

INITIATIVE

« **4 PER 1000** »

SOILS FOR FOOD SECURITY AND CLIMATE

Presentation of the

Scientific and Technical Committee (STC)



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The Scientific and Technical Committee as part of the governance of the initiative

The Initiative operates through four bodies:

- **The Consortium**, where decisions are taken,
- **The Forum**, where multi-stakeholder collaborations are fostered,
- **The Scientific and Technical Committee (STC)**, where scientific and technical expertise are provided,
- **The International Executive Secretariat** provides assistance and supports to the 3 other bodies.

The STC comprises 14 scientists or practitioners, all recognized for their scientific or technical competence on topics relevant to the 4 per 1000 Initiative. STC members are notably experts in the following disciplines: soil sciences, the carbon cycle, agronomics, land tenures, livestock farming, forestry, economics, political sciences and sociology, with the following areas of application: food security, adaptation or mitigation to climate change, and development. The composition of the STC assigns a significant role to expertise in the field. It takes into account the world's various regions and shall ensure a male-female balance.

STC members are appointed for a two-year term renewable once by decision of the members of the Consortium according to the process that will be put in place later on.

Specifically, the STC are able to:

- **propose** to Consortium members **a set of reference criteria for the evaluation of projects and actions** founded on the principles and goals of the Initiative as defined in the Paris Declaration, as well as on the Sustainable Development Goals;
- **formulate advices on projects, actions and programmes** at the request of the Executive Secretariat;
- **formulate proposals for the orientations of the international scientific research and cooperation programme** and for any cross-cutting issue submitted by the Executive Secretariat;
- **define and produce**, in conjunction with the Executive Secretariat, **the documents published in the resource center and**, when asked to do so by the Executive Secretariat, **validate the posting of documents on line.**

The STC carries out its assigned tasks by means of physical and virtual meetings with support from the Executive Secretariat. The members of the STC may appoint from among their members a STC chair and deputy chair. The STC chair and deputy chair may take part in meetings of Consortium members and Forum meetings.

Statements of interest shall be produced by each STC member and updated every year. STC members may provide advice for the development of activities and public policies only if they have demonstrated the absence of any conflict of interest.

The STC may consult as and when necessary any expert or actor considered relevant to its proceedings.

The Committee members serve in a voluntary capacity and are able to claim travel expenses.

International research and scientific collaboration program

The initiative includes an **international research and scientific collaboration program** which has four themes:

- Improve estimates of the baseline and of the potential of soil carbon sequestration (or loss) according to a large range of land management practices;
- Design and co-construction of agronomic strategies and practices for soil carbon sequestration, including an assessment of their performances and of trade-offs and synergies across multiple objectives;
- Metrics and methods for monitoring, reporting and verification (MRV) of soil carbon sequestration (farm, landscape, region, country);
- Institutional arrangements and public policies, including financial mechanisms, that aim at promoting and rewarding relevant practices.

This research program will be largely nested in existing international programs (e.g. the Global Research Alliance on agricultural greenhouse gases, the CGIAR programs on Climate Change Agriculture and Food Security and on Land Water and Ecosystems, the Global Soil Partnership, etc...). It aims to find synergies with existing initiatives as well as an added value by providing knowledge and tools from the local to the global scale.

The STC will closely collaborate with the international research program of the initiative and with other relevant international expert panels.

This document aims to present the 14 international experts, members of the Scientific and Technical Committee of the “4 per 1000” Initiative.



FARSHAD AMIRASLANI (IRAN)

Farshad Amiraslani has been involved in dryland management and research over the last 16 years. In particular, he has focused on intertwined elements of social, ecological and economic aspects in relation to natural resources management. He received his PhD from the University of Sydney in 2011 and has served as Assistant Professor (University of Tehran) since then. He has been a Cheney Fellow (University of Leeds) and Research Fellow at Chinese Academy of Sciences (UNEP-IEMP). He has also worked in Forest, Rangeland and Watershed Management Organization in Iran for five years. He has also worked in International Desert Research Centre (University of Tehran) for two years.

He has been elected or invited for various consultancies and publication assignments for the UN and international organizations over the past. For instance, He has been recently elected as National Consultant for Land Degradation Neutrality (LDN) initiative supported by the UN Convention to Combat Desertification (UNCCD). He was elected in 2012-13 as one of the twelve global members to serve on the Ad Hoc Working Group on Scientific Advice (AGSA) to design from scratch a new mechanism for science-policy communication for the UNCCD. In that regard, a Science-Policy Interface document and an ISI paper in a leading journal have been published.

At national level, he has served as a four-year committee member for formulating a National Action Plan to Combat Desertification and served as Assistant to National Project Director for Carbon Sequestration Project (in cooperation with UNDP and GEF). He also served as an advisor to Internationalization to the Persian Gulf Science and Technology Park (PGSTP) between 2011 and 2013. He also acted as the Chair of Scientific Committee - Food Security Conference in Western Asia and Northern Africa held by PGSTP in 2013.

At University level, he has been elected to serve as a member of International Fund-raising Steering Committee as well as Assistant Dean for Internationalization (Faculty of Geography). He has won several international awards and fellowships and published over 50 publications.

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CLAIRE CHENU (FRANCE)

Claire Chenu is a soil scientist with a PhD in Applied Geology (1985). She is currently Professor of soil science at AgroParisTech, a French technical university in the field of biology, agronomy, food and environmental sciences after being a research scientist at INRA, the national French institute for agronomy research, for 20 years.

Her research deals with soil organic matter, which has a prominent role in ecosystem services provided by soils. She investigated the formation and properties of organo-mineral associations and the roles of organic matter in soil physical properties. She focuses presently on the processes explaining the persistence of organic matter in soils (accessibility and organo-mineral interactions) and on C dynamics and sequestration in agricultural soils as affected by cropping practices.

As a full professor she is in charge of or participates to engineers program and masters programs courses at AgroParisTech on basic soil science, biogeochemistry and functional ecology, soil organic matter. She is also involved in training courses for professionals and executives on soils.

Claire Chenu is involved in the science-policy-practice interface and in awareness raising activities on soils. She chairs the scientific committee of the GESSOL program, a multidisciplinary research program of the French ministry of Ecology devoted to soils. This program aims at providing scientific basis and appropriate tools to decision makers and environmental managers, in order to improve the consideration of multifunctionality of soils and reduce risks of degradation.

She is vice-chair of the CSPNB (Conseil Scientifique du Patrimoine Naturel et de la Biodiversité), an advisory committee on biodiversity and natural heritage to the French Minister of Ecology. She is member of the steering committee of the National Research Program on Soils as a Resource in Switzerland, and of the scientific committee of the German Biodiversity Exploratories.

She participates, as a lead author, to the IPBES (International Panel on Biodiversity and Ecosystem Services) “Europe and Central Asia” on-going evaluation.

She is co-Chief Editor of the journal “Soil Biology and Biochemistry”.

She has been nominated Special Ambassador for 2015 the International Year of Soils by the FAO.

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MAGALI GARCIA CARDENAS (BOLIVIA)

Magali Garcia is a Bolivian Researcher dedicated since 1990 to the study of agroclimatology and climate change impacts on crops. Initially dedicated to the study of technical and physiological issues of drought resistance and agroclimatic adjustments, later her specialization broaden towards the analysis of climate change impacts on the farming productions systems especially under small farming conditions. She has a Doctorate from Belgium in Applied biological Sciences with more than 20 year of experience on scientific research, being tenure researcher on climatology since 1995 at the University of La Paz, Bolivia. She has a long list of publications in the area of agroclimatology and climate change adaptation of small rural communities. She also hold two Master Degrees on Water Resources from the Netherlands (Wageningen Agricultural University) and Belgium (Katholieke Universiteit Leuven) and a Postdoctoral position at the University of Idaho in the United States.

She had a large coordination with the Bolivian National Program of Climate Change in the adaptation division, which gave her experience on cross work related to the other conventions of UN (Biodiversity and Land Degradation and Desertification). She was part of the adaptation Division since the early years of the studies of Climate Change then she has a large run on this topic. Her experience runs from developing to developed countries where she had long stays and prepared herself in the area of adaptation to climate change impacts especially in the areas of agriculture and water resources. She is fluent in English (she did all her postgraduate and postdoctoral activities at English speaking programs) and in Spanish (her mother tongue), having working knowledge of French, Portuguese and Dutch.

Her experience in the area of adaptation, comes from the direct contact with the general population of several rural communities of the South American Andes but also from being Director and coordinator of several national and international projects all related to adaptation to climate variability and change and early warning schemes, promoting actions for sustainability through the reduction of emission of greenhouse gasses.

Working directly with communities teach several lessons to external actors, because communities deal with every day climate risks and demonstrate the capacity to develop tools and skills to live with climate change impacts in base of the management of the already changing climate conditions. Many communities, which are already facing the impacts of glacier retreat or who are feeling the temperature increases, are changing millenary farming systems towards new production patterns on their own, not even waiting for the government or local institutions to help or support them, and those lessons of successful and practical living strategies are important to be learnt for the benefits of policy makers and scientific community to translate them in applicable actions which could actually benefit societies and that is the area where her main interested of work goes.

She also has large experience working with international organizations such as FAO, UNESCO, HELVETAS and others.

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BEVERLEY HENRY (AUSTRALIA)

Beverley Henry is a plant physiologist with over 30 years' experience in academic, government and industry roles related to agricultural productivity and environmental management. She has a PhD from University of Queensland, Australia and is currently an Adjunct Associate Professor at Queensland University of Technology, a member of the Australian Government's Emissions Reduction Assurance Committee, and an independent consultant.

Her early research focussed on effects of environmental stress factors on plant function and growth, before shifting to more applied analyses on areas of sustainable agricultural production and natural resource management including quantifying and managing greenhouse gas emissions and sequestration, adaptation to climate variability and climate change, and sustainability reporting. She has a particular interest in the linked science/policy/industry challenges facing management of ruminant livestock in arid and semi-arid environments for food and fibre production while combating the risks of land and soil degradation. As a member of the ERAC she contributes to assessing compliance with integrity requirements of methods for crediting carbon abatement under the Australian Government climate change policy.

She has had opportunities to participate in or lead a number of national and international projects, initiatives and advisory panels on agriculture, climate change mitigation and adaptation, land degradation and food security. Examples relating to soil carbon include the Industry Advisory Group for Australia's National Soil Carbon Program (2012-2015), the FAO Livestock Environmental Assessment and Performance Partnership Technical Advisory Group for 'Soil Carbon Guidelines', and a Global Environment Fund review project on *Sustainable Land Management for Environmental Benefits and Food Security*. In 2009, she was a recipient of The Ecological Society of America Sustainability Science Award.

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LYDIE-STELLA KOUTIKA (CONGO)

Lydie-Stella Koutika was born at Pointe-Noire, Congo in a family of 8 children. Both her parents are retired teachers. She went to school in Congo and got her first university degree in soil science and agro chemistry at the Timiriazev Institute in Moscow, Russia in 1991. She holds a PhD in soil science from the University of Nancy II, current Université de Lorraine, France in 1996. She has lived and worked in different countries such as Russia, the Netherlands, Nigeria, Cameroon, Belgium and the UK. Currently she is living and working at CRDPI, Pointe-Noire.

For the duration of her career, she has been fascinated with soil organic matter and phosphorus studies in different ecosystems. During her Ph D program, she conducted studies on dynamics of soil organic matter in the pastures established in the state of Para (Brazilian Amazonia) after deforestation. The studies revealed carbon accretion in the pasture ecosystems, with however a further deterioration in structural and physicochemical properties of pasture soil mainly in the topsoil. Within IITA, she conducted research on soils of planted fallow linked to mixed crop productivity in the forest benchmark site (southern Cameroon) to implement results found in other countries of Central Africa (Congo, Gabon, CAR, DR Congo etc...). That research showed that planted leguminous fallows (*Pueraria* and *Mucuna*) improved nutrient status of the soils and crop yields. However, to attain higher productivity, it is necessary to combine leguminous fallow management and use of fertilizers.

She also conducted studies on soil fauna i.e., how earthworms (*Lumbricus rubellus*) enhanced the humification process in the grassland located around Wageningen (province of Gelderland, the Netherlands) in soil restoration process. The enchytraeids (*enchytraeus fragmentosus*) which essentially consumed the fine fractions in both bulk and earthworm casts from coarse texture soil, also contributed to the humification process. Under la Conservation de la Faune supervision, she studied soil properties and nutrient status in the cropping systems of the northern part of Congo-Brazzaville. In the inherently nutrient-poor and degraded soils of the area, the introduction of planted leguminous fallow was needed and was strongly advised to the rural communities.

At Rothamsted in the UK, she conducted research on how to increase P microbial biomass in the high P fixing Kenyan soils by combining inorganic and organic fertilizers in order to allow the release of P along the plant growing period. At CRDPI in Pointe-Noire, she is currently working on forest plantations, especially on soil properties (soil organic matter and phosphorus) in the pure eucalyptus or mixed with a nitrogen fixing species plantations established in the coastal plains near Pointe-Noire in the south western part of Congo. In the sandy, nutrient-poor soils of area, the nitrogen fixing species such as *Acacia mangium* improved nitrogen status to avoid the drastic degradation of the inherently poor soils and induced carbon accretion.

She is single and also a novel writer. She is strongly dedicated to her catholic faith and to the development of Africa. In December 2014, she became a laureate of African Union Awards.

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MARTIN LECKSON KAONGA (ZAMBIA)

Martin Kaonga is Director of Cambridge Centre for Environment in the United Kingdom. He obtained a PhD in agroforestry carbon biogeochemistry from Cambridge University (UK). Martin has more than 15 years' experience in terrestrial ecosystem carbon science and is the author of more than 15 peer-reviewed papers, and the editor of a book entitled 'Agroforestry for Biodiversity and Ecosystem Services: Science and Practice.'

Following a PhD in plant and soil carbon storage and fluxes in agroforestry systems, he took up a position as Director of Conservation Projects at A Rocha International (ARI) in the United Kingdom. Managing a climate change mitigation projects in northern Ghana, Peru and South Africa, he validated baseline plant and soil carbon stocks and simulated changes over a 50-year project cycle using the CO2Fix model. He also developed an aggregator model for recruitment of new project sites and for carbon accounting.

After two years in post at ARI, Martin was appointed as the Director of Science and Conservation, responsible for conservation research and community-based conservation projects in 19 countries. He designed and directed four programmes: Tropical Forest Programme; Mediterranean Conservation Science Programme; Marine and Coastal Research Programme; and European Conservation Programme involving nine countries in western Europe. He directed over 50 projects in 19 countries, including terrestrial and aquatic biodiversity and carbon research projects. These projects had strong components of sustainable agriculture and food security, and climate change adaptation and mitigation. Martin designed and led three carbon research projects, which assessed altitudinal and climate variability effects on biodiversity and carbon dynamics (France); vegetation carbon dynamics and floristic diversity in dry forests of in Eastern Ghats (India); and SOC storage in forest/agroforest ecosystems in Ghana.

Prior to his career at ARI, Martin taught a postgraduate climate change course at University of East London (UK), an undergraduate agroforestry course at the University of Zambia, and agroforestry and agricultural courses at Natural Resources Development College (Zambia). He has also validated eight Plan Vivo agroforestry/forestry and REDD+ projects located in Angola, Fiji, Malawi, Guinea, Mozambique, Tanzania, Sierra Leone, and Uganda.

His research has focused on field studies and modeling of soil organic carbon (SOC) changes in agricultural, agroforestry, and forest ecosystems. He has quantified effects of tree species on SOC storage and fluxes; simulated SOC changes using CO2Fix and RothC models; assessed biochemical effects of litter on SOC dynamics; developed conceptual models of carbon flows in ecosystems; and assessed altitudinal gradient and climate variability effects on ecosystem carbon dynamics. He has also developed fractal and allometric functions for estimation of tree carbon stocks. Martin is also interested in developing methods for field estimation of SOC and in developing digital soil maps for enhancement of food security.

Martin Kaonga is a member of the Institute of Professional Soil Scientists (IPSS) and Institution of Environmental Sciences (IES). His advisory roles have included sitting on the Darwin Expert Committee (UK), Climate Stewards Board, and Plan Vivo Advisory Group.

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JAGDISH LADHA (INDIA)

Dr. J. K. Ladha has devoted more than 32 years to aspects of sustainable management of agriculture and natural resources for increasing food security and environmental quality in developing countries. He is an expert of soil fertility and plant nutrition; serving at different positions since 1980. Currently, he is a Principal Scientist, and an adjunct senior scientist at the Columbia University; associate in the Agricultural Experiment Station at the University of California-Davis. Dr Ladha provided leadership to the Cereal System Initiative System for South Asia and the Rice-Wheat Consortium Project that aims to sustainably enhance the crop productivity. He was a “Frosty” Hill Fellow at Cornell University (July 07–June 08) and an adjunct professor of Soil Science at the University of the Philippines (1990-2004). He was born and grew up in Gwalior, India, and earned his PhD from Banaras University in 1976.

Dr. Ladha is recognized internationally as an authority on sustainable resource management for increasing food security and environmental quality. He has made immense contributions to international agriculture through his research, training, and extension activities in several Asian countries (Bangladesh, India, Nepal, Pakistan, Philippines, and Thailand) on problems across national and regional boundaries. Dr. Ladha is one of those unique scientists who have demonstrated success in conducting both basic and applied research. He has had an opportunity to pursue the full spectrum of basic, strategic, and applied research to find insights and develop technologies to solve farmers’ problems.

Dr Ladha has published widely on issues related to sustainable and conservation agriculture. The impact of Dr. Ladha’s work is evident from his exceptionally high h-index for citations (Google Scholar, 69; Web of Science, 51; Scopus, 50). He served on the editorial boards of several international journals including the Regional Editor of Biology and Fertility of Soils. He has been involved with several international advisory/scientific review panels. He supervised 35 masters and doctoral students from a dozen countries.

He is a fellow of the American Association for the Advancement of Science (AAAS), American Society of Agronomy (ASA), the Soil Science Society of America (SSA), the Crop Science Society of America (CSSA), the Indian Academy of Agricultural Sciences (NAAS), and an associate member of the Philippine Council of Agricultural Research (PARC). He is a recipient of several awards and honors notably, the Third World Academy of Sciences Agriculture Prize 2015, the International Crop Science Award 2015, the International Service in Agronomy Award 2011, International Soil Science Award 2010, International Plant Nutrition Institute Science Award 2009. In 2000 and 2004, the CGIAR awarded the Chairman’s Excellence Science Award for Outstanding Scientific Partnership and the prestigious King Baudoin Award for Outstanding Research to the Rice-Wheat Consortium in which J. K. Ladha was the key scientist and IRRI’s coordinator.

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BEATA EMOKE MADARI (BRAZIL)

Beata Madari is agronomist (1994) with PhD (1999) in Soil Science from the Szent István University, Gödöllő, Hungary. She worked as researcher at the National Soil Research Center of the Brazilian Agricultural Research Corporation (Embrapa) between 2002 and 2005.

Since 2005 she is a scientist at the Embrapa National Research Center for Rice and Beans and is Professor in post-graduate training at the School of Agronomy of Federal University of Goiás, Brazil. She was leader of the Embrapa Research Network on Greenhouse Gas Emissions from Grain Crop Production Systems (Embrapa Fluxus Network) and is presently member of the Executive Committee of the Climate Change Portfolio of Projects of Embrapa. Accordingly, she has experience in carbon and nitrogen cycling in terrestrial ecosystems, particularly regarding tropical acid soils under annual crops, but also in integrated crop-livestock-forestry systems. She has knowledge on soil carbon dynamics and physical and chemical fractionation of soil organic matter, including for modelling. She has worked with methods of soil carbon determination using wet and dry combustion and infrared spectroscopy.

She is Fellow Scientist of the Brazilian Council on Science and Technology Development (CNPq) and reviewer of several international journals.

She has also contributed to the IPCC on HWP, Wetlands and Soil N₂O and to the UN Global Compact Initiative (unglobalcompact.org).

She was member of FAO's Livestock Environmental Assessment Partnership's technical advisory group on soil organic carbon stock change.

She is currently visiting scientist at the French Joint Research Unit (UMR) Eco&Sols in Montpellier, France.

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CORNELIA RUMPEL (GERMANY)

Cornelia Rumpel is 47 years old and a researcher working for the French National Research Center (CNRS) at the Institute of Ecology and Environmental Sciences Paris. She studied forestry in Germany and Scotland and received a master diploma from the Ludwig-Maximilians University at Munich, Germany in 1994. Afterwards, she worked as a research scientist at the Brandenburg University of Technology in Cottbus, Germany, where she obtained her PhD degree in natural sciences in 1999.

After two years of postdoctoral research at the Technical University in Munich, Germany, she was hired by CNRS and moved to France. In 2006, Cornelia defended her habilitation for research supervision at the University Pierre et Marie Curie in Paris. In 2008, she was promoted Director of Research at CNRS.

During her 20 years lasting carrier, she studied the origin and fate of terrestrial organic matter, aiming to understand the mechanisms controlling carbon sequestration in soils. Her studies concerned various spatial and temporal scales in different environments ranging from soils and sediments in mining areas to natural as well as managed ecosystems, including those affected by fire. Her work was carried out in temperate and tropical climates and the results of her research changed of a number of paradigms. Since a few years, her interest is focused on the development of fertilization strategies and agricultural techniques to reduce greenhouse gas emissions and to foster carbon sequestration in soil.

She has supervised 15 PhD students to successful completion of their work. She is engaged in national and international research projects and she is actively taking part in national and international research assessments. Her work was published in more than 140 papers in international peer reviewed journals, including nature and she was invited more than 30 times to present her work at national and international conferences.

She received a prize from the French government for research excellence and has been selected a Web of Science Highly Cited Researcher in 2016. In addition to her research activities, she also serves on the editorial board of five international journals and the Biogeosciences Executive Committee of the European Geophysical Union.

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YASUHITO SHIRATO (JAPAN)

Received Bachelor (1989) and Master (1991) degree of Agricultural Science from Tohoku University, Japan. Majoured in soil science and mainly working on soil genesis and classification of Andosols (Volcanic ash-derived soils).

After finishing master course, from 1991 to 1993, member of Japan Overseas Cooperation Volunteers of JICA in Paraguay, South America, as soil scientist and working in an Agricultural high school in Paraguay for teaching and demonstrating soil organic matter management.

After coming back to Japan, from 1993 to 1995, he worked in an Agricultural school in Japan as technician mainly on Horticulture.

In 1995, employed in Ministry of Agriculture, Forestry and Fisheries, Japan, he worked on soil degradation and desertification in China and Mongolia from 1995 to 2005 and working on soil carbon dynamics mainly on modeling from 1999 to present: Validation and modification of the Rothamsted Carbon (RothC) model by using long-term field experimental datasets and mechanism studies on soil organic matter dynamics. Main achievements are modification of the RothC model for Andosols and for paddy soils, and development of country scale calculation system of soil carbon in agricultural land, which is now used for Japanese National Inventory Report of Greenhouse Gases for UNFCCC.

April 1995-September 1995: Researcher, Division of Research Planning, National Grassland Research Institute,

October 1995-March 2001: Researcher, Division of Soil Science, National Institute of Agro-Environmental Sciences,

April 2001-September 2005: Senior Researcher, Department of Global Resources, National Institute for Agro-Environmental Sciences,

October 2005-December 2007: Research Officer, Ministry of Agriculture, Forestry and Fisheries,

January 2008- March 2010: Senior Researcher, Natural Resources Inventory Center, National Institute for Agro-Environmental Sciences,

April 2010- March 2016: Leader, Research Project for Mitigation of Global Warming, National Institute for Agro-Environmental Sciences,

April 2016- present: Head, Soil Biogeochemistry and Modeling Unit, National Agriculture and Food Research Organization, Institute for Agro-Environmental Sciences (NIAES).

As domestic activities, Director of Japanese Society of Soil Science and Plant Nutrition from 2013 to present, Editor of Japanese Journal of Soil Science and Plant Nutrition from 2009 to 2012, Executive Secretary of Japanese Society of Pedology from 2000 to 2005 and from 2008 to present, and LULUCF (Land Use, Land Use Change and Forestry) Sub-committee of Committee for developing greenhouse gas inventories, Ministry of Environment from 2008 to present.

As international activities, Review editor of 2013 Revised Supplementary Methods and Good Practice Guidance Arising from the Kyoto Protocol by IPCC from 2013 to 2014, and Editor of Journal "Soil Science and Plant Nutrition" from 2013 to present.

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BRAHIM SOUDI (MAROCCO)

Brahim Soudi, born in the Province of Taroudant, in 1955, is Agronomist from Hassan II Institute of Agronomy and Veterinary Medicine (IAV), in 1982 and he obtained his PhD degree at the Catholic University of Leuven, Belgium in soil Sciences and biological chemistry Department. He stayed at the USA (University of Minnesota and University of Cornell) in 1991 as part of his Post-Doctorate on modeling of Nitrogen and Organic Matter mineralization. He is a professor at the IAV since 1982 where he is responsible for several courses including: basic soil science, management of soil organic matter, biogeochemical cycling, and recycling of organic waste, composting and recycling compost, soil and water monitoring systems under intensive agriculture, environmental assessments, etc. He also coordinated several training modules for the benefit of technical staff within Ministry of Agriculture and Ministry of Environment.

In the area of scientific research, he participated and coordinated several research projects for national institutions and in the framework of international cooperation, particularly in the following fields: impact of intensive agriculture on soil quality and water, the status of organic matter in agricultural systems in arid and semi-arid zones, modeling of the transfer and transformation of nitrogen, the dynamics of organic matter in salt-affected lands, establishment and optimizing soil and water quality monitoring in irrigated areas, soil degradation under irrigation, etc. In connection with this research activity, he supervised many works graduation and PhD theses. He is author and co-author of over 60 scientific papers and author of books and guidance manuals. It is also reviewer for some scientific journals.

He worked for several years as General Secretary of the Moroccan Association of Soil Science; he is also a member of several associations active in the field of environment and sustainable development.

Recently he acts as an expert for international organizations (FAO, GIZ, EIB, KfW, UNDP, World Bank, ADB, USAID, etc.) in the field of environment, climate change adaptation and fight against desertification, strategies elaborating, etc. He also recently coordinates scientific consortiums on Initiative (4 per 1000) and for Moroccan Initiative "Triple A or Adaptation of Agriculture in Africa".

Brahim is certified facilitator by various organizations and has a significance experience (since 2002) in institutional analysis and arrangements around development programs and projects.

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JEAN-FRANCOIS SOUSSANA (FRANCE)

Since 2010, Jean-Francois Soussana is Scientific Director for environment at INRA, Paris, France. He obtained his PhD in plant physiology at USTL Montpellier in 1986 after an engineer degree in agronomy. After becoming a senior scientist he led during 8 years an INRA research unit on grassland ecosystems and global change.

Since 1998, he is member of the Working Group II of IPCC and was Lead Author for the 3rd., 4th. and 5th. Assessment Reports and shared with all IPCC authors the Nobel Prize for Peace in 2007. He also contributes to scientific expertise for FAO (e.g. State of Food and Agriculture, 2016). He has coordinated national and European (EC FP5 and FP7) research projects on climate change and agriculture. He co-chairs the Integrative Research Group of the Global Research Alliance on agricultural greenhouse gases (46 countries) and the Steering Council of AgMIP, an international modeling program on climate change impacts on agriculture. He is a member of the governing board of the Climate KIC of the European Institute of Technology.

He has led the sectorial committee on ecosystems and sustainable development of the French research agency (ANR) and the scientific advisory board of the joint programming of research by 21 European countries on agriculture, food security and climate change (FACCE JPI). In preparation of COP21, he organized the 3rd. Climate Smart Agriculture Conference (Montpellier, 750 participants) and a major open science conference 'Our common future under climate change' (Paris, 2,200 participants). He is also a member of the Scientific and Technical Committee of the Lima-Paris initiative "4 per 1000. Soils for Food Security and Climate" which has been signed during the climate negotiations of COP21.

He has published close to 150 refereed research papers in international journals as well as two books and a dozen of book chapters. He has developed novel experimental and mathematical modelling approaches to the impacts of climate change on agro-ecosystems and food supply and to the role of agricultural management and biodiversity for the carbon and nitrogen cycles and for greenhouse gas emissions.

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DAVID WHITEHEAD (NEW ZEALAND)

David Whitehead studied as an undergraduate at the University of York, UK and started his research career in crop physiology at Rothamsted Research and the University of London. This led to Post-Doctoral work at the University of Edinburgh investigating forest water use in relation to wood structure. He moved to New Zealand where he continued to investigate the processes regulating carbon, water and energy exchange in *Pinus radiata* forests. Subsequently David's focus changed to investigating the response of forest ecosystems to elevated carbon dioxide concentration and carbon exchange in indigenous forest ecosystems. Most recently, He continues his work on above- and below-ground carbon balance in grazed grassland systems, with a focus on soil carbon and nitrogen dynamics.

David Whitehead is a Principal Investigator with the New Zealand Agricultural Greenhouse Gas Research Centre and leads a major national research programme into measuring and modelling changes in soil carbon, leading to management options to increase soil carbon stocks. He is also leading a new, collaborative research programme to investigate ways to manipulate soil carbon inputs to grasslands that will lead to maintaining soil carbon but reduced leaching losses of nitrogen and nitrous oxide emissions.

The outcomes of David's work at the science/policy interface are to determine appropriate and feasible management practices that will increase the resilience of agricultural systems to climate change and enhance adaptation, mitigate greenhouse gas emissions and, through improved productivity and ecosystem services, support food security.

He received a certificate acknowledging his contribution to the Nobel Peace Prize for 2007 awarded to the Intergovernmental Panel on Climate Change and was elected as a Fellow of the Royal Society of New Zealand in 2012. He continues to mentor PhD students and teach undergraduate courses in plant and soil biology.

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LINI WOLLENBERG (USA)

Lini Wollenberg leads the low emissions development work of the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) and is a Research Associate Professor at the Gund Institute for Ecological Economics and Rubenstein School of Environment and Natural Resources, University of Vermont. The program helps to improve estimates of GHG emissions in smallholder farm systems, provide tools and information to decision-makers and support implementation of low emissions agricultural practices and policies at large scales.

Lini was previously the Director of the Center for Sustainable Agriculture at the University of Vermont (2007-2009); Principle Scientist at the Center for International Forestry Research (CIFOR) (1994-2005); and Program Officer for Asia's Rural Poverty and Resources Program at the Ford Foundation (1991-1994). She is a member of the Forest, Trees and Livelihoods editorial board. She received her BS, MSc, and PhD degrees in natural resource management from the University of California, Berkeley, USA. Her PhD dissertation examined soil conservation among upland farmers in the Philippines.

Areas of Lini's expertise include climate change mitigation and land use, local governance of natural resources, environment and development policy, community-based forest management, participatory action research and adaptive collaborative management. She has worked primarily in Asia, especially Indonesian Borneo.

Lini has produced over 70 publications and assisted in more than 85 publications of research partners.

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