

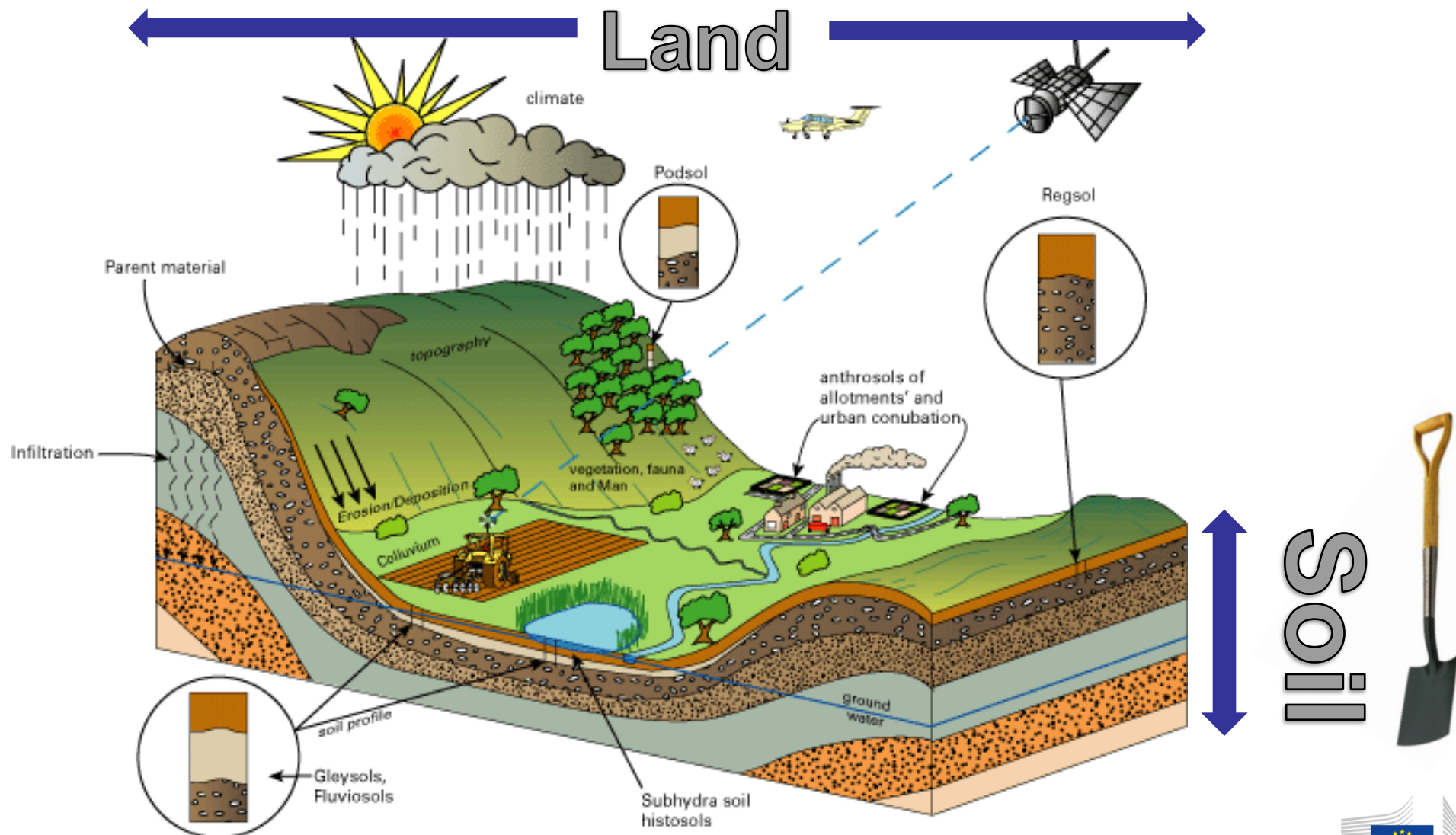


# Addressing soil de-sealing at the EU level

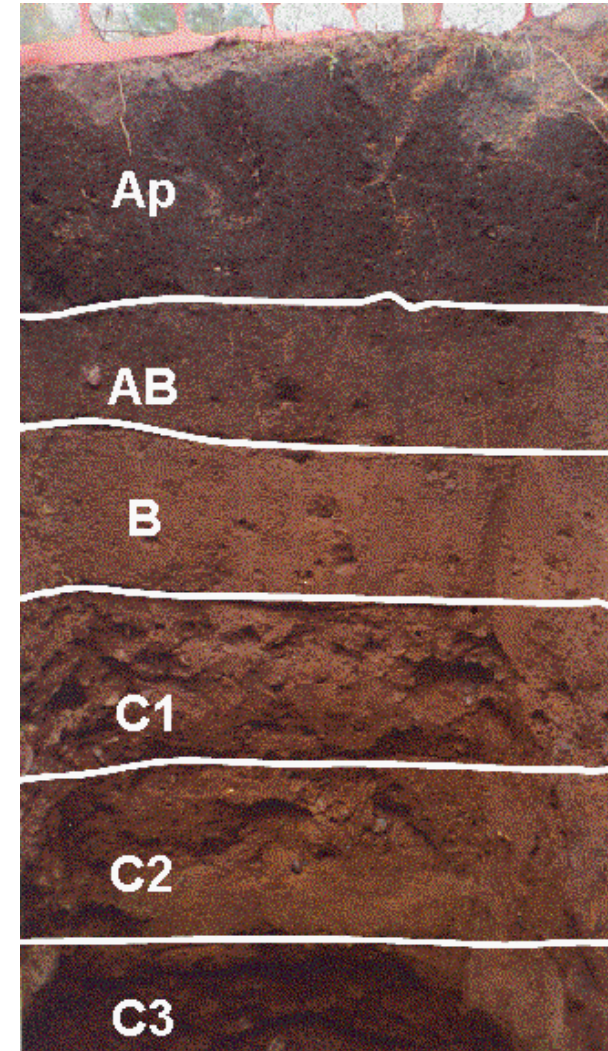
Healthy soils for healthy food, people, nature and climate  
within the European Green Deal



*Luca Montanarella, EC Joint Research Centre  
Land Resources and Supply Chain Assessments Unit*

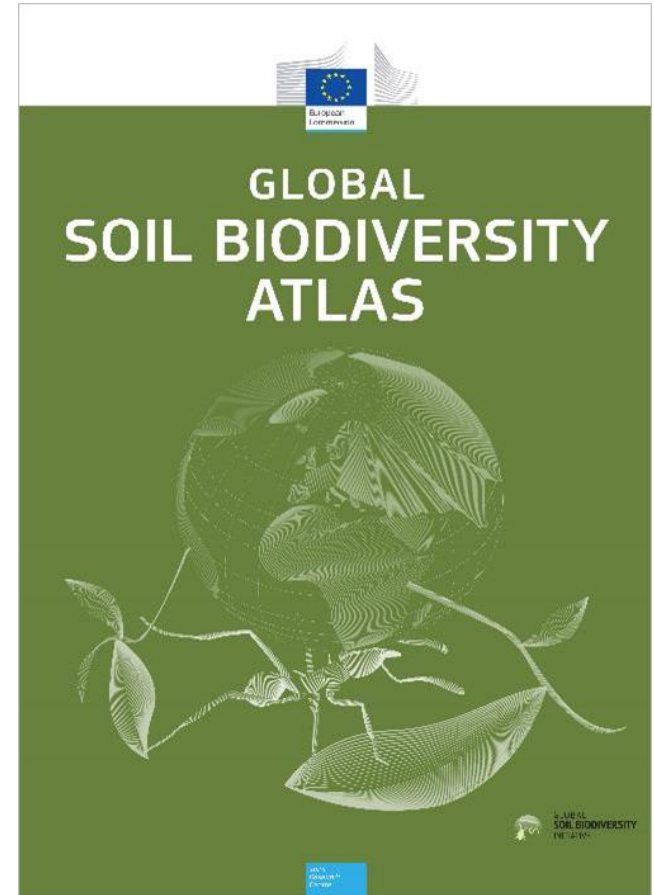


# To study soils you need to dig a pit:

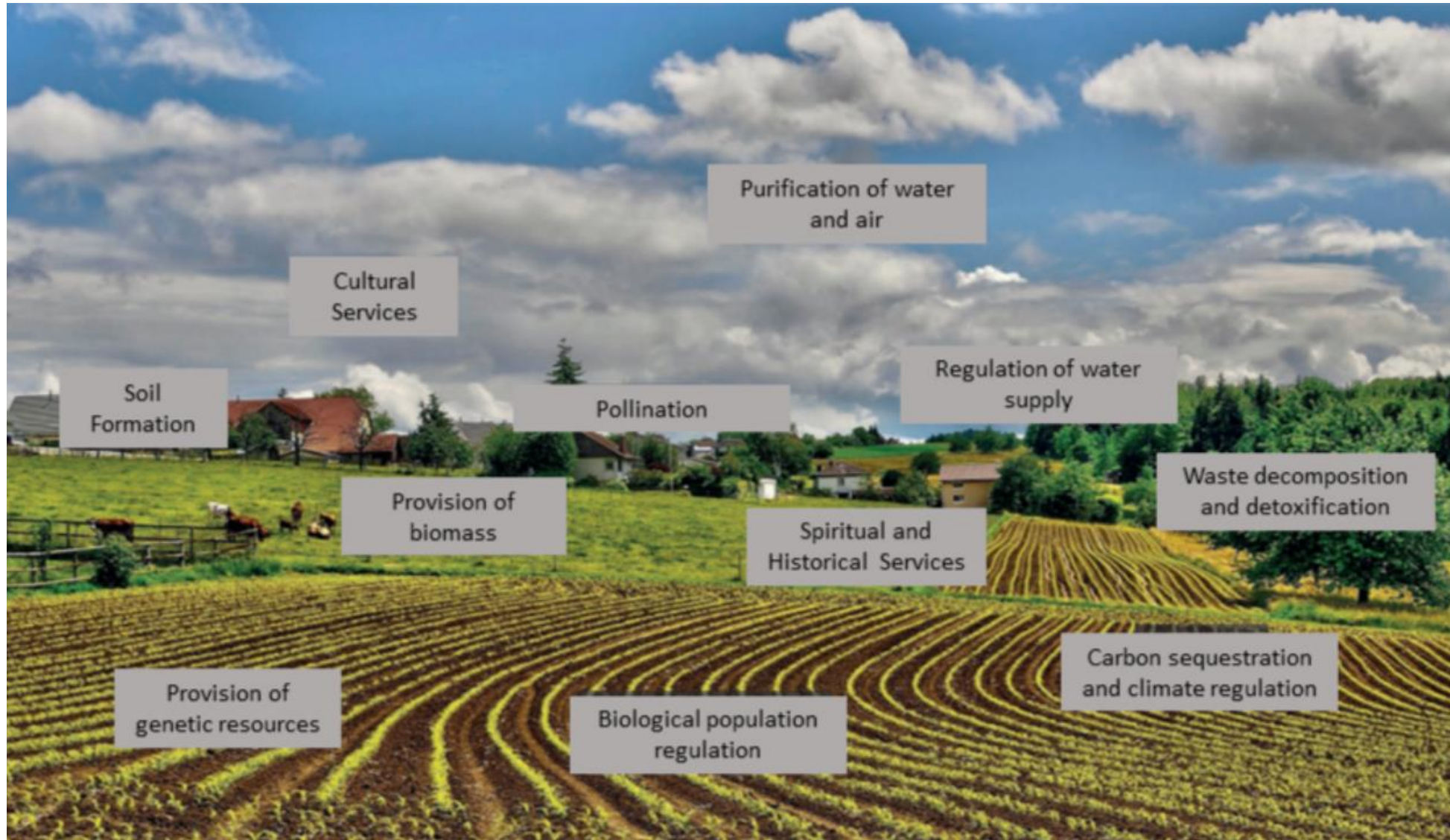




Soils are Alive!



*Soils and ecosystem services*



All soils have the capacity to provide all ecosystem services to a greater or lesser extent according to their inherent characteristics, their use and degradational processes that may be acting on them. (Based on Global Soil Biodiversity Atlas)

# The influence of land cover on the hydrological cycle

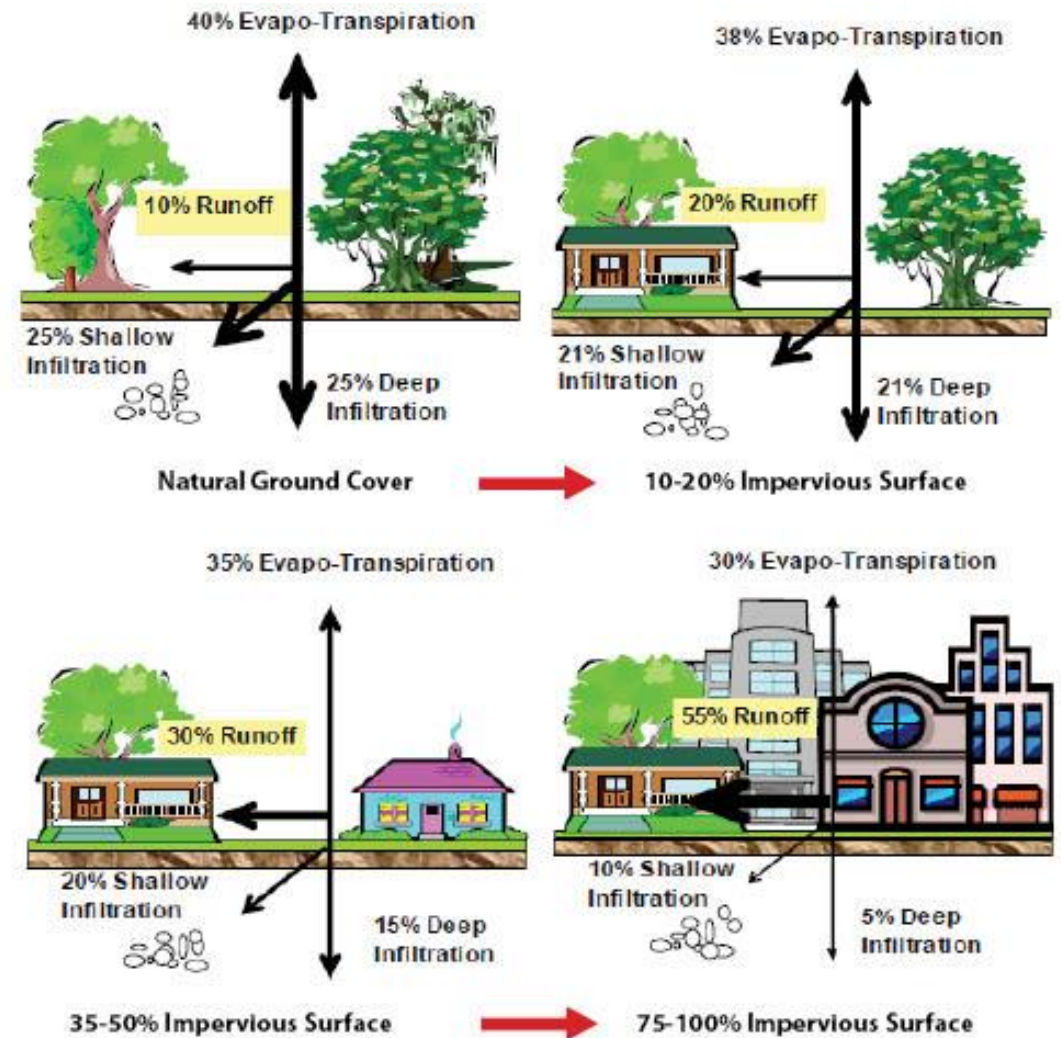


EUROPEAN COMMISSION

Brussels, 15.5.2012  
SWD(2012) 101 final/2

## COMMISSION STAFF WORKING DOCUMENT

Guidelines on best practice to limit, mitigate or compensate soil sealing



# Some of the consequences of soil sealing



Table: Comparison of benefits and limitations of most common permeable surfaces in relation to asphalt (source: Prokop et al., 2011).

	Application range				Benefits					Limitations					Unsealed surface	Runoff coefficient	Costs*: asphalt = 100%
	Pedestrians	Parking, small vehicles	Parking, medium vehicles	Road traffic	Visual appearance	Vegetation possible	High drainage possible	Regional materials	Improves micro climate	High maintenance	Bad walking comfort	No disabled parking	Sludge accumulation	Dust formation			
Lawn, sandy soil					+	+	+	+	+			+	+		100%	<0.1	<2%
Gravel turf	Y	Y	Y		+	+	+	+	+	+	+	+			100%	0.1-0.3	50-60%
Grass grids (plastic)	Y	Y			+	+	+	+	+	+	+	+	+		90%	0.3-0.5	75%
Grass grids (concrete)	Y	Y	Y	Y	+	+	+	+	+	+	+	+	+		40%	0.6-0.7	75-100%
Water bound surfaces	Y	Y	Y		+		+	+		+	+	+	+	+	50%	0.5	50%
Permeable pavers	Y	Y	Y		+		+	+	+	+					20%	0.5-0.6	100-125%
Porous asphalt	Y	Y	Y	Y			+								0%	0.5-0.7	100-125%
Asphalt	Y	Y	Y	Y											0%	1.0	100%

\* Indicative costs in relation to asphalt are provided; in 2010 average costs for conventional asphalt layers amounted to approximately €40/m<sup>2</sup> (without VAT), including construction costs. For each surface type material costs and labour costs were considered.

# Permeable materials

Figure 12: Overview of most common surfaces, from most to less permeable (source: Prokop et al., 2011).



Figure 13: Other types of permeable and semi-permeable surfaces.





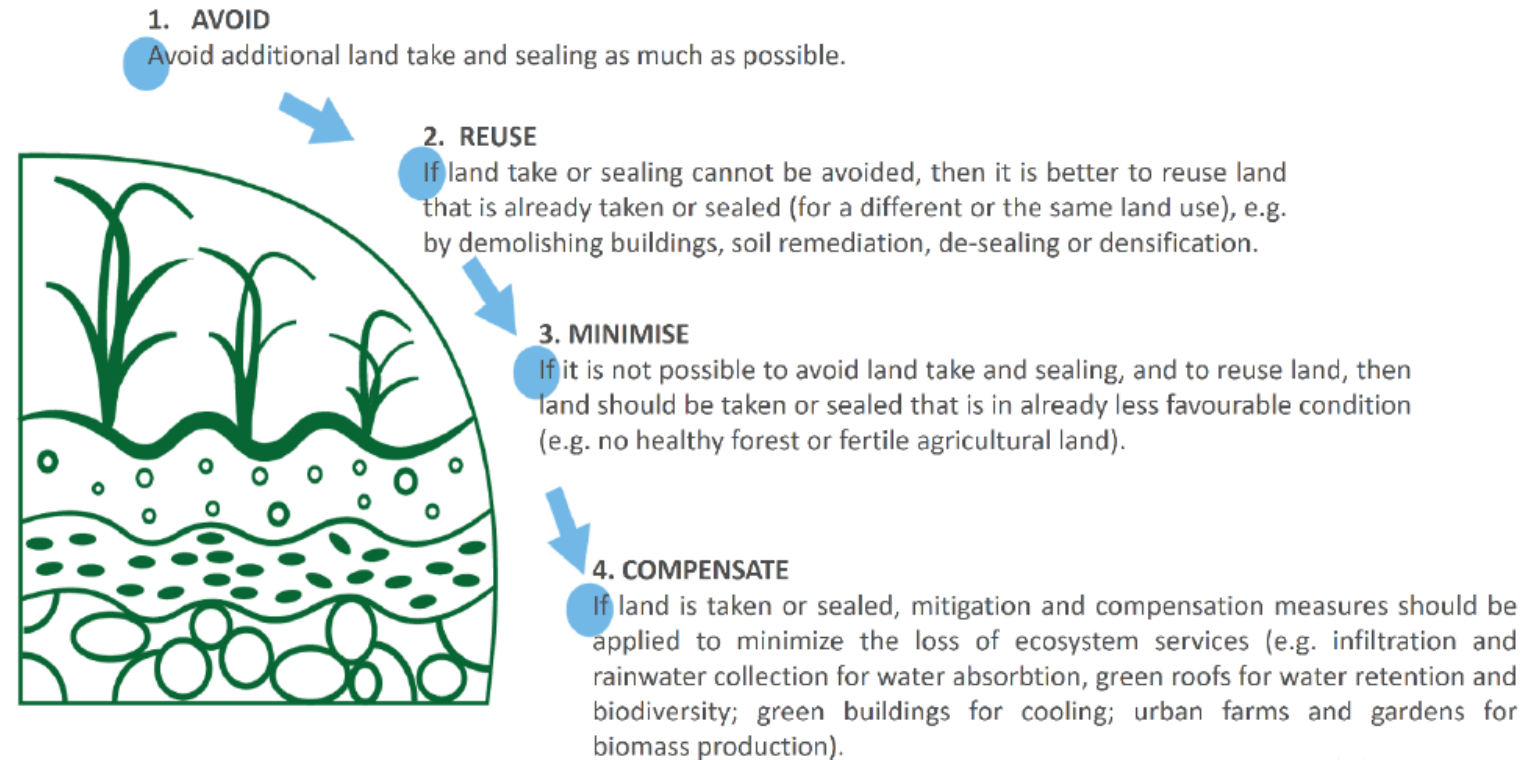
# Land take hierarchy

COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN  
PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL  
COMMITTEE AND THE COMMITTEE OF THE REGIONS

EU Soil Strategy for 2030

Reaping the benefits of healthy soils for people, food, nature and climate

{SWD(2021) 323 final}



Member States should:

- Set by 2023 their own ambitious national, regional and local **targets to reduce net land take by 2030** in order to make a measurable contribution to the EU target of 2050, and report on progress.
- Integrate the ‘**land take hierarchy**’ into their Urban Greening Plans<sup>53</sup>, and give priority to reusing and recycling land and to quality urban soils at national, regional and local level, through appropriate regulatory initiatives and by phasing out financial incentives that would go against this hierarchy, such as local fiscal benefits for converting agricultural or natural land into built environment.

Proposal for a

**DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL**

**on Soil Monitoring and Resilience (Soil Monitoring Law)**

{SEC(2023) 416 final} - {SWD(2023) 416 final} - {SWD(2023) 417 final} -  
{SWD(2023) 418 final} - {SWD(2023) 423 final}

*Article 3*

**Definitions**

For the purposes of this Directive, the following definitions shall apply:

- (1) ‘soil’ means the top layer of the Earth’s crust situated between the bedrock and the land surface, which is composed of mineral particles, organic matter, water, air and living organisms;
- (2) ‘ecosystem’ means a dynamic complex of plant, animal, and micro-organism communities and their non-living environment interacting as a functional unit;
- (3) ‘ecosystem services’ means indirect contributions of ecosystems to the economic, social, cultural and other benefits that people derive from those ecosystems;
- (4) ‘soil health’ means the physical, chemical and biological condition of the soil determining its capacity to function as a vital living system and to provide ecosystem services;
- (5) ‘sustainable soil management’ means soil management practices that maintain or enhance the ecosystem services provided by the soil without impairing the functions enabling those services, or being detrimental to other properties of the environment;

.....

- (16) ‘artificial land’ means land used as a platform for constructions and infrastructure or as a direct source of raw material or as archive for historic patrimony at the expense of the capacity of soils to provide other ecosystem services;
- (17) ‘land take’ means the conversion of natural and semi-natural land into artificial land;

*Article 4*

**Soil districts**

1. Member States shall establish soil districts throughout their territory.  
The number of soil districts for each Member State shall as a minimum correspond to the number of NUTS 1 territorial units established under Regulation (EC) No 1059/2003.
2. When establishing the geographic extent of soil districts, Member States may take into account existing administrative units and shall seek homogeneity within each soil district regarding the following parameters:
  - (a) soil type as defined in the World Reference Base for Soil Resources<sup>74</sup>;
  - (b) climatic conditions;
  - (c) environmental zone as described in Alterra Report 2281<sup>75</sup>;
  - (d) land use or land cover as used in the Land Use/Cover Area frame statistical Survey (LUCAS) programme.

*Article 11*

**Land take mitigation principles**

Member States shall ensure that the following principles are respected in case of land take:

- (a) avoid or reduce as much as technically and economically possible the loss of the capacity of the soil to provide multiple ecosystem services, including food production, by:
  - (i) reducing the area affected by the land take to the extent possible and
  - (ii) selecting areas where the loss of ecosystem services would be minimized and
  - (iii) performing the land take in a way that minimizes the negative impact on soil;
- (b) compensate as much as possible the loss of soil capacity to provide multiple ecosystem services.

Thank you for your attention!

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 #EUSoil

**EU SOIL**  
OBSERVATORY

<https://ec.europa.eu/jrc/en/eu-soil-observatory>

