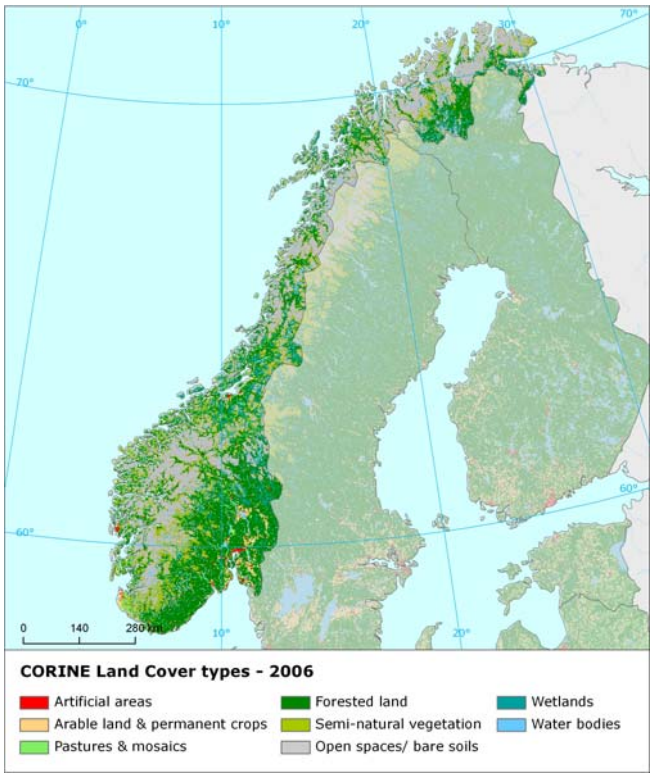
Norway

Land cover 2006

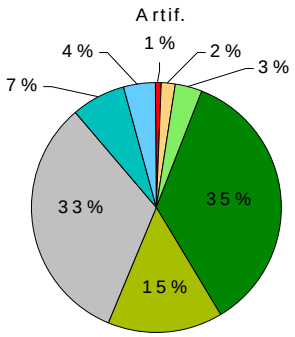
Overview of land cover & change 2000-2006

Norwegian landscape is characterised by high share of natural vegetation, composed of forests (35%), opens spaces/bare soils (33%) and semi-natural vegetation (15%) areas. The development of land cover in Norway has very distinct structure, with largely predominant formation of artificial surfaces over all other land cover types. The artificial land take is driven mostly by development of sport and leisure facilities and diffuse residential sprawl. Besides the land take, internal changes of forested land drive the development of Norwegian landscape, too.
Spatially, most of land cover changes in Norway are situated in the southern – most intensively populated part or the country. Sprawl of economic and industrial sites is scattered over south-eastern part of Norway and residential sprawl is concentrated to the south-western coast between Bergen and Stavanger and along the southern coastline. Changes in forested land have a regular pattern in the whole south-eastern part of Norway and also in Trondheim region.

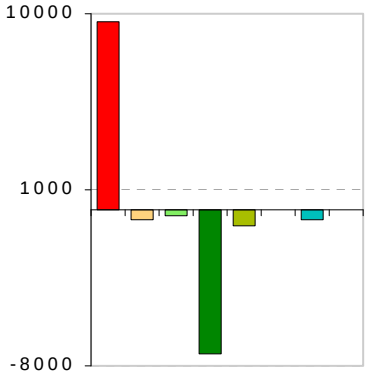


Note: The results presented here are based on a change analysis of 44 land cover types mapped consistently on a 1:100.000 scale across Europe over almost two decades 1990-2006 - see Corine land cover (CLC) programme for details.
Number of years between CLC2000-CLC2006 data for Norway:6

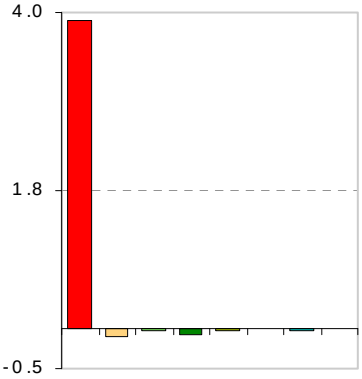
1.1. Land cover 2006 [% of total]



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

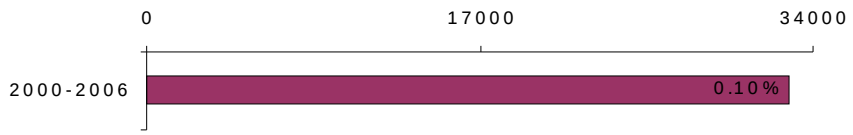
Summary balance table 2000-2006

	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	**2453**	**5707**	**11025**	**113702**	**46627**	**105656**	**21400**	**13758**	**320325**
Consumption of initial LC	6	8	6	1929	9	6	5	0	1969
Formation of new LC	102	3	2	1856	0	6	0	0	1969
Net Formation of LC	**96**	**-5**	**-3**	**-74**	**-8**	**0**	**-5**	**0**	**0**
Net formation as % of initial year	*3.9*	*-0.1*	*0.0*	*-0.1*	*0.0*	*0.0*	*0.0*	*0.0*	
Total turnover of LC	**108**	**10**	**8**	**3785**	**9**	**12**	**6**	**1**	**3939**
Total turnover as % of initial year	*4.4*	*0.2*	*0.1*	*3.3*	*0.0*	*0.0*	*0.0*	*0.0*	*1.2*
Land cover 2006	**2548**	**5702**	**11021**	**113628**	**46618**	**105655**	**21394**	**13758**	**320325**

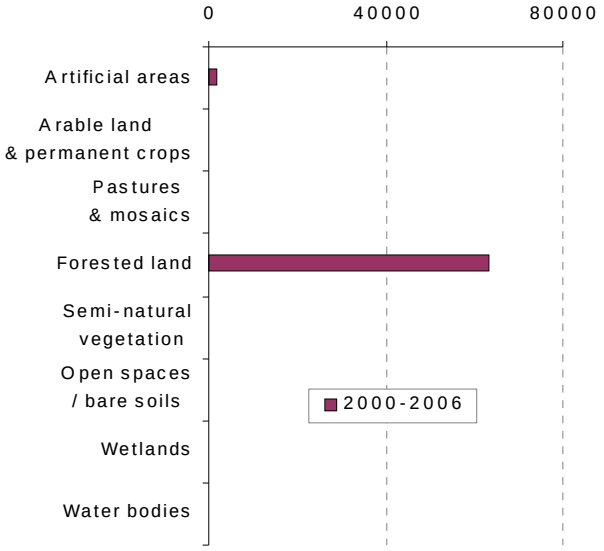
Norway

Land cover trends 2000-2006

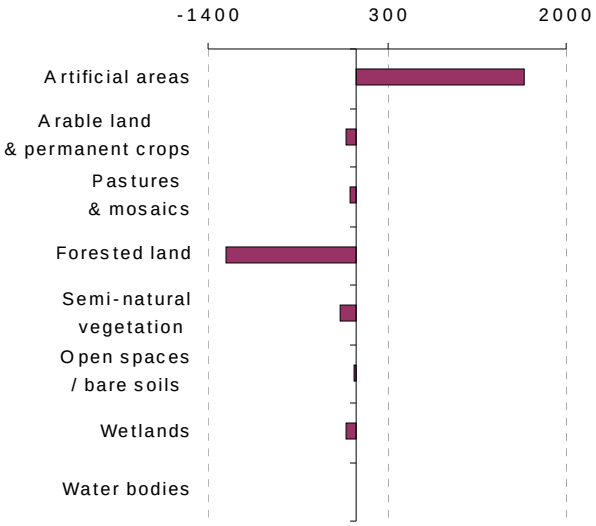
2.4. Annual land cover change [ha/year, % of total area]



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

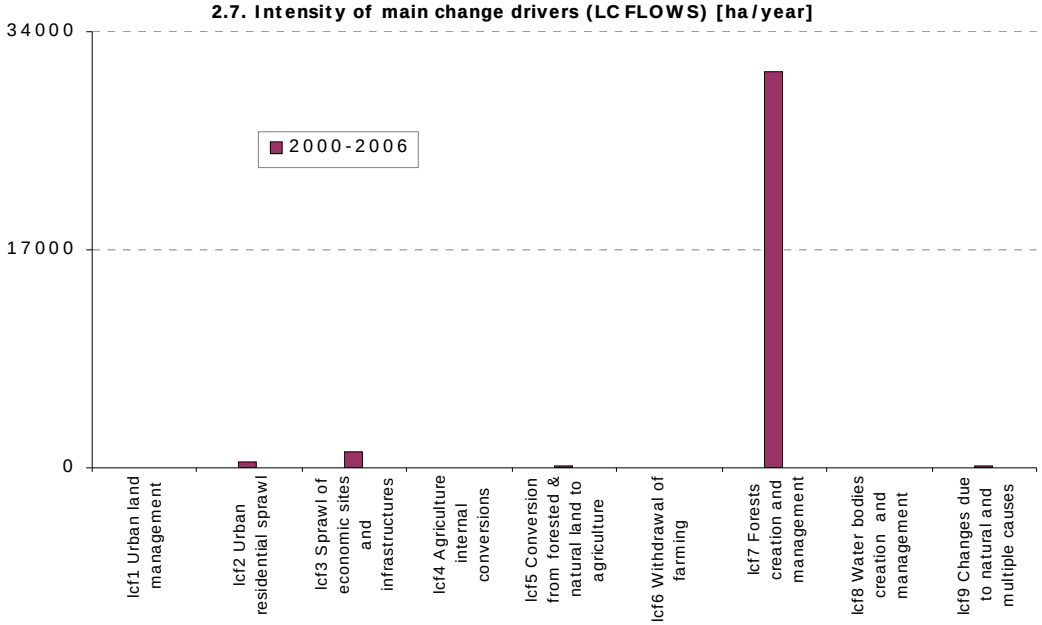


2.6. Net annual change of LC types [ha/year]



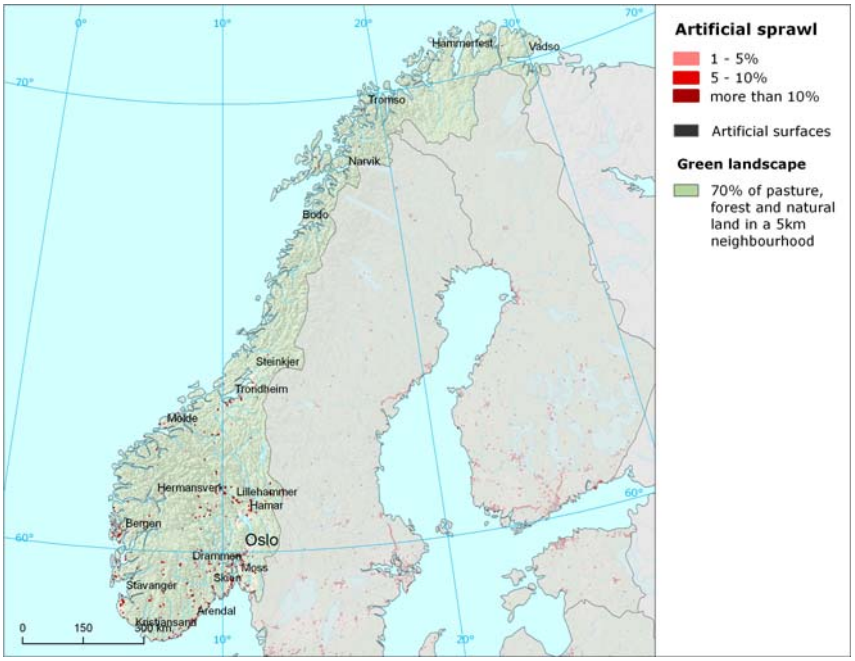
Summary trend figures	2000-2006
Annual land cover change [ha/year]	**32822**
Annual land cover change as % of initial year	**0.10%**
Land uptake by artificial development as mean annual change [ha/year]	1605
Agricultural land uptake by urban and infrastructures development as mean annual change [ha/year]	220
Net uptake of forests and semi-natural land by agriculture as mean annual change [ha/year]	75
Net conversion from pasture to arable land and permanent crops as mean annual change [ha/year]	0
Forest & other woodland net formation as mean annual change [ha/year]	-1227
Dry semi-natural land cover net formation as mean annual change [ha/year]	-146
Wetlands & water bodies net formation as mean annual change [ha/year]	-86

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

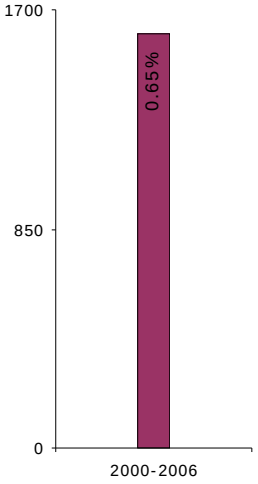


Norway

Artificial areas



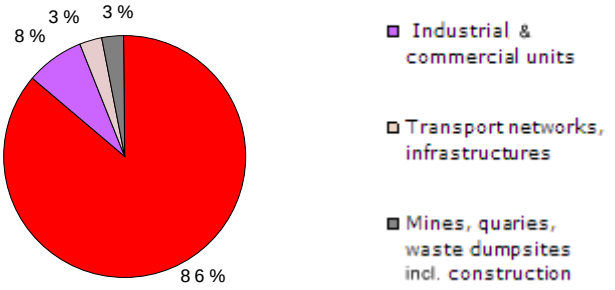
3.8. Artificial land take [ha/year, % of initial year]



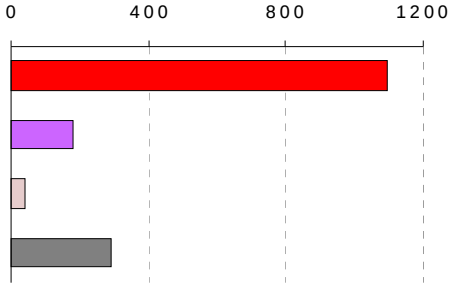
Extension of sport and leisure facilities

Artificial sprawl is the main driver of land cover exchange in Norway. The structure of this land take has very specific character, with sprawl of sport and leisure facilities as a predominant driver (43%). The other causes of artificial land take in Norway is then diffuse residential sprawl (25%), followed by sprawl of industrial and commercial sites (11%), mines and quarrying sites (10%) and construction (9%). Besides the extension of artificial surfaces, urban development has been also driven by internal infilling and recycling of already developed artificial areas. Most of artificial land take in Norway occurs at the expense of natural areas, with prevailing share of forested land. Spatially, most of artificial land take in Norway occurs in the southern – most intensively populated part or the country. Sprawl of economic and industrial sites is scattered over south-eastern part of Norway and residential sprawl is concentrated to the south-western coast between Bergen and Stavanger and along the southern coastline.

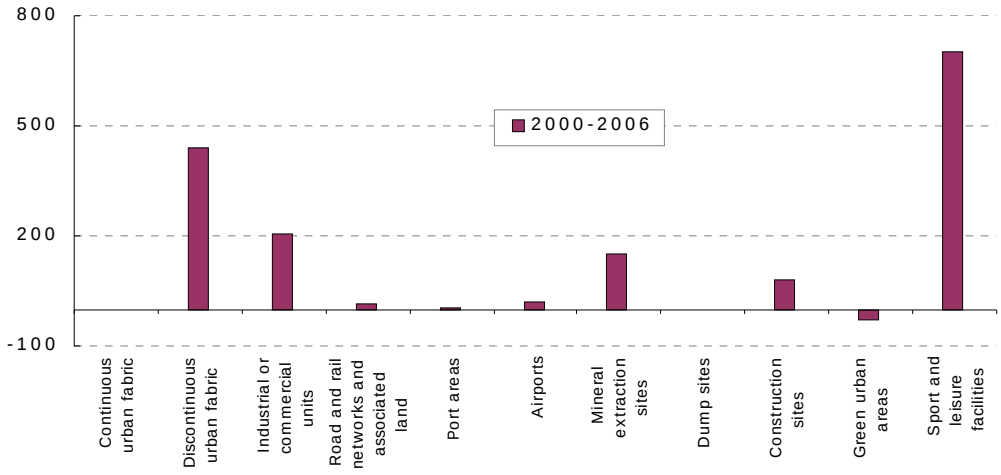
3.9. Artificial surfaces 2006 [% of total area]



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

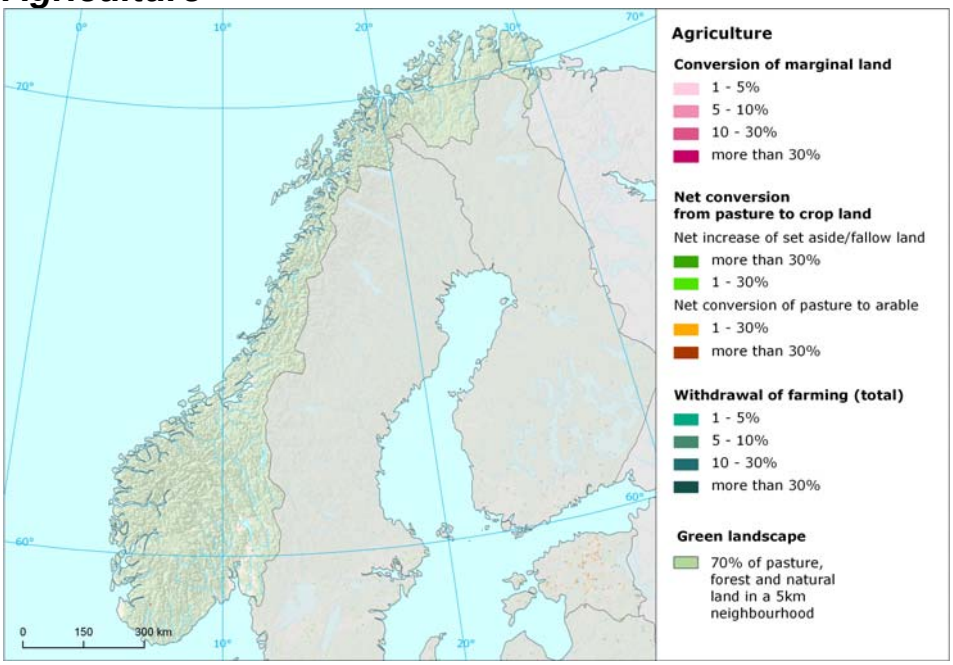


3.11. Mean annual artificial change by class [ha/year]



Norway

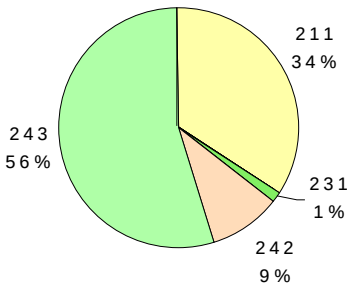
Agriculture

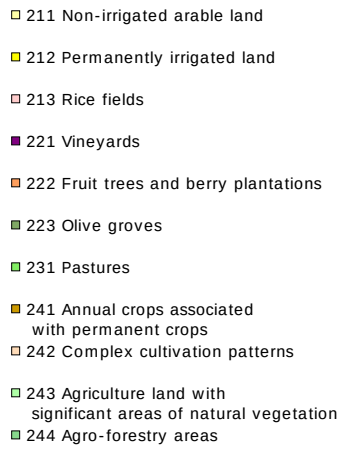


Low intensity of agricultural changes

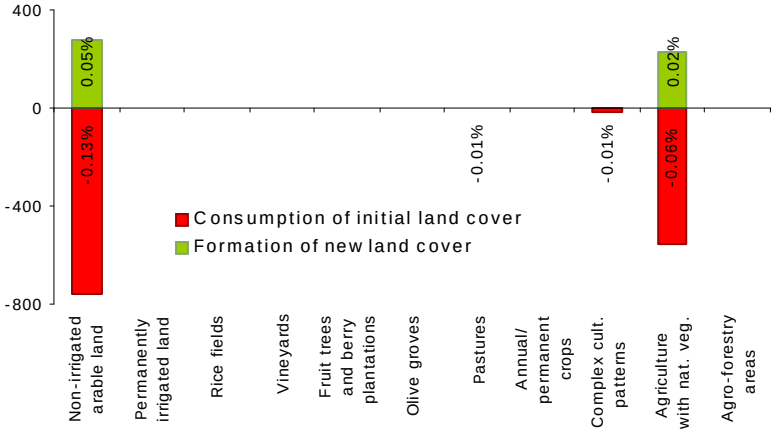
Agriculture areas with natural vegetation (56% of all agricultural land) together with arable land and complex cultivation patterns to a lesser extent are the prevailing classes of Norwegian agricultural land cover. Intensity of changes of agricultural surfaces in Norway is very small. Small changes occur only in arable land and agriculture with natural vegetation, both having negative balance of net change between 2000 and 2006. There have been no internal agricultural conversions registered within the period. Agricultural land has been consumed mostly by artificial land take, with prevailing share of sprawl of urban fabric and industrial and commercial sites. The exchange of agricultural land with natural land cover occurs to a lower extent and is represented mainly by conversion from forest and wetlands to agriculture.

4.12. Agricultural areas 2006 [% of total area]

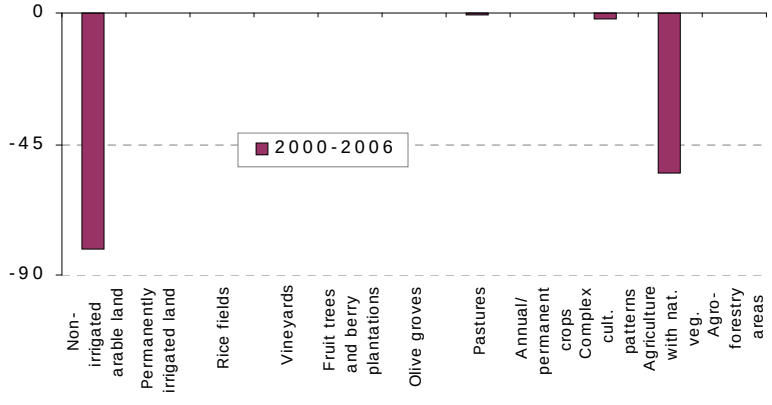




4.13. Development of agricultural areas 2000-2006 – detailed balance [ha]

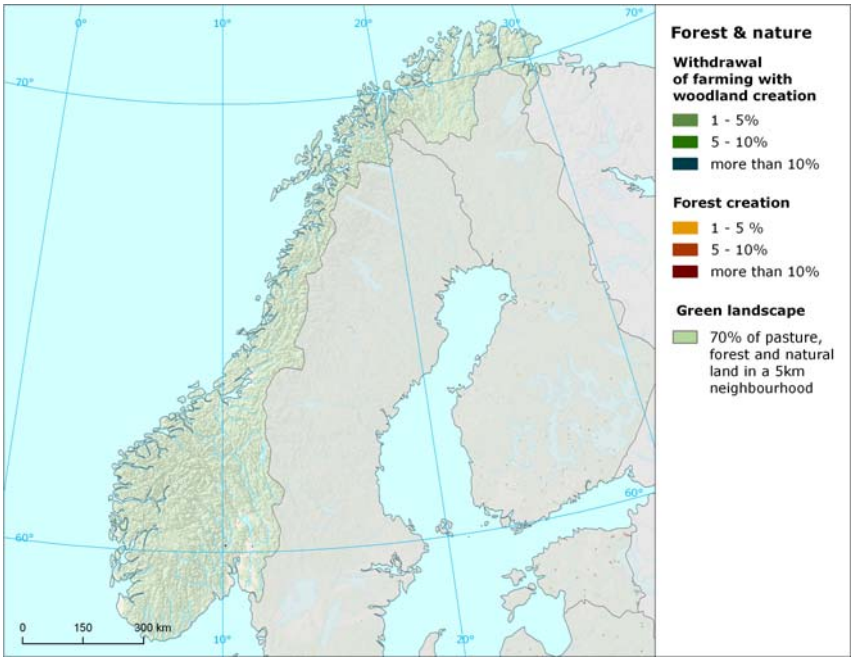


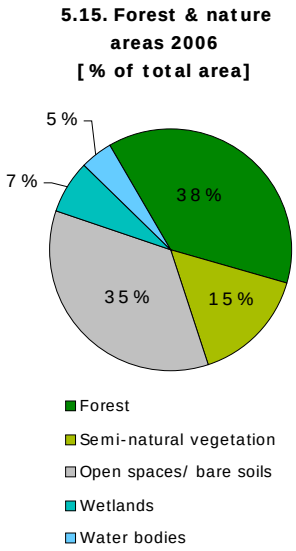
4.14. Mean annual agricultural change by class [ha/year]



Norway

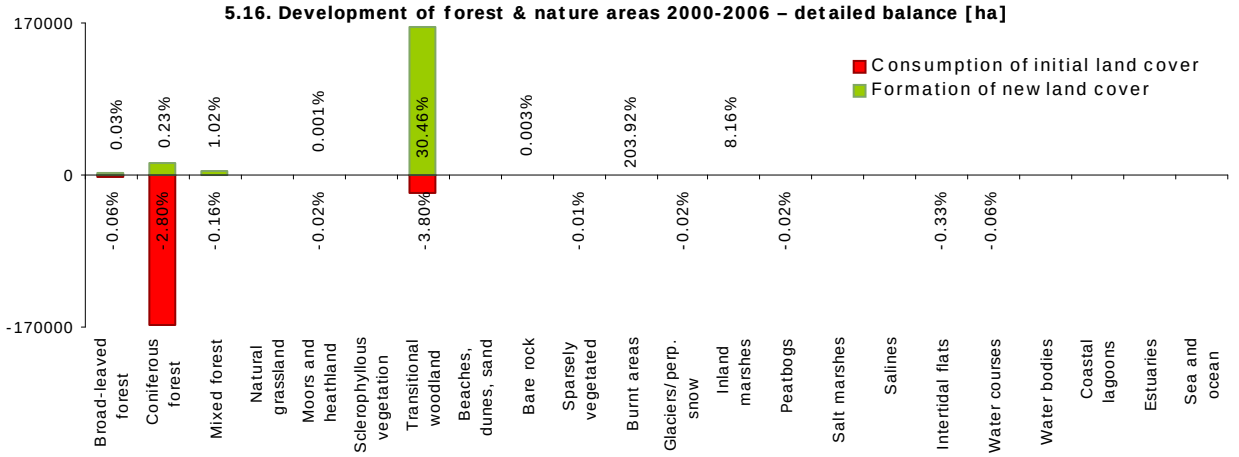
Forest & nature

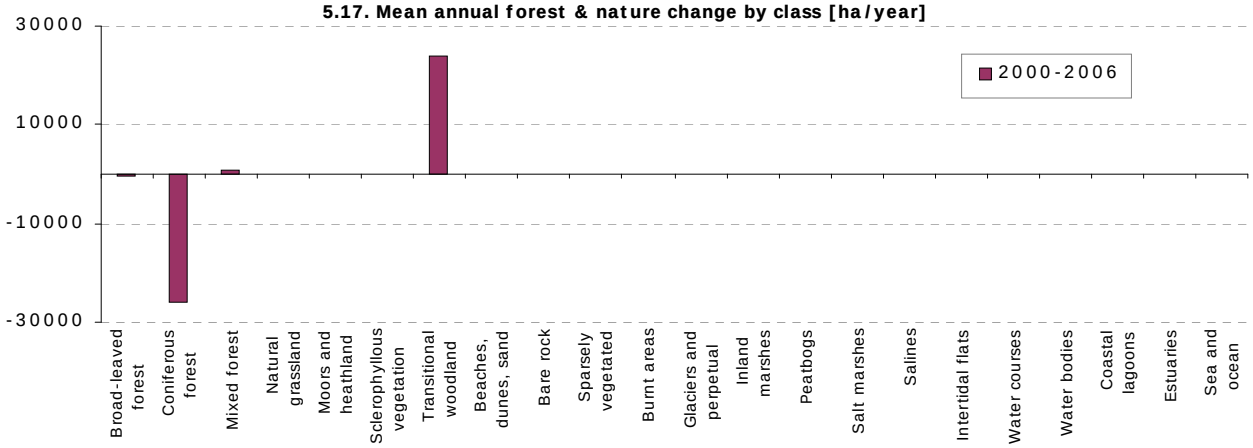




Consumption of natural land by sport and leisure facilities; forest/shrub fires and decrease of glaciers area

Natural surfaces cover predominant part of Norwegian landscape. Natural land cover consists mainly of coniferous and broad-leaved forests, sparsely vegetated areas, moors and heathland, bare rock. Nevertheless, there is also significant share of peatbogs and water bodies in Norwegian landscape. Natural surfaces seem to be rather stable and highest percentage of natural land cover exchange is caused by internal conversions of forested land due to forestry activities. Besides, artificial land uptake is the largest consumer of natural surfaces, driven mostly by development of sport and leisure facilities and urban fabric. Internal changes of natural surfaces are represented mostly by forest and shrub fires and decrease of permanent snow and glaciers area. Changes in forested land have a regular pattern in the whole south-eastern part of Norway and also in Trondheim region.



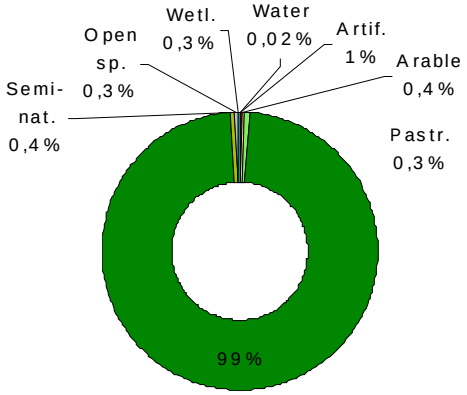


Norway

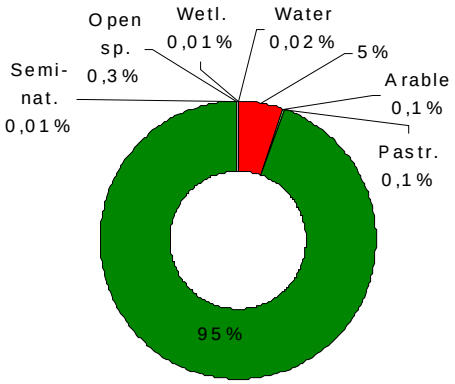
Annex: Land cover flows and trends

Land cover flows 2000-2006

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

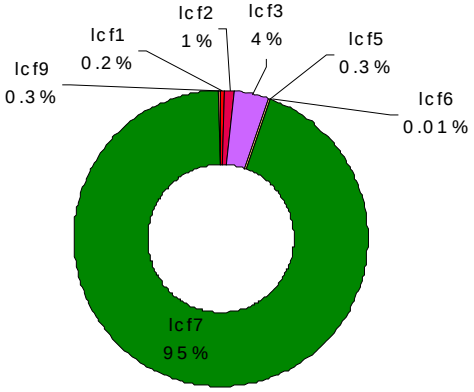


6.19. Formation of land cover 2000-2006 [% of total change area]



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]

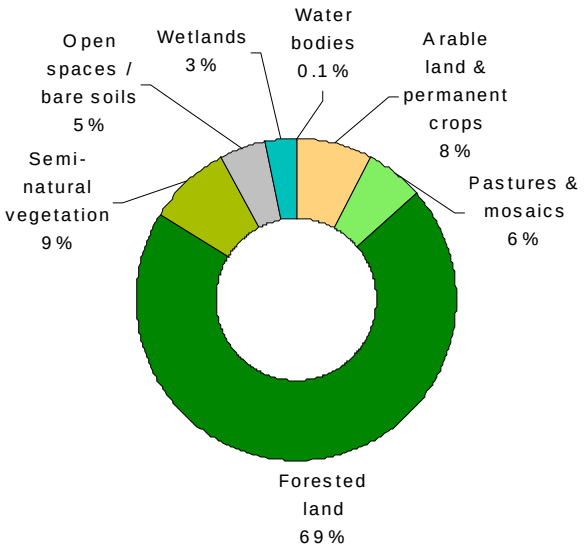


lcf1 Urban land management
lcf2 Urban residential sprawl
lcf3 Sprawl of economic sites and infrastructures
lcf4 Agriculture internal conversions
lcf5 Conversion from forested & natural land to agriculture
lcf6 Withdrawal of farming
lcf7 Forests creation and management
lcf8 Water bodies creation and management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

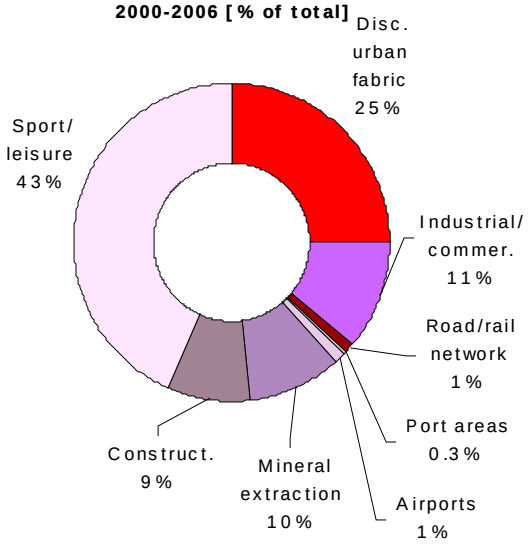
Norway

Artificial areas

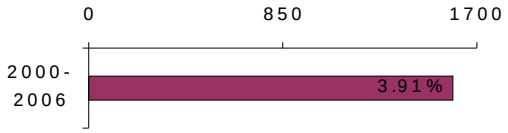
7.21. Consumption by artificial land take 2000-2006 [% of total]



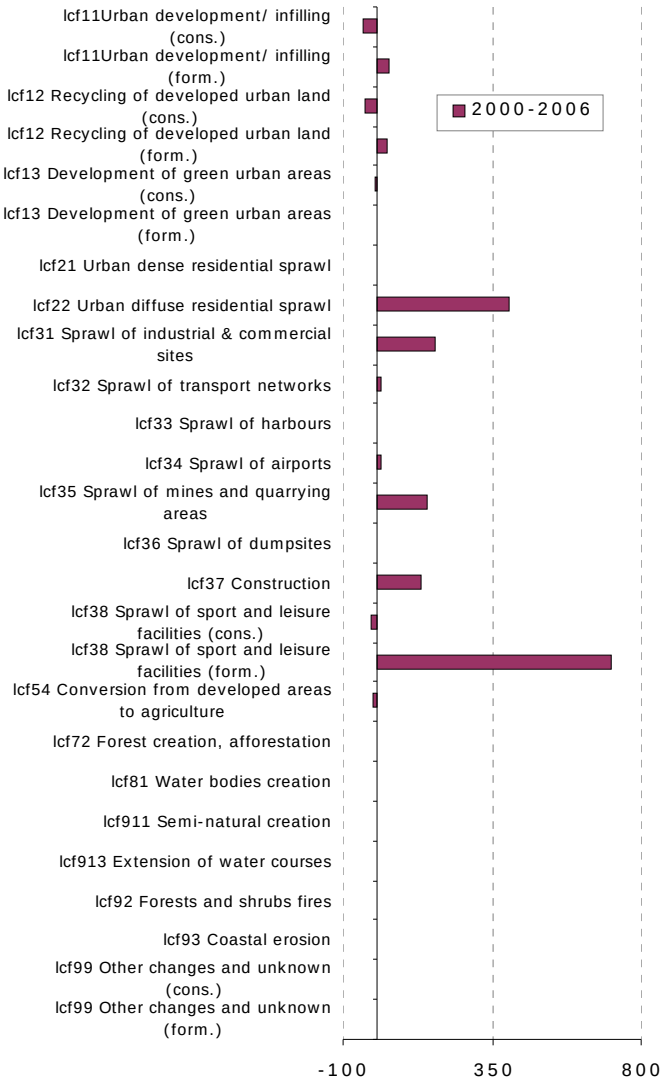
7.22. Formation by artificial land take 2000-2006 [% of total]



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



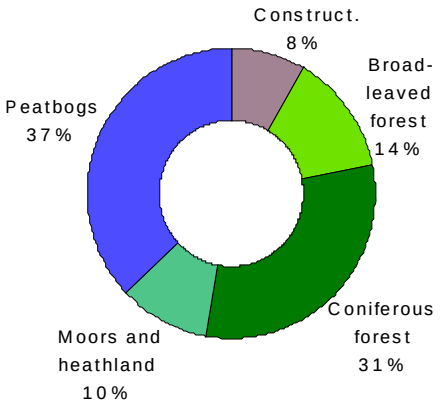
7.24. Artificial development by change drivers (LC FLOWS) [ha/year]



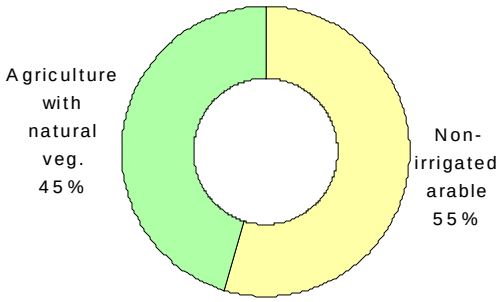
Norway

Agriculture

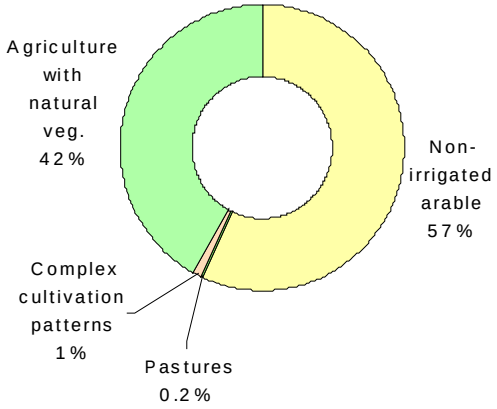
8.25. LC consumed by agriculture 2000-2006 [% of total]



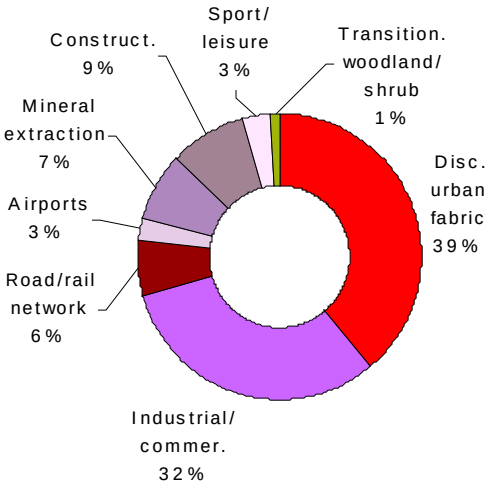
8.26. Formation of agricultural land from non-agriculture 2000-2006 [% of total]



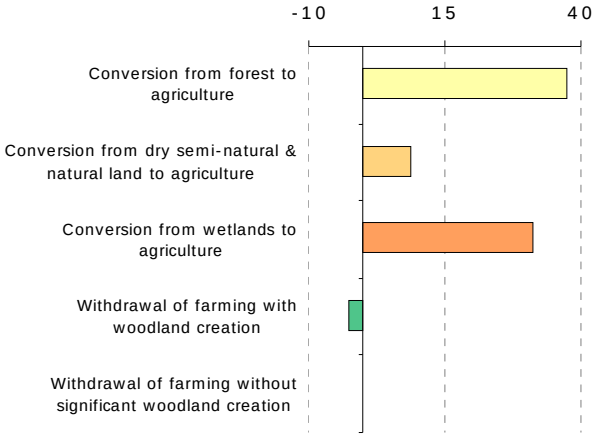
8.27. Consumption of agricultural land by non-agriculture 2000-2006 [% of total]



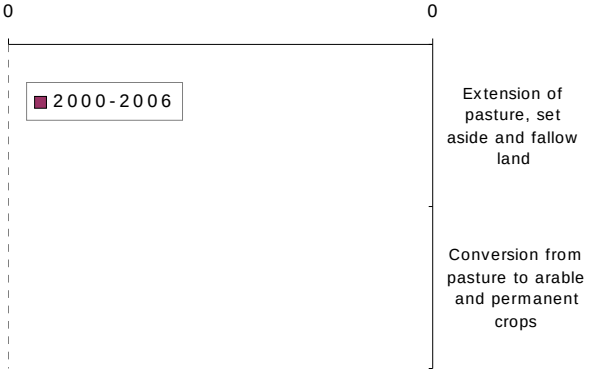
8.28. Formation of non-agricultural land from agriculture 2000-2006 [% of total]



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

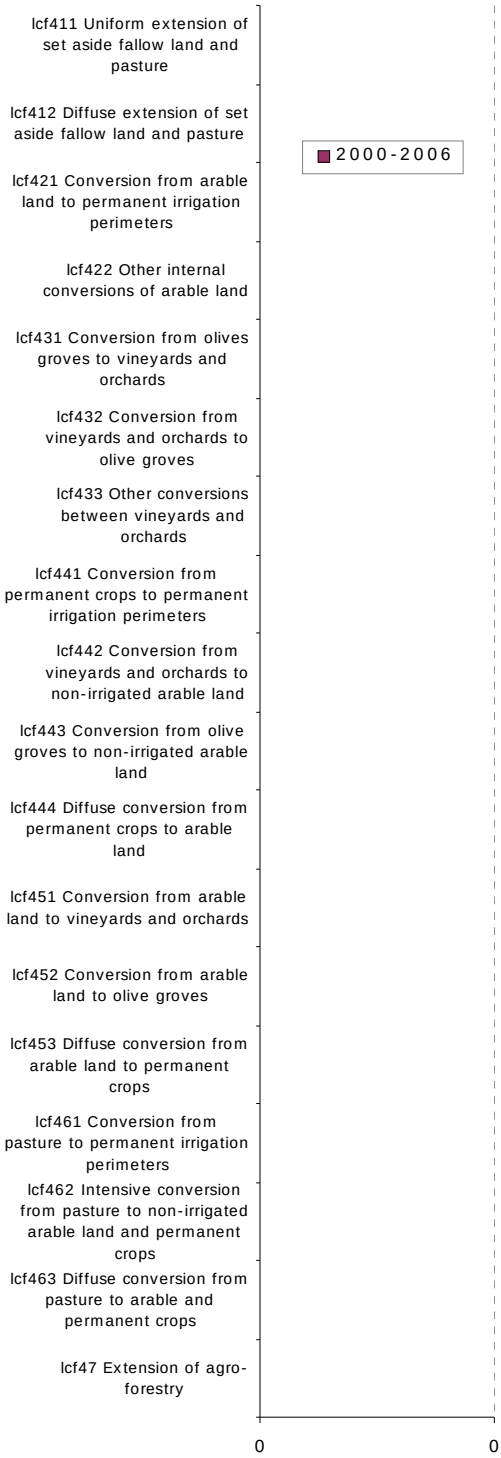


8.30. Mean annual conversion between arable land and pasture [ha/year]

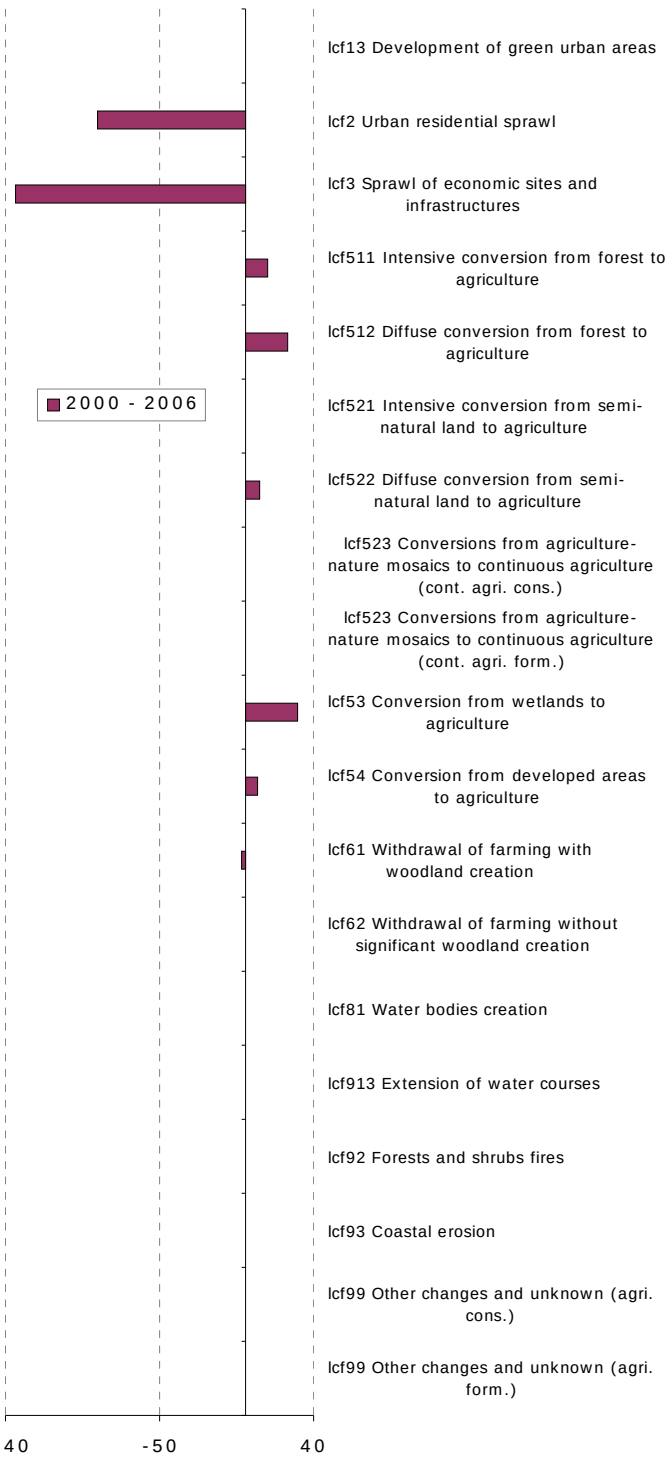


Norway

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



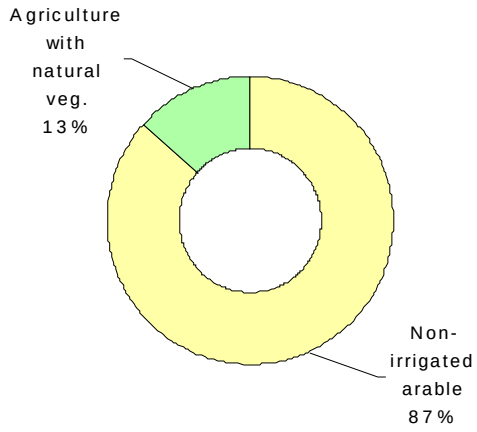
9.32. Mean annual conversions between agriculture and other LC types [ha/year]



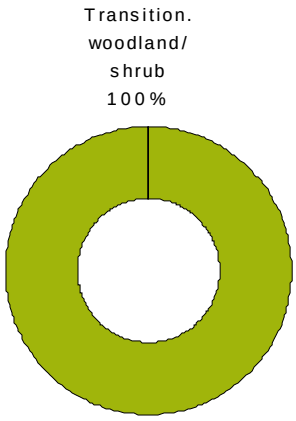
Norway

Forest & nature

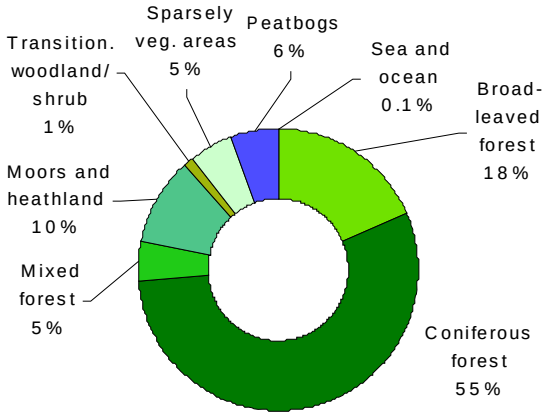
10.33. LC consumed by forest & nature 2000-2006 [% of total]



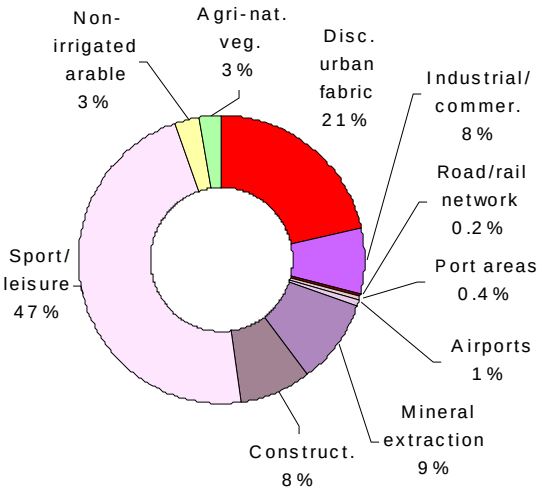
10.34. Formation of forest & nature land from non-forest /nature 2000-2006 [% of total]



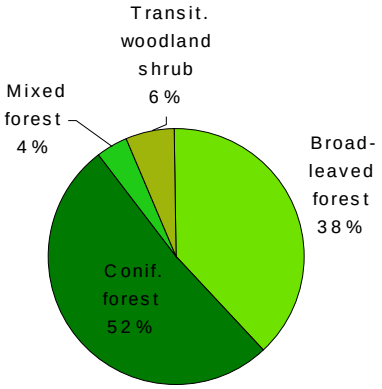
10.35. Consumption of forest & nature land by non-forest/nature 2000-2006 [% of total]



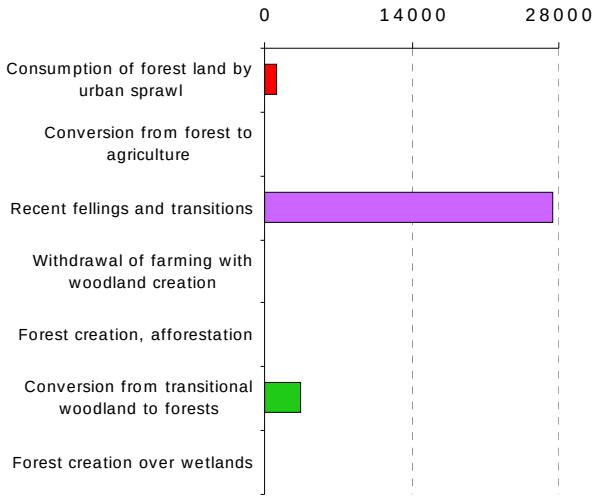
10.36. Formation of non-forest/nature land from forest & nature 2000-2006 [% of total]



10.37. Forested land 2006 [% of total area]

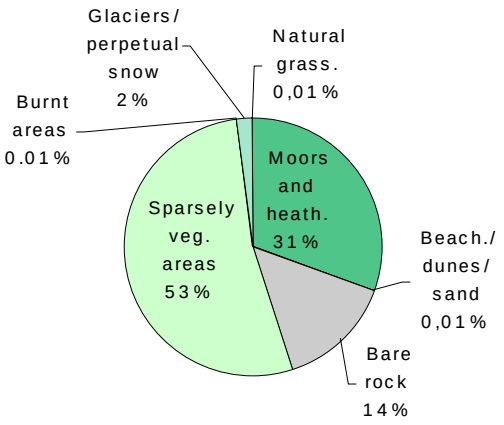


10.38. Main trends in woodland & forests consumption/formation 2000-2006 [ha/year]

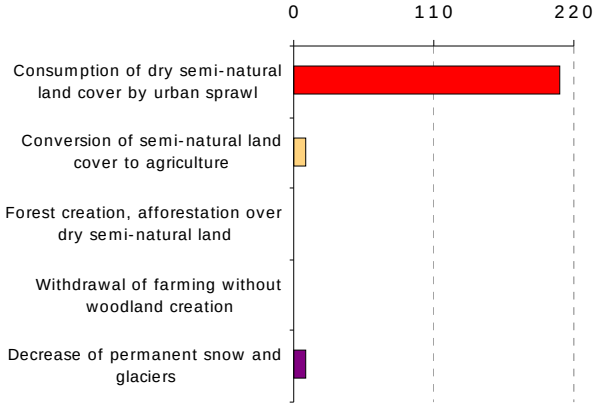


Norway

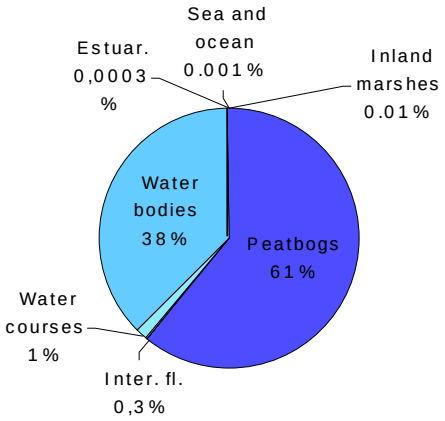
11.39. Dry semi-natural areas 2006 [% of total area]



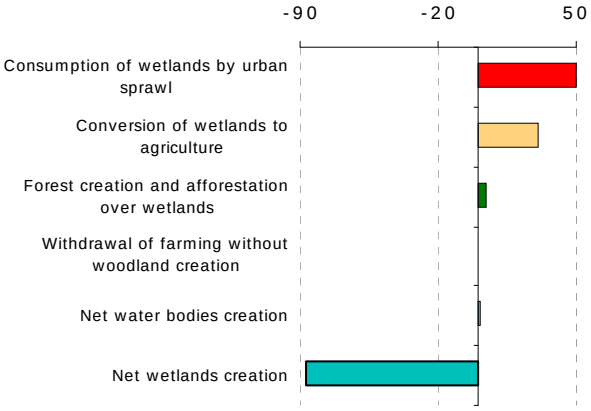
11.40. Main trends in dry semi-natural land consumption/formation 2000-2006 [ha/year]



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



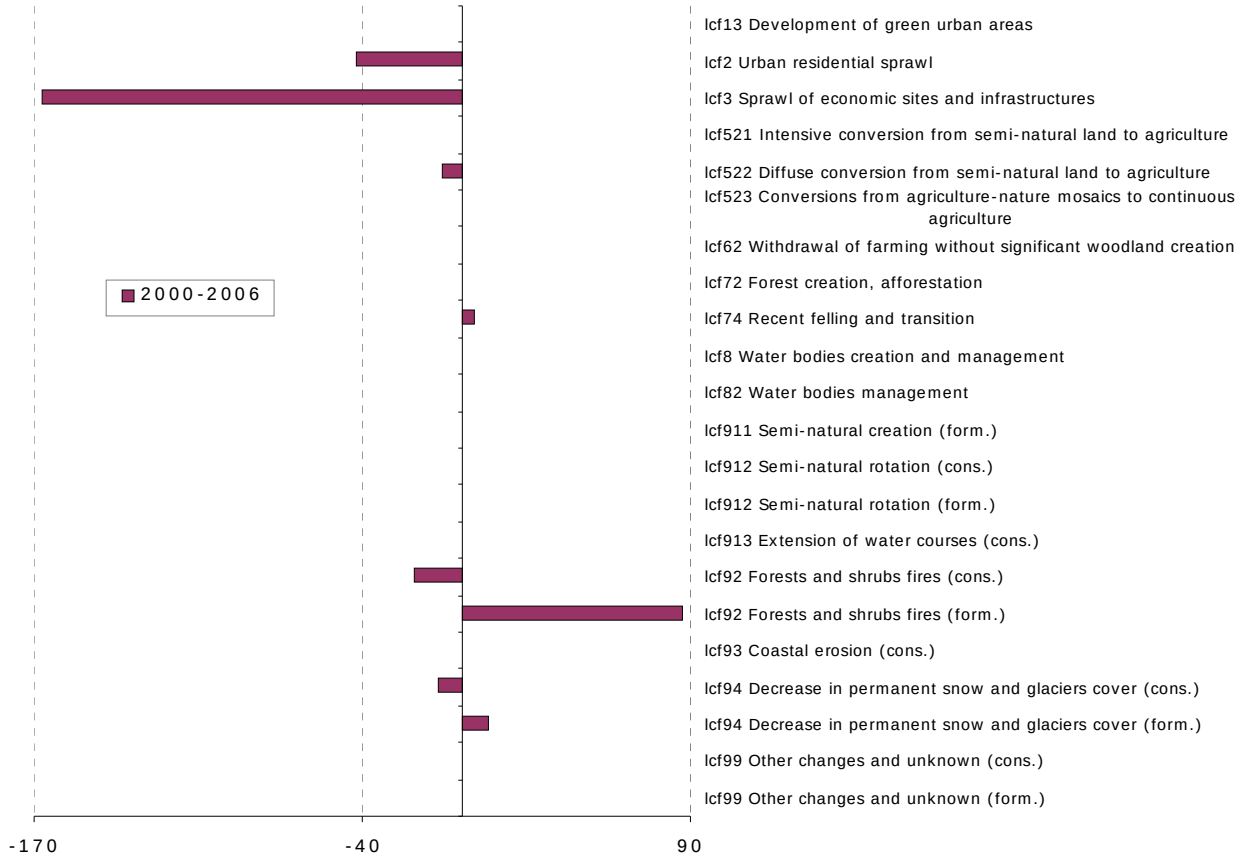
11.42. Main trends in wetlands & water consumption/formation 2000-2006 [ha/year]



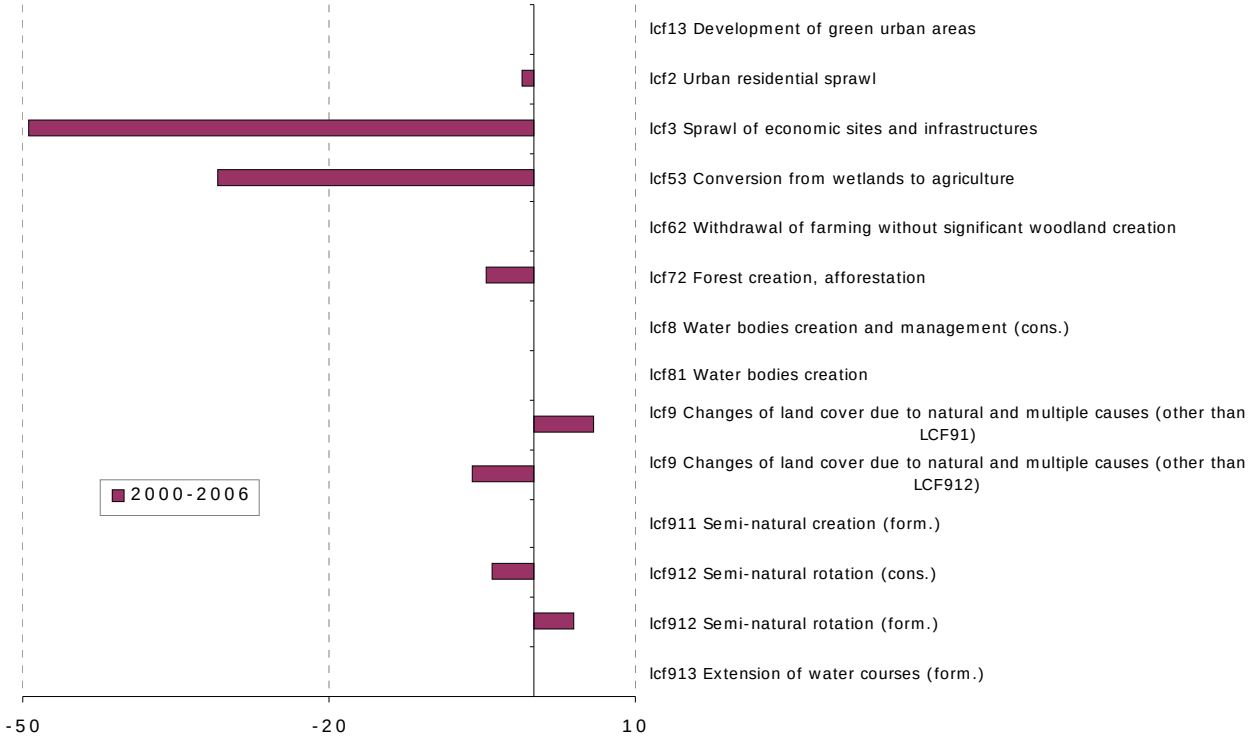
11.43. Mean annual conversions of forest & other woodland [ha/year]

Norway

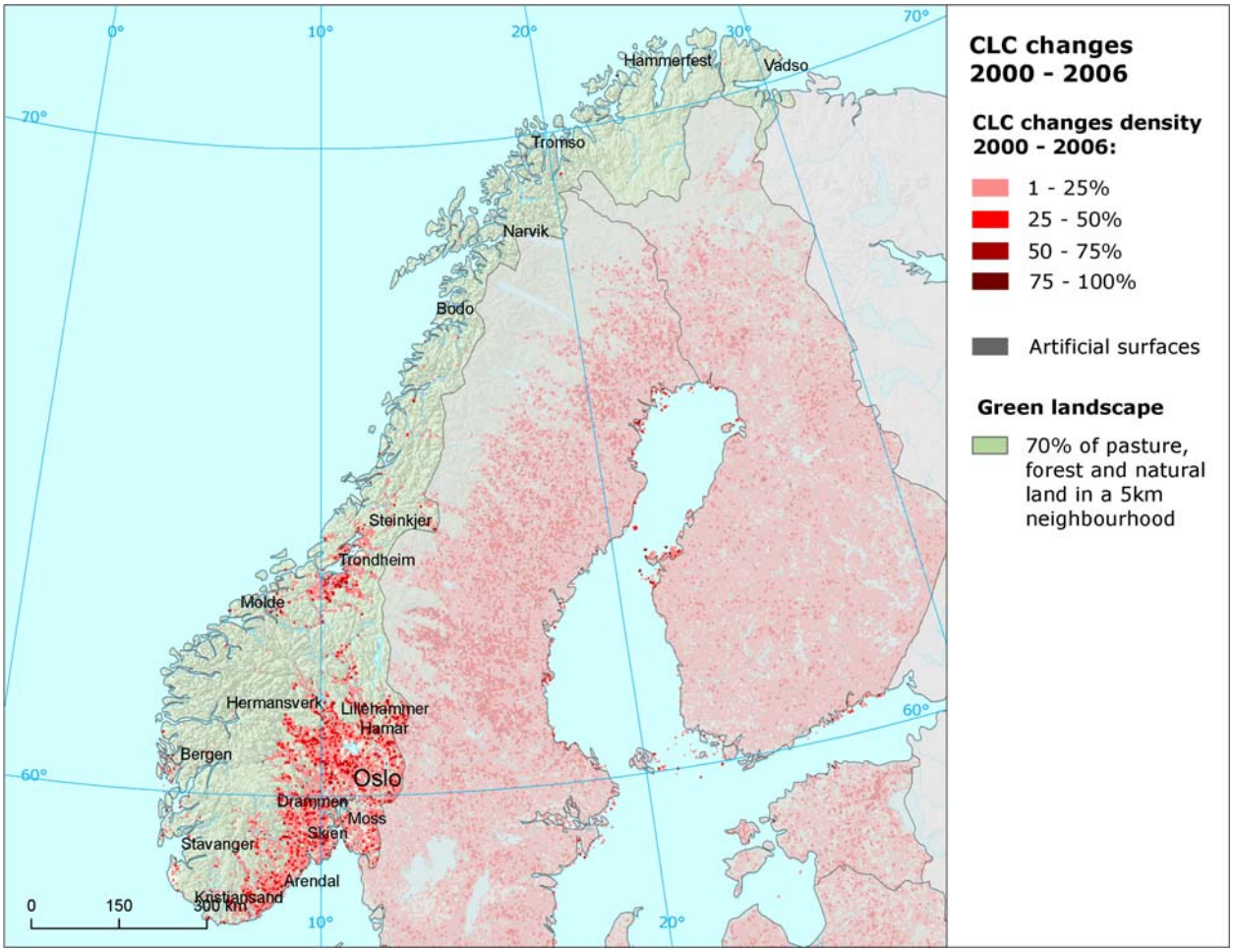
12.44. Mean annual conversions of dry semi-natural LC [ha/year]

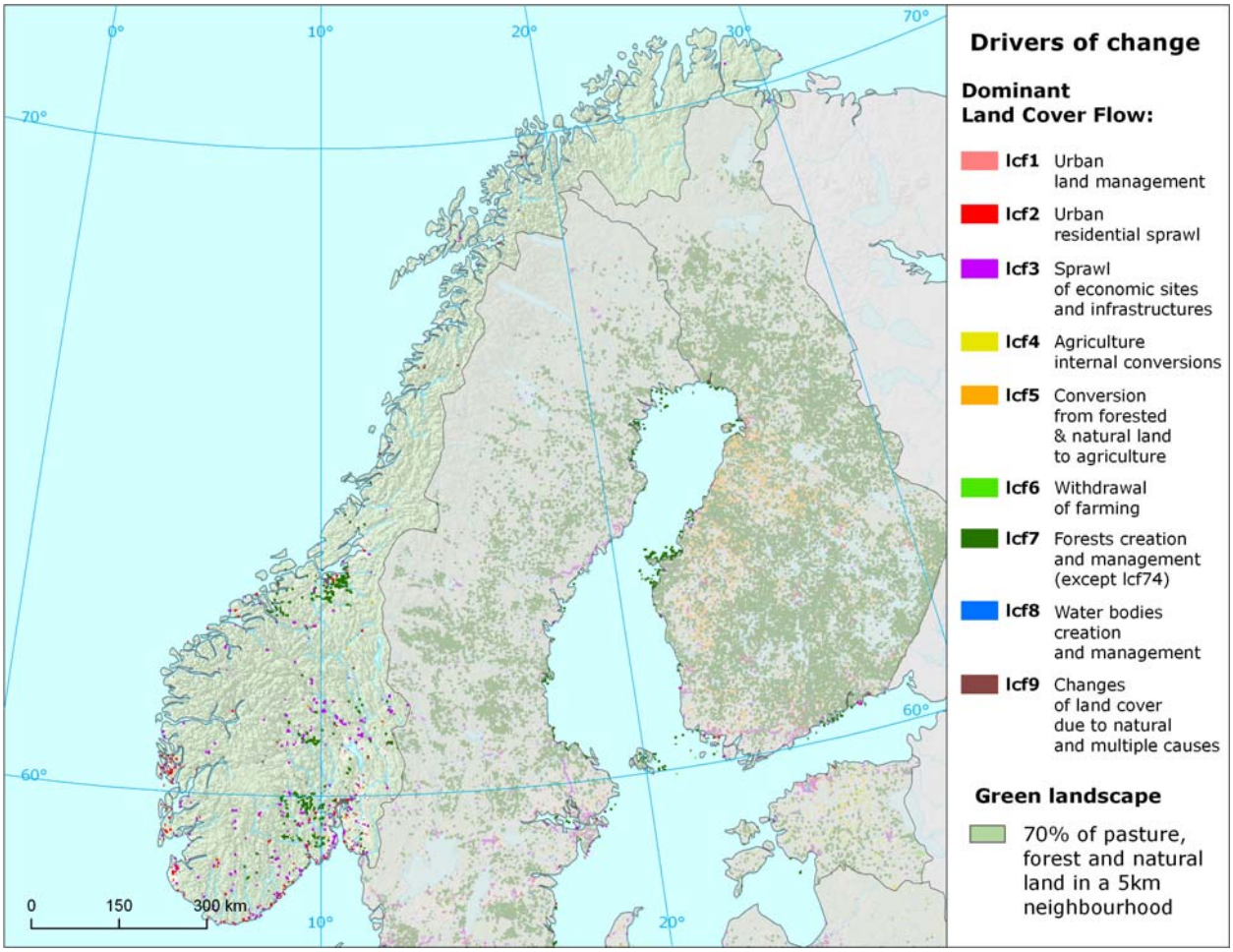


12.45. Mean annual conversions of wetlands and water LC [ha/year]



Norway


CLC changes 2000 - 2006
CLC changes density 2000 - 2006:
1 - 25%
25 - 50%
50 - 75%
75 - 100%
Artificial surfaces
Green landscape
70% of pasture, forest and natural land in a 5km neighbourhood
Hammerfest
Vadso
Tromso
Narvik
Bodo
Steinkjer
Trondheim
Molde
Hermansverk
Lillehammer
Hamar
Bergen
Oslo
Drammen
Moss
Skien
Stavanger
Arendal
Kristiansand
0
150
300 km


Drivers of change
Dominant Land Cover Flow:
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 (except lcf74)
lcf8 Water bodies creation and management
lcf9 Changes of land cover due to natural and multiple causes
Green landscape
70% of pasture, forest and natural land in a 5km neighbourhood
0
150
300 km