

2050 – Challenges for environmental law Ghent, 05/02/19

LAND USE CHANGE

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Developed Land Consumption

► “Population growth will result in a significant anthropogenic environmental change worldwide through increases in **developed land (DL)**

consumption” <https://gisandscience.com/2015/03/26/sustainable-development-under-population-pressure-lessons-from-developed-land-consumption-in-the-conterminous-u-s/>

► Urban sprawl: “the rapid expansion of the geographic extent of cities and towns, often characterized by **low-density residential housing**, single-use zoning, and increased reliance on the **private automobile** for transportation.”

<https://www.britannica.com/topic/urban-sprawl>





DL in the USA (without Alaska)

- ▶ Size of country: more than 9.800.000 km² - 33 inhabitants/km²
- ▶ Size of DL: **6 % of the country**, of which ½ urban and ½ farmhouses and rural residential (of which ½ is on 10 acres = 4 hectares or more !)

https://www.westernwatersheds.org/watmess/watmess_2002/2002html_summer/article6.htm

- ▶ Increase of DL by nearly 50 % in 25 years
- ▶ **Increase** of 1 million acres DL a year (more than LA) or **0,05 % of the surface of USA a year**

<https://www.bloomberg.com/graphics/2018-us-land-use/>

DL in the USA (without Alaska)

- ▶ Decrease of cropland, pastureland and rangeland by more than 3 % in 25 years
<http://www.choicesmagazine.org/magazine/article.php?article=49>
- ▶ Most of new DL (85 %) is due to the increase of the population <https://www.bloomberg.com/graphics/2018-us-land-use/>
- ▶ Huge difference in DL consumption between the urban population and the sub-urban and rural population <https://gisandscience.com/2015/03/26/sustainable-development-under-population-pressure-lessons-from-developed-land-consumption-in-the-conterminous-u-s/>

DL in the USA (without Alaska)

- ▶ The relationship of DL consumption with population is mostly linear, altering the notion that expected population growth will have lower DL consumption if added in counties with larger population

<https://gisandscience.com/2015/03/26/sustainable-development-under-population-pressure-lessons-from-developed-land-consumption-in-the-conterminous-u-s/>

- ▶ Land use regulation can (until now) prevent (not more than) 10 % of the increase of DL a year

<http://www.choicesmagazine.org/magazine/article.php?article=49>

- ▶ Several research studies in the USA show that land use control increases the prices and reduces house affordability

<http://www.choicesmagazine.org/magazine/article.php?article=49>

DL in the Flemish Region

- ▶ Size of region: 13.500 km² - 450 inhabitants/km²
- ▶ Size of DL: depending on the source: almost 33 % of the region (“ruimtebeslag” = houses, motorways, sportsinfrastructure, ...)

https://www.ruimtelijkeordening.be/Portals/108/docs/Onderzoek/Thema_1_Open_ruimte.pdf or almost **27 % of the region**

(“bebouwde oppervlakte” = built upon surface)

<https://www.milieurapport.be/milieuthemas/bodem/bodembedekking-gebruik/bebouwde-oppervlakte/bebouwde-oppervlakte>

- ▶ Increase of DL by nearly 30 % in 25 years

<https://www.milieurapport.be/milieuthemas/bodem/bodembedekking-gebruik/bebouwde-oppervlakte/bebouwde-oppervlakte>

DL in the Flemish Region

- ▶ **Increase** of DL by 6 ha a day, and recently after launch of policy plan that wants to reduce that to 0 ha by 2040, even 8 ha a day or **0,06 % of the surface of the region a year**

<https://www.vlaanderen.be/nl/publicaties/detail/witboek-beleidsplan-ruimte-vlaanderen>



- ▶ No decrease of agricultural land in 25 years

<https://www.milieurapport.be/sectoren/landbouw/sectorkenmerken/areaal-en-teeltkeuze/benutte-landbouwoppervlakte>

DL in the Flemish Region

- ▶ Prices of building plots in Flanders since 1973 have increased with 2300 % (!) (in the 1970s zoning plans were introduced)

<https://www.tijd.be/ondernemen/vastgoed/bouwgrond-23-maal-duurder-dan-in-1973/10081862.html>

- ▶ Even policy like now in Flanders raises the prices for building plots (+ 15 % in one year ! – around 250 euro per m²) <https://www.hln.be/nieuws/bouwgrond-nooit-zo-duur~a10dace2/>

- ▶ But even then one sees an increasing DL consumption pro capita: in 30 years from 36 to 25 inhabitants per hectare DL

<https://www.vlaamsbouwmeester.be/nl/nieuws-opinie/betonrapport-van-de-vlaamse-gemeenten-en-provincies>

Land use change and biodiversity loss

- ▶ Land use change is one of the major proximate causes of biodiversity loss, and is driven by underlying causes like the expansion of human society, poverty, bad policy choices, etc.

<http://personal.strath.ac.uk/r.perman/What%20is%20causing%20the%20loss%20of%20biological%20diversity.pdf>

- ▶ Conversion of agricultural land in DL may in itself not be the problem. However the population growth, economic factors, (bad) policy, etc. causes **intensification of agriculture** (and even more if the agricultural surface decreases), which results in biodiversity loss.

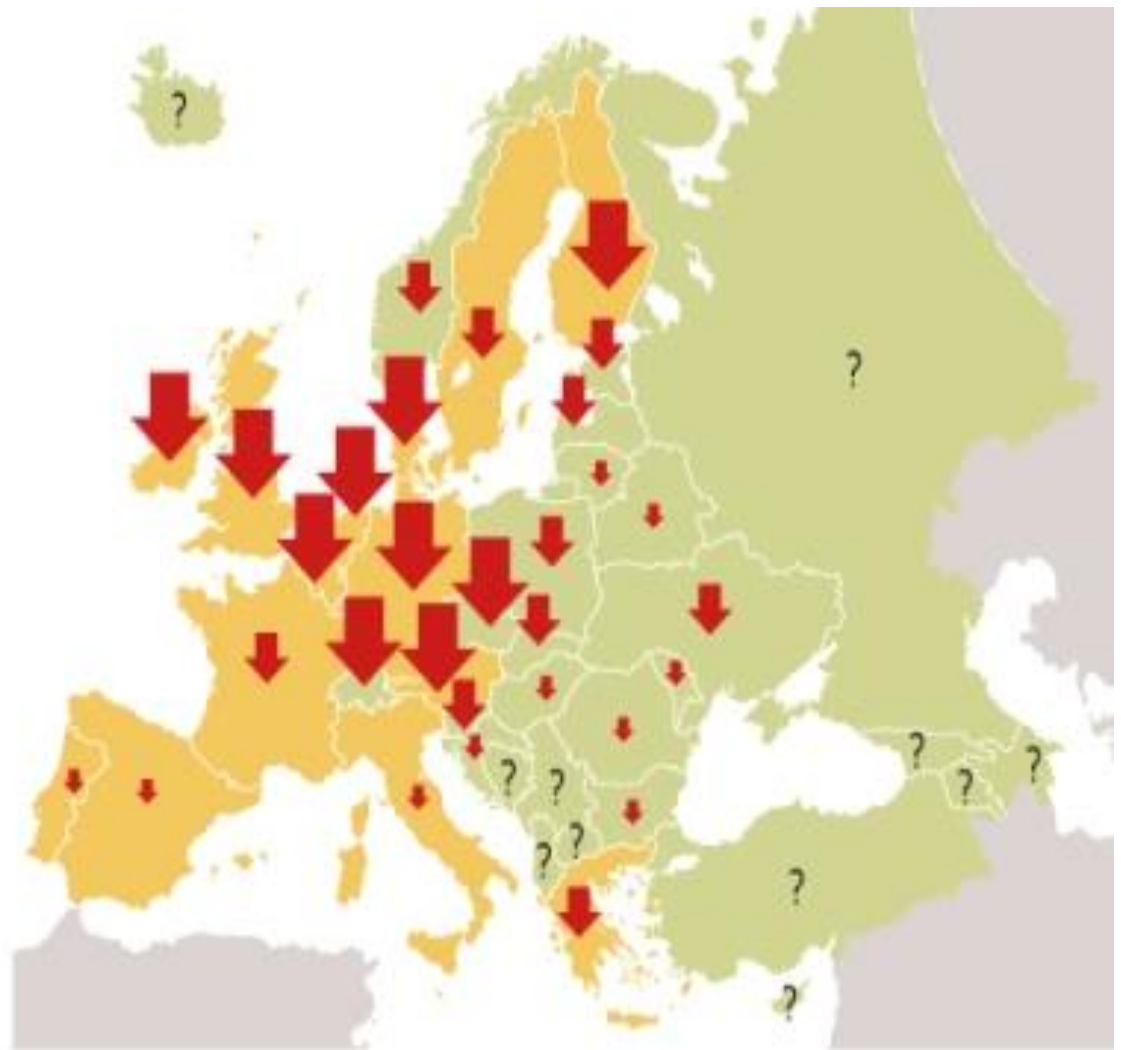
Land use change and biodiversity loss

- ▶ Unsustainable agricultural practices are the greatest threats to bird species in the intensively farmed European countries, particularly in European Union (EU) Member States where the Common Agricultural Policy (CAP) applies

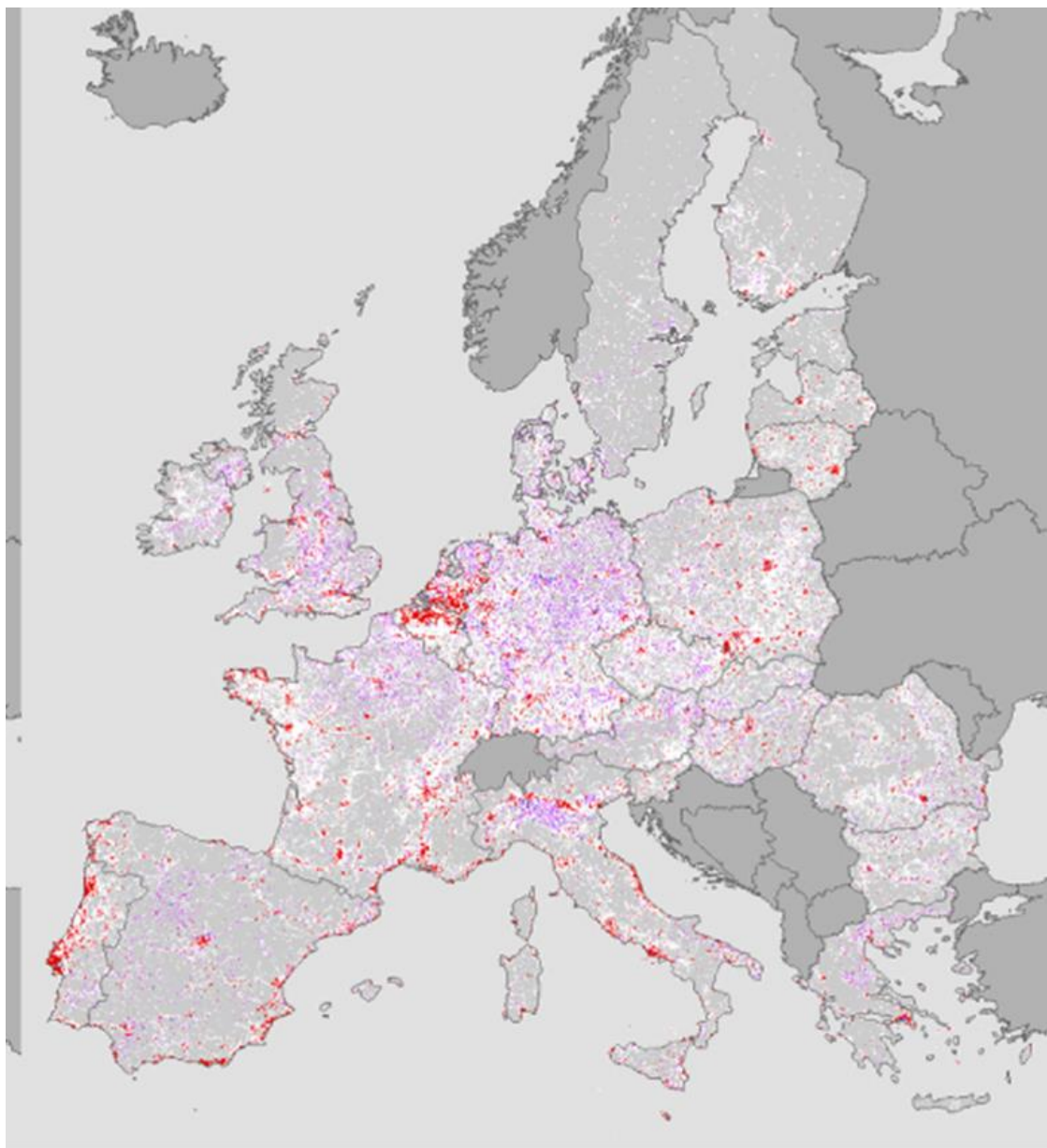
<http://datazone.birdlife.org/sowb/pressure/theme2>

<http://datazone.birdlife.org/sowb/casestudy/agricultural-intensification-has-caused-the-decline-of-many-common-bird-species-in-europe>

Severity of decline
between 1970 and 1990



<http://datazone.birdlife.org/sowb/casestudy/agricultural-intensification-has-caused-the-decline-of-many-common-bird-species-in-europe>



Red = Hot spot of increase of urban extent 1990-2006

<https://iopscience.iop.org/article/10.1088/1748-9326/11/6/064020>

Future: the current situation

- ▶ Increase of population in the USA by around 7 % in 10 years, in Flanders by 5 % in 10 years, is predicted

https://www.census.gov/content/dam/Census/library/publications/2018/demo/P25_1144.pdf

<https://www.statistiekvlaanderen.be/sites/default/files/docs/proj2018-vlaamse-gemeentelijke-demografische-vooruitzichten-2018-persbericht.pdf>

- ▶ Population growth is a main factor in the increase of DL and intensification of agriculture, which both are main factors in the further reduction of biodiversity.
- ▶ Business as usual won't stop the loss of biodiversity.

Future: the solutions

- ▶ A little reduction of agricultural land is not a problem.
- ▶ A strong land use policy must be developed to reduce DL pro capita
 - Stop urban sprawl of low density residential areas → More (not too large) cities, towns
 - But what with the social impact (prices, ...) ?

“Any policy measures that aim at curbing urban development will ultimately affect a key element of the American way of life, that is, the ability to consume a large amount of living space at affordable prices.” <http://www.choicesmagazine.org/magazine/article.php?article=49>

Future: the solutions

- ▶ A strong regulation of agriculture can prevent much biodiversity loss

“Our results predict that bird populations will continue to decline strongly if current observed trends in agriculture persist during the coming decades. Extensification scenarios seem to be able to reverse current negative bird population trends in French farmland. Management efforts counteracting the decrease in landscape heterogeneity are needed, (...), increasing heterogeneity in arable areas.”

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4336325/>

Future: some further thoughts

- ▶ Land use policy is a competence not of the EU but the member states, as in the USA also land use regulation is done merely at the local level and this very differently. In that respect it is a pity in the EU that the EU can't be used more as an “umbrella”.
- ▶ Via environmental policy (water, nature, climate change) at a higher level (EU, USA Federal State) certain land use changes are regulated (like deforestation, building in certain protected areas, etc). These don't go far enough.
- ▶ In the EU Member states are bound by the CAP which is not green enough. The CAP must be reformed drastically.

Future: some further thoughts

- ▶ Perhaps climate change policy will be “used” to break down the agricultural bastion and to strengthen land use control. 😊
- ▶ Brussels, 27/01/2019



<https://nl.metrotime.be/2019/01/27/must-read/politie-telt-70-000-betogers-op-grootste-klimaatmars-ooit/>

Future: some further thoughts

- Paradise fire, California, 2018



Future: some further thoughts

“Sixty percent of new homes built in California, Washington and Oregon since 1990 have been developed in what’s known as the Wildland Urban Interface (...). Folkman said that includes intermix — where vegetation and houses intermingle, such as in Paradise, and interface, where a concentration of houses abuts a forest or chaparral. “The interface is really susceptible to very large losses because there tends to be a big cluster of houses,” Folkman said. “At the same time, it’s an extremely desirable place to live ... it’s picturesque.” <https://www.mercurynews.com/2018/12/02/rebuild-paradise-since-1999-13-large-wildfires-burned-in-the-footprint-of-the-camp-fire/>



