STATES GENERAL FOR SOIL HEALTH II EDITION - WRAP UP DOCUMENT

November 9, 2023

Promoted by **Ecomondo Technical Scientific Committee, Re Soil Foundation, Italian Institute for Environmental Protection and Research (ISPRA) and Joint Research Centre (JRC)**, the second edition of the "States general for soil health" was hosted at Ecomondo on November 9, 2023. Ecomondo international fair, the ecological transition ecosystem, is the place for industry, stakeholders, policy makers, opinion leaders and local authorities to meet and talk. It brings together and systemises the key elements that define the development strategies of the European Union's environmental policy. The 26th edition of Ecomondo in Rimini hosted more than 1,500 exhibitor brands set up on 150,000 square meters, more than 600,000 views of online exhibitor profiles, more than 30 delegations with about 280 delegates and a total of 230 events with a focus on scientific, economic and technical aspects as well as on the sector overall.

Among these, it took place the second edition of the **"States general for soil health - Sustainable carbon cycles – Healthy soils for a climate-neutral economy"**, with an international morning session and a national afternoon session. During the international session, legislative aspects related to the proposed *"Soil Monitoring Law"*, the state-of-the-art in the condition of soils at the European level, the main problems and possible solutions, with a focus on sustainable carbon cycles, monitoring systems and relevant case studies were discussed. During the national session, the soil situation was addressed from a local point of view, analysing in detail the condition of soils on the Italian peninsula, starting with data on soil consumption, the regulatory scenario, examples of projects and best practices for soil regeneration, and the Italian participation in projects funded by the Horizon Mission Soil programme.

- International session programme
- National session programme

International session

Speakers

- Marta Gomez San Juan – FAO (Chair)
- David Chiaramonti – Professor at the Polytechnic of Turin, Department of Energy, Re Soil Foundation Founding Member (Chair)
- Catia Bastioli – Novamont, Re Soil Foundation Founding Member
- Mirco Barbero – Team Leader of Soil Team. Unit Land Use & Management, DG ENV
- Kerstin Rosenow – Head of Research and Innovation Unit, DG AGRI
- Christian Holzleitner – Head of Unit, DG CLIMA
- Serenella Sala – Head of the Land Resources and Supply Chain Assessments Unit, European Commission, JRC
- Jacob Parnell – Soil biodiversity specialist, FAO
- Andrea Salimbeni – RECORD
- Claire Chenu – Professor of soil science at Agroparistech and Research Director at INRAE
- Georg Zalidis – Professor in the Laboratory of Remote Sensing, Spectroscopy and GIS and Director of the Interbalkan Environment Center

Some significant data were reported during the morning session: the first among them, provided by the European Commission and presented by **Kerstin Rosenow**, is that 61% of European soils is unhealthy. Unhealthy soil generates side effects and is unable to provide essential ecosystem services, such as: producing safe nutrition and food, providing biodiversity, purifying and regulating water and its cycle, ensuring adequate nutrient cycling, storing carbon and mitigating climate, and finally supporting human activities as a whole.

Seventy-eight percent of soil consumption occurs in agricultural soils, the same soils that annually lose 7.4 million tons of CO2 due to the too-rapid mineralization that occurs, almost unnoticed, under agricultural crops. From the top 20 cm of soil - considering each of its types - a total of 28 million tons of CO2 are lost annually (*De rosa et al., 2023*)[1].

In addition, 13% of European soils suffer from erosion rates above normal, leading to loss of land for agriculture and thus economic resources (*Panagos et al., 2021*)[2]; 25% of soils in Central, Southern and Eastern Europe is at high or very high risk of desertification. And again, as pointed out by **J. Jacob Parnell**, although it is estimated that about 60 % of living species resides in soils, to date no clear parameters have been defined to assess soil biodiversity and its health.

The session overall brought to light the percentages and values that underscore a critical situation of Europe's soils, but at the same time highlighted that **recovery and actions must start from shared data and the numbers themselves**. *"In order to be able to act promptly, it is essential to have a better understanding of the resource you want to safeguard, and it is necessary to adopt the appropriate policies and techniques from the start,"* said **Mirco Barbero**.

[1] De Rosa, D., Ballabio, C., Lugato, E., Fasiolo, M., Jones, A., & Panagos, P. (2024). Soil organic carbon stocks in European croplands and grasslands: How much have we lost in the past decade? *Global Change Biology*, 30, e16992. https://doi.org/10.1111/gcb.16992

[2] Panagos, P., Ballabio, C., Himics, M., Scarpa, S., Matthews, F., Bogonos, M., Poesen, J., Borrelli, P., 2021. Projections of soil loss by water erosion in Europe by 2050. *Environmental Science & Policy*, **124**: 380-392.

For these reasons, we need to build on the proposed European "*Soil Monitoring Law*", as soil protection contributes to the achievement of challenging goals such as addressing the biodiversity loss and reducing greenhouse gas emissions into the atmosphere by 55% by 2030 and achieving climate neutrality by 2050. All soil ecosystems in the European Union must be in a healthy and resilient state, so decisive changes are needed in this decade.

However, as **Serenella Sala** pointed out, soil is an extremely heterogeneous resource: the same value of a parameter can define a healthy soil in an agricultural context but a degraded soil in a forest context; therefore, it is essential to achieve flexibility for Member States in setting and adapting the criteria of some soil health descriptors to local conditions.

And while knowledge of the soil and the "numbers" that describe it are the common denominator of different policies, so too is cooperation among different stakeholders.

As **Catia Bastioli** and **Fabio Fava** pointed out, the ambitious goals set by the European Union cannot be achieved without cooperation among different actors in the landscape, such as academics, institutions, and civil society. In this context, the Mission *"A Soil Deal for Europe"* plays a crucial role, as it lays the foundations and resources for the development of coordinated action at the European level.

In addition to cooperation among different actors, integration among research methodologies is crucial to achieve common goals. **David Chiaramonti** stated: *"the most effective strategies to achieve the objective are different: there is no single solution but each must be dropped into the agro-climatic reality and the characteristics of the soils in which it operates. Some examples are well-designed crop rotations that bring organic matter and nutrients back into the soil, adoptions of sustainable agricultural techniques such as cover crops and mulch inputs, technological solutions such as composting and biochar production through carbonization of agricultural residues and by-products that can be reintroduced into the soil and contribute to the improvement of its microbiological life."*

In fact, one of the central topics of the second edition of the "States general for soil health" has been dedicated to analysing what are the most effective tools to build **sustainable carbon cycles**, of which the example on biochar reported by **Andrea Salimbeni**.

In fact, the EU is laying the foundation for the initiation of Carbon Farming models, based on agricultural techniques aimed at increasing the accumulation of carbon stored in agrarian soils and thus its removal from the atmosphere. Parallel to Carbon Farming, as pointed out by **Christian Holzleitner**, it will be essential to create of a voluntary certification system that attests to the actual storage of carbon in the soil and ensures that its accumulation is prolonged over time, quantifiable, additional to the starting threshold and sustainable.

As emphasized by **Bastioli**, to achieve the as ambitious as crucial goal of bringing European soils back to health, it is paramount to focus on the circular bioeconomy and bioproducts that, starting from renewable resources, marginal soils, supply chain offucts, and waste, can help solve water and soil pollution problems, restore fertility, and protect biodiversity.

National session

Speakers

- Walter Ganapini – Re Soil Foundation Technical Scientific Committee President (Chair)
- Anna Luise – DG GLO ISPRA (Chair)
- Michele Munafò – SINA Manager, ISPRA
- Francesca Assennato – Integrated land monitoring and analysis area manager, ISPRA
- Roberta Farina – SoilHUB Coordinator, CREA
- Alessandro Bratti – Secretary General of the Po River District Authority
- Piero Gattoni – President of the Italian Biogas Consortium
- Massimo Centemero – Director of the Italian Composting Consortium
- Benito Scazziota – Società agricola Terzeria
- Gabriele Geromel – Villarasca Neorurale
- Serena Borgna – Cluster 6 Coordinator, APRE (Chair)
- Sara Guerrini – Public affairs agriculture Novamont, Re Soil Foundation founding member
- Andrea Arcidiacono – Polytechnic University of Milan
- Tanja Mimmo – University of Bolzano
- Fabrizio Adani – Gruppo Ricicla, University of Milan, DiSAA
-

Opening the national session of the States general for soil health, **Walter Ganapini** and **Anna Luise** underlined the urgency of creating coordination between the national and European levels of soil protection and health. In Italy, soil is an asset that, in most cases, is privately owned. Hence the **need to build "bridges" and foster cooperation** not only between Italy and Europe but also with civil society - users of the land - and with academic and political institutions that are instead responsible for coordinating actions and protecting the environment. Publications such as the second edition of UNCCD's *Global Land Outlook 2 – Summary for policy makers*, the Italian translation of which coordinated by ISPRA was presented during the conference, must be a starting point for restoring the land, laying the foundations for its resilience and for the management of land resources.

The state of soils is worrying and there is limited time to act, hence the need to work on multiple levels in a coordinated way. During the afternoon session, the picture of the situation of soils in Italy was outlined, with particular reference to consumption, an in-depth discussion was presented regarding current regulations and the opportunities offered by the transposition in Italy of the proposed European directive, which, as **Francesca Assennato** pointed out, "*could be an opportunity to fill a legislative gap in environmental protection policies and responsible soil management*." Then, thanks to the intervention of **Roberta Farina**, some important stakeholder engagement actions on the Italian territory were reported.

Just as at the European level, the overview of the soil situation is problematic at the Italian level. **Alessandro Bratti** (Secretary of the Po River District Basin Authority), emphasizes the complexity related to soil management along river courses, due to a great heterogeneity of the territory, marked by different climates, soils with diversified textures and the presence of a multitude of allochthonous and invasive plant species.

On the other hand, it emerges from the latest report on soil consumption in Italy[3] that 77 square kilometers were sealed in 2022, an average of 21 hectares lost per day, the highest value in the last 11 years. The report highlights how increasingly it is the country's most fertile soils that are ending up under concrete, soils previously dedicated to agriculture. Moreover, soil consumption aggravates even more the Italian hydrogeological situation, in fact *"Italy is one of the European countries most affected by landslides, with more than 620,000 landslides surveyed in total. The Italian situation is fragile, soil consumption must be regulated,"* **Michele Munafò** reported.

The reality of Italian soils described above highlights the need to prevent territorial problems and organize good practices and behaviors that are essential to implement in order to safeguard, improve and sustain Italian soils. With this in mind, **Piero Gattoni**, President of the Italian Biogas Consortium and **Massimo Centemero**, Director General of the Italian Composting Consortium, presented some efficient, sustainable and implementable best practices in agriculture. Partly the same solutions that are implemented on a daily basis and were presented during the afternoon by two lighthouse farms participating in the network promoted by Re Soil: **Villarasca Neorurale** and **Società agricola Terzeria**.

In addition, we are also observing a growth of attention on soil thanks to initiatives put in place by projects funded by Horizon programmes promoted under the mission "*A Soil Deal for Europe*". A number of soil health projects in which Italian partners are participating, specifically, PREPSOIL, NatI00ns, ECHO and Fertimanure, were presented during the session. The discussion was also an opportunity to reflect on the excellent positioning of our country in this context, which, as reported by **Serena Borgna**, in 2022 ranked second in terms of funding received through the Horizon Mission Soil programmes.

Moreover, while the situation of soils is critical in Italy, the amount of soil data collected at national and regional levels is significant, as is the national commitment regarding the development of European soil projects. The projects presented during the national session focus on soil education, starting with stakeholder engagement, dealing with research, soil education, scientific dissemination, citizen science and data collection. Among them, Lighthouse farms and Living Labs, a key tool for generating solutions through co-creation and testing their effectiveness at the local level, are having a positive impact.

It is a critical situation that emerged during the States General on soil health. Our territories are not healthy, the soil, such a superficial and ancient layer, is not resilient and is not renewable. What emerged from the experts is the need for early action to stop soil degradation and soil consumption. The tools provided by the European Union are good, and the European "*Soil Monitoring Law*" directive is a first step. A shared effort is needed to promote the involvement of all stakeholders, including civil society, scientific research, and the dissemination and promotion of sustainable agricultural practices.

Soil regeneration, in addition to being necessary to ensure the sustainability of life on the Planet, is an important opportunity for the development of the supply chains involved and for the promotion of social and territorial inclusiveness in innovation and development processes, co-design and technology transfer.

[3] Consumo di suolo, dinamiche territoriali e servizi ecosistemici. Edizione 2022; Sistema Nazionale per la Protezione dell'Ambiente (SNPA)