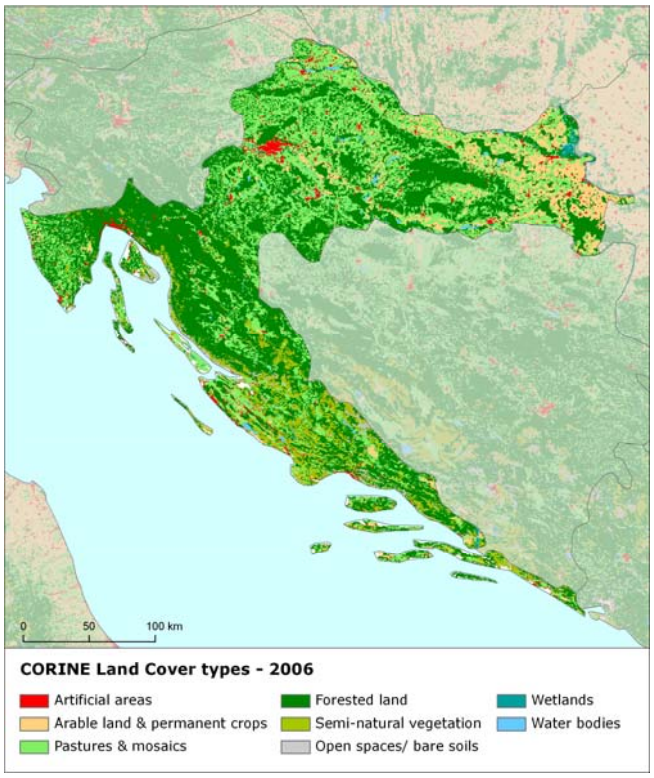
Croatia

Land cover 2006

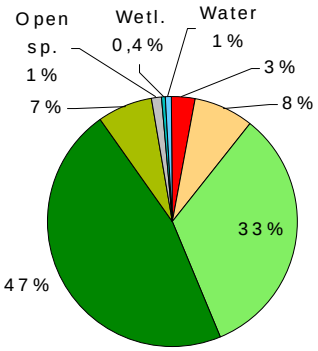
Overview of land cover & change 2000-2006

The overall dynamic of changes in landscape of Croatia slightly decreased compared to the previous period 1990-2000 to 0,17% per year. Pastures and mosaics together with forested land show the highest internal dynamic (characterized by total turnover), compared to previous period, when forested land clearly dominated. Nevertheless, the overall development of land cover in Croatia during 2000-2006 was driven mainly by artificial land uptake of natural surfaces and pastures/mosaics mostly by sprawl of transport networks and infrastructures connected with highway construction. The other land cover types with positive balance of net change are arable/crop land and water bodies, in contrast to the rest with negative net change balance. This includes also pastures/mosaics, a result of significant inversion of internal agriculture conversions compared to the previous period - prevailing formation of crop/arable land and consumption of pastures. The high percentual consumption rate of open spaces/bare soils is caused by transitional woodlands or natural grasslands formation over recently burnt areas.
Intensity of forest internal conversions significantly decreased, while internal agriculture conversions are of comparable intensity as in the previous period. Both conversions from forested/natural land to agriculture and opposite withdrawal of farming have been slowed down, too.
The most significant changes in Croatian landscape after year 2000 are due to construction of highways which connect capital city Zagreb in the north with southern part of Adriatic coast. Besides, artificial sprawl is situated also in the northern part of the country, in the surroundings of the capital city Zagreb and to a lesser extent also over the Istrian peninsula and along the Adriatic coast. Agricultural conversions are situated mostly in the central part of the country and in the region of Zadar city near the Adriatic coast. Changes in forested land are distributed over continental part of Croatia.

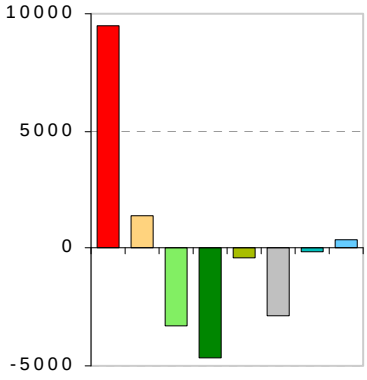


Note The results presented here are based on a change analysis of 44 land cover types mapped consistently on a 1:100.000 scale across Europe over almost two decades 1990-2006 - see Corine land cover (CLC) programme for details.
Number of years between CLC2000-CLC2006 data for Croatia: 6

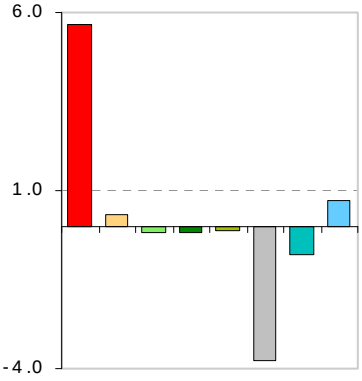
1.1. Land cover 2006 [% of total]



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

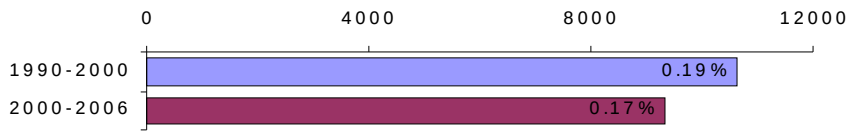
Summary balance table 2000-2006

	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	**1685**	**4399**	**18486**	**26511**	**3997**	**759**	**200**	**534**	**56571**
Consumption of initial LC	11	7	124	355	25	36	2	0	560
Formation of new LC	106	21	92	309	21	7	0	4	560
Net Formation of LC	**95**	**14**	**-33**	**-46**	**-4**	**-29**	**-2**	**4**	**0**
Net formation as % of initial year	*5.6*	*0.3*	*-0.2*	*-0.2*	*-0.1*	*-3.8*	*-0.8*	*0.7*	
Total turnover of LC	**118**	**27**	**216**	**664**	**46**	**43**	**2**	**4**	**1120**
Total turnover as % of initial year	*7.0*	*0.6*	*1.2*	*2.5*	*1.2*	*5.7*	*0.8*	*0.7*	*2.0*
Land cover 2006	**1780**	**4413**	**18453**	**26465**	**3993**	**730**	**198**	**538**	**56571**

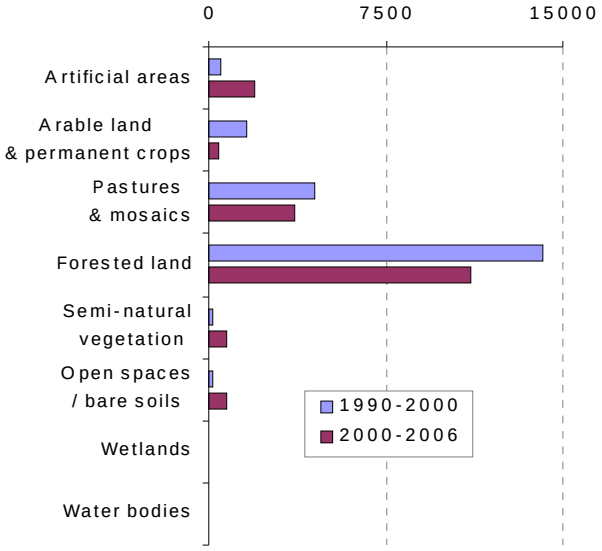
Croatia

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

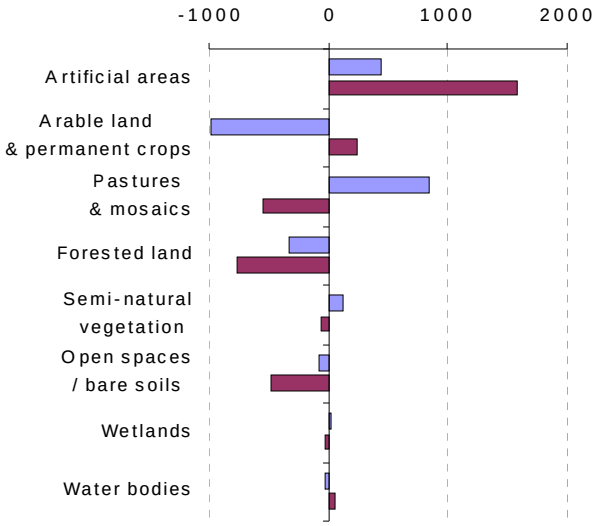
2.4. Annual land cover change [ha/year, % of total area]



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

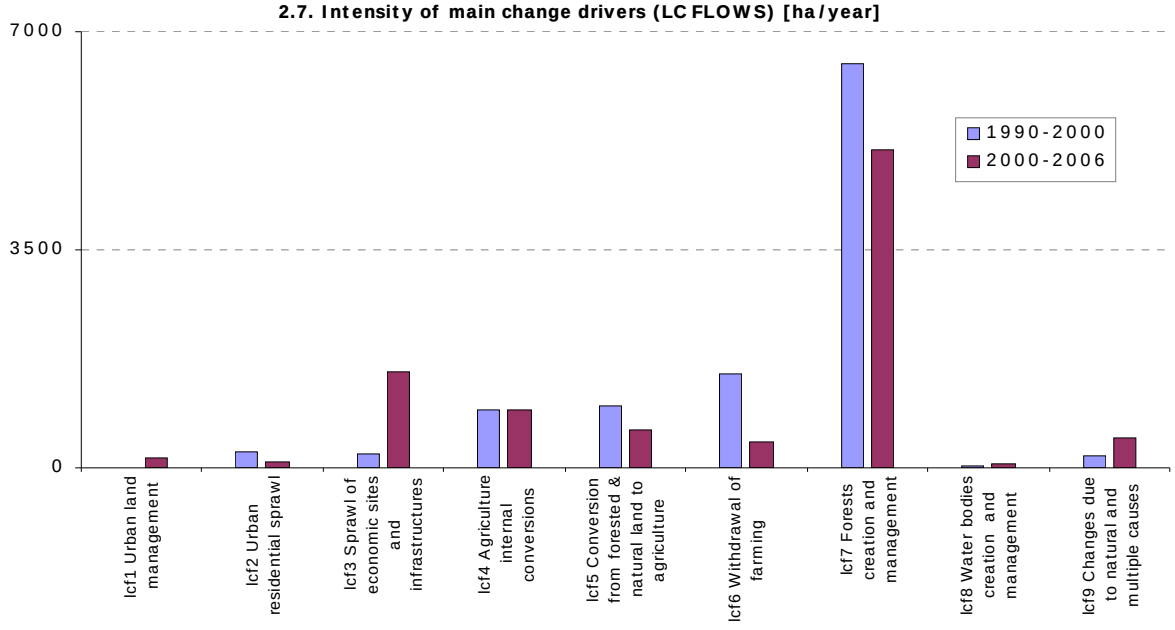


2.6. Net annual change of LC types [ha/year]



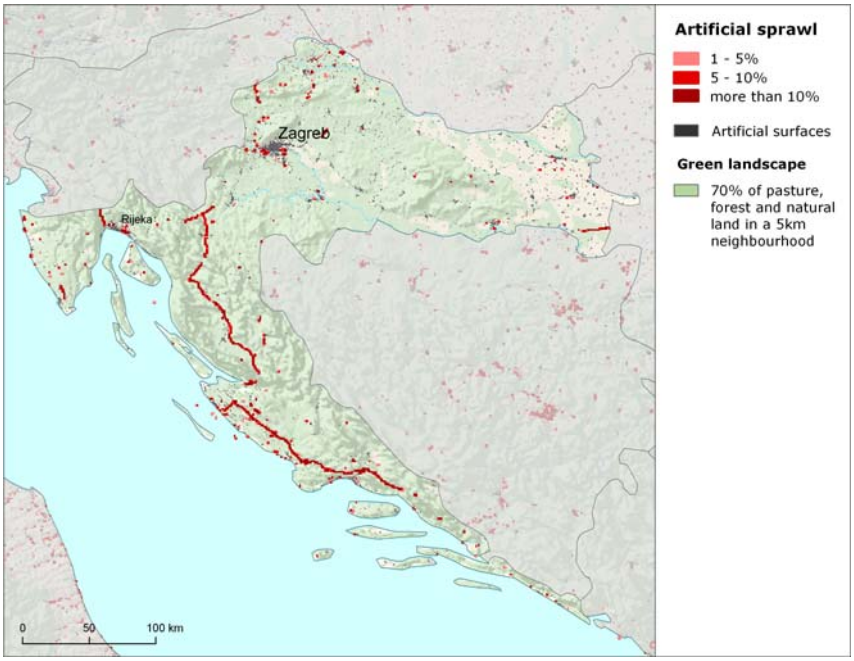
Summary trend figures	1990-2000	2000-2006
Annual land cover change [ha/year]	**10619**	**9337**
Annual land cover change as % of initial year	**0.19%**	**0.17%**
Land uptake by artificial development as mean annual change [ha/year]	459	1618
Agricultural land uptake by urban and infrastructures development as mean annual change [ha/year]	352	598
Net uptake of forests and semi-natural land by agriculture as mean annual change [ha/year]	-517	173
Net conversion from pasture to arable land and permanent crops as mean annual change [ha/year]	-577	853
Forest & other woodland net formation as mean annual change [ha/year]	-337	-772
Dry semi-natural land cover net formation as mean annual change [ha/year]	96	-512
Wetlands & water bodies net formation as mean annual change [ha/year]	0	37

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

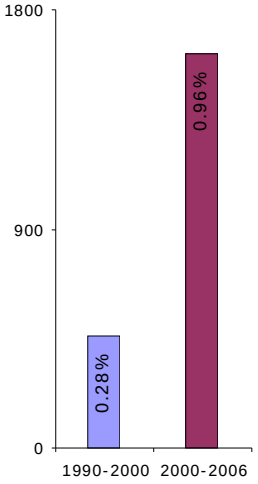


Croatia

Artificial areas



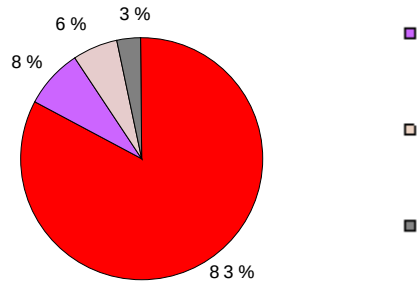
3.8. Artificial land take [ha/year, % of initial year]



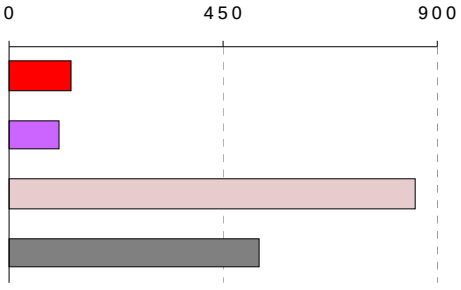
Accelerated artificial sprawl driven by highway construction

During 2000-2006, the sprawl of artificial surfaces accelerated more than three times compared to the previous period. The dominant share (53%) of the total artificial land uptake has the development of transport networks and infrastructures (caused by highway construction). Besides, sprawls of construction (22%) and mineral extraction sites (10%) are the other significant drivers of artificial land uptake in Croatia. Both residential (6%) and commercial/industrial sprawl (7%) have minor share of the total area taken, with having even decreasing residential sprawl tendency compared to the previous period. For comparison, recycling of developed urban areas, represented by conversion of construction sites into transportation networks (which is also connected with highway construction) has higher share of the total artificial change than sprawl of residential or commercial areas.
Concerning the consumed land cover, mostly natural land with majority of forested land and semi-natural vegetation, together with pastures and mosaics, have been taken by artificial surfaces. Spatially, besides construction of highways connecting the capital city Zagreb in the north with southern part of Adriatic coast, the artificial sprawl is in the surroundings of the large cities and along the Istrian peninsula and the Adriatic coast

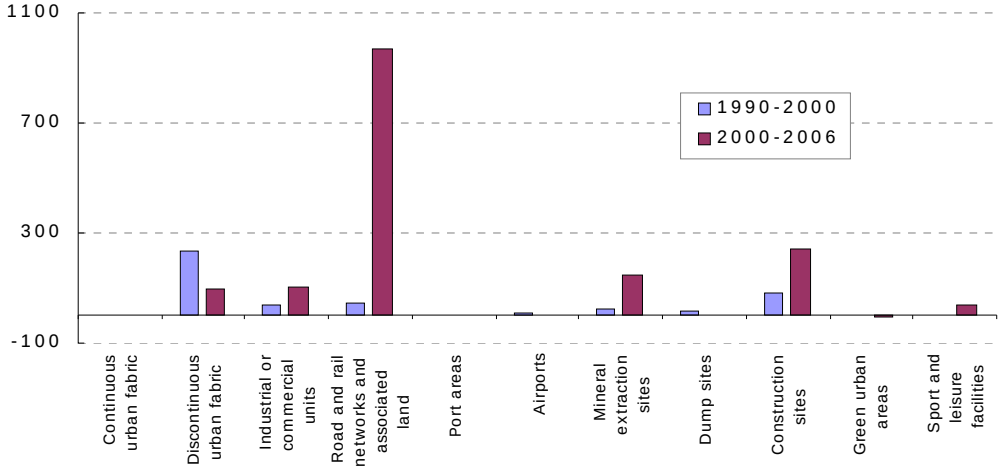
3.9. Artificial surfaces 2006 [% of total area]



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

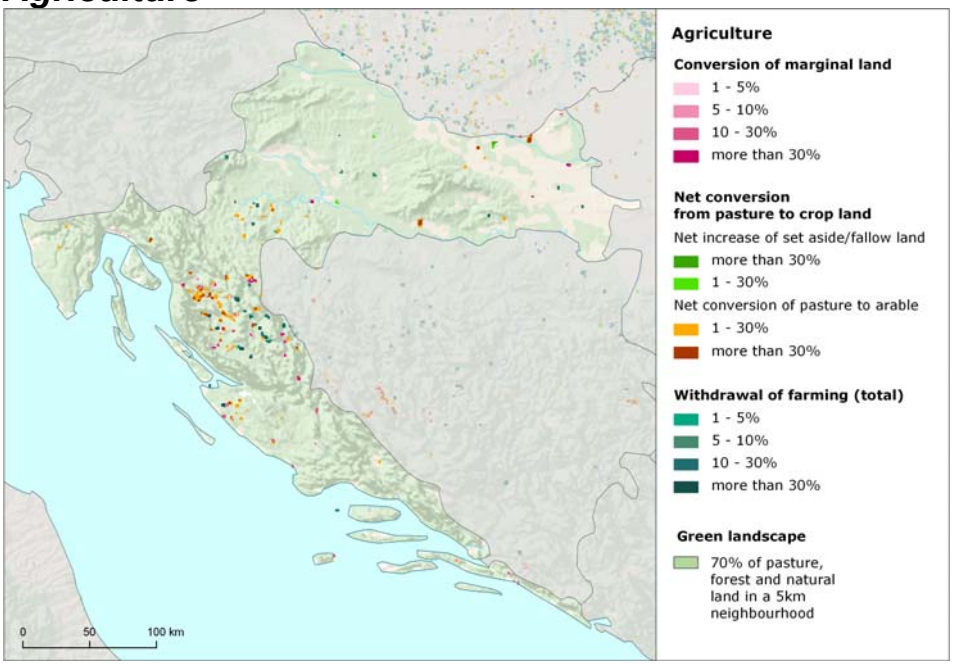


3.11. Mean annual artificial change by class [ha/year]



Croatia

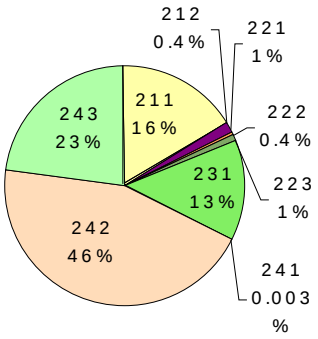
Agriculture

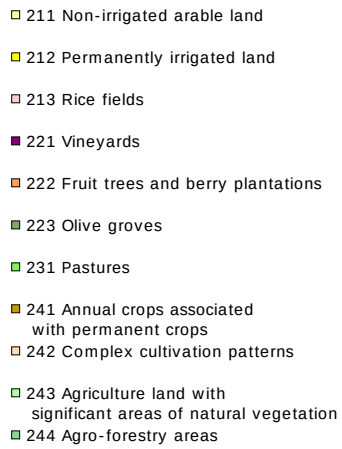


Inversion of internal conversions, formation of permanent crops plantations

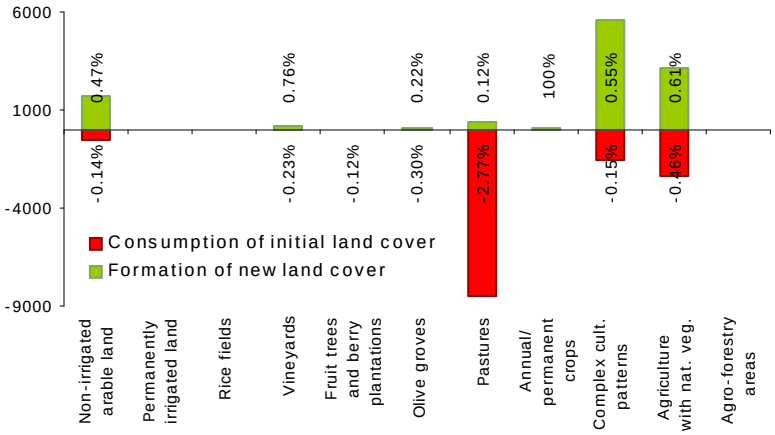
Agriculture in Croatia has typical Mediterranean character with majority of complex cultivation patterns and agricultural areas with natural vegetation. Change dynamic of agricultural surfaces has decreasing intensity with opposite trend in agricultural land conversions compared with the previous period. The period 2000-2006 is characterized by positive balance of net change for arable land, agricultural land with natural vegetation and especially for permanent crops and negative balance for pastures. Conversion from pasture to arable land and permanent crops became the dominant internal agricultural flow in Croatia. On the contrary, there has been significant consumption of pastures compared to the previous period.
From external conversions between agriculture and other land cover types, accelerated consumption of agricultural land by sprawl of economic sites and infrastructures (which is connected to highway construction) and diffuse conversion from forest to agriculture are the most significant flows. Besides, conversions between agro-natural mosaics and continuous agriculture are the other drivers with significant share of the total agriculture change.

4.12. Agricultural areas 2006 [% of total area]

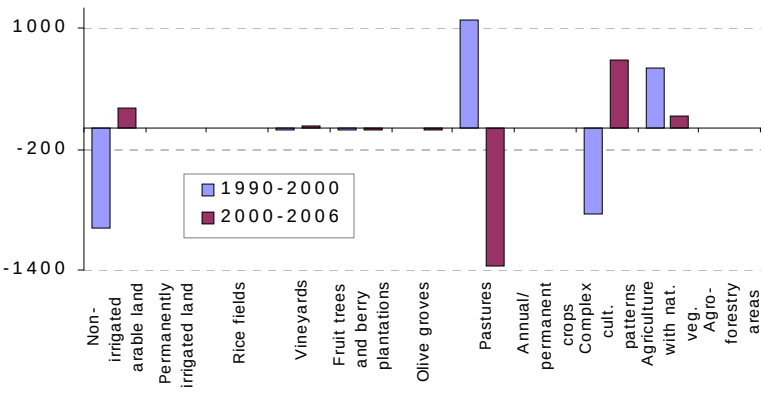




4.13. Development of agricultural areas 2000-2006 – detailed balance [ha]

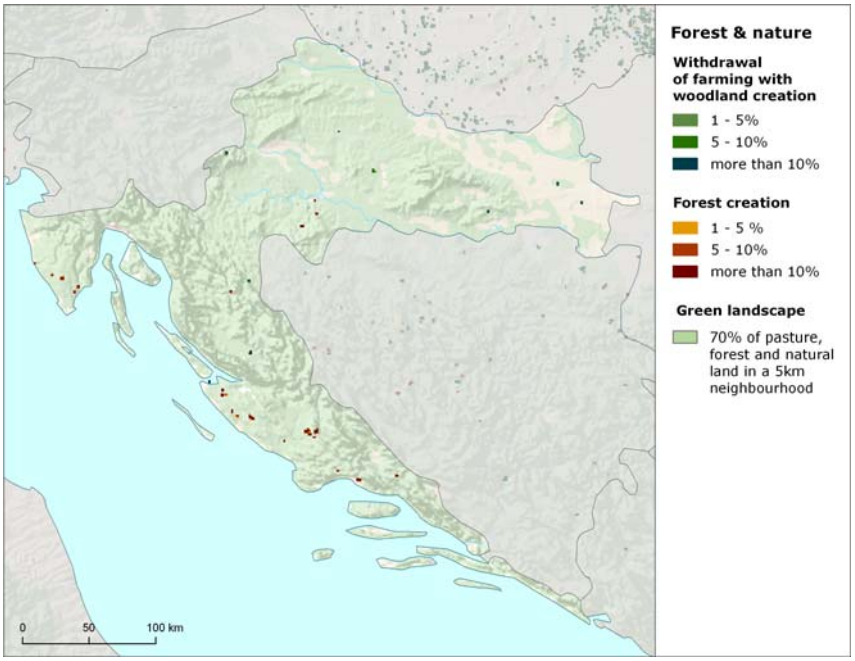


4.14. Mean annual agricultural change by class [ha/year]

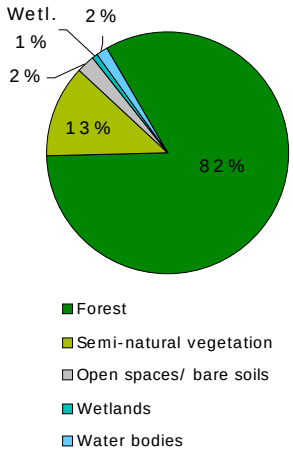


Croatia

Forest & nature



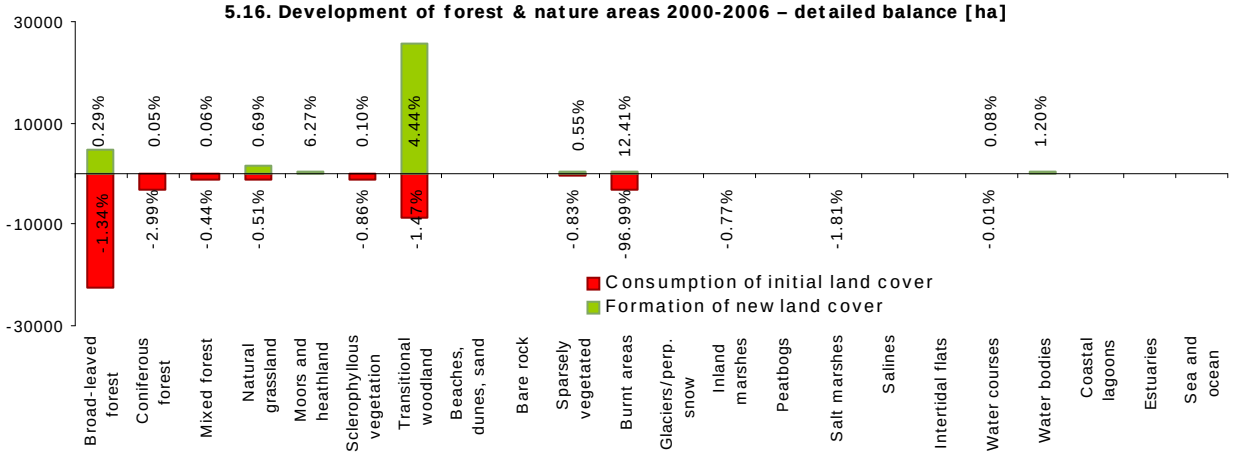
5.15. Forest & nature areas 2006 [% of total area]



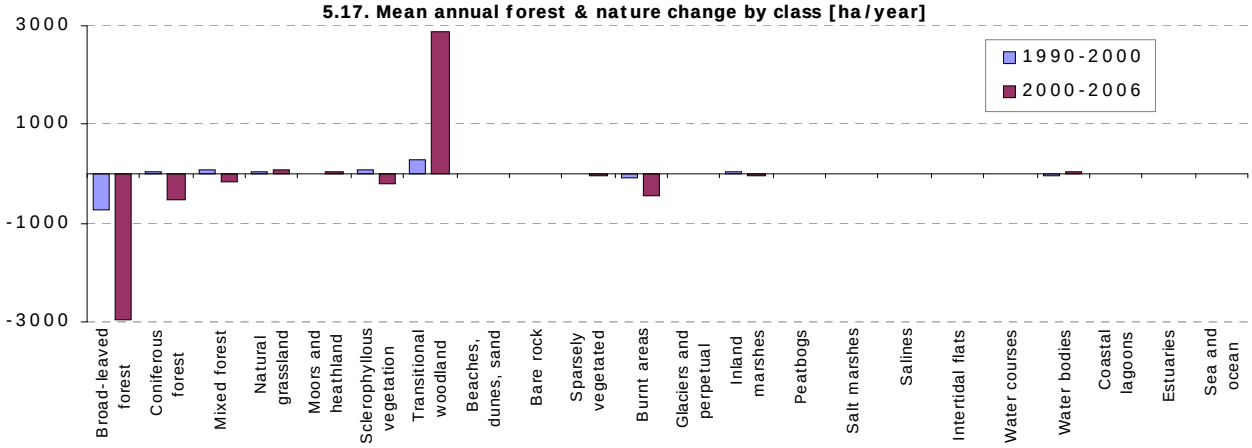
Artificial uptake of natural surfaces, restoration of burnt areas

All natural land cover types in Croatia, with the only exception of water bodies, have negative balance of net change during 2000-2006. The most significant consumer of natural land is the sprawl of transportation networks connected with highway construction. Mostly transitional woodlands, broad-leaved forests and natural grasslands have been consumed by this land take. On the contrary, positive net change balance of water bodies is caused by formation of water bodies over agricultural land or former mineral extraction areas. Open spaces/bare soils are the land cover type with highest percentual consumption rate of all natural surfaces. Their consumption is driven by transitional woodlands or natural grasslands formation over recently burnt areas, which is the second most significant driver of internal exchange in natural landscape in Croatia. Nevertheless, the highest share of the total natural land change is represented by forest internal conversions between transitional woodland and forest due to regular forestry activities.

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



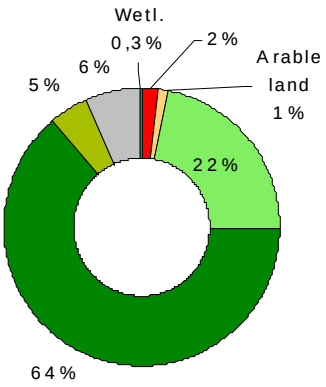
5.17. Mean annual forest & nature change by class [ha/year]



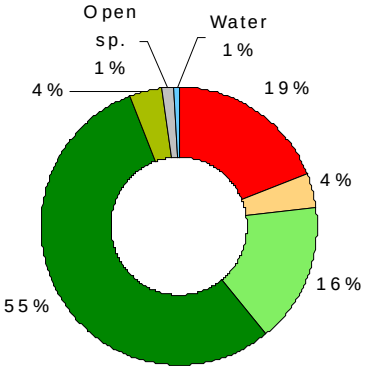
Annex: Land cover flows and trends

Land cover flows 2000-2006

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

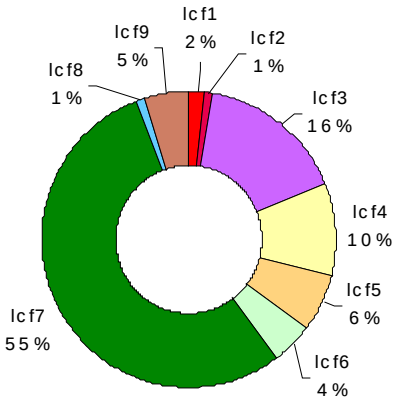


6.19. Formation of land cover 2000-20O6 [% of total change area]



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]

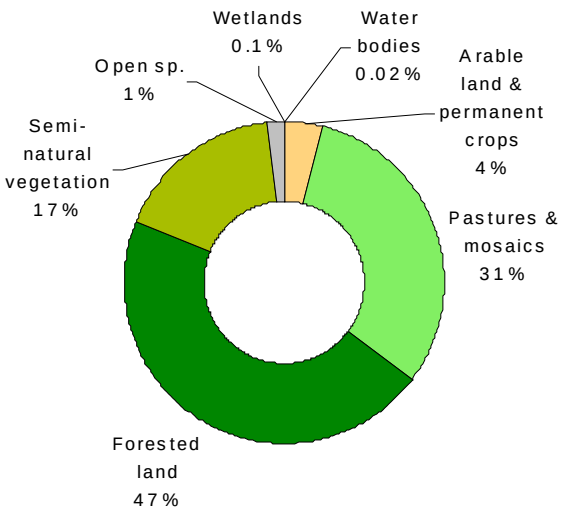


lcf1 Urban land management
lcf2 Urban residential sprawl
lcf3 Sprawl of economic sites and infrastructures
lcf4 Agriculture internal conversions
lcf5 Conversion from forested & natural land to agriculture
lcf6 Withdrawal of farming
lcf7 Forests creation and management
lcf8 Water bodies creation and management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

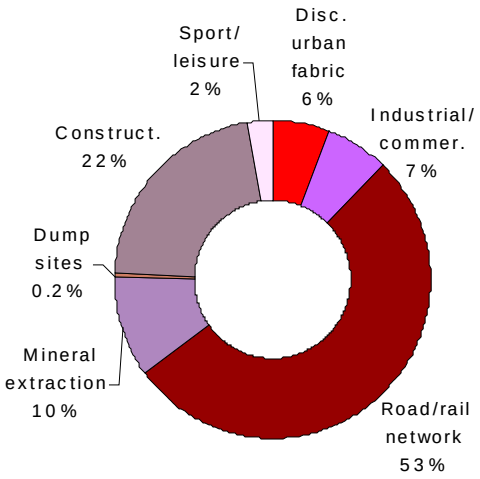
Croatia

Artificial areas

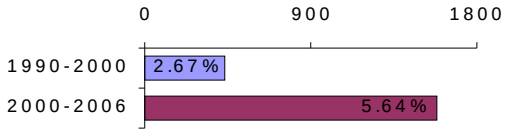
7.21. Consumption by artificial land take 2000-2006 [% of total]



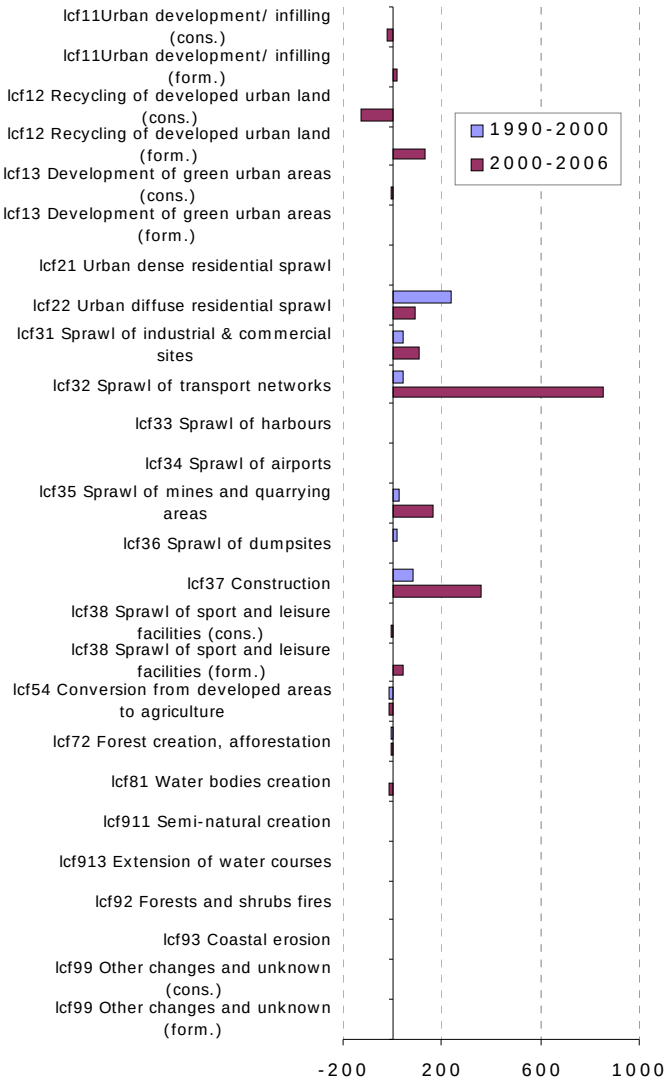
7.22. Formation by artificial land take 2000-2006 [% of total]



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



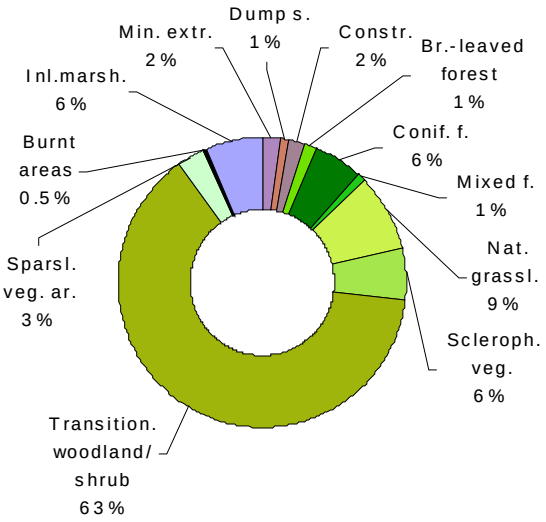
7.24. Artificial development by change drivers (LC FLOWS) [ha/year]



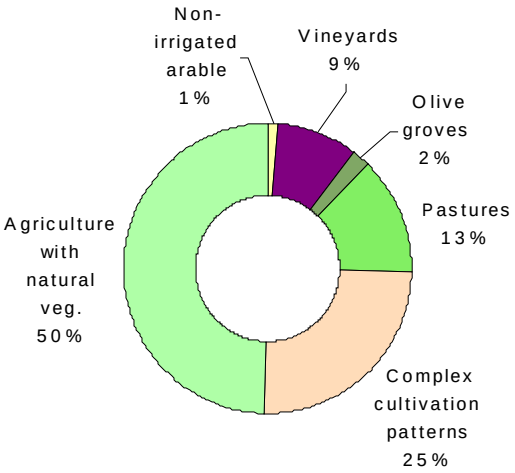
Croatia

Agriculture

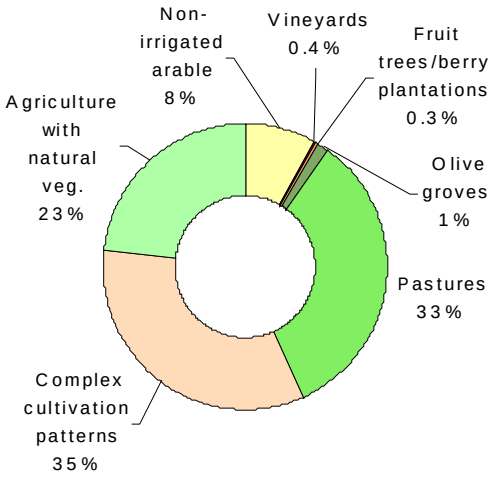
8.25. LC consumed by agriculture 2000-2006 [% of total]



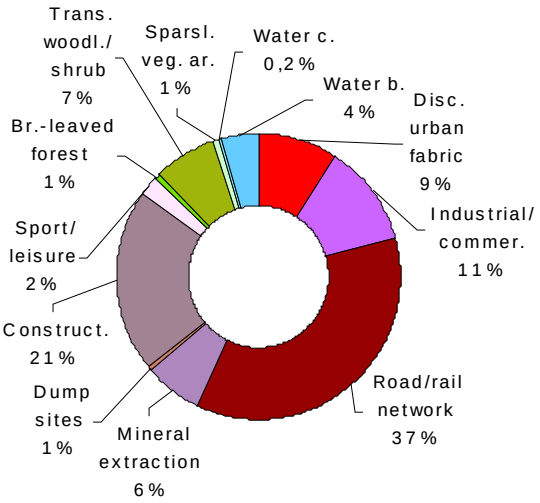
8.26. Formation of agricultural land from non-agriculture 2000-2006 [% of total]



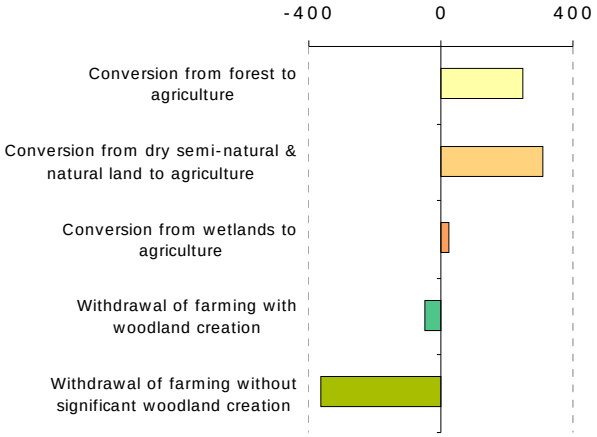
8.27. Consumption of agricultural land by non-agriculture 2000-2006 [% of total]



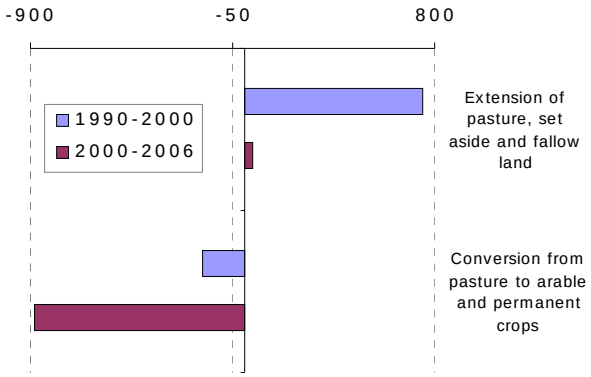
8.28. Formation of non-agricultural land from agriculture 2000-2006 [% of total]



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

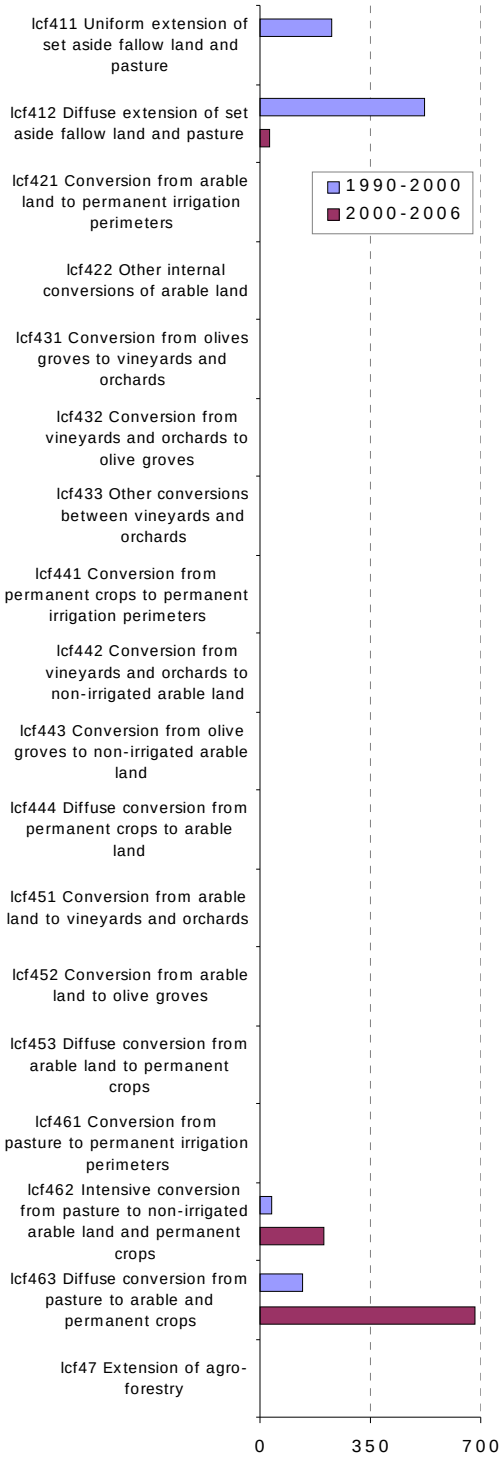


8.30. Mean annual conversion between arable land and pasture [ha/year]

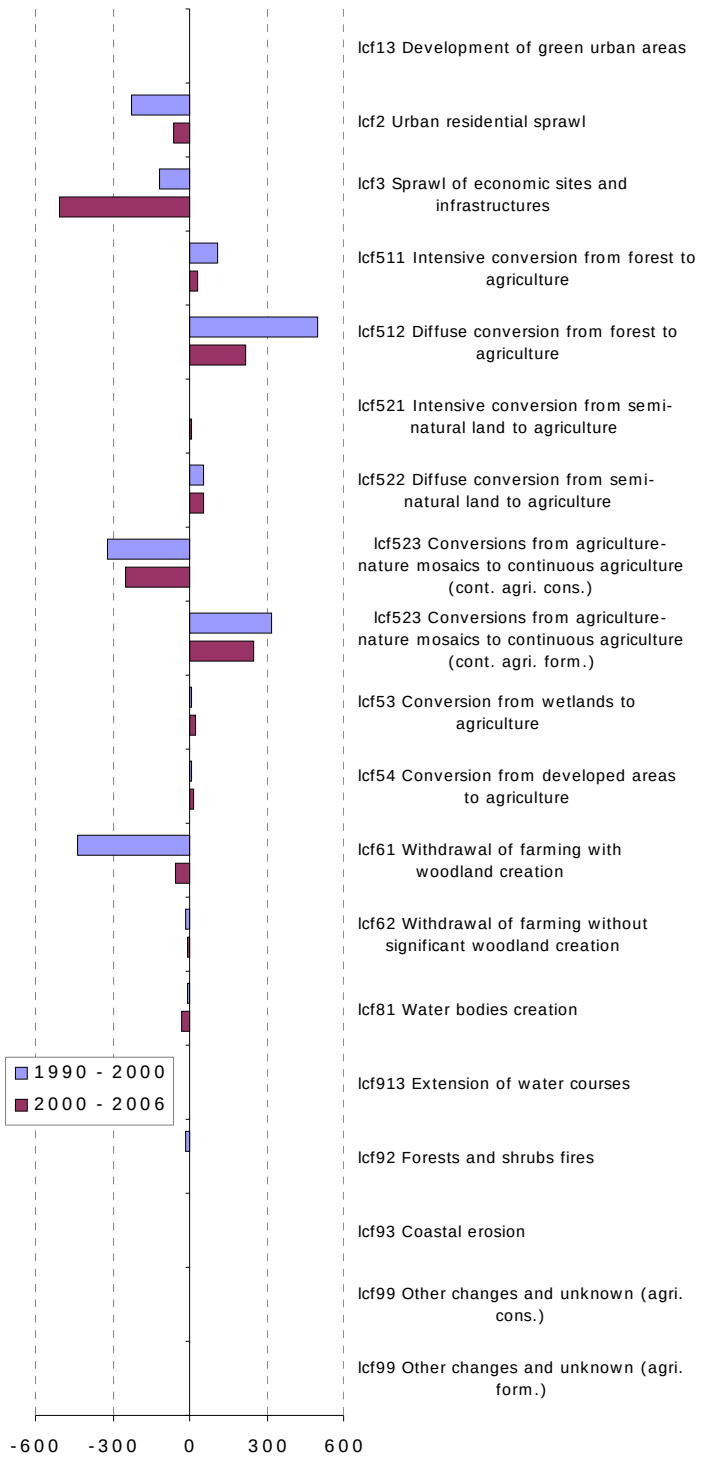


Croatia

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



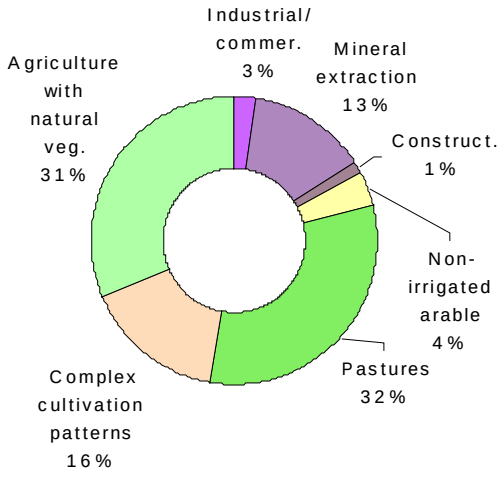
9.32. Mean annual conversions between agriculture and other LC types [ha/year]



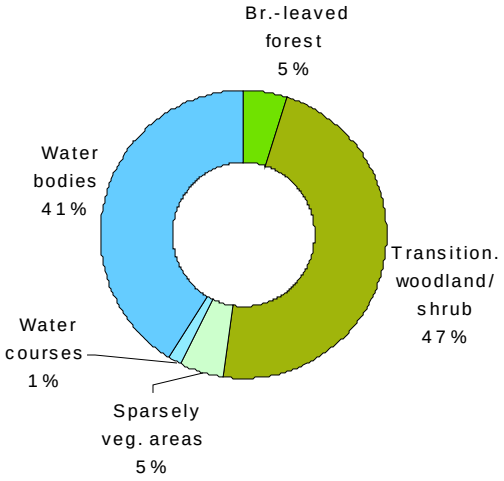
Croatia

Forest & nature

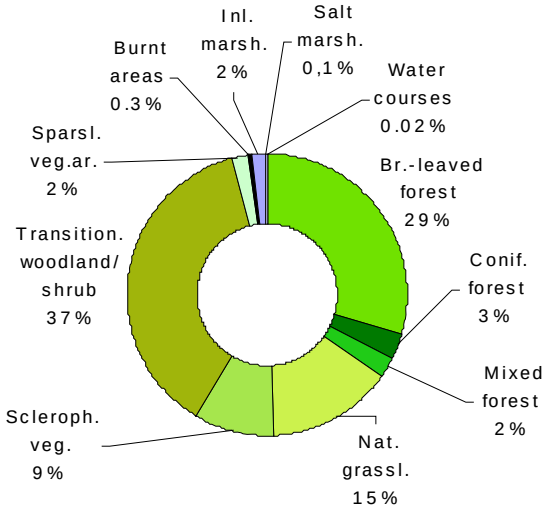
10.33. LC consumed by forest & nature 2000-2006 [% of total]



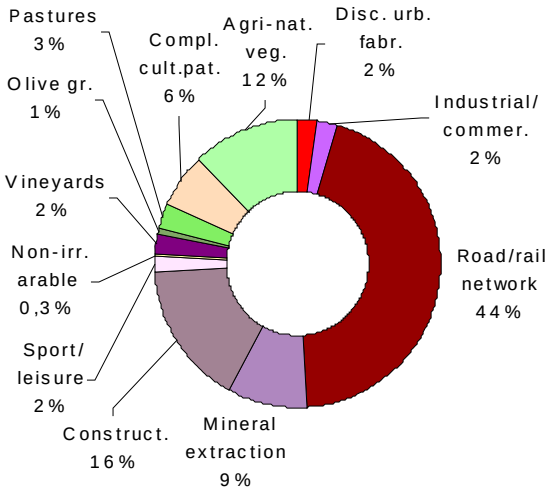
10.34. Formation of forest & nature land from non-forest /nature 2000-2006 [% of total]



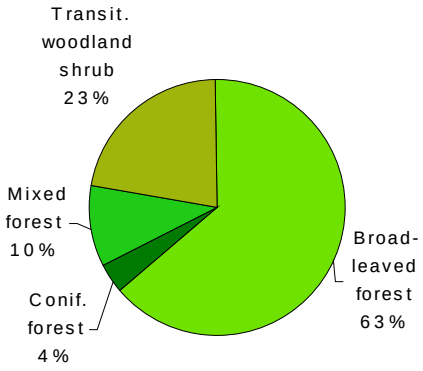
10.35. Consumption of forest & nature land by non-forest /nature 2000-2006 [% of total]



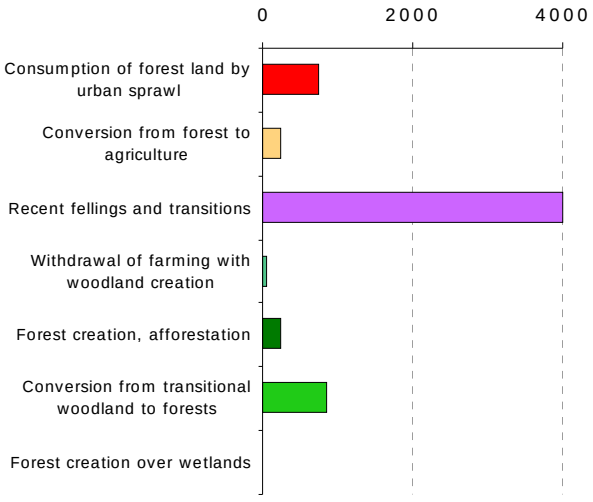
10.36. Formation of non-forest /nature land from forest & nature 2000-2006 [% of total]



10.37. Forested land 2006 [% of total area]



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



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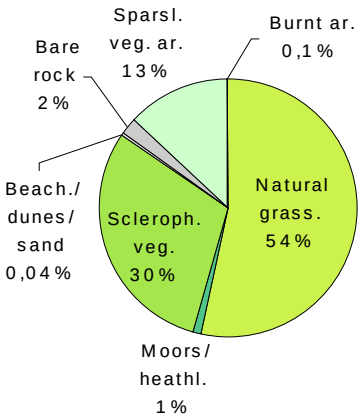
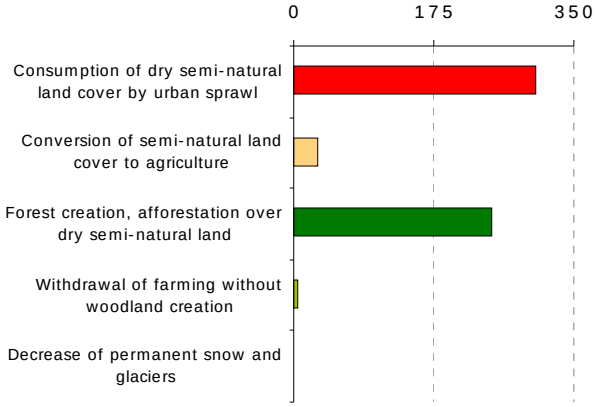
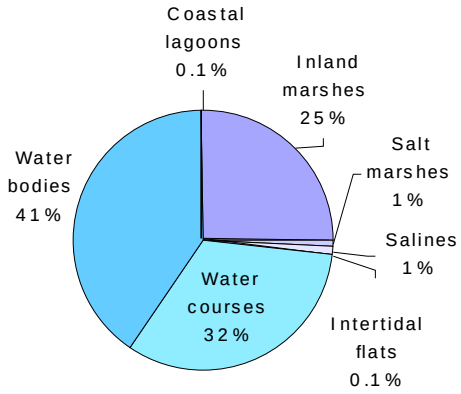
11.39. Dry semi-natural areas 2006 [% of total area]



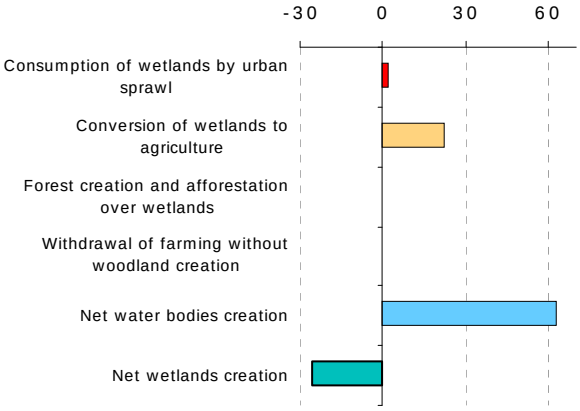
11.40. Main trends in dry semi-natural land consumption/formation 2000-2006 [ha/year]



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



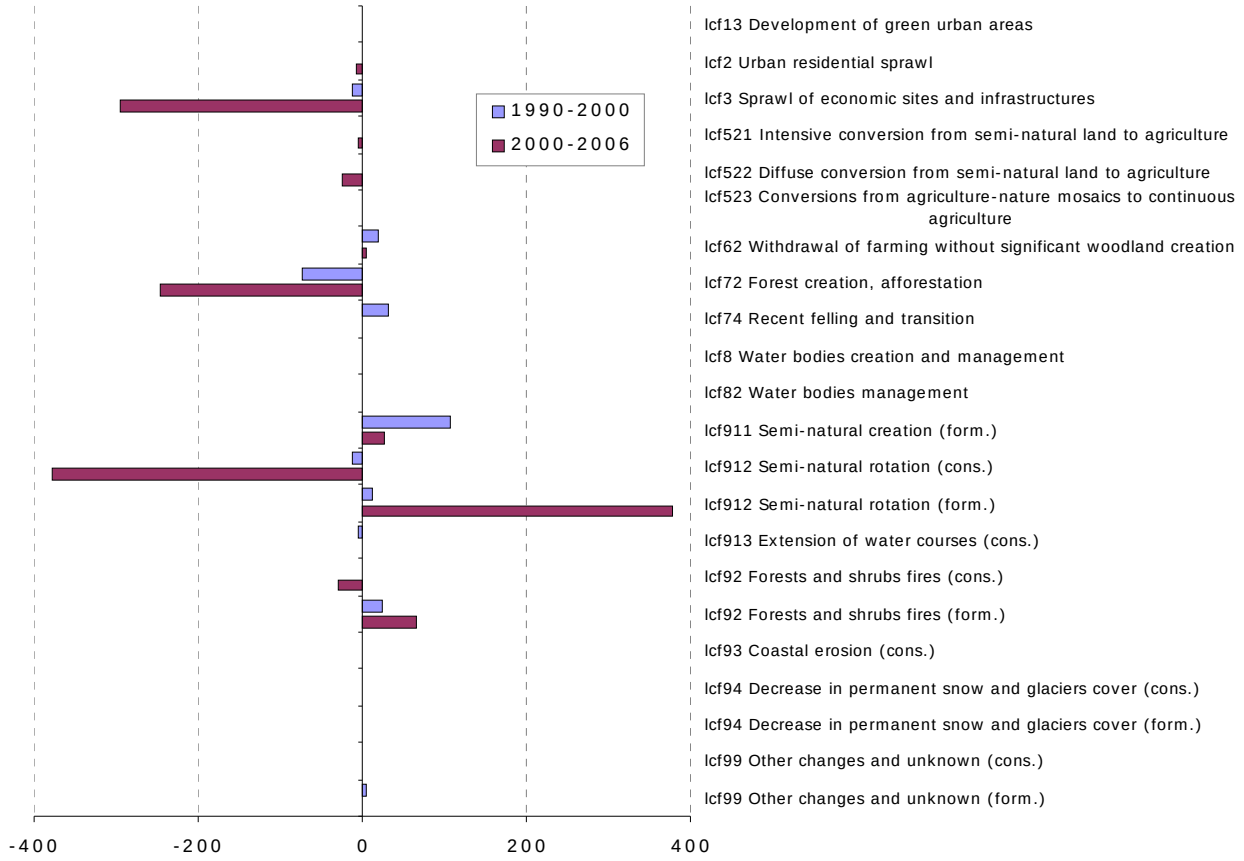
11.42. Main trends in wetlands & water consumption/formation 2000-2006 [ha/year]



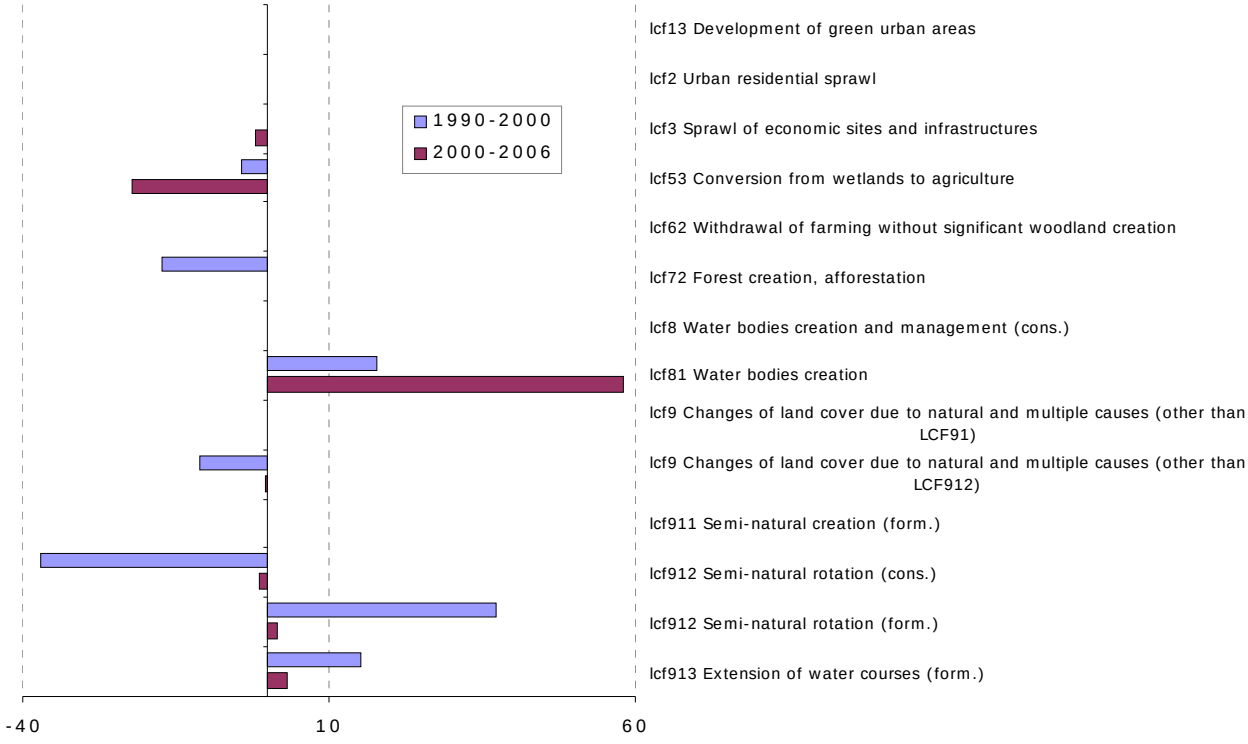
11.43. Mean annual conversions of forest & other woodland [ha/year]

Croatia

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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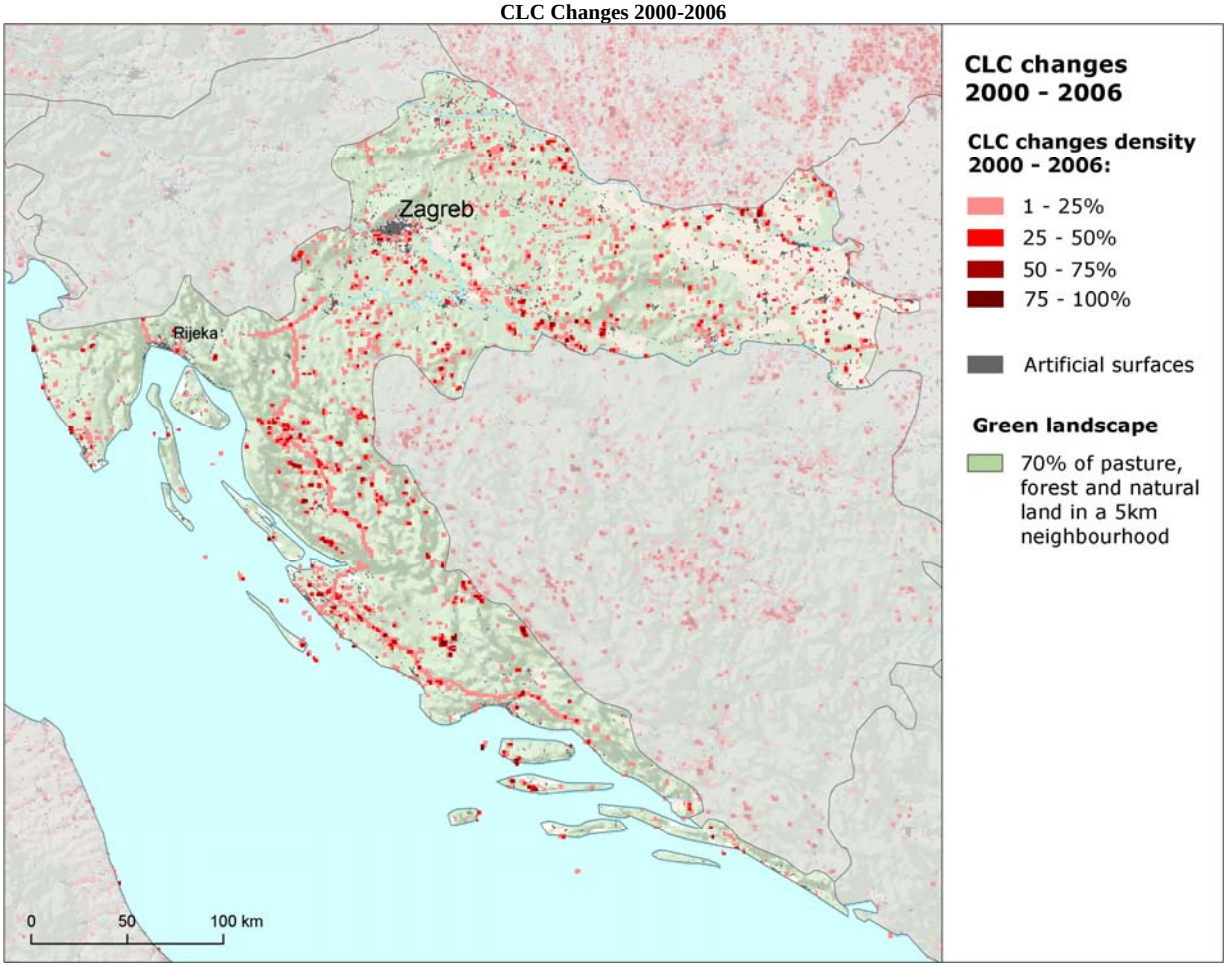
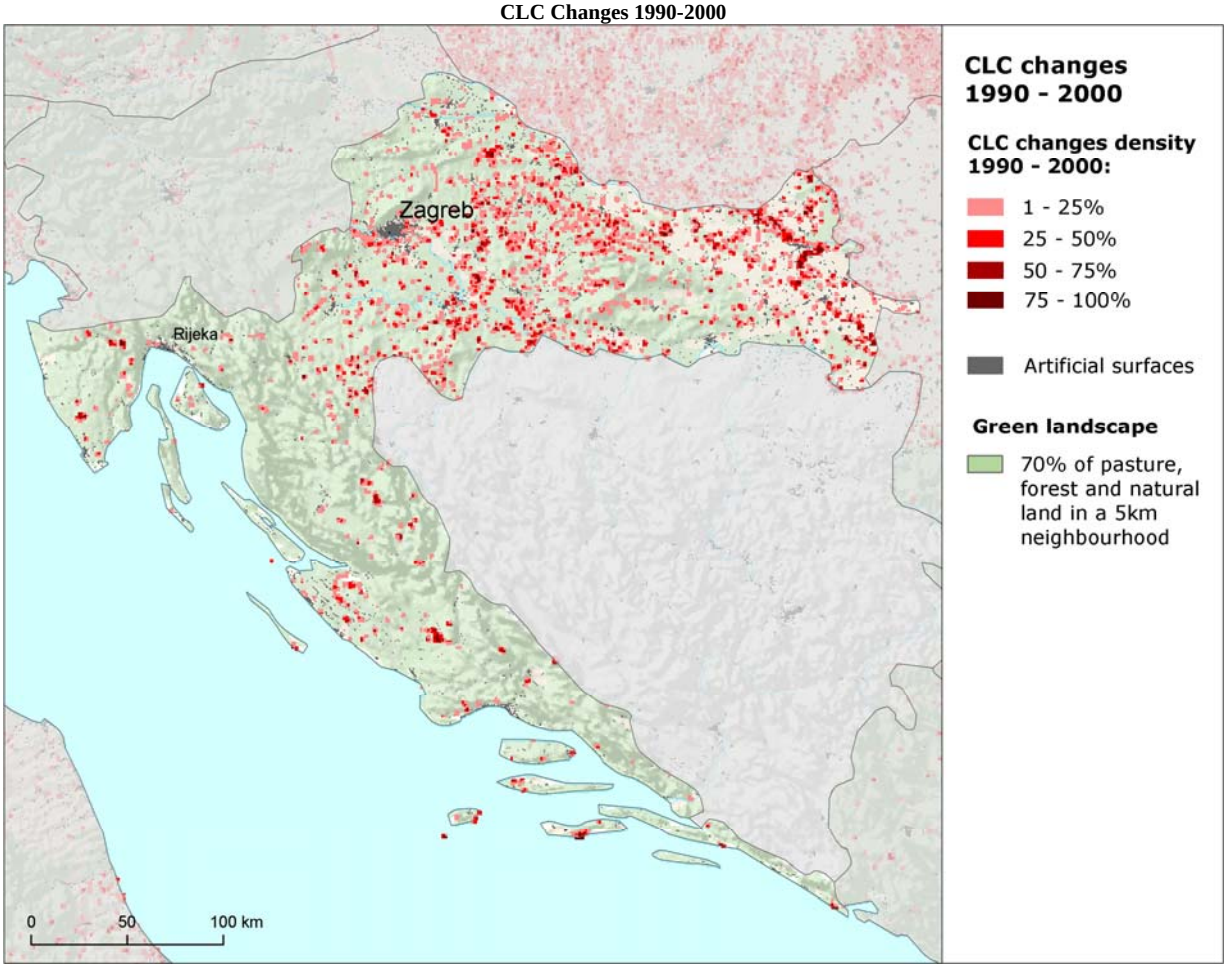
CLC Changes 2000-2006



CLC Changes 1990-2000



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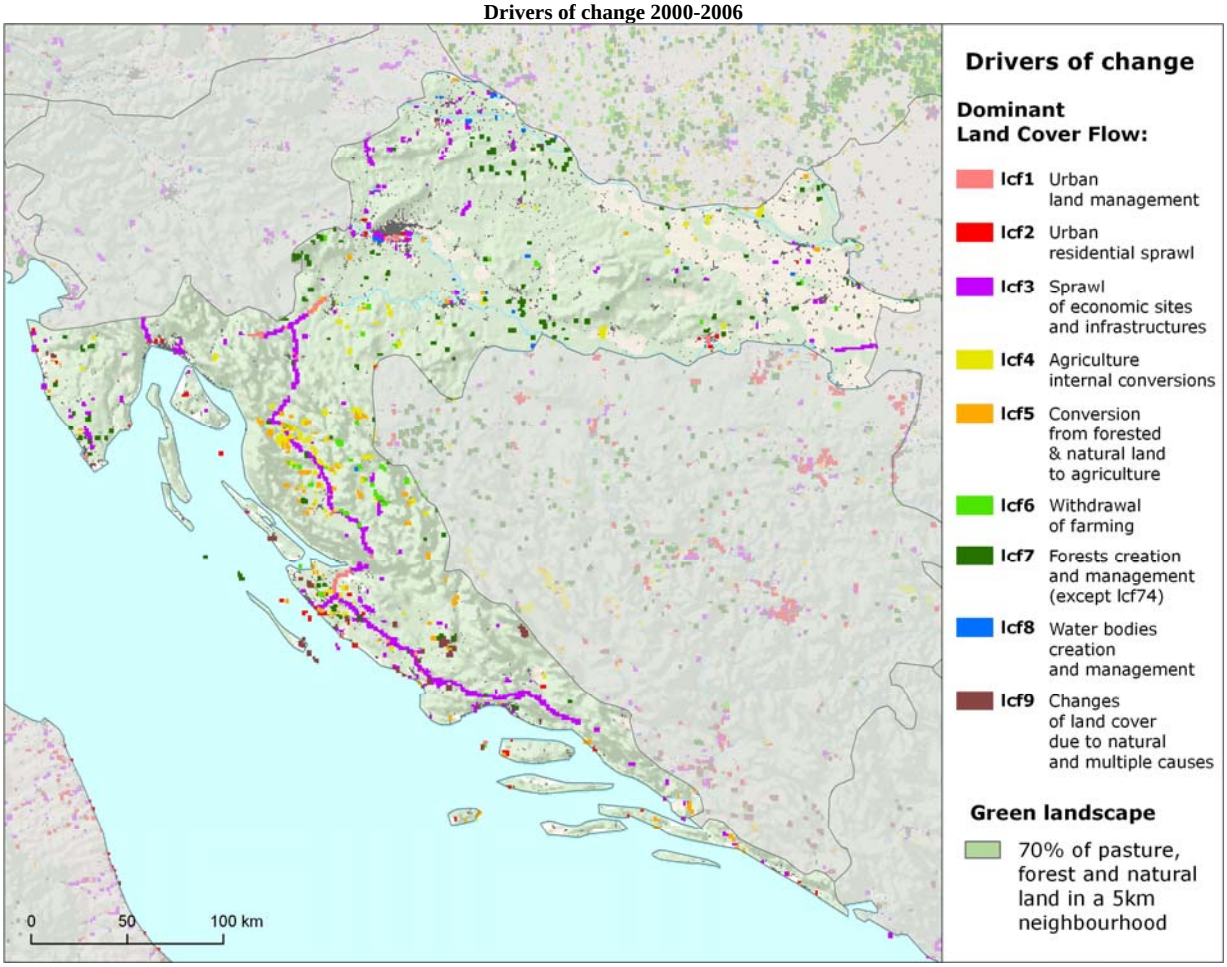
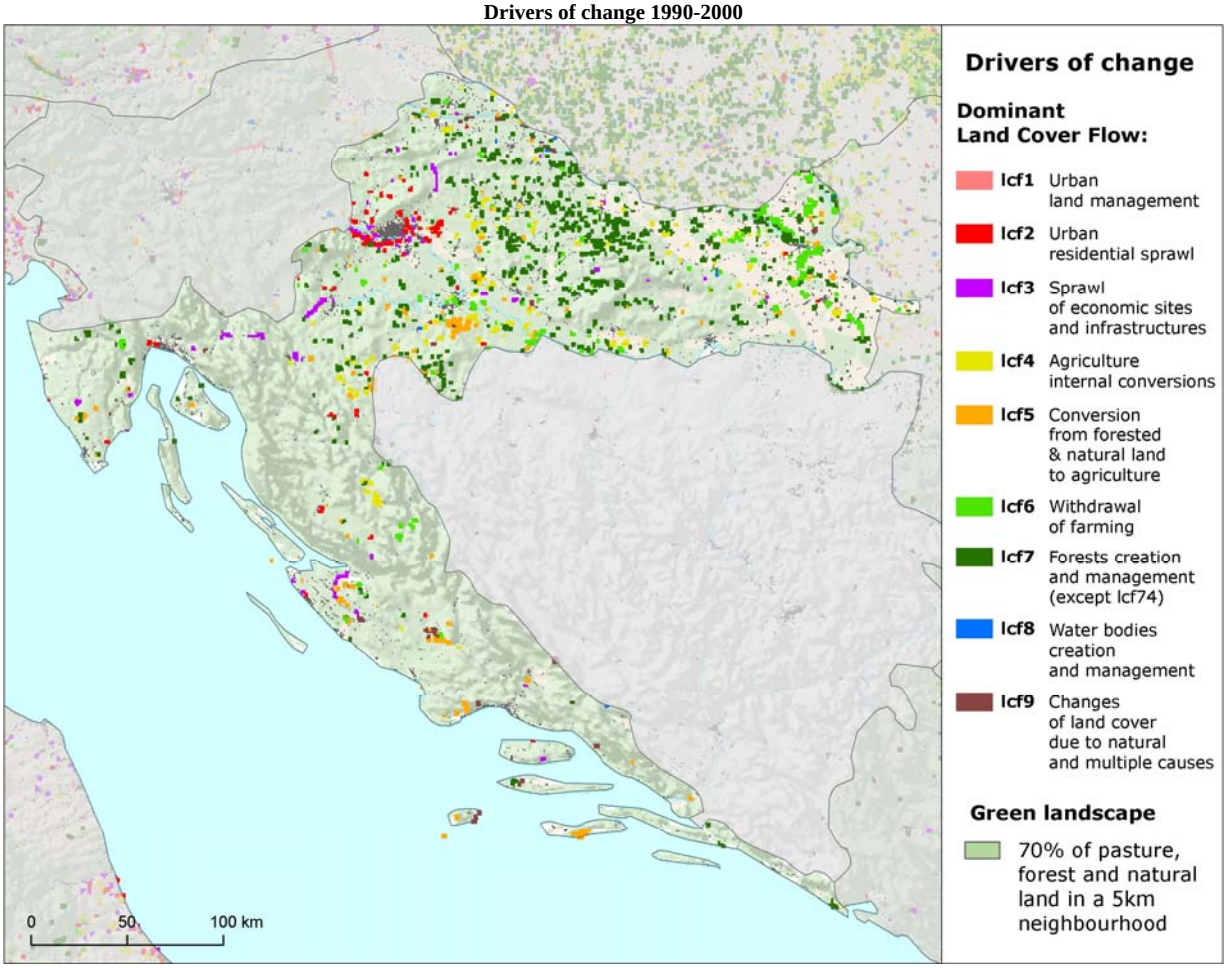
Drivers of change 2000-2006



Drivers of change 1990-2000



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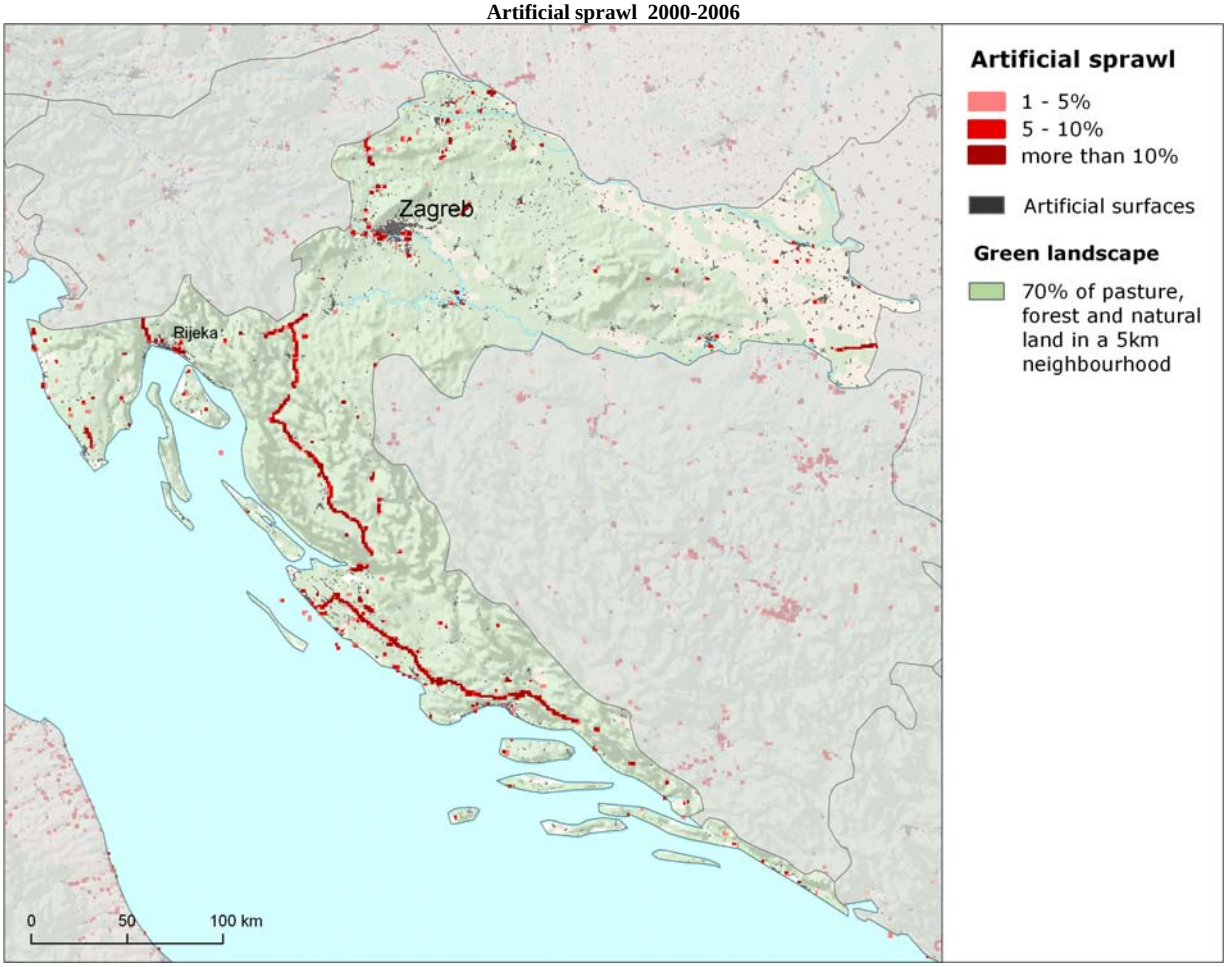
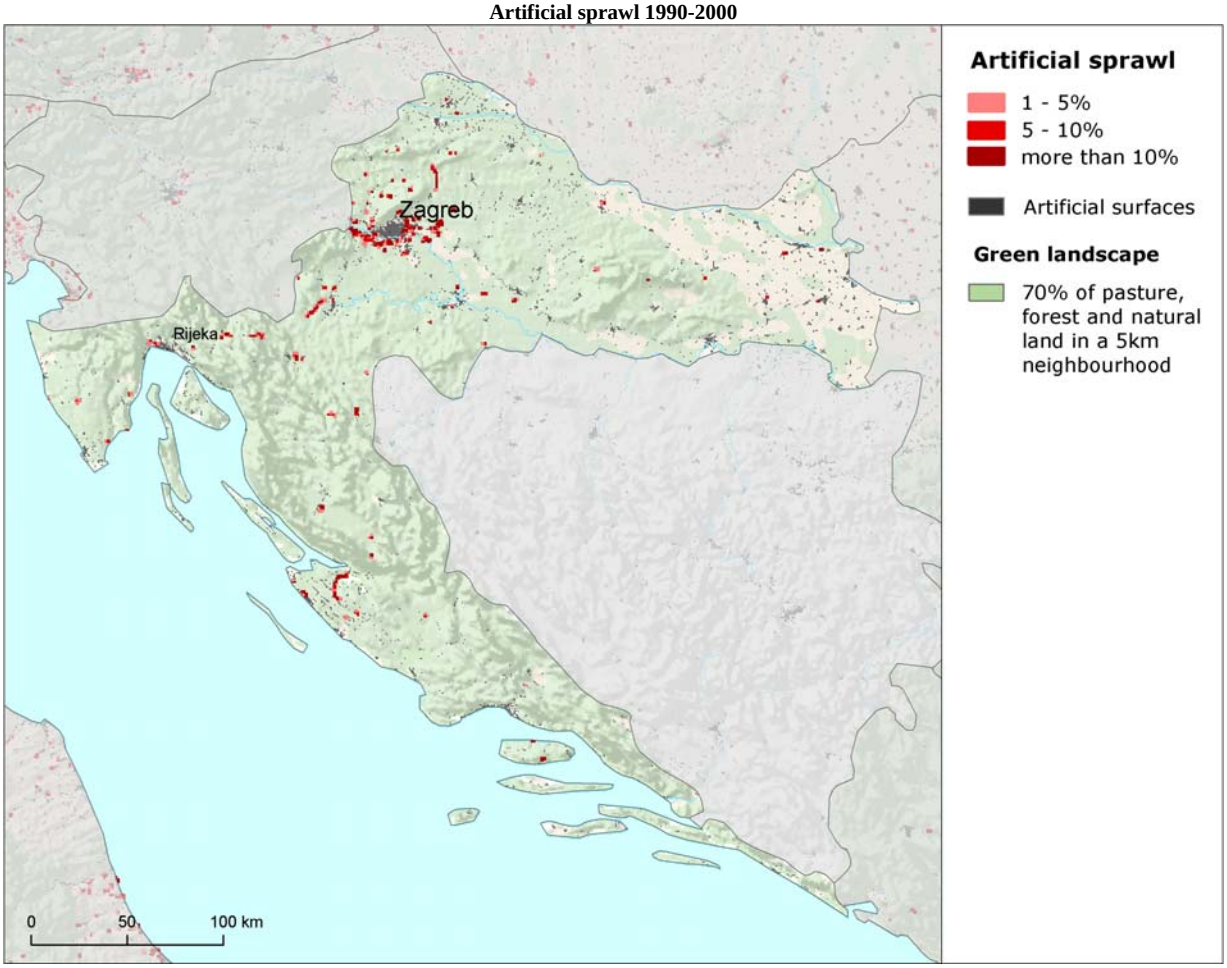
Artificial sprawl 2000-2006



Artificial sprawl 1990-2000



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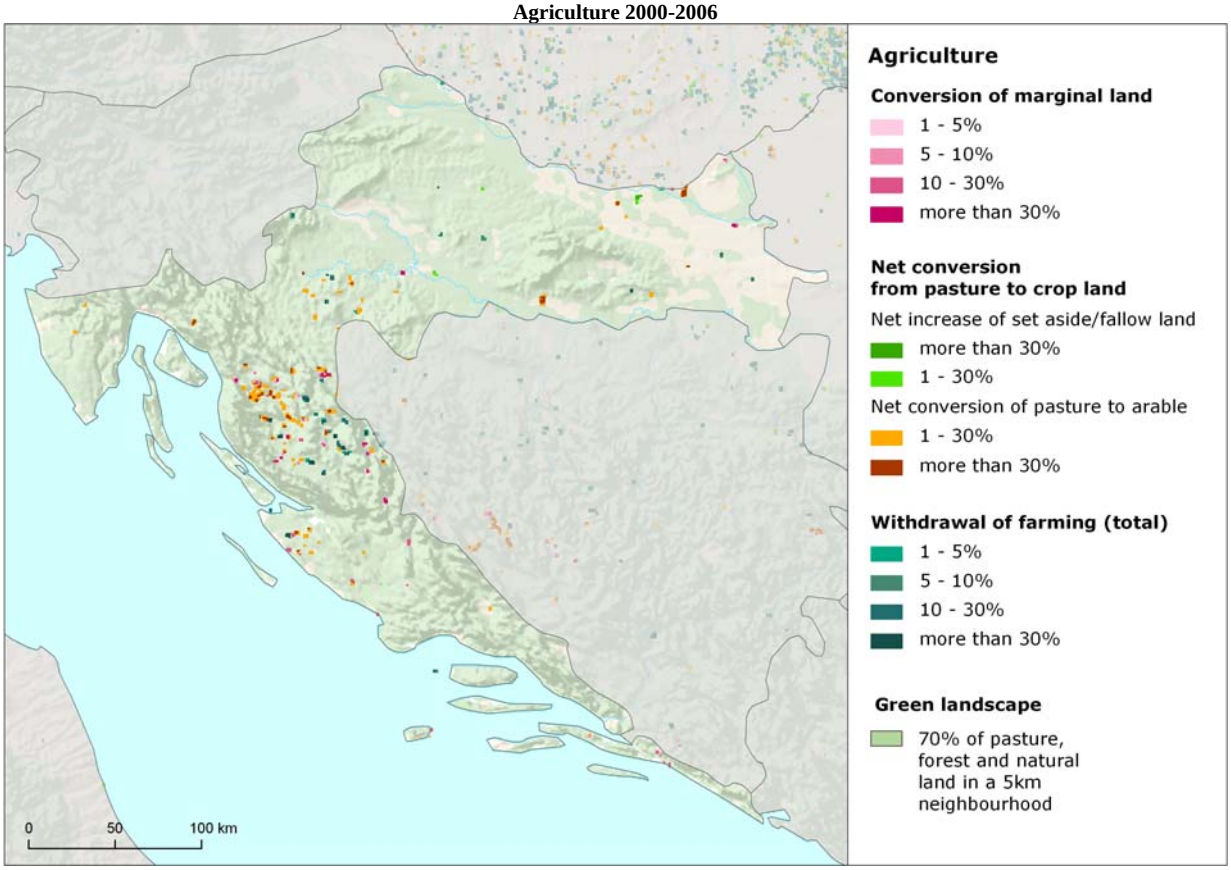
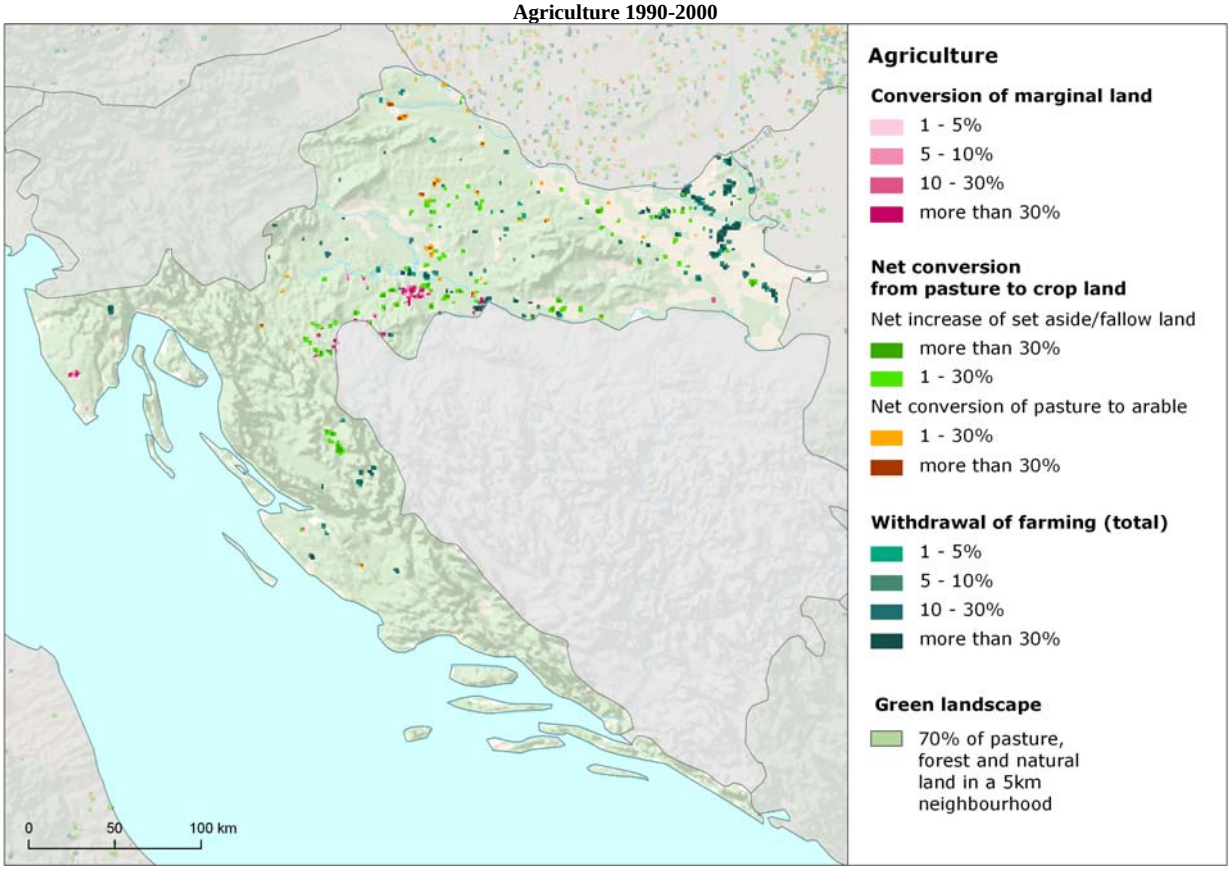
Agriculture 2000-2006



Agriculture 1990-2000



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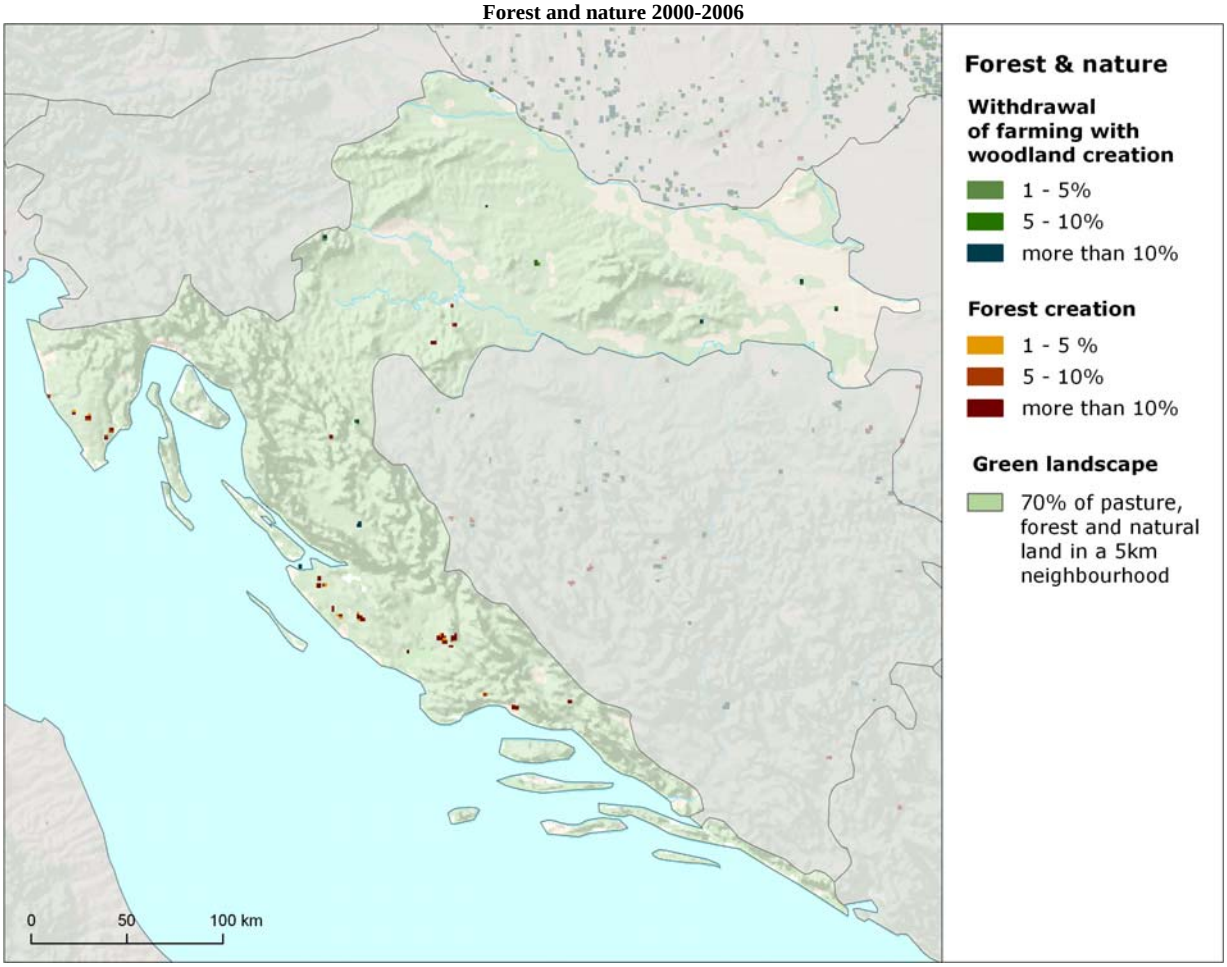
Forest and nature 2000-2006



Forest and nature 1990-2000