

# Communicating the value of soil: a JRC perspective

**Arwyn Jones**  
**European Commission**  
**Joint Research Centre**  
**SOIL Action**

*JRC/ENSA Workshop*  
*Aberdeen*  
*18 September 2013*



# Soil and society - Issues!

Despite vast body of scientific knowledge, the role of soil  
Is not understood, not appreciated nor valued by  
society at large.

Nor by many policy makers or other scientific domains.

Soil [science] (unfairly?) lacks a 'wow factor'!

WHY NOT? WHAT CAN BE DONE?

## The problem?

- Increasing urbanisation of society
- Lack of prominence in education
- Lack of political weight?
- Soil science has been living in 'ivory tower'?
- Poor delivery of the message.
- So need to improve communication....



**JRC is European Commission's in-house provider of scientific basis for EU policies.**

**Bridge between scientific disciplines and policy maker.**

## **EU Soil Thematic Strategy Communications 2006-2012**

“...little public awareness of the importance of soil protection. Measures to improve knowledge and exchange information and best practices are needed to fill this gap.”

**Article 15: Member States shall take appropriate measures to raise awareness about the importance of soil** for human and ecosystem survival, and promote the transfer of knowledge and experience for a sustainable use of soil.

To increase public awareness of the need to protect soil, the Commission will foster initiatives such as”

- **wide distribution of the Soil Atlas of Europe (10,000 copies)**
- **maintenance of the EUSOILS/ESDAC web site for open access to policy relevant soil information** (30,000 downloads for soil biodiversity atlas)
- **European Summer School on Soil Survey to provide specific training to young researchers** (4 schools run)
- initiatives such as EU Manifesto on Earth Heritage and Geodiversity,
- integration of soil protection aspects in Community-funded information and training events
- **initiatives within the UNCCD and other conventions** (soil as habitat in CBD)

# Soil in EU Policy Areas

- ⑩ **Common Agricultural Policy (CAP)**
- ⑩ **Climate Change Policy (Post-Kyoto debate, LULUCF)**
- ⑩ **Energy Policy (Renewable Energies Directive)**
- ⑩ **Biodiversity (Nature) Protection Policy (EU Biodiversity Strategy)**
- ⑩ **Water Protection Policy (WFD, Groundwater Directive)**
- ⑩ **Forest Protection Policy (Forest FOCUS, ICP Forest)**
- ⑩ **Regional Policies (Structural funds)**
- ⑩ **Food Safety (PPR Registration, EFSA)**
- ⑩ **Food Security (FAO)**
- ⑩ **Development Policy (ACP-Observatory, EU DEV DAYS)**
- ⑩ **Waste Policy (Biowaste Directive, Sewage Sludge Directive)**
- ⑩ **Nature conservation (NATURA 2000)**

.....etc.



# Reaching Policy



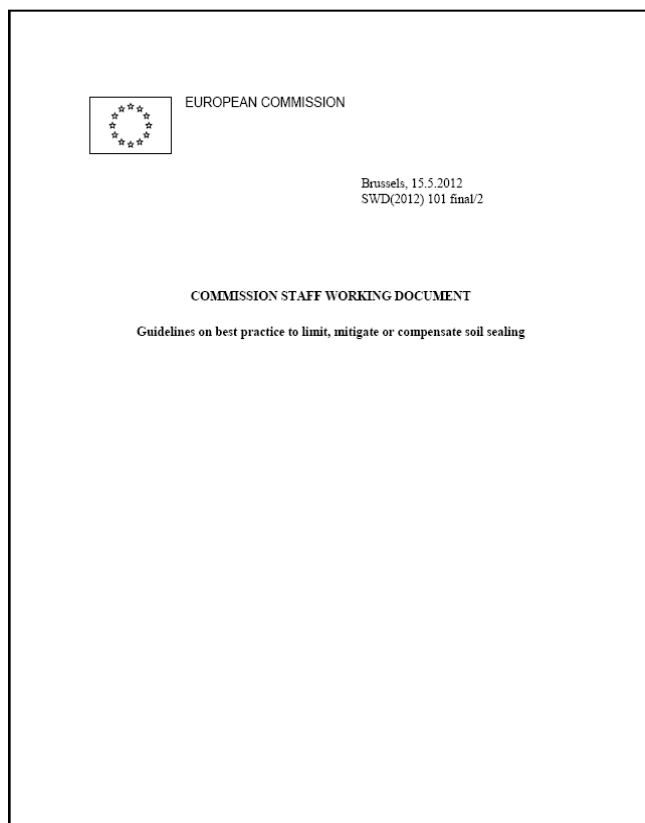
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## Guidelines on best practice to limit, mitigate or compensate soil sealing

SWD(2012) 101 final/2, 15 May 2012

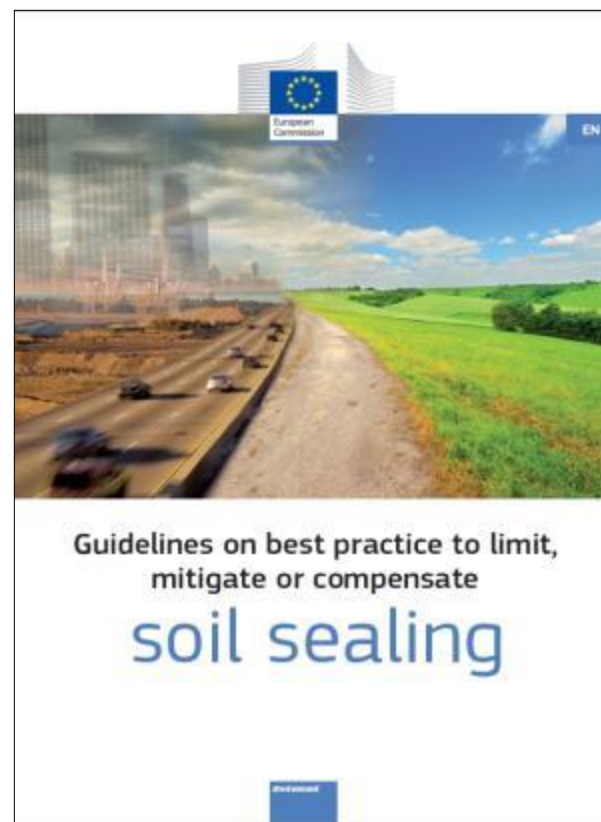
[http://ec.europa.eu/environment/soil/sealing\\_guidelines.htm](http://ec.europa.eu/environment/soil/sealing_guidelines.htm)



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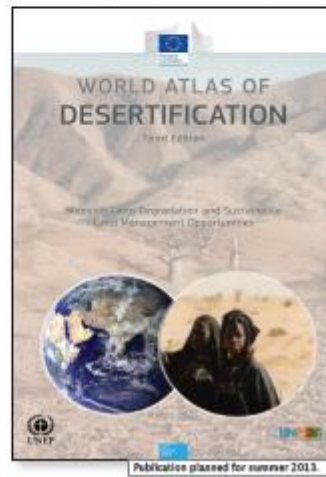
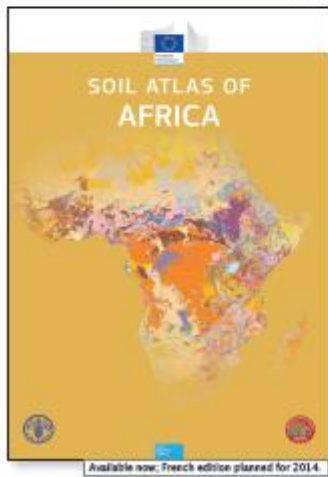
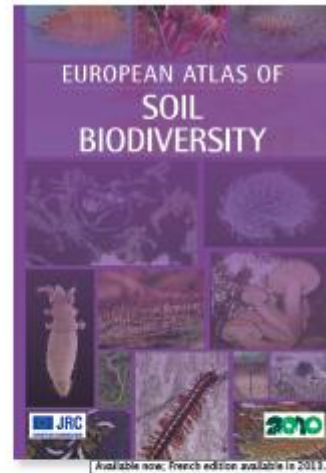
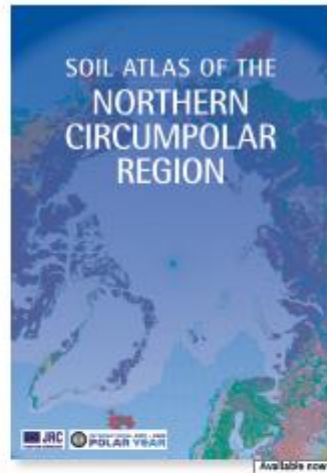
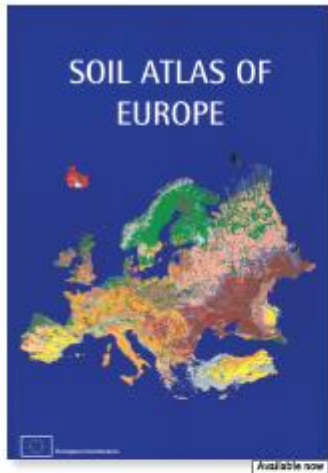


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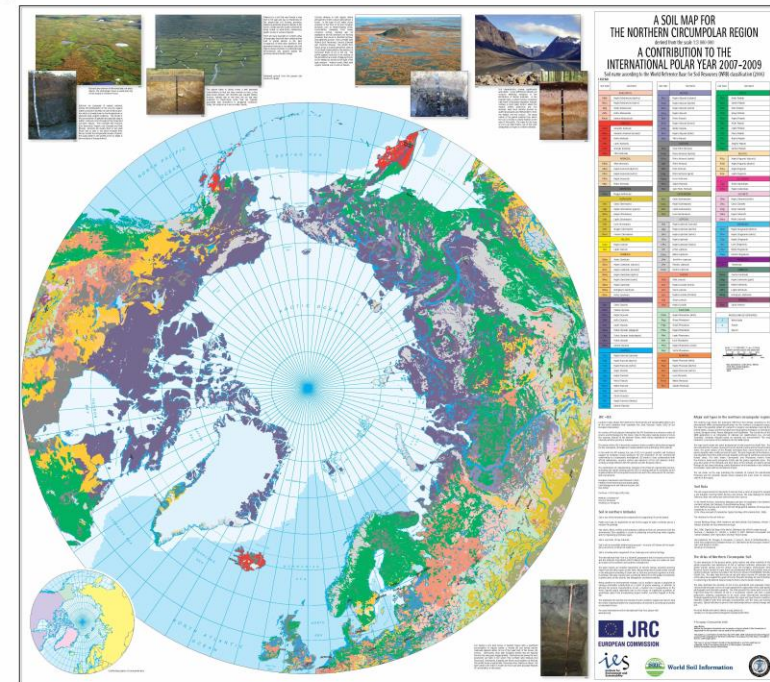


# Simplifying soil!



High political, media,  
educational and societal  
impact

**EU PRESIDENCY  
MONOLITH SERIES**



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### 3. Climate

Soil formation depends enormously on the climate as temperature and moisture levels affect weathering processes and biological activity.

With the equator runs through its middle, Africa has the largest tropical areas of any continent and about 90% of the land area lies within the tropics. In countries south of the equator, the seasons are opposite of those of countries that lie to north of the equator. The broad climatic pattern of Africa is defined by the position around the equator, the impact of vast ocean currents and the absence of mountain chains serving as climatic barriers. Diverse main climatic zones can be distinguished:

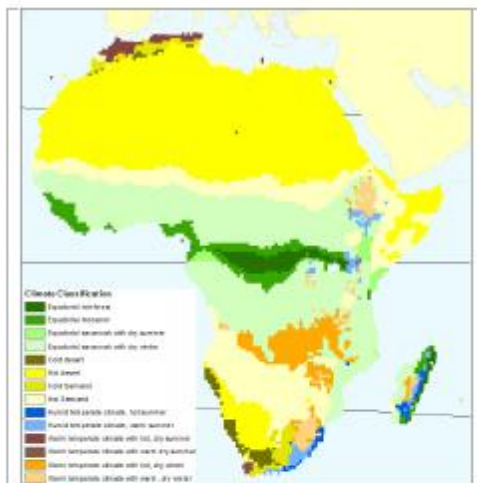
- A hot, humid zone around the equator where annual rainfall exceeds 1,200 mm - covers 14% of Africa
- To the north and the south is a sub-humid savanna zone with annual rainfall between 600 mm and 1,200

Increasingly unusual in relation to diseases from the equator?

- **Arctic and alpine zones** with an average rainfall equivalent to less than 500 mm which falls in only 10-15 wet days, covers 5% of the total land area.
- **dry climate zone** occupying nearly half of the Africa land area (47%). Annual rainfall is erratic with less than 500 mm precipitation - in some areas this is less than 100 mm.
- **Daily and seasonal extremes of temperature** are great with the average summer temperature greater than 30°C.

- Mediterranean climate in the extreme north and south with high temperatures in the summer and moderate and winter rainfall with careful.
- In the highlands of eastern Africa, particularly in Kenya and Uganda, rainfall is well distributed throughout the year and temperatures are equable.

- On a few high mountains, extremes, a subarctic climate can be found, even on the equator!



Most of Africa has a semi-arid climate, but the humidity and amount of rainfall varies drastically from area to area. Eight per cent of Africa has a tropical climate with 100 inches of rainfall. The remaining area experiences rainfall amounts with other or enough less, except for an increase of rainfall which occurs in the west. Half of the continent has Mediterranean precipitation. Thirty percent more, altitude and other localized features, plus the different regional climates. Approximately the climate can make completely new periods of diseases or venereal diseases. Climate change, especially indicated by prolonged drought in the west of the continent, has been affecting the agricultural output of the continent, but most of the crops are rain fed. As less rain comes, animals, birds in the last 80 years, extreme changes in climate can have a devastating effect on the children of people (Baker, 2010).



What is clear is that the condition of Africa exhibits tremendous variations in actual temperature ranges.

The map clearly shows an almost mirror set of zonal patterns within the basin of the equator. The differences in the extent of the patterns is controlled by the shape of the continent, formed by the north while tapering to a point in the south. The regions with the least variation are the equatorial zone. While a significant area displays a modest fluctuation of between 11–13°C, the range for the coastal fringe of the Gulf of Guinea and west-

LN Change is only around 2–3°C. The steepest fall is from the equator. The more temperate climates of the temperate regions, the Sahel, the Maghreb and large parts of northern Africa are clearly evident. What is again in many people is that the fact that the water doesn't freeze display high temperature ranges with parts of the Sahel and registering variations in excess of 40°C. This is caused by a sort of constant high pressure cells over the tropic of Cancer which give rise to cold nights (c. -10°C) and hot summers (> 45°C). So rainfall is more in correspondence in parts of the High Atlas Mountains of Morocco.

**The Tropics**  
The tropics divide the areas on the Earth where the Sun is directly overhead at least once during the solar year. It is marked by the Tropic of Cancer, at approximately 23° 26' 36" N, and similarly by the Tropic of Capricorn at 23° 26' 36" S.

Interval Convergence Time

One of the most dramatic features of climate in Africa is the *trade winds*, known as the *Inter-tropical Convergence Zone* (ITCZ). Winds originating from high pressure cells in the northern and southern hemispheres come together over the equator, where they heated by the sun and driven upward. This rising process causes the air forcing the moisture out, which falls as precipitation. The rainy day air cycle has been termed *the doldrums* where it descends, producing arid climates at approximately 20 degrees north and south of the equator. In Africa, the ITCZ is located just south of the Sahel at about 13°N. Variations in this position can result in drought conditions.

[illegible]

A photograph showing a riverbank with dense tropical forest in the background. The river is in the foreground, and the forest is on the opposite bank. The trees are tall and green, with some palm trees visible. The sky is overcast.

Soil provides the foundation upon which we construct our buildings, roads and other infrastructures.

In addition to providing the support for the vast majority of human infrastructure, soil provides a range of raw materials such as clay, sand, minerals and peat. Clay is used for making bricks for construction, pottery bases (e.g. earthenware), and as the first writing medium (clay tablets).

Daub is a building material that has been used for at least 5,000 years for making the walls of buildings. It is even better if mud-brick walls are plastered with a sticky material usually made from wet soil, clay, sand, animal dung and straw. It's still an important construction material in many parts of Africa and the technique is becoming popular again as a low impact sustainable building method.

Mud bricks, made of a mixture of clay, silt, sand and water mixed with a binding material such as rice husks or straw, are a common building material in countries such as Niger and Mali. Dried in the sun for 25 days, they have a lifespan of some 20 years.

Due to its impermeable properties, clay is used as a barrier to stop water seeping away which is why many ponds, canals and landfill sites are lined with clay.

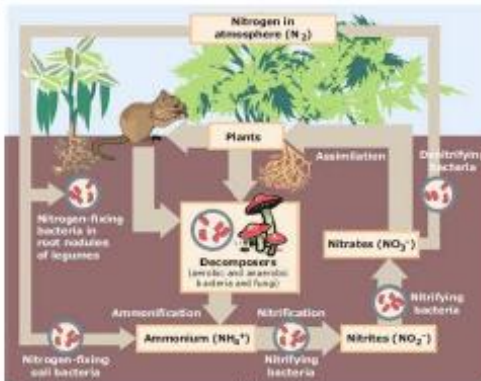
Sand and gravel deposits, laid down by rivers, are heavily used in the construction industry as aggregates in concrete-making while sand is the principal ingredient in glass making and in soil-cement. Sand is used to clean buildings and in washing to stop bleeding. Like sand, gravel has countless uses. For example, in Africa, more roads have gravel surfaces than concrete or asphalt.

While peat can be added to soil by gardeners to improve structure and enhance soil moisture retention, in some parts of Africa, peat is a source of fuel. Increasingly, people are becoming aware of the environmental impact of peat exploitation and are looking for 'sustainable' alternatives.



**Abstract:** The Great Migration of (Jewish) Jews, is the largest Jewish ethnic subculture in the world. (JGOM)

*Below: Mass built out of mud bricks and reeds that women themselves built. The mud-brick houses are the best quality and strongly well suited to particularly all weather climates. (19)*



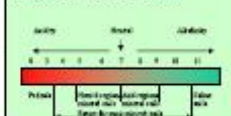
The side of a lot is the vertical distance from the

**What is meant by heavy or light soil?**

Soils are sometimes referred to as heavy or light. This refers to the ease with which they can be worked or dried and depends on their texture (see box on page 12). Heavy soils contain greater proportions of clay or silt particles and retain more moisture than soils with larger particles, such as sand. Consequently, they are harder to dig into and turn than light sandy soils.

344-445-446

Soils are often classified as being acid or alkaline or having a certain pH value. The pH index is a number which indicates the degree of acidity based on the concentration of hydrogen ions in a solution. The pH of soil is usually measured by mixing a sample of soil with deionized water, KCl or CaCl<sub>2</sub>. While the pH scale is from 0 to 14, usually typical fall between pH 4 to pH 12, with a neutral soil having a pH of 7. Alkaline soils will range from pH 8 to pH 12 (seldomly alkaline) while strongly acid soils will have a pH below 4.



cell as a regulator of the biogenerational cycles.

Soil plays a crucial role in a number of the sustaining natural biological and chemical cycles. Carbon, nitrogen and a range of essential nutrients are continuously recycled between the soil and plants, animals, insects, microbacteria and the atmosphere.

The intensity of these biological effects is also gas (Raines) varies from place to place and is regulated by

The graphic below demonstrates nutrients cycling in the ecosystem. The food, energy, and matter in the forest flow through the system. The decomposition of dead organic material. This provides the nutrients in the soil that are then easily absorbed by plant roots. However, as these nutrients are taken through the system by the children's body's organs, they do not remain in the soil for long and therefore, more materials must be supplied. This rapid consumption means that nutrients in the soil are concentrated near to the surface. If the forest vegetation is removed, the flow of nutrients from the vegetation to the soil is interrupted and the nutrients quickly leave their fertile habitat and become vulnerable to erosion. The supply of chemical nutrients can only be used for a period of additional



Answer (c) is a good answer. (ABC)

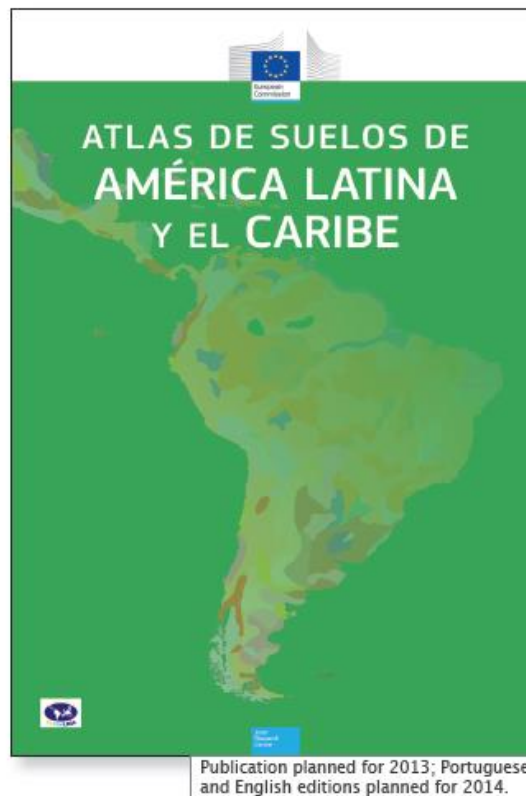
The soil functions described on these pages are vital to life on Earth. However, not all soil types can carry them out to the same extent and none are far more susceptible to failure when stresses are placed on them. A clear understanding of the functional capability and potential of different soil types is crucial for planning and managing the sustainable development of Africa's resources.



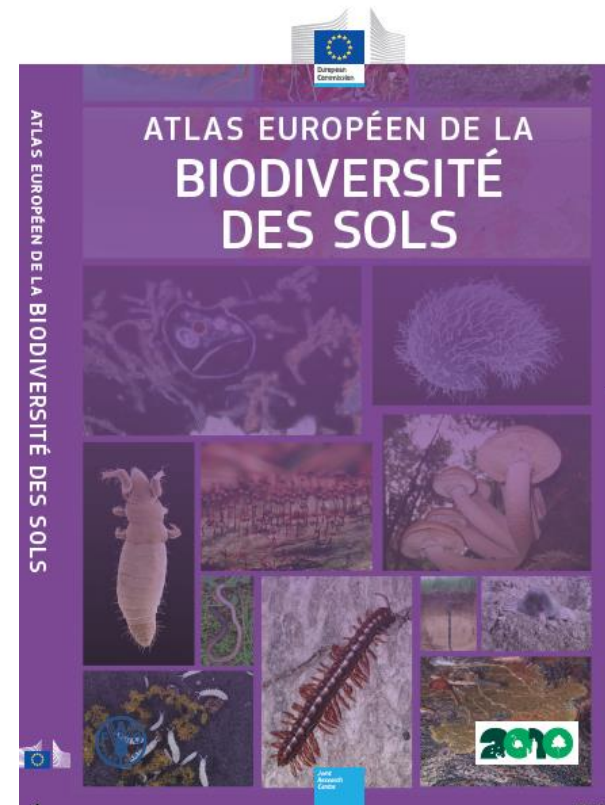
# Language considerations



Available now; French edition planned for 2014.



Publication planned for 2013; Portuguese and English editions planned for 2014.



# Public Engagements



2013 Open Day  
10,000+ visitors  
Soil exhibit = top attraction





# Schools contact



# **European Soil Bureau Network Working Group Awareness Raising & Education**

## **European Network Soil Awareness Conferences**



### **GSP - Pillar 2**





### Resource Efficiency Roadmap, COM(2011) 571:

*Milestone: By 2020, EU policies take into account their direct and indirect impact on land use in the EU and globally, and the rate of land take is on track with an aim to achieve no net **land take** by 2050; **soil erosion** is reduced and the **soil organic matter** increased, with remedial work on **contaminated sites** well underway.*

### Rio+20:

*205. We [the Heads of State and Government and high-level representatives] recognize the economic and social significance of **good land management, including soil**, particularly its contribution to economic growth, biodiversity, sustainable agriculture and food security, eradicating poverty, the empowerment of women, addressing climate change and improving water availability.*



- ❖ Second **Global Soil Week** organised by the IASS on 28-31 October 2013 in Berlin
- ❖ FAO's proposal to the UN General Assembly to endorse the **World Soil Day** on 5 December
- ❖ **International Year of Soils** in 2015
- ❖ **World Expo, Milan 2015 – Food Security**
- ❖ **Global Soil Partnership**

- While scientific excellence is important, it's not enough. Need to proactively broadcast soil science and engage with sponsors, public and other scientific domains.
- Lots of activity but...
- Lacking impact and repeatability. Media critical.
- Needs target support. Role of EC?
- Dissemination of best practices.
- Need to involve communication experts.

Old view....

*It sounded an excellent plan, no doubt, and very neatly and simply arranged; the only difficulty was, that Alice had not the smallest idea how to set about it.*

Lewis Carroll

ENSA – the way forward.

▪

**Thank you very much  
for your attention.**

[arwyn.jones@jrc.ec.europa.eu](mailto:arwyn.jones@jrc.ec.europa.eu)

EU Soil Portal

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