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Plenary Assembly

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Report on Regional Soil Partnerships: for information and decision (GSPPA: X/2022/7)

Executive Summary

- An effective network of Regional Soil Partnerships (RSPs) is key to the achievement of the Global Soil Partnership's (GSP) mandate and objectives, as specified in its Terms of Reference (ToRs). To date, all regions, and in many cases subregions, have established RSPs.
- The Secretariat has continued to make use of all available funds and opportunities to support viable RSPs where possible, particularly concerning the implementation of regional activities.
- In the present COVID-19 pandemic context, the GSP Secretariat has organized two virtual meetings with the Chairpersons of all RSPs. They briefed each other on respective challenges, stressed the need for adequate support in overcoming them and discussed proposals on how to promote inter-regional cooperation. It was agreed that meetings would be held at regular intervals, depending on the urgency of matters to be addressed.
- With the new GSP Action Framework 2022-2030 and the potential institutionalization, there is a need to reconsider the role of the RSPs and to see how to strengthen their functions.

Suggested actions by the GSP Plenary Assembly (PA)

The PA may wish to:

- call on all GSP partners, both FAO Members and non-state stakeholders, to gain their full involvement in RSP activities and establish strong supportive networks of experts in each region;
- invite the Secretariat together, with Chairs of the RSPs, to prepare a guidelines about the role of the RSPs in the context of the new GSP Action Framework and institutionalization process; and
- reiterate the need to lend strong support to the RSPs by mobilizing resources and by facilitating prominent regional activities, including networks and soil information systems.

7.1 African Soil Partnership (AfSP)

1. The GSP Secretariat distributed key GSP publications to all national focal points in Africa through FAO country offices in October 2021 to share them with their ministries.
2. Around 150 soil laboratories from 39 countries in the region have joined the Global Soil Laboratory Network (GLOSOLAN) and the African Soil Laboratory Network (AFRILAB) since its establishment in 2019. One hundred and six laboratory heads and technicians from 37 countries attended the third AFRILAB meeting on 18 October 2021 that focused on defining the position of AFRILAB in GLOSOLAN and the AFRILAB workplan for 2022, while also reviewing the AFRILAB governance. Ultimately, Dr Lesego Mooketsi-Selepe from Botswana was elected AFRILAB Chair, Mr Takesure Tendayi from Zimbabwe was elected AFRILAB vice-Chair for anglophone countries and Mr Sougueh Cheik Sougueh from Djibouti was nominated AFRILAB vice-Chair for francophone countries. Countries also agreed to set up a regional steering committee to support the AFRILAB Chair and vice-Chairs in their roles.
3. National focal points were encouraged to give their feedback in a survey on fertilizer usage that took place in November 2021 and to extend it to key persons in their ministries and engage institutions to take part.
4. During the official celebration of World Soil Day 2021 (WSD) at FAO headquarters in Rome, Italy, the Glinka World Soil prize was presented to Dr Lydie-Stella Koutika from the Republic of Congo for her outstanding work on sustainable soil management (SSM), and the King Bhumibol WSD award was given to the Nigeria Institute of Soil Science (NISS) for their organization of the 2020 WSD event. An official WSD celebration was organized in Khartoum, Sudan while about 30 events were held by countries in the region and featured on the WSD events map.
5. The Global Soil Doctors programme will be implemented in the region in association with RECSOIL. Kenya will be the first country to establish a pilot project.
6. Representatives from the AfSP participated in regional and subregional platform meetings and discussions such as the Africa Low-Emission Development Strategy (LEDS) Community of Practice (CoP).
7. A meeting between the AfSP governance, FAO Regional Office for Africa (FAORAF) and the GSP was held in February 2022 to brainstorm the proposals to present at the sixth African soil partnership plenary meeting that will take place on 26-27 April 2022 via Zoom. Proposals include:

    - The election of three vice-Chairs to represent anglophone, francophone and lusophone speaking countries. This aims to improve communication between countries in the region and to support the AfSP Chair in complying with her/his duties.
    - The election of pillar chairs or theme leaders to assist in the implementation of activities under each pillar. This item will reflect the decisions made by the 10th GSP Plenary Assembly on the new GSP Action Framework.
    - The launch of an online survey to identify primary national and regional needs and priorities. Survey results will be presented at the 6th African Soil Partnership meeting and can be used as baseline for the writing of a policy brief on soils in Africa.

- The identification of activities for immediate implementation in the region.
- Writing a Technical Cooperation Programme (TCP) project to support countries in accessing FAO financial resources in addition to other project proposal written activities. In this regard, the need to strengthen relations between national focal points and FAO country offices will be discussed.

8. The African Union (AU) is organizing the second Fertilizer and Soil Health Conference in 2023. As part of that, a Soil Initiative for Africa (SIA) is under preparation. The AfSP is invited to contribute.

7.2 Asian Soil Partnership (ASP)

9. The seventh ASP meeting was held virtually in March 2022 to: a) update the national focal points on GSP activities of regional interest, b) inform each other on national activities on soil, including the establishment of the national soil partnerships, c) brainstorm on which activities to implement in the region in 2022, and d) update countries on the implementation of the activities of the Centre of Excellence on Soil Research in Asia (CESRA). ASP countries showed great interest in the implementation of RECSOIL and the Global Soil Doctors Programme. The Partnership ultimately agreed to meet again in June to discuss how to revise its governance and set up its workplan based on the decision of the 10th GSP PA on the new GSP Action Framework for 2022-2030.

10. The ASP published a policy brief on the multi-faceted role of soils in Asia in April 2022. The document was initially prepared by national focal points in 2021 under the supervision of the ASP Pillar 2 Chair, Dr Munir Zia from Pakistan, with the support of the GSP Secretariat. Other policy briefs on the main soil threats affecting the region will be developed in 2022.

11. A webinar on soil governance in the Asian region was organized in collaboration with the Asian Research Institute for Environmental Law (ARIEL), the World Commission on Environmental Law (WCEL), the Vermont Law School, and the German Environment Agency (UBA) as part of the Association of Southeast Asian Nations (ASEAN) Environmental Law Conference 2022.

12. A call was launched to identify Asian countries with an interest in implementing the Global Soil Doctors Programme. Countries that expressed an interest in implementing the programme are Cambodia, Mongolia, and Pakistan. Once a promoter is identified in each country, selected experts will be trained on the use of the programme material to train farmers to become Soil Doctors. Countries that are ready to implement the Programme because a promoter has been identified are Mongolia and the Philippines. The Programme is currently under implementation in Bangladesh where ten Soil Doctors were trained and selected posters were translated into Bengali.

13. RECSOIL will be implemented in the Philippines, which will serve as pilot country for the Programme in the region.

14. China, Indonesia, Japan, Mongolia, Nepal, and Thailand participated in the activities of the International Network of Black Soils (INBS). In this regard, experts from these countries are contributing to a report on the Global Status of Black Soils and are developing the Global Black Soil Distribution map.

15. The backbone of a regional database on soil research and development was developed in 2021. The database aims to compile information on core soil science research and development

institutions, major soil science research and development projects, and research priorities. The database is being upgraded to include more details like the project duration, the average project budget, and the name of the donor. This would allow users to extract accurate figures on current research investments and to gain a greater understanding on the interests of different donors on different topics. The database will be available on the CESRA website and the ASP webpage.

16. All countries in the region have contributed to the Soil Atlas of Asia, an activity that started in March 2018 and will be finalised in July 2022 with the launch of the Atlas at the 22nd World Soil Congress 2022 (WCSS) in Glasgow, Scotland. Attention was paid to the conversion of national soil classification into the World Reference Base (WRB). Countries were able to finalize their national maps compiled in a single layer after the harmonization of borders. The first version of the regional soil classification map was endorsed at the fifth editorial board meeting in March 2022.

17. Asian countries showed great interest in the topic of soil salinity. They contributed to the Global Symposium on Salt-affected Soils (SAS) between 20-22 October 2021 with 14 presentations and 50 contributions in the format of posters or articles during the Symposium. Some 150 experts on soil salinity from across Asia have joined the International Network on Salt-affected Soils (INSAS) since its establishment in 2019. They are contributing to the working group on mapping, assessing and monitoring of SAS (13 experts), the working group on halophyte agriculture and salt-tolerant crops and plants (eight experts), the working group on the sustainable management of SAS (practices and policies) (15 experts), and the working group on integrated soil and water management under saline/sodic conditions (16 experts).

18. Around 120 soil laboratories from 21 countries in the region have joined the GLOSOLAN and the Asian Soil Laboratory Network (SEALNET) since its establishment in 2017. One hundred and fifty-three laboratory heads and technicians from 18 countries attended the fifth SEALNET meeting on 22 October 2021 that focused on defining the position of SEALNET in GLOSOLAN and the SEALNET workplan for 2022, and on reviewing the SEALNET governance. Dr Gina P. Nilo from the Philippines was re-confirmed as SEALNET Chair and Dr Muhammad Abbas Aziz from Pakistan was elected SEALNET vice-Chair. Countries also agreed to establish a regional Steering Committee to support the SEALNET Chair and vice-Chair in their role. National Soil Laboratory Networks (NASOLANs) were established in China, India, Indonesia, Mongolia, the Philippines, Thailand and Viet Nam. Forty-eight soil laboratories from Asia are taking part in the global proficiency test (PT) organized by GLOSOLAN in 2021. Six experts from the region served as trainers on GLOSOLAN webinars and training videos on the implementation of the Walkley and Black method were recorded in the Philippines and Thailand.

19. Some 18 experts from Bangladesh, Bhutan, Indonesia, Japan, Kyrgyzstan, Malaysia, Mongolia, Myanmar, Pakistan, the Philippines and Thailand, took part in the survey on the Use and Management of Fertilizers that was launched in December 2021 with the purpose of defining priority areas for the Fertilizer Code implementation, gaps, and main obstacles to sustainable fertilizer management in the participant countries. Within the framework of implementing the Fertilizer Code, around 28 laboratories from the Asia region have joined the International Network on Fertilizer Analysis (INFA) since its establishment in 2020.

20. Around 150 experts on soil salinity from Asia have joined the International Network on Salt-Affected Soils (INSAS) since its establishment in 2019. They are contributing to the working group on mapping, assessing, and monitoring salt-affected soils (13 experts), the working group on halophyte agriculture and salt-tolerant crops and plants (eight experts), the working group

on the sustainable management of SAS (practices and policies) (15 experts), and the working group on integrated soil and water management under saline/sodic conditions (16 experts).

21. Around 240 experts on soil biodiversity from the Asian region have joined the International Network on Soil Biodiversity (NETSOB) since its establishment in 2021. One expert from India is on the Scientific Committee of the Working Group on the economics of soil biodiversity. The working group is currently finalizing their workplan for the period 2022-2024 prior to implementing it.

22. A workshop on creating/maintaining national soil databases and soil property mapping was provided to the Asian Food and Agriculture Cooperation Initiative (AFACI) countries – Bangladesh, Bhutan, Cambodia, Indonesia, Republic of Korea, Kyrgyzstan, Laos, Mongolia, Myanmar, Nepal, the Philippines, Sri Lanka, Thailand, and Viet Nam – in November 2021. Additionally, the GSP Secretariat supported countries by releasing video tutorials on the topic. Gridded soil maps were prepared for soil organic carbon (SOC) mapping, sequestration modelling and soil salinity mapping.

23. AFACI countries also benefitted from another workshop on soil data management aiming at providing countries with the tools and methods for updating, cleaning, standardizing, quality control and sharing their soil databases with FAO was organised in February 2022.

24. After contributing to the global soil organic carbon map (GSOCmap), all countries from the Asian region are providing information to be contained on the global soil organic carbon sequestration (GSOCseq v1.0 and v1.1) map and on the global soil salinity (GSASmap v1.0) map. Efforts are currently being made to progress in the realization of the global black soil distribution map (GBSmap v1.0).

7.3 Near East and North African Soil Partnership (NENA)

25. The seventh meeting of the NENA Soil Partnership was held virtually in March 2022. The meeting aimed to a) update the national focal points on the vision of the new GSP framework 2022-2030 and on GSP activities of regional interest, b) inform each other on national activities on soil, including the establishment of the national soil partnerships, c) brainstorm on which activities to implement in the region in 2022, and d) update participants on the implementation of the regional TCP/RAB/3802 project on “Capacity development for sustainable management of soil resources in the NENA region to achieve the Sustainable Development Goals”. In this regard, the project is on track in delivering training on digital soil mapping and in producing national soil property maps, and in assessing laboratory capacities and needs, and in providing training tailored on each laboratory specific needs. This is overall true in all beneficiaries (Iraq, Jordan, Lebanon, Morocco, Oman, Sudan, Syria, Tunisia, Yemen and Palestine) but Egypt and Iran in which the governments are still to clear the project document or approve the implementation of project activities. NENA Soil Partnership countries showed great interest especially in the implementation of RECSOIL and the Global Soil Doctors Programme. The Partnership agreed to meet again in June to discuss how to revise its governance and set up its workplan based on the decision of the 10th GSP PA and factoring in the new GSP Action Framework for 2022-2030.

26. In December 2021, the NENA region organized more than 25 events to celebrate WSD in the region.

27. The NENA Soil Partnership is publishing three policy briefs on a) soil fertility and the implementation of sustainable soil management (SSM) to boost soil productivity, b) the best practices to prevent soil erosion including water harvesting, and c) conservation agriculture and carbon sequestration, which aim to raise awareness among policymakers on the need to protect soil resources and mobilize financial resources. Another two policy briefs on life and soil biodiversity, and soil pollution in NENA countries are being finalized.

28. A call was launched to identify NENA countries with an interest in implementing the Global Soil Doctors Programme. Countries that expressed an interest in implementing the Programme are Bahrain and Morocco. Once a promoter is identified in each country, selected experts will be trained on the use of the Programme's materials to train farmers to become Soil Doctors.

29. Because of the limited presence of black soils in the region, only Syria participated in the activities of the International Network of Black Soils (INBS). In this regard, Syrian experts are contributing to writing a report on the Global Status of Black Soils and provided their national map for the Global Black Soil Distribution map.

30. The regional database on Soil Research and Development prepared by the ASP was shared with the Pillar 3 Chair for NENA, Mr Bahram Taheri from Iran. The database aims to compile information on leading/core soil science research and development institutions, major soil science research and development projects, and research priorities.

31. Countries in the Near East have been contributing to the Soil Atlas of Asia, an activity that started in March 2018 and will conclude in July 2022 with the launch of the Atlas at the World Soil Congress in Glasgow. Great attention was paid to the conversion of national soil classification into the WRB 2014. Countries were supported in the finalization of their national maps that have been compiled in a single layer after the integration of borders. The first version of the regional soil classification map was endorsed at the fifth editorial board meeting in March 2022.

32. Around 80 soil laboratories from 19 countries across the region have joined the GLOSOLAN and the Near East and North African Soil Laboratory Network (NENALAB) since its establishment in 2020. Forty-six laboratory heads and technicians from 14 countries attended the second NENALAB meeting on 28 October 2021 that focused on defining the position of NENALAB in GLOSOLAN and the NENALAB workplan in 2022, to discuss the possibility of creating a NENALAB Steering Committee to support the NENALAB Chair and vice-Chairs in their role. The terms of reference (ToRs) for this new position were endorsed at the fifth GLOSOLAN meeting since they are common to all regions. The NENALAB Steering Committee is composed of Ms Yara Khairallah from Lebanon and Mr Fassil Kebede from Morocco. National Soil Laboratory Networks (NASOLANs) were established in the Islamic Republic of Iran and the Syrian Arab Republic. Some twenty soil laboratories from the NENA region took part in the global proficiency test (PT) organized by GLOSOLAN in 2021. Three experts from the region served as trainers on GLOSOLAN webinars.

33. Six experts from Iraq, Lebanon, Syria, Sudan, the United Arab Emirates (UAE) and Palestine, answered the survey on the Use and Management of Fertilizers that was launched in December 2021 with the purpose of defining priority areas for the implementation of the Fertilizer Code, tackling gaps, and some of the main obstacles to sustainable fertilizer management in the participating countries. In the framework of implementing the Fertilizer Code, around 14 laboratories from the NENA region have joined the International Network on Fertilizer Analysis (INFA) since its establishment in 2020.

34. NENA countries showed interest in the topic of soil salinity. They contributed to the Global Symposium on Salt-Affected Soils held between the 20-22 October 2021 giving six presentations and producing eight posters plus articles covering the proceedings of the Symposium. Around 140 NENA experts on soil salinity have joined the International Network on Salt-Affected Soils (INSAS) since its establishment in 2019. They contribute to the working group via mapping, assessing and monitoring SAS (22 experts), the working group on halophyte agriculture and salt-tolerant crops and plants (made up of seven experts), the working group on the sustainable management of salt-affected soils (practices and policies with 16 experts), and the working group on integrated soil and water management under saline/sodic conditions (11 experts).

35. Around 30 experts on soil biodiversity from the NENA region have joined the International Network on Soil Biodiversity (NETSOB) since its establishment in 2021. One expert from Egypt is on the Scientific Committee of the Working Group on the sustainable use, management, and conservation of soil biodiversity. The working group is currently finalizing their workplan for the period 2022-2024 prior to the implementation phase.

36. After contributing to the global soil organic carbon map (GSOCmap), all countries from the NENA region are adding to the global soil organic carbon sequestration (GSOCseq v1.0 and v1.1) map and to the global soil salinity (GSASmap v1.0) map. The GSP Secretariat is supporting their work by providing online workshops. Efforts are also underway to make progress with the creation of the global black soil distribution map (GBSmap v1.0).

37. The Chair of NENA and other soil scientists from the region are part for the OEWG of the Action Framework 2022-2030 and contributed to the development of this new strategic document.

7.4 European Soil Partnership (ESP)

38. A new ESP Secretariat was established at the Johann Heinrich von Thünen Institute, Germany's Federal Research Institute for Rural Areas, Forestry and Fisheries, to support and facilitate the activities of the Partnership.

39. The EU Soil Strategy 2030 was published in November 2021. It foresees the development of a legislative proposal to map and restore unhealthy soils, based on a set of soil indicators. The strategy and its implementation are embedded in the EU Green Deal, which involves a series of policies and indicators encompassing the Zero Pollution Action Plan, the European Climate Law, Farm2Fork Strategy, and the Common Agricultural Policy. This strategy involves the foundation of the Coalition of Action 4 Soil Health (CA4SH) as the network of networks on soil in Europe; with the GSP and the ESP being considered as important partners.

40. Several research projects have recently analysed the capacity of countries and at EU-level to monitor the condition of soils, these include: the European Joint Programme Soil (EJP) for agricultural soils, and the HoliSoils project for forest soils with a focus on carbon monitoring. The information discussed towards a European soil monitoring system by Working Groups recently formed in support of the European Soil Observatory (EUSO), is positioned within the EU's Joint Research Centre (JRC). Regarding a soil data infrastructure in Europe, the EJP Soils project, as well as the European Environment Agency (EEA), are continuing to investigate the use of the INSPIRE Directive to enable geospatial data on the environment exchanges, while the needs of the Global Soil Information Systems (GLOSIS) are also under review.

41. In order to develop concrete and innovative solutions to protect soils, one of the five missions for the Horizon Europe, EU research and innovation programme focusses on "A Soil Deal for Europe". The programme foresees the establishment of 100 living labs and lighthouses to lead the transition towards healthy soils by 2030. Several mission targets closely connect with the objectives of the GSP, namely, to promote soil ecosystem services, to detect degraded soils, and to promote SSM. In specific support of such actions, ESP Pillar 3 has been involved in an analysis of the structure and effectiveness of soil science to fulfil the knowledge needs of this process.

42. Many ESP experts are involved with GSP networks like EUROSOLAN, INBS, INSAS, INSII, and NETSOB which are currently chaired by ESP members.

43. Around 175 soil laboratories from 41 countries in the region have joined the Global Soil Laboratory Network (GLOSOLAN) and the European and Eurasian Soil Laboratory Network (EUROSOLAN) since its establishment in 2019. Seventy-six laboratory heads and technicians from 29 countries attended the third EUROSOLAN meeting on 27 October 2021 that focused on defining the position of EUROSOLAN in GLOSOLAN and the EUROSOLAN workplan in 2022, and on reviewing on the EUROSOLAN governance. Due to the need to improve the communication with Russian speaking countries, EUROSOLAN agreed to have two vice-Chairs, one to represent European countries and one to represent Eurasian countries. Ultimately, Ms Marija Romić from Croatia was elected EUROSOLAN Chair, Mr Oğuz Can Turgay from Turkey was elected EUROSOLAN vice-Chair for European countries and Ms Elena Shamrikova from the Russian Federation was elected EUROSOLAN vice-Chair for Eurasian countries. Countries also agreed to establish a regional Steering Committee to support the EUROSOLAN Chair and vice-Chairs in their role. The ToRs for this new position were endorsed at the 5th GLOSOLAN meeting since they are common to all regions. The EUROSOLAN Steering Committee is composed by Ms Ágnes Nagy from Hungary, Mr Christian Hartmann from France, Ms Špela Velikonja Bolta from Slovenia, Mr Aldis Butlers from Latvia, and Mr Giorgi Ghambashidze from Georgia.

44. A roadmap towards a new Subregional soil partnership for the Western Balkans has been prepared and is expected to be created in 2022.

45. The Subregional Soil Partnership for Eurasia (EASP) has advanced its workplan, updated in 2019. Experts from the region contributed to the publication of the book on Sustainable management of soil resources in the Eurasian region.

46. As part of the regional priorities, Eurasian countries have contributed to the Global maps of salt-affected soils and black soil distribution, as well as in the preparation of the Global Status of Black Soils.

47. The Government of Uzbekistan was the initiator and one of the co-organizers of the Global Symposium on Salt Affected Soils (GSAS), held in October 2021. Due to the COVID-19 pandemic, the GSAS could not be organised in person in Uzbekistan as originally planned. However, the Government of Uzbekistan organized a face-to-face event in parallel to the Symposium to facilitate the attendance of multiple national experts, thus contributing to enhance their capacities and facilitate the transfer of knowledge between Uzbek and international experts.

48. The sixth plenary meeting of the EASP scheduled in October 2021 was postponed to March 2022 pending the materialization of resource mobilization efforts to implement SSM.

Unfortunately, the conflict in the region forced the meeting to be postponed to an indefinite date, as the participation of all members could not be guaranteed.

49. The Subregional Soil Partnership for the Pyrenees (ASPyr), established in May 2021, has initiated its activities in three main areas: awareness-raising, the collection of soil information, and soil erosion. ASPys members have prepared and submitted two micro-projects to a call from the Working Community of the Pyrenees on the elaboration of soil information for the public along long-distance routes and on the Camino de Santiago; and the elaboration of a 1:400,000 soil map with existing information (Spain-France-Andorra), to identify the gaps in soil surveys. The proposals have been jointly developed by the *Association Française de l'Étude des Sols* (AFAS) and the *Sociedad Española de la Ciencia del Suel*o (SECS).

7.5 Latin American and the Caribbean Soil Partnership (ASLAC)

50. The ASLAC elected its new chair, Ms Sol Ortiz, focal point for Mexico and reviewed the composition of its Steering Committee at the eight regional meeting held virtually in July 2021.

51. A regional webinar for the WSD 2021 celebration was held between the 2-3 December 2021 in collaboration with the FAO Regional Office in Chile and the FAO Subregional Office for Mesoamerica in Panama. The event was attended by more than 1 000 participants and consisted of presentations on the global soil salinity map, the global soil organic carbon (SOC) sequestration potential map and ongoing sustainable management projects in the region.

52. To mark WSD, the region organized around 130 events, and Brazil and Mexico ranked 4th and 5th in the world in terms of the number of events organized. The region also had one of the highest outreach rates of across social media and press.

53. The activities of the Sustainable Soil Management Group were addressed mainly through the regional TCP project, "Actions for the climate management of agricultural ecosystems with emphasis on water and soil", launched on 25 November 2020. A regional database was created with more than 100 surveys on Sustainable Soil and Water Management Practices. The database shows the most implemented practices in the region, the time of application, the profile of implementing actors, etc. To validate the practices, pilots were established in eight countries: Argentina, Colombia, Costa Rica, Ecuador, Nicaragua, Paraguay, Uruguay, and Venezuela; where the Sustainable Soil Management Assessment Protocol (FAO, 2020) will be applied. These pilots include different land uses, agroecological zones and types of practices. In this regard, a workshop was held to explain the draft idea of the technical Manual of the SSM Protocol in December 2021. A collaboration recently started with the FAO Regional Office, to manage the Soil Community of Practice for Latin America and the Caribbean.

54. Activities carried out by the Soil Mapping and Information Group continue to be strengthened in the region, thanks to advances in salinity and carbon sequestration potential maps. An important regional mapping group has been consolidated, to target the actions agreed on in the workplan. At the regional level, several activities were developed, such as a) revision and updating of soil data in the Latin America and Caribbean Soil Information System (SISLAC), b) updating of Ecuador's soil database with more than 13 000 soil profiles, c) updating of the database and digital mapping of soil texture in Colombia, d) provision of free workshops on digital soil mapping, e) digital erosion mapping in Bolivia and Peru, f) digital mapping of soil texture in Argentina, and g) digital update of the soil map of Uruguay.

55. Progress is being made in the implementation of International Code of Conduct for Fertilizer Use and Management in a collaborative and participatory manner by defining priority actions and products to be achieved. Interest was identified in moving towards the standardization of biofertilizers and focusing on the potential synergies between the different countries in the region in terms of training experiences, technical advances, and standardization. The video on the fertilizer code was published in Spanish and a regional action plan will be developed based on the results obtained from the survey on the implementation of the "Fertilizer Code". A regional webinar "RECSOIL and sustainable management of nitrogen fertilizers: from concept to practice" will be proposed to disseminate sustainable land management (SLM) practices focused on reducing greenhouse gas (GHG) emissions and environmental pollution while sequestering organic carbon in soils. Since most nitrous oxide emissions come from agricultural activities, the webinar will focus on the efficient use of nitrogen fertilizers.

56. The roadmap for the implementation of the Global Soil Doctors Programme was presented, a first pilot was implemented in Mexico, and it is being proposed in other ASLAC countries, such as Bolivia, Chile, Colombia, and Costa Rica. Mexico appears as the first promoter of the Programme, and registered on the map of promoters in the region. In October 2021, the posters translated into Spanish were published and progress is being made with the soil kits, which will help with the training process for farmers.

57. RECSOIL developed two first concrete activities, in Costa Rica with the pilot implementation of activities in the field and in Mexico with the formulation of a Concept Note for the Green Climate Fund (GCF). The RECSOIL programme is moving on to a field implementation phase, continuing the work done in Costa Rica and Mexico and expanding its activities to Bolivia and probably Ecuador.

58. Around 206 soil laboratories from 23 countries in the region have joined the GLOSOLAN and the Latin American and the Caribbean Soil Laboratory Network (LATSOLAN) since its establishment in 2018. Ninety-three laboratory heads and technicians from 19 countries attended the fourth LATSOLAN meeting on 25 October 2021 that focused on defining the position of LATSOLAN in GLOSOLAN and the LATSOLAN workplan in 2022. Countries also agreed on having ToRs for the LATSOLAN Chair and vice-Chair, and the regional Steering Committee common to all Regional Soil Laboratory Networks.

59. The LATSOLAN Steering Committee held three meetings in October and December 2021 and in January 2022 to plan and follow up the activities of the Network, and to revise its governance in response to the appointment of Ms Miriam Ostinelli (former LATSOLAN Chair) as GLOSOLAN Chair. Ultimately, Ms María Cristina Suárez Marte from the Dominican Republic accepted the interim position of LATSOLAN Chair until the next elections in 2023.

60. Two new National Soil Laboratory Networks were launched in Chile (RENALASCH) and Mexico (MEXOLAN). Experts from LATSOLAN participated in online webinars on the implementation of GLOSOLAN Standard Operating Procedures as trainers and 48 laboratories from the region are participating in the global PT organized by the GLOSOLAN in 2021-22.

61. The English-speaking Caribbean subregion remains underrepresented as many countries have not nominated and ratified focal points. It is envisaged that the recently approved project SOILCARE Phase 1 will improve the capacity and heighten the importance of soil. As such, an unidentified objective of the project is to ensure that the remaining countries nominate focal points to the Partnership. At subregional level the project aims to update soil profile information with the creation of a Caribbean Soil Information System (CARSIS) and strengthen analytical

capacity and capability through the Caribbean Soil Laboratory Network (CARSOLAN) both aligned and connected to global affiliates. The project also includes several SSM and SLM activities which would serve as pilots with expand opportunities. Additionally, there is a capacity building component that aims to increase awareness and knowledge of soils and their importance at all levels and scales. It is hoped that the Global Soil Doctors Programme can be incorporated. It is also noted that several other projects and programme activities have been ongoing but not adequately reported or easily accessible.

7.6 Pacific Soil Partnership (PSP)

62. The 5th PSP meeting was held virtually between the 12 and 13 April 2022 to a) update the national focal points on GSP activities of regional interest, b) inform each other on national activities on soil, and c) prioritise activities for implementation in the region in 2022.

63. A call was launched to identify Pacific countries with an interest in implementing the Global Soil Doctors Programme. Countries interested in implementing the programme are Australia to support the programme in the Pacific islands of Fiji and Tonga. Once a promoter is identified in each country, selected experts will be trained on the use of the Programme material to train farmers to become Soil Doctors.

64. Around 80 soil laboratories from nine countries in the region have joined the GLOSOLAN and the Pacific Soil Laboratory Network (ASPAC) since its establishment in 2019. The regional network organized its third annual meeting in November 2021 to revise its workplan and position in GLOSOLAN. Four soil laboratories from the Pacific countries are taking part in the global PT organized by GLOSOLAN in 2021 and under implementation in 2022, to assess the quality of the laboratories' analytical performance, especially in determining carbon content in soils.

65. Australia is implementing the Australia's National Soil Strategy to inform land management and improve soil conditions, agricultural productivity, and environmental outcomes. In this regard, the country is allocating AUD 54.4 million over two years to support farmers and land managers to access low-cost soil sampling and certified testing in exchange for sharing their data. This new programme will increase the frequency and quality of soil testing by farmers and land managers and provide access to this data through secure national platform, the Australian National Soil Information System (ANSIS). The quality, quantity, and distribution of information across Australia is under review by the Department of Agriculture, Water and the Environment (DAWE). Private and public entities will be paid to provide access to existing soil data to be incorporated onto the ANSIS.

    The Soil Science Challenge Grants Program and the National Soil Package will provide support (1) to researchers to address fundamental gaps in soil science and improve understanding of how to better manage Australia's soil resources, (2) to develop a new accreditation in soil science, and (3) for projects that promote and support the adoption of best practice in sustainable land management. A new National Land Management Classification System will also be established, and CSIRO will release a Soil Spectral Analysis Platform in the latter part of 2022, based on the transformation and harmonisation of NIR/MIR spectra from multiple laboratories.

    The Australian Government is also developing a five-year National Soil Action Plan to set out how programs and policies will be delivered by all Australian governments. The Department of Industry, Science, Energy and Resources and CSIRO are undertaking the re-sampling of a

national wide set of soil carbon sites to assess change since the original sampling in 2011, and to provide baseline and research data for the calibration and implementation of new soil carbon measurement and sequestration projects.

66. The Pacific Soils Portal has been open to the public for over two years, delivering the best available legacy soils data and knowledge for Fiji, Kiribati, Tonga, and Tuvalu. Usage levels have been slowly increasing to about 100 users per month potentially including a significant fraction of academic/student and ex-patriot users from the Pacific. Although modest by international standards, over 1 200 users undertaking nearly 3 000 sessions averaging eight minutes in duration which suggests a high level of engagement. Recent developments include adding another 84 legacy soil profile data points for Fiji: 75 from Nadi Forest soil reports and nine from the Seaqaqa Research Station of the Department of Scientific and Industrial Research (DSIR) soil report. At the same time the soil reports were improved to better organize the data and improve readability. A Phase II proposal has been submitted to ACIAR via CSIRO to load Vanuatu soils data to the portal, introduce raster digital soil mapping products and add more contemporary proximally sensed soil profile data. Discussions have also been held with the New Zealand Ministry of Foreign Affairs and Trade (MFAT) regarding expanding geographic coverage to include the Cook Islands and Niue for which legacy data is available and, which would require minimal harmonization to add to the Pacific Soils Portal.

67. A very large soil mapping programme is underway and carried out by Manaaki Whenua Landcare Research, New Zealand with 23 regional surveys. S-map now covers 37.1 percent of New Zealand, including 67.7 percent of "multiple use land". Technical advice was also provided to the World Soil Data Centre regarding the development of GLOSIS and contributions were made to various soil ontology initiatives. Data Privacy and indigenous data sovereignty – soil data ownership, soil data privacy and Māori data sovereignty continue to be of national interest and the resulting policies may affect what soil data can be released for use nationally and internationally. There has been a major refresh of the MWLR Soil Portal and work continues on the new version of NZ Soil Description Handbook and improved farm scale soil mapping protocols. MWLR is part of the international ring test of soil spectroscopy (Soil.Spectroscopy 4 Global Good), both NIR and MIR, led by the Woodwell Climate Research Centre. This initiative is aligned with the GSP's activities and thee GLOSOLAN spectroscopy working group.

68. The FAO Koronivia Joint Work on Agriculture initiative – hosted five webinars on a) soil organic carbon (SOC); b) improved nutrient use and water use c) improved livestock systems including biogas and its use for soil improvement; d) adaptation options; and e) soil testing and its adaptation benefits. Palintest SKW 500 soil test kits were ordered for each FAO country and enough Hanna NPK test kits to test 250 samples.

69. In Tonga, with CSIRO and SPC, 12 soil management training events were conducted including the use of the Palintest kit and had over 200 participants. These were the foundations for starting farmer field schools and the GSP's Soil Doctor Programme. Staff are now engaged in analysis of the ash from the volcanic eruption and the subsequent tsunami – in Tonga. The CSIRO led ACIAR Pacific Soils Project has been working in Fiji, Kiribati, Samoa, Tonga and Tuvalu and implementing training associated with the Soil Doctor Programme.

7.7 North American Soil Partnership (NSP)

70. The NSP which is made up of scientists from both Canada and the United States, has actively contributed to the INBS, completing mapping of North America and drafting chapters for the GSP's black soils publication.

71. Canada and the United States have completed the salinized soils mapping and affiliated reports and documents for North American SAS for the Global Soil Salinity Map initiative.

72. Scientists and policymakers from Canada and the United States participated in and co-organized the FAO Global Symposia on Soil Biodiversity in April 2021 and presented research opportunities for the GSP and attendees.

73. The Secretariat for the Global Soil Biodiversity Initiative (GSBI), based at Colorado State University, in the United States, is a partner of the GEOBON Soil Observation Network (SoilBON) and the Food Web research team. Additionally, the Convention on Biological Diversity (CBD) is engaged through a GSBI Secretariat and Scientific Advisory Committee position statement on the importance of the inclusion of soil biodiversity science in the Conference of the Parties (COP).

74. Government agencies from the United States released an announcement regarding the United States Department of Agriculture's (USDA) Agricultural Research Service (ARS) Agency on Soil Biology and Soil Health Research Team on WSD 2021 via social media including on Twitter, Facebook and the USDA website. Additionally, members of the Faculty of Land and Food Systems at the University of British Columbia in Canada made it to first place in the Food and Agricultural Organization's (FAO) WSD booklet contest with their entry: "The Beetle: A Salty Soil Journey".

75. Agriculture and Agri-Food Canada (AAFC) and other Canadian organizations, including the Canadian Society of Soil Science (CSSS) and Soil Conservation Council of Canada (SCCC), promoted WSD on a variety of platforms (Twitter, Facebook, press releases, newsletters).

76. Universities and government agencies in the USA are taking part in an effort to quantify soil carbon storage phenomena and potential in the USDA designated Conservation Reserve Program sites, specifically wetlands, grasslands, and forests.

77. The GSBI secretariat, a partner of the GSP, co-sponsored the launch of the NETSOB on 17 December 2021. Many scientists in the USA and Canada are leading this effort, including Zoë Lindo from the Western University of Canada, chairperson of the working group on sustainable use and management of soil biodiversity, and Diana Wall from GSBI, is the NETSOB board member.

78. Within the United States, the USDA and partner research agencies, especially the USDA's Natural Resources Conservation Service (NRCS), Agricultural Research Service (ARS), and the National Institute of Food and Agriculture (NIFA) as well as the National Science Foundation support activities and collaborations that are closely aligned with those of Pillar 3 of the GSP.

79. Canada's Agricultural Climate Solutions (ACS) program includes the establishment of a Canada-wide network of regional collaborations led by farmers and including scientists and other stakeholders. These collaboration hubs, also known as "Living Labs" will develop and share farming practices that best store carbon, reduce greenhouse gas emissions (GHG), and mitigate climate change. Since the "Living Labs" concept was endorsed by G20 Ministers of Agriculture in 2018, efforts continue to advance this approach regionally and globally through

discussions between representatives of AAFC's "Living Labs," the USDA/LTAR network, on how to build a stronger network of networks on "Living Labs" through the Living Soils for the Americas, and other initiatives.

80. The USDA long-term Agroecosystem Network conducts research in different production zones to scientifically evaluate the benefits of both traditional and aspirational production systems over long periods of investigation. Included in these, efforts are focused on evaluating short- and long-term changes in soil health and the associated ecosystem services in these traditional and aspirational production systems.

81. The USDA Sustainable Agriculture Research and Education (SARE), part of NIFA, supports research, education and related efforts that enable evaluation and adoption of innovative agricultural approaches to increase productivity and simultaneously protect natural resources, including those that address the improvement of soil health.

82. Non-governmental organizations (NGOs) within the United States are seeking to advance research on soils for improved outcomes; including efforts for adoption and communication of soil health practices by the National Association of Conservation Districts (NACD). Entities are also working to provide science-based publications that span agricultural efforts to increase the awareness of the importance of soils as a natural resource and the sustainable use and management of agricultural soils.

83. The Council for Agricultural Science and Technology (CAST) in the United States recently released a publication entitled "The Role of Agricultural Science and Technology in Climate 21 Project Implementation," that includes aspects of appropriate soil health research and communication.

84. In Canada, AAFC provides significant science and innovation resources for Canadian scientists to collaborate with the agriculture sector industry to create developments that seek to benefit soil health, and related issues such as soil carbon sequestration; nitrogen and carbon dynamics; soil microbiome; and reducing soil chemical, biological and physical degradation.

85. Both countries are supporting targeted research on soil, particularly focused on greenhouse GHG emissions from agriculture, soil biodiversity and the quantification of soil heath.

86. The NSP is actively contributing to the International Network of Soil Information Institutions (INSII) and GLOSIS activities. It has contributed to the preparation of the GSS map, having submitted the national maps for both Canada and the USA and related reports on SAS. In the United States, NRCS staff made presentations at the GSP Global Symposium on Salt-Affected Soils in October 2021, discussing mapping and analysis of, and management measures for SAS. Both countries are also participating in the preparation of the Global Soil Organic Carbon Sequestration Potential map. The United States regularly participates in workshops to draft a manuscript.

87. Agriculture and Agri-Food Canada (AAFC), as part of its programming, works to enhance the National Soil Data Base and other related data sources for the purposes of expanding and improving the application of soils data and information. The modelling and mapping that is carried out as part of AAFC's Sustainability Metrics Program continues to support the global modelling and mapping initiatives of the GSP.

88. The US National Academies Board on Agriculture and Natural Resources conducted a workshop on a Dynamic Soil Information System. A workshop was organized to envisage a Dynamic Soil Information System. Such a system would overlay important chemical, physical,

and biological information about soil samples taken across a wide range of geographies with information on influences on soils, such as land use and land management, soil moisture, weather, and other variables. The workshop examined the level of detail needed by potential users of this combined information and envisioned how data on soils and other parameters could be most effectively collected, combined, and curated over time.

89. Scientists from both countries continue to participate in the GLOSOLAN under Pillar 5. The United States is active in implementing the workplan of GLOSOLAN including the attendance to the fifth GLOSOLAN meeting and the development of standard operating procedures. NSP partner, Kellogg Soil Survey Laboratory (KSSL), is co-leading the GLOSOLAN activities on soil infrared spectrometry in particular, mid-infrared spectrometry, or MIR. A webpage outlining KSSL-MIR support services was submitted for use on the GLOSOLAN website. The KSSL developed a draft standard operating procedure (SOP) for sample preparation and MIR analysis for potential GLOSOLAN use. Staff from KSSL both reviewed and edited GLOSOLAN SOPs for endorsement and were invited to serve on the GLOSOLAN technical committee.

90. USDA-NRCS soil scientists attended the second GLOSOLAN plenary on soil spectroscopy and the outgoing co-chair of GLOSOLAN soil spectroscopy co-presented prior year's accomplishments. The KSSL is currently participating in the second GLOSOLAN PT program, and its performance will be compared with those of other GLOSOLAN member facilities around the world.