

Production Systems in Pre-colonial Africa

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1. Introduction

How did Africans organize production in order to sustain their livelihoods or occasionally produce a surplus in pre-colonial Africa? In this chapter we will investigate this broad question. The chapter will show that Africans were innovative and adaptable to changing circumstances. At the same time, the opportunity to establish systems that would generate sustain surplus production was in most times and most places hampered by prevailing factor endowments (i.e. the relative supply of land, labour and capital), geography and the disease environment.

People in pre-colonial Africa were engaged in hunting and gathering, agriculture, mining and simple manufacturing. Agriculture involved most people, so the chapter looks mainly at farming activities. The chapter explains that farmers in those days faced two big challenges: a hostile environment and scarcity of labour. In many regions the environmental conditions were unfavourable for production. And almost all regions suffered from a shortage of labour. We will, however, see that there were many different systems of production in pre-colonial Africa, to suit the variety of conditions the people faced.

The production systems had to be flexible to deal with the existing conditions. Pre-colonial Africans could make an impression on nature. As a Malawian proverb says: 'It is people who make the world: the bush has wounds and scars.' They were not, however, able to *transform* nature on a large scale, since economic development was not far advanced in the pre-colonial period. Without modern machinery such as tractors, and modern inputs such as chemical fertilisers and pesticides, they were to a large extent at the mercy of the land and the weather. Minor temporary changes in conditions could have severe effects on people's livelihood, for example, two weeks' delay in the rains could reduce the crop yield by one third.

A short chapter like this cannot accurately capture all spatial and temporal differences in economic activities in pre-colonial Africa. What the chapter aims to do is to focus on some of the major differences in production systems and the key factors that can explain why the systems developed as they did. It begins with outlining the factors that affected production and how it was organized. It then discusses the economic activities in the different ecological zones found in Africa. This is followed by a section that discusses specialization, adaptation and crises.

2. Conditions for production in pre-colonial Africa

Looking at the geography of the continent enables us to understand other factors that affected production. Map 1 shows the five main ecological regions in Africa. These are the tropical rain forest, the savannah, the highlands, the deserts and the temperate zones. The last two produced very little in pre-colonial times. The deserts are huge but have always been very scarcely populated. The temperate zones include only the southern tip of Africa and in pre-colonial times these were populated only by a small number of pastoralists and hunter-gatherers. So the rest of this chapter discusses the first three regions – forests, savannah and highlands – as these are the ones most relevant to our study of production. Before we do that, however, let us first provide a very brief summary of some of the generic conditions affecting economic activities in pre-colonial Africa.

Scholars have not been able to conclusively identify the origins and diffusion of food production in Africa, but the origin of food production in West Africa did not lag far behind that of the Near East. Food production using iron tools is believed to have spread across Africa through the Bantu migration that began c. 1000 BC. Population density was low in most regions and at most times in pre-colonial Africa. Because people were widely spread out, land was in abundance but labour was scarce. Conflicts over land seldom developed and there were no economic incentives to give people property rights to land. In these vast African landscapes, pastoralists could move freely in search of grazing land without coming into conflict with the settled farming communities. And the abundance of land meant that the farmers could use extensive agricultural methods. This means that they did not use a lot of inputs to keep the land fertile. Once land was exhausted, or they wanted to increase yields, they opened a new field.

What held up production, then, was not an insufficient supply of land but an insufficient supply of manpower. Plenty of strong young people were needed to work the land and open new fields. Without a big labour force, farmers were limited in their use of extensive agriculture. Shifting cultivation and land rotation (instead of crop rotation) was common. Labour was very valuable, and institutions that regulated the use of labour, such as the family, kinship systems and slavery, played a crucial role in Africa's pre-colonial economic history.

The African environment was in many ways more severely hostile than that of other continents. Two factors that limited exploitation of the natural resources were the generally thin soils, animal diseases and crop pests. Soil quality obviously differed from region to region, but we have no reason to assume that it was low overall. The problem was that in most regions of pre-colonial Africa the soil nutrients were concentrated in the topsoil. This meant that the good soil was vulnerable to erosion, and its fertility was severely depleted when the land was exposed to wind and heavy rain. Another problem was that the thin topsoil made plough agriculture inefficient, because turning up the soil with a plough would bring the less fertile soils to the surface. This is one reason why the plough was used in only a few regions of pre-colonial Africa. Summing up, farmers had to work with – land that was of fairly good quality in most regions, but with fragile soils that were difficult to exploit.

The other limiting factor, diseases and pests, restricted what animals could be kept and what crops could be grown. Sleeping sickness (trypanosomiasis) and rinderpest effectively prevented livestock rearing in many places, and swarms of locusts could devastate crops. Animal diseases could wipe out herds, so stock loss was a constant threat to the growth of pastoral and agro-pastoral societies. These diseases also affected agricultural societies by limiting crop production, because where disease was endemic the farmers could not keep cattle and thus did not have manure to use as fertiliser for their crops. And there was another factor that limited crop production – a factor that farmers in those days could not have known about. If you look at a world map, you will see that geographically the continent of Africa is aligned along longitudes rather than along latitudes. It is a botanical fact that species tend to diffuse more successfully along latitudes than along longitudes. In other words, if you travel east or west you will see more variety of plant species than if you travel north or south. This meant that the domestic crop repertoire – in other words, the range of different crops for human and animal use – was relatively poor in Africa. So there was a limit to how many new crops farmers could introduce to enhance productivity.

As we shall see in the next three sections the various ecological regions offered its own specific conditions for production. This helps to explain the great variety of production systems that existed in pre-colonial Africa. As we have noted above, Africans were not passive victims of their situation. On the contrary, African agency is a key to understand how production systems developed and changed in pre-colonial Africa.

The tropical forest zones

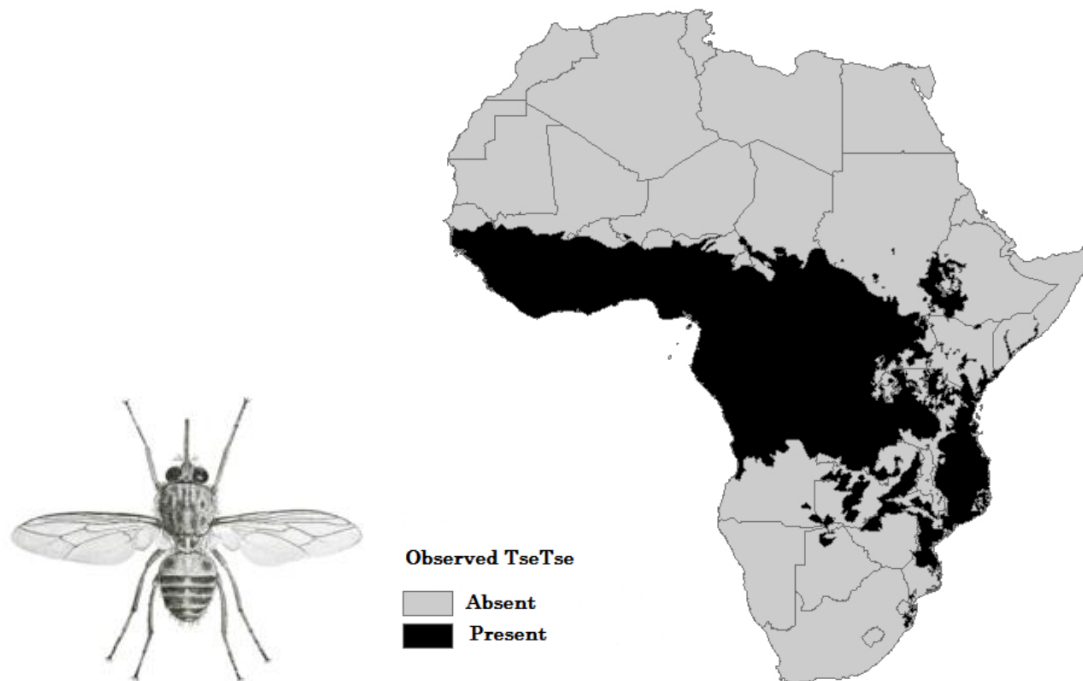
Agriculture and mining were the two most important productive activities in the tropical forest zones during our period. In 1000 AD, the beginning of our period, West Africa was the main supplier of gold to Western Europe. This, however, was an exceptional case. The main economic activity in the forest region was agriculture.

The forest was both a blessing and a curse. Forest land, newly cleared with iron axes and digging sticks, was very fertile. Here people grew oil-palms, yams and plantains (a type of banana). These were labour saving crops that yielded well and were thus suitable for the labour-scarce economies of the forest zones. But the forest limited people's access to grazing land.. It meant also that plough agriculture could not develop, with no oxen to draw the plough. The forest also limited long distance trade, as goods had to be transported by human porters in the absence of pack animals.

The forest harboured mosquitoes and tsetse flies, especially along the rivers and streams. Map 2 shows the prevalence of the tsetse flie in Africa. It was found in west, central and parts of eastern Arica. And the presence of tsetse flies of course meant that people were infected with sleeping sickness, thus aggravating the scarcity of labour. Malaria was probably the biggest killer, but sleeping sickness was more prevalent. Although the tsetse fly carried trypanosomiasis that was fatal for humans, it was its effect on livestock that more profoundly impacted the pre-colonial economies. Tsetse flies also carried the animal trypanosomiasis parasite (also known as nagana) that is fatal to cattle and horses. The presence of tste-tse flies prevented the

development of pastoral or agro-pastoral systems in the forest zones. With no cattle, ploughs – one of the most important labour saving technologies in the pre-industrial age – could be introduced. It also impeded long-distance trade human porters had to be used to carry goods. This is one of the reasons why trans-Saharan trade for the West African economies as it was the only tse-tse free transport route and camels could be used as carriers.

Figure 1: Tsetse distribution, 1973



Source: Alsan, M. (2012). The Effect of the TseTse Fly on African Development. Unpublished manuscript Harvard University, p. 41.

Despite these problems, people settled in these areas, probably drawn there largely by the labour-saving fertility of the soil. Newly cleared forest land was very fertile and suitable for labour-saving crops that enabled many farmers in the forest regions to produce a surplus for the market. Clearance of forest land, however, required large initial investments to make it usable for planting. The occupation of the forest areas was a heavy task requiring many strong labourers. It has been estimated that to clear enough forest land to support one family in East Africa required up to 150 man-days of labour. The forest clearers were generally young men who worked in groups and then shared the land among themselves. Labour shortages can lead to social conflict.

The chronic labour shortages made competition over labour common, so institutions that regulated access to labour were of crucial importance. The family was the main source of labour for the farmers and social status was closely associated with the number of children a household was blessed with. Men competed intensely for women and tensions arose because of inequality in access to them. All societies in the forest zones observed the custom of bridewealth, by which the husband's family paid compensation to the bride's family for the loss of her fertility and

labour. Forced marriages, abduction of women, and polygamy (having more than one wife) were all fairly common.

The ideal social organisation in the forest region was a large complex household headed by a 'Big Man' surrounded by his wives, married and unmarried sons, younger brothers, poor relations, other dependents, and numerous children. Labour was shared out in various ways between men and women, depending on the job. Women's share of agricultural labour varied. Heavy clearing work was usually a job for men, planting and weeding were for women, and peak activities like harvesting were for both. The children were used as soon as possible for domestic and farm labour.

The savannah

Land in the savannah was generally less fertile than land in the forest zones. But the environment was less hostile, so there was a better chance for agricultural, agro-pastoral and pastoral economies to develop, at least in southern Africa. Farmers in the savannah mainly grew grain such as millet and sorghum. Millet was most common in the dryer savannah regions of West Africa and sorghum was most common in southern Africa. In the pre-colonial savannah regions the population was very unevenly distributed. Islands of intensive agriculture were isolated amidst huge areas of pasture and sparsely populated land. Not surprisingly, most of the densely populated areas were on lake shores, in river valleys or along the coast.

The densest population concentration was in the Great Lakes region of Central Africa. In this region farming was less labour-intensive than in the forest zones. Along the shores of the lakes it was not necessary to clear the land regularly to open up new areas for cultivation. Here people grew yams, sorghum and bananas. Bananas were important for the survival of the agricultural societies in this region. A banana grove could last for 50 years and produce food to support several people. In some areas farmers deliberately established groves by fertilising the soil with grass and manure carried there from pasture areas.

Like the people in the forest zones, the savannah people were constantly threatened by endemic diseases such as malaria. In the late 19th century, colonial doctors estimated that up to 20% of all young children living near the shores of Lake Nyasa (now known as Lake Malawi) died from malaria. Leprosy was common, especially in the humid areas, and smallpox posed a threat all over the savannah. Women in these agro-pastoral societies of the savannah played a bigger part in farm labour than the women in the forest zones. Men were mainly responsible for clearing land and taking care of the cattle, while women were in charge of all remaining tasks.

Because of this division of labour, men competed intensely for women, and bridewealth was, just as in the forest region, the common strategy to regulate the competition. Polygamous households were fairly common. The wealthier you were as a man the more wives were you able to marry. Occasionally, a poor man who lacked the means to pay bridewealth could still marry by working for his father-in-law, but he could not take his wife to his own village or gain control over her children. And again just as in the forest region, young men quite often resorted to capturing women through minor raids on neighbouring societies. But although women were valuable, and female labour was crucial to the survival of these societies, their status was low.

Women often lacked access to land and in the unlikely case of a divorce they lost their rights to the children.

The highlands

The highlands are not one specific ecological region but are found in various regions in Africa. The most famous are the highlands of northern Tanzania, central Kenya and Ethiopia. We will discuss the highlands separately because the socio-economic organisation of these areas was very different from that of the forest zones and the savannah. The well-watered highlands enabled Africans to develop systems of intensive agriculture. This can be compared with the extensive agricultural systems of the forest zones and savannah, where farmers used only minimal inputs and simply moved on when the soil became depleted.

Here in the highlands, instead of extending the frontiers of their lands, farmers worked on improving the land they had. They found methods to prevent the cultivated land from deteriorating over time. Some of these methods were terracing, manuring, mulching, and in a few places irrigation. Terracing was necessary to exploit the land on the hill slopes. The slope was cut into a series of receding flat levels, like steps. To keep the land productive, farmers protected the land from erosion by covering the topsoil with a layer of bark chips, or mulch. They increased its fertility by digging in animal manure, which added nutrients such as nitrogen to the soil. And a few farmers in the highlands took extra advantage of the many streams and rivers – they constructed irrigation furrows to lead the water to their land, ensuring that it was well watered throughout the year.

Intensive agriculture made it possible for populations to grow. So, unlike most other regions of pre-colonial Africa, the highlands were quite densely populated. For the people in the highlands, land and not labour was the scarce resource. Men and women commonly worked together in the fields, sowing and harvesting. Men were usually responsible for the heavier work, such as ploughing and construction of terraces. When extra labour was needed during the agricultural peak seasons, for jobs like clearing land and bringing in a big harvest, a farmer could arrange a work party of men from his village. After the work was done they would be invited to a feast where meat and beer were served. Women played a central role in the work parties, as they were in charge of cooking food and brewing beer. Households that could not provide a good spread of food and plenty of beer would be unlikely to get many villagers to help with their work.

The most prevalent sign of wealth was in fact not the size of a farmer's land but his control and ownership of terrace walls, irrigation canals, and other land conservation devices. Richer and wealthier farmers employed rural wage labourers, not to help with agriculture but to maintain the land and improve its quality.

The Ethiopian highlands deserve special mention, as this area was different from the rest of pre-colonial Africa because their use of ox-ploughs. The topsoil in Ethiopia was generally deeper than in other regions of Africa, making the use of ploughs beneficial. The biggest expansion of plough agriculture in Ethiopia took place between the 16th and early 20th centuries. Because

the plough made farming more efficient, farmers in Ethiopia could produce a surplus, rather than just what they needed to survive. This in turn boosted their economy and made it possible to develop a centralised political system.



The Ethiopian Highlands, likely in the 19th century. Source: British Library (WD1313).

While people in the other highlands fought over the control of conservation and water resources, social conflict in the Ethiopian highlands was over oxen. And oxen were an important source of wealth. People gained access to and control of oxen through complex institutional arrangements of social cooperation, rental agreements and labour exchange. There was not enough land to raise sufficient livestock in the highlands. Instead, to acquire oxen the farmers in the Ethiopian highlands depended on regular market exchanges with the surrounding lowlands.

The brief summary above may give the impression that production systems in pre-colonial Africa were static. That was not the case. The most important economic change for our period, with notable long-term effects, was the introduction and spread of new crops. The introduction of rice, Asian Yams and banana plantains were important changes. We do not know the date for the introduction of these crops, but it most likely happened before the 16th century and via the Indian Ocean trade. Cassava and maize arrived to the African continent from the Americas. Scholars have called the introduction of maize an agricultural revolution in Africa. We do not know exactly when maize was introduced into Africa, but historical sources suggest that it was brought by missionaries and traders from Latin America to West Africa in the 16th century. This crop spread slowly. It became a major staple crop in sub-Saharan Africa only in the late 19th century. The introduction and spread of maize increased the productive capacity of Africa farmers, as the yields per hectare were far higher than the yields of crops like millet and

sorghum. The downside was that maize is more vulnerable to unsuitable environments and bad weather. The production of maize in pre-colonial Africa probably fluctuated more than the production of other crops, in other words it varied more and was less reliable.

The introduction and spread of maize affected the ecological regions in different ways. In the forest zones of West Africa it was soon integrated as a major crop and stimulated farmers to create complex fallow systems in the 17th and 18th centuries. In these systems the land was rested between crops, or planted with a different crop, to allow it to recover its fertility. Maize provided the people in the forest region with much needed carbohydrates and thus enabled population growth. In the Ethiopian highlands, however, farmers did not adopt maize in this way, but treated it as a garden crop throughout the pre-colonial period. Crops already being grown in these highlands satisfied people's demand for nutrients and so there was no incentive to invest in the risky business of cultivating a new crop like maize on a large scale. Women, and not men, were mostly in control of maize production in the highlands and the crop was sown on ground opened by hoe and not the plough.

Although subsistence agriculture played a major role in pre-colonial Africa it was not the only economic activity and that Africans were not producing for the market. Trade and economic specialization were important strategies to generate wealth in the various African societies.

3. Specialization, adaptation and crises

Two inter-related factors are important for understanding economic development over the centuries. One is the ability of the societies to adapt to changing circumstances. The other is their inability to avoid recurring crises such as disease, droughts and famines.

Let us look first at West Africa. The pre-colonial West African societies were more specialised than societies in the rest of Africa, and their specialisation seems to have increased over time. Trade and the use of slaves were far more developed in West Africa, in both the forest and the savannah regions. At first the gold trade dominated, but later the trades in copper and salt became more important. These valuable goods were used for long-distance trade across the Sahara desert. In the forest areas, gold mining developed in specific locations. Indigenous gold production was well established by the 13th century and gold was traded with the Islamic merchants on the East African coast. This trade was disrupted by the arrival of the Portuguese in the 16th century. The Portuguese wanted monopoly rights over the gold trade with Africans and thus waged war on the coastal Islamic traders. These wars, together with the rise of the Atlantic slave trade and the spread of diseases from Europe, led to a drastic decline in gold production. By the end of the 18th century gold mining and trade were only marginal activities in the region.

Further south, gold mining continued to be an important source of wealth. Estimates from 1800, for example, suggest that Great Zimbabwe had become the largest supplier of gold in the world. Gold mining, however, did not do much to change the lives of ordinary people in pre-colonial

Africa. It did not provide them with many job opportunities and the surplus was commonly controlled by the people in power, the political elite.

Another kind of specialisation in West Africa was the development of commercial centres. New centres became important and older ones lost their importance as the types of trade and the goods traded changed over time. Hausaland, for example, was a leading regional centre in the 16th century. Hausaland was a collection of states situated between the Niger River and Lake Chad in what is modern day Nigeria. It grew in strength because of its successful engagement in the gold trade. But as the gold trade became less important in the 17th century, Hausaland was replaced as a major commercial centre by the Dahomey kingdom, in the area known today as Benin. This kingdom had become a key player in the growing trade in people as goods – in other words the slave trade. It grew richer and richer as it profited from the 17th century trans-Atlantic slave trade.

The cities in southern and eastern Africa were seldom centres of trade and exchange. We might wonder why commercial centres were more common in West Africa. There are two possible answers. Perhaps people in West Africa could produce a much bigger surplus and this stimulated trade and specialisation. Or perhaps the larger population densities of West Africa decreased the cost of trading and this encouraged specialisation. Whatever the reason, it is clear that there was a significant difference between West African societies and systems and those of the rest of sub-Saharan Africa.

Most of the trade in pre-colonial Africa was not with countries beyond the continent but consisted of local exchange. Local trade was commonly highly organised. Market days rotated between different villages and in some cases the markets were organised on neutral land between the villages. Trade within regions was supported by regional currencies, such as small imported sea shells or locally produced cloth.

Despite the expansion of trade and specialisation, no society in pre-colonial Africa managed to escape the traps of recurrent crisis. From what we know about the forest and savannah regions, it seems likely that hunger was common, and famines occurred quite regularly. In the forest region it seems that one third of babies may have died in the first year of life and most likely an even larger proportion died during the next four years because of malaria and the widespread lack of animal milk.

The crises often had severe effects on the populations. At Cape Verde, for example, three well-documented great famines between 1773 and 1866 killed roughly 40% of the population. Desperate people responded to these major crises in the only ways that they could. In the history of southern Africa there are examples of people living on grass and in West Africa of people selling themselves as slaves. Diversification rather than specialisation was the most important strategy for coping with hunger crises and famines. People grew a variety of crops and tried, as far as possible, to exploit a variety of environments. Cultivation of drought-resistant crops like cassava continued to be an important strategy despite the spread of maize, and people invested in livestock even where there was a shortage of grazing land.

4. Pre-colonial Africa: between development and stagnation

The aim of this chapter has been to provide a very brief summary of the variety of economic activities in pre-colonial Africa.

The three main ecological zones – forest, savannah and highlands – all experienced periods of economic growth and increased trade. New divisions of labour were introduced. People planted new crops and adopted or created new technologies. Complex arrangements of rules and customs came into being to regulate social cooperation and enhance production. Pre-colonial Africa was developing. At the same time, recurrent crises such as drought and famine meant that periods of development were seldom sustained over long periods. The obstacles were too huge to allow Africans, at their stage of economic and technological development, to move towards sustained wealth. Pre-colonial Africa faced greater economic and ecological challenges than many parts of the rest of the world. The continent thus began to lag behind as the rest of the world became steadily wealthier from the 18th century onward.

Study questions

1. Africa is commonly divided into five major ecological regions. Name them and explain why pastoral and agro-pastoral societies developed in the savannah but not in the forest region.
2. Bridewealth was an important practice that existed in most parts of pre-colonial Africa. Explain why the practice was so widespread.
3. The introduction of maize signified a major change in pre-colonial Africa. How and when did maize arrive to Africa? What are the major advantages and disadvantages of maize compared to indigenous African crops like sorghum and millet?
4. Explain why maize soon became a major staple crop in West Africa and not in the Ethiopian highlands.
5. Trade and specialisation was more prominent in pre-colonial West Africa than the rest of sub-Saharan Africa. The chapter provides two explanations for these regional differences. Summarise the two explanations and discuss which one you think is most accurate.

Suggested readings

- Alsan, Marcella (2015). The Effect of the TseTse Fly on African Development. *American Economic Review* 105(1): 382-410.
- Austin, Gareth (2008). Resources, Techniques and Strategies South of Sahara: Revising the Factor Endowment Perspective on African Economic Development, 1500–2000. *Economic History Review* 61(3): 587-624.
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- Iliffe, John (1995). *Africa: The History of a Continent*. Cambridge: Cambridge University Press.

About the author



Erik Green is an Associate Professor in Economic History. His research focuses on issues related to agrarian change, rural labour relations, inequality and long-term structural change in Africa from 16th century to the present.