

« 4 per 1000 Initiative: Soils for food security and climate »



Document Forum 3-1 – Report from Forum n°2 – Bonn (16th November 2017)

3rd Meeting of the Forum

Thursday 13th December 2018 08:00 to 16:15 University of Silesia – Katowice - Poland

The **High Level Segment of the Forum meeting** was opened by a welcoming address of The Representative of **Mr. Christian SCHMIDT**, German Federal Minister of Food and Agriculture, and by a speech of **Dr. Ibrahim MAYAKI**, CEO of NEPAD and Chairman of the "4 per 1000" Initiative Consortium.

Dr. MAYAKI recalled that according to new data from the international scientific literature, the increase of temperature to less than 2°C would be impossible without a storage of Carbon in soils, and that international experts believe that funding for soil Carbon storage would remain competitive at a cost of around US\$ 100 / t CO_2 stored, even though one of the difficulties would remain the need for long-term storage. He stressed the fact that the effort must be carried out everywhere and be effective, using all the relevant practices: conservation agriculture, organic fertilization, reduction of tillage, agroecology including regenerative agriculture and agroforestry, etc.

He reiterated the importance of concretizing the initiative launched at COP 21 in Paris, based on the dual interest of storing Carbon in soils to increase their fertility and therefore the world's ability to produce food while at the same time to partially offset the Gt of carbon emitted to the atmosphere as greenhouse gases from fossil reserves and thus to have an impact on the climate. He also stressed that the "4 per 1000" Initiative and carbon sequestration in soils does not exempt from drastically reducing carbon emissions on a global scale.

Noting that all soils of the planet had a potential for storing Carbon, he emphasized that the initiative is an opportunity to work on agricultural models by moving from intensive agriculture using inputs and mechanization to more natural processes and ecosystem based agriculture: in short, going from the green revolution to the double green revolution.

After two years of setting up the Initiative, in terms of advocacy and governance especially, he said that it was now the time for action. He encouraged the members and partners to discuss and define a common strategy to move forward and to implement activities on the ground through farmers and foresters.

Finally, Dr. MAYAKI expressed his gratitude to the members of the Future Policy Awards Jury for the "Vision award" received by the Initiative in Ordos at COP 13th of the UNCCD. He recognized it as a major international recognition and a wonderful encouragement for the promotion of carbon sequestration in soils in agricultural and forest soils that will allow to tackle the major challenge of the next 30 years which is food security.

Professor Rattan LAL from Ohio State University and Chairman of the International Union of Soil Sciences delivered then an inspirational speech to the audience: Soil organic carbon for climate, food and peace. He insisted: "Depleting soil organic matter and declining soil fertility, degrading soils and denuded lands, recurring drought and intensifying heat waves, increasing salinization and reducing use efficiency of water, low crop yields and perpetual hunger, and marginal living and desperateness are as real threats to global peace and security as are ICBMs

and nuclear weapon proliferation because the health of soil, plants, animals, people and ecosystems is One and indivisible."

Professor LAL said: "If I am asked what would I suggest to mitigate global warming and end hunger, the only rational response would be to change the ways we treat our soils to produce, transport, process, and consume our food. This would imply making soil, water and agriculture an integral part of the solution, and empowering farmers and land managers to produce more and more from less and less by reducing waste, enhancing the eco-efficiency and restoring the degraded soils and afforesting denuded lands."

https://4per1000day.sciencesconf.org/data/pages/Forum_2_1_Inspirational_speech_Profes sor_Rattan_LAL.pdf

The following personalities took the floor during the High Level Segment:

- Mrs. Isabel Garcia TEJERINA, Minister of Agriculture & Fisheries, Food & Environment (Spain)
- Mr. **Stéphane TRAVERT**, Minister of Agriculture & Food (France)
- Mr. Sándor FAZEKAS, Minister of Agriculture (Hungary)
- Mr. Samir TAÏEB, Minister of Agriculture, Hydraulic Resources & Fisheries (Tunisia)
- Mrs. Naoko ISHII, CEO & Chairperson of Global Environment Facility (GEF) TBC
- Mr. Eduardo MANSUR, Director of Land and Water Division (FAO)
- Mr. Barron ORR, Lead Scientist, UNCCD
- Mr. Bernard FAUTRIER, Administrator Fondation Prince Albert II de Monaco
- Mrs. Monika CHRISTMANN, Chairperson of OIV
- Mr. Mohamed SADIKI, Vice-Chairman of CIHEAM
- Mr. Philippe MAUGUIN, Chairman & CEO of INRA
- Mrs. Inger ANDERSEN, Director General of UICN
- Mr. Emmanuel FABER, Chairman & CEO of Danone
- Mr. Bharat KAKADE, Vice-President of BAIF

Meeting of the Forum

• Adoption of the agenda

The agenda was adopted by the Forum

• Approval of the report of Forum n°1 – Marrakesh 17th November 2016

The report of the Forum n°1 held in Marrakesh on November 17th 2016 was adopted by the Forum

• Annual activities report for 2016 & 2017

The annual activities report for 2016 and 2017 was presented to the Forum by Mr. **Paul LUU**, Executive Secretary. The Forum took note of all the work done during the two first years.

https://4per1000day.sciencesconf.org/data/pages/Forum 2 2 Rapport d activites 201 6 2017.pdf

• Panel n° 1: Progress on the "Science – Research" component

The first panel was articulated in 2 parts, and was introduced by **Dr. Cornelia RUMPEL**, Chair of the STC, who insisted on the increasing awareness of soil carbon sequestration through various meetings held in 2017 (GSOC by FAO in March, Stakeholders meeting in Chatilly in May, SOM2017 in Rothamsted in September), and international collaboratives projects on SOC sequestration (CIRCASA, SoCA, ...), as well as on the work done during the first year of the Scientific and Technical Committee (work on the set of indicators for project assessment, on the international research and scientific cooperation program, on technical papers and on the promotion of the Initiative).

- The <u>1st part on the orientations for an international research and scientific cooperation</u> program was presented by **Professor Pete SMITH**, member of the STC.

Professor SMITH explained that such a program was supposed to be an action oriented and policy relevant research program, needed to provide evidence-based options for countries, stakeholders and the private sector and support the multi-partner initiative. It should also help answer high level policy questions such as national policies (NDCs, Land degradation neutrality, improving GHG inventories, etc...) and their implementation (most efficient technical intervention, breakthrough technologies, trade-offs between carbon for soils and other uses, barriers for adoption, etc...).

The 4 main themes of the program should be:

- Estimating the potential of soil carbon sequestration and associated benefits
- Developing practices adapted to specific conditions (soil, climate, socioeconomy, institutional, ...)
- Define and strengthen the enabling environment
- Monitoring, reporting and verification of soil carbon

As examples, Professor SMITH mentioned CIRCASA project which encompass all the four pillars, SoCA project which includes all pillars but the third, just like GRA SCS Flagship.

- <u>The 2nd part on the set of references criteria and indicators for project assessment</u> was presented by **Professor Claire CHENU**, Vice-Chair and member of the STC.

Professor CHENU underlined that this set of indicators was elaborated in support to partners and members of the Initiative, as a base for a formative assessment in order to provide advice for the improvement of projects.

She started with a <u>definition</u> of a <u>project</u>: *specific actions under defined temporal and* spatial scales and ecosystems (e.g. arable, rangeland, forests, ..), targeting retention or increase in soil carbon, related to changes in land management and/or land use options and with expected benefits and possible trade-offs for local communities.

She described the proposed assessment procedure (based on project description, criteria and indicators, and the code of conduct) that will be eventually adopted with the set of criteria by the Consortium in its meeting of the afternoon. This procedure will be an iterative mechanism starting with the project holder and involving the Executive Secretariat and the STC, and may conduct to a formative assessment resulting in a new version of the project after consideration by the project holder.

The project assessment will follow four sequential steps:

- <u>Safeguard Criteria</u> (in order to ensure that the project does not compromise human rights, land rights and poverty alleviation) which need to be all meet;
- <u>Direct reference criteria</u> (SOC stocks and land degradation neutrality, adaptation to climate change, climate change mitigation and food security), Soil C should be maintained or increased without compromising all the others;
- <u>Indirect Reference Criteria</u> (welfare & well-being, biodiversity & ecosystem services, and water and nutrients cycles);

• <u>Crosscutting criteria</u> (training and capacity building, and participatory and socially inclusive approaches)

And will conduct to a narrative advice aimed at improving the quality of the project before and during implementation.

Professor CHENU gave an example of more detailed criteria with the soil organic carbon stock increase. She also finished by addressing to question to the audience:

- What indicators do you use to assess the impact of the project on soil C?
- How can the 4 per 1000 initiative contribute to your needs for your assessment?

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No answer to those questions came from the audience, but few questions were asked.

To a <u>question on the relative weight between criteria</u>, Professor SMITH answered that as it was not an evaluation but a formative assessment, no relative weighting was needed. The funders will have to conduct their own evaluation, and the purpose of the assessment was to help project holders to improve their projects.

Concerning the fact that <u>environmental criteria were only evaluated in step 3</u> and not as safeguard criteria on step 1, Professor CHENU recalled that if a project showed environmental deficiency in step 3, that would mean that the project need to be improved on those aspects and will receive suggestions for improvement.

To a question on <u>the baseline used for the assessment</u>, Professor SMITH underline that a project stabilizing a decreasing carbon content in soil would be as valuable as a project increasing carbon content from a stabilized situation. The baseline would be different for each project.

He also answered to a question on the <u>cost effectiveness and the public and private</u> <u>benefits of a project</u>, that of course a project needs to be implemented in a costeffective way by farmers. A project would need to be improved if such a condition of implementation were not met.

Finally, Mr. Stephane LE FOLL thanked the STC for this very important work that was already started in Montpellier during the 2nd meeting of the Consortium in June 2017. He stressed the fact that this set of indicators will help implementing the "4 per 1000" Initiative in a practical way, from knowledge and science to action.

• Panel n°2: *Time for Action*

The second panel was articulated also in 2 parts, one on the contribution to the NDC and one on projects making the link with farmers.

Mr. **Eduardo MANSUR**, Director of the Land and Water Division at FAO recalled that agriculture was high on the global agenda only since COP 21, and that 90% of the developing countries mentioned Agriculture and Land issue in their NDCs. Soils were rarely mentioned. He stressed the fact that for SDG 2 and 15.3, soil organic carbon (SOC) was one of the 3 metrics with land productivity and land use change, and that countries need to develop MRV (monitoring-reporting-verification) programs for SOC. Working on SDG 15.3, in particular on land degradation neutrality (LDN) would encompass working on soil restauration, soil fertility and SOC. The countries will have to report not only on carbon above the ground, but also on carbon below the ground.

FAO contribute to this link between SDGs and NDCs, because global question requires local solutions. That is why FAO works on the production of the Global Soil Organic Carbon Map on the base of contribution of all countries and organized the Global Soil Organic Carbon Symposium in March 2017, in order to support the IPCC to have a solid SOC assessment. FAO will look at NDCs to see how to contribute to two aspects of the question: reduction of carbon emissions, and protection and restauration of soil carbon pools. The problem is not only conserving and protecting carbon pools, but also to use soils to sequester carbon in order to reduce carbon in the atmosphere. To do so, agriculture is the only synergetic option linking mitigation and adaptation, and there is room to explore synergies between agriculture and energy within the framework of the NDCs.

Mr. MANSUR insisted on the importance of the process starting with the SBSTA at COP 23 with the "Koronovia Joint Work on Agriculture" mentioning the need to "improve soil carbon, soil health, soil fertility under grass land and crop land as well as integrated systems including water management". He underlined that SOC was important but it should be part of integrated systems including water management: "Thus, irrigation is important, but it is not the only solution, because the best place to keep water is in the soils!"

Mr. **Christian FUSILLIER**, mentioned the fact that the Agence Française de Developpement (AFD) developed a new strategy from 2017 in order to improve the support to countries in the implementation of their NDCs linked to climate change. AFD was thus the first funder to work on climate change: 24 billion € granted to projects with a co-benefit on climate since 2005. He stressed that NDCs will not be enough, because they will lead to an increase of 3 to 3,5°C in 2100. He underlined that funders have high responsibilities in supporting countries, that tools and approaches need to be adapted to the demand, according to the development stage of the country. AFD committed to finance 100% of projects compatible with the Paris agreement, while targeting Africa and LDCs.

Mr. FUSILLIER explained that AFD works with 2 levels of support: at the macro level to help a country to develop its own policy and strategy "Climate", at the field level to maximize impacts of projects funded by AFD, using solutions inspired by nature. The implementation of ADAPT'ACTIONS facilities for 4 years with 30 million \in on 15 countries (Africa, LDC and Small Island Countries) is articulate around 3 axes: improve the implementation of NDCs, declination of NDCs in the public policies, and implementation of funding tools for pilot projects. He insisted on the importance for AFD of the economic and social development, the territorial equity through the improvement and the creation of descent employment opportunities, increase of incomes, and the improvement of the livelihood of rural inhabitants.

Mr. FUSILLIER concluded in underlining the fact that AFD worked a lot in partnership to support agro-ecology over the last 15 years, in the North and in the South.

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On "Projects making the link with farmers", Mr. **Barat KAKADE** mentioned that BAIF Development Research Foundation founded by Dr. Manibhai DESAI has been committed to sustainable development of rural India. Development programs through the creation of opportunities of gainful self-employment (6 thematics: livestock development, natural resource management, agri-horti-forestry (Wadi), climatic resilient agriculture, quality of life, and women empowerment), have being implemented in 16 states, transforming lives of over 4,4 million rural families.

Mr. KAKADE stressed the importance of the issue of soil health in India, with around 70% of the country's 1,35 billion people engage in agriculture and 44% of the land area being affected by soil degradation. Agri-Horti-Forestry (Wadi) was mentioned as an example of carbon sequestration with a total upper and below ground biomass of (10 years wadi) 23 t of carbon per ha which is equivalent to 84,67 t of CO2 per ha (an increase of soil carbon from 0,42 to 0,60 % was observed in four years).

He also indicated that BAIF participates to the BMZ's One World – No hunger Initiative, with a program on "soil protection and rehabilitation for food security" implemented in 5 countries (Benin, Burkina Faso, Ethiopia, Kenya and India). The project area covered 14 villages in 4 Clusters of Yavatmal and Amravati of Maharashtra, 10 000 ha and 3 000 households, and conducted to an improvement of the productivity of crops from 28 to 40%. Mr. KAKADE underlined that BAIF was also involved in the promotion of Integrated Renewable Energy and Sustainable Agriculture (IRESA) model.

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The following comments and questions came from the room after the panel presentations.

A <u>comment from a representative from the Argentinian Ministry of Agriculture</u> referred to the use by farmers and technicians all over the world, of leading sustainable productive system with no till, with reduced emissions and increased carbon sequestration. Those systems need the right policies backed by science to be implemented, and to promote them.

To a <u>question by the Chairman</u> on the reason why 90% of developing countries mentioned agriculture but not soils in their NDCs, Eduardo MANSUR answered that even though he was ignoring the reason, it could be because the "4 per 1000" Initiative was not existing at that time, or because it was not so obvious that soils was a fundamental part of the agricultural production. He considered that this was not a problem as far as the agriculture was in the agenda, and that the link between NDCs with SDGs was on the right way to demonstrate the impact of sustainable soil management, including the increase of SOC as an element of the solution. He concluded on the importance of the "Agriculture based climate solutions".

• **Professor Jørgen Eivind OLESEN** from Aarhus University (Denmark) delivered a speech on perspectives for soil carbon management.

After recalling the main sources of GHG in the atmosphere, he insisted on the challenges faced by the "4 per 1000" Initiative: sufficient measures to enhance C sequestration, permanence of soil carbon, global warming leading to increased soil organic matter decomposition, and overall assessment. He also insisted on the conditions to increase carbon storage in soils.

He recalled the 7 principles of soil organic carbon (SOC) management:

- SOC is sustained through sufficient inputs of organic matter in roots, crop residues, manure and compost to (out)balance losses from decomposition of soil organic matter.
- SOC contributes to sustaining soil productivity by enhancing soil water retention and nutrient supply, and it enhances soil structure and soil workability on soils with high clay content.
- SOC contributes to sustaining soil biodiversity, which also influences pests and diseases requiring management targeted to local conditions.

- Effective management of SOC requires a long-term effort and this commitment is more effective if it is a key element in strategic farm management.
- Effective SOC management depends on current soil carbon levels.
 - On soils with acceptable or good soil carbon content, measures should target maintaining these levels of soil carbon and avoiding losses, e.g. through modified and adapted crop rotations, cover crops and residue retention.
 - On soils with low soil carbon content, effective measures involve both securing carbon already in soil in combination with enhancing soil carbon inputs, e.g. through crop rotations, manure/compost application, residue retention and cover crops.
 - Such measures may be combined with no-tillage practices to further prevent soil erosion maintaining soil carbon and improve soil structure in surface-near soil layers.
- SOC management also involves management of nitrogen and phosphorus.
- Where soil carbon levels are targeted to be enhanced, this will only be effective if supported with sufficient input of nitrogen, phosphorus and sulphur to ensure this carbon storage.
- The full benefit of enhanced SOC on crop yield is only fully captured, if the measures are timed well to provide the water and nutrients (in particular nitrogen) that the crop needs, and aligned with appropriate management to prevent weeds, pests and diseases. This requires adaptation of the management measures to local soil and climatic conditions as well as to (region) specific farming systems.

and in conclusion of his speech, <u>he introduced the 3 questions to be debated in the</u> workshops:

- <u>Question 1</u>: How can the "4 per 1000" initiative facilitate general action at all levels? Which actions to prioritize?
- <u>Question 2</u>: As an actor or college, how can you invest in this move to action? Which interventions to prioritize?
- <u>Question 3</u>: What are the conditions that can boost or slow actions? Classify conditions and environment elements by priority in two columns: boost versus slow down

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Workshops by colleges

After the coffee break, workshops were held by college in different meeting rooms in order to answer the three questions asked by Professor OLESEN.

Then the Plenary resumed, and report from the 5 workshops per college were presented.

1. Countries, local governments, international and regional organization groups

Question 1: 4 per 1000 as facilitator: simplicity versus/and complexity and incentives

- The beauty of 4 per 1000 is in the simplicity of the message, whereas questions of soil are usually characterized by complex scientific answers ("magic moment")
- Interaction between decision makers, scientists and farmers requires a new quality of communication approaches, knowledge flows and participation
- Incentivization is a relevant issue that requires donors to sit at negotiations

Soil is characterized by long-term processes, which require different forms of incentivization (long-term perspective)

<u>Question 2</u>: How to invest – the knowledge of the context

- Change perception from maximizing production to optimizing production in a sustainable way
- 4 per 1000 has been built, but now has to be put in action ("learn how to drive the car")
- Requires the willingness of policy to involve and support the actions in order to access different levels of decision making

Question 3: What boosts or slows actions

Boosts:

- Knowledge of the context
- Simplicity of complexity
- Intelligent incentivization
- Availability of good examples and knowledge flow

Slows:

- Consideration of time scales
- Consideration of land ownership
- 2. Farmers

Question 1: What can 4 per 1000 do for farmers?

Keywords: field labs/model farms, bottom-up approach, participatory research, closure of knowledge gaps, knowledge platform, name costs for farmers, mapping of the social increase potential, evaluations, twinning projects, farmers' network for farmers who work on difficult soils

- Farmers are often seen as study objects, not leaders. Need to have a bottom-up approach with participatory research e.g. Field Labs
- Communicate to all farmers worldwide what 4 per 1000 is and what it means
- Enable knowledge transfer, networking and exchange between, to and from farmers
- Identify existing projects and practices disseminate; but don't duplicate existing work
- > Can the Initiative support financially with researchers and/or extension work?
- Provision of a collaborative platform, assistance to apply for funding, link between research and practice
- Look at mechanisms to get long term commitments from farmers, policy makers, funders, etc.
- Get farmers on to the 4 per 1000 Scientific Committee
- Farmers need to be in the center of the organization (there were very few farmers at the whole event)
- Enable a risk management system for farmers to assess benefit of changing their systems/management

<u>Question 2</u>: What can farmers do for the Initiative?

- Put in to practice the theory application. Enable it all to happen!
- Commit to increasing SOM in our soils
- Can take a long-term approach
- Provide an integrated approach i.e. multiple benefits to the farm, society, environment, etc.
- Influence and guide policy (if frameworks/mechanism exist)
- ➢ Gather and provide long-term data, e.g. climate, SOM, yields, etc.
- Provide citizen science and action

<u>Question 3</u>: Prioritizing actions, an assessment of opportunities and barriers:

Opportunities	Challenges
Farmers trust other farmers; if techniques work they will use them	Need technical and/or research backing
Peer-to-peer learning is a strong mechanism	Finance – need to invest to make changes to systems
Farmer involvement can be high if approached/engaged in right way	Time – farmers tend to be time poor. Therefore speed of change can be limited
Autonomy over decision making on own land – change can happen fast	Lack of knowledge on best practice(s)
Farmers organizations can help a lot to harness momentum and drive change	Supply chain not understanding the need to build carbon in soils
Risk mitigation system – quite easy on farms	Replicability – every farm is different
Policies and subsidiesbut also could be a challenge!	Policies and subsidiesbut also could be an opportunity!

3. Research and Education

Question 1:

- 4 per 1000 should aim at more engagement with funders, since all 4 per 1000 projects require some funding (closer collaboration with funding organizations).
- Alignment of objectives of 4 per 1000 projects need to be achieved among different stakeholders (famers, scientists, policymakers). This common understanding should be fostered by the initiative.
- Pilot projects shall be set up that act as success stories and attract attention from other actors and will be adopted by famers themselves. Dissemination and education in relation to these projects and the general objectives of the initiative are essential.
- Long-term field experiments are important infrastructures for research projects that need support to be maintained.
- Knowledge gaps shall be identified (by the initiative) (e.g. subsoil, saturation)
- The initiative should help to build up a network and bring together the different scattered existing and emerging projects and different stakeholder groups (publicprivate cooperation).

Question 2:

- As scientists, we need to work more together with other actors (farmers, policy makers, extension services). Such interdisciplinary intersectoral projects at different scales (regional to international) are essential.
- We need to identify and quantify the soil C sequestration potential at different scales and evaluate the implications for other ecosystem services and socioeconomic consequences/implications.

Question 3:

- SOC sequestration is complex and other ecosystem services may be compromised. There is no easy message on this for policy makers. The solution: integrate policy makers in projects.
- Open (science) conferences at different scales and for all stakeholders help for a common understanding.
- Communication is essential. 4 per 1000 initiative should act as knowledge hub.
- > Funding is prerequisite.
- Parallel structures and competition between organizations (FAO, GRA, 4 per 1000, etc) slow down the initiative.

4. Business

The most important message of the group: 4 per 1000 should be more linked up with the private sector – no representative from industry was in the group.

The two participants in the group (from science and NGO) suggested the following: 4 per 1000 should design a good promotion strategy, i.e. a branding and unique arguments which allow industry to identify with and build on 4 per 1000 values to promote their participation.

5. NGO

Improve Communications:

- Create a clear and understandable message
- Re-brand the name, create a communication campaign with its own tag.

More events and exchanges:

- Create project-based events that increase networking among actors (beyond knowledge sharing through the collaborative platform), objective level/team based or regional focus
- Increase exchanges at a personal level with a multi-stakeholder approach
- Host webinars/regular visual meetings

Network/Platforms:

- Expand the 4 per 1000 message beyond the usual audience
- Create a moderated Facebook group/Google group with partner/consortium organizations participating
- Create a climate label that could be attractive for consumers
- Synthesis of the workshops and Conclusion by the Grand Témoin, Professor **OLESEN**

In conclusion of the workshops synthesis presented by the five "rapporteurs", Professor OLESEN indicated that the issue on carbon in soils, how to achieve it, the benefits it will

bring, and the barriers to it, was highly complex. He also stressed the fact that it was a place where no one size fits all, and where many actors are involved, many actors that need to have a common understanding, which was not achieved at the moment. He considered that there was a clear need for working much better together, including the fact that none of the involved one should be seen as a study object but as a true partner in that work.

He said that another issue was how to facilitate the change needed and who would do it. He considered that the answer might actually be that not one key group could do it, but that everybody should work together. According to Professor OLESEN, the main challenge for the "4 per 1000" Initiative was to make these different groups of stakeholders work together more closely.

• Conclusion of the Forum by Dr. MAYAKI

Dr MAYAKI closed the Forum n°2 at 14h35.