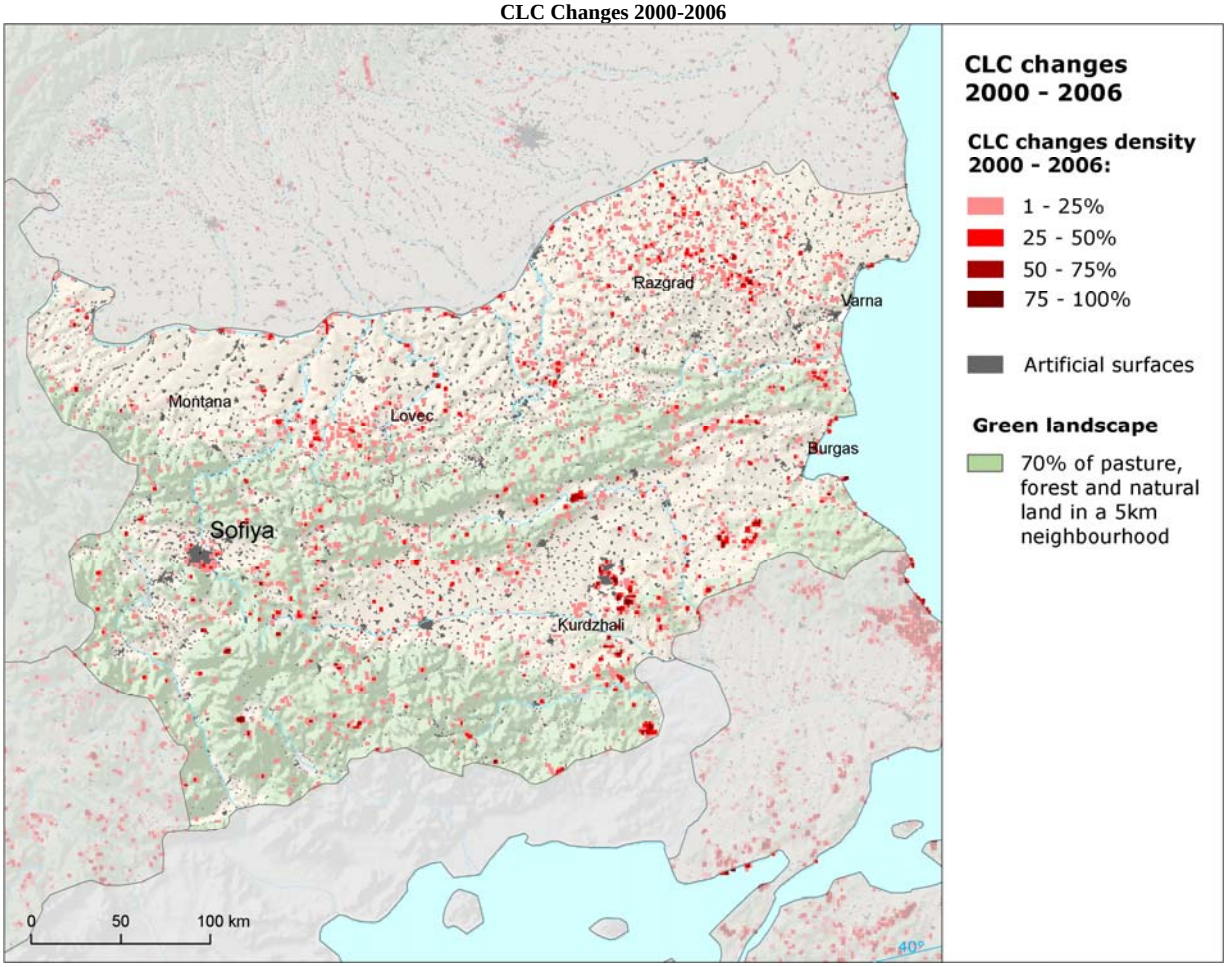
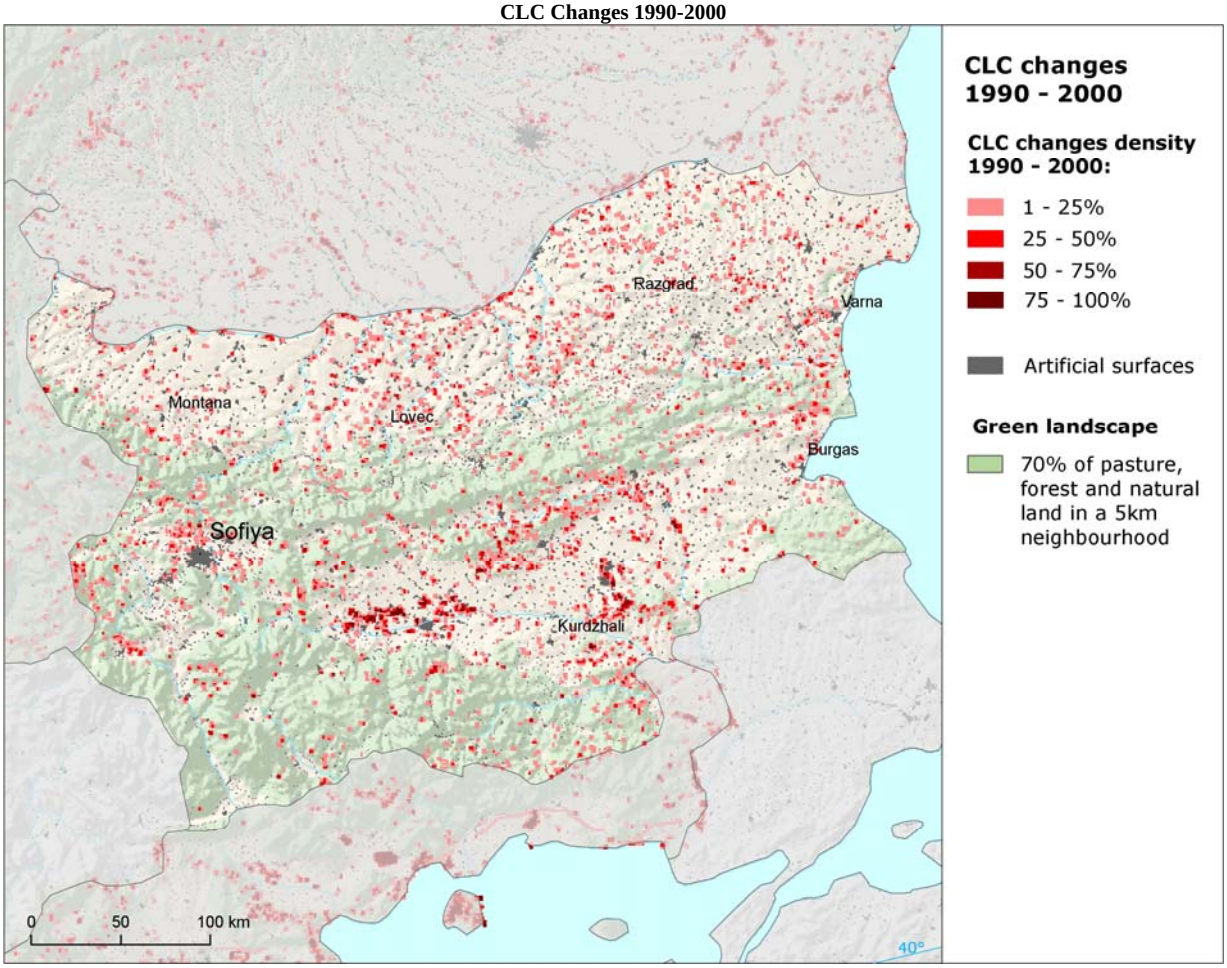
CLC Changes 2000-2006



CLC Changes 1990-2000



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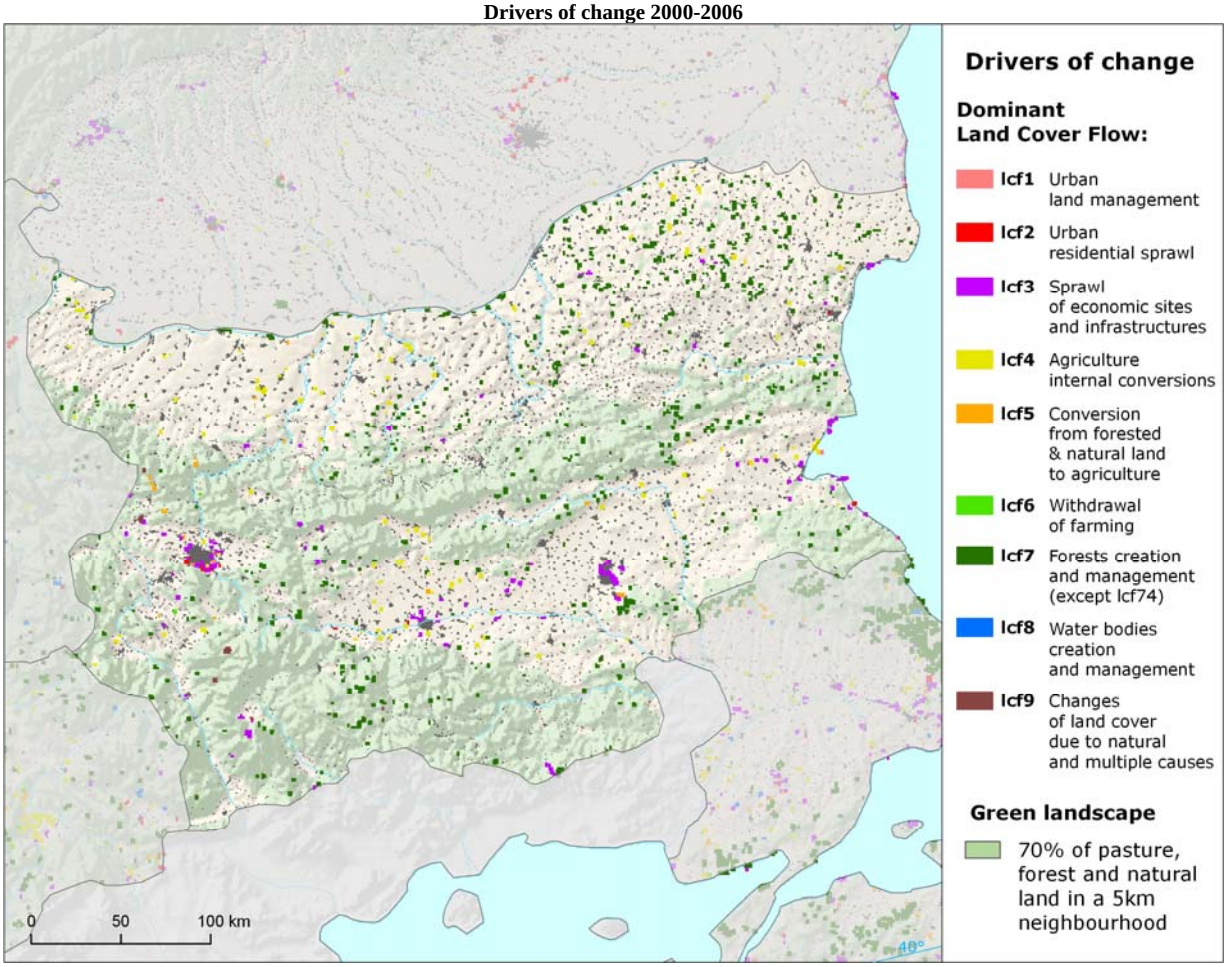
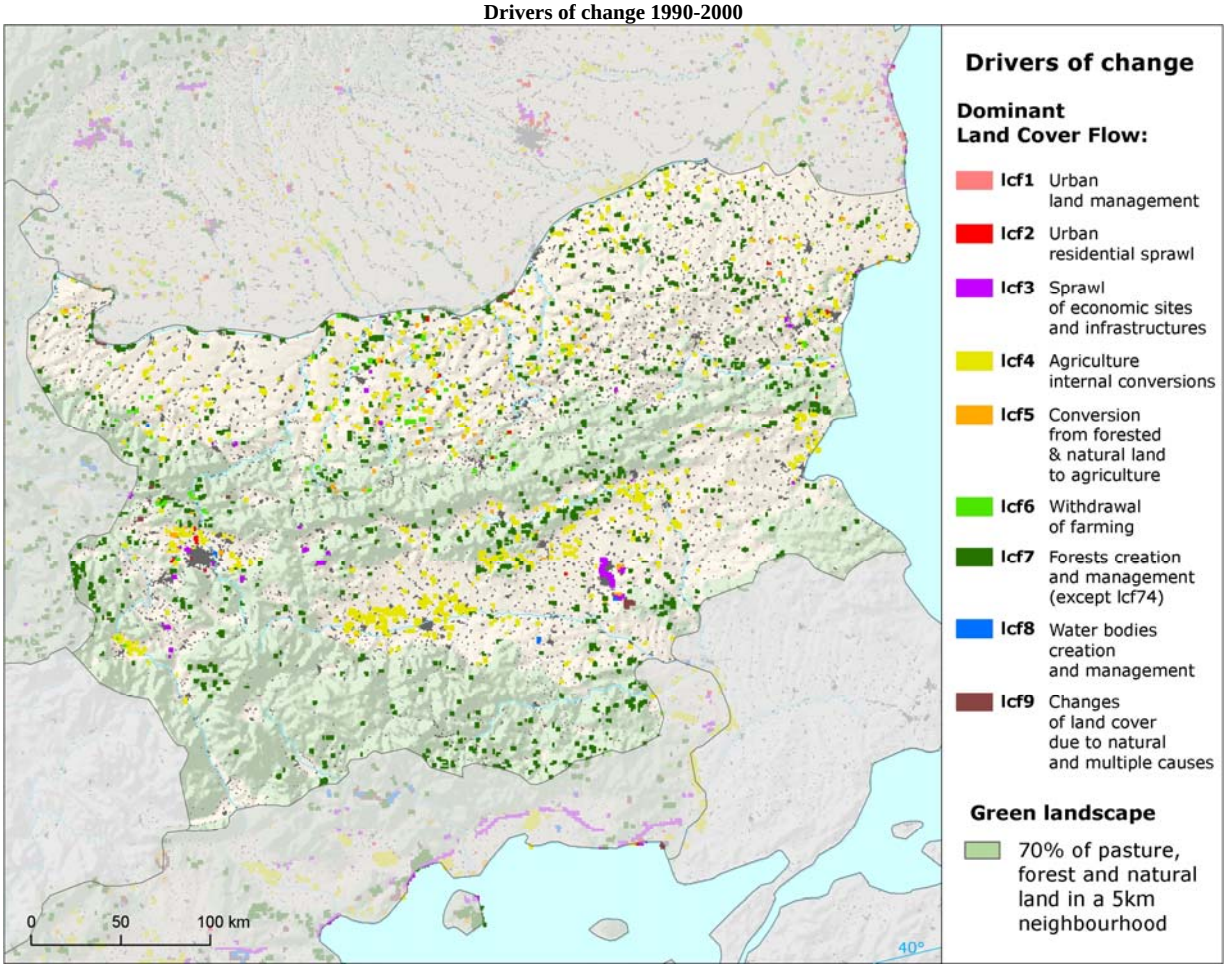
Drivers of change 2000-2006



Drivers of change 1990-2000



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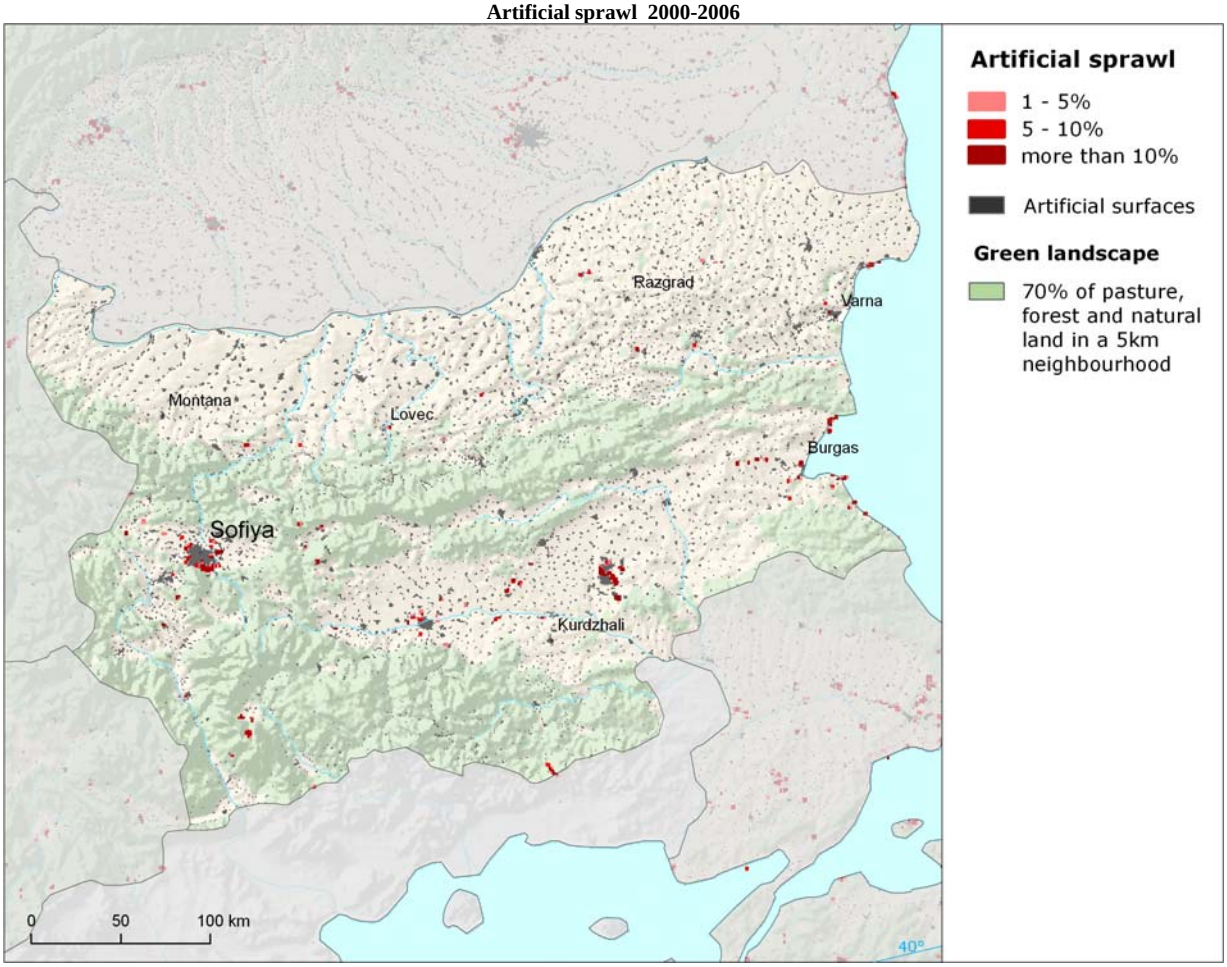
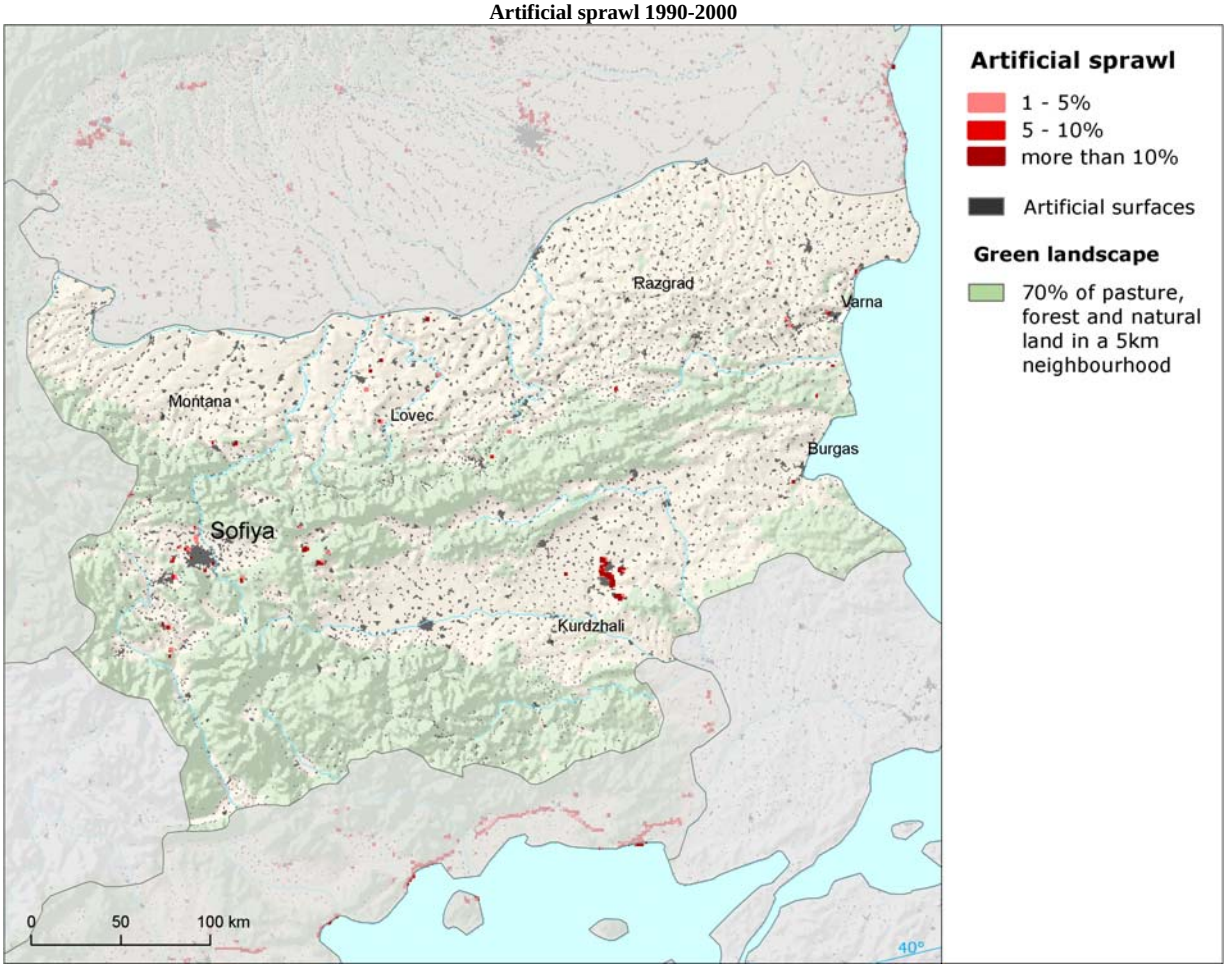
Artificial sprawl 2000-2006



Artificial sprawl 1990-2000



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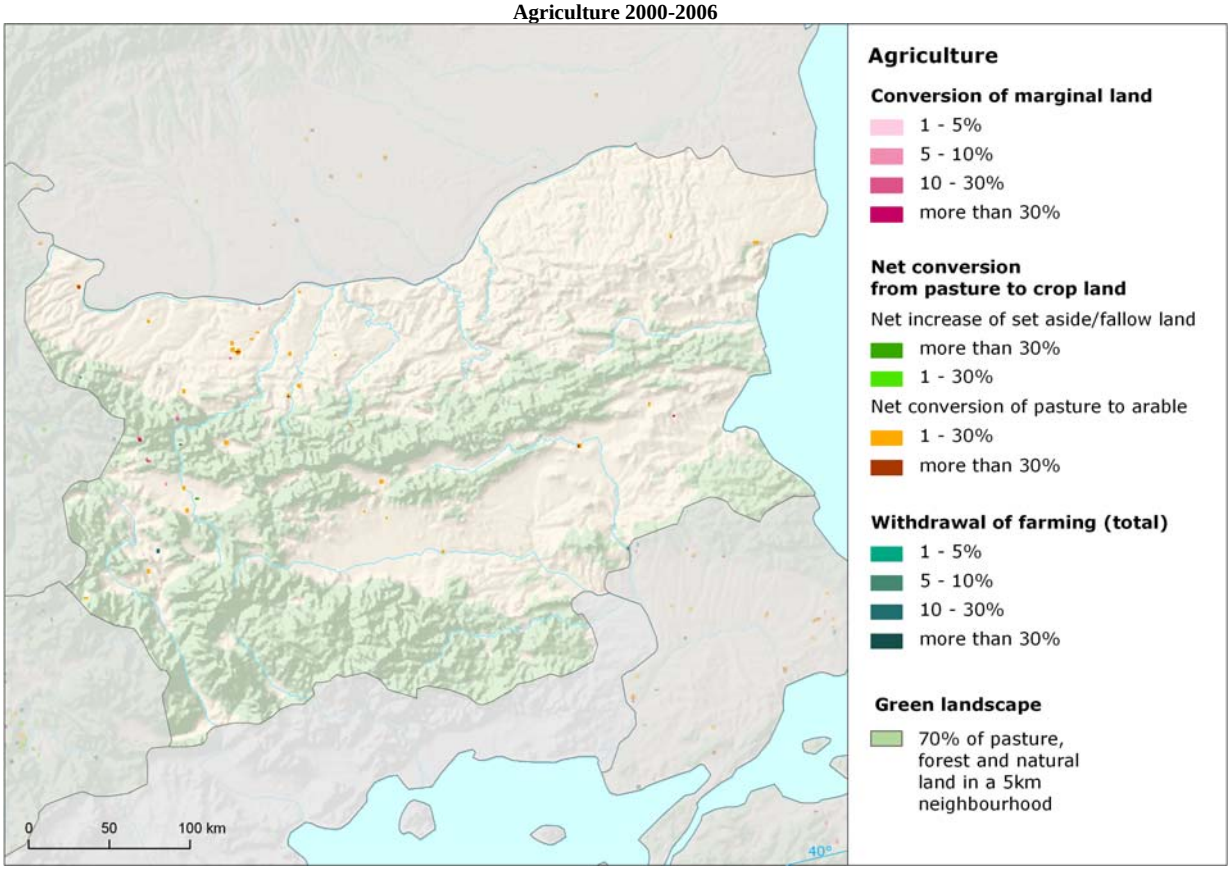
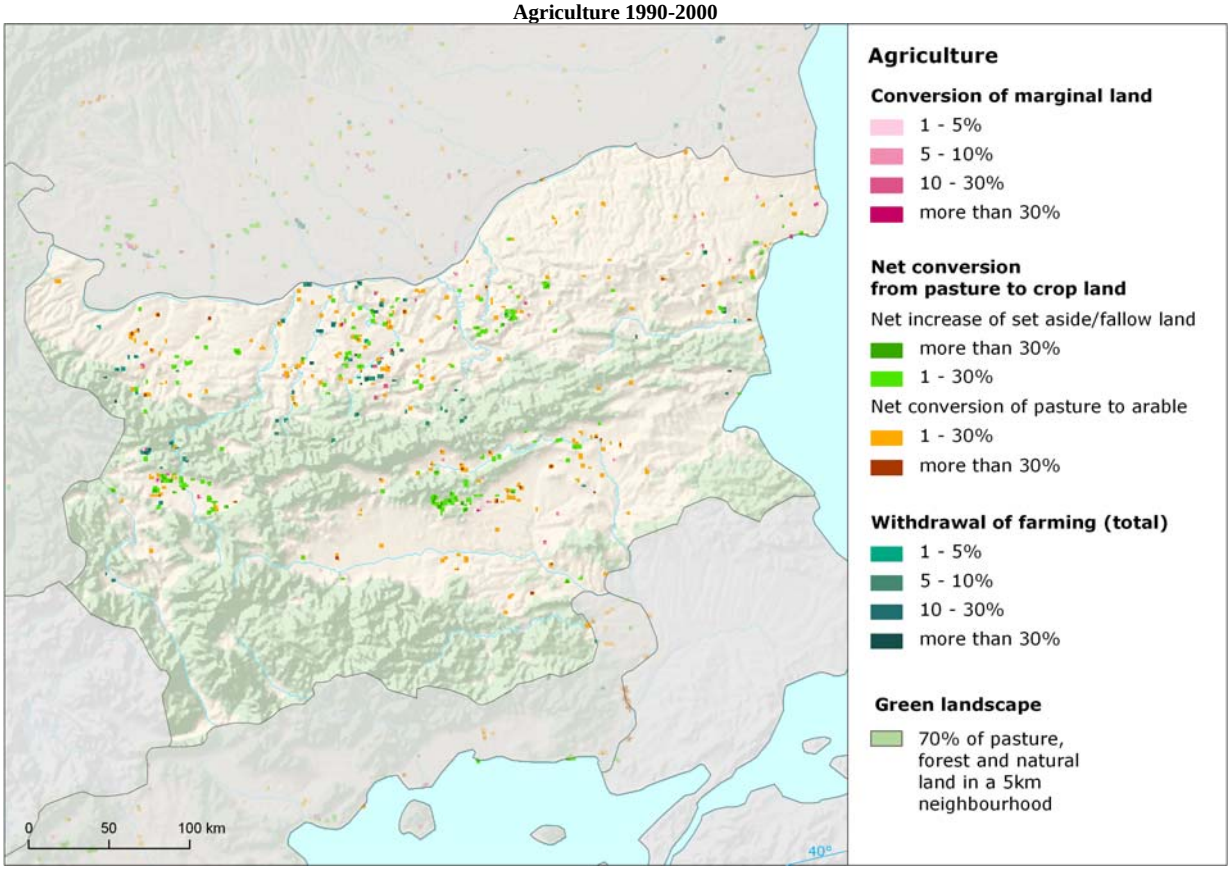
Agriculture 2000-2006



Agriculture 1990-2000



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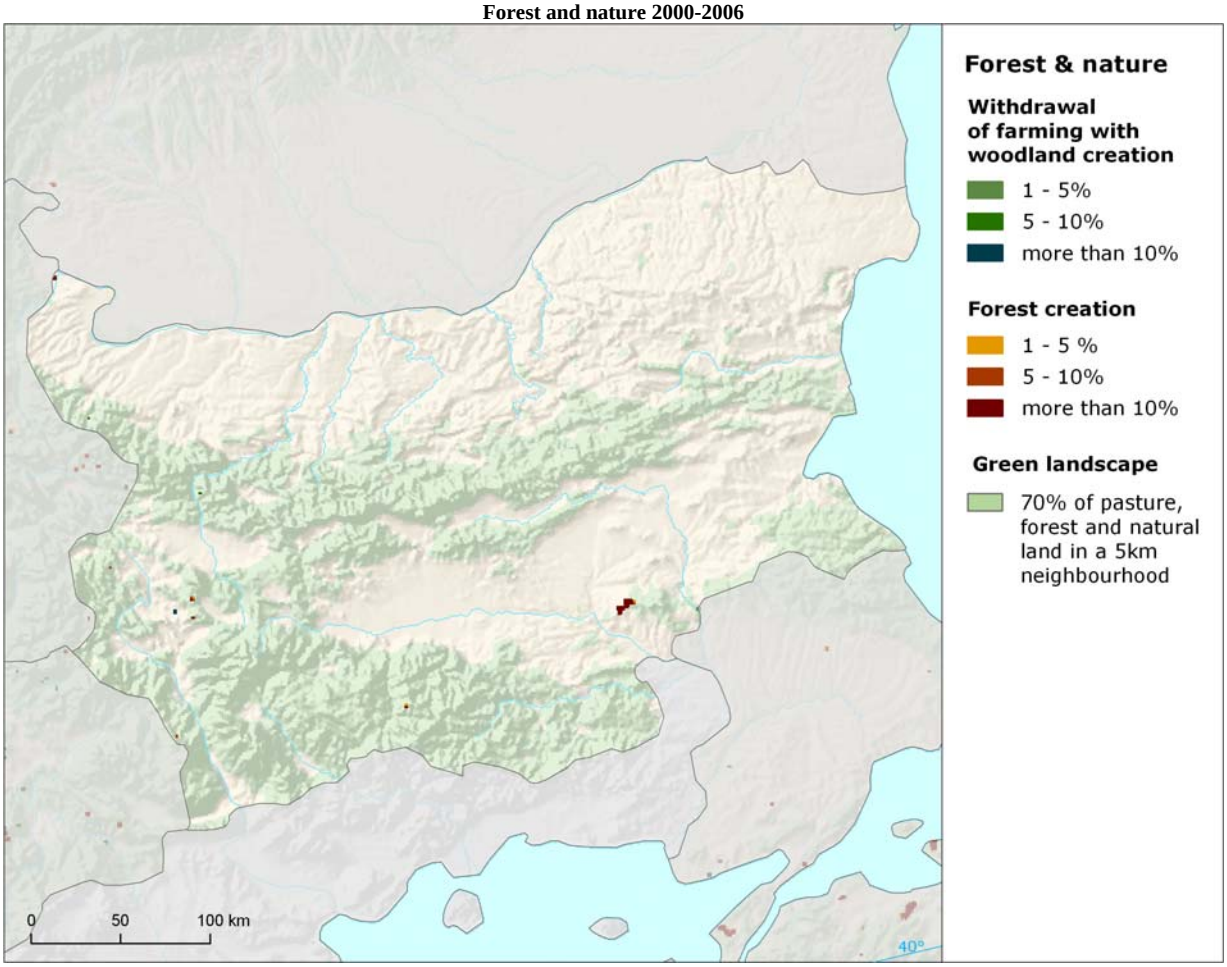
Forest and nature 2000-2006



Forest and nature 1990-2000