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## Global Soil Partnership Plenary Assembly



### Seventh session

Rome, 05-07 June 2019

### Report on Regional Soil Partnerships

#### Executive Summary

- An effective network of Regional Soil Partnerships (RSPs) is key to the achievement of the GSP mandate and objectives, as specified in its Terms of Reference. To date, all regions and in some cases sub-regions, have established RSPs.
- The Secretariat has continued to make use of all available funds to facilitate the functioning of viable RSPs, and especially the execution of Regional Implementation Plans (RIPs). Yet, these resources are limited in the face of the range of valuable activities listed in these plans, particularly in those regions where much external support is needed. In addition, in many cases, there remains a problem of lack of sufficient and balanced institutional backup and commitment from partners within the area, so as not to depend on the willingness of a few individuals from some countries, a situation which does not guarantee further growth, or the full recognition of the partnership at regional level.
- While the present document provides some information in telegraphic form, the Chairpersons of, or representatives from the various RSPs are to provide oral reports on major achievements and especially on challenges faced in each region.
- It is also important to highlight the need for enhanced communication between RSPs and the Secretariat, for initiatives to ensure the sustained functioning of the RSPs and for active participation of regional pillar chairs as well as focal points.

#### Suggested action by the GSP Plenary Assembly

- The Plenary Assembly may wish to:
  - renew its call to all partners to actively participate in, and support the RSPs, including empowering these RSPs to execute Regional Implementation Plans (RIPs).
  - invite focal points to play an active role in both the execution of RIPs and the functioning of the RSPs.
  - invite resource partners to support the RSPs, and especially the execution of RIPs. Similarly, member countries may be urged to align their national programmes to the

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substantive thrust of the pertinent RIP in order to advance sustainable soil management within the region in a consistent manner.

## **I. Background**

1. Section 5.4 of the GSP Terms of Reference stipulates that: *“Regional Soil Partnerships (RSPs) will be established among interested and active stakeholders in the regions. These RSPs will work in close coordination with FAO Regional Offices and their activities will be supported by the GSP Secretariat. The RSPs will establish an interactive consultative process with national soil entities and relevant regional institutions.”*
2. Hence, the Secretariat has continued to give due priority to supporting the functioning of RSPs and the execution of the various regional implementation plans. To date, all regions have established RSPs and RIPs. The GSP Focal Points appointed in many countries have been instrumental in promoting these regional cooperation processes.

## **II. Main challenges**

3. In its ongoing dialogue with RSPs, the Secretariat continuously seeks to assess the main challenges they are facing. In general terms, the difficulty to access financial resources is identified as the main challenge to execute the Regional Implementation Plans. Also, there is a need to ensure due complementarity of actions, methodologies and approaches between those promoted by the Global Soil Partnership and those of other organizations or/initiatives such as the United Nations Convention to Combat Desertification.
4. It is often noted that communication between the GSP Secretariat and the RSP Chairs should be enhanced and concrete involvement from partners should be boosted. Efforts should also be made to connect better global and regional activities so that more effective engagement is achieved.
5. In many instances, the identified gaps in terms of expertise available at regional level that could support global and valuable regional activities, could be remedied by establishing a regional pool of experts for different topics.

## **III. Overall progress report**

6. A summary of recent (or planned) achievements in the geographical areas covered by RSPs is provided below.

### **A. African Soil Partnership (AfSP)**

7. The main developments in the context of the AfSP are:
  - The AfSP has been undergoing a substantial change in its functioning and working groups composition. The previous working groups consisted of a few country focal points for each pillar, with for example only three focal points making up the working group for Pillar 2. The working groups for the different pillars of action now ensure the participation of one person per country. The AfSP focal points kindly nominated one person per pillar of action to constitute these working groups so as to give each country the opportunity to contribute to all the regional activities.
  - The AfSP has been actively promoting the programme “Afrisoils: Boosting soil productivity for a food and nutrition secure Africa” to potential donors, highlighting the activities most consonant with the interests of different stakeholders.
  - Following the launch of the GSOCmap in December 2017, many countries that participated in the mapping process are working on improving their national datasets and SOC maps.
  - Various countries organized awareness raising activities as part of the celebrations for World Soil Day 2018 under the theme: Be the Solution to Soil Pollution. These ranged from training

courses and workshops to specific events organized by FAO country offices and the national ministries of environment on the threat of soil pollution.

- As a follow up to a project on soil and nutrient loss in Malawi, publications were prepared on the findings, and on an economic assessment of soil and nutrient loss in Malawi. Policy briefs were also prepared on the microeconomic and macroeconomic impacts of nutrient and soil loss in the country. Finally, the Soil Loss Atlas of Malawi, which provides a comprehensive picture of soils and a baseline for future monitoring of soil loss rates and trends in the country, was also issued.
- The different countries of the regional partnership have been active in promoting and implementing the VGSSM at the national level. Many countries are in the process of translating the VGSSM in local languages for better dissemination.
- A project on nutrition-sensitive agriculture was launched in 2019 involving two AfSP countries: Burkina Faso and Malawi.
- The Regional Soil Laboratory Network (RESOLAN) for Africa was launched in May 2019 in Nairobi, Kenya, and most AfSP countries were able to register a national laboratory in the network and attend the meeting.
- Various AfSP countries have supplied the GSP Secretariat with information on the national status of soil pollution, thereby contributing to the preparation of a Global Soil Assessment on Soil Pollution..
- A policy brief on the main challenges that African soils are facing, as well as on what needs to be done to address these issues has been prepared and is to be widely disseminated in 2019.
- The fourth AfSP meeting will be held at the beginning of 2020 to discuss the progress made in the 2018 – 2019 period, introduce the new working groups and way forward, and agree on activities for the 2020 – 2022 period.

## **B. Asian Soil Partnership (ASP)**

8. The main achievements are:

- The fifth ASP plenary meeting was organized from 26 February to 1 March 2019, with contributions from the GSP Secretariat and the Indian Council of Agricultural Research.
- The same meeting carried out a review of the mission, structure, functions and work plan of the Center of Excellence for Soil Research in Asia (CESRA), which was established in Thailand in December 2018.
- The mechanism by which the five Pillars of Action operate in the region were revised keeping into consideration that both regional working groups and regional Pillar Chairs are not fully active or sufficiently supported in their role. Decisions were made to review the composition of the regional working groups and to appoint the Pillar Chairs based on a performance assessment.
- The organization of a project writing session at CESRA was discussed. In this regard, each country will consider the possibility to self-finance the participation of their representatives in the meeting.
- Under Pillar 1, countries were invited to implement the Voluntary Guidelines for Sustainable Soil Management (VGSSM) at the national level. The national multi-stakeholder workshop organized by Thailand was brought as good example of a way to implement the guidelines. Countries that registered as participants to the International Network of Black Soils (INBS) committed to implement the network's activities as needed

- Under Pillar 2, CESRA took responsibility for the development of region-specific educational material and a soil testing kit for the Global Soil Doctors Programme. Countries contributed to improve SoiLex.
- Under Pillar 3, countries replied to the survey on soil pollution and included their regional plan on research into the CESRA's work plan. The second meeting of the Editorial Board for the Soil Atlas of Asia was held in South Korea from 29 April to 3 May. Progress was made on the preparation of both text and maps for the Atlas. During the meeting, training took place on soil classification.
- As part of Pillar 4, countries got ready to prepare the soil erosion, salinity and carbon sequestration maps as requested by the GSP Secretariat. They also replied to the country soil information system survey and completed an exercise on soil data fragmentation with the purpose of establishing or strengthening their national soil information systems.
- As part of Pillar 5, the second meeting of the South-East Asia Laboratory Network (SEALNET) was organized in November 2018. Four regional standard operational procedures (SOPs) for pH in water, organic carbon, exchangeable potassium and available phosphorus were developed, and a regional ring test for external quality control was performed.

### **C. European Soil Partnership, including Eurasia (ESP)**

9. The main achievements of the ESP are:

- Three national partnerships (Italy, Portugal, and Slovakia) were established within the framework of the ESP,
- The initiative for an Alpine Soil Partnership (AlpSP) was pursued to facilitate cross-border cooperation on soil protection in the countries that share the Alps. It is in fact an output of the EU-funded Links4Soils projects; the associated Alpine Soil Platform consists of a web node where users can access information about soil, sustainable soil management and communicate with soil experts in the Alpine context.
- The ESP emphasized the need to disseminate materials that promote SSM in local languages. A book on best soil management practices and a booklet on soil ecosystem services for Alpine practitioners is currently being drafted. The AlpSP is working on a declaration on sustainable land use and soil protection as part of the EU Strategy for the Alpine Region (EUSALP).
- As endorsed by ESP, another initiative was launched, aiming at establishing the European Research Council (ERC) panel on soil sciences. This started two years ago, and a petition was prepared in collaboration with the chair of the ESP and the chair of the European Confederation of Soil Sciences Societies (ECSSS), which was then sent to the president of the ERC requesting the establishment of a panel specifically dedicated to the field of soil sciences. Such a panel should simplify the process by which the ERC provides grants for research in the field of soil sciences.
- ESP was represented during the 21st World Congress of Soil Science (2018) in Rio and during the meeting of the European Environment Information and Observation Network (EIONET) in February 2019.
- A small research project, financed by the European Commission, has been executed within the scope of the Pillar 1 Implementation Plan. The project aims to develop a database of EU funded national and international projects on sustainable soil management.
- The report on barriers hampering the use of SSM practices has been prepared for the Eurasia area; a review was conducted of adopted national programs, legislation and projects towards mainstreaming of SLM/SSM approach and technologies in the EASP region.
- A new call for Eurasia projects on sustainable management of saline soils was opened by FAO in early 2019.

- Pillar 2: many soil related activities (aimed at raising awareness) are currently underway at the European level, but in order to scale up their impact there is a need to better coordinate them. A major limitation is the lack of funding. The composition of the ESP and GSP working groups may be too biased towards soil scientists and there is a need for experts in finance, public procurement and advisory services. It is felt that the ESP should define its Pillar 2 related activities based on one soil theme at the time, but unlike global GSP work, within a two year cycle.
- For the implementation plan of Pillar 2, a website containing information about the EASP was launched ([link](#)) and promotional material was published during the World Soil day.
- With the support of the World Bank, a review “Taking Stock of Human Capital in Soil Science for Central Asia and the South Caucasus” was issued.
- Pillar 3: in relation to the current ESP Pillar 3 implementation plan, it is felt that a more holistic approach should be taken in regard to soil research in order to broaden the involvement of other stakeholders such as policy makers and farmers; ESP Pillar 3 has had limited success so far in achieving some of its goals due to the lack of funding.
- In the framework of Pillar 3, several research studies on the Economics of Land Degradation in Russia, Belarus and Armenia were carried out and the results published.
- A new call for research projects on soil salinity and SOC was opened for Eurasian countries by FAO.
- A Soil Salinity Management training course was performed in Ukraine and a contest of Small Research Projects was included in the peer-reviewed journal Eurasian Soil Science. Various online courses for Eurasian partners took place on Food Security and SLM/SSM.
- Work under Pillar 4 focused on cross-border/bilateral activities, in particular, to update the GSOCmap. Several activities involved cooperation between the European Joint Programme (EJP), ESP, JRC and the GSP. Most prominent ones were the organization of a workshop among various interested ESP partners on comparing SOC data that were delivered for the GSOC map in 2017/2018 (to explain cross-border differences), and the promotion among ESP Partners of liaising with country contact points for being included in the EJP-ASM (European Joint Programme on agricultural soil management, of the European Union) proposal, at least for data matters (for which the deadline was end-January 2019). For the implementation plan of Pillar 4 and the establishment of the Eurasian Soil Information System (EurSIS) several training sessions and workshops were undertaken in several Eurasian countries and two articles were published during the Eurasian GIS conference.
- For Pillar 5, the establishment of a Eurasian Soil Laboratory Network (EUROSOLAN) was initiated through the nomination of the Leading Soil Lab (CINNAO) and the launch of an open call for soil labs. The 6<sup>th</sup> ESP Plenary Meeting was held at FAO HQ Rome on 28-29 March 2019. There were presentations by the GSP-Secretariat, ITPS and the ESP national focal points on their contribution to the ESP, together with illustrations by other players on the soil scene in Europe which have a relation to ESP (European Environment Agency, European Commission DG-ENV). The regional activities were discussed via-a-vis the global activities of the GSP for the corresponding pillars. A few important conclusions from the meeting were:
  - a. it was proposed to start coordinating the contributions to the next version of The Status of the World's Soil Resources report, which is to be published in 2025.
  - b. the need to improve communication and the coordination of activities and to foster synergies between the ESP and the global GSP work was highlighted.
  - c. in order to make the ESP plenary more effective at decision making level, it was suggested to the GSP secretariat to provide documents with relevant information beforehand.
  - d. several ESP members underscored the need to devise a more focused strategy when defining activities for the coming years.

- e. it was suggested to prioritize outputs that are readily implementable to attract donors.
- f. national focal points were asked to transmit to the GSP secretariat suggestions on how to improve communication.
- g. national focal points were also asked to work on a message to convey to the next GSP plenary assembly.

#### **D. Near East and North Africa Soil Partnership (NENASP)**

10. The main actions undertaken by the NENASP are:

- The Fifth NENA Plenary Meeting took place on 1 to 2 April 2019 as part of the Land and Water Days 2019. The work plan of the partnership was reviewed and actions were taken to expand its network, mobilize financial resources to sponsor activities, and strengthen the position of national focal points within their own country.
- A task force was established to write shared-benefit project proposals.
- Under Pillar 1, national initiatives to implement the Voluntary Guidelines for Sustainable Soil Management (VGSSM) were taken. Ultimately, a multi-stakeholder national workshop to implement the guidelines in Iran was organized in December 2018 and a TCP project proposal for implementing the guidelines in the regional context was submitted to FAO-RNE.
- Under Pillar 2, “The multi-faceted role of soil in the Near East and North Africa – Policy Brief” was launched on the Land and Water Days 2019. The document is the first of a series of policy briefs the NENA Soil Partnership is going to produce. as a most suitable way to raise the awareness of policy makers on the need to preserve soil resources in drylands and to trigger policy actions to implement sustainable soil management. The NENA Soil Partnership Facebook page (available in English and Arabic) was launched and efforts were made to translate GSP and FAO’s soil documents in Arabic. NENA countries also put great attention to celebrating World Soil Day and raising the awareness of the civil society on the added value of soil resources.
- Under Pillar 3, the second meeting of the Editorial Board of the Soil Atlas for Asia, which also involves countries in the Near East, was organized in April 2019. Actions were taken to establish a global platform for the exchange of research and development information, which would include both successful and unsuccessful project results. This activity is carried out in coordination with global activities on Pillar 3.
- As part of Pillar 4, NENA countries were encouraged to improve their national Soil Organic Carbon (SOC) maps, review technical documents of the International Network of Soil Information Institutions (INSII), including GLOSLAN design and SoilSTAT, and to provide information on the status of their soil information by completing the Country SIS survey.
- As part of Pillar 5, NENA laboratories participated in the 2<sup>nd</sup> GLOSOLAN meeting (November 2018). Agreements were taken for organizing the launch meeting of the Regional Soil Laboratory Network (RESOLAN) for the NENA region in Jordan at the end of June 2019. Information on the manuals and guidelines for soil description in use in NENA countries were collected and presented to the Pillar 5 working group for consideration. In this regard, the soil description in the region should be harmonized but a global consensus on how to proceed needs to be reached.

#### **E. South America Soil Partnership (SSP)**

11. The main achievements of the SSP are:

- On the 9<sup>th</sup> of July 2018, the regional workshop on "The use of soil data for decision making and planning in Latin America: presentation of the soil information system (SISLAC)", was held, as part of the TCP cooperation Project for the "Development of capacities in soil

information for the sustainable management of natural resources in the countries of South America”.

- On the 10th of July 2018, the fifth meeting of the SASP was held, in Bogotá, Colombia. The main achievements of the meeting were:
  - a. the adoption of the “Rules of Procedure” of the SASP, after revisions and contributions from its members.
  - b. reports on the progress under the regional pillars were presented.
  - c. new representatives for the regional pillars were elected.
- On the 11th of December 2018, an extraordinary meeting of the SASP was held, via videoconference, where the progress under the regional pillars was presented and ideas for regional projects to be submitted for international funding, were exchanged.
- From the 11th to the 15th of March 2019, the second meeting of the Latin American Network of Soil Laboratories was held in Mexico City, Mexico.
- The Regional Workshop on: "Use of the tools of the Global Soil Partnership for informed decision-making and the sustainable land management in Latin America and the Caribbean" was held, with the participation of the Soil Partnership of Central America, Mexico and the Caribbean. Also, the closure of project “TCP/RLA/3613: Development of capacities in soil information for the sustainable management of natural resources in the countries of South America” took place in Quito, Ecuador.
- On the 22nd of May 2019, the sixth meeting of the SASP was held, in Quito, Ecuador, with the participation of the Soil Partnership of Central America, Mexico and the Caribbean, where some issues of Governance of the Partnerships were addressed.
- Under Pillar 1: a regional pillar meeting was held on the 22nd of January 2019. A series of activities is proposed for the implementation of the regional implementation plan, related to the selection of adequate land use and sustainable land management measures. A compilation of research projects on sustainable land management practices, and its classification by biome, is in progress in all the countries. A communication addressed to the Ministers of Agriculture in the region to raise awareness about the current state of soils, the urgent need for sustainable management and how the SASP can collaborate in this process, is being prepared.
- Under Pillar 2: the region is working on a proposal to start working within the ‘Doctor Soil Programme’ initiative. Some contributions were made by the region to the EduSoil and SoilLex programs.
- Under Pillar 3: the draft Pillar Implementation Plan, has already been revised and corrected by countries and submitted to the Chair of the ASS for final review and approval. The National Survey to collect information of databases from projects was modified. The search for key sources in soil sciences was carried out by each member country, based on the results of authors and institutions with larger scientific production. The SCOPUS database was used. A database of the scientific productivity of ten member countries is being prepared. A virtual meeting of the regional pillar took place on the 10th of May 2019.
- Under Pillar 4: work included the publication of profiles in the Soil Information System of Latin America - SISLAC. Approaches were made with Universities to standardize a Soil Information database at the country level, in order to increase the information provided to SISLAC, and therefore identify functional maps for decision making. Also worth mentioning is the participation in the meetings of the International Network of Soil Information Institutions (INSII); training on Digital Soil Mapping and the videoconferences (held on September 28th and December 11th, 2018) for making decisions regarding the information collected through the SISLAC. A regional pillar meeting was convened on the 19<sup>th</sup> of December 19, 2018, to recall the importance of the databases, and the international guidelines for its management.

- Under Pillar 5: A presentation and discussion of the statistical results of the 1st Ring Test of the LATSOLAN network took place; the second Ring Test of the soil labs of the LATSOLAN network was organized; the introduction of improvements in the harmonized protocols for soil sample analysis was discussed, as well as the harmonization of the protocols of soil analysis between the Latin American (LATSOLAN) and Asian (SEALNET) Networks with a view to proposing a global protocol; the need to disseminate the activities and integration of the LATSOLAN network in each of its member countries was identified in order to foster the creation of national networks of soil analysis laboratories in countries that do not have it.

#### **F. Central America, Caribbean and Mexico Soil Partnership**

12. The main achievements are:

- Despite insufficient involvement during the last year of the Heads of Pillar 1 and 4 groups and several GSP national Focal Points of the region, many SSM country initiatives and activities within CACMSP consistent with the objectives outlined under the five Pillars are under development. These natural resource conservation initiatives undertaken by a range of government, private or international institutions and NGOs, mainly national Soil Science Societies on a voluntary basis and according to the VGSSM, are a reflection of the awareness created by the CACMSP withingovernments and stakeholders since the launching of GSP in 2013 and the approval of the RIP by the participant countries. Besides, too limited funds were available from Donors for the Region. In several cases, some of the national Focal Points were not able to support in time the formulation of FAO's TCP projects so that no project was finally approved, despite the interest of countries like Costa Rica.
- Under Pillar 1: Continued implementation of SSM and capacitation of farmers in most of Central American countries (CRS support), Mexico and Cuba, also for the benefit of, student groups and other stakeholders.
- Under Pillar 2: Celebration of World Soil Day 2018 through different kind of activities in the 15 countries of the Region. Notable examples were: Soil Congresses in 6 countries; Radio and TV programs and newspaper articles related to soil degradation, SSM and WSD; promotion of SSM via more than 50 articles on journals, and a similar number of conferences in most of the countries; educational activities dedicated to children, like the Symposium on Educational Innovations in the Teaching of Soil Science (by LSSS), in Mexico.
- Under Pillar 3: Research for the adaptation and promotion of SSM was carried out. A good example is the successful strengthening of SSM Demonstration Areas in cooperative farms (more than 100) all over Cuba, where technical support is provided to farmers by the competent scientific institutions. In addition, different SSM Training Programs began in several Central American universities (Panama, Costa Rica and El Salvador, the last one by CRS).
- Under Pillar 5: The very successful 2<sup>nd</sup> Regional Workshop of the Latin American Soil Labs Network (LATSOLAN) was held in March 2019 in Mexico with the participation of 18 countries with important results in Soil Lab Quality Control and Harmonization.

#### **G. North American Soil Partnership**

13. The main achievements are:

- Last year NRCS participated in the GLOSOLAN, whose key purpose to strengthen the performance of laboratories in support of the harmonization of soil data and information and the development of global standards. Harmonization of soil analytical methods will help make soil information comparable and interpretable across laboratories, countries and regions and avoid the never-ending struggle to unify divergent soil taxonomic systems to avoid unnecessarily divergent laboratory standards in the long term.

- About 50 laboratory representatives from the Americas, Africa, Middle/Near East, Europe, Asia, Australia were present. The deliberations were very productive, and much emphasis was placed on developing new methods, that avoid wet chemistry and stakeholders were assigned to propose a provisional SOP format for review including the development of transfer functions relating diverse approaches for assessing a particular soil property. As well as developing a checklist to facilitate the import/export of soil samples.
- Promoting soil spectrometry as a cutting-edge predictive tool for rapid soil assessment emerged as unifying idea. NRCS is already following up on these propositions with national and international partners.
- NRCS participated in a workshop in Harbin, China in September of 2018. The workshop proposed a framework of necessary soil properties for inclusion in the INBS. Through email correspondence an alternate set of guidelines has been developed and is now being reviewed by participants in the network. A contribution chapter was submitted on Management of Black Soils in the USA. NRCS continues to participate in discussions of black soil definitions, identification and mapping.
- The ongoing Cacao for Peace Project in Colombia provides unique opportunities to use digital soil mapping, genetic mapping with Penn State, CIAT and the government of Colombia and as part of a multi-disciplinary to develop a cacao suitability map and resolve the problem of high cadmium levels in cacao following recent EU guidelines.
- Continued technical support for the Haiti Soils and Natural Resources Conservation initiative is as expected to help improve soil and food security in Haiti.
- Through its International Programs Division, NRCS supports various other soils activities world-wide upon request from partner agencies and other collaborators.
- Pillar 1: Strengthening the science on Soil Health and promoting collaborations among various partners continues to be a priority. This implemented through meetings, conferences, trainings and the strategic recruitment of more health personnel. The Soil Health Institute hired a Chief Scientific Officer and selected seven and regional scientist to evaluate soil health measurements using 31 indicators. The Soil and Plant Science Division developed pilot Soil Health interpretations for inclusion in Web Soil Survey. Efforts also continued toward the development of (Soil Vulnerability Index, SVI) and the Fragile Soil Index.
- Pillar 2: National and International Collegiate Soil Judging Contests/Future Farmers of America Environthons; Interagency US Presidential Working Group on Soil continue to provide avenues for expanding soil science information and for the recruitment of future soils scientists.
- Pillar 3: there is continued emphases on Research Agenda-Soil Health; Urban agriculture; Climate change; Dynamic Soil Properties; Wetland; Soil Monitoring Network for dynamic soil properties within the National Cooperative Soil Survey.
- Pillar 4: MIR data Library Kellogg Laboratory Lincoln NE; addition of Soils data and samples to International Soil Collections system; Ecological Site Description (ESIS/EDIT database; NWCA Wetlands Data Collection. Plans are underway to strengthen collaborations among Kellogg National Laboratory, in Lincoln Nebraska the International Institute for Tropical Agriculture (IITA) Dar es Salaam, Tanzania and Ibadan, Nigeria) on the use of MIR and other technologies (exclusive of wet chemistry) for soil analyses, comparison of test results as we as trainings on how to make environmental and agronomic inferences from the analytical soil test results.
- Pillar 5: Progress continues the finalization of International Horizon Nomenclature. NRCS participated in the “The Joint workshop for Digital Soil Mapping and Global Soil Map” in Chile recently. Also, NRCS participation in the 21st World Congress of Soil Science (WCSS) in Brazil is noteworthy.

- NRCS is also involved in the affirmation of the role for science-based decision making for advancing global food production in agriculture by reviewing G20 and FAO documents, notably;
  - Food security and nutrition: Challenges for agriculture and the hidden potential of soil
  - G20 Meeting of Agriculture Ministers 27-28 July 2018, Buenos Aires, Argentina
  - Healthy Soils to Support The role of agriculture in Sustainable development
  - International Code of Conduct for the Sustainable Use and Management of Fertilizers

## **H. Pacific Soil Partnership**

14. The main achievements in Australia, New Zealand and the Pacific Islands are:

### **Australian report**

- The Pacific Regional Soil Partnership is developing a Regional Implementation Plan, to be finalised at a CSIRO supported working meeting in Brisbane May 2019, and presented for endorsement by Ministers of Agriculture at the Pacific Agriculture Week to be held in Samoa October 2019
- Australia and New Zealand representatives actively participated in the INSII and Pillar 4 Working Group Meetings held in Rome Nov 2018, providing data governance and technical systems input to the development of GLOSIS
- Australia actively participated in the GLOSOLAN/RESOLAN meeting in Rome in late 2018 and agreed to support Pacific nations with membership the Australasian Soil and Plant Analysis Council (ASPAC) to facilitate better regional laboratory coordination and quality assurance testing
- CSIRO provided Australian input to the GSP reporting of the GSOCmap distribution of the sampling locations as a "sampling density map"
- Australia completed a large area (approx. 200,000 km<sup>2</sup>) operational digital soil mapping and agricultural suitability assessment across northern Australia. Reports and maps are available at <https://www.csiro.au/en/Research/Major-initiatives/Northern-Australia/Current-work/NAWRA/Publications-and-data-sets> and data are visible through the NAWRA Explorer <https://nawra-explorer.csiro.au/>
- CSIRO Australia and other research organisation and state government agencies have undertaken a significant number of soil research projects including: identification of sub-soil constraints and impacts on crop yield gaps; soil carbon loss mitigation and sequestration; soil nitrogen across irrigated and non-irrigated agricultural industries; and land management relating to erosion, soil movement and pesticides particularly related to the Great Barrier Reef Protection Plan
- Australia has renewed investment through the Terrestrial Ecosystems Research Network (TERN) to further improve national soil data estimates delivered through the Soil and Landscape Grid of Australia <https://www.tern.org.au/TERN-Landscapes-pg32473.html>
- The ACIAR Project SMCN/2016/111: Soil management in the Pacific Islands: Investigating Nutrient Cycling and Development of a Soil Portal, is using the concept of mass nutrient balance to guide nutrient cycling and improved soil management for taro cropping systems in a number of Pacific countries. The project is collating legacy soil data and establishing a Pacific Soil Portal, potentially testing and using the CountrySIS software being developed through ISRIC for GLOSIS
- Australia's CSIRO is developing a project proposal with ACIAR to reinvigorate the Papua New Guinea Resource Information System (PNGRIS) including investigation of priority soil/crop/management issues and further development of PNGRIS potentially utilising the GLOSIS CountrySIS package to align with Pacific Region Soil Portal and GSP global initiatives
- Australia is developing a business case for an Australian Soil Information Facility through the National Soil RD&E Strategy implementation committee, supported by government, research and industry sectors <https://soilstrategy.net.au/>

- The Australia Government, along with 39 partners have made a 10 year investment in a Cooperative Research Centre for High Performance Soils bringing together scientists, industry and farmers to find practical solutions for Australia's underperforming soils  
<https://www.soilcrc.com.au/>
- The Australian Soil Science Society hosted a successful 2018 National Soil Conference <https://soilscienceconference.org.au/> to explore the lessons of the past, reflect on the present and develop concrete plans and goals for the future to achieve greater sustainability of our soil resources.

### **New Zealand Report**

- National Soil Data Repository (NSDR) for New Zealand: was commissioned and now being populated with legacy soil profile and analytical data - both NZ and Pacific Island data will be included as funding permits. The NSDR has functionality for data entry of soil profile descriptions at the office or in the field for current survey work; there is viewing and download of dataset capability.
- ACIAR Project SMCN/2016/111: Soil management in the Pacific Islands: Investigating Nutrient Cycling and Development of a Soil Portal. Establishment of the soils portal is underway.
- Ongoing program by Manaaki Whenua – Landcare Research (MWLR) to update and document standards for collecting and storage of soil data. The New Zealand soil description handbook is undergoing substantive update; farm scale soil mapping protocols have been documented; database storage and harmonisation of data; update of the New Zealand soil classification.
- Science to underpin next-generation S-map and smarter land management decisions. This MBIE funded programme led by MWLR has reached half-way. Research conducted has investigated covariate layer development to support soil mapping approaches for New Zealand, optimal soil sampling strategies for soil mapping, improvements to data workflows and infrastructure; large focus on measurement of soil hydrological properties for soils that are difficult to measure (e.g. stony or pumice), land suitability modelling, implementation of pedotransfer functions into S-map, development of interactive tools for end users and co-development with Maori end users.
- Smarter targeting of erosion control. This MBIE funded programme led by MWLR is focused on the need for higher-resolution data on catchment erosion and sediment delivery to streams. Development of new tools to predict and assist with erosion and sediment mitigation plans.
- Work is being undertaken for a statement regarding high class land and versatile soils.
- New Zealand Bio economy in the digital age. This AgResearch funded programme is looking at how digital technologies can be used to transform agriculture. The most specific soil management project looks at Grazing management of critical source areas that result in enhanced losses of P, sediment and E. Coli. Digital technologies are being used to refine grazing management decisions based on soil moisture conditions and the risk posed to soil damage and runoff losses.
- Sustainable nutrient management of peat soils. This MPI SFF funded project looks at nutrient management (including farm dairy effluent application) on peat soils of differing development status and their implications for nutrient losses to water. A peat categorisation guide has been produced to help farmers identify the risk and management requirements needed to have a sustainable effluent management practice.
- Dairy effluent mineralisation. This MBIE funded programme through the Forages for Reduced Nitrate Leaching programme looks at the mineralisation of N in soil from applied dairy effluent products with the intent to guide future farmer decision making around crop fertility requirements.
- Statistical design of a national soil carbon monitoring programme for New Zealand. New Zealand has a project underway looking at the sample numbers needed to establish a national soil carbon monitoring system.

**Pacific Islands**

- Supported Fiji's UNCCD and FAO funded land degradation neutrality project – PSP delivered 3 training workshops attended by over 60 participants (extension officers and farmers) in diagnosis of soil health problems, and solving issues using quick soil test methods, pot trials and field experiments
- Conducted soil management training and setting up bucket drip irrigation systems for the Marshall Islands Organic Farmers Association in May 2018.
- In June 2018 a successful mid-term review of the ACIAR Atoll soil health project was convened in Tarawa, Kiribati attended by key scientist from Tuvalu, Kiribati, and Marshall Islands. Project is technically supported by SPC, University of Tasmania and University of Adelaide
- End of project meeting for an LOA between FAO and SPC supporting atoll agricultural research and development was convened in Nadi, Fiji in August 2018
- PSP delivered a presentation on Soil Health at the APAARI International Conference on soil and plant health in Bangkok, Thailand in November 2018.
- The World Soil Day celebration for 2018 was celebrated in Tuvalu on 5<sup>th</sup> December 2018. Was attended by almost 100 people from various agricultural stakeholders
- PSP in November 2018 Assessed the soils of Nauru which are currently under cultivation; evaluated potential of the soils for agriculture production; and developed a soil management program for Nauru
- Establish wicking based food production systems for vegetables and root crops in Kiribati and Tuvalu.
- PSP continues to promote use of targeted compost on atolls and use of *Mucuna pruriens* as cover crop in higher islands
- PSP continues to support development of soil doctor program in the islands using Hanna quick soil test kits, Solvita respiration tests, and the Palintest SKW 500 soil test kit.