



Soil & land related activities in DG Environment

**LIFE15 Kick-off meeting
ENV Resource Efficiency / Soil
EASME, 14 October 2016**

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Summary

- *Soil Thematic Strategy*
- *EU Expert Group on Soil Protection*
- *Inventory and gap analysis of policy instruments contributing to soil protection*
- *Mapping and Assessment of soil-related ecosystem services*
- *Land Degradation Neutrality & International developments*

(EEA) European Environment State and Outlook 2015

- *The ability of soil to deliver ecosystem services — in terms of food production, as biodiversity pools and as a regulator of gasses, water and nutrients — is under increasing pressure.*
- *Observed rates of soil sealing, erosion, contamination and decline in organic matter all reduce soil capability. Organic carbon stocks in agricultural soil may have been overestimated by 25%.*
- *A coherent soil policy at EU level would provide the framework to coordinate efforts to survey soil status adequately.*

Protecting, conserving and enhancing natural capital






SYNTHESIS
REPORT

GLOBAL
MEGATRENDS

EUROPEAN
BRIEFINGS

COUNTRY
COMPARISONS

COUNTRIES &
REGIONS

	5–10 year trends	20+ years outlook	Progress to policy targets
➤ Terrestrial and freshwater biodiversity			
➤ Land use and soil functions			No target
➤ Ecological status of freshwater bodies			
➤ Water quality and nutrient loading			
➤ Air pollution and its ecosystem impacts			
➤ Marine and coastal biodiversity			
➤ Climate change impacts on ecosystems			No target

Soil Thematic Strategy: genesis, structure & objectives

4 pillars



- 2002
 - Communication "Towards Thematic Strategy for Soil Protection, COM(2002)179
 - 6th EAP objective to protect natural resources and promote sustainable use of soil
- **2006: Thematic Strategy for Soil Protection**

Overall objective: protection and sustainable use of soil, based on the following guiding principles:

1. Preventing further soil degradation and preserving its functions:
2. when soil is used and its functions are exploited, action has to be taken on soil use and management patterns, and
3. when soil acts as a sink/receptor of the effects of human activities or environmental phenomena, action has to be taken at source.
4. Restoring degraded soils to a level of functionality consistent at least with current and intended use, thus also considering the cost implications

Achievements under the Thematic strategy: awareness raising



- *Public events*

- **Conferences: at EU level**

- Soil Remediation and Soil Sealing, May 2012
 - High Level Conference 'Soil, Climate Change and Biodiversity, September 2010
 - "Climate change: can soil make a difference?", June 2008

- **IYS 2015 – EU and MS very active – ca 350 events registered**

http://ec.europa.eu/environment/soil/iys2015/events_en.htm

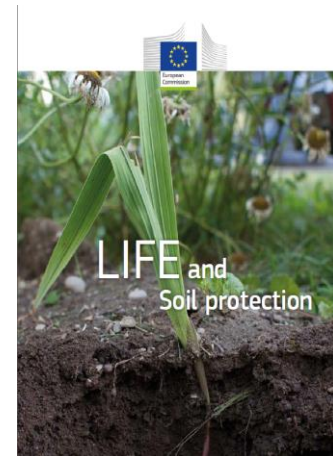
- *Leaflets and brochures, Atlas*

- "Guidelines on best practice to limit, mitigate, compensate soil sealing" and brochure "Hard surfaces, hidden costs"
 - "Soil – the hidden part of Climate Change"
 - "Soil biodiversity: the factory of life"
 - Environment factsheets on soil
 - Soil atlas of Europe, Africa, Latin America, European Atlas of Soil Biodiversity (JRC)

Achievements under the Thematic strategy research and monitoring



- *EU-funded research projects*
 - **FP6, FP7**
 - **Horizon 2020**
 - *LIFE/LIFE+: 147 projects on Soil Protection*
<http://ec.europa.eu/environment/soil/pdf/LIFE%20and%20Soil%20protection.pdf>
 - *Monitoring – soil data collection*
 - **A lot of soil data at national level**
 - **JRC European Soil Data Centre**
 - **LUCAS database**
 - >20,000 soil samples collected in 2009-2012 and analysed (physico-chemicals properties, Heavy Metals)
 - New campaign in 2015
 - **Land cover/land use monitoring: Corine, Copernicus**
- > However lack of systematic monitoring system accross EU**



Achievements under the Thematic strategy Integration



Soil-relevant GAECS:

GAEC 4	Minimum soil cover
GAEC 5	Minimum land management reflecting site specific conditions to limit erosion
GAEC 6	Maintenance of soil organic matter level including ban on burning arable stubble

Rural Development Regulation:

- Art. 5(4)(c): prevent soil erosion and improving soil management
- Art. 5(5)(e): fostering carbon conservation and sequestration in agriculture and forestry

Regional policy – urban sustainable development

2007-2013: EUR 3.4 billion for the rehabilitation of industrial sites and contaminated land areas





Soil Framework Directive: lessons learned

- *SFD proposal withdrawn by the Commission in May 2014 after 8 years of negotiations and blocking minority of 5 MS in the Council (OJ C 153, 21.5.2014, p.3)*
 - **"The Commission remains fully committed to the objective of soil protection and would examine how to best achieve this. Any further initiative in this respect would however have to be considered by the next college". (in OJ C 163, 28.5.2014, p.15)**
- *Key issues*
 - **Sustainability principle**
 - **Soil not recognized as Common good – Private ownership**
 - **Ambitious - encompassing all soil threats in different contexts**
 - **Contamination – flexible but perceived as too prescriptive – issue of orphan sites and costs**
 - **Farmers' concerns – articulation with CAP**

- *Objective*

- **By 2020: "land is managed sustainably in the Union, soil is adequately protected and the remediation of contaminated sites is well underway;"**
- **This requires, in particular: "increasing efforts to reduce soil erosion and increase soil organic matter, to remediate contaminated sites and to enhance the integration of land use aspects into coordinated decision-making involving all relevant levels of government, supported by the adoption of targets on soil and on land as a resource, and land planning objectives;"**

- *Commitments*

- *"The Union and its Member States should reflect as soon as possible on **how soil quality issues could be addressed using a targeted and proportionate risk-based approach within a binding legal framework.**"*

Key ongoing actions under the **EU Soil Thematic Strategy:**

- *Launch of an EU Expert Group on Soil Protection*
 - **With experts nominated by all EU Member States**
 - **Reflexion on how to address 7th EAP commitments on soil**
- *Inventory of soil protection measures in all EU MS*
 - **National legislation + implementation EU policies**
 - **Regulation, voluntary, support schemes: state of play, implementation, gap analysis**
- *Pilot Mapping and Assessment of Soil-related Ecosystem Services (MAES)*

EU Expert Group on Soil Protection

- Objective
 - to provide a permanent channel of communication between Member States and the Commission to implement the soil protection provisions of the 7th EAP.
 - To discuss and agree on the policy baseline, the gap analysis and the need to further act at EU level, paving the way for a further wider consultation process with stakeholders.
- Composition
 - 60 experts from all 28 Member States.
 - Nomination request sent to Permanent Representations.
 - Half of them also participate to Eionet and/or Common Forum meetings

Two annual meetings

- *The objectives of the 1st meeting (October 2015, Ispra) were*
 - **to take stock of recent developments at global, EU and national levels, and to agree on the objectives and modus operandi of the expert group**
- *The objectives of the 2nd meeting (April 2016, Brussels) were*
 - **to present the progress of the soil legislation inventory, agree on the gap analysis approach & engage MS experts to contribute to wiki**
- *Next meeting: 18-19 October 2016, Brussels*
 - **Discuss the draft findings of the inventory and preliminary gap analysis**
 - **Agree on next steps: exploring potential actions at EU level**
- *Communication through CIRCABC and the collaborative (wiki) platform*

Why an inventory of soil legislations?

- *Soil provisions in EU policies*
 - **In absence of Soil Framework Directive, soil not subject to a comprehensive and coherent set of rules in the Union.**
 - **Protection and sustainable use of soil scattered in different Community policies contributing in various degrees to mainly indirect protection of soil**
- *Need to update existing knowledge from the preparation of Soil Thematic Strategy (2003-2006).*
 - **Stakeholders participation, in particular EU Soil Expert Group, is essential!**
 - **Focus on recent developments and new initiatives in the pipeline addressing soil protection (directly/indirectly) and collect evaluations of policy (implementation reports etc.)**
 - **Take into account existing literature (e.g. RECARE, LANDMARK, other projects...)**

Service contract on inventory policy instruments: timing, approach

- *12-months contract (signed on 18/12/2015), open call for tender ENV.B.1/SER/2015/0022*



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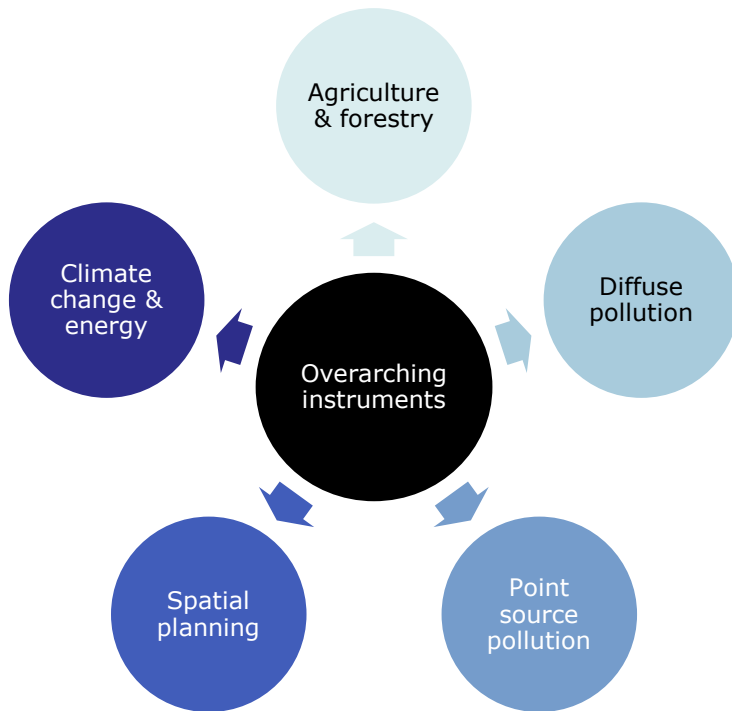


- *Continuous consultation of Member States and Stakeholders and further update of the inventory/gap analysis*
 - **Interaction with MS competent authorities (EU Soil Expert Group and EIONET) and with stakeholders.**

Service contract on inventory policy instruments: objectives

- *Deliver a critical analysis of the efficiency of soil related policies and measures at EU or Member State level, including those not specifically aiming at soil protection.*
 - 1. Collect information assessing the effectiveness of soil legislation and soil protection measures at Member State and EU level on the state of soil.**
 - 2. Perform a cross-policy analysis identifying the efficiency and gaps of EU policies and national legislation in addressing the soil threats and soil functions.**
 - 3. Provide recommendations for EU actions and to stimulate a discussion with experts from Member States and stakeholders.**
- *The outcome shall support the baseline for any further proposal for action at EU level, taking fully into account the proportionality and subsidiarity principles.*

Gap analysis: EU Policy Assessment



- *Assessment fiche for each of the 35 instruments identified so far + 6 cluster assessments*
 - **Coverage soil threats and functions**
 - **SWOT analysis**
- *Complemented by assessments at national level (implementation EU policies + national initiative policy instruments)*

MAES-Soil pilot objectives

- *Capacity building:*
 - **opportunity for exchanging experiences from research projects and policy initiatives and involving stakeholders.**
- *Policy-oriented deliverables*
 - **Providing realistic indicators and method for soil ecosystem services assessment, with direct with potential application in EU or national policy frameworks.**
- *Improvement of the knowledge base*
 - **Shared assessment framework connecting EU, national, regional and local interests and decisions.**



© JRC The contribution of soil and its biota to the provision of ecosystem services in a mixed landscape. Ecosystem services are the benefits people obtain from ecosystems. These include provisioning services, such as food and water, regulating services, such as pest and disease control, supporting services, such as habitat provision, that maintain the conditions for life on Earth, Cultural services, such as the educational value of ecosystems, (JRC).

2015-16 pilot phase: 2 concrete outputs, enabling further development over the next years:

- A ***Policy Brief*** a 20-30 pages document describing the key soil ecosystem services, the interactions between them, and providing policy-relevant conclusions.
- The development of a ***network*** of practitioners, focusing on science-policy interface, bringing together activities taking place in different networks and projects.

Technical workshop

2-3 June 2016 (Ghent)

- *Objectives:*
 - Discuss and agree on the policy goals of MAES-Soil
 - Provide a comprehensive perspective of the scope and timing of related research projects or assessments at EU and national levels, and how it contributes to improving the mapping and assessment of soil-related ecosystem services
 - Identify the knowledge needs (monitoring, research) for potential policy initiatives at EU and national levels
 - On that basis, agree on timetable and outputs for MAES-Soil and the linkage with related initiatives

Participants

- *National administration / institutes*
 - **BE (Flanders, Wallonia), NL (MINENM, RIVM), FR (INRA), IT (ISPRA)**
- *FP7/Horizon 2020 Research projects*
 - **RECARE, ISQAPER, LANDMARK, INSPIRATION, SOILCARE**
- *LIFE+ projects / Regional-Local institutions*
 - **SAM4CP (Torino), DEMETER (Flanders)**
- *Other networks*
 - **SedNet**
- *European Commission and Agencies*
 - **DG ENV, DG AGRI, DG CLIMA, DG JRC, EEA**

Objectives policy brief:

- *Provide room for exchanges, co-ordination and consistency of many parallel initiatives*
- *Connecting soil-related ecosystem services to policy making at multiple levels*
- *Advise MS on the value added of mapping and assessing soil-related ES and the approach to follow:*
 - **offers what exist at EU level + best practices**

Short-listing soil-related ecosystem services

- *Focus on a handset of soil-related ecosystem services:*
 - **relevant for EU societal challenges / deep link with EU policies,**
 - **multi-scale intervention perspective**
 - **represented in the research projects / case studies at EU, national or local level identified so far.**
- *For these services:*
 - **Provisioning of food, feed, fibres, fuel and biomass**
 - **Carbon storage**
 - **Water purification**
 - **Water regulation**
 - **Nutrient cycling**
 - **Support for biodiversity**
- *The policy brief identifies:*
 - **Key soil conditions for their supply**
 - **Policy context associated to their demand**
 - **Specific knowledge issues associated to their mapping and assessment**

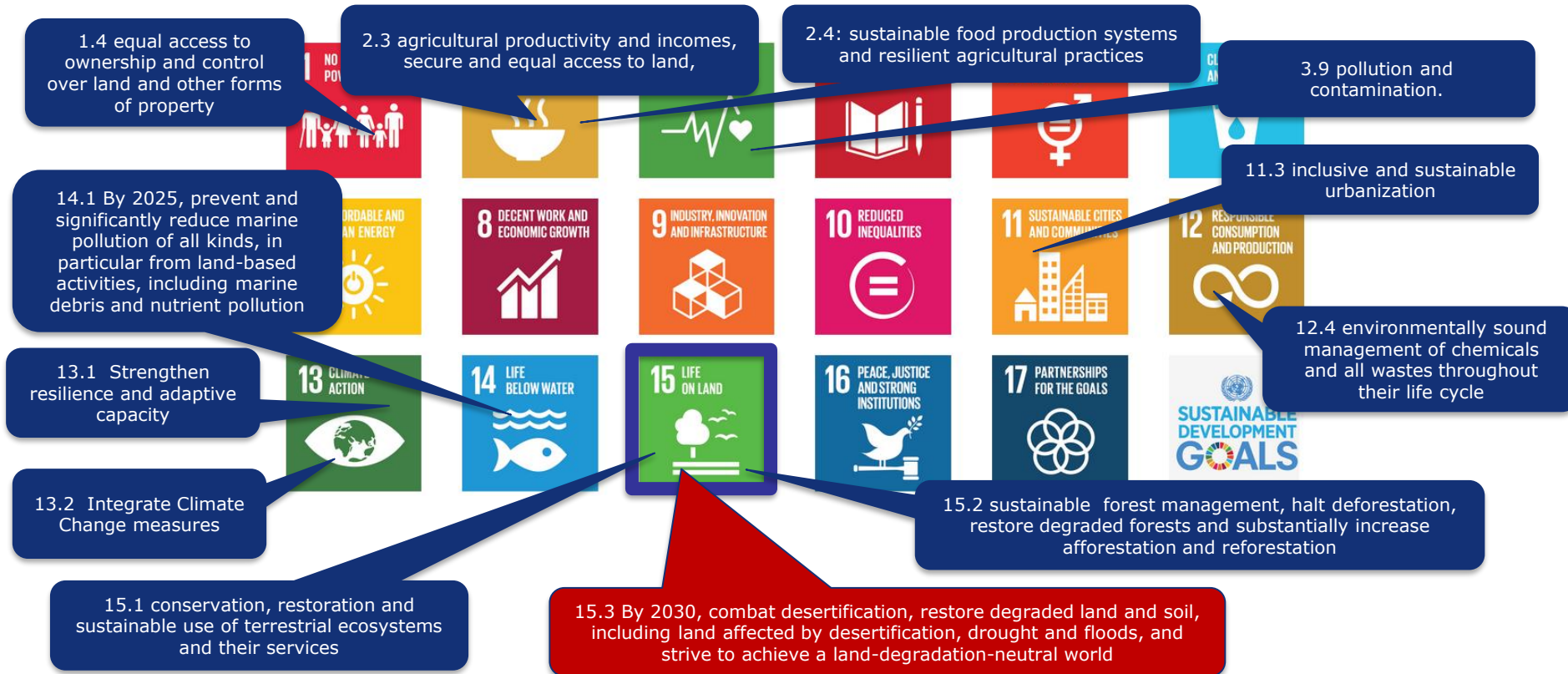
Policy implications (1/2)

- *Mapping and assessment at EU level*
 - **Identification data/soil functions to monitor at EU level: to be discussed at LANDMARK workshop on 20th October 2016**
 - **On-going EEA/JRC work based on EU-wide datasets (Copernicus, LUCAS) and soil functions: to be contrasted/complemented by information from national sources.**
- *Monitoring*
 - **Ensure a greater level of accessibility, comparability and spatial/temporal coverage of information coming from national soil monitoring platforms.**
 - **Inclusion of soil biodiversity: Building i.e. on FP7 Ecofinders, pilot assessment by DNA extraction to be included in LUCAS 2018**
 - **Most soil ecosystem services are positively correlated with soil organic matter content (FP7 SoilService). Should the priority be given to an improvement of the information on soil organic matter content and its contribution to multiple ecosystem services?**

Policy implications (2/2)

- *Information system*
 - **Specific MAES-Soil wiki collaborative platform vs inclusion of soil-related ecosystem in existing platforms (BISE, ESDAC, etc.)**
- *Methodology*
 - **Needs for a common methodology to value soil property data into ecosystem services and natural capital? How to take into account local pedo-climatic and land use conditions?**
- *Integration into policy instruments*
 - **To be discussed not only in EU Expert Group on Soil Protection but also other working groups supporting EU policies (agriculture, water, climate, biodiversity, impact assessment, etc.)**
 - **Backbone of any potential initiative on land degradation neutrality!**
 - **Regional/local scale experiences: support knowledge sharing**

Land in the Sustainable Development Goals

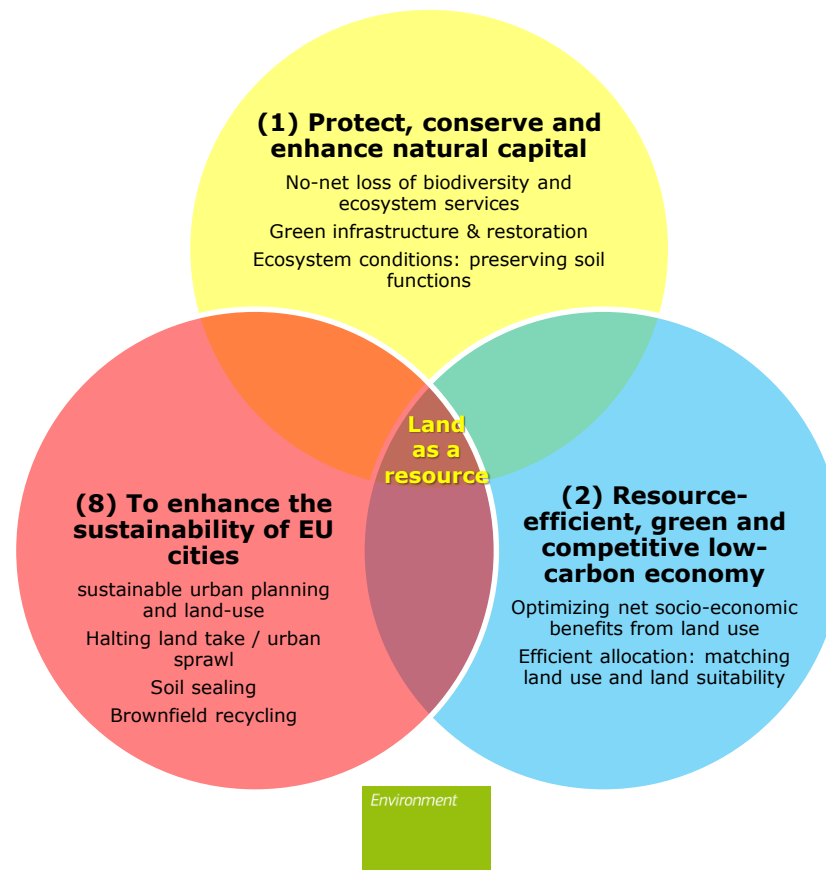


Contribution to political priorities of the Juncker Commission:

- *"A new boost for jobs, growth and investment":*
- *"A resilient energy union with a forward-looking climate change policy":*
 - **Costs of land degradation (energy, transport, mineral fertilizers, crop protection products, etc.)**
 - **Preserve and enhance the resource enabling a successful move to circular economy**
 - **Halting and reverting land degradation needed for both climate change mitigation (transport & energy, soil carbon storage) and adaptation (water retention) policies;**

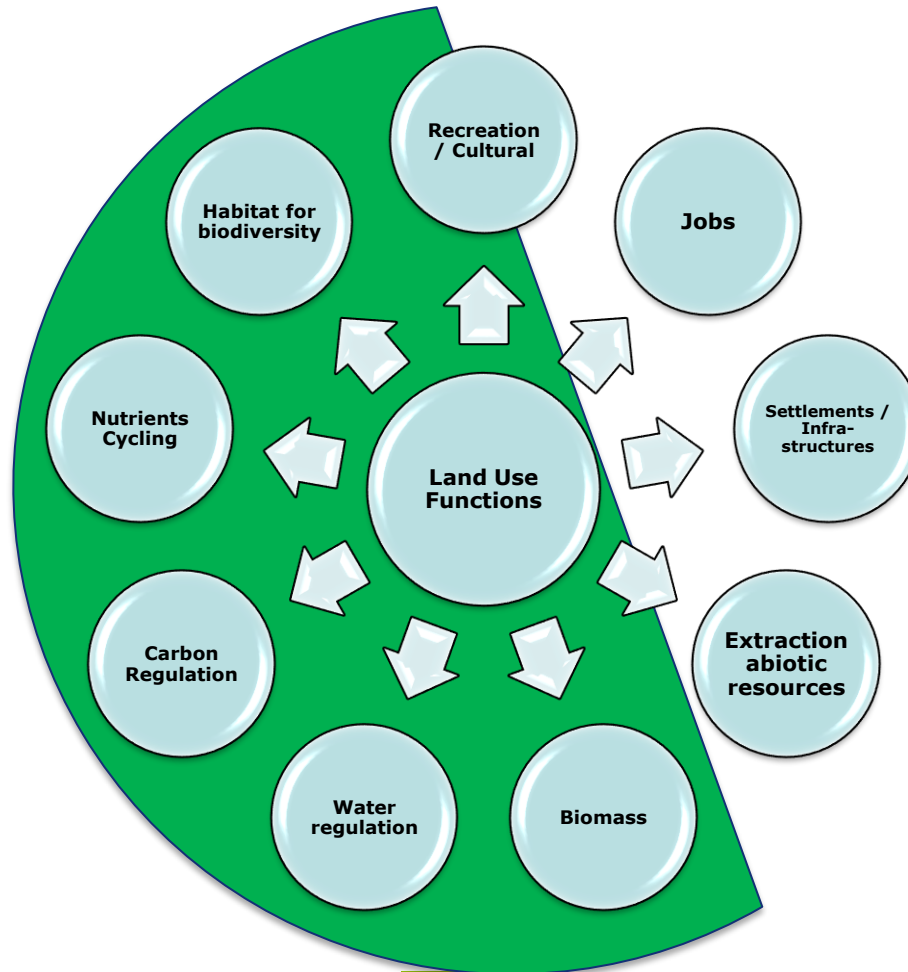
Land as a Resource:

at the crossroad of objectives 1, 2 and 8 of 7th EAP



Scope?

Land: terrestrial bio-productive system that comprises soil, vegetation, other biota, and the ecological and hydrological processes that operate within the system...



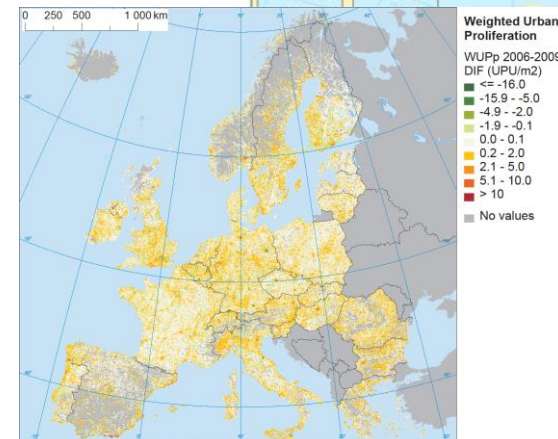
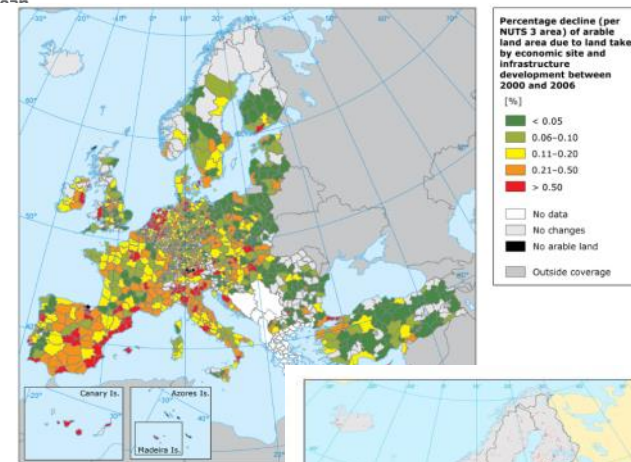
Land Use Functions: express the goods and services that the use of the land provides to human society and are likely to be affected by policy changes

Land Degradation Neutrality

- *Definition (UNCCD)*
 - "A state whereby the **quantity and quality of land resources**, necessary to **support ecosystem functions and services** and enhance food security, remains stable or increases within specified **temporal and spatial scales** and ecosystems."
- *Drivers: a variety of processes, under specific conditions*
 - **Land take**
 - **Intensification agriculture and forestry**
 - **Land abandonment**
- *The question of the scale*
 - **Some functions and services are local, other global**
 - **"Telecoupling": need to take into account embedded land use**
- *Need to have good indicators that provide the right picture and support possible target setting integrated in the broader policy agenda*

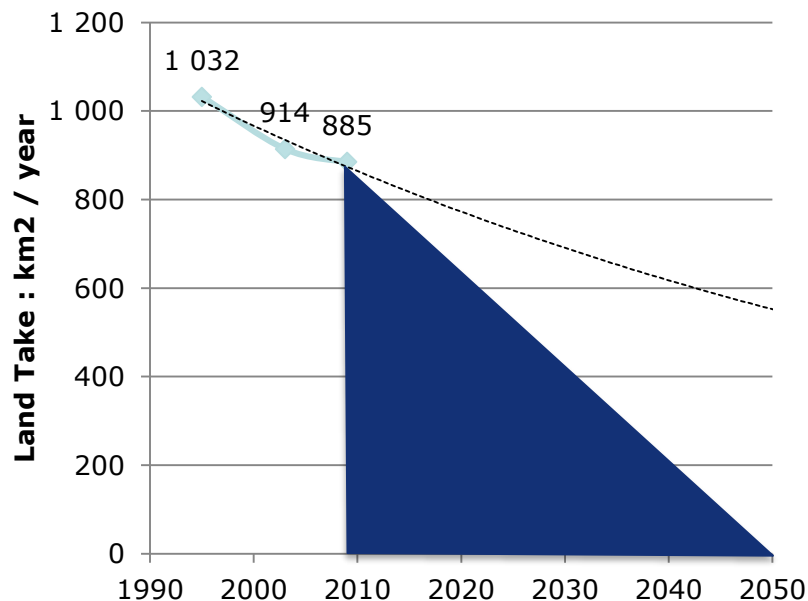
Land Take

- *Land take indicator*
 - Current definition based on CLC, too coarse
 - To be complemented by data on imperviousness, density, dispersion...
 - Need to focus on the impacts (energy efficiency, ecosystem services, etc.)



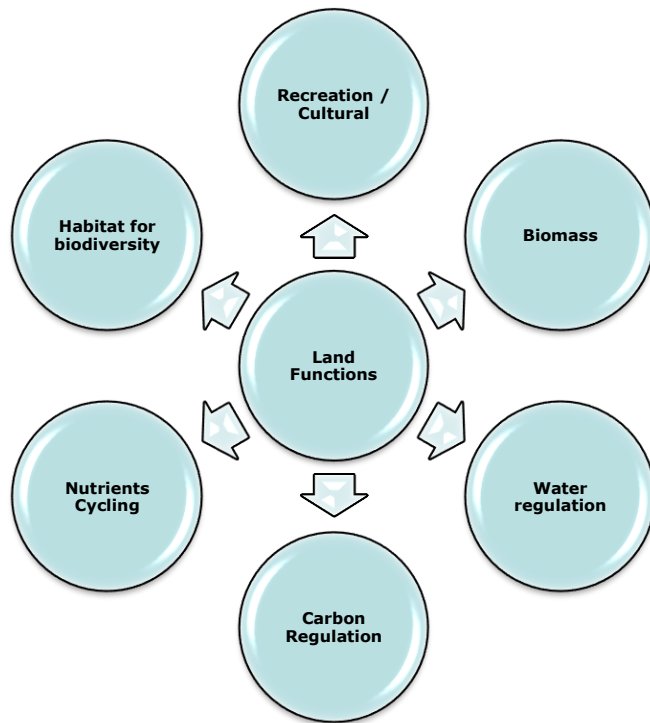
No-Net Land Take by 2050...

Not on track...



- **Pathway: >15.000 km²...**
- **1 ha \neq 1 ha: how to identify the soils to be protected in priority?**
- **Compatibility with land degradation neutrality by 2030?**
- **Scope for "renaturalisation" of brownfields?**
- **Net impact for the provision of ecosystem services?**

Proposed approach



- *Multiple drivers of land degradations*
- *Aligned with SDGs (target 15.3)*
- *Focused on land use functions based on natural capital*
- *Linked to policy frameworks (demand and impact on supply of soil-related ecosystem services)*

Land Use Efficiency & Land Degradation Indicators

- *Study on identification appropriate indicators & relevance and feasibility of setting targets (<http://bookshop.europa.eu/en/study-supporting-potential-land-targets-under-the-2014-land-communication-pbKH0414979/>)*
 - **Net land take** indicator: to complement with information on intensity and impacts. Land recycling: still lacks common understanding terminology
 - **Land Degradation**: indicators on Soil erosion and organic matter: EU-wide datasets, strengthen link with provision ecosystem services + water resources & biodiversity.
 - Global impacts: beyond **Land Footprint**: bio-productivity and impact oriented indicators. Still high methodological / data challenges
 - **Land Use Efficiency**: Overall economic / energy balance. Multi-functionality: specify minimum provision levels and maximum acceptable trade-offs.
- *Need to address these topics together!*

Indicators and tools

- *Building a shared information and assessment platform serving multiple policy areas and scales*
 - **Copernicus / LUCAS / ESDAC / KIP_INCA...**
 - **Support to spatial planning & green infrastructure**
 - **Socio-economic drivers of land use & degradation**
 - **Land use modelling: LUISA and EC Reference Scenarios**
 - **Indicators for land degradation neutrality (SDG and UNCCD reporting)**

Possible actions to be further assessed

- *Refine and validate the set of land indicators to support policy making at various scales*
 - **interaction between scientists, policy makers and stakeholders**
 - **mapping of the EU territory showing the suitability of soils for the provision of key land functions and the level of land degradation**
- *Put in place a land information system for Europe*
 - **Bring together the information EU-wide and national centres and assessments.**
 - **Integrate decision support systems and the outcome of modelling exercises**
 - **Increase harmonisation, coverage and quality of the European land monitoring system**
- *Support to EU policy making and implementation*
 - **Input to policy reviews (MFF, WFD, CCA, etc.)**
 - **SEA as key instrument**
 - **mechanisms for the exchange of best practices and knowledge/tools for target setting and actions**

Action at international level



15
LIFE
ON LAND

Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

Target 15.3

By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world

How to achieve target 15.3 in the EU?

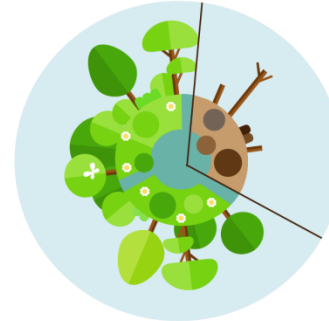
- *A coherent approach at EU level is needed*
- *Success will be measured against a land degradation baseline (2015) and the actual land degradation in 2030*
- *Adopted indicator by the UN is "Proportion of land that is degraded over total land area"*
- *There are on-going discussions within the UNCCD on the necessary methodology to be applied for measuring this degraded land area*
- *LDN target setting should be consistent within the EU*

Framework for Monitoring and Reporting on SDG Target 15.3

Land Productivity refers to the biological productive capacity of the land, the source of all the food, fiber, and fuel that sustains humans. Land productivity can be calculated across large areas from Earth observation data on net primary productivity (NPP). Estimates of NPP, using vegetation indices, are influenced in the short-term by crop phenology, rainfall, nutrient fertilization and other variables which must be corrected for to accurately interpret trends. National authorities are best able to determine whether declining levels of land productivity are considered land degradation by taking into account local circumstances.

National Data is envisaged to be primarily used, to the greatest extent possible, to derive the sub-indicators and other relevant indicators and information at the country level, covering bio-physical, governance and socio-economic conditions as well as the status of land resources. National Data can be collected through existing sources (maps, databases, reports), including participatory inventories on existing land management systems and their characteristics

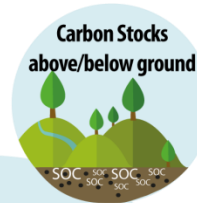
Indicator 15.3.1
Proportion of land that is degraded over total land area



Land Productivity



Carbon Stocks above/below ground



Land Cover and Land Cover Change



Official Statistics and Earth Observation



Land Use and Management Practices



Surveys, Sampling and Citizen Sourcing



Data from multiple sources
FAO, GEF and other Reporting Mechanisms

Carbon Stocks (Above and Below Ground) give an indication of the amount of carbon in living and decomposing biomass above and below ground, including soil organic carbon. Carbon stocks are elementary to a wide range of ecosystem services and reflect land use and management practices. These stocks, including for soil organic carbon, can be estimated by applying carbon density values from ground-based measurements or national inventories in conjunction with land cover maps derived from Earth observation data. National authorities are best able to estimate trends in carbon stocks that indicate land degradation by taking into account local circumstances.

Land Cover and Land Cover Change, most often derived from Earth observation, is a fundamental parameter that assists with the interpretation and stratification of the other two sub-indicators. It is also essential for monitoring and reporting on multiple SDG targets focused on natural resource management, food and water security, environmental health and rural/urban planning for sustainable development. For global comparisons, countries are encouraged to use standardized land cover classification systems. National authorities are best able to determine whether land cover change is considered land degradation by taking into account local circumstances.

A new Global Soil Carbon map by 2017

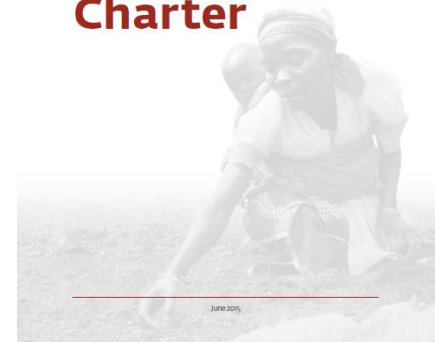
- *Formal request to all FAO Members to provide soil organic carbon data for compiling the new SOC map*
- *2nd Meeting of the International Network of Soil Information Institutions (INSII) to be held in FAO, Rome, 24-25/11/2016*
- *A coordinated approach among EU Member States required for feeding the next generation global soil carbon map*
- *JRC in the lead for providing the necessary EU data and information (European Soil Data Centre)*
- *A EU coordination meeting planned after the 2nd INSII meeting*



Voluntary Guidelines for Sustainable Soil Management



Revised World Soil Charter



- *Relevant to all FAO members, including the EU*
- *Implementation in the EU to achieve the following:*
 - **Minimize soil erosion**
 - **Enhance soil organic matter content**
 - **Foster soil nutrient balance and cycles**
 - **Prevent, minimize and mitigate soil salinization and alkalization**
 - **Prevent and minimize soil contamination**
 - **Prevent and minimize soil acidification**
 - **Preserve and enhance soil biodiversity**
 - **Minimize soil sealing**
 - **Prevent and mitigate soil compaction**
 - **Improve soil water management**



**Thank you for your
attention!**

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