Global Soil Partnership, European Soil Partnership

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&

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Global Soil Partnership

- to support and facilitate joint efforts towards sustainable management of soil resources for food security and climate change adaptation and mitigation.
- It has been subsequently endorsed by 193 UN nations at Rio+20, which is quite unprecedented
- and will probably move to having an Intergovernmental Panel on Soils which means that representation for future meetings will be via Government.
- Currently there is an Intergovernmental Technical Panel on Soils

Pillar 4: Why do we need a Global (European) System?

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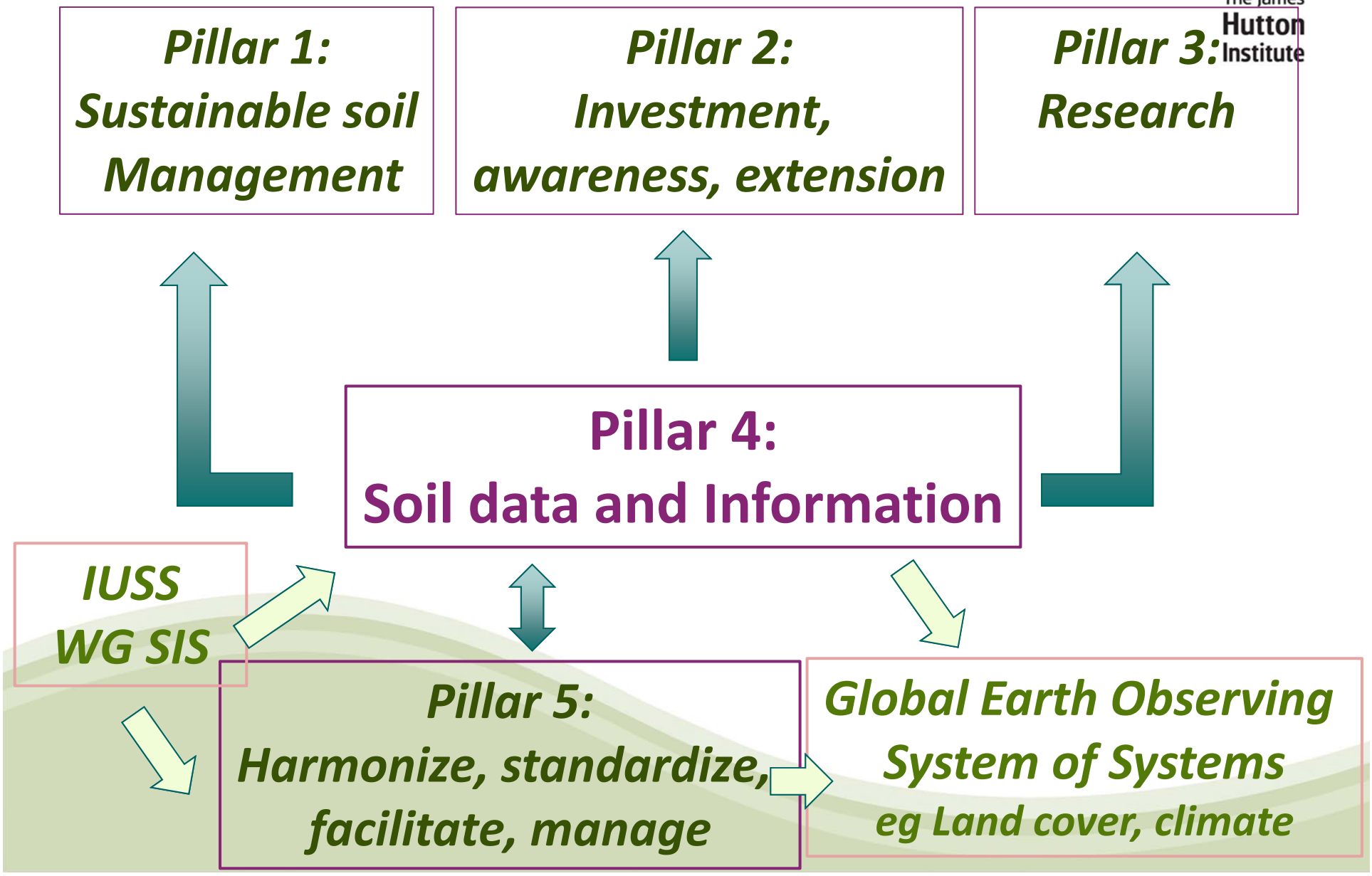
Is there enough land with good soil to feed the population?

Are we managing soil, nutrients and water to maximise yields, maintain other functions and minimise degradation/GHG emissions?

The quality of global soil datasets compares poorly with other on eg geology, land cover, climate

Relationship between Pillars



Pillar 4: Soil Data and Information

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Enhance the quality and quantity of soil data and information: incl data collection, analysis, validation, monitoring, reporting and integration with other disciplines.

Pillar 4: GSP Action Plan

Initial 23 Recommendations from ITPS reduced to 4 high-level:

1. An enduring system for monitoring and forecasting the condition of soil resources

2. This system to use national and regional soil data though a collaborative network and include facilities to incorporate new data – distributed design, IP remains with data providers

3. Soil information should integrate with 'Earth Observation System'

4. There should be a training programme for new monitoring, mapping and forecasting specialists

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Global datasets require harmonized soil data on a standardized grid compatible with other global datasets (100m) – interim grid by Dec 2015, Version 1 by Dec 2018

Web-based delivery and land evaluation via SoilML and web portal, interoperable systems

Organisations can act on behalf of countries by mutual agreement.

Harmonized data (from Pillar 5)

Implement monitoring systems (in time) to aid global assessment of soil health

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Shared technical advances/ Training

Harmonized World Soil Database to be updated/Enhanced profile database

1km vs 100m grid to be resolved

e SOTER approach possible

Pillar 4 Action Plan endorsed by GSP Plenary

Working Group formed End 2014 to further develop and firm up the Action Plan

Soil attribute data GlobalSoilMap.net

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Twelve soil properties will be predicted at each location to a depth of 2m where possible at fixed depth intervals. These are:

(1) total profile depth (cm),

(2) plant exploitable (effective) soil depth (cm),

(3) organic carbon (g/kg),

(4) pH,

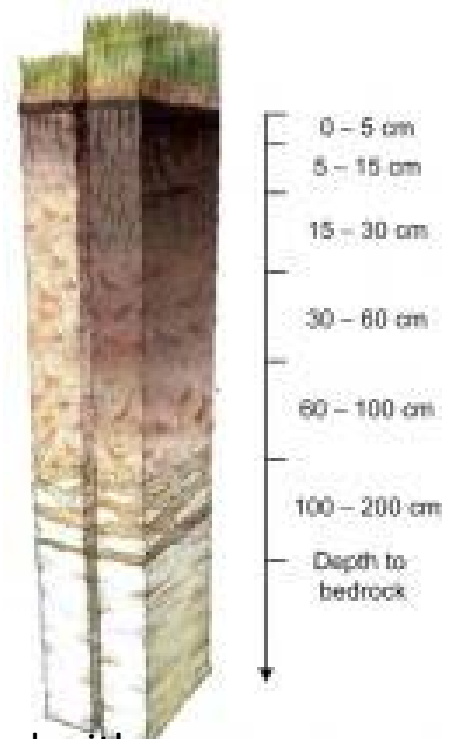
(5) sand (g/kg), (6) silt (g/kg), (7) clay (g/kg), (8) gravel (g/kg),

(9) ECEC ($cmol_c/kg$)

(10) bulk density fine earth (Mg/m^3)

(11) bulk density (Mg/m^3) and

(12) available water capacity (mm).



Each soil property will have an estimate of the uncertainty associated with the prediction for each depth for each grid location. Uncertainty is defined as the 95% prediction interval (PI), which is the range in values within which the true value at any prediction location is expected to be found 19 times out of 20 (95%).

GlobalSoilMap.net

The James Hutton Institute

- Supported by the Australian Government and IUSS, this project includes CSIRO, NRCS and ISRIC
- the aim is to produce a global map of specific soil properties at a 100m resolution based on the principles of digital soil mapping.
  - There will be regional nodes
  - The consortium secured money from the Gates Foundation project to map the soils of sub-Saharan Africa at a scale of 100m
  - Much of the work will be based on legacy data with some new spectral data collected

http://www.globalsoilmap.net/

eSoter – Soil and Terrain

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Digital soil mapping protocol based on the traditional soils and terrain protocols. Also uses legacy soil data. Designed to provide a framework for producing a new soil map of the world and an accompanying soil database.

- using remotely-sensed data both to validate and correct existing survey data (and identify soil parent materials)
- generating new data surfaces – including DEM
- improving the quality of results of applications previously based on legacy data alone
- Could contribute to a global soil map AND provide grid data required by Global Soil Map consortium

	Soter	GlobalSoilMap
Spatial entity	polygons	Points and blocks
Spatial entity area	Variable, but limited by the scale at which polygons are represented	90x90-m
Soil information	Soil types and representative soil profiles. Diagnostic soil properties, derived soil parameters	Selected mandatory soil parameters (not limited) at fixed depths intervals + uncertainties
Scale	1:250,000	No scale
Data used	DEM, PM maps, soil maps, RS, soil profiles…	Same…
Method	Basically => draw polygons on physiography and parent material => put soil information in it.	Not unique. Various DSM methods depending on available data. Options provided in the specs.
Complementarity	Soter as a co-variate for Global Soil map predictions ?	Global Soil Map as data to populate Soter ?

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Soter and GlobalSoilMap – Some good reasons to collaborate

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- The data to create the products are basically the same
- The soil experts are the same
- Both polygon and raster maps are useful
- They can benefit from mutual enrichment
- JRC and some member states are already working on a GlobalSoilMap product at country or EU level

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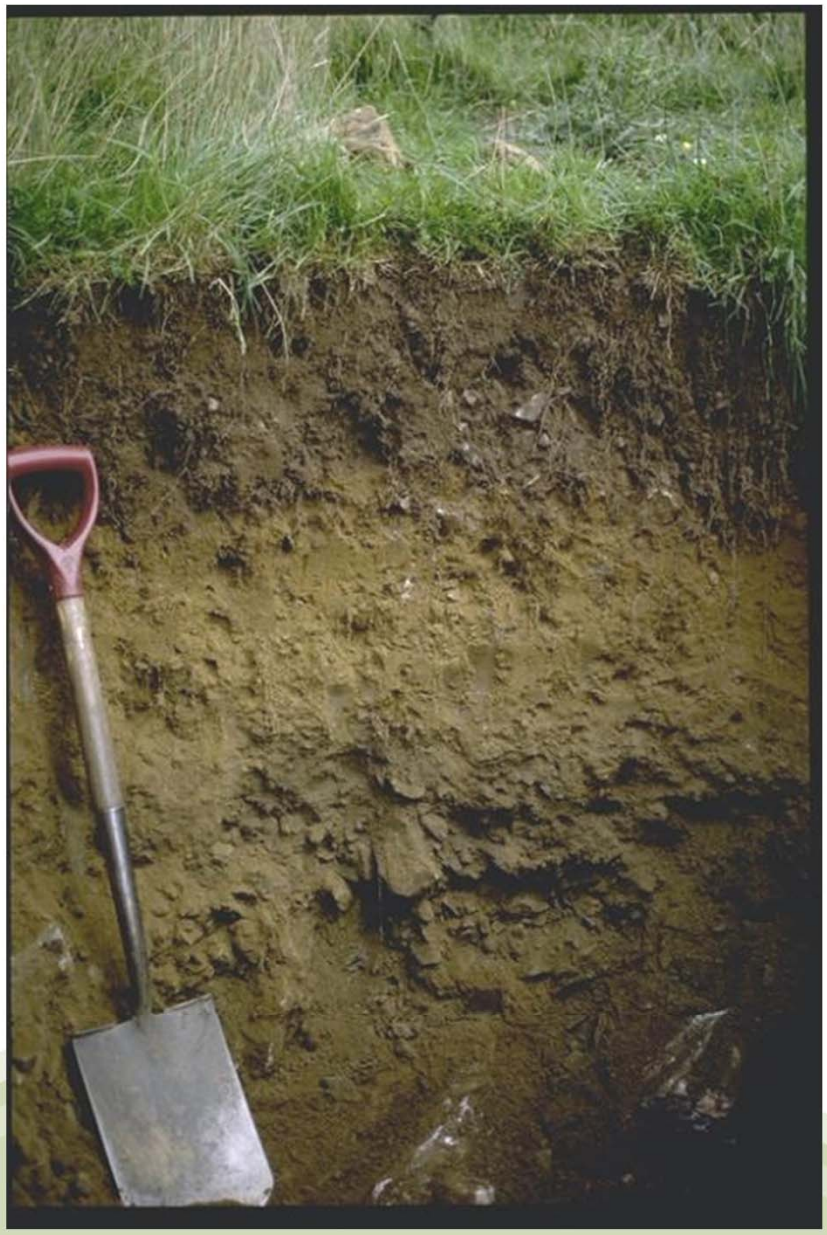

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"A cloak of loose, soft material, held to the earth's hard surface by gravity, is all that lies between life and lifelessness."

- Wallace H. Fuller, 1975.

Pillar 4: GSP Action Plan

Governance

ITPS will be responsible for strategic oversight of the development of the global SIS

IPR (and data) will remain with the national bodies but IPR issues will have to be overcome