POLICY BRIEF

Healthy soils sustain food system transformations to contribute to the net zero CO_2 emission target by 2050

CONTEXT

- Climate crisis calls for urgent transformations.
- The Parties agreed at COP 21 UNFCCC[1] (Paris 2015) to reduce greenhouse gas (GHG) emissions to maintain by 2100 the global mean temperature on Earth below +2°C compared to the pre-industrial global temperature.
- The sixth IPCC[2] report indicates that we are not on track, with a global temperature increase already reaching +1.01°C in the 2011-2020 period.
- Food systems contribute to a third of these global emissions, 70% of them being due to agriculture, land use, and land use change activities (AFOLU).
- Agriculture provides 95% of food to humanity.
- Soils provide to societies and ecosystems a wide diversity of services.
- Loss of ecosystem services through land degradation, affecting 3.2 billion people worldwide, has reached high levels in many parts of the world.
- By 2030, the most vulnerable people will suffer from:
  - A global decrease in food production due to more frequent crop failures.
  - An increase by nearly one billion hectares of degraded land, provided a similar rate of degradation.

Business as usual strategies for agriculture, land use and land use changes will impede the contribution of the food systems to the net zero CO_2 emission ambition.

Food system transformation is needed for *"safeguarding food security and ending hunger, and the particular vulnerabilities of food production systems to adverse impact of climate change[3]"*.

1. UNFCCC : United Nations Framework Convention on Climate Change
2. IPCC : Intergovernmental Panel on Climate Change
3. UNFCCC, COP27 decision "Sharm el-Sheikh Implementation Plan"

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To sustain this transformation, **our recommendations,** include 4 pillars:

PILLAR 1

HEALTHY SOILS MAKE FOOD PRODUCTION SYSTEM SUSTAINABLE

- Soils are complex systems characterized by physical, chemical and biological properties, determining together with human uses and agricultural practices soil functioning and services provided to the ecosystem and the societies.
- Soil health is the continued capacity of soils to function as a vital living part of the ecosystem that sustains services.
- Soils are a sink and a source of CO_2.
- Over the past two centuries, the net CO_2 emission from soils has increased by 8% due to land conversion and unsustainable management.
- Projections to 2050 predict a further contribution of soils to atmospheric CO_2 concentration.

WE RECOMMEND TO

- ▷ Avoid soil health degradation, reduce degradation and restore soil health, caring is better than curing.
- ▷ Assess current soil health conditions to design appropriate food systems transformation planning: doing the right thing at the right place.

PILLAR 2

AGROECOLOGICAL PRACTICES MAKE SOILS HEALTHY

- Agroecology promotes ecological processes, systemic approaches and more synergies between humans and nature for a sustainable future.
- Agroecology blends traditional and local knowledge and trans-disciplinary academic research.
- Agroecology principles provide an efficient framework to strengthen soil health and to support sustainable intensification of food production.

WE RECOMMEND TO

- ▷ Disseminate and scale-up agroecological practices and approaches to leave no one behind.
- ▷ Subsidize agroecological transformations in the long term.
- ▷ Anchor agroecological transformative pathways in public policies.
- ▷ Thoroughly document the impacts of agroecological practices.

PILLAR 3

LOCALLY CO-DESIGNING MAKES PRACTICES MORE EFFICIENT

- Soil diversity and local heterogeneity call for the design of context-dependent soil management practices.
- Peculiar social and economic strengths and weaknesses should be addressed toward a citizen-driven desirable future.

WE RECOMMEND TO

- ▷ Strengthen the multi-stakeholder arena where:
  - Consultation tools are implemented (participatory science, living labs, decision-making tools).
  - The skills of all the stakeholders are strengthened to stimulate interdisciplinarity and multi-stakeholder dialogue.
  - Public-private partnership is being stimulated.

PILLAR 4

SCIENCE-BASED METHODOLOGIES MAKE TRANSFORMATION ASSESSMENT RELIABLE

- Monitoring, reporting and verification (MRV) methodologies are needed to plan financing needs, to measure the implementation of the transformation, to evaluate the associated financial costs, and to report on and verify the application of standards and good practices.
- Appropriate indicators and metrics need to be defined to assess and monitor transformations.
- Scientific concepts such as soil health help in designing metrics and tools for decision-making.
- A wide diversity of approaches (ex-ante, ex-post assessment of impacts, certification and labelling of practices) can be implemented.

WE RECOMMEND TO

- ▷ Develop metrics and associated MRV tools by gathering expertise and experience from scientists, policymakers, and other stakeholders (smallholders' farmers and other stakeholders).
- ▷ Develop ad hoc methodologies, indicators, and metrics to effectively communicate the concept of soil health to a wide audience.
- ▷ Address data and research gaps.
- ▷ Make stakeholders account for uncertainties as part of the decision process.

Strengthening science-policy-society interface and investing in knowledge-based solutions are the core of our recommendations.

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4 PER 1000 SOILS FOR FOOD SECURITY AND CLIMATE

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