



Food and Agriculture
Organization of the
United Nations



Soil Atlas of Asia-II/19/Report

Report of the Second Editorial Board meeting, Soil Atlas of Asia

Wanju/Jeonju, Republic of Korea, 29 April – 3 May 2019



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FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

Rome, 2019

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Introduction

The second Editorial Board meeting of the Soil Atlas of Asia took place from 29 April to 3 May 2019 at the Rural Development Administration, National Institute of Agricultural Sciences in Wanju/Jeonju, Republic of Korea. The scope of the meeting was to review the progress made in the writing of the first 60 pages of the Atlas, agree on the final version of the Table of Content, and plan next year's activities with a focus on data collection, the preparation of maps, pictures provision and text writing for the remainder of the atlas.

The meeting was opened by Mr. Yong-Beom Lee (Director General of National Institute of Agricultural Sciences, RDA), Mr. Jiweon Lee (Director General of Technology Cooperation Bureau, RDA) and Mr. Arwyn Jones (European Commission Joint Research Centre, JRC-EC). The meeting was attended by 19 participants from 13 countries in Asia, Eurasia and the Near East.

Main activities and decisions

Soil classification

Ms. Erika Micheli (Szent István University) provided a series of lectures and field training on the use of the World Reference Base for Soil Resources (WRB) for soil classification. Differences between the WRB 2006 and the WRB 2014 were highlighted by Japan, who showed how their map changed when they changed from one system to the other. Ultimately, the decision was made to use the WRB 2006 classification system for preparing the maps in the Atlas. This was based on (1) the fact that limited data existed for key criteria in the WRB 2014 / 2015, (2) to avoid using use transfer functions and calibrations for preparing the maps and (3) to provide correspondence with maps in previous soil atlases.

The map spreads in the Atlas will display the main WRB reference group and one dominant qualifier. For any countries that have the WRB 2014 or 2015 in place: if some qualifiers in the WRB 2014 or 2015 is not in the WRB 2006, this can still be reported in the soil classification of the Atlas.

Decisions on specific soil types:

- Haplic (typical) soil units should be avoided as much as possible in the Atlas. Eventually, soils should be classified using other parameters, such as soil depth.
- Frozen soils: if the soil depth is less than 20 cm then they can be classified as Leptosols.
- Acid sulphate soils: a section should be added in the Atlas.
- Histosols: their fragility to climate change and role in carbon sequestration should be highlighted.
- Cryosols: Nepal and Mongolia to write about them in the Atlas.

Soil types can be divided into two groups: major and minor soil types depending on the data and information collected. Indeed, there is the risk that it will not be possible to represent minor soil types in the dedicated maps. These distinction will be reported right after the section on "The World Reference Base for Soil Resources" at page 52 in the print out.

Ms. Micheli will prepare a form for harmonizing soil classification, building on the table for converting soil taxonomy developed by Thailand (see Annex 1).

Mapping

The Atlas will focus on those areas not covered by other Atlases in the JRC series. However, the decision was taken to include the Asian part of Russia and Turkey in the overview map on page 68-69.

At present, the only harmonised datasets expressing the soil type for the entire area are the Harmonised World Soil Database and the WRB probability map in ISRIC SoilGrids. The intention is that a new map soil map of Asia will be prepared using the data submitted by each country to the GSP and the JRC. By the end of June 2019, Mr. Jones will draft an email for the GSP Secretariat to send a request to all countries asking them to provide polygon or raster information at a scale of 1:500.000 or :1.000.000. It would be easier to make maps with polygons but raster information can be accepted and then reprocessed. For each polygon or raster cell, countries should submit:

- Name of the soil in their national classification scheme
- A code for the perceived WRB translation (as defined by Annex 3 of the WRB Manual)

In addition, for each legend item for their country (i.e. list of all Reference Groups + main qualifiers), countries are asked to provide:

- Modal profile data, together with representative landscape and profile pictures. Mr. Jones will send countries a template with the data to provide, which will be kindly prepared by Ms. Micheli

Data should be submitted by the end of August 2019.

If some country fails to submit national data, then the Harmonized World Soil Database or the ISRIC map will be used to fill the gaps. Because the map from ISRIC is a prediction map, at the time of using it, a look should be paid to the uncertainty map. All data and information will be presented as they are at the purpose of triggering countries to submit more data or produce new ones. In this regard, no harmonization to the lower denominator will be made.

Small countries and countries with very detailed mapping are kindly invited to send their maps at the largest national scale available. Countries are also invited to send examples of medium- and large-scale soil maps (reference: page 128 in the Soil Atlas of Africa).

In order to make the Soil Atlas of Asia consistent with the others in the series, the scale of the individual map spreads was set to 1:3.000.000. In their dedicated mapping spreads, Turkey and Russia will be represented at a smaller scale of approximately 1:6.000.000 and 1:20.000.000, respectively. It was noted that the scale of the map impacts the number of pages in the Atlas, which should be a multiple of 16, and its production cost. In order to reduce the cost, the proposal to have only one big foldable map at the end of the Atlas was made as well as the proposal to reduce the scale. Mr. Jones will enquire with the graphics and printing companies on the variation of costs if these proposals are taken into account. Alternatively, a decision can be taken at the next Editorial Board when a more advanced draft of the Atlas will be presented.

Mapping spreads: Each spread is identified so for the central meridian of each page will be vertical. Islands and archipelagos will be included as inset boxes in the spreads, as required. Mr. Jones, will directly coordinate with the focal point of countries with islands to see how to better represent them. In the more detailed map spreads, Russia and Turkey will appear in white.

Legend: The reference soil groups in the legend of the Soil Atlas of Africa should be taken as a reference. For the principal qualifiers, please refer to those in Annex 3 of the WRB 2006. The legend in the maps and spreads will contain only soils that appear in those specific maps.

Colors: The colors of the reference soil groups will be used throughout the whole Atlas, including in the “Major soil types of Asia – page 52 of the print out). Mr. Jones will ensure that colors are coherent with those used in other Atlases of the series. However, the current red colour of Andosols will be made a bit darker on the request of the representative of Japan.

Regional overview maps

In addition to the main Soil Map of Asia, the atlas will contain a series of regional overviews. A set of initial maps will be developed based on the UN classification¹. Regional maps will be accompanied by descriptive texts and summary statistics on soil types.

Soils of Western Asia (Page 70-71): Western Asia is a rather vague ‘geographical’ definition as it overlaps with the Near and Middle East and is not generally used. For the Atlas, this spread will include the all target countries with a Mediterranean coastline (including Turkey, the Caucasus countries and the Sinai Peninsula) and the Arabian Peninsula (including Iraq).

GSP national focal points for Iran, Iraq, Jordan, Oman, Qatar, Saudi Arabia and the United Arab Emirates should be involved more in the preparation of the Atlas. Still, ICBA can provide substantial contributions in terms of pictures and text on arid environments. Soil data on Sinai can be retrieved from the Soil Atlas of Africa.

Soils of central Asia (Page 72-73): Central Asia is also a rather vague definition. It was accepted that this map would cover Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan. A decision was taken to keep Afghanistan in central Asia. However, this is not online with the UN definition, which should also include Iran and a case may be made to include it as part of Southern Asia. Russian will not be included in this map.

Soils of Southern Asia (Page 74-75): This map will cover Afghanistan, Bangladesh, Bhutan, Iran, Maldives, Nepal, India, Pakistan and Sri Lanka. Due to their location, the Andaman and Nicobar Islands will be included in both the Southern and Southeast Asia maps. This grouping also matches the South Asian Association for Regional Cooperation (SAARC).

Soils of Eastern Asia (Page 76-77): Because this area is very large, the meeting discussed the possibility to divide the region into two parts so to keep them at the same scale of other overview maps. Mr. Jones will prepare the maps to facilitate the decision making – it should be noted that the UN classification makes a distinction between Eastern and South-Eastern Asia on the following basis:

- East Asia consists of China, Japan, the Korean Peninsula and Mongolia.
- Southeast Asia consists of Brunei, Cambodia, East Timor, Indonesia, Laos, Myanmar (Burma), Malaysia, Philippines, Singapore, Thailand and Vietnam. Due to their location, the Andaman and Nicobar Islands will be included on this map as well.

Some of the spin off products of this Atlas could be to focus in more detail on specific regions.

¹ <https://esa.un.org/MigFlows/Definition%20of%20regions.pdf>

Data Policy

The JRC and the GSP will make a formal request to countries for sharing their maps and data. The GSP will enquire whether their soil data policy can be used for the Atlas so that a new revised Soil Map of Asia can be released at the same time as the Atlas (showing WRB name).

Table of contents

The following decisions were made;

- The Key Messages at the beginning of the Atlas should be more highlighted.
- The Chapter on “Current Initiatives, future challenges and conclusions” has to be integrated and related to the “Scope of the Atlas” section. In this regard, the Atlas will open with:
 - o Scope of the Atlas + textbox on the Global Soil Partnership, which will replace the textbox on “Some facts about soil of Asia”. All important documents from the FAO and the GSP should be mentioned in this section in order to provide a global perspective. Suggestion to eventually mention WOCAT and the SLM project. Ultimately, a national perspective on legal frameworks on soil can be provided through SoilLEX, a database under development at the GSP.
 - o Global soil initiatives
 - o Soil policies in Asia
 - o Soil research
 - o Awareness raising and education. This section can report about the National Soil Partnerships.
 - o In order to provide a regional and EU perspective, a reference to Association of Southeast Asian Nations (ASEAN) together with EU policies and strategies for Asia should be made.
- The textbox on “Some facts about soil of Asia” should become a fact box under “The role and importance of soil” section. This section should be enriched with agricultural information (numbers, figures, scenarios) and read as following:
 - o The role and importance of soil: introduction to the general importance of soil and soil functions
 - o Tell a story about the importance of soil in Asia including numbers, figures and scenarios. The chapter on “Key soil functions” (pages 32, 33, 34, 37, 40-43) should be merged to this one and retitled “Ecosystem services” or “Soil’s contribution to people”. A link to soil fertility and innovative agricultural practices should be expanded. Contributions will be provided on rice cultivation from Thailand, date palm from UEA and agro-forestry in India.
- In the section “Where do the soils of Asia come from?”:
 - o Highlight that human activities affect all other soil forming factors.
 - o Add a map on permafrost distribution and major drainage basins at page 21 of the print out
 - o The political map at page 22 in the print out should be moved to the Introduction. To note that the name “Eastern Sea” should be added to the “Sea of Japan”.
 - o The maps at page 23 in the print out should be moved to the Introduction.
- In the section “Soil-forming processes”:
 - o Be more specific on what common processes happen in humid conditions. In which region do they occur? For which soil types? A sentence stating that “the terms used to describe soils refer to the WRB 2006 described in section xxx” should be added.

- Thailand to submit a picture of Podzol for page 25 in the print out.
 - At page 27 in the print out: reduce the textbox on “Clay minerals” and expand the part on volcanic materials
 - In the section on “Soil assessment – Land evaluation” agro-ecological zones should be included.
 - In the section on “The World Reference Base for Soil Resources” only the WRB qualifiers used in the Atlas will be mentioned.
 - Page 139 in the print out will be deleted
 - In the section on “Soil degradation”, key threats to soil in Asia should be ordered by importance. The Status of the World’s Soil Resources report should be taken at reference. The section on soil pollution should be expanded to one page.
 - The section on “Interventions” (page 158 in the print out) should include inputs for up-scaling good practices
 - The section on “Key soil issues for Asian countries” will be developed for the next Editorial Board.
- Proposals:
- Add the national flag or a chart reporting the main soil types next to each country
 - Give more space to each for reporting
 - Use standard statistics

Mr. Jones will send a template to countries to complete.

Writing

Individual countries’ stories should be collected in one page text with good quality pictures. Stories could be about successful and unsuccessful practices (lessons learnt), awareness raising, historical events, etc. The “Stories” page in the RDA Webpage, which includes cartoons on soil management and other awareness raising material, can be taken as an example.

One section of the Atlas should be dedicated to how soils are being used in Asia. Still, a section on soil threats in Asia should be included. Among others, the topic of soil salinity should be addressed. This can be linked to the work that the GSP is currently doing to produce a global soil salinity map, which should consider also salinity at 30-50cm soil depth. In addition to natural salinity, salinization trends on managed soils especially should be discussed in the Atlas. By declaring to have data on these trends, India and Bangladesh volunteered to serve as case studies on this topic.

Indonesia and Malaysia will coordinate in presenting their soils and write a key message on peatlands management in Asia.

The case study presented by Mr. Anda in the meeting will be included in the section of the Atlas on land evaluation and suitability (pages 44-45 in the print out). A note on rice crop can be added.

The Atlas can also be enriched by providing the translation for the word for “soil” in different languages, as well as quotations and national perceptions on soil. The GSP Secretariat will lead the collection of these inputs.

Pictures

About 200-300 pictures are needed for the whole Atlas.

Only good quality pictures in terms of size and resolution will be considered for publishing. All pictures should be submitted with a caption and with the name of the person that took them for photo credits purposes. Pictures should be submitted with as much geolocation information as possible (location, district and region). All pictures should be original, meaning copyright free, or in the public domain with clear possibility to reuse. Each member of the Editorial Board should commit to provide pictures for the Atlas. If pictures are not available already, members of the Editorial Board or the contributing authors working with them should go to the field to take new ones. A list of the pictures needed and the persons/countries assigned to provide them is available in Annex 2. The GSP Secretariat will send an email to all countries that were assigned to provide pictures but that could not attend the meeting.

Suggestion to switch the order of the pictures at page 8 in the print out to have the landscape above the soil profile. Overall, the font size of all captions should be increased.

For the section “Major soil types of Asia”, pictures can also come from different countries. Indeed, this section aims to show typical landscapes associated with the soil profiles described.

Cover design, Preface, Forward, Preamble & logos

The color of the cover seems to be quite sensitive in some regions. In order to make a decision, a prototype will be prepared using the color of the rings of the Olympic Games for Asia (yellow). The JRC will prepare draft cover page examples to discuss at the 3rd meeting of the Editorial Board. The inside cover page (i.e. page 1), will contain an appropriate quotation/statement plus the logo of all organisations who provided financial support to the production of the Atlas.

The Preface, Forward and Preamble can be written and signed by the Director General of FAO and the Chair of the Asian Soil Partnership. Possible contributions from EC side will be checked.

All institutional logos of the members of the Editorial Board will be reported at page 3. Members of the Editorial Board that commit to be active until the end of the assignment were kindly invited to send the logo of their institution to Mr. Jones.

Authors

The decision to change the “Editorial Board” and the “Authors and principal contributors” titles in order to avoid repetition of names was made. Whoever will give a constant contribution to the writing of the Atlas will be acknowledged as Editorial Board member. The contribution of the members of the Intergovernmental Technical Panel on Soils should be evaluated by the GSP Secretariat. Mappers will be acknowledged as principal contributors, not under image and graphic credits.

Citations and Bibliography

Decision to use the standard scientific citation. However, the Atlas is not a scientific document so that only key documents will be cited (no need to cite five or more references per statement).

Acknowledgements

All contributions, even if little, will be acknowledged. Each member of the Editorial Board should keep track of the people they work with and the type of contribution they are giving. People will be separated based on the type of contribution they give: writing, mapping, provision of pictures, etc.

Additional assignments

All participants were asked:

1. To read the SWOT per each profile (pages 60-61 in the print out) and come back with suggestions on how the text can be improved. In order to facilitate the completion of this assignment, Mr. Jones will circulate the Word version of the document so for participants to submit their inputs in track change. Preliminary observations and decisions on the SWOT:
 - Talk about “limitations” instead of “weaknesses”
 - Look for another word for “opportunities”, maybe “management” or “recommendations”
 - The content of this section should be better defined. Eventually, the content can be organized in a table or merged with the descriptions of WRB Reference Groups (i.e. pages 52 to 61 in the print out). Mr. Jones will talk to the graphic designer about it.
2. Mr. Jones will circulate a table on the “National soil survey coverage in selected Asian countries” for countries to complete. This table will include a column for maps with a scale greater than 1:10.000. Information and data on monitoring and ongoing mapping activities will be addressed in a dedicated chapter.

Field training

As requested during the KO meeting, a short training course was organised in conjunction with the Editorial Board meeting on soil description and classification. The RDA prepared three soil profiles (on agricultural land reclaimed from the sea, under grassland and under rice (paddy) cultivation). Ms. Micheli provided a series of highly instructive supporting lectures and in-field instruction to support the translation of national soil classification schemes to WRB. Special focus was given on definitions of Anthrosols and Technosols (i.e. soils that have been significantly altered through human intervention) as they are widespread in the region (e.g. paddy, terrace, land reclamation, etc.) and on waterlogging characteristics. The training also saw several presentations highlighting country specific issues (e.g. problems with the definition of permafrost soils in Nepal, acid sulphate soils in India, volcanic soils in Japan), which were then discussed and resolved.

Conclusions and way forward

The Third meeting of the Editorial Board should to take place in Dubai, Thailand or Bangladesh in March-April 2020. The main focus will be about harmonizing data and maps, and overcoming border issues. In this regard, great attention will be paid to the section of the Atlas on “Data processing” (page 137 in the print out). Members of the Editorial Board will receive un-harmonized maps to study in January 2020. Ultimately, the Atlas will be launched in 2021 (date to be confirmed depending on the opportunities in terms of international events that will appear).

Ms. Caon will send the report of the meeting to all members of the Editorial Board and coordinate with Mr. Jones to follow up on individual assignments.

Annex 1. Soil Taxonomy conversion table developed and used by Thailand

ตารางที่ 7 สรุปการเทียบเคียงหน่วยแผนที่ดินของประเทศไทยระบบฐานอ้างอิงทรัพยากรดินของโลก (WRB) และระบบอนุกรมวิธานดิน (Soil Taxonomy)

| WRB (2014) | | Soil Taxonomy (1979) | | | Soil Taxonomy (1999) |
|-----------------|--------------------|----------------------|-------------|--------------------|--|
| RSGs | WRB | Order | Suborder | Great Group | Great Group |
| Histosols | Fibric Histosols | Histosols | Fibrists | Tropofibrists | Haplofibrists |
| Leptosols | Skeletal Leptosols | Entisols | Orthents | Troporthents | Psammaquents, Udorthents |
| | | | | Ustorthents | Udorthents |
| Arenosols | Gleyic Arenosols | Entisols | Aquents | Tropaquents | Psammaquents |
| | Rubic Arenosols | | Psammments | Quartzipsammments | Psammaquents |
| | | | | Ustipsammments | Ustipsammments |
| Fluvisols | Eutric Fluvisols | Entisols | Fluvents | Ustifluvents | Ustifluvents |
| | Gleyic Fluvisols | | | Fluvaquents | Endoaquents |
| Vertisols | Chromic Vertisols | Vertisols | Usterts | Chromusterts | Haplusterts |
| | Chromic Vertisols | | Uderts | Chromuderts | Vertic Endoaquents, Endoaquents |
| | Pellic Vertisols | | | Pelluderts | Epiaquents, Endoaquents |
| Gleysols | Thionic Gleysols | Entisols | Aquents | Sulfaquents | Sulfaquents |
| | Eutric Gleysols | Inceptisols | Aquepts | Hydraquents | Hydraquents |
| | | | | Tropaquents | Endoaquents, Endoaquolls, Epiaquents |
| Mollic Gleysols | Mollisols | Aquolls | Haplaquolls | Vertic Endoaquolls | |
| Cambisols | Chromic Cambisols | Inceptisols | Tropepts | Ustropepts | Eutrudepts, Haplustolls |
| | Dystric Cambisols | | | Dystropepts | Dystrudepts, Kandiodults, Paleodults, Paleustults, HaplustalFs |
| | Entric Cambisols | | | Eutropepts | Eutrudepts, Haplustolls |
| | Skeletal Cambisols | | | Dystropepts | Dystrudepts, Kandiodults, Paleodults, Paleustults, HaplustalFs |
| Solonchaks | Gleyic Solonchaks | Inceptisols | Aquepts | Halaquents | Halaquents |
| Solonetz | Gleyic Solonetz | Alfisols | Apualfs | Natraqualfs | Natraqualfs |
| Kastanozems | Calcic Kastanozems | Mollisols | Usolls | Calciustolls | Haplustolls |
| | Haplic Kastanozems | | | Haplustolls | Haplustolls |

Annex 2. Pictures assignment and specific tasks

| Picture type | Country/Institution/Person |
|--|---|
| Paddy soils | <ul style="list-style-type: none"> • Japan • Indonesia • Bangladesh • Nepal (4000 meters case study) |
| Arid soils | <ul style="list-style-type: none"> • ICBA • Mr. Pandi Zdruli |
| Classic profile | <ul style="list-style-type: none"> • Everybody. The best picture will be published. Ms. Micheli will also ask the people that went to the WRB meeting in Mongolia for pictures |
| Bed rock and material that has been transported (not local parent material, e.g. gravel) | <ul style="list-style-type: none"> • Nepal • Mongolia • India |
| Catena | <ul style="list-style-type: none"> • Japan |
| Deep weathered profiles | <ul style="list-style-type: none"> • Malaysia • Philippines • Indonesia • |
| | <ul style="list-style-type: none"> • |
| Volcanic soils (picture, graphs, diagrams to explain the differences) | <ul style="list-style-type: none"> • ICBA (Yemen) • Japan • Indonesia |
| Overlap of urban expansion on best soil types (page 21) | <ul style="list-style-type: none"> • Mr. Pandi Zdruli • Mr. Sangho Jeon (urban picture of Jeonju) |
| Main diagram at page 24 | <ul style="list-style-type: none"> • Mongolia |
| Physical weathering | <ul style="list-style-type: none"> • Everybody |
| Chemical weathering | <ul style="list-style-type: none"> • Everybody |
| Leaching/clay movement/clay destruction (leached profile and eluviated profile) | <ul style="list-style-type: none"> • Everybody • Thailand |
| Ferralic horizons | <ul style="list-style-type: none"> • Philippines |
| Nitisols and plintic horizon | <ul style="list-style-type: none"> • India • Thailand • Indonesia • Sri Lanka |
| Laterite | <ul style="list-style-type: none"> • India |
| Argic horizons (Luvisols, Lexisols, Alisols and Acrisols) | <ul style="list-style-type: none"> • Everybody |
| Processes on volcanic materials | <ul style="list-style-type: none"> • Korea • Japan • Philippines |
| Dry soils | <ul style="list-style-type: none"> • Iran |

| | |
|--|--|
| | <ul style="list-style-type: none"> • ICBA • NENA Soil Partnership |
| Salty soils | <ul style="list-style-type: none"> • Central Asia |
| Sandy soils | <ul style="list-style-type: none"> • Malaysia • United Arab Emirates |
| Vertisols and Fluvisols (especially mangrove conditions) | <ul style="list-style-type: none"> • Indonesia • India • Vietnam • Laos |
| Vertisols (surface cracking - put your hand for reference) | <ul style="list-style-type: none"> • Indonesia • India |
| Peats | <ul style="list-style-type: none"> • Indonesia • Malaysia • India |
| Sulphate-rich soils | <ul style="list-style-type: none"> • India (they will also write the chapter on this) • Vietnam • Laos |
| Anthrosols | <ul style="list-style-type: none"> • Picture from 2nd EB meeting |
| Illustration, graphs on nutrient cycles (N,P, C, etc.) | <ul style="list-style-type: none"> • Everybody |
| Cryogenic processes | <ul style="list-style-type: none"> • Mongolia, Nepal |
| Mountain soils | <ul style="list-style-type: none"> • Bhutan • Nepal • China • UAE |
| Loess | <ul style="list-style-type: none"> • China |
| Rangeland, palm and crops | <ul style="list-style-type: none"> • Central Asia • Malaysia (palm oil) • Everybody to send a pic of what they consider as their major crop |
| Rice cultivation (write and pic) | <ul style="list-style-type: none"> • Thailand • Indonesia |
| Date palm | <ul style="list-style-type: none"> • ICBA |
| Agro-forestry system | <ul style="list-style-type: none"> • India |
| Soybean | <ul style="list-style-type: none"> • China |
| Halophates | <ul style="list-style-type: none"> • ICBA |
| Who has good data on soil carbon stocks? | <ul style="list-style-type: none"> • ask Yusuf |
| Soil culture | <ul style="list-style-type: none"> • India • Nepal |
| Soil biodiversity | <ul style="list-style-type: none"> • China |
| Archeology | <ul style="list-style-type: none"> • Iran • China • Preserved in permafrost? |

| | |
|--|---|
| Raw material: Acid plants (tea - rhododendron) | <ul style="list-style-type: none"> • Japan • Nepal |
| Raw material: sweet potatoes) | <ul style="list-style-type: none"> • Indonesia • NENA Soil Partnership |
| Soil classification | <ul style="list-style-type: none"> • Everybody to send a small paragraph on its development in their country • Japan to share old soil map based on parent material and texture |
| Page 50-51 | <ul style="list-style-type: none"> • Ms. Erika Micheli will revise text |
| Major soil types of Asia | <ul style="list-style-type: none"> • Everybody to check for pictures of soil types and landscapes • Mr Jones will investigate adapting the layout to include SWOT analysis. |
| Page 63 | <ul style="list-style-type: none"> • Everybody to provide information on ongoing surveys and soil monitoring network • Mr. Markus Anda to send something based on what he presented • Info on the use of drones, probes, and new methods for mapping soils |
| Medium-scale soil maps | <ul style="list-style-type: none"> • India (50.000 and 10.000) • Indonesia (50.000) • Thailand (200.000) |
| Large-scale soil maps | <ul style="list-style-type: none"> • India (10.000) • Korea (5.000) |
| Page 131 | <ul style="list-style-type: none"> • Korea, case study on their National Soil Information System (how it was established, how it works, added value) |
| Page 132-137 – soil properties maps | <ul style="list-style-type: none"> • Arwyn will make a trial with the soil texture map from HWSD/SOILGRIDS, to see how it look like |
| Pages 140-148 – geographical perspective | <ul style="list-style-type: none"> • everybody to send pictures and text on the identified geographical regions...Arwyn to check what other categories fall into Asia in the WWF Biomes map |
| Climate change (150-151) | <ul style="list-style-type: none"> • Nepal (glaciers) • ICBA and NENA (drought) • Bangladesh, Vietnam and India (sea water intrusion) • Korea (banana plantation) |
| Land management (152-153) | <ul style="list-style-type: none"> • Indonesia (land use conversion) • Nepal (soil fertility in mountain) • Mongolia (overgrazing) • Deforestation (Arwyn to check the data at the JRC) and shifting cultivation (debate...good or bad?) |
| Soil pollution | <ul style="list-style-type: none"> • Japan (radioactivity/cadmium) • Bangladesh and India (arsenic) |

| | |
|--|--|
| | <ul style="list-style-type: none"> • Myanmar • Plastic SE Asia • China – soil pollution |
| Soil erosion (link to JRC/GSP map) | <ul style="list-style-type: none"> • India • United Arab Emirates (wind erosion and dune control) • Japan (wind erosion) • Central Asia (wind erosion) |
| Soil sealing (statistic on land take are welcome, data on land use extension change) | <ul style="list-style-type: none"> • China • India |
| Salinization (look at increasing salinity instead of naturally salt-affected soils) | <ul style="list-style-type: none"> • Korea (soil salinity in greenhouses) • ICBA • Central Asia |
| Compaction (link to compaction in peats) | <ul style="list-style-type: none"> • Thailand • Indonesia • Japan (companies for soil compaction restoration) |
| Landslides (also link to technology) | <ul style="list-style-type: none"> • Nepal • Bhutan • China |
| Education material and awareness raising | <ul style="list-style-type: none"> • Everybody |

Annex 3. List of participants

Ahmed H. El-Naggar, International Center for Biosaline Agriculture (ICBA), United Arab Emirates

Arwyn Jones, JRC-EC, Italy

Byingkeun Hyun, National institute of Agricultural Sciences, Soil and Fertilizer Management Division, Republic of Korea

Chang Hoon Lee, Soil and Fertilizer Division, Organic Resources Laboratory, National Academy of Agricultural Science, Republic of Korea

Erika Micheli, Soil Science Division, IUSS/Szent István University, Hungary

Lucrezia Caon, GSP Secretariat, FAO

Maria Konyushkova, Lomonosov Moscow State University, Russia

Markus Anda, Indonesian Center for Agricultural Land Resources, Research and Development, Ministry of Agriculture, Indonesia

Md. Altaf Hossain, Soil Survey and Land Classification Section, SRDI, Ministry of Agriculture, Bangladesh

Ochirbat Batkhishig, Institute of Geography – Geoecology Mongolian Academy of Sciences, Mongolia

Pandi Zdruli, Land and Water Resources Management Department, CIHEAM Mediterranean Agronomic Institute of Bari, Italy

Partha Pratim Biswas, Indian Council of Agricultural Research (ICAR), India

Saleh Fazrul Edlin, Soil Resource Management and Conservation Division, Department of Agriculture, Ministry of Agriculture, Malaysia

Sangho Jeon, Soil and Fertilizer Management Division, Rural Development Administration, National Institute of Agricultural Science, Republic of Korea

Satira Udomsri, Land Development Department, Thailand

Shree Prasad Vista, Soil Science Division, Nepal Agricultural Research Council, Nepal

Sukyoung Hong, National institute of Agricultural Sciences, Soil and Fertilizer Management Division, Republic of Korea

Woori Goh, National institute of Agricultural Sciences, Soil and Fertilizer Management Division, Republic of Korea

Yeonkyu Sonn, National institute of Agricultural Sciences, Soil and Fertilizer Management Division, Republic of Korea

Yuji Maejima, National Institute for Agro-Environmental Sciences, National Agriculture and Food Research Organization (NARO), Japan

Byunghwan Seo, National institute of Agricultural Sciences, Soil and Fertilizer Management Division,
Republic of Korea

Apologies were received from the other members of the Editorial Board who unfortunately were unable to join the meeting but have communicated their desire to be involved in the activity and contribute as required.