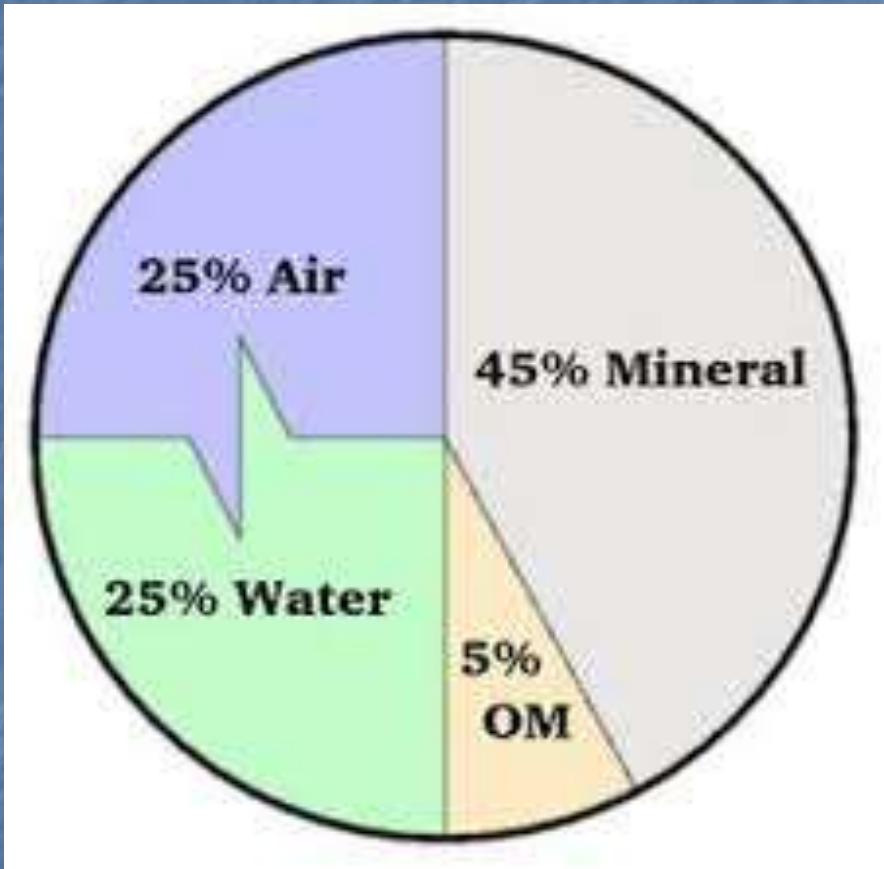
Soil and Mineral Resources in Bangladesh

Definition of Soil

Soil is the loose, surface material of the earth, composed of minerals, organic matter, water, and air, that supports plant life and provides a habitat for various organisms.



Soil forming Factors

Five principal soil forming factors are:

(1) parent material,
(2) landform,
(3) time,
(4) climate, and
(5) biological activity.

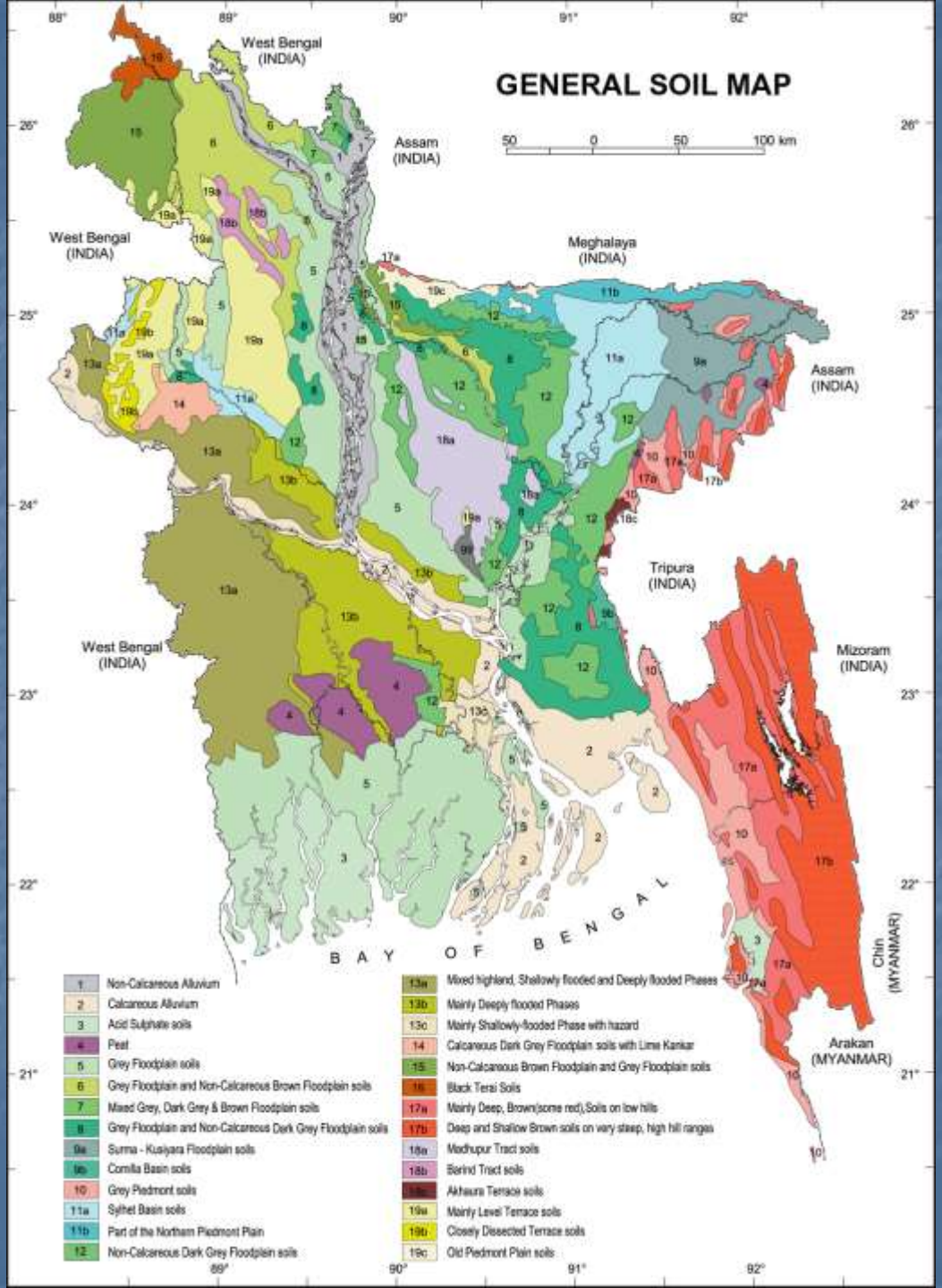
Soil Formation

Soil classification

The soil resources development institute (SRDI) has identified about 500 soil series in Bangladesh.

Soil series is a group of soils formed from the same kind of parent material under similar conditions of drainage, vegetation, climate and time, and having the same sequence of soil horizons with similar differentiating properties.

Each soil series is known after a name of locality (e.g. Tejgaon series, Ishwardi series, etc).



Soils of Bangladesh

General soil type

A non-technical grouping of soils, made originally to enable non-specialists to make use of the technical information provided by the FAO/UNDP Soil Survey Project in the 1960s.

These general soil types give a very broad level of generalisation of soil characteristics.

Floodplain Soils

In many areas, the soil surveys recognised active, young, and old floodplain landscapes. Active floodplains occupy land within and adjacent to the main rivers where shifting channels deposit and erode new sediments during the annual floods. Newly deposited alluvium within this floodplain is stratified in different layers.

Usually, silty and clay deposits are finely stratified, and sandy deposits, as well as mixed sandy and silty deposits are coarsely stratified. This is a state from where the soil forming factors starts activating the soil forming processes.

Hill Soils

- Soil forming processes are active on the hills for a significant period. Due to erosion on steep slopes of high hills, the weathered material on the hills is constantly removed and thus keeps the soils young on the high hills.

- The soils on the low hills are older as erosion is less severe and allows soil material to accumulate. Soils have been developed from these minerals through prolonged weathering under well to excessively drained conditions, leaching, acidification and removal of surface material by erosion.

Pleistocene Terrace Soils

- Unlike other floodplain terraces, the madhupur clay was uplifted and formed a terrace above sea level probably before the Late Pleistocene. Since then it has been subject to the action of soil forming processes.
- Soils have been developed in the two kinds of Madhupur clay - deeply weathered pervious clay and little altered impervious clay.
- The soil formation process vary considerably in drainage, and degree of profile development, depending on the extent of weathering of the parent material and the topography.

Minerals of Bangladesh

MINERALS OF BANGLADESH

Geologically, Bangladesh occupies a greater part of the Bnegal Basin and the country is covered by **Tertiary folded sedimentary rocks** (12%) in the north, north eastern and eastern parts; **uplifted Pleistocene Terraces** (8%) in the north western, mid northern and eastern parts; and **Holocene deposits (recent floodplain)** (80%) consisting of unconsolidated sand, silt and clay.

MINERALS OF BANGLADESH

Because of a different geological environment, important mineral deposits of Bangladesh are **natural gas, coal, limestone, hard rock, gravel, glass sand, construction sand, white clay, peat, beach sand and heavy minerals**.

Oil and Gas

There are 26 discovered gas fields in Bangladesh of various sizes. The estimated recoverable reserve of the 26 gas fields is 13.6 TCF.

The **only oilfield** of the country has been discovered at **Haripur** in 1986. It has an estimated in-place oil reserve of about 10 million barrels, with a recoverable reserve of about 6 million barrels. The oil field produced 0.56 million barrels of oil in six and a half years, but production remained suspended from 1994.

MINERALS OF BANGLADESH

Coal

Coal first discovered in the country by Geological Survey of Pakistan (GSP) in 1959 was at great depth. Geological Survey of Bangladesh (GSB) continued its efforts for exploration that resulted in the **discovery of 4 coalfields**. All the discovered fields lie in the north-western part of the country. Commercial coal production at **Barapukuria** Coal Mine started in April 2003 with the expectation to produce 1 million tons of coal/year. Coal has been playing vital role in **irrigation** as well as demand of **electricity** in North-Western part of the country. Some coal is also being used in **brickfields**.

Limestone

In the early 1960s, a mine of limestone with a small reserve at **Takerghat, Sylhet,** in the north eastern part of the country started supplying raw materials to a cement factory.

In the 1960s GSP discovered another limestone deposit in **Joypurhat** at a depth of about 515-541m below the surface with a total reserve of 100 million ton. In the mid 1990s GSB discovered limestone deposit at a depth of 493-508 and 531-548m below the surface at **Jahanpur and Paranagar of Naogaon** respectively. Thickness of these deposits is 16.76m and 14.32m respectively.

Hard Rock

Bangladesh has shortage of **construction materials**. A large deposit of hard rock has been discovered by GSB at depths ranging from 132 to 160m below surface at **Maddhyapara, Dinajpur** went into production 25 mt 2007. Hardrock has been extracted upto April 2017 a sum of total of 459,284 metric ton. These rocks are used as construction materials for **housing apartments, commercial buildings, roads and highways, bridges, dams, river dykes, embankments, flood control, railway sleepers, decoration pieces, tiles,** etc.

MINERALS OF BANGLADESH

Peat

In Bangladesh peat deposits occur in the marshy areas of the north-eastern, middle and south western parts with a total reserve of more than 170 million ton. Peat can be used as fuel for **domestic purposes, brick manufacturing, boilers** etc. However, their exploitation has not yet been started.

Construction sand

It is very much available in the riverbeds throughout the country. Sand consists mostly of quartz of medium to coarse grains. It is extensively used as construction material for buildings, bridges, roads, etc. all over the country.

MINERALS OF BANGLADESH

Gravel

Deposits of gravel are found along the piedmont areas of the Himalayas in the northern boundaries of Bangladesh. These river borne gravels come from the upstream during the rainy season. Total reserve of the gravel deposits is about 10 million cu m. Gravel deposits are being exploited and used in the country.

Glass sand

Important deposits of glass sand of the country are at **Shahjibazar** (1.41 million ton) and **Chauddagram** (0.285 million ton) at or near the surface, Maddhyapara (17.25 million ton) and Barapukuria (90.0 million ton) below the surface. **Glass sands consist of fine to medium, yellow to grey quartz.**

White Clay

There are surface to near surface deposits of white clay in **Bijoypur and Gopalpur area of Netrokona** district, **Nalitabari of Sherpur district, Haidgaon of Chittagong district and Baitul Izzat of Satkania upazila**, Chittagong district. Besides there are subsurface deposits of white clay' in Maddhyapara, Barapukuria, Dighipara of Dinajpur district and Patnitala of Naogaon district. The exposed white clay is not good in quality. **It is used in the ceramic factories** of Bangladesh after mixing with high quality imported clay.

Beach sand

Deposits of beach sand have been identified in the coastal belt and in the coastal islands of Bangladesh. Different heavy minerals and their reserves are: **Zircon, Rutile, Ilmenite, Kyanite, Garnet, Magnetite and Monazite.**