

Land cover 2012



The former Yugoslav Republic of Macedonia



September 2017

Photo: © Toni García, My City/EEA



Former Yugoslav Republic of Macedonia

Land cover 2012

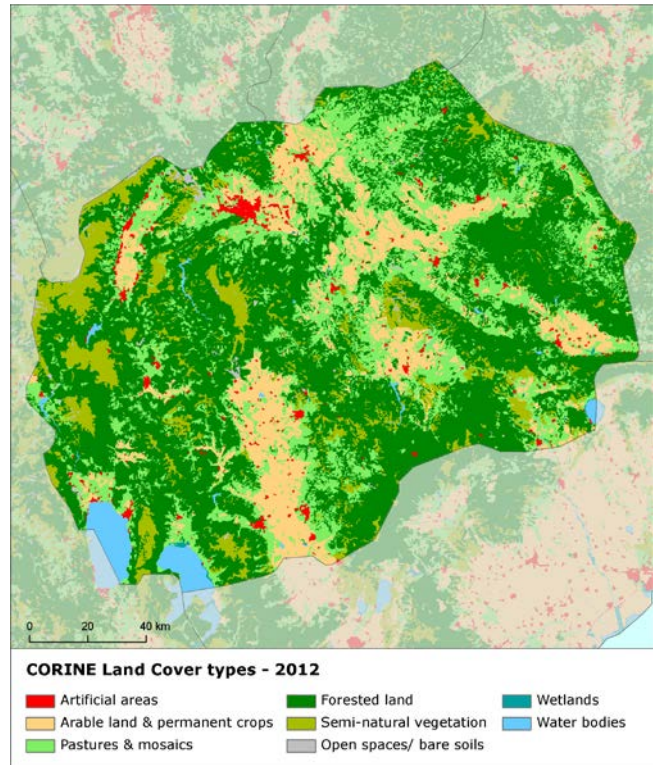
Overview of land cover & change 2006-2012

The period 2006-2012 in the former Yugoslav Republic of Macedonia is characterized by an average speed of land cover exchange, compared to other European countries. The annual land cover change rate – 0.17% shows, that the intensity of landscape development in the country, is only a bit higher than in the previous period. However, most of this exchange is represented by internal forest conversions, with prevailing share of recent felling and transition. Also the increase of the overall land cover change rate is caused by acceleration of these flows.

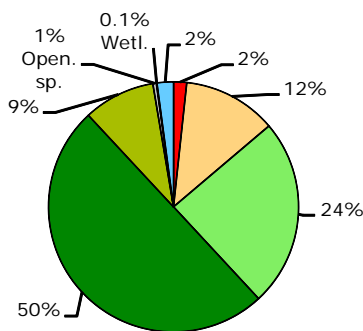
Agriculture internal conversions are the second most significant drivers of change in the country, followed by sprawl of economic sites and infrastructures. However, their intensity is much lower, compared to forest internal exchanges.

The intensity of artificial land take is showing a decreasing tendency. However, the annual sprawl rate of the former Yugoslav Republic of Macedonia (0.47%) is still one of the highest among European countries. The sprawl in the country is driven mainly by extension of mines, quarries and dumpsites and construction.

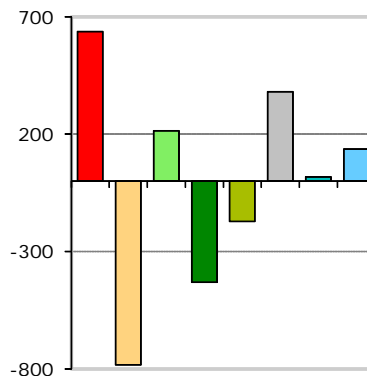
*Note: The results presented here are based on a change analysis of 44 land cover types mapped consistently on a 1:100,000 scale across Europe over more than decade between 2000-2006-2012 - see Corine land cover (CLC) programme for details.
Number of years between CLC2006-CLC2012 data for the former Yugoslav Republic of Macedonia: 6*



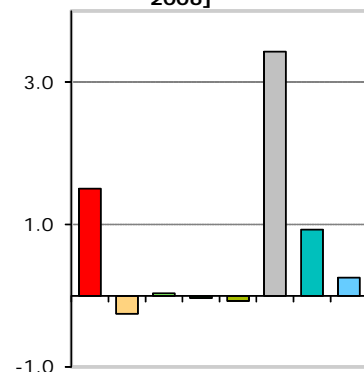
1.1. Land cover 2012 [% of total]



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



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



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

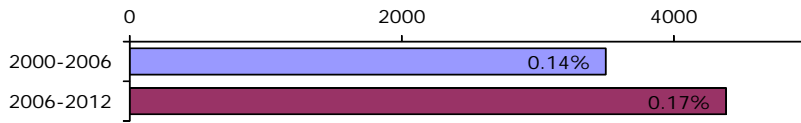
Summary balance table 2006-2012

	Artificial areas	Arable land & permanent crops	Pastures & mosaics	Forested land	Semi-natural vegetation	Open spaces/ bare soils	Wetlands	Water bodies	TOTAL [hundreds ha]
Land cover 2006	423	3075	6149	12658	2349	111	19	535	25319
Consumption of initial LC	6.4	27.5	10.1	212.2	5.7	0.2	0.5	0.6	263
Formation of new LC	12.7	19.7	12.2	207.9	4.0	4.0	0.7	2.0	263
Net Formation of LC	6.4	-7.8	2.1	-4.3	-1.7	3.8	0.2	1.4	0
<i>Net formation as % of initial year</i>	1.5	-0.3	0.0	0.0	-0.1	3.4	0.9	0.3	
Total turnover of LC	19.1	47.1	22.3	420.0	9.7	4.2	1.3	2.5	526
<i>Total turnover as % of initial year</i>	4.5	1.5	0.4	3.3	0.4	3.7	6.5	0.5	2.1
Land cover 2012	430	3067	6151	12654	2347	115	20	537	25319

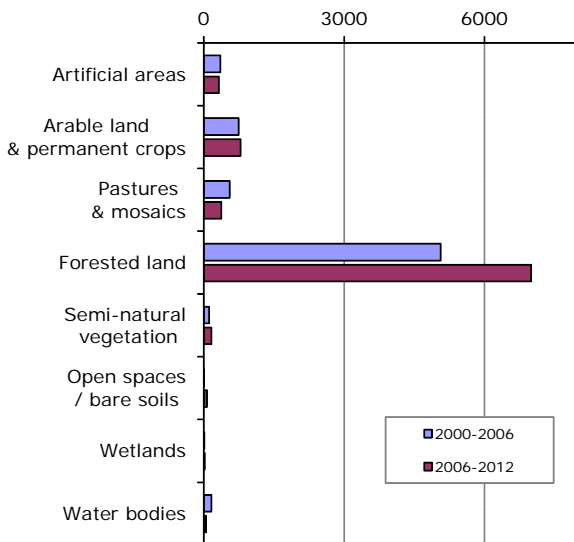
Former Yugoslav Republic of Macedonia

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

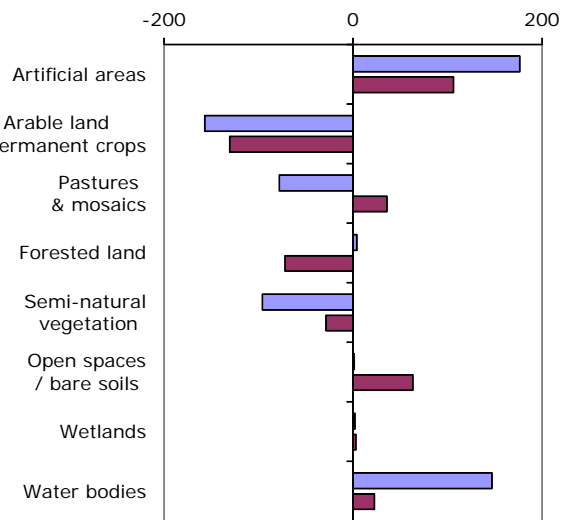
2.4. Annual land cover change
[ha/year, % of total area]



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

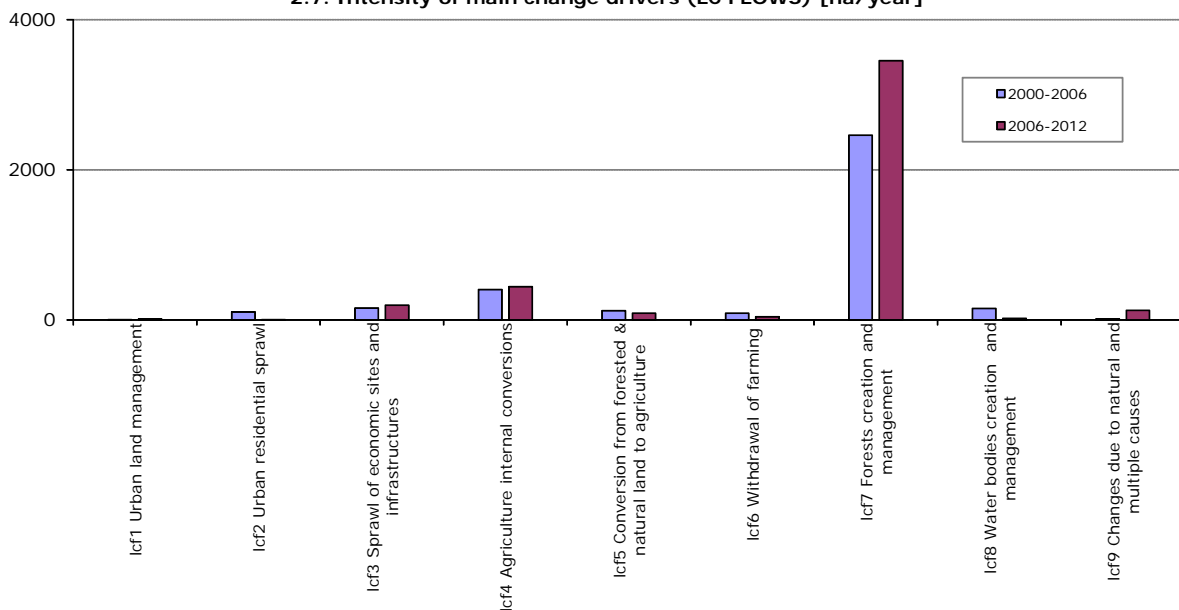


2.6. Net annual change of LC types [ha/year]

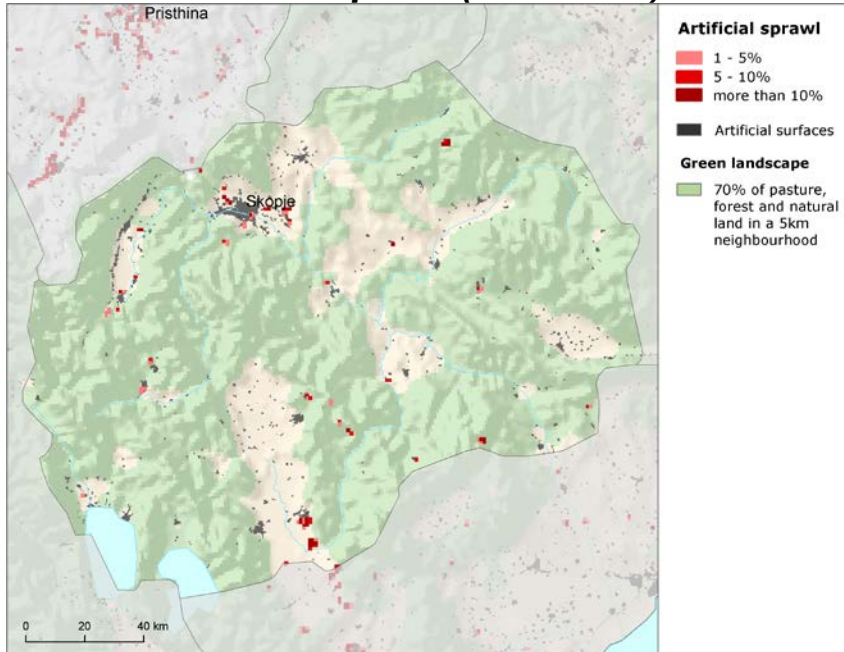


Summary trend figures		
	2000-2006	2006-2012
Annual land cover change [ha/year]	3501	4385
Annual land cover change as % of initial year	0.14%	0.17%
Land uptake by artificial development as mean annual change [ha/year]	263	198
Agricultural land uptake by urban and infrastructures development as mean annual change [ha/year]	266	139
Net uptake of forests and semi-natural land by agriculture as mean annual change [ha/year]	-52	-19
Net conversion from pasture to arable land and permanent crops as mean annual change [ha/year]	-10	-2
Forest & other woodland net formation as mean annual change [ha/year]	4	-72
Dry semi-natural land cover net formation as mean annual change [ha/year]	-94	35
Wetlands & water bodies net formation as mean annual change [ha/year]	149	26

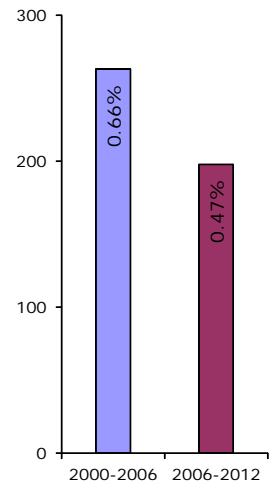
2.7. Intensity of main change drivers (LC FLOWS) [ha/year]



Artificial surfaces sprawl (2006-2012)



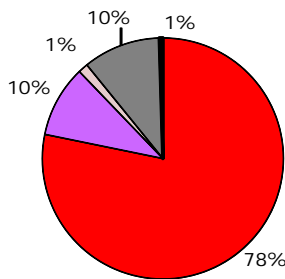
3.8. Artificial land take [ha/year, % of initial year]



Residential sprawl disappeared

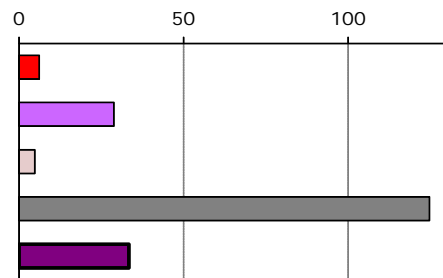
The pace of artificial development in the former Yugoslav Republic of Macedonia is getting slower, compared to the period 2000-2006. Recently, the land take is driven mostly by extension of mines, quarries and dumpsites, followed by construction. The residential sprawl, which was the main driver of artificial development in the previous period, became rather neglectable in the period 2006-2012. The sprawl is still concentrated mainly into the surroundings of the capital city Skopje, with two other major patches observable in the southern part of the country, representing extension of quarries. This extension of mines is compensated by the opposite conversion of developed areas mainly to agriculture, which occurs in the same mining resort.

3.9. Artificial surfaces 2012 [% of total area]

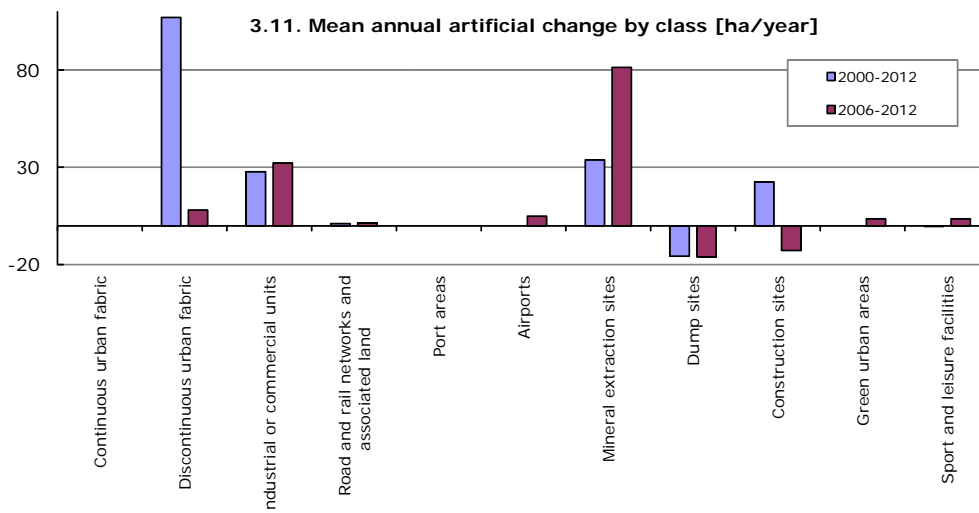


- Housing, services, recreation
- Industrial, commercial units
- Transport networks, infrastructures
- Mines, quarries, waste dumpsites
- Construction

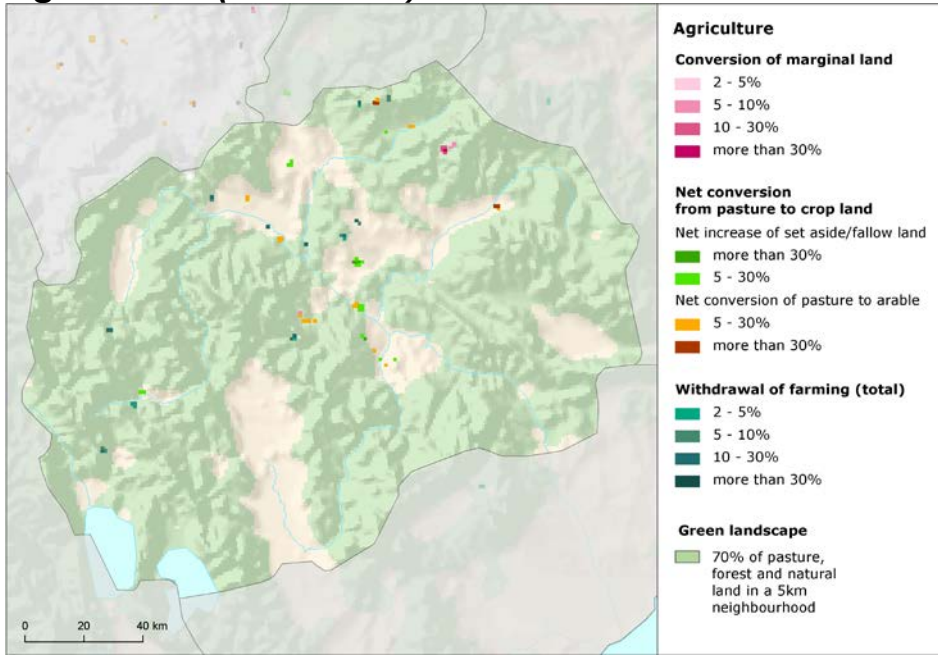
3.10. Artificial land take 2006-2012 [ha/year]



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



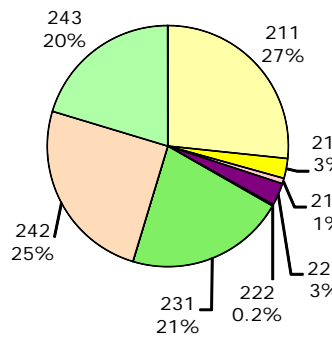
Agriculture (2006-2012)



Formation of rice fields through conversion from pasture

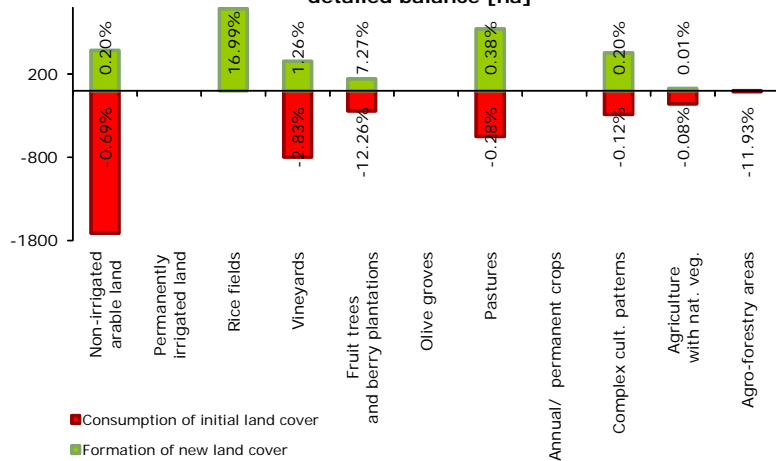
The volume of agricultural exchange in former Yugoslav Republic of Macedonia is rather low in the long term, with prevailing internal agriculture flows. Both directions of conversion between arable/crop land and pasture have approximately the same intensity in the period 2006-2012, which, in both cases, is slightly higher than in the previous period. However, the most significant internal agricultural flow in the last period is the conversion from arable land to permanent irrigation perimeters, which causes an increase of rice fields' area by 17%. This formation has not been observed in the previous period. The other relatively frequent internal agriculture conversions occur between vineyards/orchards and non-irrigated arable land. Again, they have comparable intensity in both directions, which, however, means significant slowdown (by more than half) of conversion from vineyards/orchards to non-irrigated arable land. Externally, the agricultural land is consumed by the sprawl of economic sites/infrastructures and there also occurs few examples of withdrawal of farming with woodland creation. On the other hand, new agricultural land has been created through conversion from developed areas (mainly dumpsites).

4.12. Agricultural areas 2012 [% of total area]

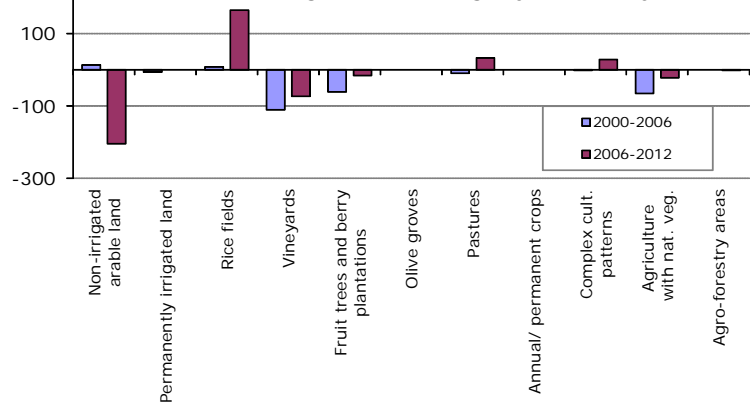


- 211 Non-irrigated arable land
- 212 Permanently irrigated land
- 213 Rice fields
- 221 Vineyards
- 222 Fruit trees and berry plantations
- 223 Olive groves
- 231 Pastures
- 241 Annual crops associated with permanent crops
- 242 Complex cultivation patterns
- 243 Agriculture land with significant areas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

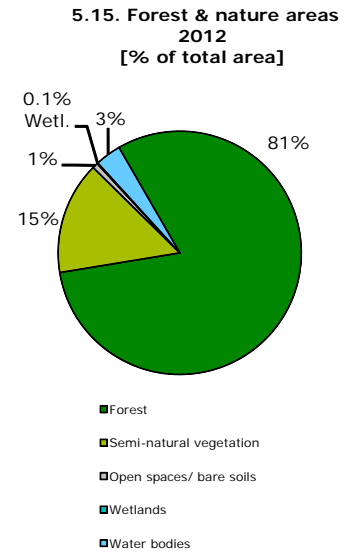
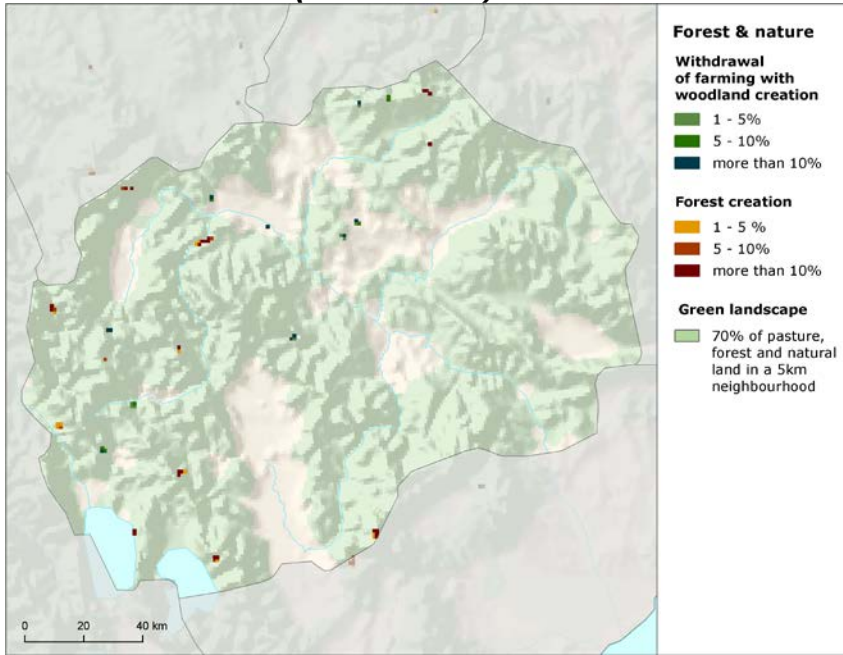
4.13. Development of agricultural areas 2006-2012 - detailed balance [ha]



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



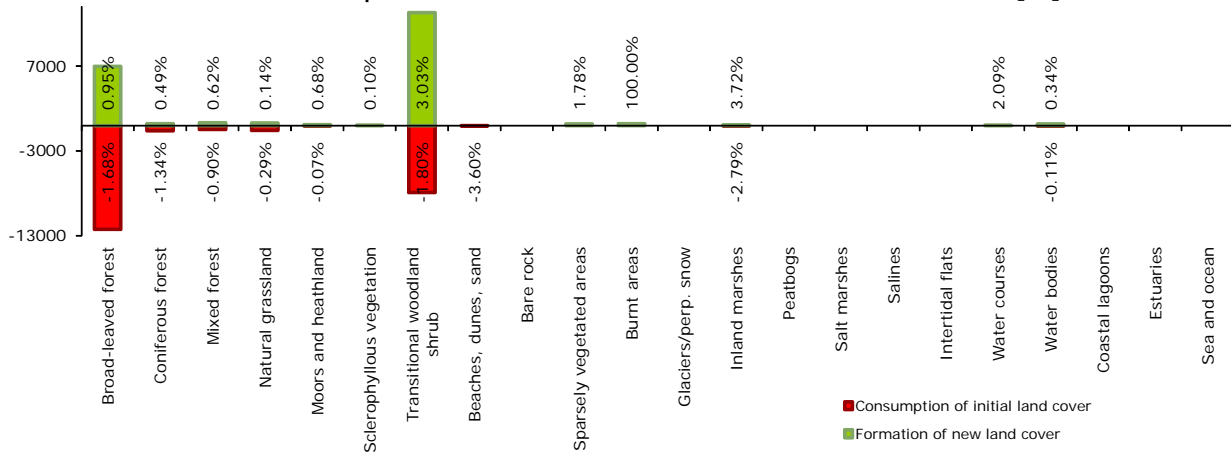
Forest & nature (2006-2012)



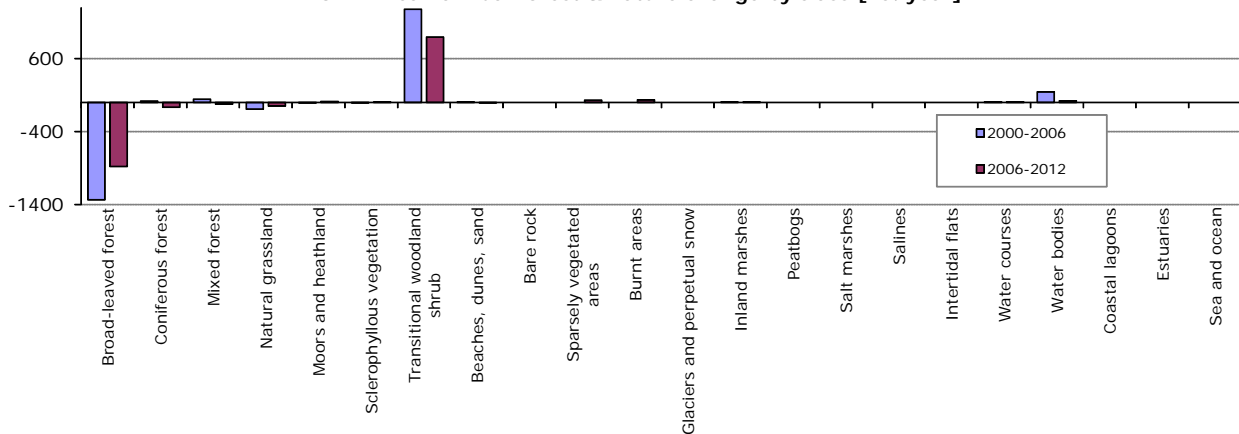
Internal forest conversions even more intensive

Forest creation and management is by far the most frequent conversion in the landscape of the former Yugoslav Republic of Macedonia, with significantly increased intensity, compared to the previous period. However, it is almost exclusively driven by internal forest conversions, with prevailing share of recent felling and transition. Beside these internal flows, there also occurs forest creation/afforestation, represented by conversion from agricultural land with natural vegetation, pastures and former construction sites into mainly transitional woodland/shrub or broad-leaved forest. Semi-natural creation (represented by conversion from transitional woodland and shrub into mainly semi-natural grassland) and forest fires were also observed during the period 2006-2012 in this country. On the other hand, water bodies' creation, which was quite significant in the previous period, lost most of its intensity.

5.16. Development of forest & nature areas 2006-2012 – detailed balance [ha]



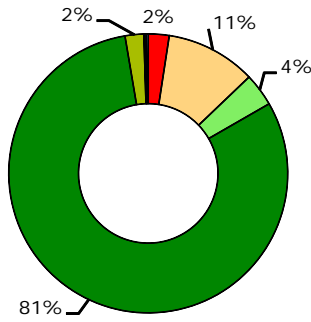
5.17. Mean annual forest & nature change by class [ha/year]



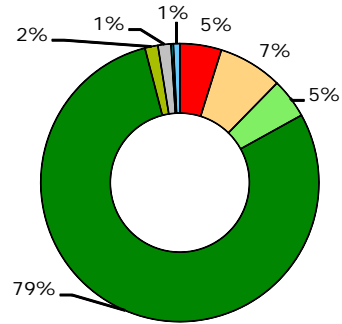
Annex: Land cover flows and trends

Land cover flows 2006-2012

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

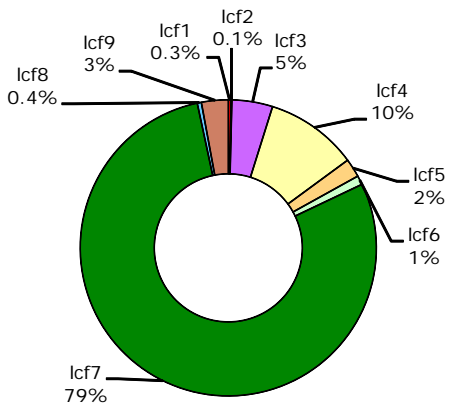


6.19. Formation of land cover 2006-2012 [% of total change area]



- 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]

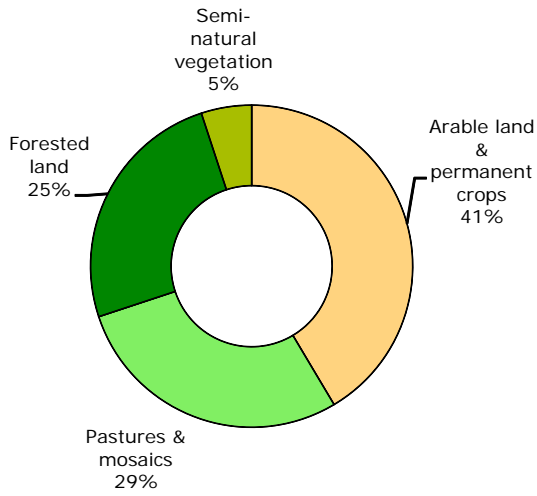


- Icf1 Urban land management
- Icf2 Urban residential sprawl
- Icf3 Sprawl of economic sites and infrastructures
- Icf4 Agriculture internal conversions
- Icf5 Conversion from forested & natural land to agriculture
- Icf6 Withdrawal of farming
- Icf7 Forests creation and management
- Icf8 Water bodies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

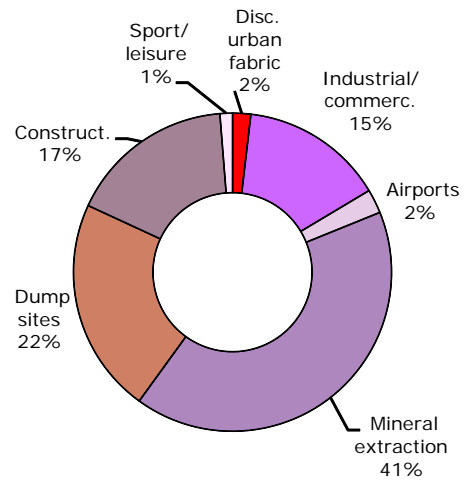
Former Yugoslav Republic of Macedonia

Artificial areas

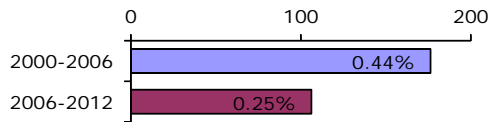
7.21. Consumption by artificial land take 2006-2012 [% of total]



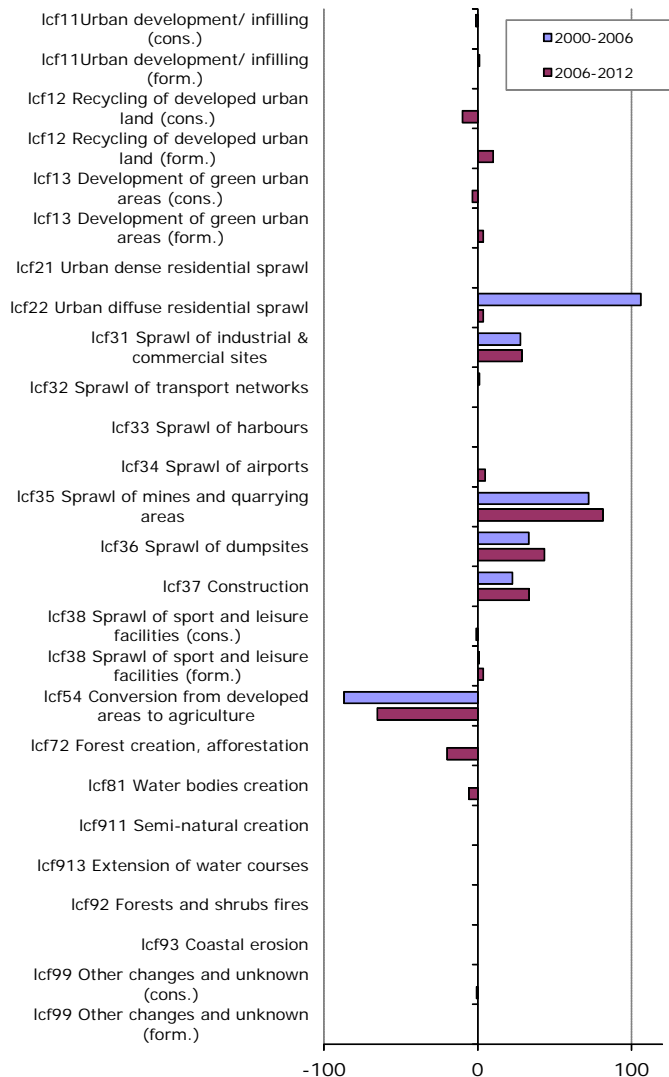
7.22. Formation by artificial land take 2006-2012 [% of total]



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



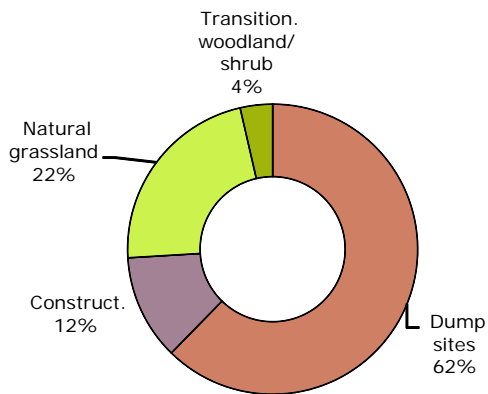
7.24. Artificial development by change drivers (LC FLOWS) [ha/year]



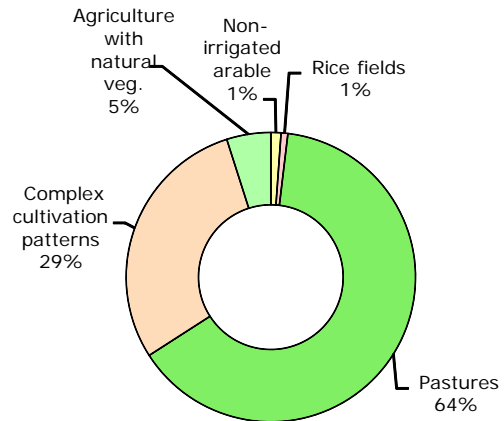
Former Yugoslav Republic of Macedonia

Agriculture

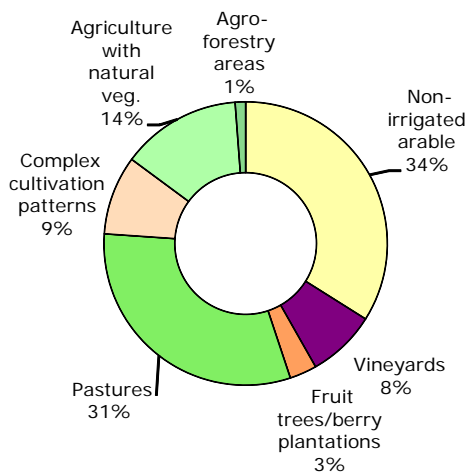
8.25. LC consumed by agriculture 2006-2012 [% of total]



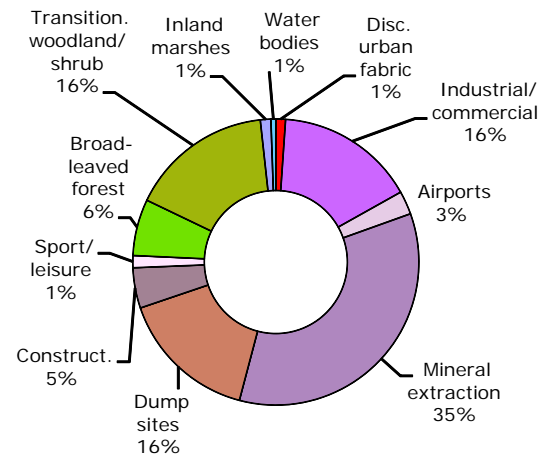
8.26. Formation of agricultural land from non-agriculture 2006-2012 [% of total]



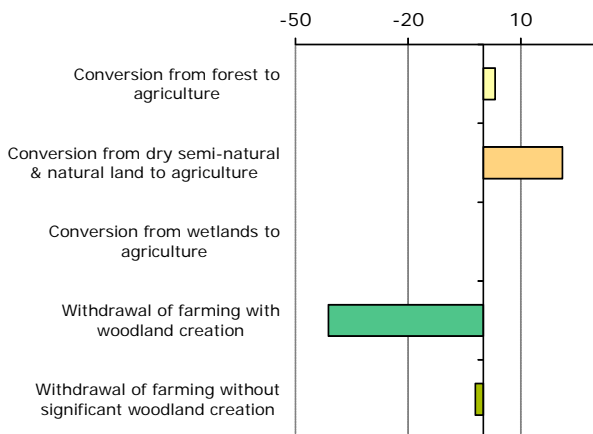
8.27. Consumption of agricultural land by non-agriculture 2006-2012 [% of total]



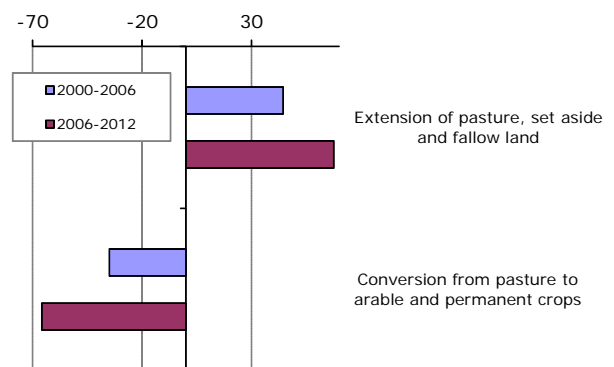
8.28. Formation of non-agricultural land from agriculture 2006-2012 [% of total]



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

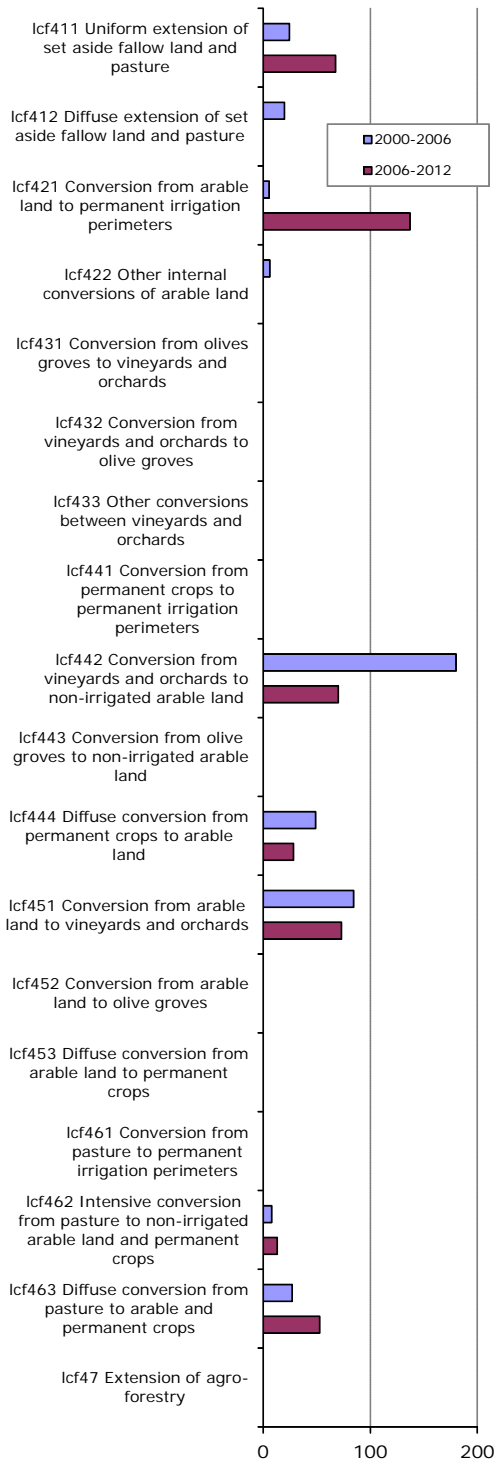


8.30. Mean annual conversion between arable land and pasture [ha/year]

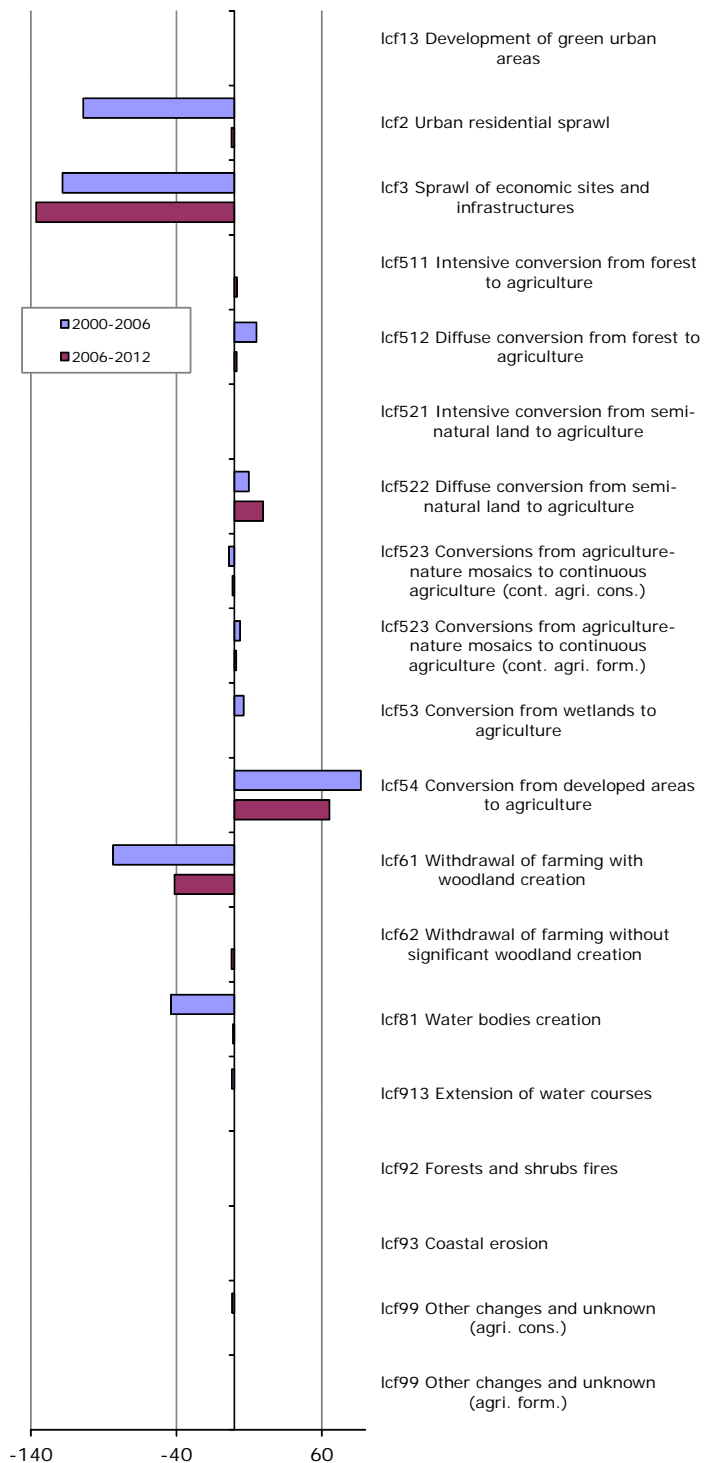


Former Yugoslav Republic of Macedonia

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



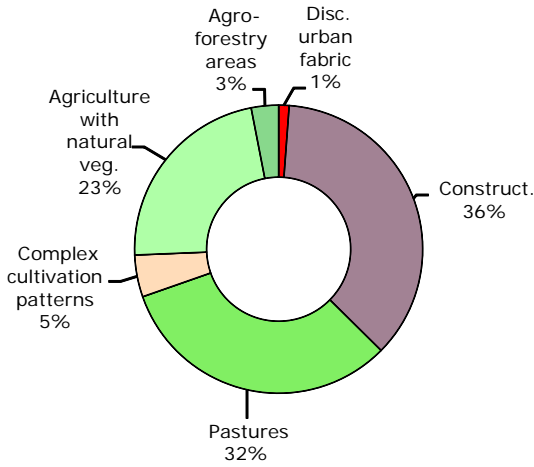
9.32. Mean annual conversions between agriculture and other LC types [ha/year]



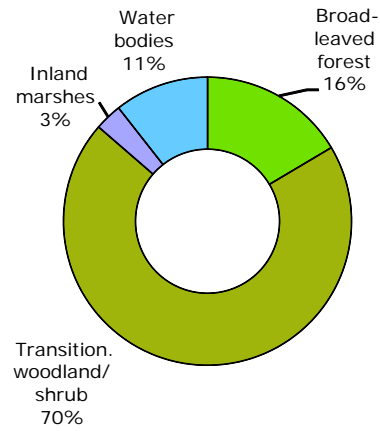
Former Yugoslav Republic of Macedonia

Forest & nature

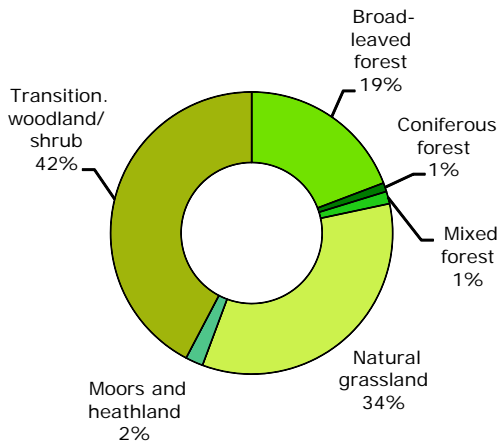
10.33. LC consumed by forest & nature 2006-2012 [% of total]



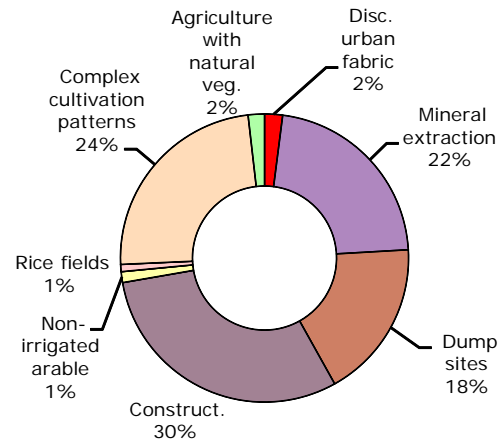
10.34. Formation of forest & nature land from non-forest /nature 2006-2012 [% of total]



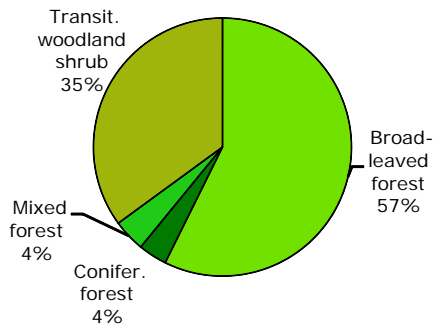
10.35. Consumption of forest & nature land by non-forest/nature 2006-2012 [% of total]



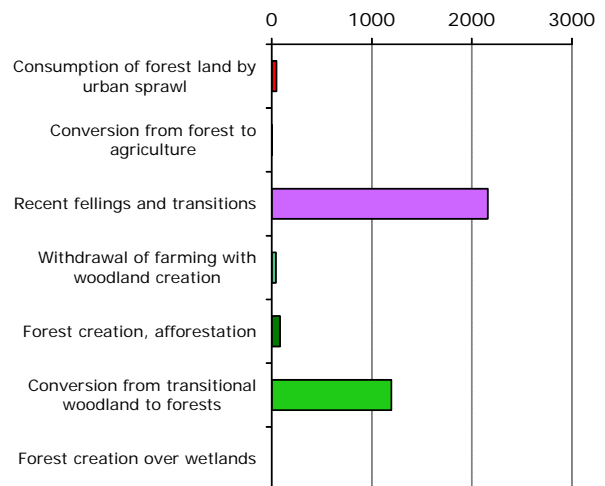
10.36. Formation of non-forest/nature land from forest & nature 2006-2012 [% of total]



10.37. Forested land 2012 [% of total area]

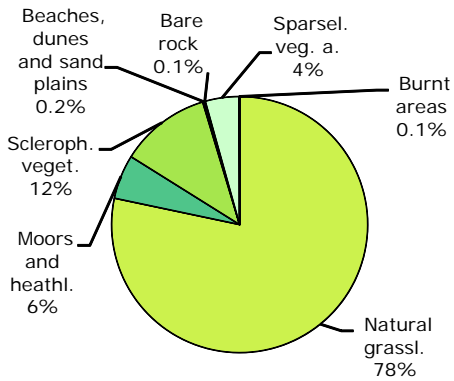


10.38. Main trends in woodland & forests consumption/formation 2006-2012 [ha/year]

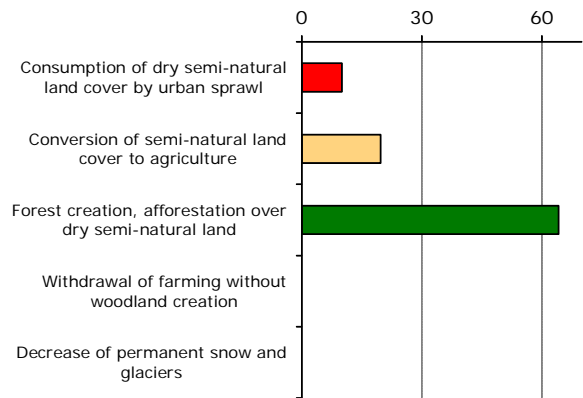


Former Yugoslav Republic of Macedonia

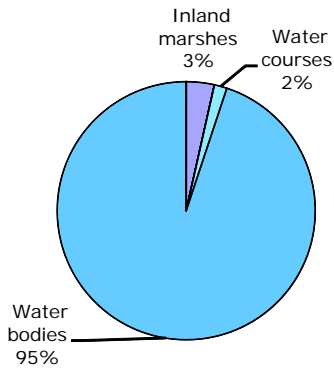
11.39. Dry semi-natural areas 2012
[% of total area]



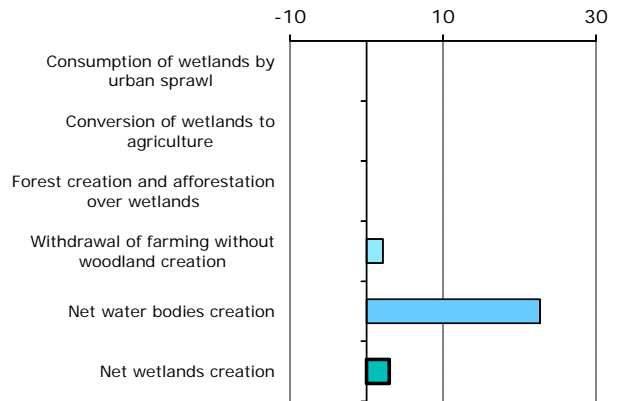
11.40. Main trends in dry semi-natural land consumption/formation 2006-2012
[ha/year]



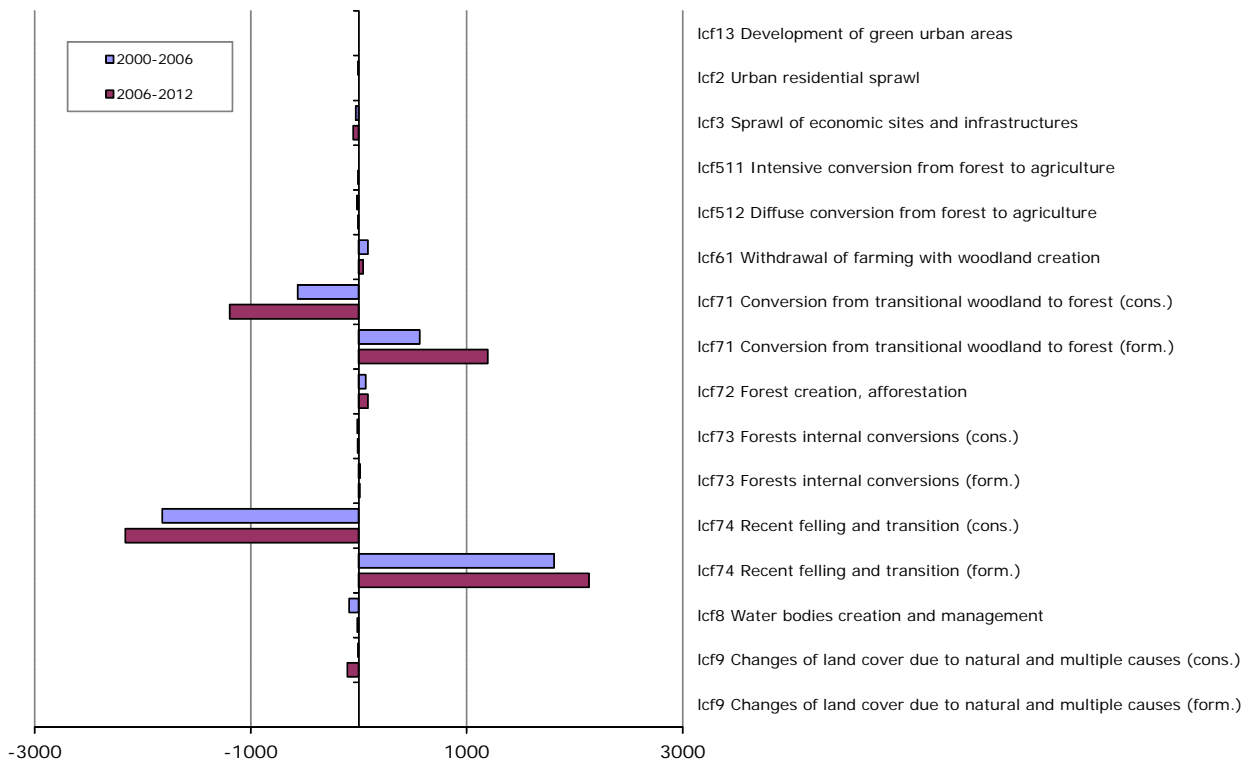
11.41. Wetlands & water 2012
[% of total area]



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

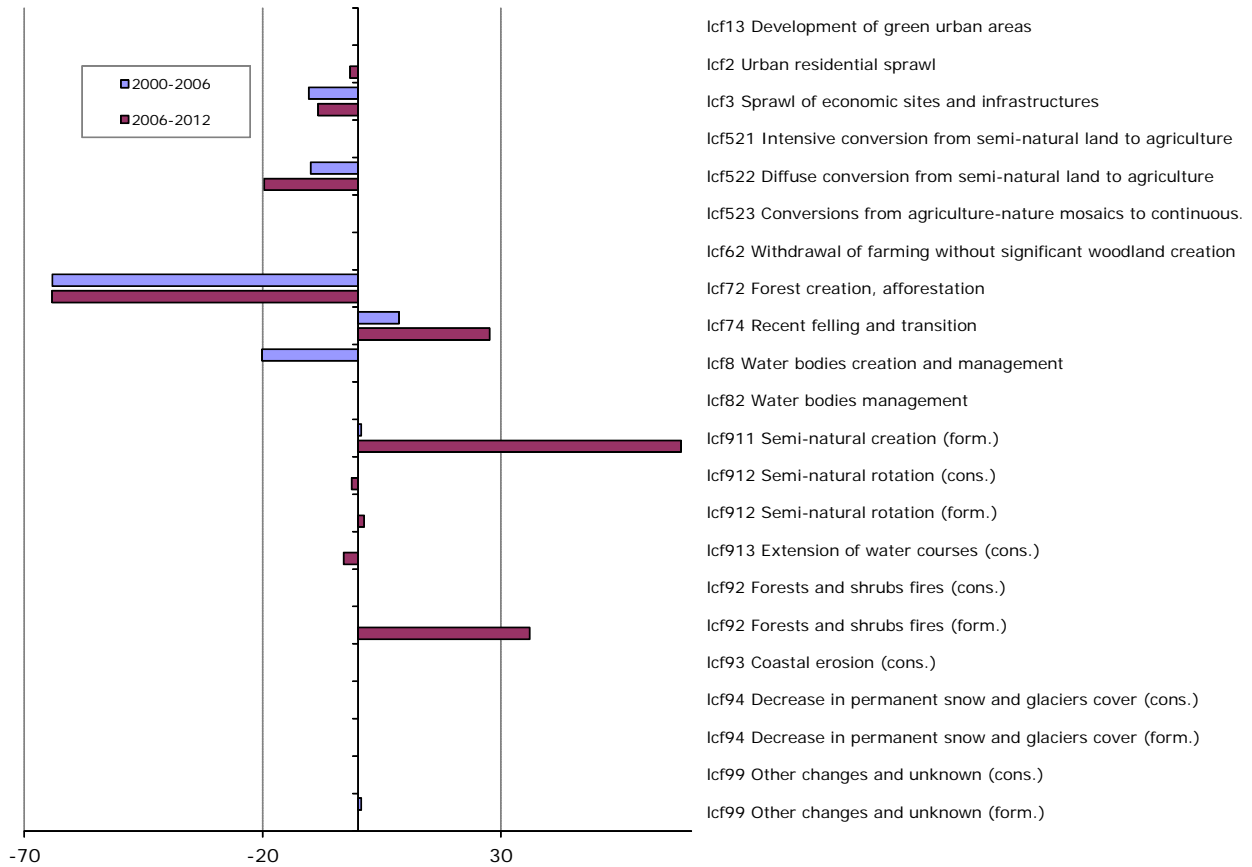


11.43. Mean annual conversions of forest & other woodland
[ha/year]

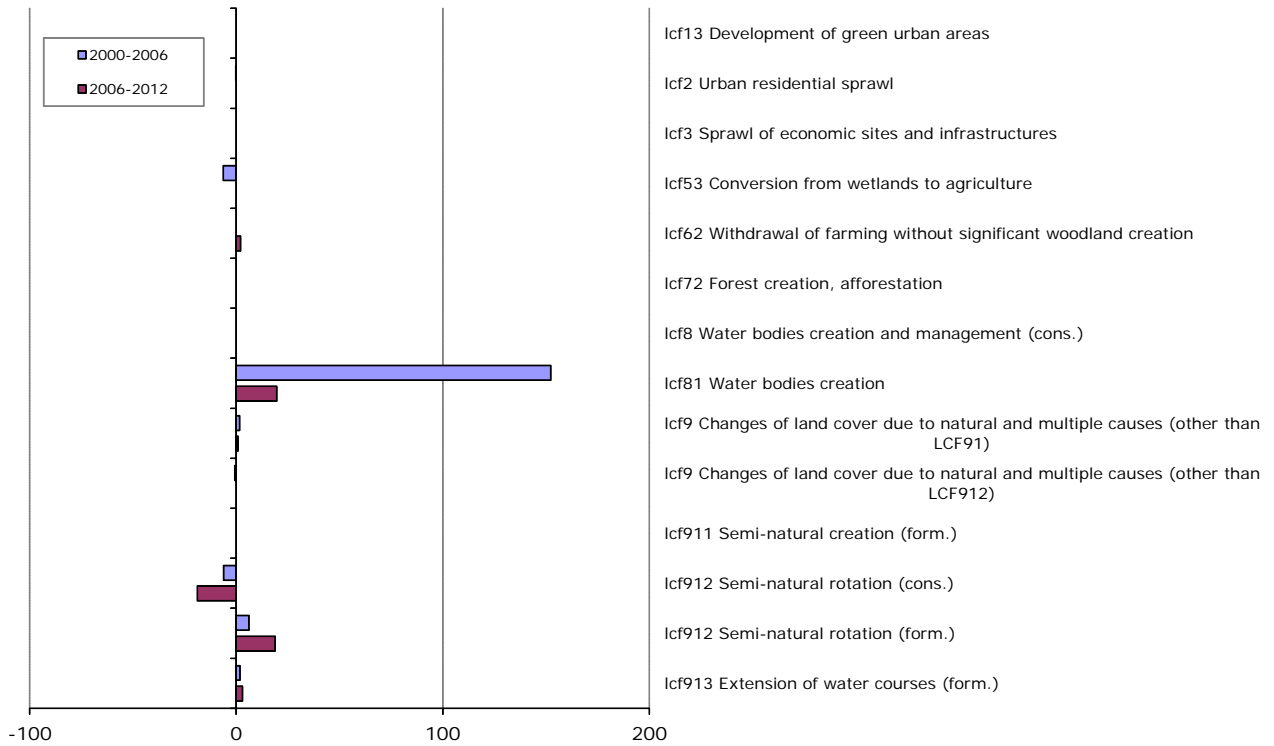


Former Yugoslav Republic of Macedonia

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

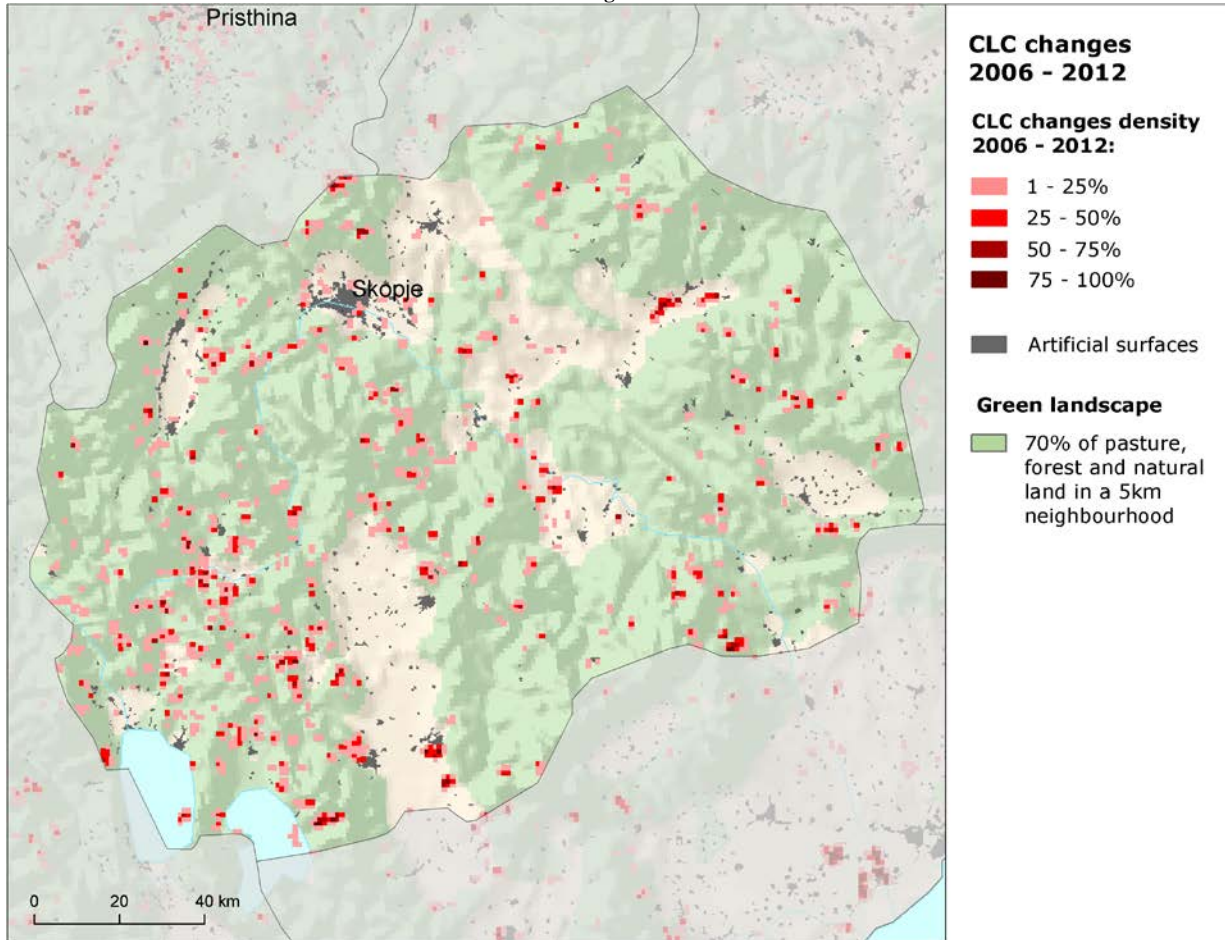


12.45. Mean annual conversions of wetlands and water LC [ha/year]

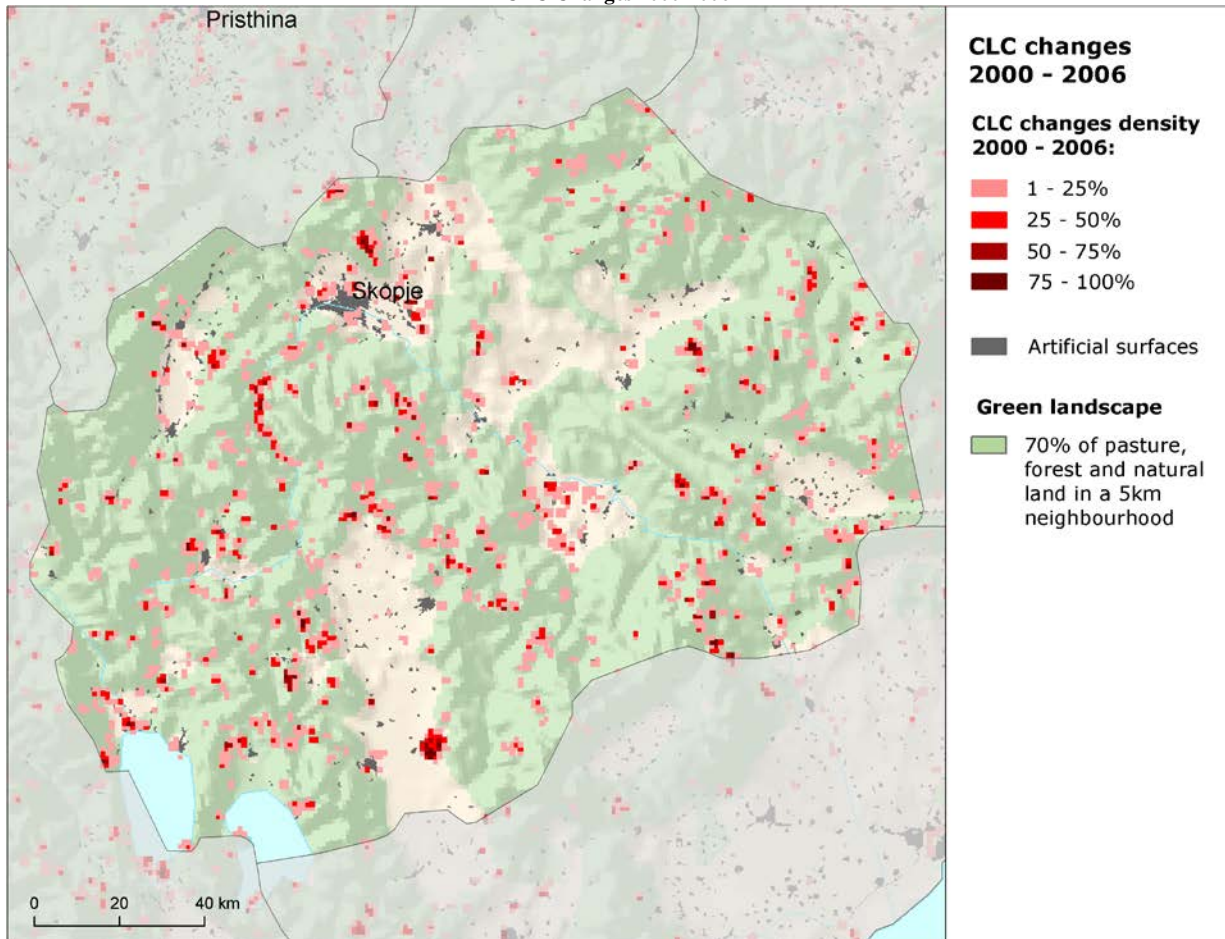


Former Yugoslav Republic of Macedonia

CLC Changes 2006-2012

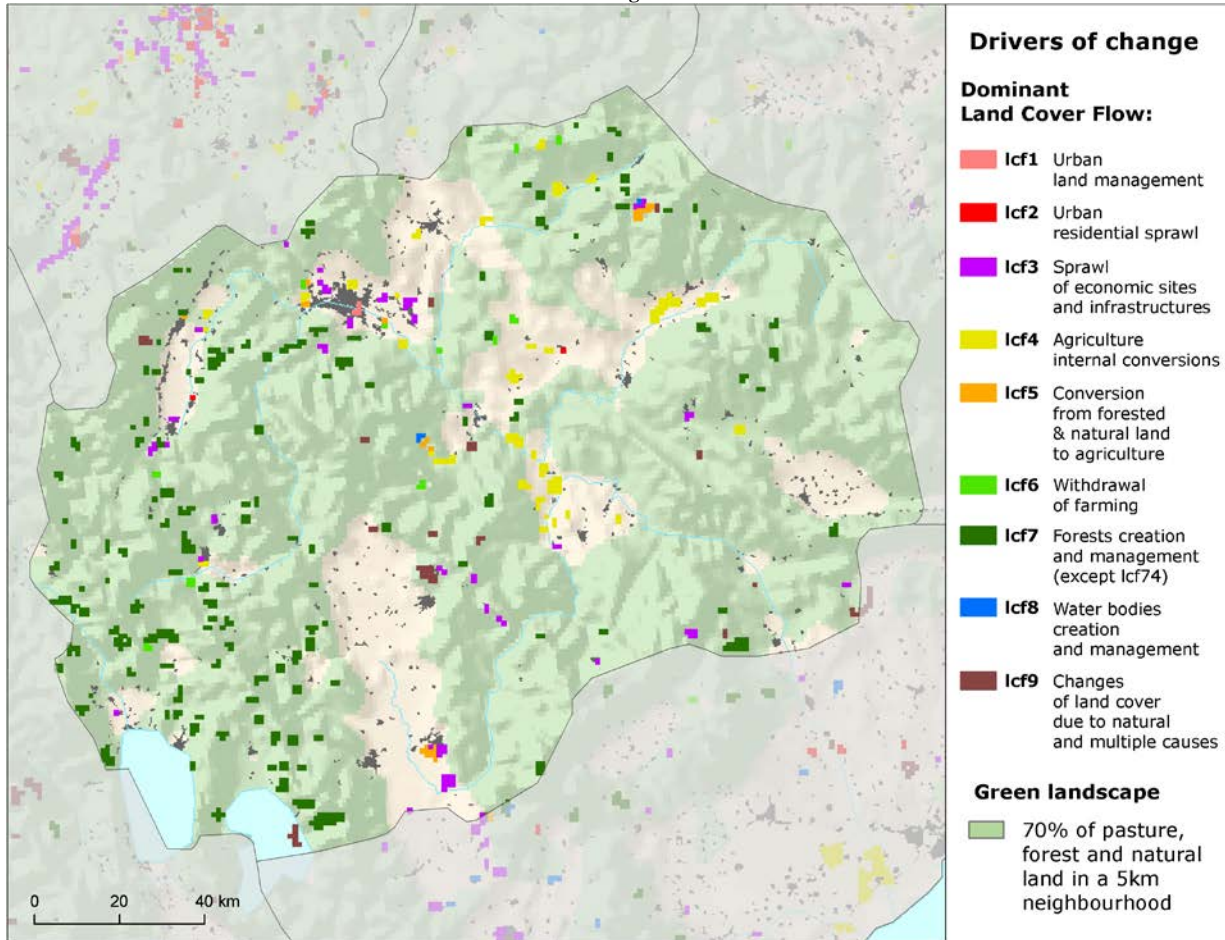


CLC Changes 2000-2006

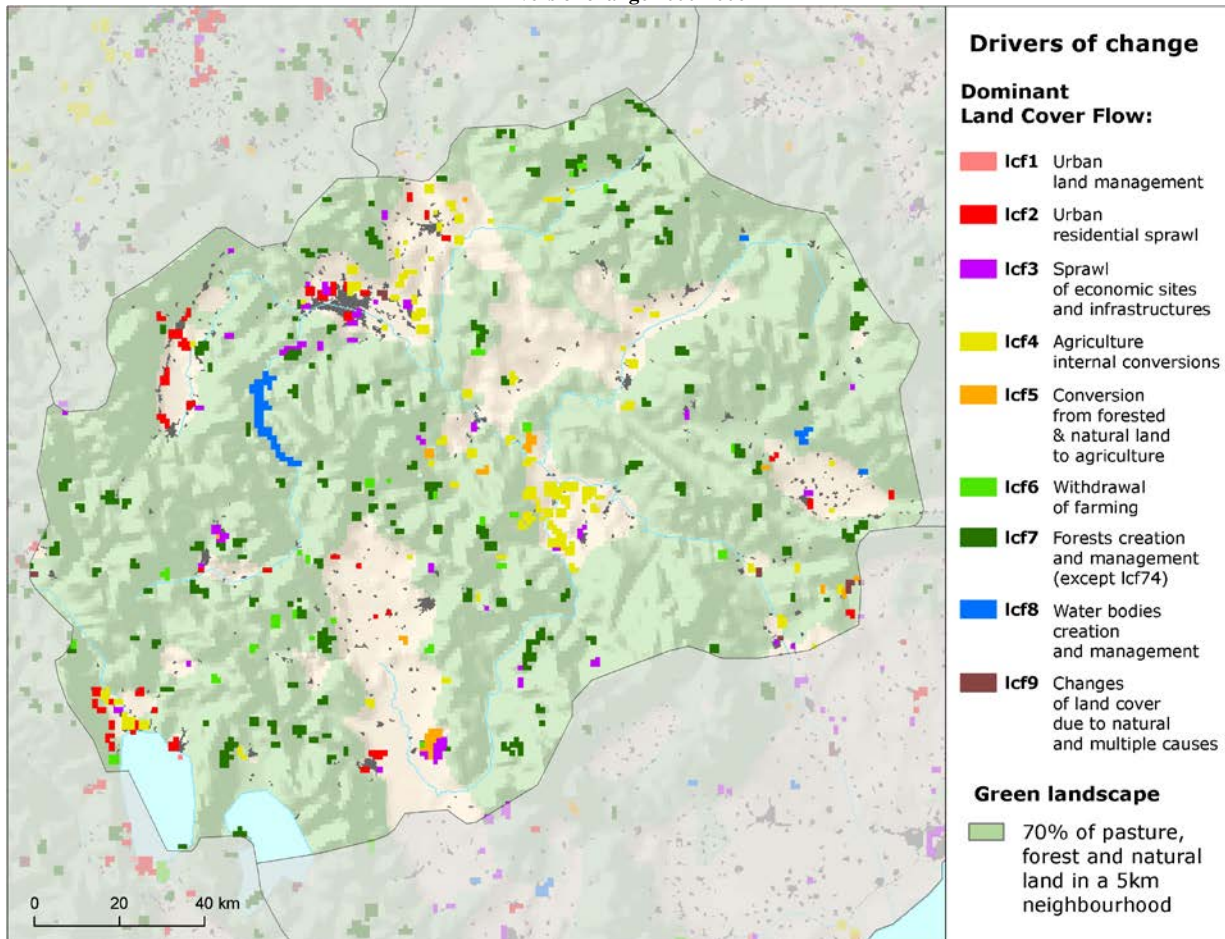


Former Yugoslav Republic of Macedonia

Drivers of change 2006-2012

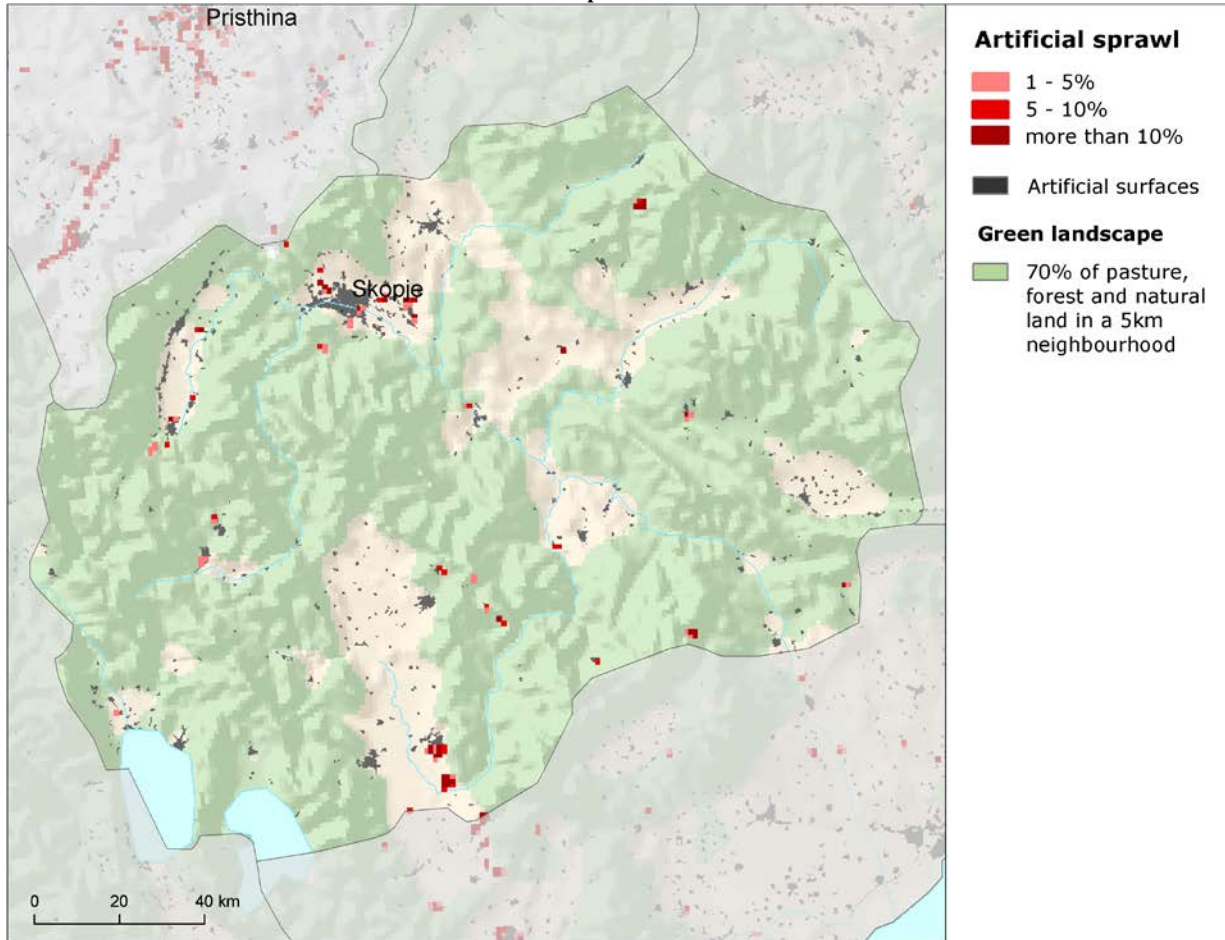


Drivers of change 2000-2006

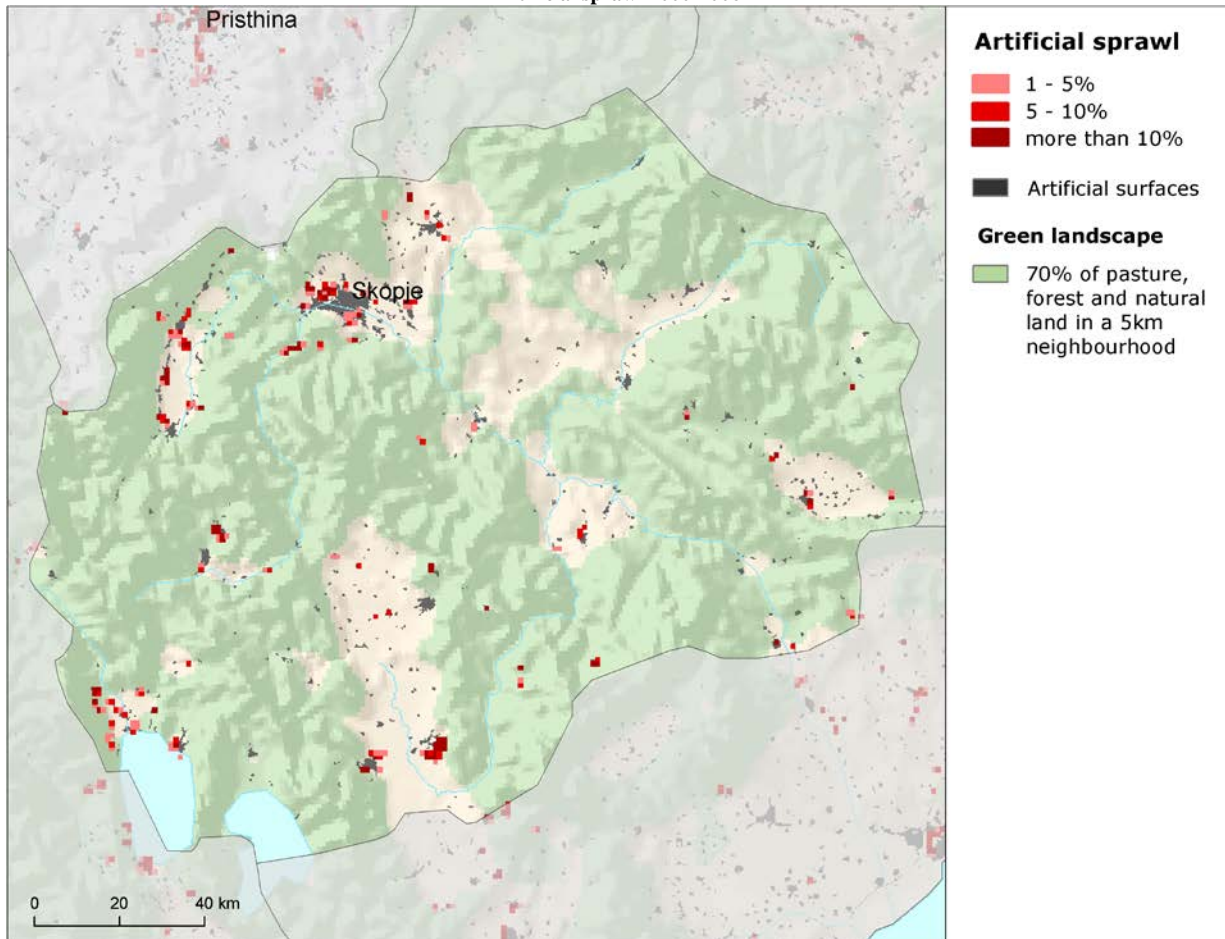


Former Yugoslav Republic of Macedonia

Artificial sprawl 2006-2012

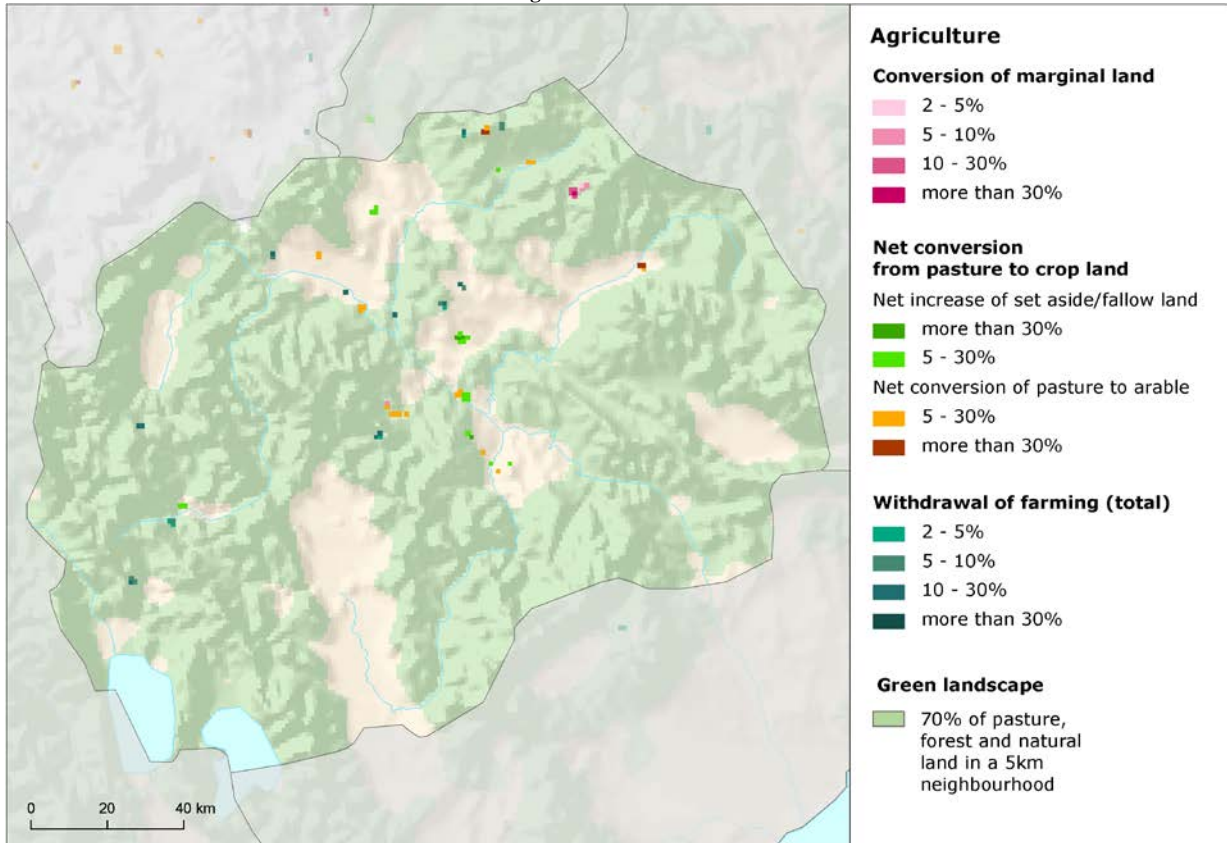


Artificial sprawl 2000-2006

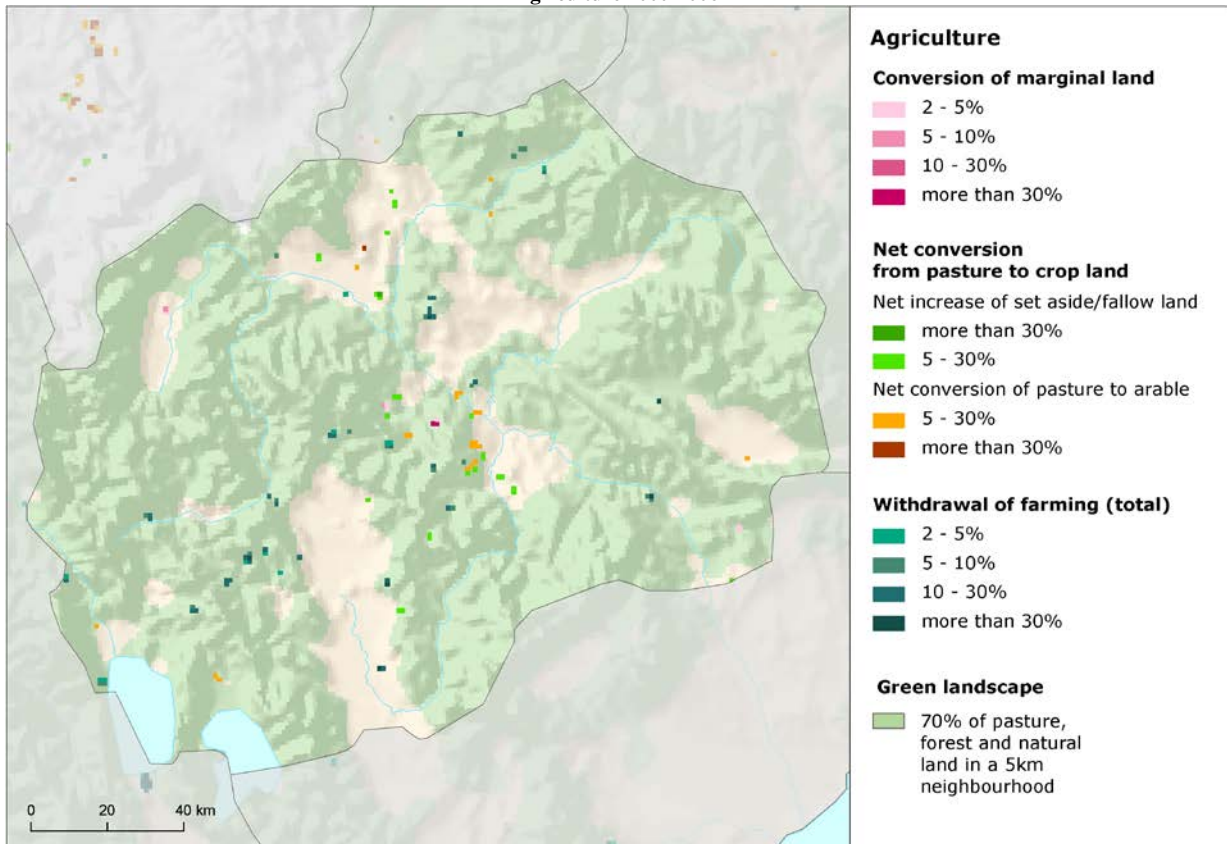


Former Yugoslav Republic of Macedonia

Agriculture 2006-2012

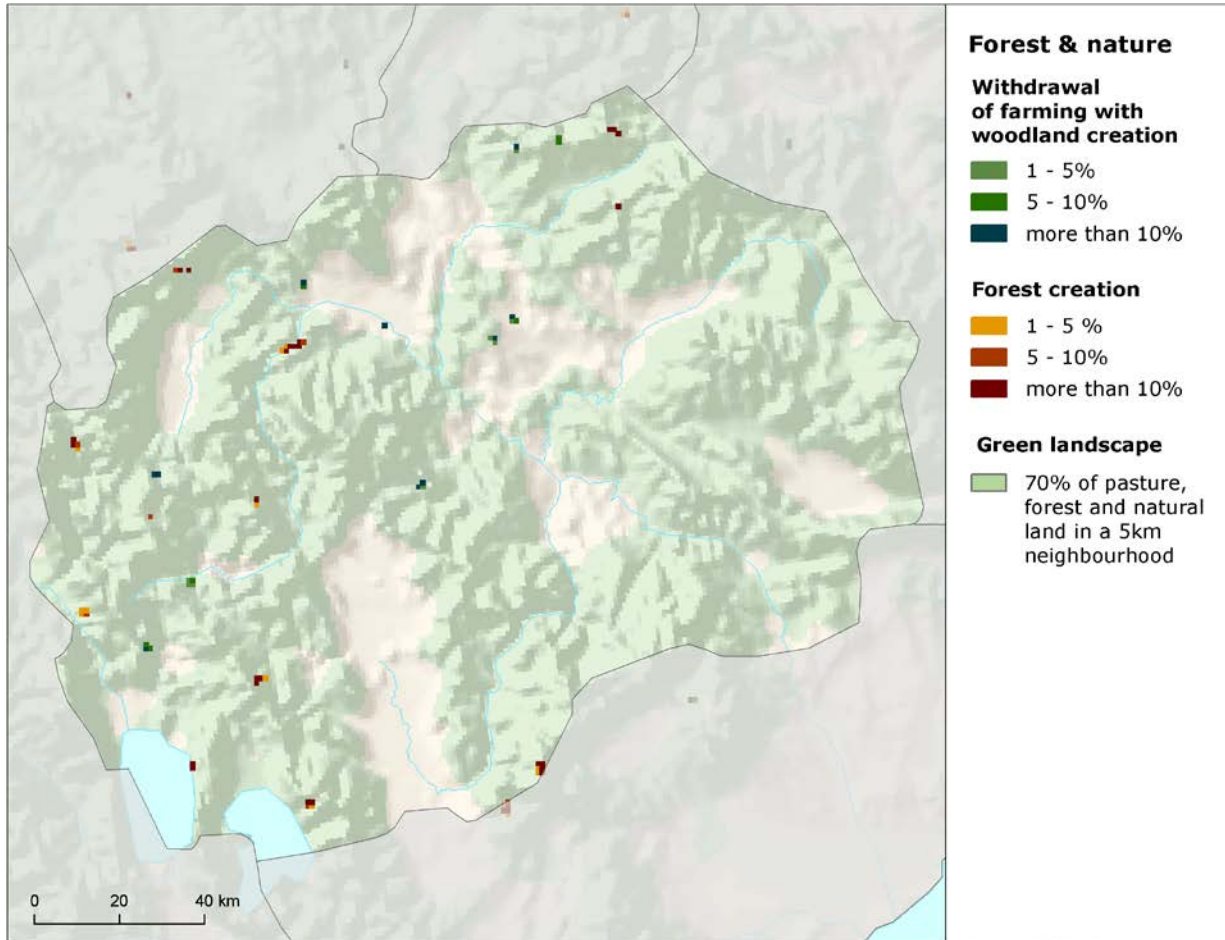


Agriculture 2000-2006



Former Yugoslav Republic of Macedonia

Forest and nature 2006-2012



Forest and nature 2000-2006

