



HEALTHY SOILS FACILITY OF THE GLOBAL SOIL PARTNERSHIP

**PROGRAMME DOCUMENT
PGM/MUL/2014-2018-GSP**

EXECUTIVE SUMMARY

The Healthy Soils Facility (generally referred to as the “Facility” in the present programme document) has been formulated in response to a specific request from the Plenary Assembly of the Global Soil Partnership (GSP) at its first meeting of June 2013.

This Facility is meant to constitute a major “operational arm” of the GSP, and needs to operate in a context of major threats against limited soil resources in all regions and consequent urgent need for countries to take collective and individual action to reverse worrisome trends. In fact, it should be one of the concrete expressions of the new momentum for action and cooperation on soils, as embodied by the recently launched Partnership.

In this light, the Facility is designed to align resource partners (constituting an effective multi-partner platform) willing to join forces in support of the GSP, as it allows both for a cogent approach and full consistency with the GSP objectives. At the same time, it will maintain visibility of, and accountability for the underlying approved projects (to be financed either *via* the multilateral Trust Fund modality when resource partners so wish, or bilateral Trust Fund arrangements).

Therefore, resource partners should be able to support those components and activities outlined in this document which correspond most closely to their own strategic and geographical preferences, while having the assurance that their contributions would be part of a global, coherent set of interventions.

The intended substantive thrusts of the Facility dovetail with the five Pillars and attendant Plans of Action of the GSP. In effect, its main components are mapped to these Pillars throughout. It fully builds on FAO’s comparative advantages and corresponds most closely to the Organization’s Strategic Objective 2.

The indicative lifetime of the Facility is to be about five years (at least initially) with a resource envelope envisaged at this stage at USD 64 million (for voluntary contributions from resource partners) to be completed by eventual “in-kind” contributions from GSP partners.

Robust implementation modalities are factored in, including internal and external arrangements for monitoring progress.

While kept as concise as possible to facilitate examination, the present programme document follows established design principles, covering *inter alia*: main context and strategic considerations, the major substantive components and activities proposed for support from resource partners as well as their intended outcomes, and summary budget information.

This is complemented by logical frameworks and timelines in subsequent Annexes.

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1. BACKGROUND AND STRATEGY

1.1 A context of great urgency for effective action on soils

Soil is a core component of land resources and the foundation of agricultural production, rural development and ecological sustainability. It is the basis for food, feed, fuel and fibre production and for many critical ecosystem services. However, soils constitute complex and dynamic systems and their properties and suitability vary from place to place and are affected by human activities.

The area of productive soil is limited in relation to current technologies and is under increasing pressure of intensification and competing uses to satisfy demands of growing populations, for food, fibre, energy, wood and other products from cropland, forests and pasture/rangeland, for settlement and infrastructure, and raw materials extraction. Soil formation takes a very long time. If soils are severely damaged or lost through erosion or contamination, they are very difficult and costly to restore/rehabilitate in a human time frame.

Soil degradation is an escalating threat in most regions. It includes a number of different processes: erosion, nutrient mining, loss of soil biodiversity, compaction, acidification, salinization, contamination and soil sealing through expansion of settlements and infrastructure which leads to serious loss of land away from production in many countries. Soil degradation is caused essentially by unsustainable land use and management practices that result from a range of interacting social, economic and governance drivers. It implies declining productivity and loss of soil-related functions and impacts negatively on ecosystem services, livelihoods, food security and human wellbeing. Soils are being depleted at a rate that is already compromising the capacity of current and future generations to meet their needs, unless a new paradigm is rapidly adopted for the sound management and protection of this vital resource.

FAO's State of Land and Water Report (SOLAW, 2012) estimates that on average only 0.20 ha of arable and productive land will be available per person in 2020, less than half the amount in 1960 (0.43 ha). By 2050, only 0.10 ha may be available, if soil degradation trends are not halted or significantly reduced.

On a more positive note, the maintenance of soil properties and functions is possible through appropriate human land use and management decisions that address interactions with the various components of the agricultural production system. Healthy soils maintain a diverse community of organisms that help to control plant diseases, insect and weed pests, form beneficial symbiotic associations with plant roots, recycle essential plant nutrients, improve soil structure with positive repercussions for soil water and nutrient holding capacity, and ultimately improve and sustain crop, grazing and forest production. A healthy soil also contributes to climate mitigation by maintaining or increasing its carbon content and enhances human capacity to adapt to climate variability and change through enhanced resilience to drought, excess water and erosion by water and wind. Thus, there are great incentives to maintain soil health and hence productivity and related ecosystem services worldwide across high, medium and low potential crop, grazing and forest lands.

The outcome document agreed at the recent Rio+20 Conference (UN, 2012) recognized the need for urgent action on land and soils management and advocated a "land-degradation neutral" world. This concept has been taken up as a global target by the Convention to Combat Desertification which

focuses on combating desertification, land degradation and drought in drylands (arid, semi-arid and sub-humid areas). Regrettably, soils have very often tended to be perceived as a second-tier priority, with no international body mandated to promote dialogue and to prioritize and support collective decisions and endeavours for their sound management worldwide. While there have been various regional and international initiatives and projects with focus on soil issues in the last decades, these and the generally rather limited national efforts to sustain soils have been insufficient to mobilize adequate attention and efforts to reverse negative trends.

1.2 Genesis of the Global Soil Partnership

Following a recommendation by FAO's High-level External Committee on the Millennium Development Goals (October 2009) and subsequent examination at FAO's Committee on Agriculture (COAG) in early 2010, the proposal for establishing a "Global Soil Partnership" (GSP) was addressed through intense preparatory activities, including an international meeting held in Rome on 7-9 September 2011, organized by FAO in collaboration with the Joint Research Centre (JRC) of the European Commission (EC). The premise was that the maintenance of healthy soils required for feeding the growing population of the world and meeting their huge needs for biomass (energy), fibre, fodder, and other ecosystem services could only be ensured through a strong partnership-based initiative.

The Terms of Reference (ToR) of the GSP were discussed and developed at both technical and political levels through an inclusive process, and were eventually endorsed by COAG in May 2012 and the FAO Council in December 2012, allowing for the formal inception of the Global Soil Partnership in early 2013 and holding of the first meeting of its Plenary Assembly in June 2013.

Hence, the GSP was conceived as a unified and authoritative global mechanism specifically focused on soils, in order to coordinate efforts at all levels - global, regional and national - and pool limited resources to guarantee the many contributions of soil resources to food security and key ecosystem services, including climate change adaptation and mitigation now and in the future.

1.3 Key features of the GSP

1.3.1 Vision and Mandate

The mandate of the GSP is to improve governance of the limited soil resources of the planet in order to guarantee healthy and productive soils for a food secure world, as well as support other essential ecosystem services, in accordance with the sovereign right of each State over its natural resources.

The GSP is expected by its founders to become an *interactive and responsive partnership*, active in all regions and interested countries.

The GSP is also to develop awareness and contribute to the development of capacities, build on best available science, and facilitate/contribute to the exchange of knowledge and technologies among stakeholders for the sustainable management and use of soil resources. Figure 1 presents the GSP structure and their due interactions.

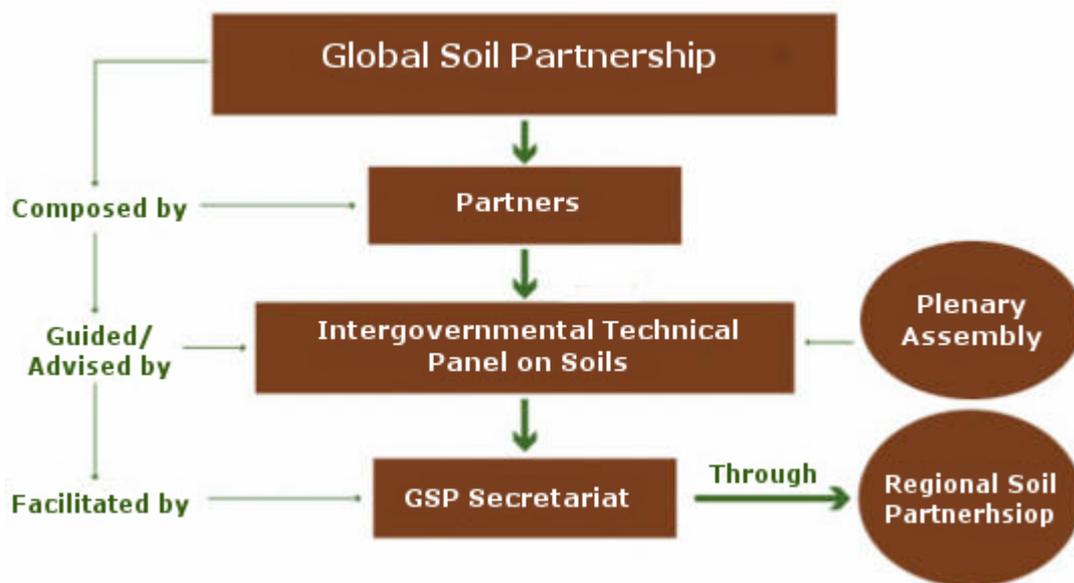


Figure 1: Structure of the Global Soil Partnership

1.3.2 Governance

Governance arrangements for the GSP include two principal organs: the Plenary Assembly (PA) which is open to all interested Partners; and – as its main advisory body – the Intergovernmental Technical Panel on Soils (ITPS) which is composed of 27 reputed experts from all regions appointed by the Assembly. Both organs have successfully concluded their first sessions, held respectively on 11-12 June and 22-26 July 2013. A second meeting of the ITPS took place in April 2014. The second session of the PA is scheduled on 22-24 July 2014.

The Plenary Assembly, expected to meet on a yearly basis, is charged to review and prioritize GSP actions, and facilitate a balanced decision making process taking into account regional needs and priorities.

Designed to be the authoritative technical voice on global soil issues, the ITPS is to fill a critical gap in analysis and assessment alongside and in synergy with the concert of similar international panels or platforms, such as the International Panel on Climate Change (IPCC) and the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES). The appointed experts should act in their personal capacity, not receive instructions from any government or institution, and should provide the best possible scientific and technical knowledge available.

More precisely, the ITPS is tasked to:

1. Provide scientific and technical advice on global soil issues primarily to the GSP, and in relation to specific requests submitted by global or regional institutions.
2. Advocate for the inclusion of sustainable soil management into different development agendas.

3. Review and follow up on the situation and issues related to soils in the contexts of food security, use and management of natural resources, ecosystem services provision, climate change adaptation and mitigation, and other relevant areas.
4. Review and endorse from a technical viewpoint the GSP Plans of Action.
5. Follow up on the implementation of these Plans of Action with due attention to their impact and contributions to different global policies and initiatives related to sustainable development, food security, climate change adaptation and other subject matters.
6. In exceptional cases, when complex technical matters arise, request the Plenary Assembly and the Secretariat to form technical committees aiming to gather specific advice.

1.3.3. GSP Task Force

In order to enlist support to the Facility from all required units and layers of the Organization (and more generally to the entire GSP-related work), the organization has established an internal GSP Task Force. The **goal of the GSP Task Force** is to share information and obtain relevant technical feedback from the other FAO units involved in soil management. In effect, the extensive promotional and technical work involved is not to be confined to the GSP Secretariat, or the Land and Water Division (NRL) which hosts the Secretariat. Sustainable management and conservation of soils is also very much of relevance for other technical divisions such as the Plant Production and Protection division (AGP), the Forestry department (FO), and the ES department where socio-economic factors are concerned. Raising awareness activities also require advice and inputs from competent units like the FAO Office for Partnerships, Advocacy and Capacity Development (OPC). The GSP Task Force also includes focal points from the FAO Regional Offices.

1.3.4 Partners

As an “interactive and responsive” partnership, based on the principle of voluntary participation, the GSP is open to governments, regional organizations, institutions and other stakeholders with interest in soils at various levels.

The types of partners that can make a difference in seeking to reverse worrisome trends belong to various spheres of influence: e.g. financial/funding institutions, technical/scientific organizations and professional associations, or partners with specific advisory, implementation or monitoring capacities. Hence, the GSP can include any kind of regional and national institutions/organizations dealing with soils (Government authorities, universities and training centres, technical agencies/institutions, research centres, soil science societies, UN agencies, NGOs, private companies, farmer associations, resource partners etc).

Partners by default to the GSP are FAO members (194 states, 1 member organization and 2 associate members), which determine the Organization’s priorities as laid out in its Strategic Framework and according to the needs identified at various levels (global, regional or national).

Close links are to established with other key institutions that work in the field of soils/land issues, notably: UNCCD, CBD, UNFCCC, CGIAR system, and other bodies, according to their mandates and comparative advantages.

1.3.5 Secretariat

The GSP Secretariat provides a broad range of coordination and facilitation services, including support to regional soil partnerships, platforms and networks. The Secretariat is hosted by FAO which makes available a limited amount of resources from its Regular Budget for its basic functioning. The resources needed for implementing the activities under the five Pillars of Action (see below) should come from voluntary contributions (extra-budgetary resources).

1.3.6 Regional Soil Partnerships

The GSP architecture is complemented by a network of Regional Soil Partnerships (RSPs), which comprise interested and active stakeholders in various regions (or specific geographical areas if not coinciding with entire regions). In particular, the RSPs are tasked to establish and nurture interactive consultative processes involving national soils entities and relevant regional institutions, including identification and discussion of regional priorities in terms of prevailing soil related problems and issues and possible solutions and mechanisms.

1.3.7 The Five Pillars and related Plans of Action

The Terms of Reference of the GSP contemplate five “Pillars” of action, as in Box 1:

Box 1: Pillars of Action of the Global Soil Partnership

1. Promote sustainable management of soil resources for soil protection, conservation and sustainable productivity.
2. Encourage investment, technical cooperation, policy, education awareness and extension in soil.
3. Promote targeted soil research and development focusing on identified gaps and priorities and synergies with related productive, environmental and social development actions.
4. Enhance the quantity and quality of soil data and information: data collection (generation), analysis, validation, reporting, monitoring and integration with other disciplines.
5. Harmonize methods, measurements and indicators for the sustainable management and protection of soil resources.

Plans of Action (PoAs), as formulated for each Pillar based on Guidelines approved by the PA, are reviewed by the ITPS and ultimately endorsed by the GPS Plenary Assembly. They address vast requirements throughout the world for concrete activities and assistance.

1.4 Overall strategic considerations

1.4.1 New momentum for action and cooperation on soils

As a promising “coalition of the willing”, the GSP embodies a renewed momentum for enacting concrete activities and international/regional cooperation on soils. Its founders saw it as a long overdue, major step towards boosting recognition of the vital importance of soils, and generating commitments in all regions and individual countries to sustainable soil management in order to achieve a food secure world. It should also fill a current vacuum through its global remit to provide authoritative decision support on soil resources, thereby contributing to the global sustainable development agenda.

In effect, the exhaustive attention paid by potential partners to shape the GSP Terms of Reference (and subsequently complementary Rules of Procedure), the care taken by the PA in selecting a truly representative group of reputed experts to constitute the Inter-governmental Technical Panel on Soils (ITPS), and the very productive first meetings of its two main organs, the Plenary Assembly and the ITPS, provide comforting evidence of the seriousness of this intent.

However, effective policies for sustainable soil management and conservation and protection of suitable soils for productive purposes ultimately remain in the hands of the concerned authorities in countries. The implementation of sustainable soil management requires empowering the diverse farming populations and other land users on the ground and, as required, providing technical support. National authorities play a critical role: i) to put in place adequate regulation, legislation and policy on soil protection, conservation and rehabilitation including incentive measures to encourage land users to sustain soil quality and prevent loss of productive soils for non-agricultural purposes (e.g. urban expansion and mining); ii) to identify and resolve conflicts and reduce pressures arising from competing land use options; iii) to remove serious obstacles to sustainable soil/land management including tenure security and user rights; and iv) to facilitate access of soil/land users to knowledge, technical advice, financial services and innovation.

International support is also required to place soils high on the global development agenda and to coordinate efforts of the GSP partners so as to take account of comparative advantages, prioritize actions and avoid duplication of efforts, and thereby make a significant difference in promoting sustainable soil management worldwide.

It remains essential for the GSP partners and community of practice to make this new momentum towards healthy and productive soils a concrete and fruitful reality.

1.4.2 Soils and the internationally agreed Sustainable Development Goals (SDG)

Considering the challenges posed by population growth and taking into account the alarming current soil degradation status and trends in many regions, it is imperative to reflect soils adequately in the ongoing Sustainable Development Goals (SDGs) and post-2015 dialogue. The ITPS is to play a crucial role in this conceptual effort. In fact, at its first meeting of July 2013, the Panel considered opportunities for the soil community to contribute to the Post-2015 Development Agenda.

As new targets and indicators are being formulated, with a view for the UN to announce newly prioritized Sustainable Development Goals in September 2015, ideally soils should be seen as

contributing to one or more of the major Goals. The ITPS faces a major opportunity and challenge in seeking to influence a dense and sensitive process of high-level discussions and negotiations to this end.

1.4.3 Complementarities with other awareness building initiatives

The GSP is in itself a major advocacy instrument through its governance mechanisms and underlying regional partnerships in order to foster greater international and national recognition of the importance of soils for sustaining productivity and achieving food security, as well as of their pivotal role in the maintenance and restoration of healthy ecosystems.

To that end, with full support from the GSP Secretariat, FAO Governing Bodies expressed support to institutionalizing the observance of World Soil Day (WSD) on 5th December (already recognized by the International Union of Soil Sciences), and of an International Year of Soils (IYS), according to UN system practice. Activities in connection with the WSD and IYS by national governments, international organizations and civil society should assist in raising awareness about soil as an essential, finite and non-renewable natural resource and in mobilizing the international community to act towards its sustainable management. Following this, the 68th session of the United Nations General Assembly in December 2013, formally designated 5 December as World Soil Day and declared 2015 as the International Year of Soils (IYS).

The GSP Secretariat is also in charge of implementing WSD and IYS and is to encourage the organization of events worldwide and provide promotional materials to this end, in close consultation with the FAO Office for Partnerships, Advocacy and Capacity Development (OPC). The commitments of all GSP partners to both World Soil Day and the International Year of Soils 2015 will be part and parcel of the implementation of the Plan of Action for Pillar 2.

2. PROGRAMMATIC OVERVIEW OF THE FACILITY

2.1 Specific call from the Plenary Assembly

At its first meeting of June 2013, the PA of the GSP addressed the issue of resource mobilization as regards future work, particularly in view of the subsequent implementation at full steam the Plans of Action for the 5 pillars. It called on all partners to support the GSP by contributing extra-budgetary funds (voluntary contributions) and/or in-kind contributions to develop and implement specific activities at global, regional or national level, while also considering enhancing the capacities in the Secretariat by seconding necessary support staff.

More concretely the Plenary Assembly: *“requested the Secretariat to establish a dedicated financial facility under FAO's rules which may be called the "Healthy Soils Trust Fund", in order to facilitate collection of contributions and financial allocations to approved activities and projects in a transparent manner.*

The present programme document is in response to this request (with the title slightly adjusted to become “Healthy Soils Facility”).

2.2 Scope of the Facility

The Facility should align resource partners willing to join forces in support of the GSP objectives. While maintaining visibility of, and accountability for the individual underlying projects (to be financed either *via* multilateral Trust Fund modality when resource partners so wish, or bilateral Trust Fund arrangements) the Facility allows both for a cogent approach and full consistency with the various Plans of Action which will govern the concrete commitments of partners themselves at various levels.

Therefore, resource partners should be able to support those components and activities outlined in this document which correspond most closely to their own strategic and geographical preferences, while having the assurance that their contributions would be part of a global, coherent set of interventions.

It may be noted that concept notes for implementation of specific activities have already been submitted to interested resource partners and if approved, would be part of this Facility, as follows:

- *“Boosting healthy soils for a food secure world through the GSP”, duration of 36 months, budget USD 3 000 000;*
- *“Implementation of Healthy Soils for Future Generations”, budget USD10 000 000;*
- *“Support to the Implementation of World Soil Day and the International Year of Soils 2015”, budget USD 200 000;*
- *“Support to the implementation of the GSP”, period 24 months, budget USD 1 350 000.*

The European Union has agreed to fund the latter one, and operations started in early 2014.

2.3 The problems to be addressed (synthetic view)

Through several consultative workshops held to assist with establishing active Regional Soil Partnerships, the Secretariat has been able to take stock of needs and priorities at national and regional level for promoting sustainable soil management. A synthesis (not exhaustive) of the findings to date is provided below.

In the first instance, **available global/regional/national soil information is very often outdated and limited in coverage**. It is also dispersed among various specializations (soil fertility, soil carbon, soil biology/ecology, soil degradation, etc) and not readily accessible by the farmers and development practitioners who need such information. Little is known about the status of key soil properties and functions in many areas. As a result, agricultural intensification programmes often fail to address actual soil constraints and to generate expected sustained increases in yields. They often tend to rely on the provision of general recommendations for the use of fertilizers, high yielding varieties and irrigation, rather than on building local participatory research and adaptive management capacity based on sound soil information and knowledge of farming systems. In facing added challenges of climate change, data will also be needed on the effects of climate variability and change and their interrelations with soil properties (e.g. in term of carbon sequestration and greenhouse gas emissions, resilience to drought and erosion, etc.).

Evidence based decisions are crucial for developing appropriate land uses and management practices and boosting healthy and productive soils. That implies assessing, mapping and monitoring soil health and specific soil properties on a regular basis. New tools and methods of digital soil mapping can aid this demanding process of generating adequate and accurate soil information, but external assistance is required to adapt and make these methods available according to varying capacities in the countries and regions. Moreover, the soil science community today is **somehow limited in** offering an accurate assessment of current soil resources at national, regional or global level, which seriously hampers valuable analytical and scenario development work towards improving food security, climate change adaptation and mitigation and ecosystem management. This could be changed by fostering cooperation and efforts towards establishing an effective global soil information system, including a soil health monitoring framework.

There are **very weak soil institutions and human resources capacities** in many, especially developing, countries. Besides inadequate information at their disposal, they receive insufficient attention at policy making level. The lack of interest of youth and young professionals in soils and agriculture in general, is leading to a very serious, progressive loss of soil expertise and skills. Technical and research institutions need to be empowered to attract talent/expertise, leading to a new generation of well-trained soil scientists and up-to-date tools, policies, incentives and investments for soil management, as part of the agricultural development and food security agenda.

While addressed to some extent by a wide range of institutions and universities, **soil research and capacity development is very fragmented thematically and geographically** (e.g. due to excessive specialisations in soil survey and modelling, soil fertility, soil carbon and climate change, soil biodiversity and ecology). In many cases, they are not effectively targeted to demands and needs on the ground. Soil research remains the domain of limited numbers of soil scientists, whose results are often not accessible either for use by other disciplines, nor for decision making at field level, nor

tailored to address current problems or development agendas. There is still a substantial gap in interactions between soil researchers who focus on trials in research stations and soil laboratories, and the agricultural and rural development actors who require locally adapted solutions for soil management and conservation at farm and landscape levels. A major priority is to identify points of convergence to match effective needs in the field with appropriate targeted research and technological responses. ***Soil-related training and extension services*** (to farmers and communities) ***require substantial strengthening*** for improving both soil and wider farming system productivity and sustainability.

Given that soils are a limited and threatened resource under varied land uses and farming systems, and considering the vast demands of society on soils, ***investments in soil conservation and management and the restoration of degraded soils are extremely low compared to needs***. Priorities vary among regions: for instance, in Africa, in view of low inherent productivity of the heavily weathered soils and low smallholder productivity compared to other regions, a prime concern to be addressed is soil fertility management. In Central America and other mountainous areas worldwide, there are serious problems of loss of protective vegetation cover and resulting soil erosion by water and leaching of nutrients. In drylands, key issues are soil erosion by wind and soil salinization, the latter often due to inadequate water applications in irrigation schemes. However such generalisations can be misleading and detailed soil information and targeted interventions are required, as soil properties can vary over short distances. Sustainable soil management deserves to be given top priority in national development plans and investments as well as in international development and priority setting processes.

There is a ***widespread need for compatible and coordinated soil policies and strategies***, which should be harmonized with and take account of a broad range of complex factors and interrelations (e.g. eradication of hunger, food insecurity and malnutrition, sustainable provision of goods and services, reduction in rural poverty, increased resilience of livelihoods to risks and disasters, addressing competition for land through promoting rural and urban land use planning and development, integrating soils data in information and monitoring systems as well as testing and promoting use of new financing mechanisms for sustainable soil and agro-ecosystem management).

The Plans of Action under the five GSP pillars clearly are meant to chart a road map for partners and soil authorities to overcome the above mentioned major constraints or limitations. The Regional Soil Partnerships are fundamental instruments for taking these Plans of Actions to regional and national levels through specific implementations plans and mechanisms involving committed partners in each region.

Accordingly, the Healthy Soils facility is organized around the five Pillars and related Plans of Action (see below).

2.4 FAO's Comparative Advantages

FAO has implemented more than 120 soil-related projects throughout the whole world, in the last 30 years. These projects were funded both by FAO regular programme and by extra budgetary (voluntary contributions) resources.

The Organization has long experience in advising countries about soils issues in relation to food and agriculture and it also has close links with funding institutions that could be willing to support projects in this area. FAO has produced, together with UNESCO, the first and only existing World Soil Map that is available in a digital format. The guidelines for land evaluation, land use planning, soil description, together with the world soil resources series, are landmark examples of such extensive experience.

Its many fields of expertise of relevance to soil management, in regard to crop, livestock and forest production and agricultural and rural development can also be brought to bear on ensuring that GSP actions, including this Healthy Soils Facility, fully reflect the major drivers behind current damaging trends and are adequately integrated into sustainable development agendas, both nationally and internationally.

In addition to the role of the Secretariat in coordinating actions, FAO's regional and country field office network will be the natural counterpart to the nascent regional soil partnerships under the auspices of the GSP. Both country and regional FAO offices will be expected to interact closely with and support the RSPs in both technical and operational ways.

As the GSP is a very novel undertaking based on the concept of partners of various types freely willing to consult and join forces to address a major international problem, it will be able to capitalize on FAO's proven capacity in coordinating partnerships and expertise towards common challenging food and agricultural development and environmental management objectives (such as partnership for developing the only available World Soil Map).

Building on these comparative advantages, and at a critical juncture for much threatened and limited soils resources in all regions, the Healthy Soils facility is to be the **main operational arm** of the GSP.

2.5 Expected beneficiaries

Among the direct beneficiaries will be the **soil users**, as well as the soil-related **governmental institutions** in all countries participating in the GSP (including ministries, research, extension and academic bodies and their partnership with NGOs that support sustainable soil management).

The components of the Facility covering capacity development, sustainable soil management, restoration of degraded soils, the strengthening of soil information systems, more targeted research are geared to a wide range of constituents: **policy-makers** in the various sectors, experts in research and technical institutions/services, **extension services** working with farming communities, soil science associations, soils students in academia and other relevant disciplines.

While the above benefits are naturally expected to trickle down to field level in various ways, a substantial share of the resources eventually committed to the Facility will go to capacity development and technology transfer on sustainable soil management, aiming more directly at benefiting **farming communities themselves**. This is obviously the prime objective of all programmes aimed at rural and agricultural development, but it is generally the most elusive. The GSP will seek to learn from positive lessons in this regard from earlier initiatives and will work through already established education and extension systems and farmer field school programmes and research processes.

Should the GSP live up to the expectation of being the undisputed (and respected) voice for soils, able to influence complex international debates and ground-breaking decision-making and awareness raising and priority setting for sustainable soil management policies and investments, this would be of clear benefit to *international cooperation* for agricultural production and natural resources management and food security and livelihoods of *world populations at large*.

2.6 Links to FAO's Strategic Framework

Strategic Objective

The scope of the Facility falls squarely under **Strategic Objective 2** of FAO's Strategic Framework, namely: *Increase and improve provision of goods and services from agriculture, forestry and fisheries in a sustainable manner*, and more particularly under two of its **Organizational Outcomes**:

1. producers and natural resource managers adopt practices that increase and improve the provision of goods and services in agricultural sector production systems in a sustainable manner; and
2. stakeholders make evidence-based decisions in the planning and management of the agricultural sectors and natural resources to support the transition to sustainable agricultural sector production systems through monitoring, statistics, assessment and analyses.

The Facility will also contribute to other Strategic Objectives of FAO, albeit in a more indirect manner. In particular it will contribute to SO1: *Contribute to the eradication of hunger, food insecurity and malnutrition*; SO3: *Reduce rural poverty*; and SO5: *Increase the resilience of livelihoods to threats and crises*.

Corporate Areas for Resource Mobilization and Main Areas of Work

As part of the FAO Corporate Resource Mobilization and Management Strategy, a prioritization process has led to the selection of eleven Corporate Resource Mobilization Priorities to engage FAO partners around critical areas of work. In these areas, FAO sees a clear potential to accelerate the delivery of results through expanded partnership. The GSP has been clearly identified among the 11 Corporate Areas for Resource Mobilization (CARM), as part of the CARM – 7 “Ecosystem Services and Biodiversity for Food and Agriculture”.

It is primarily part of the **Major Area of Work (MAW)** on “Ecosystem Services and Biodiversity for Food and Agriculture”, and also associated to the MAW “Doing more with less –Sustainable Intensification of Agriculture” and the MAW on “Climate Smart Agriculture”. All these MAWs fall under the Strategic Objective 2 of FAO.

Regional Activities

To the extent applicable, project formulation under the Facility will also take account of the regional initiatives included in the Strategic Framework and the Major Areas of Work. GSP is related to the FAO Regional Initiatives such as Building resilience in Africa's drylands, Integrated Management of agricultural landscapes in Africa, the Asia and the Pacific's rice initiative, and Improving food systems in the Caribbean.

2.7 Substantive thrusts and expected outcomes

Close correspondence with the Pillars

The Facility closely dovetails with the Plans of Actions¹ developed under the five GSP Pillars (Box 1), which resource partners may wish to underwrite by providing catalytic funding.

Overarching outcomes

The Facility will seek to contribute to two overarching outcomes:

- achievement of environmental wellbeing through preventing soil erosion and degradation, reducing greenhouse gas emissions, promoting carbon sequestration and promoting sustainable use of agricultural inputs for soil health and ecosystems management;
- achievement of human wellbeing and social equity through improved use and management of soil resources, enhancing the productivity of healthy food and finding alternatives to soil degrading practices through participatory experiential processes, and being sensitive to issues of gender and rights of indigenous peoples.

More specific outputs

At a more concrete level, groups of actions which resource partners may wish to support through the Facility are put in proper context, and described in detail below under the five GSP Pillars of Action.

These major components are labelled: A1, A2, etc... up to E3.

A. PILLAR 1²

A major priority under this pillar is to fill critical gaps at national level in terms of capacity building, as relates to national policy formulation for soil protection and implementation of specific action programmes on the conservation and sustainable management of soil resources and the restoration /rehabilitation of degraded soils. Substantial needs in this area have been hinted in a preceding section and range from: 1) the generation of adequate knowledge, understanding and information on soil conditions and causes of degradation and declining productivity by actors on the ground, to 2)

¹ While, at the time of writing, there is no fully-fledged Plan of Action under Pillar 3 as yet, even in draft form, there is broad agreement about its major directions, so that the present programme document covers this Pillar as well, for the sake of completeness.

² Promote protection and conservation and sustainable management of soil resources for sustained productivity and restoration/rehabilitation of degraded/problem soils

planning for the conservation and sustainable use of soil according to their suitability, through enabling and promoting land use decisions and management practices that respect the characteristics, qualities and resilience of soils, through 3) the implementation of proven and well targeted soil and water conservation and sustainable management measures on a large scale, including the restoration of degraded soil properties and ecosystem functions.

These efforts, if implemented worldwide by partners, are expected to:

- increase the area under sustainable soil management practices (e.g. through protective vegetation, minimum/zero tillage, conservation agriculture, low external input and organic agriculture systems, integrated agro-silvo-pastoral systems, integrated plant nutrient management; rotational grazing systems, watershed/territorial management);
- ensure “sustainable production intensification” through combined use of various techniques including use of adapted biological resources, increasing soil fertility, water use efficiency, ensuring sustainable use of inputs (genetic resources, fertilizers, pesticides, etc.) and recycling of agricultural by-products; and promote adapted soil and water conservation practices; and,
- enhance the restoration of degraded soils with attention to salinization, compaction and crusting, contamination, loss of topsoil by erosion, nutrient mining, loss of organic matter and associated soil biota and biological functions.

The budget envelope factored in the Facility in relation to Pillar 1 necessarily covers a limited number of components, i.e.:

A.1 Capacity development for strengthening national strategy formulation, technical and extension services, and mechanisms on the ground for sustainable soil management, conservation and restoration.

The first step is to assess capacity development needs in countries and regions and to set priorities. Members of the nascent Regional Soil Partnerships should identify the most pertinent soil thematic issues and agree on priority areas for capacity development, including institutional arrangements and specific training topics, so as to enhance uptake of sustainable soil management practices and identify regional or national actors who could assist with training within the region. Based on these overall findings, more focused capacity development projects will be formulated together with representatives of various stakeholders in countries and regions. These projects should outline the modalities and responsibilities of main actors, taking into account the comparative advantages of potential institutions and service providers, including past records of successful delivery and capacity to host activities. The projects should identify the best locations for possible upscaling at national level and also for possible replication across borders in neighbouring or other countries, facing the same local issues and circumstances.

The projects in the different regions will be implemented through various modalities, including: a) hands-on training of trainers, extension staff and farmer field school facilitators, and b) updating and promotion of formal training courses and conduct of summer/winter schools.

Where possible, South-South cooperation should be explored to make effective use of expertise and facilities in the more advanced countries of region for sharing of experiences.

A.2 Scaling up and implementation of sustainable soil management practices at regional and national levels (preventing degradation) and enhanced soil productivity and ecosystems services.

Under component A2, the main activities are foreseen to relate to: the development of effective overall soil policies and sustainable soil management strategies; the implementation of sustainable soil management practices by smallholders; the implementation of adapted soil conservation practices for preventing soil degradation and drought.

Similarly, where requested, support to national soil legislation will be provided and to connecting local interventions and results to the global soil agenda.

Local successful practices will be scaled up in every region and their impact monitored and evaluated in order to understand the costs and benefits of investment. In fact, a compendium of these successful practices will be built up through a participatory and collaborative framework.

A.3 Restoration/rehabilitation of degraded and/or problem soils for improved livelihoods, food security and increased resilience (ecosystems at risk).

As soil degradation is most often related to mismanagement of natural resources, ecological restoration is seen as an effective tool that should be used in parallel to improved land management in order to regain ecosystems' previous level of resilience in the long term. In most cases, it is possible to halt and reverse soil degradation, but as degraded ecosystems have in most cases crossed several biotic and abiotic thresholds, ecological restoration is almost always necessary to overcome the threshold/s that may prevent the systems from self-recovering.

The soil restoration and rehabilitation activities under this component will be implemented primarily through the Regional Soil Partnerships and using existing networks which have addressed soil restoration over many years. On-the-job training on soil restoration science will be included.

A conceptual framework will be developed right from the beginning in order to monitor progress and assess impacts of these important activities.

A.4 Networking and disseminating documentation on measures for soil protection, management and restoration.

The establishment of new networks where required, and strengthening of existing regional partnerships will be one of the main areas of focus under this component. Documentation on both successful and negative experiences in relation to soil management, conservation and restoration practices will be assembled, and the lessons learned will be disseminated both within and across regions.

B. PILLAR 2³

B.1 Facilitation of GSP Governance, active positioning of the GSP in the international arena and institutional collaboration.

The purpose of this component is twofold: to facilitate and support wider and effective participation from partners to the sessions of the Plenary Assembly and to convene required meetings of the ITPS to advance the international soils agenda.

Firstly, it is very likely that participation by representatives of national authorities and soils institutions of the least developed countries to the annual sessions of the GSP Plenary Assembly (and even more so, to eventual extraordinary sessions, if ever convened) will continue to be hampered by domestic budgetary considerations for many years to come. The agenda of future PA sessions may be expected to become more technical in nature, so that attendance by high level specialist staff from capitals will be critical.

As the GSP is by design of a voluntary nature, this may make it even more difficult for experts and senior officials in government dealing with soils in small and resource poor countries (which may face the most serious degradation problems!) to justify the cost of attendance at the PA. However, even during the present age of widespread electronic communications, physical presence at the main governance mechanism of such an undertaking as the GSP remains essential for ensuring an open consultation and feedback process, and developing bilateral contacts with counterparts in other countries. Otherwise, there is a risk for the GSP to be perceived as a restricted “club” of partners from a few (relatively richer) countries.

Secondly, limitations in available FAO budgetary resources allow for only one yearly meeting of the ITPS in Rome. While the reputed experts comprising the ITPS are able to do business through “virtual” methods, the Panel needs to deal with a broad range of matters and to react to external developments and a heavy calendar of events in other fora so as to place it *on a par* with other panels of international standing dealing with natural resources. Hence, a frequency of least twice sessions a year would be highly desirable.

B.2 Strengthening of the GSP Secretariat.

Since the inception of the GSP, the Organization has confirmed its willingness to provide Secretariat support from its Regular Budget resources. However, despite the priority attached to soils in general and the GSP in particular, due to recurrent financial limitations there are clear limitations to augmenting the budgetary provision in any substantial manner beyond present levels. The GSP Secretariat has been coping until now with a fast growing workload, resorting for instance to such relatively more economical formulae as recruiting interns, however pressure on limited staff is increasing.

It is hoped that some partners (governments or institutions) in a position to spare high level staff for limited periods of time would be willing to second them to the Secretariat for specific assignments,

³ Encourage investment, technical cooperation, policy, education awareness and extension in soils

so as to strengthen its analytical and operational capacities. However, expectations should not be too high, given the current climate of generalized pressures on budget and staff resources, and this formula is likely to constitute only a short term palliative. Reinforcing the Secretariat with additional staff and providing adequate financial resources for its growing operations should be considered.

A *status quo* situation for the Secretariat would be even less tenable if this Healthy Soils Facility does take off successfully and leads to a substantial portfolio of projects which will need to be adequately formulated, technically and financially backstopped and monitored.

A minimum of staff reinforcement and additional non-staff resources has been factored in the budget estimates under this component B2.

B.3 Facilitating effective engagement of the ITPS in addressing soil issues, and its interface with other panels and institutions of similar international standing.

This should in particular facilitate the work of the ITPS in generating consensus and mobilizing strong policy commitment on soils through inter alia: updating and disseminating the principles of the World Soil Charter, supporting the effective integration of soils into the SDGs, producing a regular report on the status and trends of world soil resources and to advise on the implementation of action plans under the Pillars.

It should also allow for an effective and continuous interface by the ITPS (and more generally the GSP) with other panels and institutions of similar international standing: e.g. IPCC, IBPES, and the recently established Science-policy interface (SPI) of the UNCCD. This may imply covering the cost of attendance to key meetings organized by such panels and institutions by the ITPS chairperson and members, or the organization of side events, which would be beyond the capacity of the FAO's Regular Budget allocation to meet.

B.4 Awareness raising campaigns on the importance of soils.

Soil-related outreach involves the dissemination of information about soils to stakeholders who have not been aware of its importance. The increased urbanization of society and detachment from the food production process means that a significant proportion of people (probably the majority) lack a fundamental understanding of soils, their functions and indeed where food comes from. Life-critical questions such as what makes soil fertile are a mystery to many. Major providers of information materials should include the national soil science societies, museums, NGOs, universities, public administrations and extension services, but to be effective this massive awareness building effort requires appropriate funding.

Traditionally, there has been little engagement between the soil scientists and the public. Funding and performance targets mean that greater emphasis is placed on high-level research and peer reviewed publications than on outreach activities, often only carried out by motivated 'volunteers'. As a result, soil scientists tend to communicate through complex language, dominated by a technical vocabulary that is incomprehensible to almost everyone outside the soil science community. Due emphasis should be given to public outreach activities which should be well funded and not just be conceived as add-ons to projects.

Opportunities for awareness raising may include:

- celebratory events for World Soil Day (5th December) at global, regional and national levels;
- the same for the International Year of Soils 2015;
- specific advocacy events and materials for increased investment and strengthened policies and decision support on soils;
- establishment of a World Soil Prize.

B.5 Youth and education programmes to promote renewed interest in soil sciences.

While more comprehensive soil monitoring programmes are essential, they depend on an adequate skills base, with staff trained to collect the necessary data and interpret the results for decision makers.

However, soil science as a stand-alone discipline is rapidly disappearing from many universities. Governments and tertiary education sectors must be encouraged to reverse this trend or, as a minimum, to have it as a compulsory cross-cutting discipline for agriculture and environmental science students.

Also, soil science education should not be viewed in isolation from related disciplines such as water conservation or ecology. Education should also not just be about the accumulation of knowledge but also in the development of competencies that allow the application of that knowledge to move forward.

This component B5 covers the strengthening of formal education programmes to those ends. The organization of summer and winter schools at regional level will be also implemented using various modalities. Soil scientists will also be encouraged and rewarded to engage with other disciplines in projects that demand multidisciplinary solutions.

B.6 Strengthening the policy environment for investment and technical cooperation in sustainable soil management.

In recent years, there has been increased appreciation of the economic and environmental value of soil to society and a realization that soil needs at least the same level of attention and protection as air and water. In fact, many social crises throughout the developing world are triggered to a large extent by inadequate soil management policies and practices. The GSP came into being in part due to this increased appreciation.

In 1982, the FAO adopted a World Soil Charter detailing some basic principles and guidelines for sustainable soil management and soil protection to be followed by governments, international organisations and users of the land. An updated Charter is currently under consideration in FAO Governing Bodies, culminating by its scheduled adoption at the FAO Conference of June 2015. The Charter calls for a commitment to manage soil resources for long-term benefit rather than for short-term expediency. Special attention is drawn to the need for land-use policies that create incentives for people to participate in sustainable soil management and conservation work, taking into account

both the technical and socio-economic elements of effective land use. Policies should be proportionate because there is a risk that over-zealous administration will not be supported by governments.

The GSP is expected to have an important role in helping to achieve enhanced protection coupled with real policy support. However, in many countries, many of the principles of the Charter have not or are not being applied, so that the GSP should give strong signals to decision-makers on the need for a supportive policy environment and technical solutions that lead to effective protection and management of soils.

In parallel, long-term and large-scale policy measures must be put in place to build greater resilience to soil degradation and to reduce vulnerability to disaster events. Key to this is the enhancement of capacity for soil survey and monitoring, with a particular focus on the assessment of soil productivity, soil carbon and soil biodiversity in light of soil protection requirements (with strong links to Pillar 4).

C. PILLAR 3⁴

C.1 Inventory of soil research outputs and their relevance to various development actions.

As stated in a preceding section, the outputs of soil research are, in many cases, not properly used by development partners and this is due to a number of reasons such as: disconnect between research and development institutions, weak or insufficient extension services and poor communication by scientists. Also some of the research is dominated by purely scientific considerations and not by concrete development situations and issues. This component C1 should clarify the relevance of research programmes and outputs.

C.2 Bring together the research and end-users communities to prioritise research and development needs on soils.

Traditionally, research priorities and the issues to be addressed are determined by researchers themselves, often without considering real user needs. As a consequence, the limited financial resources available are simply used to prepare scientific publications.

In order to bridge the gap between users and researchers, this component covers the establishment of a user interface in countries where it is lacking, in order to discuss priorities at various levels with the national soil research departments and units.

C.3 Establish research and development mechanisms to enhance actions that promote agricultural productivity, environmental quality and social development.

This component aims to strengthen available research networks and cooperative programmes by establishing effective mechanisms to target soil research activities to specific needs, as may be assessed by different users in all regions.

C.4 Dissemination/extension of research outputs at all levels.

⁴ Promote targeted soil research and development focusing on identified gaps and priorities and synergies with related productive, environmental and social development actions

In many countries, extension services are weak or even unavailable, so that farming communities cannot be supported or guided in their challenging daily activities and in meeting their individual and societal needs. However, research outputs should increasingly be judged on the basis of their scientific integrity, relevance and societal impact. This component should assist countries in putting in place more effective dissemination/extension services as regards soils in support of users.

D. PILLAR 4⁵

D.1 Global Soil Information System and enhancement of regional and national soil information systems.

A prerequisite to the sustainable management of soil resources is access to information on their distribution, condition and rates of change from local through to global scales. All countries have a responsibility to collect, and act on this information to ensure that soil resources continue to provide the ecosystem benefits necessary for a secure and prosperous future.

The design and operation of the global soil information system which is the essence of the Plan of Action under Pillar 4 will take account of existing soil data primarily from national and within-country systems and deliver information products and services for regional and global purposes, including the assessment of progress towards the Sustainable Development Goals and the provision of data to other disciplines to ensure integrated analysis.

The global soil information system will be comprised of consistent spatial data sets and services provided by a mix of institutions. However, national soil agencies will play a key role as facilitators for the collection, management, quality assurance and provision of data. In some cases, organizations may act on behalf of other countries through mutual agreement. The system is to be developed and implemented in a neutral central location and institution and managed by a core group of experts.

Many countries are likely to require substantial external assistance for the enhancement of national infrastructures for the collection, storage and exchange of soil information, so as to allow for the full participation of their national systems to the proposed major soil information system under Pillar 4. They should also be able to participate through national soil reports and databases to a global soil database known as SOILSTAT under development by FAO, and to ensure due links/integration with other data sets for analysis, modelling and scenario development. The resource envelope under this component covers limited financial contributions for information system infrastructure enhancements in most needy countries.

D.2 Establishment of SoilSTAT for monitoring global soil health and properties.

As noted earlier, detecting and forecasting soil change over time is technically more demanding than mapping, but the information is needed for monitoring and verification purposes in relation to a number of multilateral environmental agreements. Only a few countries have national monitoring

⁵ Enhance the quantity and quality of soil data and information: data collection (generation), analysis, validation, reporting, monitoring and integration with other disciplines

systems with the capability to detect soil change over time (e.g. France, Japan, South Korea and Switzerland).

In most parts of the world, scientists draw inferences about soil change from a variety of sources including:

- long-term monitoring sites (from simple plots through to complex field experiments);
- simulation modeling;
- proxies (e.g. monitoring changes in land management rather than soil variables directly, or comparing paired-sites where space is substituted for time);
- narratives (e.g. historical accounts of soil condition).

For countries lacking soil monitoring, it would seem appropriate and cost-effective to resample existing representative and well-described and analyzed soil profiles in a first instance.

A global soil monitoring system called SoilSTAT (i.e. analogous to Aquastat dealing with water) is under development to provide periodically updated soil health information (about soil properties and functions). This system will complement other FAO statistical tools as an essential, still missing element to monitor soil condition at regional and global levels and contribute to analytical work and modeling. Variables to be assessed should include the main drivers of soil change: for example; land management practices, agricultural inputs (e.g. fertilizer, lime, energy costs, and tillage), loss of high-quality agricultural land.

A stepwise approach to monitoring is proposed starting establishing reliable baselines for selected soil properties in priority regions. The effort (e.g. sampling frequency, number of measurements) devoted to operational monitoring at the global scale will be based on these initial investigations and supporting environmental monitoring and modelling.

D.3 Capacity development on soil information (including data collection, mapping and monitoring of soil health and soil functions).

Traditional soil surveys have been in place for some years but have produced soil class maps that are static and focused on soil genesis (how soils have been formed and how they are classified). When national soil survey agencies have to face requests from extension services for information on important soil functions, they are not ready to respond because the information at their disposal is more in terms of soil class type and very little in terms of soil properties, especially over spatial domains. A full synthesis of available information was published in 2013 by the European Commission (Soil Atlas of Africa) and by FAO GSP (FAO, 2012).

The quality and comprehensiveness in coverage of the global international system depends on substantial progress being made in those countries which are lagging behind in terms of major technological advances in soil data collection. SoilSTAT is to cover soil health information (data about soil properties and functions) at periodic intervals. In the near future, this system will be fed by information coming from regionally agreed sites, by partners who are willing to contribute and by national soil institutions which could contribute the standardized data that they are able to share. It

is essential that the providers of data use similar methods and tools, such as those under Digital Soil Mapping.

Digital Soil Mapping is a new, very effective approach, involving a set of tools for mapping soil properties and functions in both qualitative and quantitative ways, considering soils as continuum. It leads to information on soil properties and soil functions which are of direct relevance and interest to agronomists, extension services and ultimately farmers, while being important also for climatologists, ecologists and policy-makers. Therefore, it provides the foundation for an effective monitoring system for soil health.

There are vast needs for capacity development on digital soil mapping throughout various regions. It is in effect high time for training a new generation of soil scientists especially in the Africa, Asia, Near East and Latin America regions who are able to use the most advanced techniques to tackle the enormous problems in their region.

Capacity development activities will be implemented considering regional contexts and will involve various modalities such as: on-the-job training of trainers, summer schools and formal training on digital soil mapping. A training Toolbox and appropriate educational material will be made available to trainees and other interested scientists.

D.4 Report on the Status of World Soils Resources (SWSR).

The ITPS is currently working towards the issuance of the first version of this new and seminal state-of-the-art report at the end of 2015. The periodic SWSR reports will identify the rate and extent of soil changes and the likely consequences for society, including soil productivity and sustainability. This regular reporting will also serve operational discipline in the assembly and management of soil information. A global reporting mechanism on soils would also contribute to other major activities, most notably:

- the assessment of the Land Degradation Neutral World target agreed at the Rio+20 conference;
- general reporting by the Intergovernmental Panel on Climate Change (IPCC) and Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES);
- regular assessments by FAO, such as updates of the State of Land and Water Resources.

The ITPS will have oversight of the preparation process and ensure that the best available information has been used including soil monitoring. The primary outcomes would be that:

- decision makers have a clear understanding of soil status and trends and the impacts of past and future decisions on the soil and the systems dependent on its health;
- regular attention on the state of the world's soils leads to more sustainable systems of land.

E. PILLAR 5⁶

E.1 Develop an over-arching soil description system designed to describe and explain soil features in a common and consistent manner to facilitate systematic application in all parts of the world.

Soil can be considered at many levels, from a broad view of soil as a component of the total environmental landscape in which it exists, through a particular body of soil, to a specific expression of soil at a defined location. Soil may be described in terms of its properties as a whole, from an Earth's surface viewpoint, or with depth as a cross section or profile which have distinct layers or horizons that can be described with specific properties and morphology, and over time (monitoring). This is the most basic soil information. Results from soil descriptions must be comparable in order to serve as a consistent descriptive communication basis for professionals across the international community.

Soils are currently described in many ways, lacking world-wide agreed definitions (e.g. texture class) and structures to store and disseminate information about soils. Because of this, valid and complete soil descriptions from different data bases cannot be easily exchanged and made available to the broad user community. There is a need for improved international communication about the nature and properties of soil and harmonizing the way we describe and classify them.

Besides the traditional approach to soil description, there are also many new technologies which generate information related to visible soil properties (used in field during soil profile description). Examples are non-destructive sampling using optical sensors, electromagnetic or spectro-metric devices applied proximally, from the air, or space. Effort is required to understand how this information may support the description of soil profiles. The requirements to calibrate, validate and interpret such data completely differ from the conventional approach to describe soil profiles.

Another important consideration in the description of soils is to include information usable by the general public and non-scientific users. Many handbooks for soil description are scientific, so that the broad public sector including landowners may be excluded from the terminology and method used to describe soils. Effort is needed not only to harmonize and improve the various existing approaches, but also to simplify such a system, e.g. in order to allow crowd sourcing of new and innovative data. It is important to have a simplified understanding and terminology to describe soils and share lessons about its use and management. For example farmers may talk about 'light sandy country' compared to 'red loamy soils' or the 'black cracking clay plains'. This requires a basic mechanism for communicating about different soil types, the properties and attributes of different soil and implications for management.

Considering these challenges, a generic soil profile description would allow soil science researchers, practitioners and other scientific disciplines to have a common descriptive language to communicate important scientific information. This availability will stimulate the use of soil information and result in many new applications. Soil description should identify and include all relevant soil features, and how they relate to other environmental and human features. That way 'soil' can be more broadly integrated with other domains. If no other national guideline for soil description is available, the FAO

⁶ Harmonization of methods, measurements and indicators for the sustainable management and protection of soil resources

(2006) Guidelines for Soil Description shall be used. The guideline should be reviewed with the aim to develop it further as a new generic field book. Agreement on basic definitions and codes is required.

Harmonization would follow principles of cooperation (commonality, inclusiveness, efficiency and multi-linguality) and operations (interoperability, extensibility, scalability). This harmonization can be done by using reference laboratories to set standards. The standards should be made by examining existing practices for field sampling, preparation and measurement. A comprehensive web-based soil data exchange would facilitate communication between scientists and individuals on soil quality and management.

E.2 Development of a new Universal soil classification system

Professional soil scientists have been working internationally for many decades to develop systems for soil classification and great progress has been made from before 1900 to the present time. **Soil classification is the naming of different types of soils based on a set of common or expected properties.** Classification is an aid to talk about the soil in a consistent, comparable way, and is applied at local, national and international levels, and at various levels of complexity and scientific consideration. Classification and consistent terminology allows land management lessons from one location to be shared with similar regions.

The system for global soil classification is based on many different national systems, of which there are over 50 throughout the world. Many of these are no longer being updated or have been abandoned; it is often cumbersome to correlate these systems because of definitional differences in concepts, in physical and chemical measurements and in organizational formats (Krasilnikov *et al.*, 2009). There are several classification systems that have been designed for wider application. Examples of these systems are the US Soil Taxonomy and the French Référentiel Pédologique. These overarching systems have been in development for many decades and have matured to the point where they are used in many parts of the world.

There is now a renewed interest within the soil science community for the further development of a system of soil classification that can be applied across the world. Towards this means, in 2010, the IUSS approved a Universal Soil Classification System Working Group (see also Appendix 2). This group plans to contribute to the improvement of the WRB, US Soil Taxonomy and other national classification systems through the work of task groups. Gaps in soil classification clearly exist in national systems, for example in the cold, hydromorphic, salt affected, anthropogenic, and tropical soil groups. Work within the task groups is specifically designed to better define soil classification needs for national soil classification systems that can feed into a Universal Soil Classification System.

The systems for soil classification and correlation at the international level will be either the World Reference Base for Soil Resources or USDA Soil Taxonomy until a new standard system is released. To this end, the GSP supports the development of the new Universal Soil Classification System.

A review of existing practices for field sampling, sample preparation and measurement (including laboratory standardization and QA/QC) and prepare specifications and guidelines for harmonized approaches to the determination of the main functional properties of soils (i.e. chemical, physical and biological) will be performed.

E.3 Development and harmonization of indicators for monitoring the condition of soils and to assess the needs and effects of sustainable soil management at various levels among concerned international processes (e.g. CBD-Aichi targets; UNFCCC, UNCCD, SDGs).

Harmonization is often used in the context of soil data collection, describing soils in the field, sampling, analysis or soil information exchange. However, governments, civil society organizations, international development agencies and many other users usually cannot interpret complex raw soil data sets. A major task for them is assessing the impact and performance of their policies, projects and investments. Attempts to measure the effectiveness and the efficiency of policy prescriptions have been aided by the development of specific indicators that strive to capture a particular circumstance, situation or condition (e.g. agro-environmental indicators for soil protection, indicators for sustainable land management) (Bindraban *et al.*, 2000; Dumanski and Pieri 2000; Bouma 2002). New methodologies for defining and interpreting indicators for soil monitoring were investigated by Huber *et al.*, (2008). This activity will also support the development of effective correlation procedures and evaluation functions.

E.4. Create a reference system for the integration of soil maps from different sources and ensure harmonized products meet the needs of users (e.g. for monitoring in Pillar 4).

Soil maps have traditionally provided a communication mechanism to describe the types and attributes of soils occurring in certain areas. Soil maps have been created at small global and national scales, through to detailed large scales for smaller countries or regions. Besides conveying a general understanding of the properties of local soil types, these maps have been used as the basis of land planning and management decisions. Often however, the scale and detail of the information contained within the soil map, its legend or the associated descriptive report, is not at a resolution commensurate with the applied use.

Harmonization of soil descriptions and classifications will provide a mechanism to translate existing map data to a common framework which will be able to be applied to aggregated maps. This has been the approach to the previous attempts to construct the Harmonized World Soil Database and the SOTER map of the world. Unfortunately the legacy data holdings of many countries cannot be easily reconciled to the adopted standards, such as the World Reference Base classification system, without considerable effort and access to pedological expertise. WRB (2014) provides rules for creating map legends using WRB at different scale levels.

Data on soils is collected and maintained by many organizations and individuals, within government, industry and private sectors; data are stored in data bases, sometimes information systems, using a variety of software solutions, storage models and terminology. The frame conditions for data collection and storage is usually specific to data producer's own needs and finding universally common data content, attribution or formats is unlikely. Attempts to insist on the use of a specific data base structure or minimum data set are likely to fail, as the needs and applications of soil data by different users are many and varied.

The exchange of globally harmonized soil data and information is expected to realize many benefits at individual, local, country and global levels. Largely these will be due to improvements in the efficiency and effectiveness of data access and collation activities, which are known to regularly consume up to 80% of project resources.

As a significant added value to the considerable investment embodied in existing soil data, the publishing of interoperable soil data via web services should be promoted in order to make soil data more readily accessible.

To enable the exchange of digital soil-related data, agreement is reached on a global soil information model, vocabulary service and meta-data standards. Implementation of this model driven architecture will be consistent with the aspirations of the global soil information infrastructure (GSP Pillar 4).

2.8 Environment and gender/youth considerations

Given the scope of the GSP, the close organic links between the GSP and FAO and the global standards and policies the Organization adheres to, the Healthy Soils Facility can be classified as belonging to Category C of FAO's Environmental Impact Assessment Guidelines. Hence, it should not be subject to further analysis or impact assessment, provided that the underlying projects remain consistent with this overall programme document.

As regards gender and youth, it should be stressed that the very damaging soil degradation circumstances prevailing in many regions tend to have a disproportionate toll on women and young people. While women bear a major burden from soil degradation, they may be active promoters of effective solutions to reverse it. Hence, under all the pertinent components of the Facility, attention to gender/youth issues will be duly applied to the design of projects or activities.

2.9 Risk analysis

As desired by its founders, the GSP is of a voluntary nature, so that actions under its auspices necessarily depend on the willingness of partners to support and commit resources to them (including participation to meetings). However, this essential characteristic could also be a major strength, as justifications to be given to national budget authorities for such financial resources could emphasize the "good examples" prevailing within the region.

There is also some risk of dwindling enthusiasm, especially if direct tangible benefits are not perceived to accrue from participation over the immediate to longer-term horizons (e.g. improved information, additional resources to address critical gaps in capacities, etc...). In fact, a good resource partner response to this Facility would greatly contribute to mitigate such risks.

The overall Facility and its components may be confronted by other more "classical" risks, as mentioned in Annex 1.

2.10 Budget estimates and duration

The initial duration of the Facility is planned to be five years.

Table 1. Overall budget

	Resource envelopes by Pillar	USD
	A] Promote sustainable management, protection and conservation of soil resources for sustainable productivity and restoration/rehabilitation of degraded/problem soils (Pillar 1)	28 000 000
	B] Encourage investment, technical cooperation, policy, education awareness and extension in soils (Pillar 2)	7 128 000
	C] Promote targeted soil research and development focusing on identified gaps and priorities and synergies with related productive, environmental and social development actions (Pillar 3)	8 500 000
	D] Enhance the quantity and quality of soil data and information: data collection (generation), analysis, validation, reporting, monitoring and integration with other disciplines (Pillar 4)	8 000 000
	E] Harmonization of methods, measurements and indicators for the sustainable management and protection of soil resources (Pillar 5)	4 043 893
	Total Activities	55 543 893
5027	Technical Support Services	4 141 192
6120	TSS to Field Projects	3 622 642
6111	Reporting (standard cost)	6 550
6116	Evaluation	512 000
	Total value of goods and services	59 813 085
5029	PSC 7%	4 186 916
	Entire Facility	64 000 000

Table 2. Budget based on FAO accounting categories

BUDGET OF HEALTHY SOILS FACILITY-GSP	
FAO Accounts	USD
Salaries Professional (Parent Account)	9,560,378
5011 Salaries Professional - Direct Cost 6%	3,622,642
Salaries General Service (Parent Account)	3,000,000
Consultants (Parent Account)	4,421,251
Contracts (Parent Account)	12,628,000
Locally Contracted Labour (Parent Account)	500,000
Travel (Parent Account)	3,000,000
Training (Parent Account)	4,162,264
Expendable Procurement (Parent Account)	7,250,000
Non Expendable Procurement (Parent Account)	10,000,000
General Operating Expenses (Parent Account)	1,150,000
Total Activities	55,671,893
Technical Support Services (Parent)	4,141,192
TSS to Field Projects 6%	3,622,642
Reporting (standard cost)	6,550
Evaluation 0.08%	512,000
Total value of goods and services	59,813,084
PSC 7% (Support Cost) (Parent)	4,186,916
Entire Umbrella Programme	64,000,000

3. IMPLEMENTATION MODALITIES

3.1 Institutional and management arrangements

The GSP Secretariat would be the **Lead Technical Unit (LTU)** for all projects formulated under the Facility. For the global and inter-regional projects it will act as **Budget Holder Unit (BHU)**. The regional and/or country based projects will be reviewed and budget holder will be nominated accordingly. All projects identified and formulated will be aligned with the Country Programme Frameworks (CPFs) and with the Regional initiatives (RI).

The GSP Secretariat will advocate and promote the Facility among resource partners.

In terms of technical oversight, there are two mechanisms (one external and one internal) where the technical aspects of GSP work are being addressed, namely: the Intergovernmental Technical Panel on Soils (ITPS, described above under paragraph 1.3.2 Governance) and the GSP Task Force (see above paragraph 1.3.3 GSP Task Force). While the ITPS is able to draw on the competence of external experts appointed by the Plenary Assembly, the GSP Task Force includes representatives from all concerned technical units in FAO. The major oversight role of the Facility lies within the Plenary Assembly.

The Facility will have a **Steering Committee** (see below) welcoming resource partners where technical and programmatic issues linked to the Facility will be discussed. Progress in project implementation (i.e. projects which are within the Facility) will be reported to the GSP Plenary Assembly and to the ITPS as appropriate. As the reports of the PA are submitted to the Committee on Agriculture (COAG), the work under the Facility will be automatically reported to COAG and to the FAO Council. In respect of information sharing with other UN agencies or key partners, it is worth pointing out that they are observers of the Plenary Assembly (see also above, paragraph 1.3.4)

Steering Committee of the Facility (SCF)

In line with arrangements adopted for similar multi-partner platforms, it is envisaged to establish a **Steering Committee of the Facility (SCF)**, including representatives of the resource partners. This mechanism is to provide participatory oversight during the entire lifetime of the Facility (and the projects that are part of it).

Once established, the SCF is expected to meet at least once a year in order to monitor the implementation progress of the approved projects under the Facility, assess their impact, and make any required decisions on the strategic allocations of the funds.

The membership of the SCF is to be defined in due course.

3.2 Ensuring synergy between inputs from resource partners and in-kind contributions

At the first meeting of the Plenary Assembly, there were already consistent expressions of keen interest from many partners to provide “in-kind contributions” to GSP activities, e.g. in relation to training of staff from other countries or assistance with soil information collection and analysis.

An important dimension in the design of projects under the Facility will, therefore, be to maximize impact by combining where possible resource partner inputs with in-kind contributions. This will be

particularly germane to the work on capacity development, in particular component A1, where host countries should be able to offer facilities for the hands-on training at no cost.

3.3 Roles of Regional Soil Partnerships

The Regional Partnerships will be particularly instrumental to:

- facilitating and leading the implementation of activities under the regional implementation plans which are to be supported by the Facility;
- identifying measures and practices to serve sustainable management and conservation of soil resources which offer the best potential for application in the respective regions;
- canvassing opportunities for intra-regional cooperation, including *via* the provision of in-kind contributions to activities of common interest;
- ensuring interactions with other global instruments/institutions dealing with the conservation of key natural resources.

3.4 Oversight, Monitoring and Reporting arrangements

3.4.1 Communication and visibility

Depending on the eventual business volumes generated, a section of the GSP website may be devoted to providing regular updates on the Facility (new approvals, feedback from ongoing projects, etc...).

The GSP newsletters will also provide communication opportunities to inform partners and other interested constituents of the different implementation activities.

The two major soil related awareness platforms, the WSD and the IYS (up to the end of 2015) will also be used, as applicable, to showcase achievements, particularly at field level.

3.4.2 Maximizing knowledge sharing

Should some components fully develop as intended (“state-of-the-art” workshops and pilot projects at regional level) they will by essence involve a substantial amount of knowledge generation. While the pertinent reports will be made public and accessible to interested readers, their sheer volume may discourage consultation by broader audiences. There will be a need for synthesis which could be met through the periodic issuance of brochures or fact sheets, to be given wide circulation.

Due attention will also be paid to disseminate the eventual *lessons learned* during implementation, as soon as identified, e.g. *via* the GSP website or through the regional partnerships.

3.4.3 Provision for evaluation

The Facility has an indicative timeframe of 5 years. It is expected that progress will, however, be reviewed at annual intervals, while a mid-course review may also be possible and the lessons learned would assist with deciding on the way forward.

An independent Final Evaluation will be completed within six months prior to the actual completion date (NTE date) of the entire programme. It will aim at identifying project outcomes, their sustainability and actual or potential impacts. It will also have the purpose of indicating the measures needed to ensure continuity of action developed through the projects. The FAO Office of Evaluation, in consultation with project stakeholders, will be responsible for organizing and backstopping this Evaluation, including: finalizing the ToR, selecting and backstopping the team and Quality Assurance of the final report. The evaluation will, *inter alia*:

- assess relevance, efficiency and effectiveness of project design and implementation;
- assess project actual outputs and potential outcomes, impacts and sustainability;
- assess project performance in gender mainstreaming and achievements on gender equality;
- identify lessons learned about project design, implementation and management;
- highlight achievements and practices worth up-scaling and/or replication.

3.4.4 Reporting

There will be consolidated narrative and financial reporting to the resource partners every six months.

Should any resource partner wish to have a separate narrative and/or financial report with a different time schedule, this can be accommodated. However, separate reporting has major cost implications for the Organization.

Annex 1 - Logical Framework

PILLAR 1. Promote protection and conservation and sustainable management of soil resources for sustained productivity and restoration/rehabilitation of degraded/problem soils		
<i>OUTPUTS</i>	INDICATOR (S)	ASSUMPTION AND RISK
<i>A.1 Capacity development for strengthening national strategy formulation, technical and extension services and mechanisms on the ground for sustainable soil management, conservation and restoration.</i>	Pre and post test is carried out in relation to the training and other field activities aimed at improvement of capacities.	Partners need to select fully qualified participants.
<i>A.2. Scaling up and implementation of sustainable soil management practices at regional and national levels (preventing degradation) and enhanced soil productivity and ecosystems services</i>	Reports from national authorities on the number of hectares in which sustainable soil management, conservation and restoration practices have been implemented.	Successful engagement of top level scientists and soil practitioners needs to be ensured. Good preparatory work would be essential (e.g. by using focal point systems or dedicated sub-teams of partners).
<i>A.3. Restoration/rehabilitation of degraded and/or problem soils for improved livelihoods, food security and increased resilience (ecosystems at risk).</i>	Number of hectares that have been restored/rehabilitated; there should be a strong will from the national authorities to implement the activities.	All classical risks in this type of projects, e.g. regarding the selection of suitable areas, sufficient and timely counterpart support by country authorities, full account of local conditions.

A.4. Networking and disseminating documentation on measures for soil protection, management and restoration.	Number of networks assisted and documented measures effectively and widely disseminated.	
PILLAR 2. Encourage investment, technical cooperation, policy, education awareness and extension in soils		
OUTPUTS	INDICATOR (S)	ASSUMPTION AND RISK
B.1. Facilitation of GSP Governance, active positioning of the GSP in the international arena, and institutional collaboration.	Number of participants supported for participating at the Plenary Assembly.; enhanced two-way feedback with the concerned countries; perception of the GSP as a truly globally useful initiative.	Commitments by partners to make full use of GSP opportunities.
B.2. Strengthening of the GSP Secretariat.	Elimination of backlogs and full responsiveness. Capacity to baskstop timely and efficiently an expanding field programme. Sufficient number of appropriate staff is recruited. Number of field missions is carried out.	Availability of adequate resources, also stemming from partners.
B.3. Facilitating effective involvement of the ITPS in addressing soil issues and its interface with other panels and institutions of similar international standing.	ITPS able to carry out its heavy workload more effectively; image and reputation of the Panel increased internationally due to enhanced responsiveness.	Dedication of appointed members to contribute to demanding tasks.

B.4. Awareness raising campaigns on the importance of soils.	Number of events organized during the IYS and WSD.	
B.5. Youth and education programmes to promote renewed interest in soil sciences.	Number of specific activities implemented related to assistance to national youth and education programmes.	
B.6. Strengthening the policy environment for investment and technical cooperation in sustainable soil management	Soil issues to be higher on the investors' agenda (measured by positive incidence on investment portfolios at country level).	
PILLAR 3. Promote targeted soil research and development focusing on identified gaps and priorities and synergies with related productive, environmental and social development actions		
OUTPUTS	INDICATOR (S)	ASSUMPTION AND RISK
C.1. Inventory of soil research outputs and their relevance to various development actions.	A full inventory that is endorsed by various partners is available.	
C.2. Bring together the research and end-users communities to prioritise research and development needs on soils.	Users' interface is successfully established and able to guide the formulation of well targeted research activities in all regions.	
C.3. Establish research and development mechanisms to enhance actions that promote agricultural productivity, environmental quality and social development	Number of mechanisms established to promote targeted soil research	
C.4. Dissemination/extension of research outputs at all levels	Documented evidence is provided that research outputs are appropriately disseminated in the	Regional partnerships should live up to the expectation of being

	field, through various extension activities.	effective engines of knowledge generation within geographical areas sharing the same problems.
PILLAR 4. Enhance the quantity and quality of soil data and information: data collection (generation), analysis, validation, reporting, monitoring and integration with other disciplines		
OUTPUTS	INDICATOR (S)	ASSUMPTION AND RISK
<i>D.1. Global Soil Information System and enhancement of regional and national soil information systems</i>	A Global Soil Information System online and functioning.	There is a risk that the national soil information units do not follow up with providing information on a timely manner.
<i>D.2. Establishment of SoilSTAT for monitoring global soil health and properties</i>	SoilSTAT established and fed in by FAO members.	Availability of adequate resources.
<i>D.3. Capacity development on soil information (including data collection, mapping and monitoring of soil health and functions)</i>	Sharing of experience and capacities among officials within the same region; foundation for effective contacts and eventual networking arrangements across boundaries. Number of seminars and conferences are organized for information sharing.	
<i>D.4. Report on the Status of World Soils Resources (SWSR)</i>	. Status of World Soil Resources Resport launched by 5 th December	

	2015	
PILLAR 5. Harmonization of methods, measurements and indicators for the sustainable management and protection of soil resources		
<i>OUTPUTS</i>	INDICATOR (S)	ASSUMPTION AND RISK
E.1. Develop an over-arching soil description system designed to describe and explain soil features in a common and consistent manner to facilitate systematic application in all parts of the world.	A set of harmonization processes for soil classification, soil information and soil laboratory methods is in place aiding various soil applications	Risk of possible overlapping and duplication; need for clear mandate and roles of the various working groups.
E.2 Development of a new Universal soil classification system	Evidence of a new universal soil classifications system available.	(id)
E.3 Development and harmonization of indicators for monitoring the condition of soils and to assess the needs and effects of sustainable soil management at various levels among concerned international processes (e.g. CBD-Aichi targets; UNFCCC, UNCCD, SDGs).	A set of harmonized soil indicators jointly developed by various partners	(id)
E.4. Create a reference system for the integration of soil maps from different sources and ensure harmonized products meet the needs of users (e.g. for monitoring in Pillar 4).	A draft reference system is developed for the integration of regional soil maps.	

Annex 2 - Timelines

N..B. While the Facility has an initial intended lifetime of 5 years, forecasting is limited to up to 2017. The table will be regularly updated depending on developments.

TENTATIVE WORK PLAN		2014		2015		2016		2017	
		Semester 1	Semester 2	Semester 1	Semester 2	Semester 1	Semester 2	Semester 1	Semester 2
PILLAR 1									
OUTPUT	<i>A.1. Capacity development for strengthening national strategy formulation, technical and extension services and mechanisms on the ground for sustainable soil management, conservation and restoration.</i>								
OUTPUT	<i>A.2. Scaling up of sustainable soil management practices at regional and national levels (preventing degradation) and enhanced soil productivity and ecosystems services.</i>								
OUTPUT	<i>A.3. Restoration/rehabilitation of degraded and/or problem soils for improved livelihoods, food security and increased resilience (ecosystems at risk).</i>								
OUTPUT	<i>A.4. Networking and disseminating documentation on measures for soil protection, management and restoration.</i>								

TENTATIVE WORK PLAN		2014		2015		2016		2017	
		Semester 1	Semester 2	Semester 1	Semester 2	Semester 1	Semester 2	Semester 1	Semester 2
PILLAR 2									
OUTPUT	<i>B.1. Facilitation of GSP Governance, active positioning of the GSP in the international arena, and institutional collaboration.</i>								
OUTPUT	<i>B.2. Strengthening of the GSP Secretariat</i>								
OUTPUT	<i>B.3. Facilitating effective engagement of the ITPS in addressing soil issues and its interface with other panels and institutions of similar international standing</i>								
OUTPUT	<i>B.4. Awareness raising campaigns on the importance of soils.</i>								
OUTPUT	<i>B.5. Youth and education programmes to promote renewed interest in soil sciences.</i>								

TENTATIVE WORK PLAN		2014		2015		2016		2017	
		Semester 1	Semester 2	Semester 1	Semester 2	Semester 1	Semester 2	Semester 1	Semester 2
OUTPUT	<i>B.6. Strengthening the policy environment for investment and technical cooperation in sustainable soil management</i>								
PILLAR 3									
OUTPUT	<i>C.1. Inventory of soil research outputs and their relevance to various development actions.</i>								
OUTPUT	<i>C.2. Bring together the research and end-users communities to prioritise research and development needs on soils.</i>								
OUTPUT	<i>C.3. Establish research and development mechanisms to enhance actions that promote agricultural productivity, environmental quality and social development</i>								
OUTPUT	<i>C.4. Dissemination/extension of research outputs at all levels</i>								
PILLAR 4									

TENTATIVE WORK PLAN		2014		2015		2016		2017	
		Semester 1	Semester 2	Semester 1	Semester 2	Semester 1	Semester 2	Semester 1	Semester 2
OUTPUT	<i>D.1. Global Soil Information System and enhancement of regional and national soil information systems</i>								
OUTPUT	<i>D.2. Establishment of SoilSTAT for monitoring global soil health and properties</i>								
OUTPUT	<i>D.3. Capacity development on soil information (including data collection, mapping and monitoring of soil health and functions)</i>								
OUTPUT	<i>D.4. Report on the Status of World Soils Resources (SWSR)</i>								
PILLAR 5									
OUTPUT	<i>E.1. Develop an over-arching soil description system designed to describe and explain soil features in a common and consistent manner to facilitate systematic application in all parts of the world.</i>								
OUTPUT	<i>E.2 Development of a new Universal soil classification system</i>								

TENTATIVE WORK PLAN		2014		2015		2016		2017	
		Semester 1	Semester 2	Semester 1	Semester 2	Semester 1	Semester 2	Semester 1	Semester 2
<i>OUTPUT</i>	E.3 Development and harmonization of indicators for monitoring the condition of soils and to assess the needs and effects of sustainable soil management at various levels among concerned international processes (e.g. CBD-Aichi targets; UNFCCC, UNCCD, SDGs).								
<i>OUTPUT</i>	E.4. Create a reference system for the integration of soil maps from different sources and ensure harmonized products meet the needs of users (e.g. for monitoring in Pillar 4).								

