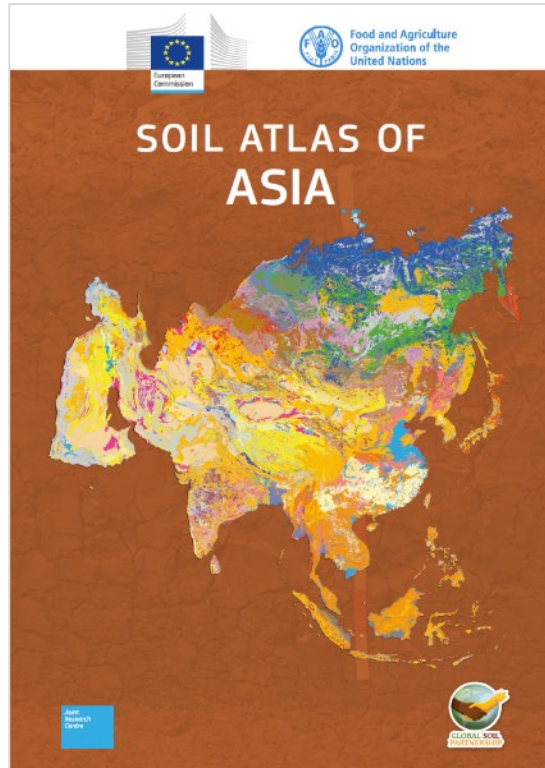


Introducing the first ever Soil Atlas of Asia



FAO, World Soil Day 2022

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Asia?



The natural resources of Asia!



Flickr LHOON

RawPixel PDI



WC: Floréalréal

WC: Shankar Raman



Not enough focus on Asia's most important natural resource



Why this perception?



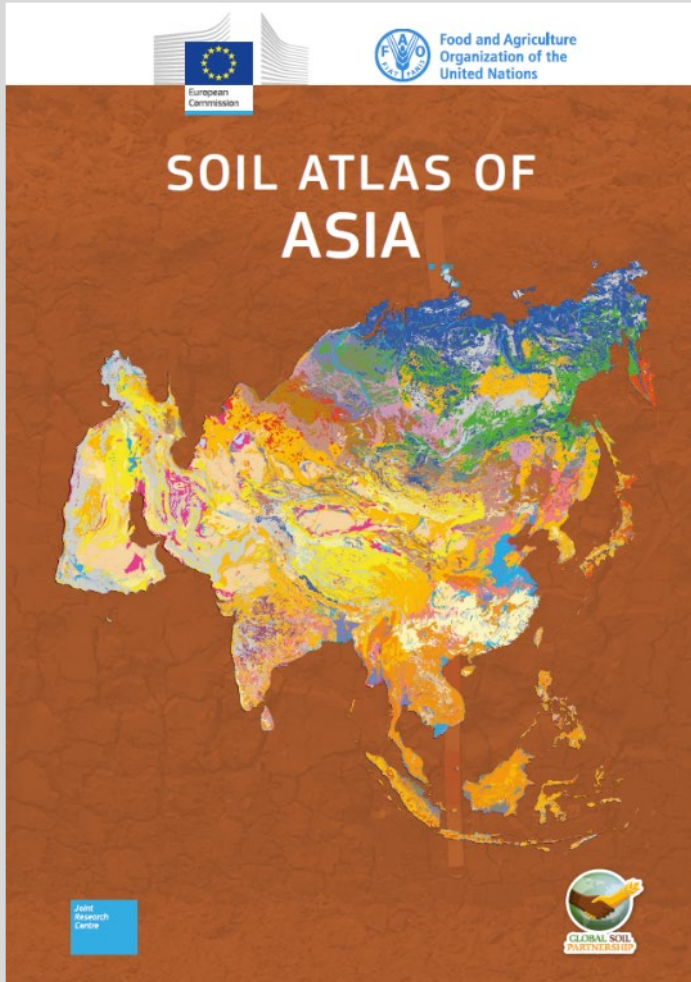
Soils in Asia are often undervalued – neglected – or simply ignored....





- AWARENESS RAISING / OUTREACH
- EDUCATION
- IMPROVE POLICY RELEVANT SOIL DATA
- CAPACITY BUILDING

The Atlas



Joint publication EC JRC & FAO Near East and North African, Asian and Eurasia Soil Partnerships



What have we produced?



Physical book

192 A3 pages/ 44 A2 Map Sheets

Downloadable pdf (free)

<http://esdac.jrc.ec.europa.eu>

<http://bookshop.europa.eu/>

<http://www.fao.org/publications>

Available 2023 First Quarter

High-level **political** and **scientific** launch events



- High quality reference work on the soils of Asia
- Not aimed at soil scientists but...
- Written for general public, policy makers, environmental science, educationalists...
- Informative, easy to read, graphically stimulating
- Should lead to a better understanding and appreciation of the importance of soil across Asia

New soil map



Overview maps: the major soil types of Asia

The map shows the main soil types for Asia. Covering an area of almost 44.5 million km², Asia is Earth's largest continent. Stretching from the Arctic to the Equator and from the Pacific Ocean to the Mediterranean Sea, Asia occupies about 30% of the total land surface of the planet and is home to 60% of the world's population.

A broad north-south zonal pattern of soil groups can be observed, reflecting broad climatic zones. Long and very cold winters in the north give rise to permafrost-affected Cryosols of the tundra regions. In places extending into the boreal forests. To the south, low temperatures inhibit the decay of vegetation to form extensive Histosols together with waterlogged Gleysols, especially on the low-lying plains of Siberia.

As temperatures rise towards the south, large expanses of coniferous boreal forests are denuded by Podzols, which have developed on coarse-grained, quartz-rich deposits. Increasing clay content of soils is indicated by Albeluvisols and Luvisols.

Further south again, the broad grassland belt of the steppe is denuded by Kastanczems, Chernozems and Phaeozems. These are soils with well-defined organic-rich topsoils that have developed in silty loams and reflecting a decreasing precipitation gradient to the south.

In fact, large parts of Asia, including much of the north, experience a relatively dry climate, often coupled with extremes of temperatures. The overall aridity and high temperatures of the west means that poorly developed soils, with low soil organic matter levels and low water retention capacity and elevated levels gypsum (Gypsisols) and carbonates (Calcisols) are widespread. Desert areas with sand dunes are denuded by Arenosols which are interspersed by Regosols and Leptosols, often denuding mountains or rock outcrops. Cambisols, displaying only the slightest signs of soil development, are common. Saline soils (Solonchaks and Solonchaks) are characteristic of depressions in arid areas and are common throughout western and central Asia.

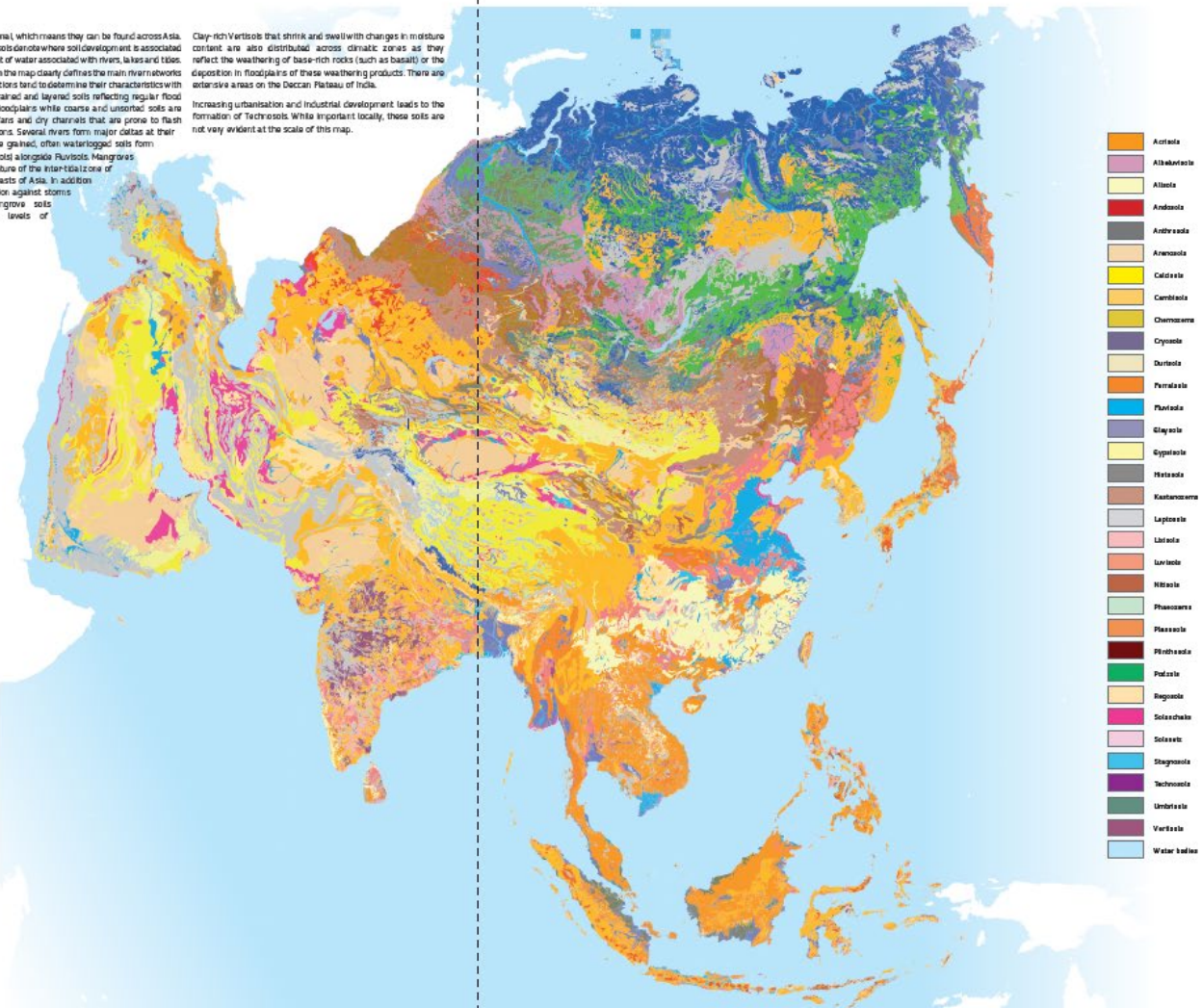
Asia is also a mountainous continent. Containing the world's highest peaks, the various ranges of the Himalayas extend from Myanmar in the east to Afghanistan in the west. They separate the Indian Sub-continent from the High Tibetan Plateau. They are a barrier to drainage and dominate the monsoonal weather patterns of southern Asia. Poorly developed and shallow, stony Regosols, Leptosols, and Cambisols highlight mountainous regions, often closely reflecting the characteristics of the underlying geology. Erosion is widespread, especially on steep slopes. Higher elevations with low temperatures are denuded by Cryosols, often in conjunction with glaciers.

A hot and humid climate supports rainforests over much of southeastern Asia. Deep chemical weathering gives rise to iron- and aluminium-rich Ferralents and Acrisols, with Lixisols emerging in drier conditions.

Some soils areazonal, which means they can be found across Asia. In the same, Fluvisols develop where soil development is associated with the movement of water associated with rivers, lakes and tides. Their occurrence on the map clearly defines the main river networks of Asia. Flow conditions tend to determine their characteristics with medium to fine grained and layered soils reflecting regular flood events in broad floodplains while coarse and unsorted soils are found in alluvial fans and dry channels that are prone to flash floods in arid regions. Several rivers form major deltas at their mouths where fine grained, often waterlogged soils form (Gleysols, Stagnosols alongside Fluvisols. Mangroves are a common feature of the inter-tidal zone of many southern coasts of Asia. In addition to coastal protection against storms and floods, mangrove soils store significant levels of organic carbon.

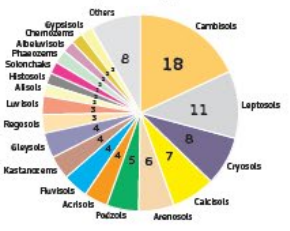
Clay-rich Vertisols that shrink and swell with changes in moisture content are also distributed across climatic zones as they reflect the weathering of base-rich rocks (such as basalt) or the deposition in floodplains of these weathering products. There are extensive areas on the Deccan Plateau of India.

Increasing urbanisation and industrial development leads to the formation of Technosols. While important locally, these soils are not very evident at the scale of this map.

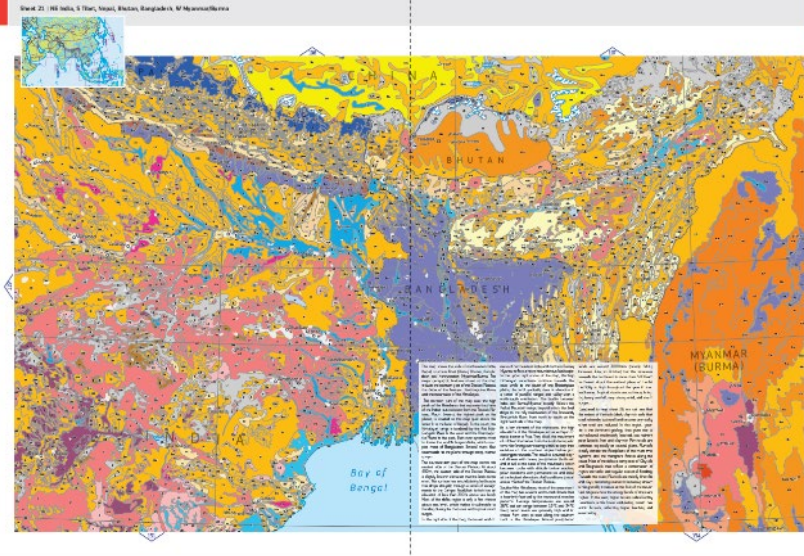
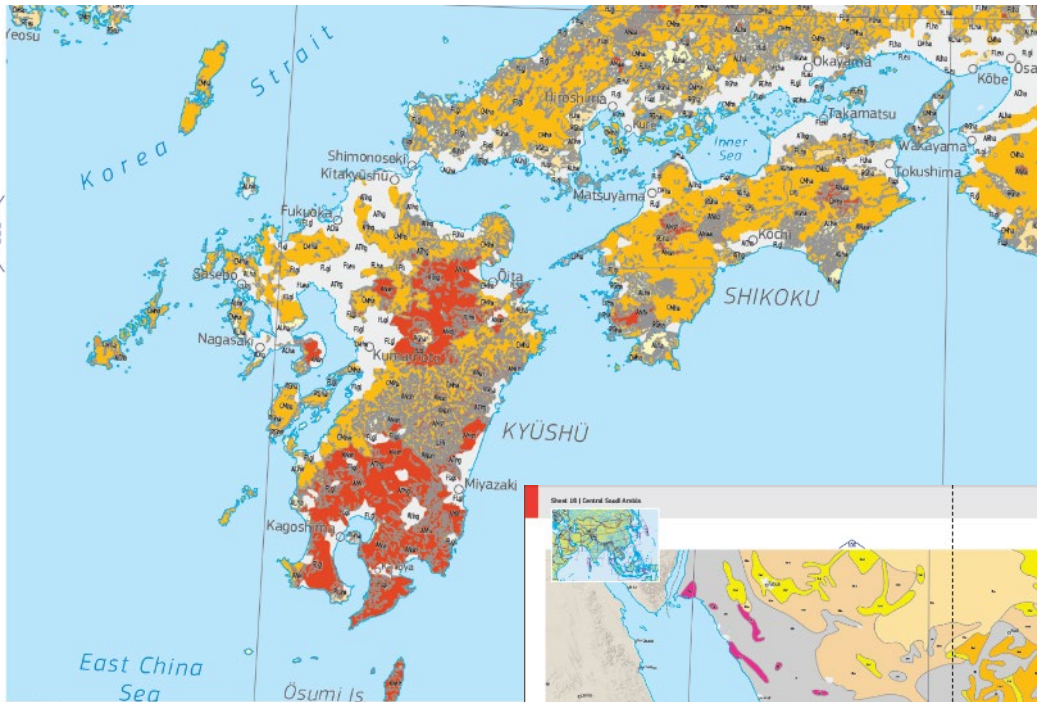


- Acrisols
- Albeluvisols
- Allicols
- Arenosols
- Andosols
- Androble
- Arenosols
- Calcisols
- Cambisols
- Chernozems
- Cryosols
- Durrisols
- Ferralsols
- Planosols
- Gleysols
- Gypsisols
- Histosols
- Kastanczems
- Leptosols
- Lixisols
- Luvicols
- Mollisols
- Phaeozems
- Planosols
- Planosols
- Podzols
- Regosols
- Solonchaks
- Solonchaks
- Stagnosols
- Technosols
- Umbrisols
- Vertisols
- Water bodies

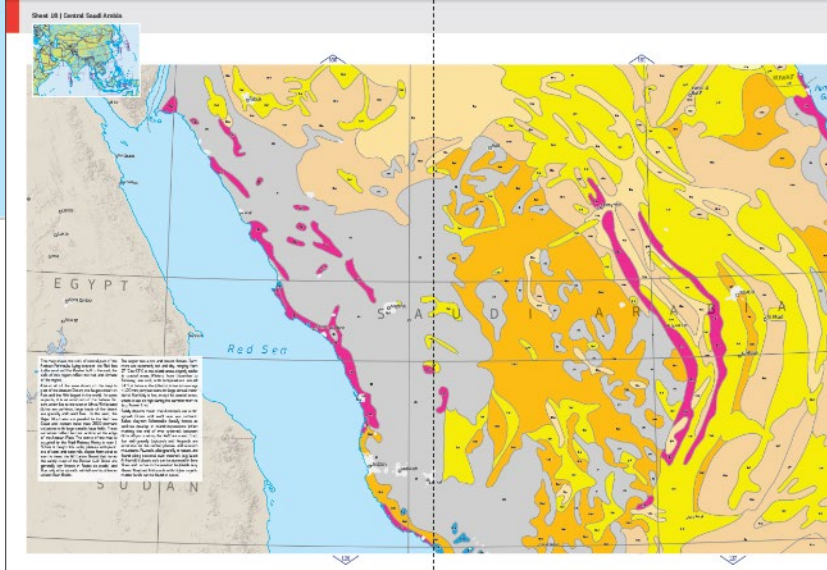
Common soil types of Asia (%):



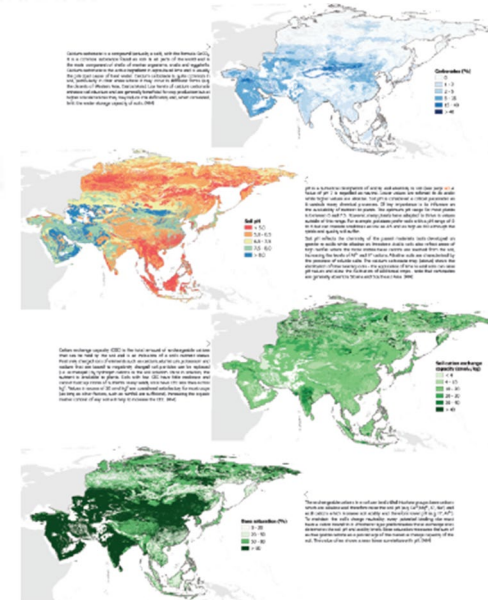
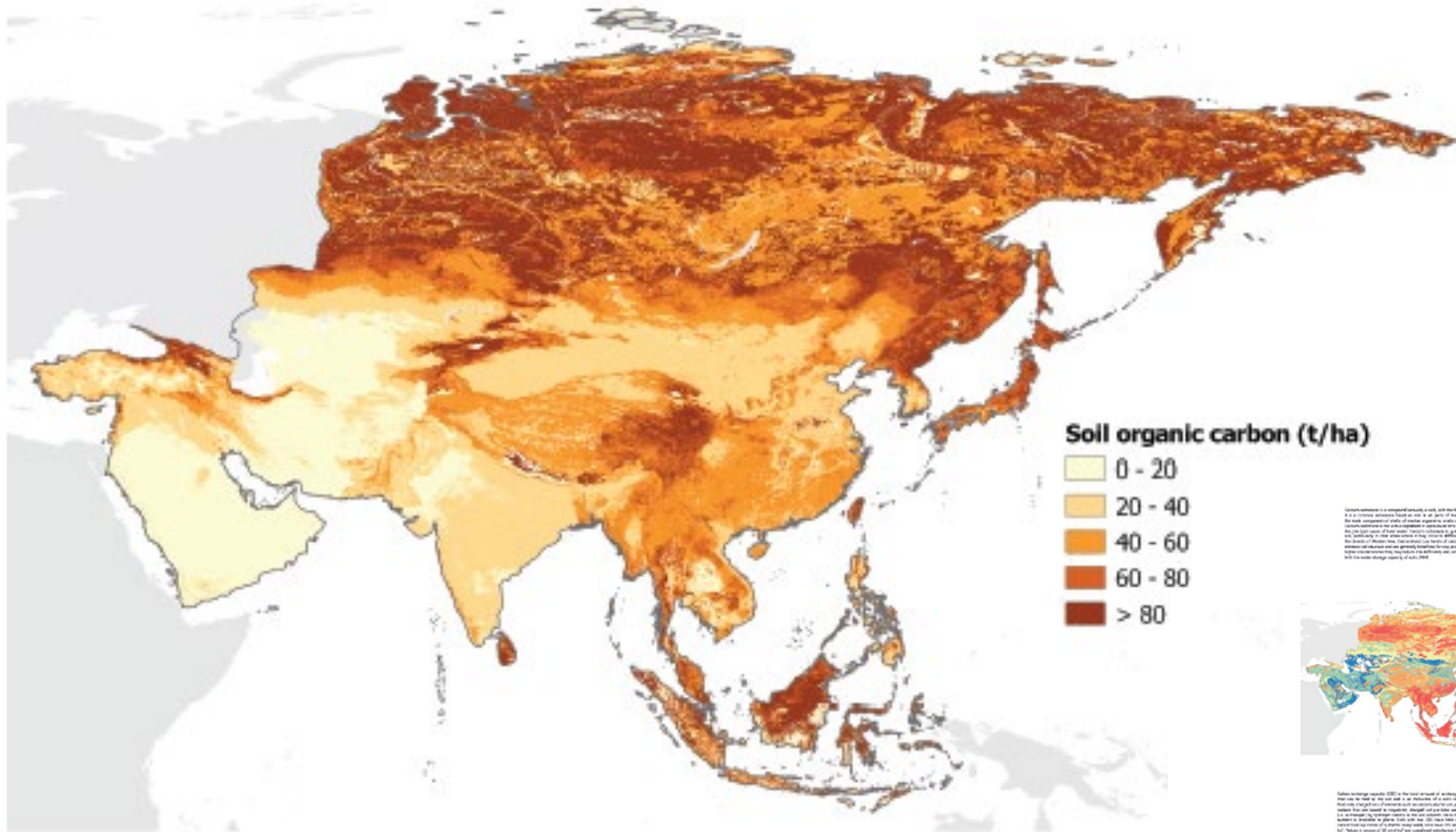
New soil map



Consistency with other Soil Atlas



Derived products



More than maps



- **The role and importance of soil**
 - ❖ **Functions**
 - ❖ **Ecosystem services**
- **What is soil**
- **Soil forming factors and the Asian environment**
- **Soil classification**
 - ❖ **WRB: a harmonizing approach**
- **Major soil types of Asia**
 - ❖ **Strengths, Weaknesses, Opportunities, Threats**
- **Pressures and solutions**
- **National perspectives**

Why is soil important?

Soil is a natural resource that provides a base for plant growth and a habitat for a vast array of organisms. It is also a natural storehouse of water and nutrients, and a natural filter for pollutants. Soil is also a natural source of energy and a natural sink for carbon dioxide.

Soil and water

Soil is a natural storehouse of water and nutrients. It is also a natural filter for pollutants. Soil is also a natural source of energy and a natural sink for carbon dioxide.

Soil and carbon

Soil is a natural storehouse of carbon. It is also a natural sink for carbon dioxide. Soil is also a natural source of energy and a natural sink for carbon dioxide.

Soil and biodiversity

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The Phosphorus cycle

The Phosphorus cycle is a natural process that involves the movement of phosphorus through the environment. It is a cycle that involves the flow of phosphorus through the soil, plants, animals, and the atmosphere.

Soil as a regulator of the Phosphorus cycle

Soil is a natural storehouse of phosphorus. It is also a natural sink for phosphorus. Soil is also a natural source of phosphorus and a natural sink for phosphorus.

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Soil forming factors & using vegetation

Soil forming factors include climate, parent material, topography, and time. Using vegetation can help to improve soil quality and prevent soil erosion.

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- National perspectives

Climate
Soil is a key element of the climate system. It acts as a carbon sink, storing carbon in the soil. Soil also plays a role in the water cycle, influencing evaporation and transpiration. Soil health is crucial for maintaining the climate system.

Flora and Fauna
Soil is home to a vast array of organisms, from bacteria and fungi to plants and animals. These organisms play a vital role in soil health, contributing to nutrient cycling and soil structure. Healthy soil supports diverse and resilient ecosystems.

Soil Health
Soil health is the capacity of soil to function as a medium for plant growth, to store and cycle nutrients, and to regulate water. It is determined by a complex interplay of physical, chemical, and biological factors. Maintaining soil health is essential for sustainable agriculture and ecosystem services.

54. Soil health and the environment in Asia

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Indonesia
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Philippines
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What next?



- Translations
- Soils of Asia Wall Chart (in preparation)
- Educational material
- Regional perspectives

Thank you for your attention.



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