International research and scientific cooperation program

Presentation by the STC
Based on material provided by the science leadership group
Scientific and technical committee

Who are we?

Countries where STC members are coming from.
Scientific and technical committee

Who are we?

- Dr. AMIRASLANI Farshad – Socio-eco natural resource management (Iran)
- Professor CHENU Claire – Soil scientist – soil organic matter (France)
- Dr. GARCIA CARDENAS Magali – Agroclimatology (Bolivia)
- Dr. KAONGA Martin – Agroforestry carbon biogeochemistry (Zambia)
- Dr. KOUTIKA Lydie-Stella – Soil scientist – soil organic matter (Rep of Congo)
- Dr. LADHA Jagdish – Soil fertility and plant nutrition (India)
- Dr. MADARI Beata – Soil scientist – C and N cycling (Brazil)
- Dr. RUMPEL Cornelia – Forester – terrestrial organic matter (Germany)
- Dr. SHIRATO Yasuhito – Agricultural and soil scientist (Japan)
- Professor SMITH Pete – Soils and global change (United Kingdom)
- Professor SOUDI Brahim – Agronomist – soil science (Morocco)
- Dr. SOUSSANA Jean-François – Plant physiologist (France)
- Dr. WHITEHEAD David – Crop physiologist – forestry (New Zealand)
- Dr. WOLLENBERG Lini – Natural resource management (USA)
Scientific and technical committee

*Missions*?

- propose a set of reference criteria for the evaluation of projects and actions founded on the principles and goals of the Initiative, as well as on the SDGs;

- formulate advice on projects, actions and programs;

- formulate proposals for the orientations of international scientific research and cooperation and for any cross-cutting issue;

- define, produce and/or validate the documents published in the resource center.
Suggested Governance of the 4 per 1000 International Research Program

- Forum Research college
- International Research and Scientific Cooperation Program
- 4 per 1000 secretariat
- 4 per 1000 research secretariat
- Scientific and Technical Committee
- Collaborations CCAFS, GSP, GRA,..
4 per 1000?

Start : a global estimate (Balesdent & Arrouays, 1990)

Soils have a potential major role in climate change mitigation

An aspirational goal

Today, at the local scale : an order of magnitude for a reference (top soil)

Maintain or increase SOC stocks
Soil organic carbon storage potential

Subsistence farming, none or low off-farm input soil degradation

Adoption of better management practices

Adapted from Lal, 2004
Why a research program?

- Providing evidence-based options for countries, stakeholders and the private sector and supporting the multi-partner initiative
- Help answer high level policy questions
  - action oriented
  - policy relevant research program
Why a research program?
Help answer high-level policy questions

- **National policies** NDCs, Land Degradation Neutrality, national development plans, etc.
  - Mitigating global GHG emissions
  - Contributing to food security, biodiversity and ecosystem services
  - Land-based climate change adaptation
  - Improving GHG inventories

- **Implementation**
  - What are the most efficient technical interventions?
  - Breakthrough technologies
  - Trade-offs between carbon for soils vs. other uses
  - Economics at national scale: benefits for farmers etc.
  - Evidence-based policies
  - Scenarios for soil carbon sequestration implementation
Four main themes

• Estimating the potential of soil carbon sequestration and associated benefits
• Developing practices adapted to specific soil and climate conditions
• Define and strengthen the enabling environment
• Monitoring, reporting and verification of soil carbon
PILLAR 1. Estimating the potential of soil carbon sequestration and associated benefits

- Mapping soil organic carbon (SOC) stocks and changes
- Assessing and mapping soil carbon sequestration technical potential depending on management systems and practices.
- Studying the biophysical and biochemical conditions for SOC sequestration (N, P, water).
- Assessing the vulnerability of SOC stocks and the duration of SOC sequestration in relation to stabilization processes.

- Assessing associated non-CO2 GHG emissions
- Studying the effects of carbon sequestration on yields and ecosystem goods and services.
- Assessing the impacts of increased soil organic matter on crop and pasture adaptation.
PILLAR 2 Developing practices adapted to specific soil and climate conditions

Provide knowledge for 4 per 1000 agricultural and forestry practices for soil carbon sequestration:

- design and co-design
- assessing their performance,
- assessing trade-offs and synergies (climate change, food security, SDGs)
- assessing costs and benefits at a range of scales

- Review
- Modeling
- Monitoring
- Set up show case systems.
Agricultural practices for soil carbon sequestration

Conservation agriculture

Integrated soil fertility management

Rangeland Management

Water management

Agroecology

Agroforestry

Organic fertilizers
PILLAR 3 Define and strengthen the enabling environment

Enabling environment to promote, perpetuate and reward relevant sustainable practices:

- effective governance
- institutional and organizational arrangements
- public policies
- incentive and regulatory instruments
- financial mechanisms
- land tenure rights protection
- education and capacity building

= f(time scales) ?

= f(geographical, societal, soil, climate contexts) ?

Improvements and innovations ?
PILLAR 4 Monitoring, reporting and verification

Elaborate metrics, methodologies and tools for MRV of SOC at different scales (farm, landscape, region, country)

- Direct and indirect methods for monitoring changes in soil organic carbon stock at field scale.
- Combining modeling, land use and remote sensing for assessment of farm to regional scale changes in soil organic carbon stocks & GHG.
- Long term monitoring of soil carbon stock changes in national inventories.
- Assessing *ex-ante* and *ex-post* soil carbon changes in sustainable development projects.
Research secretariat activities

- Interactions with the STC and with the Consortium
- International Events: COPs, OECD, FAO, GSP…
- Research activities and coordination across research programs
- Involvement in calls for proposals (EU)
- Scientific and technical publications
- Thematic Meetings
- Communication: Website, Newsletter
- On-line knowledge sharing platform
- Training and capacity building
### Example of international projects

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#### Involved institutions from:

- Australia, Austria, Brazil, China, Colombia, Denmark, France, Germany, Italy, Madagascar, New Zealand, Nigeria, Russia, South Africa, The Netherlands, United Kingdom, USA
- CASA network, Benin, Cameroon, France, Ivory Coast, Madagascar, etc.
- Argentina, Australia, Brazil, Canada, Chile, Costa Rica, France, Ghana, Ireland, Japan, Lithuania, New Zealand, Paraguay, Spain, USA, Uruguay
Montpellier 29th & 30th June 2017 – 2nd CONSORTIUM of MEMBERS

The soil C science policy international “ecosystem”

- FAO GSP, ITPS, AGMIP, EU FACCE, JPI, GEOGLAM
- GRA, CGIAR, CCAFS, WLE
- UNCCD LDN
- African CASA Network

1. Zero Hunger
2. Life on Land
3. Responsible Consumption and Production
4. Climate Action
5. Adaptation
Thank you for your attention!
Recent developments

- Publications on the topic in the scientific literature: minasny, chabbi, van groeningen, dignac etc
- Publications prepared by individual members of STC and of science leadership group (special issue in STILL journal)
- Many events: Chantilly, Rothamsted, World soil congress 2018
- Project of publication by the STC to explain the scope of the research program
Governance of the initiative

**THE FORUM OF PARTNERS**
- A CONSULTATIVE BODY
- Any organization sharing the principles and goals of the initiative
  - Focuses, collaboration, partnerships

**THE CONSORTIUM**
- A DECISION-MAKING BODY
- Any not-for-profit, non-commercial organization committing to the Initiative
  - Decisions on focuses, policy, work programmes, budget, indicators for inclusion in the project evaluation reference criteria, etc.

**THE SCIENTIFIC AND TECHNICAL COMMITTEE**
- A SCIENTIFIC BODY
- 14 scientific experts
  - Focuses for the research programme, scientific and technical advice for projects, indicators for the reference criteria, database for the resource centre, etc.

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The Executive Secretariat = AN EXECUTIVE BODY
- Providing support to the three bodies above

- Action plan
- Research program