



Soil Atlas of Africa

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Joint Research Centre – Soil Action



Aims of the atlas

Soil in Africa is generally undervalued – especially by policy makers.

To raise the awareness of the general public, policymakers and other scientists of the importance of soil in Africa – EC/JRC Soil Atlas Series

To provide educational material to schools & university.

To support EU policies and instruments for Development and Aid Assistance.



Specifications

High quality reference work on the soil of Africa

*Written for general public, policy makers,
environmental science, educationalists...*

Not aimed 'primarily' at soil scientists.

Informative, easy to read, graphically stimulating

*Lead to a better understanding and appreciation of
the importance of soil in Africa*



A collaborative initiative of the European Union to support and encourage the sustainable use of soil resources in Africa

Joint publication by JRC, AUC, ASSS, FAO, ISRIC and scientists from both Africa and Europe



Editorial Board

Approach: Maps

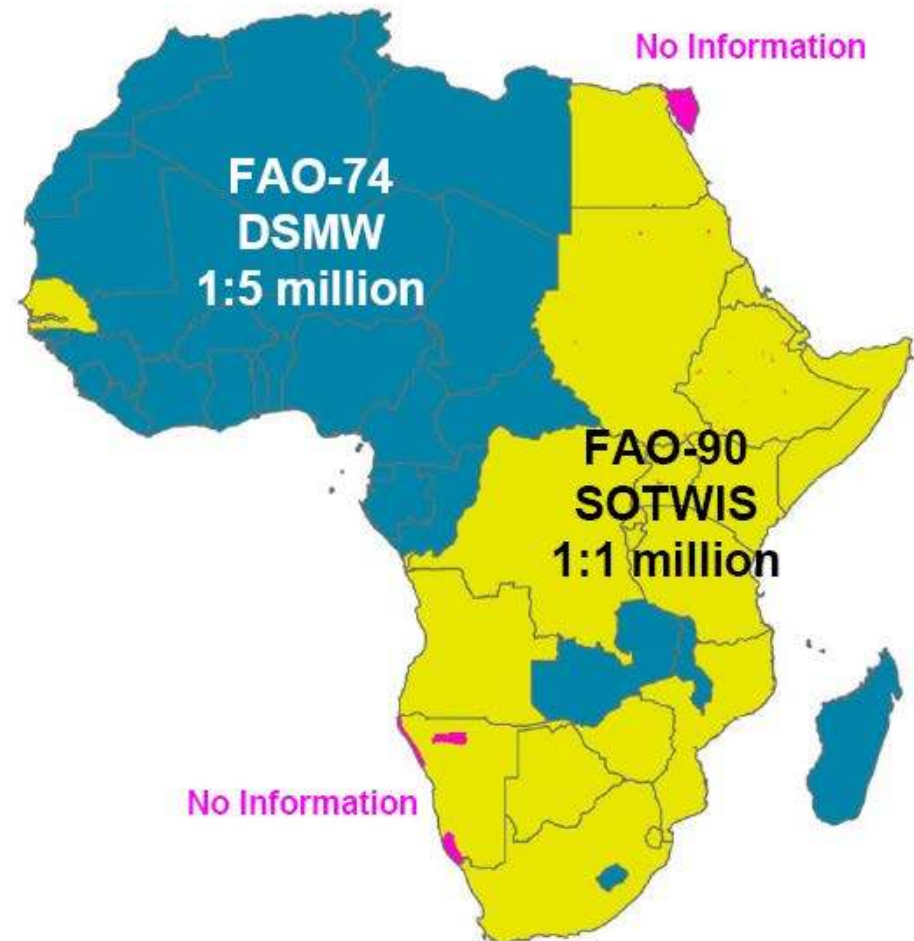
Harmonized World Soil Database (HWSD)

Soil mapping units – use of dominant soil types

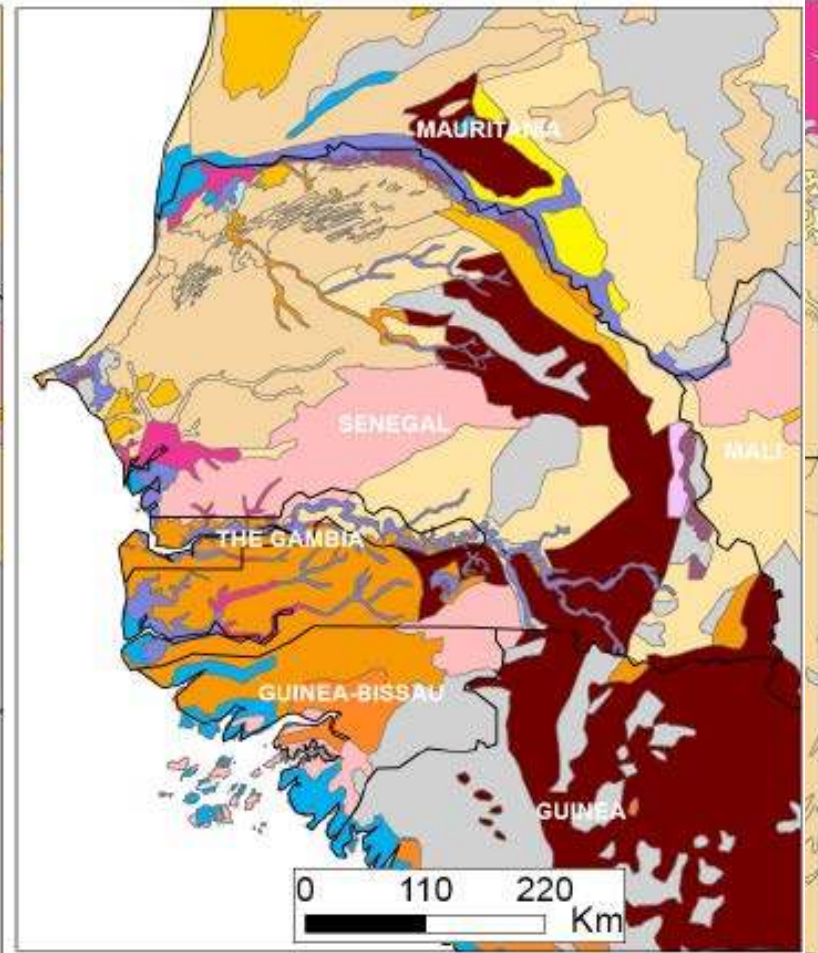
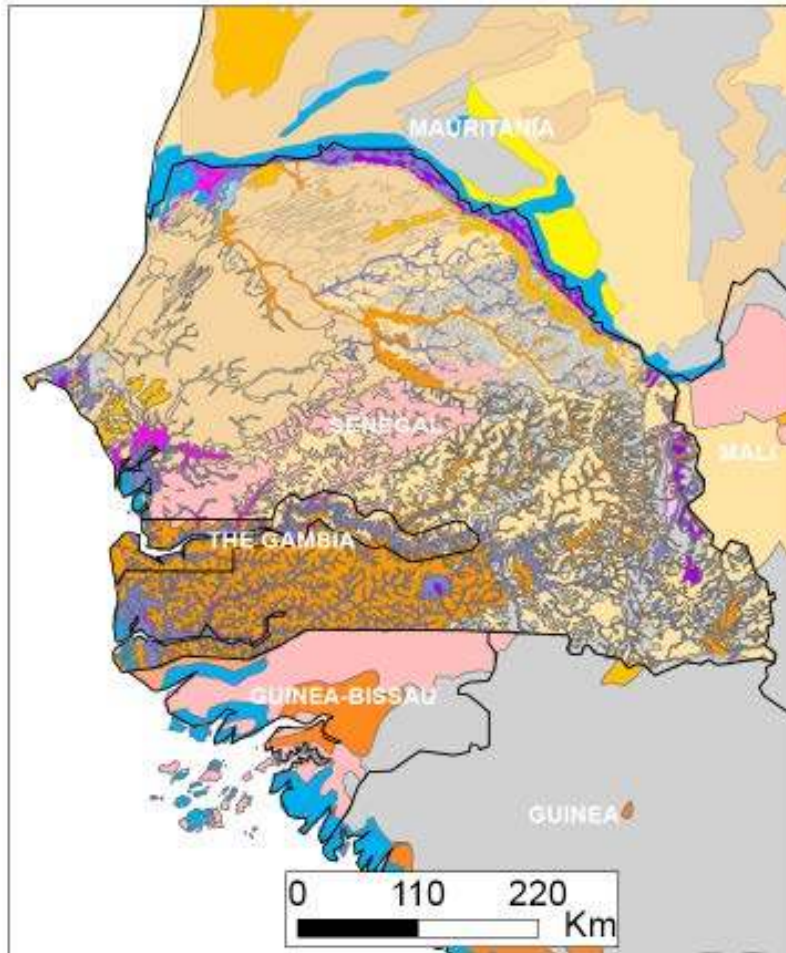
FAO 74 and FAO 90 classifications ‘translated’ to WRB

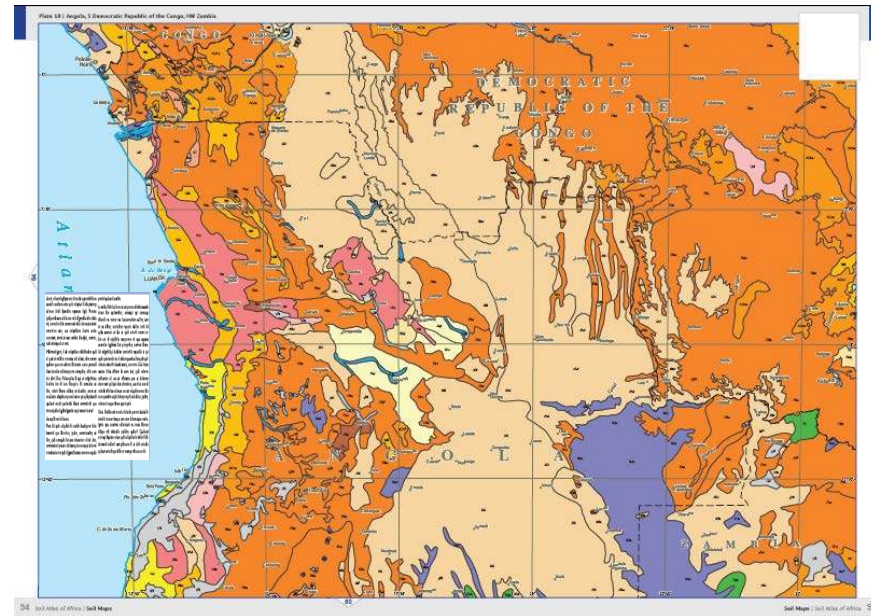
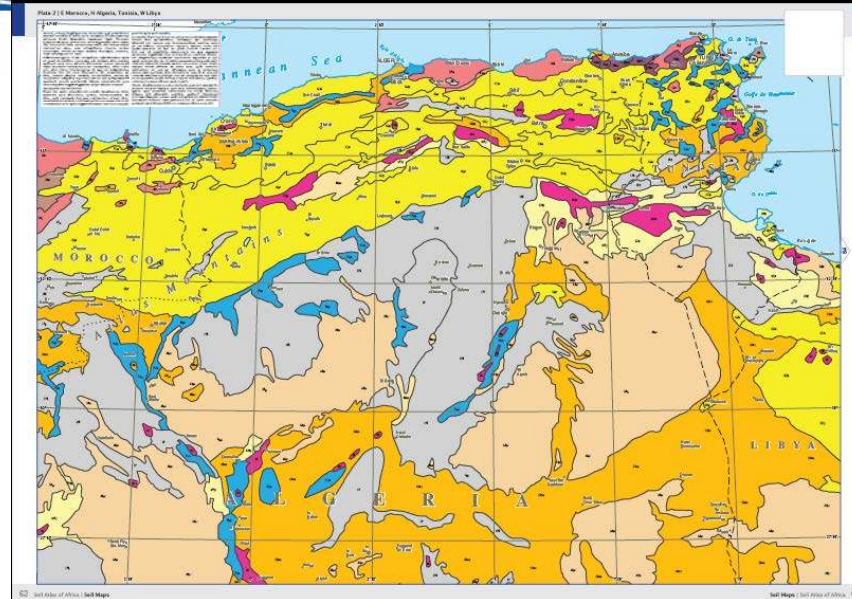
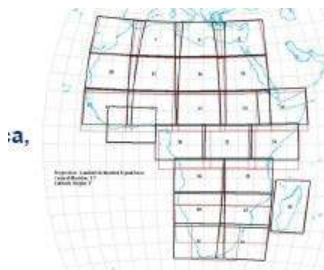
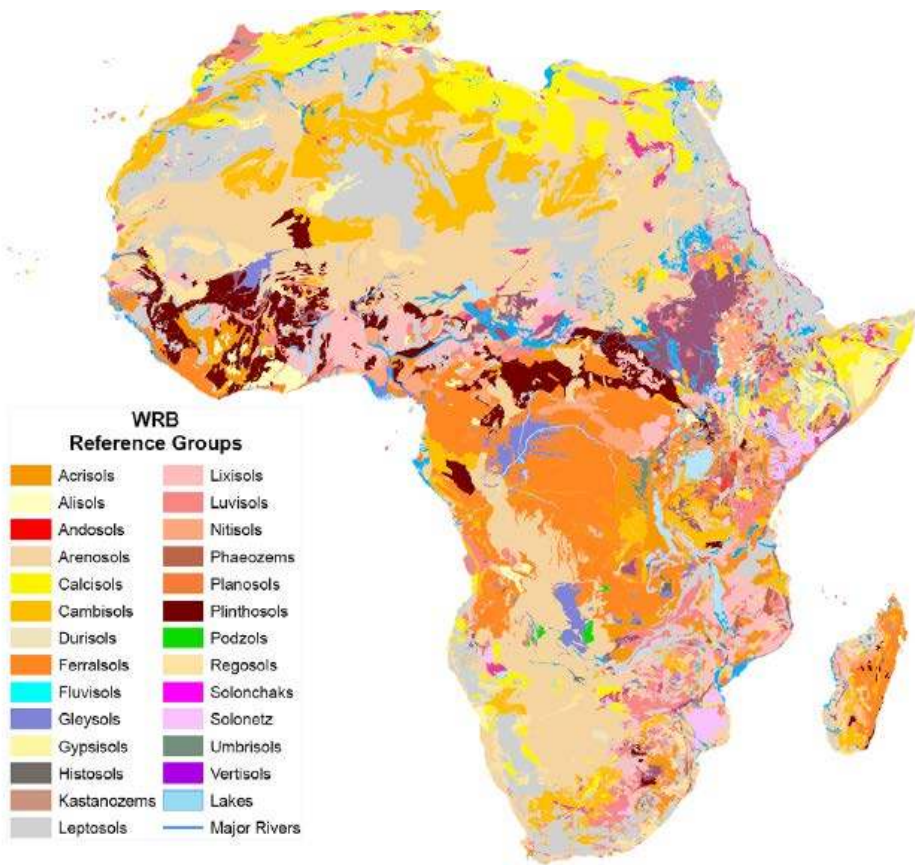
Key properties: texture, Ph, organic carbon, water storage capacity, etc for soil characteristics maps

Additional updates



Mapping







More than just maps

Introduction

What is soil

The role and importance of soil

Soil forming factors and the African environment

Soil processes

Soil functions

Soil and Food Security

Soil assessment/land evaluation

Introduction to soil classification

Development of soil classification in Africa

Indigenous soil classifications

WRB: a harmonizing approach

Major soil types of Africa

Soil maps

African soil in a global context

GIS/African soil databases

Soil of the regions

- Soils of the Mediterranean region, deserts, Sahel, rainforest, highlands and mountains, south, wetlands and valleys

Case studies on African soil

- Strengths
- Weaknesses
- Opportunities
- Threats

Future perspective/challenges/conclusions

Additional information



The role and importance of soil

Soil is the natural resource that facilitates vegetation and environmental services. It is responsible for providing water, a growing medium for the majority of crops, and contains a large number of key nutrients that are essential for life on Earth.

Soil is the medium that enables us to grow our food, natural fibre, timber and energy crops

One of the most widely known and valued functions of soil is the medium in which many crops, in many forms, are raised and harvested. It provides a natural and renewable growing medium for a wide range of crops, including cereals, oilseeds, pulses, fruits and vegetables, and for a wide range of other crops, such as timber, natural fibre, and energy crops. Soil is also the medium in which many of the world's most important natural resources, such as oil, coal, gas, and uranium, are found. Soil is also the medium in which many of the world's most important natural resources, such as oil, coal, gas, and uranium, are found.



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Soil is a natural barrier and regulator of water flow

One of the key functions of soil is to act as a natural barrier and regulator of water flow. It prevents water from flowing freely through the ground, and it regulates the rate at which water moves through the soil. This is important for a number of reasons, including the fact that it helps to prevent waterlogging and drought, and it helps to regulate the temperature of the soil.

Soil protects our natural heritage of archaeological and historic remains from damage and depletion

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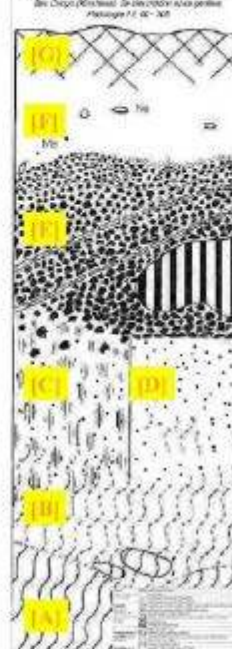
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Deeply weathered soils in Coastal Africa

The deep soils of the coastal region of Africa are characterized by a high degree of weathering. This is due to the high temperatures and high humidity of the region, which leads to the rapid breakdown of primary minerals. The resulting soil is highly weathered and contains a high proportion of secondary minerals.

A photograph showing a cross-section of a deeply weathered soil profile in the coastal region of Africa. The soil is highly weathered and contains a high proportion of secondary minerals.



The diagram shows a cross-section of a soil profile with various layers labeled A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z. The layers are shown as distinct horizontal bands of different colors and textures, representing different soil horizons.

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Biological processes

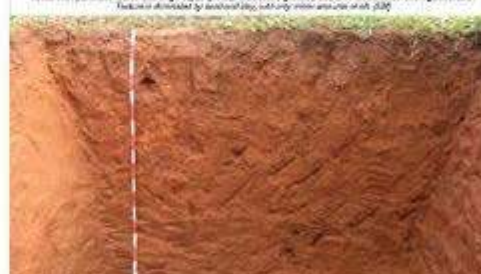
Biological processes in soil are essential for the maintenance of soil health and fertility. These processes include the decomposition of organic matter, the fixation of atmospheric nitrogen, and the cycling of nutrients. These processes are carried out by a wide range of soil organisms, including bacteria, fungi, and plants.

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3. Climate

Soil formation depends essentially on the climate as temperature and moisture levels affect weathering processes and biological activity.

With the equator runs through to the poles, Africa has the largest latitudinal area of very continent and about 90% of the land area lies within the tropics. In southern Africa, the tropics are opposite to those of the equator. The broad climatic pattern of Africa is defined by its position around the equator, the impact of cold ocean currents and the absence of mountain chains forming an albedo barrier. There is no albedo barrier on the continent.

• In the tropics, the equator where annual rainfall exceeds 2,000 mm, covers 16% of Africa.
 • To the north and to the south is a broad belt covering over 50% of the land area, with annual rainfall between 600 mm and 1,200 mm, covering 37% of the land area. The rainfall is seasonally seasonal in relation to distance from the equator.

• A series of steps zones with an average rainfall equating to less than 500 mm which falls in only five months of the year, covers 2% of the land area.
 • A dry desert zone occupying nearly half of the African land area (37%). Annual rainfall is rarely more than 100 mm. Precipitation is in winter areas that is less than 100 mm and seasonal variations of temperature are greater with the average winter being more than 20°C.

• In the Mediterranean climate in the western north and south, high temperatures in the winter and mean winter and winter temperatures which are high.
 • In the highlands of eastern Africa, particularly in Kenya and Uganda, rainfall is not distributed throughout the year and temperatures are high.
 • The high plateau of southern Africa has a semi-arid climate.

• On a high plain, the rainfall is seasonal, a relative climate can be found, even in the equator.

Annual Temperature Range

The pattern is well illustrated in the map where there is a large temperature range in the tropics. The map on the right shows the annual temperature range and range for Africa based on the difference between the monthly mean temperatures of the warmest and coldest months. This change depends on the annual cycle of incoming solar radiation, which in turn depends on the latitude, altitude and proximity of the ocean.

What is clear is that the continent of Africa exhibits the greatest temperature range in the world. The map clearly shows that the continent of Africa exhibits the greatest temperature range in the world. The map clearly shows that the continent of Africa exhibits the greatest temperature range in the world. The map clearly shows that the continent of Africa exhibits the greatest temperature range in the world.

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Map of Africa showing climate zones and rainfall patterns. The map is color-coded by climate zone: Desert (yellow), Semi-arid (orange), Arid (red), Sub-humid (green), Humid (dark green), and Very humid (dark blue). A legend on the left lists the climate zones and their corresponding colors.



Map of Africa showing annual temperature range. The map is color-coded by temperature range: 0-5°C (blue), 5-10°C (light blue), 10-15°C (green), 15-20°C (yellow), 20-25°C (orange), 25-30°C (red), and 30-35°C (dark red). A legend on the left lists the temperature ranges and their corresponding colors.

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The variety of climate zones in Africa gives rise to a wide diversity of biomes. Africa is a continent where the climate is so diverse that it is difficult to find a single climate zone. The climate is so diverse that it is difficult to find a single climate zone. The climate is so diverse that it is difficult to find a single climate zone.



Soil provides the foundation upon which we construct our buildings, roads and other infrastructures. In addition to providing the support for the vast majority of human infrastructure, soil provides a range of services such as: it stores nutrients and water. Clay is used for making bricks for construction, pottery (such as, earthenware) and as the first writing surface (clay tablets).

Clay is a building material that has been used for at least 6,000 years for making the walls of buildings. A series of bricks made of clay, sand, straw and water, were used for making the walls of buildings. A series of bricks made of clay, sand, straw and water, were used for making the walls of buildings. A series of bricks made of clay, sand, straw and water, were used for making the walls of buildings.

Due to its impermeable properties, clay is used as a barrier to stop water seeping away, which is why many ponds, canals and canals are lined with clay. Clay is used as a barrier to stop water seeping away, which is why many ponds, canals and canals are lined with clay. Clay is used as a barrier to stop water seeping away, which is why many ponds, canals and canals are lined with clay.

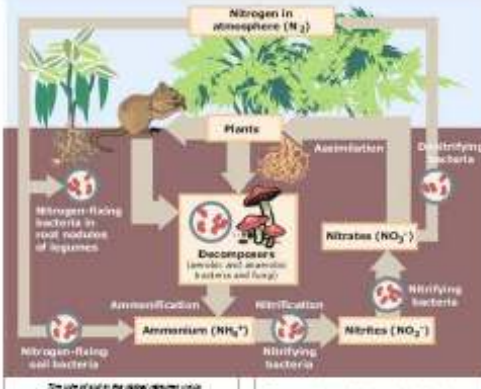
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Photo of the Glass Pavilion in Dubai, UAE, a building made of glass and steel. The building is made of glass and steel. The building is made of glass and steel. The building is made of glass and steel.



Photo of a rural settlement with traditional mud-brick houses and thatched roofs. The settlement is made of mud-brick houses and thatched roofs. The settlement is made of mud-brick houses and thatched roofs. The settlement is made of mud-brick houses and thatched roofs.



The use of soil in the nitrogen cycle.

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Soil is often classified as being acid or alkaline or having a neutral pH value. The pH value is a measure of the acidity or alkalinity of a solution. The pH value is a measure of the acidity or alkalinity of a solution. The pH value is a measure of the acidity or alkalinity of a solution.

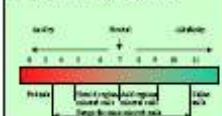


Photo of a rural settlement with traditional mud-brick houses and thatched roofs. The settlement is made of mud-brick houses and thatched roofs. The settlement is made of mud-brick houses and thatched roofs. The settlement is made of mud-brick houses and thatched roofs.

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Next steps

Final product: hard back book of 174 A3 pages (Portrait)
Opens to A2 = Landscape spreads

Current status: advanced draft

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