

INSII-I/15/Report



**Food and Agriculture
Organization of the
United Nations**



Report of the Workshop “Establishment of the International Network of Soil Information Institutions (INSII)”

Rome, Italy, 8-10 December 2015

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**FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
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1. Opening of the workshop

The first workshop of the International Network of Soil Information Institutions (INSII) was held at the headquarter of the Food and Agriculture Organization of the United Nations (FAO), Rome, Italy from 8 to 10th of December, 2015.

The meeting was opened by Mr. Olcay Unver (Deputy Director of the FAO Land and Water Division). He highlighted the importance for new global soil information for evidence decision making and as a basis for reporting on the Status of the World's Soil Resources. He also emphasized the fact that never before, national soil information institutions with significant country representation (60 countries) have met and discussed a global soil information system. He has confidence that on this basis, the GSP Pillar 4 can be successfully implemented.

2. Tour de table: outstanding expectations

Mr. Vargas, Secretary of the GSP, invited the participants to introduce themselves and their expectations towards the workshop. He stressed that concrete outcomes from this first INSII meeting are expected and will be reported to the next Plenary Assembly in May 2016. The outstanding expectations of the participants are herewith summarized:

- Improve soil information to support important applications such as food security, climate change adaptation and soil restoration;
- Integrate soil information systems with decision making processes (communicate with the governments);
- Understand new methodologies and techniques for data collection and analysis;
- Bring national data into the international context;
- Find alternatives to improve data sharing under common data policies;
- Build information systems at national, regional and global levels for better decision making on the ground;
- Disseminate soil information as broadly as possible, to decision makers, to the public, and especially to the farmers.

Countries that already have well developed soil information systems (e.g. Czech Republic) expressed their hope to explore ways to further improve in the process of data collection and analysis.

3. Introduction to the workshop

An introduction to the workshop was provided in order to familiarize participants with the GSP implementation process. The rules of procedure state that the GSP secretariat coordinates and facilitates the implementation process. It was noted that Pillar 4 is the first pillar to have an advanced implementation plan that was developed by a working group facilitated by Mr. David Rossiter (as member of the GSP Secretariat) since December 2014. The objective of the workshop was to finalize the development of the Pillar 4 implementation plan and establish the International Network of Soil Information Institutions. This is very timely as the International

Year of Soils has created a momentum recommending the need of having soil data and information for any activity related to soil management.

The GSP secretariat is expected to report to GSP partners in the upcoming 4TH GSP Plenary Assembly, therefore the expectations are that finally the establishment of the Global Soil Information System will become a joint reality.

4. Introduction to Pillar 4 implementation plan

Mr. Rossiter presented an overview of the draft Implementation Plan for Pillar 4. The Pillar 4 working group consisted of the Pillar 4 representatives from each Regional Soil Partnership and a representative from the Intergovernmental Technical Panel on Soils (ITPS). The working group has developed a draft implementation plan that was subject to various iterations with regional soil partnerships and focal points. Comments were provided and incorporated into the current version that was distributed to all workshop participants.

It was stressed that the guiding principle of the process was to identify feasible actions that will allow the implementation of the agreed Pillar 4 Plan of Action that was endorsed by the second GSP Plenary Assembly. Therefore, special attention was paid to avoiding the introduction of new products and activities which are not considered by this plan. The detailed components of the draft implementation plan were then presented while providing the opportunity for questions and answers that emerged from the floor.

5. Discussion of the Pillar 4 implementation Plan

Following the agenda, a general discussion of the draft Pillar 4 Implementation Plan (P4IP) took place and addressed many issues ranging from general to very specific components of the plan. This session was chaired by Mr. Luca Montanarella (ITPS Chair). The general discussion pointed out the need to revise the structure of the document, and that the deliverables and the timeline for implementation shall be clarified. Questions were raised about the budget and great attention was given to the governance section of the plan. During the discussion, it was ensured, that the recommendations, objectives and tasks set by the Pillar 4 Plan of Action are completely and correctly included in this implementation plan.

As the discussion started to address specific issues, it was agreed to review the plan in a systematic approach by chapter from the beginning, and by allowing live-modifications to the text when consensus was reached. The following components were prominent in the discussions:

5.1 Structure of the P4IP

Even though the current version was very closely oriented along the Pillar 4 Plan of Action, it was the general feedback that the P4IP should easily be understood by non-experts as well, and the structure should allow quick access to the main objectives, the governance, and how the various tasks will be implemented. Most importantly, a new section “Rationale and Background” was added.

A new structure for the draft implementation plan was then endorsed, with the aim to enhance its readability.

5.2 Governance

The workshop participants underlined the need for a diagram showing the governance of the Pillar 4 Implementation. Thereafter, the structure of the governance was graphically represented and information about the role and composition of the GSP Secretariat, the INSII network, the Pillar 4 working group (P4WG), the Regional Soil Partnerships and the Global Soil Spatial Data Infrastructure Centre (GSSDIC) were provided. The terms of reference (ToRs) for each governance element were jointly developed and were included as Annexes in the P4IP. Particularly, it was stressed that as per the GSP’s Rules of Procedure, Annex I-g: Guidelines for the development of Plans of Action of the GSP Pillars, “implementation will be coordinated and facilitated by the Secretariat in close consultation with the interested Partners”; this indeed places an important consideration of the GSP Secretariat for the Governance of the P4IP. A discussion about INSII was held and it was agreed that almost all participants to the workshop were the national soil information institutions that were nominated by the governmental focal points, other GSP Partners interested to join Pillar 4 implementation and also diplomats/government officers representing FAO member countries. Thus, these institutions will constitute INSII members as soon as the P4IP is finalised and shared with the GSP Plenary Assembly. As of today, besides the 60 participating countries, INSII may also include other GSP partners who could not join this workshop but that are interested to become INSII members.

The role of the Regional Soil Partnerships was defined as critical for implementing actions at regional/national levels (a clarification was made regarding a GSP partner being also member of its related Regional Soil Partnership and thus INSII). In this framework, it was underlined the importance of having a tight connection between the global implementation plans and the regional implementation plans. Indeed, the Secretariat informed that the latter were/are developed as a regionalization of the endorsed GSP Plans of Action.

The Pillar 4 Working Group (P4WG) is meant to steer the execution process of the P4IP. Its composition was agreed as follows:

- Mr. Ronald Vargas (GSP Secretariat)
- Mr. Neil McKenzie (ITPS)
- Mr. Christian Omuto, African Soil Partnership
- Mr. Rodelio Carating, Asian Soil Partnership

Ms. Mayesse Aparecida Da Silva, Central America, the Caribbean and Mexico Soil Partnership
Mr. Allan Lilly, European Soil Partnership
Mr. Ramazan Kuziev, Eurasian Soil Partnership
Mr. Rachid Moussadek, Near East-North Africa Soil Partnership
Mr. Thomas Reinsch, North American Soil Partnership
Mr. Mike Grundy, Pacific Soil Partnership
Mr. Federico Olmedo, South American Soil Partnership
Mr. Rainer Baritz, Chair of Pillar 5
tbd, Representative of the Global Soil Spatial Data Infrastructure Centre

The P4WG reports progress to INSII and the GSP Plenary Assembly in coordination with the GSP Secretariat (as responsible for preparation of documents subject to PA attention). The coordinating/facilitating role of the Secretariat includes the link to other Pillars and GSP bodies. The ITPS is a scientific body of the GSP will provide scientific advice and guidance to the P4IP process. The suggestion by some workshop participants to include external parties with strong technical competences was rejected. Because of the close interaction with Pillar 5, it is important to have it represented in the P4WG as well.

In accordance with the draft P4IP, a data centre (GSSDIC) is needed to back up the soil data infrastructure. The selection of an institute or organization to serve as the GSSDIC will be coordinated by the P4WG in a transparent process, based on an open call launched by the GSP secretariat. The open call will give legitimacy to the selection. The nominated institute should then closely cooperate with FAO SoilSTAT.

While INSII will play the role of the decision making body for the P4IP, in accordance with the GSP rules of procedure, all the political decisions are deferred to the Plenary Assembly, which role is not negotiable.

5.3 Data policy

As a very sensitive matter, this was referred by various participants in many occasions. The main issues were: who will host the data? What is the IP policy to use? How data will be shared (this will build on national information about the level of detail with which data will be shared). The concerns about the data policy were also related to the fact that many countries have conflicts and/or are afraid of sharing primary data. At this regard it was suggested to have tailor made and flexible approaches for data collection and sharing. The design of web-based data exchange (distributed system) vs. centralized components was discussed. As much as possible, data remain with the data owner, and are distributed by the owner.

The need for a generic conduct of ethics about data sharing was agreed. The respective writing assignment was transferred to the P4WG. Additionally, it was underlined the need for a legal agreement on data sharing between the institutions providing the data and the FAO. The GSP Secretariat was charged with exploring legal solutions to this issue. After a consultation with FAO's Legal Office, it was clarified that data sharing between member countries and FAO is a

common practice, since FAO already hosts various global information systems, and since a standard data policy has already been developed and applied; it is based on a formalized procedure between FAO and the given member country, usually building on a bilateral Memorandum of Understanding. However, it is important to clarify that under this arrangement FAO cannot forward and release data to third parties.

5.4 Products of the Global Soil Information System

The discussion mainly focused on the feasibility of the activities, the timeline and the budget. Additionally, attention was paid to the quality and type of data to be provided, as well as on the implementing entities. Each of the products were introduced with a presentation made by the GSP Secretariat.

- **Monitoring, forecasting and status reporting (SoilSTAT)**

Many questions were raised about soil monitoring. During the discussion, it was agreed that monitoring includes indicators derived from the repeated assessment of measureable soil and soil-related parameters, and that these indicators should back up future reporting such as the “Status of the World’s Soil Resources” (including SDGs, soil threats, etc.).

FAO has established data exchange routines about indicators for different domains (e.g. agro-environment, forestry). Recently, FAO STATS involves spatially explicit approaches as well (CountrySTAT). It was concluded from the workshop that a new SoilSTAT could further promote the visibility of soils, the harmonization of soil data with those of other domains, and also strengthen cooperation with member states.

A concept for SoilSTAT will be prepared by the GSP secretariat. It will be part of a concept note for soil monitoring prepared by the P4WG.

- **Soil Profile Data Bases**

The Tier 1 approach was accepted. Some doubts were raised about the Tier 2 soil profile data base. However, it was agreed to keep Tier 2 in the activities list due to its importance for the scientific community, but also as representative soil profiles for the global soil polygon map and the different grid products.

The Tier 2 soil profile data base requires specifications (minimum parameters, selection criteria, data storage, data exchange structure, level of harmonisation, harmonization methods). It was questioned whether Tier 2 soil profiles must necessarily contain spatial coordinates. The soil profiles may also be representative for soil map units (e.g. the Global Soil Polygon Map). It was not distinguished between described and analysed soil profiles.

With the support of Pillar 5, the specifications for the Tier 1 and Tier 2 soil profile data base will be prepared by the P4WG.

A list of institutions that hold soil profile data, and a list of institutions willing and capable to sharing profile data sets, will be developed by the P4WG. The inventory and also the population of data bases will be supported by the GSSDIC.

- **Global Soil Polygon Coverage**

Methodical specifications are needed to define the product and thus, which national data sets can be used to update the 1974 Soil Map of the World. Specifications also need to contain solutions for gap filling (e.g. eSOTER) and map harmonization (Pillar 5).

Similar to the updating of the Harmonized World Soil Data Base (see below), the polygon coverage with a target scale of 1:1M could be achieved with limited effort. This, however, would depend on voluntary input by INSII members, FAO, GSP partners and the GSSDIC.

- **Harmonized World Soil Data Base Version 2**

The updating of the Version 1.2 depends on the provision of additional existing data sets in several regions (e.g. North America, Pacific, and the work performed by the GSP in Latin America, Asia and Near East-North Africa). With regard to the development of the top- and subsoil properties, additional specifications might be needed. This will be followed up by the GSP secretariat together with the P4WG and GSSDIC.

- **Version 0 and Version 1 grids**

While the general purpose for grid products was not questioned (soil property maps), the necessity for a v0 grid was discussed and the feasibility of a global 100 m grid (v1) was reflected. The resolution of the v0 grid will correspond to the HWSD v2, and is thus expected to be finalized more easily than the v1 grid. It was agreed that the 1 km SoilGrid developed by ISRIC may serve as a backbone, so that global coverage may be received in a feasible time frame. It was suggested that on the long-term, investments should focus on the v1 grid.

Both grids shall be using the same specifications so that v0 can be successively updated towards v1. The specifications of GlobalSoilMap.net were briefly presented and participants felt that they could be a good basis. It was concluded that these specifications in fact allow many approaches to generate the grids depending on the existing national data coverage.

It was agreed that further discussion and implementation planning should be based on a specifications and implementation document prepared by the P4WG.

Other Activities involved with the Global Soil Information System

Besides data policy and data products, the Pillar 4 Implementation Plan contains some additional elements:

- **Integration into GEOSS**

The importance of the link to GEOSS was confirmed. The GEOSS-representative, Mr. Zalidis, was encouraged to propose an individual working item (task) for global soil information and monitoring. Currently, contributions to GEOSS were on halt waiting for the Pillar 4 global soil information system to become established. The topic will be taken up at the next INSII meeting depending on the discussion with GEO.

- **Capacity development programme on soil information**

The GSP Secretariat emphasized that capacity development is the core area of the Global Soil Partnership and as such, much effort should be addressed to develop and implement a very strong and open capacity development programme on soil information development and sharing. Successful experiences were conducted already by the GSP in Latin America, Africa and the Near East-North Africa where in-depth training on state of the art digital soil mapping methods were provided. It was agreed that institutions that currently do not have the technical capabilities to collect and process data themselves will thereafter be supported by the P4IP capacity development programme.

The GSP Secretariat suggested that this will be a good opportunity to learn from participants on their needs regarding capacity development and other aspects if to implement P4IP. The Chair called up all those participants of the workshop to express their needs accordingly. The response was surprising as it could be realized that many participant countries require support in different means. The majority requested support for developing capacities on modern digital soil mapping techniques. Basic soil data and data management systems are needed in Africa, and many of the smaller Island countries in the Pacific. Many other countries need support to digitize, complete and update their data bases. In some countries, strategic support is needed to re-establish institutions which can be functional for developing national soil information systems. All in all, more than 2/3 of all workshop participants identified needs. It was agreed that the P4WG will prepare a detailed document on training and capacity development.

Eurasia

- Uzbekistan
- Kazakhstan
- Ukraine
- Georgia
- Armenia
- Russia

Western Europe

Countries articulated the need for training in digital soil mapping, but also raising investments into soil data base building.

- Sweden
- Slovakia
- Bulgaria

Africa and Near East

It was stressed that more than 80 % of the members of the African Soil Partnership do not have national soil information systems.

- NENA countries
- Sudan
- Burkina Faso
- Nigeria
- South Africa
- Lesotho
- Zambia

South America

It was noted that generally, much data is on paper, but needs to be digitized and quality-assured. Similar to some European countries, capacity in applying digital soil mapping techniques is needed. The continuation and maintenance of the Soil Information System of Latin America and the Caribbean - SISLAC (funded by FAO-GSP) requires funding.

- Ecuador
- Jamaica
- Cuba

Pacific

Most of the smaller Island countries lack soil information systems.

5.5 Deliverables

From the previous discussion about products and actions, a list of deliverables was compiled which includes the timeline. Great importance was given to the P4WG as being in charge for developing the specifications for most for the data products. It was recognized that the work load to the P4WG is immense and that adjustments of the time table/priorities may be necessary during the starting phase of Pillar 4 implementation. It was pointed out the need for keeping the number of deliverables at the minimum because of the limited resources available.

5.6 Budget

Several workshop participants stated that costs reported in the current draft implementation plan are underestimated when considering the amount and work load related to the deliverables.

Additionally, it was recognized that the implementation plan must be communicated to governments and other potential donors. The GSP Secretariat commented that it is not easy to raise funds for Pillar 4 activities and that it is of critical importance to demonstrate that the INSII network is established and operating as quickly as possible. This could be achieved by moving quickly towards the initial (first Tier and the v0 global grid) outcomes of the implementation plan. Upon feedback from the workshop participants, and upon more detailed work planning based on P4WG specification documents, the GSP secretariat will prepare a more detailed budget overview. Until then, the figures mentioned in the implementation plan remain as rough estimates.

In order to communicate the effort involved with the Pillar 4 implementation, and to attract donors to support national and international actions, a Pillar 4 communications document shall be developed between the GSP secretariat, the P4WG and interested INSII members.

6. Conclusions

Pillar 4 Implementation Plan

Despite the inclusive one-year process for finalizing the P4IP among working group members and GSP focal points, the final draft was subject to substantial modifications that improved the flow and consistency of the plan per se. The main components, expected results, actions and activities, and governance were overall agreed by workshop participants. It was agreed that GSP Secretariat will produce a final clean version of the plan taking up all those agreed elements. This version will be send back to INSII members for their final consideration.. It is expected that any final comment shall not include new elements that were not agreed during the workshop. The GSP secretariat will compile all final comments, and then send a final version for information to all workshop participants and GSP focal points. In order to keep the Plenary Assembly fully informed about the Pillar 4 progress, the Implementation Plan will be submitted for information purposes.

GSSDIC

Once the final version of the P4IP is sent out, the GSP secretariat will prepare an open call for the GSSDIC. Applications will be evaluated by the P4WG. The GSSDIC will be confirmed during the next GSP PA.

P4WG

Once the final P4IP is available, the GSP secretariat will compile an overview of P4WG tasks. The P4WG will be chaired by the INSII Chair. Preferably, P4WG operates using electronic means such as Skype, video conferences or other.

INSII foundation

A question arose regarding the formality on how to become an INSII member. Once the 4th GSP Plenary Assembly appreciates the Implementation Plan and thus endorse the establishment

of INSII, all participants to the workshop and other interested GSP partners working on soil information could become an INSII member. INSII will then appoint its chair during its next meeting.

Annex I: List of Participants

Surname	Name	Country	Institution
Olmedo	Guillermo Federico	ARGENTINA	INTA
Sahakyan	Samvel'	ARMENIA	Ministry of Agriculture
Grundy	Mike	AUSTRALIA	CSIRO
McKenzie	Neil	AUSTRALIA	CSIRO
Lima	Roberta	BRAZIL	Permanent Representation of Brazil to FAO, IFAD and WFP
Rousseva	Svetla	BULGARIA	N. Poushkarov Institute of Soil Science
Gnankambary	Zacharia	BURKINA FASO	Bureau National des Sols
Liu	Feng	CHINA	Institute of Soil Science,
Alvarez German	Darío	COLOMBIA	Instituto Geografico Agustin Codazzi (IGAC)
Da Silva	Mayesse Aparecida	COLOMBIA	CIAT
Rivero	Luis Beltran	CUBA	Istituto de Suelos
Kozak	Josef	CZECH REPUBLIC	Czech University of Life Sciences
Moreno	Julio	ECUADOR	Instituto Espacial Ecuatoriano
Bardy	Marion	FRANCE	INRA
Sanadze	Ekaterina Sanadze	GEORGIA	Ministry of Agriculture of Georgia
Marx	Kirstin	GERMANY	Thünen Institute
Boateng	Enoch	GHANA	Council for Scientific and Industrial Research
Zalidis	George	GREECE	Aristotle University of Thessaloniki
Chaudhari	Suresh Kumar	INDIA	Indian Council of Agricultural Research
Benedetti	Anna	ITALY	Council for Agricultural Research and Economics, CREA,
Costantini	Edoardo	ITALY	Università di Firenze
Jacomini	Carlo	ITALY	ISPRA
L'Abate	Giovanni	ITALY	Ente CRA-A
Montanarella	Luca	ITALY	European Commission-JRC
Morrison	Joan	JAMAICA	Agricultural Land Management Division, Ministry of Agriculture
Matsumoto	Maho	JAPAN	Ministry of Agriculture, Forestry and Fisheries of Japan
Ohkura	Toshiaki	JAPAN	National Institute for Agro- Environmental Sciences
Saparov	Abdulla	KAZAKHSTAN	Kazakh Research Institute of Soil Science
Saparov	Galymzhan	KAZAKHSTAN	Research Institute of soil science and agriculture
Omuto	Christian	KENYA	University of Nairobi
Nthatuoa	Rantoo-Kuleile	LESOTHO	Ministry of Forestry, Range and Soil Conservation
Rodríguez Ramírez	Adrián	MEXICO	INEGI
Moussadek	Rachid	MOROCCO	National Agronomic Research Institute
Kempen	Bas	NETHERLANDS	ISRIC
Van Den Bosch	Rik	NETHERLANDS	ISRIC

Ande	Olufunmilayo Titilayo	NIGERIA	Institute of Agricultural Research and Training
Schmidt	Alex	PERU	Catholic Relief Services
Carating	Rodelio	PHILIPPINES	Bureau of Soils and Water Management
Bialousz	Stanislaw	POLAND	Warsaw University of Technology
Golozubov	Oleg	RUSSIA	M. V. Lomonosov Moscow State University
Lilly	Allan	SCOTLAND	James Hutton Institute
Skalsky	Rastislav	SLOVAKIA	National Agricultural and Food Centre
Mampholo	Ramakgwale	SOUTH AFRICA	Dept. of Agriculture, Forestry and Fisheries
Seabi	Faith Tumelo	SOUTH AFRICA	Department of Agriculture Forest and Fisheries
Elmobarak	Abdelmagid Ali	SUDAN	Agricultural Research Corporation, land and Water Research Centre
Stendahl	Johan	SWEDEN	Swedish University of Agricultural Sciences (SLU)
Udomsri	Satira	THAILAND	Office of Soil Resources Survey and Research
Hamrouni	Hedi	TUNISIA	Ministry of Agriculture Hydraulic Resources and Fischers
Madenoglu	Sevinc	TURKEY	Ministry of Food, Agriculture and Livestock
Sahin	Mehmet	TURKEY	Ministry of Food, Agriculture and Livestock
Corstanje	Ron	UNITED KINGDOM	Cranfield University
Arkadiy	Levin	UKRAINE	Istitute for soil Science and Agrochemistry Research
Rossiter	David	USA	FAO Consultant
Reinsch	Thomas	USA	USDA
Khasankhanova	Gulchekhra	UZBEKISTAN	Design and Research UZGIP Institute
Sichinga	Stalin	ZAMBIA	Zambia Agriculture Research Institute
Baritz	Rainer	FAO	GSP Secretariat
Caon	Lucrezia	FAO	GSP Secretariat
Ziadat	Feras	FAO	GSP Secretariat
Vargas	Ronald	FAO	GSP Secretariat
Nachtergaele	Freddy	FAO	GSP Secretariat