



COURSE GUIDE

HCM 145 GEOGRAPHY OF TOURISM

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CONTENTS**PAGE**

Introduction.....	1
Course Objectives.....	1
Working through this Course.....	1
Study Units.....	2
Assignment File.....	2
Final Examination and Grading.....	3
Salient Points	3
Final Advice	3

Introduction

HCM 145 is on Geography of Tourism. Our major concern here is with geography as it relates to tourism professionals. An attempt has been to provide all the essential features of the geography of Nigeria that you may need in your profession. We have touched on the concept of geography, only peripherally in this book.

In the unit on Biodiversity: Landscape, Environment and Ecology, we have discussed, besides the geographical features of Nigeria, the variety of its flora and fauna wealth along with the environmental concerns.

The unit on Seasonality and Destinations defines the concept of seasonality. It describes mainly the relationship between the destinations and their seasonality from the point of view of tourism.

The unit on Map and Chart Work deals with the importance of maps and charts for tourism professionals. It also describes the language used in maps and charts and tells you the method to read maps and charts to your benefit, etc.

Course Objectives

As a potential tourism professional you will wonder at the variety and range of questions/queries that may be put across to you by an itinerant tourist (particularly to Nigeria) regarding the landscape, ecology or environment of this country even including questions concerning the state of transportation and road network system. In order not to avert or try to dodge such queries but instead, be able to provide replies that will satisfy potential tourists the necessary information you require has been provided in this course. Thus, by the time you have read this course fully, you should have sufficient knowledge in areas such as:

1. Geographical features
2. Ecological varieties
3. Environmental concerns in Nigeria
4. The road network and
5. Transportation

Working through this Course

In order to complete this course, you are required to read all the study units as well as other suggested materials. While it is not necessary for you to read them, in order to complete the course successfully, it will be to your advantage if you can. Each unit contains a Self Assessment Exercise by which you can assess your own progress. At various points

in the course, particularly at the end of each unit, are TMAs (Tutor-Marked Assignments). Such assignments are supposed to be attempted and their answers mailed to your Tutorial Facilitators.

Study Units

This course is made up of 12 units broken into modules as follows:

Module 1

- Unit 1 Nigeria's Biodiversity (Landscape, Environment and Ecology)
- Unit 2 Seasonality and Destinations
- Unit 3 Map and Chart Work
- Unit 4 Nigeria's Location
- Unit 5 Nigeria: Relief and Drainage

Module 2

- Unit 1 Climate of Nigeria
- Unit 2 Nigeria Vegetation
- Unit 3 Modes of Transport in Nigeria
- Unit 4 Demand for Recreation I
- Unit 5 Demand for Recreation II

Module 3

- Unit 1 Site Evaluation
- Unit 2 Visitor and Site Monitoring and Control

Assignment File

The assignment file will be made available to you; there you will find all the details of the work you must submit to your tutor for marks. The marks you obtain for these assignments will count towards the final mark you obtain for this course. Assignments will normally attract 30% of the final grade, while the formal examination also attracts 70%. The assignments and the final examination add up to 100%.

The assignment policy of the University as stated in the student's handbook should be observed. Application for extension should be submitted to the tutor. If the assignment is mailed to the tutor, it is the responsibility of the student to check with his/her tutor to confirm the receipt of such assignment so posted. As a precaution, you are advised to keep a copy of each assignment you submit. You are advised to be very systematic in following the instruction pertaining to your course of study.

Final Examination and Grading

The final examination of any tourism course will be questions of 2½ - 3 hours duration, with a value of 70% as formerly stated of the total course grade. All areas of the course will be examined. As a result, it is very important you read through and through the whole course material as many times as possible as mere permutation may disappoint you. You might find it useful to review your self-tests, TMAs and comments on them before the examination period.

The series of courses under Foundation Course in Tourism are at 100 level, of either first or second semester courses. They are all 2-credit unit courses. They are available to all students taking the B.Sc. Tourism Studies. They are also suitable for any one who is interested in knowing what tourism is, particularly those studying a course in Hospitality Management, generally.

Salient Points

Below are some salient points that could be of help to you while working through this course:

1. Read the course guide thoroughly.
2. Organise a study schedule. Note the time you are expected to or should spend on each unit and how the assignments relate to the unit.
3. Once you have created your own study schedule, do everything you can to stick to it. The major reason that students fail is that they get behind with their course work.
4. Review the objective for each study to confirm that you have achieved them. If you feel unsure about any of the objectives, review the study material or consult your tutor.
5. After completing the last unit, review the course and prepare yourself for the final examination.

Final Advice

Organise how to manage your time. Do everything to stick to it. One of the major reasons a lot of students fail is that they take things for granted and procrastinate, only to be rushing unnecessarily towards exam period. If you get into difficulties with your schedule, do not waste time to let your tutor know before it will be too late to help you.

When you are confident and satisfied that you have achieved a unit's

objectives, you can then move on to the next unit. Proceed unit by unit through the course, pacing your studies and making the whole exercise easy for yourself.

Good luck and enjoy your reading.

**MAIN
COURSE**

CONTENTS		PAGE
Module 1	1
Unit 1	Nigeria’s Biodiversity (Landscape, Environment and Ecology).....	1
Unit 2	Seasonality and Destinations.....	18
Unit 3	Map and Chart Work.....	28
Unit 4	Nigeria’s Location.....	41
Unit 5	Nigeria: Relief and Drainage.....	52
Module 2	64
Unit 1	Climate of Nigeria.....	64
Unit 2	Nigeria Vegetation.....	78
Unit 3	Modes of Transport in Nigeria.....	87
Unit 4	Demand for Recreation I.....	100
Unit 5	Demand for Recreation II.....	109
Module 3	125
Unit 1	Site Evaluation.....	125
Unit 2	Visitor and Site Monitoring and Control.....	138

MODULE 1

- Unit 1 Nigeria's Biodiversity (Landscape, Environment and Ecology)
- Unit 2 Seasonality and Destinations
- Unit 3 Map and Chart Work
- Unit 4 Nigeria's Location
- Unit 5 Nigeria: Relief and Drainage



UNIT 1 GEOGRAPHY AND TOURISM – NIGERIA'S BIODIVERSITY (LANDSCAPE, ENVIRONMENT AND ECOLOGY)

CONTENTS

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
 - 3.1 Geography of Nigeria
 - 3.1.1 Location
 - 3.1.2 Physical Features (Relief and Drainage of Nigeria)
 - 3.1.3 Importance of the Rivers of Nigeria
 - 3.1.4 Climatic Characteristics
 - 3.2 Ecology of Nigeria
 - 3.2.1 Vegetation and Soil
 - 3.2.2 Forestry
 - 3.2.3 Minerals
 - 3.3 Environmental Concern

- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Readings

1.0 INTRODUCTION

This unit is on Geography and Tourism. Our major concern here is with geography as it relates to tourism professional. An attempt has been to provide all the essential features of the geography of Nigeria that you may need in your profession. We have touched on the concept of Geography, only peripherally in this study.

2.0 OBJECTIVES

After reading this unit, you should be familiar with the:

- geographical features
- ecological variety
- environmental concerns in Nigeria

3.0 MAIN CONTENT

3.1 Geography of Nigeria

3.1.1 Location

Nigeria is located on the West Coast of Africa between Latitudes 4° and 14°N and Longitudes 3° and 15°E. It covers an area of 923,768 square kilometers. The country is bounded to the West by the Republic of Benin, to the North by the Peoples Republic of Niger and the Republic of Chad, to the East by the Republic of Cameroun, and to the South by the Atlantic Ocean.

With a current population of about 140 million inhabitants, Nigeria records the highest population in Africa and the largest concentration of the black race on earth.

3.1.2 Physical Features (Relief and Drainage of Nigeria)

The land of Nigeria could be divided into highlands and lowlands, as shown in the relief map. The highland areas are:

- (a) An extensive area covering much of northern Nigeria and Kaduna State to the eastern border of the country through Plateau, Kano and Bauchi States.
- (b) Another extensive mountainous area marking practically the whole of the eastern boundary of Nigeria
- (c) An upland area running from south-west to south-east Nigeria and terminating in the Udi Highlands.

The lowlands separate the highland areas and include the coastal plains and the Niger Delta, the valleys of the rivers Niger and Benue, the valley of the Sokoto River, and the low plain in Borno State near Lake Chad.

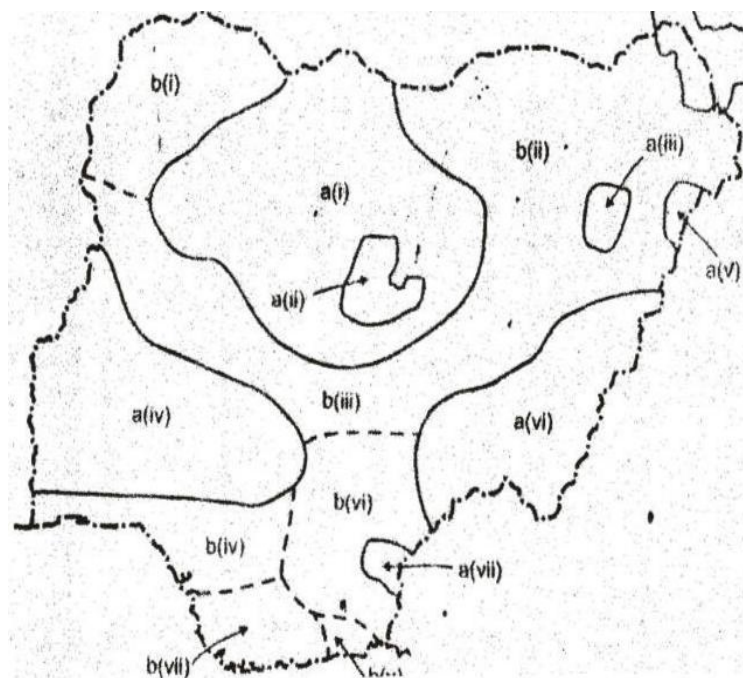


Fig.1: Relief regions

Nigeria may be divided into the following nine relief regions as shown in Fig.1:

1. The Northern High Plains
2. The Eastern Mountains
3. The Western Uplands
4. The South Eastern Lowland and the Enugu Scarp-lands
5. The Western Coastlands
6. The Niger Delta
7. The Niger-Benue Valleys
8. The Sokoto Plains
9. The Chad Basin

1. The Northern High Plains

Most of these high plains are more than 600 metres above sea level, but some of the individual hills rise to over 1200 metres. In general, the Northern High Plains look like a series of steps, with the Jos Plateau as the uppermost step. The Jos Plateau itself is at an average height of 1200 metres but its highest point, in the Shere Hills, rises some 1780 metres above sea level.

The Northern High Plains consist of some of the oldest rocks in Nigeria – the Basement Complex (granites, gneisses and schists). Some volcanic rocks are found, however, especially in the Jos Plateau. Several rivers in Nigeria rise in the plateau; the rivers Kaduna and Gongola flow into the Niger and the Benue respectively, but the Kamadugu – Yobe drains north-eastwards into Lake Chad.

2. The Eastern Mountains

From the north to south, the mountains, which lie along the eastern frontier of Nigeria, are the Mandara Mountains and the Biu Plateau. These mountains are over 800 metres high and are north of the River Benue. Other mountains south of the river are Alantika, Shebshi, Adamawa and Bamenda. Further south are the Oban Hills.

A number of small rivers rise in the Eastern Mountains. Some of them (Rivers Yedseram, Ngada and Gana), flow north-eastwards to Lake Chad, whilst others e.g. (the Hawal) flow into River Gongola.

3. The Western Uplands

This is an area with several steep-sided hills standing uncovered by themselves above the general level of the land. Such hills are called inselbergs (Fig.2). When the hills have the appearance of heaps of large boulders they are usually referred to as Kopjes. Two of the inselbergs are Idanre and Aseke hills. There are many kopjes in this area. Several short rivers rise from the Western Uplands. Some of these are the Ogun, Osun and Osse, flows southwards into the Atlantic Ocean, whilst the others – e.g., the Oro and the Kampe flow northwards to join the River Niger.

4. The South-Eastern Lowlands and Enugu Scarp-lands)

The prominent feature of this area is a large scarp (at times called the Enugu scarp) which stretches from near the Cross River and turns north through Enugu, finally swinging west towards Lokoja. The general height of the scarp is about 300 metres. The scarp divides the south-

eastern lowlands into two. To the eastern part of the scarp is a succession of low ridges and valleys which stretch to the Oji and Anambra river valleys. The whole area is made up of sedimentary rocks.



This is the Zuma Rock, near Abuja, in the area where the Federal Capital of Nigeria is established. This rock, like many other similar ones in Africa, is a remnant of an older and higher surface or level. The hard granite of this rock has made it resist erosion, which has weathered away all the surrounding rocks. So it remains like an island hence the name and has the sheer and rounded form of Granite Mountains).

5. The Western Coastland

This area immediately south of the Western Uplands consists of young sedimentary rocks. The western part of the coast consists of low sandy beaches, lagoons and marshes. In Lagos, there is a break through the beaches to provide a connection between the lagoons and the open sea. The interior is a low plain which rises steadily from the lagoon northwards. The northern edge of the area is marked by a broken line of small hills, some of which rise up to 270 metres. The whole coastland is composed of young sedimentary rocks. It is broadest in the southern part of Edo State.

6. The Niger Delta

This is the fan-shaped region of muddy creeks and swamps, with occasional patches of dry land, in between which the Niger enters the Atlantic Ocean through its numerous distributaries. The most important outlets of the river are at the ports of Warri, Burutu and Forcados. The whole area of the Delta region consists of deposits of sand, clay, mud and silt brought down by the Niger.

7. Niger-Benue Valleys

The course of the Niger in Nigeria is made up of stretches of broad open valleys separated, as at Bussa, before the construction of the Kainji Dam, by a narrow rocky stretch with rapids and falls. The Niger was, therefore, not navigable throughout its entire course in Nigeria. On the other hand, the Benue has a broad open valley throughout the part of it that lies in Nigeria. There it is not interrupted by falls or rapids, so that during flood it is navigable throughout its course below Garoua, in Cameroun. The Niger-Benue valleys consist of older sedimentary rocks, although there are some small volcanic rocks between Makurdi and Yola.

8. Sokoto Plains

These low plains, averaging between 200 and 500 metres, lie to the north-west of the Northern Highlands and are drained by the Sokoto River. Headstreams of the river and its tributaries, the Rima, Zamfara, Gaminda, etc. have some places cut peculiarly shaped valleys, in some cases called dallols. These dallols have step sides, up to 40 metres or more, with very flat wide floors which may be as wide as 4 kilometres. The whole area consists of sand-stones with crusts of laterite.

9. The Chad Basin

This extensive area of sedimentary rocks to the north-east of Nigeria is very much like a broad shallow basin. It is believed to be the bed of an old inland lake which has since dried up, now leaving an extensive area of shallow water. Lake Chad itself is some 180 metres above sea level, and its average depth is usually less than 3 metres. It is a good example of an inland drainage lake, several rivers including the Shari, Lagone, Hadeija and Yedseram, flow into Lake Chad. These are inland drainage rivers.

The drainage of Nigeria may be divided into three: the Niger-Benue system, the rivers which radiate from the Northern High Plains, and the short coastal rivers. The Niger and its most important tributary, the Benue, form the most important drainage system in Nigeria. The two rivers divide the country into three units by their Y shape. The river Niger has been described on pages.....

Many of the northern tributaries of the Niger and the Benue, including the Sokoto, Kaduna and Gongola rivers and the rivers which flows north-eastwards to Lake Chad, rise from the Northern Plateau. They radiate from the plateau like spokes of a bicycle.

The third group of rivers are those which rise from the Western Uplands and from the Eastern Mountains and flow south to the Atlantic. These rivers include the Ogun, the Osun, the Ose, the Imo and the Cross River. The importance of some of these rivers as a means of transport is described later on page....

SELF-ASSESSMENT EXERCISE 1

Into how many relief regions is Nigeria divided?

3.1.3 Importance of the River of Nigeria

- i. Transport of people and goods by boats and canoes
- ii. They provide drinking water for man and livestock, and water for household purposes.
- iii. They provide fish for food and for trade. They provide water for industries producing beer, soft drinks, rubber and sugar products, and canning fruit.
- iv. They provide an easy way by which timber is floated down to the saw mills.
- v. They provide water for irrigation especially in northern Nigeria (see map of irrigated areas). Irrigation is practiced extensively along Sokoto, Rima, Hadeija and Kaduna river valleys. There is also extensive irrigation in parts of the Niger valley, especially near the Kainji Lake for the Bacita sugar estate. In these places water is led in channels from the streams to the farms. The important crops cultivated on these irrigated lands are rice, sugar cane (especially at Bacita), tobacco, onions and carrots.
- vi. Rivers flowing down some hillsides or over the edges of plateaus may have waterfalls which can be used for generating hydro-electricity. The greatest hydro-electric plant in Nigeria, and one of the largest in Africa, is the Kainji Dam.

The Kainji Dam

The existing Kainji Dam is part of a larger projected Niger Dams Project. The rest of the project involves damming the Niger at Jebba, and the Kaduna River in the Shiroro gorge. The project was to be executed in stages. First, the Kainji Dam across the Niger near the Bussa rapids was built. Next, another dam and power station which would produce 500MW may be built at Jebba, 103 kilometres downstream from Kainji. Then finally, a third dam and power station with a capacity of 480MW may be constructed at Shiroro on the Kaduna River.

The Kainji Dam, the first in the project, was started during Nigeria's 1962 to 1968 Development Plan. Before construction work on the dam itself was started, an access road was built from Mokwa to Kainji, as well as houses for workers, and workshops and offices. Actual construction work on the dam commenced in 1964 and was completed in 1968 at a total cost of about ₦180 million. The dam has a power station which ultimately will have twelve turbines and generate 960MW of electricity. At present, only four turbines and four generators have been fitted and they supply only 320MW. The other eight turbines are expected to be installed as they are needed.

The electricity generated at Kainji is transmitted to many towns in the northern, western and eastern parts of Nigeria as shown on the map and major sub-stations for power transmission have been built in such towns as Jebba, Oshogbo, Lagos, Benin and Kaduna.

Geographical Advantages of the Kainji

The site of Kainji Dam was carefully selected because of its geographical advantages.

First, the valley of the Niger at Kainji is narrow, and a large lake could be formed behind the dam.

Second, the lake lies securely in a deep valley which acts as a reservoir and the dammed water does not flow away in another direction.

Third, the bed rock of the Niger at Kainji is hard granite – part of the Basement Complex. With this foundation there is no fear of the land sinking or the dam collapsing.

Fourth, there is an island (Kainji Island) in the middle of the river at Kainji; thus construction work was comparatively easy, for the workers had dry land there, on which to work. The Kainji Island divides the river into two channels. Across the left channel is a dam about 549 metres long and 36.5 metres high. The other dam on the right channel is 2438 metres long and 72 metres high. The main dam on the island is 1219 metres long and 36.5 metres high.

Fifth, Kainji is situated at a relative vantage point from where electricity could be transmitted to all parts of Nigeria.

Sixth, the dam is insurably situated that the lake upstream could easily be used for irrigation.

Importance of Kainji

Kainji Dam is of great importance to Nigeria.

- i. The dam when fully tapped is expected to supply most of the electricity needed in Nigeria
- ii. Using the water from the large lake which has formed behind the dam has made it possible to navigate the Niger by the use of a lock. Navigation is possible in this area which was formerly blocked by the Bussa rapids, and which are now covered by the lake.
- iii. The large lake, some 1240 sq.km in area, which formed behind the dam, has flooded several villages. This has led to the building of many new and modern homes and villages, the largest of which is New Bussa.
- iv. West African rivers are very seasonal. With the dam, it has become possible to control the flood and even out the flow of the river. This has helped agriculture along the river – e.g., at the Bacita sugar cane plantation just below Jebba.
- v. The water in the lake behind the dam is used for irrigation of the Niger valley below the dam.
- vi. The lake has increased the number of fish for people to catch. This has raised their incomes, and given them more protein in their food.
- vii. Animals can cross the Niger at Kainji and travel southwards through a less tsetse fly infested area. The erstwhile route through Jebba Bridge is heavily infested with tsetse flies.
- viii. With the disappearance of rapids at Bussa the fly causing river blindness and living at the rapids has been eliminated

Climatic Characteristics

1. Observation of rainfall figures shows that both the total rainfall and the periods of rain vary from year to year. Thus the mean annual rainfall for Lagos is 1835mm, but in 1912 the total was 1041mm, whilst in 1917, it amounted to 2941mm. Such variations greatly affect crops in rural areas.
2. There are considerable differences in the climatic conditions of the north and south of Nigeria, as shown by the accompanying statistics. Studying these figures, we notice, among other things, that:
 - a. The mean temperatures are highest at the end of the Harmattan just before the commencement of the rains. At this time, the Harmattan winds, which bring a tempering influence, are

diminishing, and the south-west monsoon winds have not yet brought their rains to lower the temperature. Temperatures are, therefore, highest from about February to April in the south, and from about March to June in the north.

- b. The lowest temperatures are recorded in August in the south. Although this is a month of the northern hemisphere summer, the off-sea south-west monsoon winds and rain-clouds reduce the temperatures. The days are usually cloudy at this period, although the nights may be clear. In the north the lowest temperatures are recorded in December and January (i.e., in the northern hemisphere winter), when the angle of the sun's rays is most acute in northern Nigeria.
- c. The small ranges of temperature in the south contrast with higher ranges in the north. (The reader should work out and compare the range of temperatures of Akassa and Lagos with those of Kano, Maiduguri and Sokoto).
- d. High atmospheric humidity all the year, with a tendency to lower figures only during the Harmattan in the south, are opposed to the marked high humidity in the wet season and low humidity of only 30 percent at certain times in the dry season in the north.
- e. There are usually higher levels of rainfall in the south than in the north, where there is a marked drought from November to March. It is uncommon to find that the total dry-season rainfall on the south-east coast is greater than the annual total in the extreme north east.
- f. Northern towns on uplands, such as Minna, Kaduna and Jos have annual rainfall levels of 1372, 1314 and 1422 mm, respectively, higher than those of some southern stations.



3.2 Ecology of Nigeria

3.2.1 Vegetation and Soils

The accompanying map shows a major two-fold division into:

- a. High Forest
- b. Savanna

a. High Forest

The high forest is found, with modifications, where the dry season is generally not more than four months long each year. This forest zone is subdivided into:

- i. **Swamp Forest:** Which covers the delta, the creeks, and the tidal waters of the coastal areas. The Mangrove Swamps of the saline (salty) or brackish waters on the coast are backed on the landward side by Freshwater Swamp Forests which occupy the annually flooded areas on river-banks and creeks.
- ii. **Rain Forest:** Consists of mostly of big trees, and provides the bulk of the exploitable timber. The chief centres of Benin, Ondo and Calabar have already been mentioned. Lands of former Rain Forests are the farming areas of the south, producing root crops for food; and cocoa, oil palm produce, and kola nuts for sale.

b. The Savanna Zone

This zone in its widest sense includes grass plains interspersed with trees. Different types of savanna must be distinguished:

- i. The Guinea Savanna:** nearest the high forest, has limited visibility, an outcome of closely packed or tall grass with trees. The annual firing of the grasslands changes the dry-season scenery to that of scorched, scattered, leafless stems standing on ash-coated fallow lands.
- ii. The Sudan Savanna:** has shorter grass and medium-sized trees, usually acacias, drum and fan palms, and shea butter trees. The loose, sandy soils which characterize this zone around Sokoto, Katsina and Kano are farmed for groundnuts and millet. On the loamy soils nearer Zaria, guinea corn and cotton are more significant. A good part of the Sudan Savanna is also grazed by the Cow Fulani.
- iii. The Sahel Savanna:** farther north, has poorer grass and fewer and more drought-resistant woody plants. This vegetation should be distinguished from the almost treeless grass in the more clayey and impervious parts of Borno.

By far, the most important economic activities in Nigeria are agriculture, lumbering, fishing, mining and manufacturing. These have been discussed generally for West Africa as a whole. In the following paragraphs we shall examine some features of each of the occupations in Nigeria shelf. A few Nigerian companies (e.g., the IBRU and MESU group of companies) fish in distant waters some 2000 to 3200 kilometres away from the shores of Nigeria usually using chartered foreign ships, especially Japanese and Russian vessels with refrigerated fish-holds. They fish in the rich marine grounds as far as north Guinea and as far south as off the coast of Namibia (South-West Africa), and bring large quantities of frozen fish to the country.

Inshore or coastal trawling takes place on Nigeria's continental shelf (usually within 75 kilometres from the shore). At present, there are more than sixty vessels owned by Nigerian companies engaged on inshore fishing. Some of these companies are in partnership with the Federal Rivers or Cross Rivers State governments. About half of these vessels are shrimpers (which fish for shrimps). Inshore fishing is expanding greatly and several thousands tones of fish are landed annually.

Artisanal or Subsistence fishing is an important occupation in Nigeria. The main areas associated with this type of fishing are

- a. Coastal creeks and lagoons,
- b. Rivers and ponds
- c. Lake Chad
- d. Lake Kainji

In the coastal areas fishing is the most important occupation among the Ijaws, the Urhobos and the waterside Ijebus. In these areas, the fishermen generally fish from canoes with cast nets, set nets, and beach seines and hooks. Considerable fishing is also done in the swamps with various fish traps and baskets. The fish caught are either sold fresh to Lagos markets or smoked and sold in more distant markets – e.g., in Ibadan.

Freshwater fishing in rivers and ponds is also done by canoes and boats with set nets, beach seines and hooks and in some places fish traps. The Niger is the most important river for fishing. Considerable fishing is also done in Sokoto (where a famous and magnificent fishing festival – the Arugungun festival – is held yearly), the Benue, Imo and Anambra rivers. The fish caught in these rivers is also either sold fresh or kept in a processed (usually smoked) form and sold in markets in large towns, especially in southern Nigeria.

In Lake Chad, the fishermen traditionally use papyrus rafts for fishing. Today, most of them have changed to wooden boats. The method of catching fish in this lake is the long-line method, by which hooks are tied to a long line laid at the bottom of the lake. This line is drawn into the boat after a catch. Fish caught in the lake are generally cut into small pieces, smoked as ‘mangala’ fish and sent to markets in southern Nigeria.

The quantity of fish produced in Nigeria has increased in recent years. It is difficult to collect exact statistics of the quantity of fish produced because the fishermen’s landing places are too numerous and at times unknown. However, figures based on data collected by the Federal Department of Fisheries and from surveys showed that in 1972, over 709,000 metric tones of fish were produced in Nigeria. Nearly 50 percent of this came from the coastal creeks and lagoons, some 22 percent came from rivers and ponds, whilst lakes Chad and Kainji accounted for some 10 percent and 1 percent respectively.

The Federal Department of Fisheries and various state Ministries of Agriculture have been working out plans, based on scientific investigations, to:

- a. Introduce village and commercial fish farms.
- b. Ascertain the location and the extent of fishing grounds.
- c. Introduce new and improved methods of catching sea fish.

3.2.2 Forestry

Nigeria is fairly rich in tropical hardwood. Most of this comes from the Rain Forest belt of the country. As we saw earlier, this belt is characterized by high rainfall (between 1500 and 2500mm), a long rainy season lasting six months or more, and high temperatures all the year round.

Many kinds of trees grow to various heights in the Rain Forest belt. Some of the giant trees attain heights of up to 45 metres, and measure up to 4 metres in circumference at the base. They include Iroko, Mahogany, African Walnut, Agba and Obeche. These trees provide most of the country's timber. They grow abundantly in Edo, Ondo, Ogun and Cross River states. The forests of Benin in Edo State are the most important source of timber for both export and for home consumption.

Trees are felled in forests set aside by government as reserves as well as in open forests. However, timber-men must obey certain government regulations made with a view to preserving the forests. Once a timber-yielding tree is selected, it is felled, cut into convenient logs, trimmed, then hauled out by labourers, and taken by lorries or floated down or pulled by a tug on a river to the saw mill. Here it is sawn by machines into planks for buildings, furniture, etc. There are saw mills in several places, including Sapele, Lagos and Degema. In Sapele, there is a large plywood and veneer factory. Sapele is the chief timber port of Nigeria.

A little timber comes from the savanna grassland, especially from the doka tree. Apart from timber, the forest of Nigeria provides things like firewood, raffia for roofing, making mats and brooms, gum Arabic, fruits, kapok, fibres, etc.

3.2.3 Minerals

The most important economic minerals of Nigeria are petroleum, natural gas, tin ore and coal. Other currently less important minerals include limestone, gypsum, columbite and iron.

Exploration for oil in Nigeria started in the 1930s but it was not until 1956 that oil was first struck at Oloibiri in the Niger Delta. Since then, the oil industry has developed very rapidly into the most important mineral and Nigeria's greatest foreign exchange earner. There are at

present fifteen oil prospecting and producing companies, including a fully indigenous one – Henry Stevens & Sons Ltd. The other companies are mostly foreign owned, often with Nigerian participation.

Crude oil export rose very rapidly from ₦ 8.4 million in 1960 to ₦136.2 million in 1965 and to ₦984.4 million in 1971 when over 542 million barrels of oil were exported. The present oil production stands at about two million barrels a day, thus placing Nigeria as the eighth world producer and rivaling Libya as the leading African producer.

The main oil-producing wells are located in Rivers State: in Owaza, Afam and Egbema in Imo State; and near Ughelli and Kokori in Edo State. Oil wells are on land and offshore (on Nigeria's part of the continental shelf). From the offshore wells pipelines on the sea floor and ships load oil from offshore terminals. From the onshore wells, there are pipelines to the Bonny terminal and several other terminals.

3.3 Environmental Concern

Nature Conservation/Wildlife Preservation in Nigeria

The first Game Reserve in Nigeria, the Yankari Game Reserve (now Yankari National Park) came into being as a result of the visit of the then Northern Nigeria Minister of Natural Resources, Alhaji Muhammadu Klali to the Republic of Sudan in the early 1950s. The Minister was conducted round the Sudanese Conservation Areas. He was highly elated by the sight of Elephants, Buffalo and Giraffe in the land of Sudan.

Upon his return to Nigeria, he urged the government of Nigeria to set up similar reserves. So, the first forest reserve, rich in wildlife were set up in Bauchi State. The Forestry Division of the Northern Ministry of Animal and Natural Resources surveyed and demarcated in 1955. By January 1956, a Game Preservation Unit was already in operation within the Forestry Division under the leadership of Mr. Coulthard. He was Nigeria's first Game Warden. After the death of Mr. Coulthard in 1961, Mallam Jibrin Jia assumed responsibility and saw to Yankari Game Reserve's successful development. That was the beginning of nature conservation in Nigeria.

The varied Flora and Fauna inside the Reserve were thus protected and the success of the exercise was the manifestation of what the Nigerians are proud of today as National Parks for Research, Tourism, etc.

SELF-ASSESSMENT EXERCISE 2

Discuss how the first Game Reserve in Nigeria came into being.

4.0 CONCLUSION

This very first unit of this course is centered on biodiversity of Nigeria. It has examined the geographical make up of Nigeria and by extension, its importance to the tourism industry.

It has also examined the ecology of Nigeria; vegetation and peculiar soil types found in this country; various tree types found in the forest; economic minerals found in Nigeria; climatic characteristics of various regions at different times of the year and environmental concerns as they relate to tourism.

5.0 SUMMARY

Nigeria is a great landmass that is bounded by various countries on the East, West, North and the Atlantic ocean by the South. Nigeria may be divided into nine relief regions as enumerated in 3.1. Nigeria's water system comprises of rivers Niger and Benue that drains the country majorly. Others are rivers Kaduna, Sokoto, Osun, Ogun, etc. Nigeria has wealth of flora and fauna. Forest trees, floral plants, and shrubs of many varieties grow in different topographical zones.

ANSWER TO SELF-ASSESSMENT EXERCISE 1

Into 9 relief regions

ANSWER TO SELF-ASSESSMENT EXERCISE 2

Visit of the then Northern Nigeria Minister of Natural Resources Alhaji Muhammadu Klali to the Republic of Sudan in the early 1950s. Upon his return to Nigeria to set up similar reserves.

6.0 TUTOR-MARKED ASSIGNMENT

Discuss the importance of the Rivers of Nigeria.

7.0 REFERENCES/FURTHER READINGS

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UNIT 2 SEASONALITY AND DESTINATIONS

CONTENTS

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
 - 3.1 Seasons and Climate
 - 3.2 Seasonality in Tourism
 - 3.3 Festival Season
 - 3.4 Measurement of Seasonality
 - 3.5 Destination Management, Marketing & Employment
 - 3.6 Destination
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Readings

1.0 INTRODUCTION

Very often you hear, “Oh! It's tourist season”. What does it mean? Well, there are tourists all around the place and accordingly go the activities and services. You may have heard a hotelier say, "this was a bad season". Here, he is not talking about the climate but in terms of his business which did not yield him the expected profits during that particular period, in this unit an attempt has been made to familiarise a learner in tourism with matters related to seasonality and destinations. The unit starts with a discussion on climate and weather conditions and how they affect the movement of people from, their place of origin to destinations. Certain characteristics of destinations have also been listed. Such information equips a tourism professional with the knowledge to cater for his clients or generate awareness.

2.0 OBJECTIVES

After reading this unit, you will be able to:

- appreciate the role of climate in tourism
- know the relationship between climate, destination and tourism
- understand the concept of seasonality in relation to tourism
- know about the measurement of seasonality
- learn about the impact of seasons on destination and its marketing
- know the impact of seasonality on employment
- learn about destinations.

3.0 MAIN CONTENT

3.1 Seasons and Climate

Seasonally, a year can be divided into four main periods, recognised in the northern hemisphere as:

Spring (21 March to 20 June)

Summer (21 June to 22 September)

Autumn (23 September to 21 December)

Winter (22 December to 20 March)

Seasons are important in view of the climatic changes associated with them and their impact on all forms of life. Even human beings are not spared from the rhythms of cyclic variations in climate.

The average weather conditions prevailing in an area over successive years is taken to be the climate of that region. The basic elements which constitute the weather conditions are:

- Temperature of the air
- Humidity of the air
- Type and amount of cloudiness
- Type and amount of precipitation
- Atmospheric pressure, and
- Speed and direction of the wind

The specific measurements of the above factors represent the weather conditions at any given time in a place. They, however, keep on changing over time and space leading to varied weather conditions. By and large, similar weather conditions prevail at the same point of time during successive years in a given place. The average measurements, thus discerned over a period of few years are described as the climate of that place.

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The weather changes are caused by the revolution of the earth around the sun and the inclination of the equatorial plane to the plane of its path

by an angle $23^{\circ}27'$. The other factors which affect the weather conditions include the:

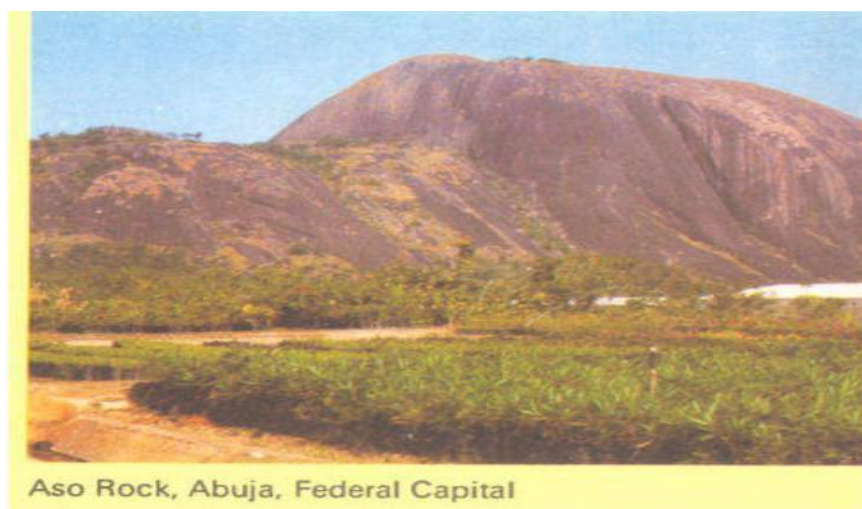
- radiant energy of the sun,
- earth's atmosphere which modulates the passage of solar radiation, and
- natural land forms and geographical features of the earth's surface, like mountains, valleys, oceans, ice-caps, deserts, lakes, rivers, etc.

The climate of any particular region is also determined by its geographical location and physiographical features. In Nigeria, the climate is influenced by the two principal seasons. These are

- April to October (otherwise called Raining season)
- November to March (otherwise called Dry season)

Here, you must remember that every tourism professional must be well equipped to answer the queries related to weather. You may be asked frequently at any destination about the humidity there? Will it rain during the time of our visit? Which is the best season to visit? Etc.

This makes the following of weather forecasts and reports important in tourism. You must be aware that the media plays a vital role in this regard. Daily weather bulletins are carried out by Radio Stations and Televisions. The newspapers also report on weather. Besides, you get to know about the weather of different destinations world over through published reports and charts, etc. For example see Chart 1.



3.2 Seasonality in Tourism

The seasonal variations in climate make significant impact on travel and tourism. The most visible impact is the emergence of tourist seasons because of climatic changes. People move to cooler places like beaches and mountain resorts during summer months and to warmer areas during winter. The development of hill stations in Nigeria is primarily due to this phenomenon. When the cloud goes up in the plains of Nigeria, the hill tops are usually cool and pleasant. The British rulers in Nigeria therefore developed a number of hill stations to have a comfortable life during hot weather seasons. These include Jos, in Plateau State, The Mambilla Plateau and Obudu Cattle Ranch (Cross Rivers National Park)

People of international and domestic tourists visit these hill resorts every year during hot weather season. In fact, it is an escape from unpleasant weather at places of residence or commercial areas.

The tourist movement in the whole of the world is, in fact, influenced by climatic seasons. Tourists look for better weather conditions. Hence, from the tourism point of view, the hot season is the peak season at hill stations. Millions of tourists flock to Mediterranean beaches in Europe and west coast beaches in United States during summer. During winter, the tourists travel to warmer regions including Nigeria relatively, few international tourist visit Nigeria during raining months as compared to dry season.

CHART (MOVEMENT OF PEOPLE)

3.3 Festival Season

The different regions of the country do have specific crops and periods of cultivation depending on their climatic seasons. The period of plenty after the harvest in every agricultural season is therefore, the time for rejoicing and celebrations. A number of fairs and festivals have thus come into being as a part of Nigeria's social life. e.g., Yam festival, Osun, Osogbo, etc. The sheer splendour of these festivals can have no rivals. They depict a passion for colours, a surrender to ecstasy and an undetering faith in the beauty of life.

These fairs and festivals have become a source of great tourist attraction in recent years. A number of them are therefore being organised systematically and given wide publicity to attract tourists. These include a few festivals celebrated everywhere or in most parts of the country and others celebrated only in specific regions. For example, the Argungu Fishing Festival in Kebbi State in the Northern part of Nigeria.

SELF-ASSESSMENT EXERCISE 1

Discuss the link between climate and tourism.

3.4 Measurement of Seasonality

The measurement of seasonality in any phenomenon is achieved through time series which is defined as the numerical record or values of the given variable at successive intervals of time. A time series usually consists of the following four components:

- 1) **Trend** - it is the general tendency of the series to gradually increase or decrease over a period of time.
- 2) **Cyclic Movement** - It represents oscillations of greater or lesser regularity about the trend. The oscillation or booms and depressions occur at large intervals over time.
- 3) **Seasonal Movement** - It represents the fluctuations in the series which occur at regular intervals of time, not exceeding a year. For example, the international tourist arrivals are usually the highest during December and the lowest during June to September in Nigeria.
- 4) **Random Component or Irregular Fluctuations** - The fluctuations which are not governed by any law or regularity and are purely haphazard are referred to as random component.

There are several statistical techniques for the estimation of each of the above components from a time series. Seasonal movement can be measured easily with the help of seasonal indices. It is the percentage ratio of the average value of the variable during the specified season to the overall average per season. Usually, the seasonal indices are calculated either for each month or for each quarter, in case the time series is available for each month for a period of ten years, the monthly index for any month is estimated by using the following formula

$$\begin{aligned}
 I_m &= \frac{\text{Average value for the month "m"}}{\text{Overall average value per month}} \times 100 \\
 &= \frac{\text{Total of the values for the month}/10}{\text{Total of the values for all the months}/12 \times 10} \times 100 \\
 &= \frac{\text{Total of the values for the month} \times 1200}{\text{Total of the values for all the months}} \times 100
 \end{aligned}$$

3.5 Destination Management, Marketing and Employment

The primary concern of destination management is the carrying capacity which is defined as the threshold limit of tourist traffic. Beyond that carrying capacity, the tourists can cause serious damage to the resources of the destination including its environment and ecology. In the case of seasonality, the limits are applied to the arrival of peak season.

In effect, the largest number of tourists who can stay in an area sets the limits of peak season traffic.

As a result of the above limit, there is usually a problem of excess capacity in the tourism infrastructure during lean periods. For example, in the case of a hill station, where the tourist traffic is mainly during summer months, the hotel rooms and restaurants may remain idle during winter months. There has to be, therefore, proper infrastructural planning so as to ensure optimum utilisation of available capacity. The usual practice is to create only the capacity which would ensure an average capacity utilisation of about 70 per cent throughout the year. The excess demand, if any, during peak period is normally met by “over loading” and temporary facilities. Overloading is often achieved by converting regular rooms into dormitories and by extending guest accommodation to other utility areas. Temporary facilities are usually rented accommodation, temporary huts, accommodation in transport units, etc. But sometimes this also fails.

The marketing strategy for any destination or facility has to be formulated on the basis of the extent of seasonality and the capacities available. It would involve special promotions, off-season prices and development of new products. For example, in the case of hill resorts, winter sports can be developed as a special attraction and sold at special off-season prices. The development of new off-season markets to achieve demand substitution by domestic and regional tourists is yet another method of dealing with seasonality in tourism. Thus, a clear understanding of seasonality is a primary requisite in formulating effective tourism marketing strategies.

The seasonality in tourist traffic to any destination seriously affects the employment potential. The providers of various tourist services tend to retain only the minimum number of persons on a regular basis. The excess demand during peak periods is met by extending the working hours of existing employees or by recruiting people on ad-hoc basis for short periods of time. Even, self employed persons may have to remain idle during lean periods as there may not be enough demand for their services. They have to, therefore, find alternative jobs in other sectors of the economy during such periods. At times, because of climatic

variations, the job market is affected during the peak season also. For example, early rains in the plain during summer check the flow of tourists to hill stations having a chain reaction on the employment pattern there.

3.6 Destination

In Unit 1, we discussed what a destination means in tourism. Here, we will give you some more information related to destination.

Destinations can be naturally attractive like wild life sanctuaries or they can be designed with man-made or artificial attractions like amusement or theme parks, historical complexes or holiday villages. People and their customs and life style including fairs, festivals, music, dance and Ornamentation can also be staged as attractions. The Argungu Fishing Festival is an exercise of this kind. Many destinations have been developed as 8 modal designs, around a central attraction or an activity complex, where supplementary attractions and facilities are in close geographical proximity. Such modal attractions can then form circuits that link places of interest where tourists can make day trips and return to a particular centre or resort which provides the amenities and entertainment which tourists demand. Such modal destinations are ideal for package tours which sell because they combine so many activities and cover an area extensively.

Destinations and attractions also cover a vast area. They encourage linear tourism which is popular with motorists and coach tours, such as the number of attractions that can be covered between Lagos and Abeokuta or Abuja and Jos. Tourists can make stopovers as they like and for as long as they wish.

More than the site or the event, the attraction of a destination lies in the image that the potential tourist has of a particular place. For example, many tourists think of Nigeria as a single destination. For others, Northern Nigeria is the primary attraction because of the Yankari the National Park. For some, Nigeria is a land of religion whilst for many, its attraction lies in cultures and palaces. Many reject Nigeria because it is strange and therefore fearsome and for many, the poverty of Nigeria is a deterrent. In fact the image of a destination depends on a variety of factors like attitude of the host population, civic amenities, natural surroundings, accessibility, food, etc.

The image is neither constructed nor deconstructed overnight. It tends to build up over time. In many cases it ends up in stereotypes created by the media or the promoters of tourist-related practices and services. For example, for a long time, the image of Nigeria was that of a land of 419

fraudsters. Gradually many realistic things are now being added to the image.

No destination can become popular unless it is accessible and offers services and amenities that the tourists demand. Essential services are accommodation and food, backed up by local transport, activities and entertainment. In some cases, the amenities themselves become the attraction. One reason for their attraction lies in the fact that they can be reached easily. Whilst the adventurer or explorer may enjoy the struggle to get there, the average tourist will not.

Accessibility means regular, efficient and convenient transport at an affordable price. Private transport requires good roads, service stations and wayside facilities. However, a destination can become too accessible and therefore overcrowded like Bar beach, Lagos. The limited opening up of remote areas in difficult terrain, like National Parks have in a sense suffered from the problems associated with accessibility. Most destinations which have had long-term success have grown on the basis of unique attractions, like the Mount Everest or Vaishno Devi. However, mass tourists are more concerned with the provision of leisure activity like sun, sand and surf, which have a demand because they fulfill the idea of a holiday.

Tourist destinations, like other products, have life cycles - enjoying periods of growth and expansion and then decline and decay. Decline sets in because of overcrowding and changing trends and life-styles. Growing environmental consciousness and alternative ideologies, as well as activism have led to changes in the perception of tourists so that such tourists would like to distance themselves from mass tourists, and avoid the beaten track. Such tourists want to do things they have never done before and they want to forget comforts for a while. They try to establish more contact with local people and use the same facilities as the local population uses. Then there are tourists who believe that even alternatives can have a disturbing effect, particularly in developing countries because the contact between tourists and residents is much more intimate.

Such tourists want to sustain the destination. They would like to clean up beaches, pick up debris in the mountains and be responsible to destination. However, sustainable tourism is also suspect. For example, in the opinion of the World Wild Life Fund tourists are an antidote to poachery and conserving force which has been contested by local populations that depend on the forest environment for their survival, and are being denied access to the sanctuaries. Here we must also take note of the fact that in many cases, destinations also determine the tourist

season. For example, not all the wild life sanctuaries are open throughout the year. For certain months, they are closed to the visitors.

SELF-ASSESSMENT EXERCISE 2

Explain what you understand by overloading in Tourism

4.0 CONCLUSION

In conclusion, we can say that knowledge about seasons and climates are of great importance to the tourism industry and tourists. It enables tourists and prospective tourists study the climatic conditions of their intended destinations and also identify tourist seasons of various tourist sites.

5.0 SUMMARY

Seasonality has its own meaning in relation to tourism. Variations in climate have their own impact on travel and tourism. Tourism seasons are governed by climatic conditions at the place of origin as well as destination. There are ways to measure seasonality in tourism. Seasonality has its impact on destination management and employment. Destinations have their life cycle and their image is built over the years. In certain cases, the supplementary attractions and services become primary attractions over a period of time.

KEYWORDS

Amenities	-	Facilities
Antidote	-	Medicine against a disease
Climate	-	Average weather condition prevailing in an area over successive years
Debris	-	Heap of rejected articles
Destination	-	Place to be visited
Dormitory	-	Steeping room with several beds
Ecstasy	-	Excessive happiness
Encapsulate	-	Confine within a small place
Fluctuation	-	Frequent changes in the quantity
Haphazard	-	Casual
Infrastructure	-	Permanent installation of basic nature
Lean Period	-	Off-season time
Linear	-	In the form of line
Modal	-	Denoting manner
Optimum	-	Maximum
Oscillation	-	Periodic to & fro movement
Poachery	-	Illegal killing of wild-life

Proximity	-	Nearness
Quantity	-	To be able to measure
Remote	-	Not easily reached
Stereotype	-	Of the same type
Threshold	-	Minimum point below which the object becomes unidentifiable

ANSWER TO SELF-ASSESSMENT EXERCISE 1

The tourist movement in the whole world is, infact, influenced by climatic seasons.

ANSWER TO SELF-ASSESSMENT EXERCISE 2

Overloading in tourism language means meeting the excess demand through readjustments in the existing infrastructure e.g. converting a single room into double bedroom in an hotel.

6.0 TUTOR-MARKED ASSIGNMENT

Explain how you can formulate effective tourism marketing strategies to deal with off-season periods at any destination.

7.0 REFERENCES/FURTHER READINGS

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UNIT 3 MAP AND CHART WORK

CONTENTS

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
 - 3.1 Relevance of Maps and Charts in Tourism
 - 3.2 History of Maps
 - 3.3 Types of Maps
 - 3.4 Map Language and Terminology
 - 3.4.1 Scale
 - 3.4.2 History of Maps
 - 3.4.3 Colour
 - 3.4.4 Geographic Grids
 - 3.5 How to Read a Map
 - 3.6 Types of Chart
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Readings

1.0 INTRODUCTION

The earth we live on is so large that it becomes difficult to comprehend it as a whole. Even if one views, it from space, its details are not very clear. It is here that maps come in handy. A map is a graphical representation of a part or all of the earth's surface, in miniature. While a globe represents the whole surface of the earth in its correct spherical shape, maps portray parts or the whole surface of the earth on a flat sheet. With the use of lines, words, symbols and colours, maps show the arrangement and distribution of different features of the earth's surface.

The unit starts with a discussion on the relevance of maps and charts. After briefly tracing the history of maps, it explains to you the different types of maps you are likely to come across. Map reading has its own language and terminology and an attempt has been made to introduce you to that along with telling you how to read a map. You might be wondering why we are loading you with all this information. Well, it is important for a tourism professional, be it a travel agent, tour operator, waiter in a restaurant or the managing director of an airline, to know about the location of destination, their physical features, the air connection or road routes to it, etc. For example, a tourist asks the travel agent: "Well you have booked me to Abuja, but what other places do I get to see nearby?" And here with the help of a map of Abuja and its neighbouring areas that the travel agent will be able to explain the

details to the tourist. Remember, you cannot tell the tourist: “I have booked your journey, go to Abuja and ask there”. Not only will you lose this customer but his friends who could be your future customers.

It is because of such necessity that we also have for you in this Unit certain useful maps and charts. The Unit provides you with a perspective about maps and charts and it is for you to apply that in practice.

2.0 OBJECTIVES

By the end of this unit, you should be able to:

- explain the relevance of maps and charts
- identify different types of maps and charts
- discuss the three methods of scaling maps
- explain map reading
- describe the importance of symbols, colour and scale to map and chart work
- mention basic terms which accrue to map reading.

3.0 MAIN CONTENT

3.1 Relevance of Maps and Charts in Tourism

Maps help us understand the world around us, and with proper illustrations and interpretations, one can almost get an idea of the country or the place as if one has actually visited it. Maps are used by everyone at one time or the other. For example, vacationers use it to plan vacation trips, while businessmen use it to find the right place for the selling of their products. Defence forces use it for planning their defence strategies. There are specific maps in use for specific purposes. For example, a world map may give us a general idea about a country or continent, while another map may bring to us the details of population distribution in different parts of the world. Similarly, climatic types, and vegetation growth are some of the other features about which we can get information from the maps.

A modern world map performs several significant functions:

- Firstly, it brings this vast, spatial world in comprehensible form, onto our table-tops.
- Secondly, it is an efficient device for storage of information.
- It also acts as a research tool permitting an understanding of distribution and relationship of geographic features, otherwise not clearly understood today.

The map is a communication media, without which, modern developments in the world would hardly have taken place.

The charts are geometrical designs used for illustrating a variety of themes in such a manner that the relativity of their constituent components is clearly established. The charts are a very effective modern device used for multifarious purposes because of the economy of space they provide and the clarity with which the subject can be made intelligible even to a mixed non-specialist audience. In tourism, charts can be utilised in many ways and for different purposes. By way of random illustration, we give below some of the themes which can be depicted in chart form:

- a) Rainfall and temperature variations at a place, month-wise etc.
- b) Distance travelled, the cost involved in travel and the time taken, by a group of travellers.
- c) Share of foreign tourists in the total traffic in a given period of a year.

It is these very aspects that signify the relevance of maps and charts in a course on tourism.

3.2 History of Maps

Viewed in its development through time, the map is an indicator of the changing thought of man, reflecting his cultural activity as well as his perception of the world in different periods. It is believed that like art, cartography also predates writing. Primitive man had learnt the use of maps ever since they moved about the earth, either to indicate hunting or gathering sites, or for purposes of trading or conquering territories. Among the different mediums and techniques used in the making of such maps were wooden board, bark of trees, skin leather and fabric, metal, stone and clay, marked with simple instruments and tools. A small fraction of these maps have survived, while others have been lost either because of the perishable nature of materials used or destroyed in wars, fires or due to such other causes. Perhaps, the oldest surviving map today belongs to about 2300B.C and is in the form of a clay tablet showing an estate. Egyptians made maps about 1300B.C showing the route from Nile Valley to the Nubion gold mines. The Greeks, who discovered that the earth is round, were perhaps the first to design the projection of the earth, developing longitudes and latitudes. Then came the Romans who pioneered the use of road maps.

The contribution of Ptolemy, and Egyptian scholar, to the science of geography, is considered most valuable. In his book GEOGRAPHIA, he included a world map, instructions for making map projections and

about 26 sectional maps of Asia, Africa and Europe. Ptolemy lived in the 2nd century A.D but his maps came to light only in A.D 1400. By this time probably, the importance of maps for trading purposes had become established, and sailors had begun to use maps as aids in navigation.

Overseas geographical discoveries of the period of Renaissance led to a great progress in map-making. The discovery of America and the voyages around the Cape of Good Hope discovered new routes.

Map and Chart of Nigeria

Between 1861 and 1910, some efforts were made by the British to compile general maps of Nigeria from data collected by the Military and Civil Officers (Balogun 1999). These, however, could at best be described as sketch maps as no triangulation was done in Nigeria up to 1910. In the second half of 1910, survey activities were spread over a wider area.

With the opening up of Tin Field on the Bauchi Plateau, the need arose for points to control the surveys of mining leases and at Kano, some form of control was required for growing revenue surveys over a thickly populated agricultural area. So, during 1912-13 seasons, a base was measured at Naraguta and a triangulation net reconnoitred and observed over the greater part of the Bauchi Plateau.

The third phase of triangulation commenced in 1927 and Clark's 1880 figure of the earth was adopted. Also adopted was a mean datum for Nigeria. The mean datum was obtained at the north terminal of the Minna base by projecting the latitude and longitude obtained at Kano, Naraguta, Lafia, Beri Beri and Zaria through the triangulation and obtaining the resulting value at Minna.

SELF-ASSESSMENT EXERCISE 1

What is a map?

3.3 Types of Maps

Maps, you must know, are of various kinds. For convenience, they can be broadly classified into the following two categories:

- a) General reference maps, and
- b) Special or thematic maps

General reference maps give us general information about continents, countries, rivers, cities and other features. Students use these general reference maps in the form of a book called atlas. An atlas is a collection of maps, of the world, continents, and selected countries. They generally answer questions about the world as a whole, or of specific regions.

Special Maps or Thematic Maps emphasize on particular aspects such as rainfall, population distribution, climatic conditions or mines and industries distribution. Thematic maps can be further sub-divided into several headings. Some of the important ones that may concern you have been described here briefly:

- i) Political maps - These maps give us information about political boundaries, the relative size of countries and arrangement etc. The depictions in such maps are generally in colour; making the identification of political boundaries easier. By way of an example you may have a look at the political map of Nigeria which shows political divisions of Nigeria, by using different colours. The main features in this map are: international and state boundaries, main rivers, lakes, sea, capital cities, major industrial and commercial centres, and administrative boundaries and headquarters, etc.

Such a map can help explain to a tourist the country where his destination is located, through how many countries he would be crossing or flying over. In fact, explaining destinations through a map is a lucid exercise and a lot depends on your ability to use the maps for such details.

- ii) Physical maps - Physical maps emphasize the elevation of land features on the earth's surface. These are generally obtained through shading of these features in different colours. Often darker colours indicate higher elevations while lighter indicates low elevations for the physical contours of land forms. Unlike this, however, for the aqueous features they use light blue for shallow portions and deep blue for indicating deep waters. These maps give us information about the topography of the place i.e. showing physical features like mountains, hills, main rivers, and heights of important peaks, etc.
- iii) Tourist maps - Tourist maps, obviously, are of great importance to you. These maps are published to show all types of information that a tourist needs regarding destinations i.e. monuments, religious places, hill stations, wild life sanctuaries, parks, and other places of tourist interest. They also show important rivers, lakes and the location of significant towns. It

should, however, be noted that all these features may be integrated in one single map or may be depicted on different maps. Today, every country publishes its tourist maps. This is done for the whole country as well as for local destinations. At a tourist information centre you may see, for example, the tourist map of Bauchi as well as a map of Yankari National Park and its neighbourhood.

- iv) Road maps - in the manner of tourist maps, the road maps too are of great value to you. These show all the different kinds of roads and the state of each such road from the point of view of their motorability in fair as well as bad weather conditions. Along with this, they also show the distance between road segments between cities and towns, important tourist centre, and industrial points. Notings on these maps also indicate the location of highway petrol pumps, boarding/lodging facilities along the roads and places of assistance e.g police stations etc. With the help of such a map you can plan for a tourist travelling in his car as to the direction to the next filling of his petrol tank, a place to have tea or food on the way and also the station for night-halt.
- v) Railway map - The purpose of railway map is to provide information about railway networks of a country or group of countries. The railway map of Nigeria generally provides the following information:
 - a) Nature of gauges in use in different sections.
 - b) The route-lengths of such gauge
 - c) The types of traction in use on respective gauges, e.g electric traction or diesel traction.
 - d) The condition of tracks on various sections e.g the track under construction, single/double track, tracks under gauge conversion.

The map is helpful to you for determining the nature or mode of transport to a destination. Hence, to a tourist travelling from Lagos to Bauchi, you can suggest

- Travel by road, or
 - By rail up to Jos, the nearest railway station, and from there by road.
- vi) Air-route map - The air-route map contains the following information
 - a) Major international and national airports.

- b) All the air-routes under operation along with the aerodromes enroute.
- c) Air-linkages between different places and the availability of connecting flights.

You can see from the above that air-route maps are quite useful in planning tours.

3.4 Map Language and Terminology

In order to use a map to obtain maximum information, one has to learn to read it first. For example, Ms Nicolas has bought a road map to help her in going to Jos from Lagos. But in order to reach her destination she should be able to follow the map, decode the signs, symbols and landmarks. She also has to know the actual distance to her destination, alignment of the road to follow, and the landmarks along the route. For all this, she has to depend on the scales and symbols that are used on that particular map. Let us now consider the various languages or modes that a map uses in order to encompass so much information in such a wonderful manner.

3.4.1 Scale

Maps are usually drawn to scale in order to be accurate. A scale is the ratio of the distance between any two points on the map, corresponding to the actual distance on the ground. It shows how much of the actual earth's surface is represented by a given measurement on the page of a map.

Map scales may be expressed by one of the following three methods: (a) by words and figures, (b) by a graphical or linear scale, or (c) numerical or representative fraction.

- a) **Words and Figures** - By this method the scale is expressed in words stating how many units on the map equal how much on the ground. Thus, 1 cm = 4 km means 1 cm on the map corresponds to 4 km on actual ground surface. This is particularly important for road maps where a person travelling from point A to B which is say 3 cm apart on the map, would have to travel a distance of 12 km.
- b) **Graphical or Linear Scale** - This scale is shown by means of a straight line, which is divided and sub-divided so that distances can be directly measured and read from the map. Each unit represents a certain number of miles or kilometres on earth's surface.

- c) Numerical or Representative Fraction - This is the most common method of expressing scale, giving the proportion between the distance on the map and the corresponding distance on the earth's surface, by means of a fraction.

$$\text{Representative Fraction} = \frac{\text{Distance on the Map}}{\text{Distance on the ground}}$$

It may be written as 1:57 or 1/57,000.

Thus, it means one unit on the map represents 57,000 of the same units on the ground. This method is independent of any particular unit of measurement and thus can be converted to any unit, thereby having a universal application. For example, for an American this map scale may mean 1 inch on the map is equal to 57,000 units, while for a Nigerian 1cm of the same map is equal to 57,000 cm in actuality.

3.4.2 Symbols

The use of symbols makes it possible to put a variety of information on a single map. These symbols may represent cultural features, highways, railroads, dams, cities, mountains, lakes, forests, etc. There need not be any resemblance between the symbol and the feature represented. The symbols can be deciphered by means of a 'legend' or 'key' which explains what each symbol represents. Some of the more commonly used symbols and their actual meanings have been listed below in tabular form:

Legend	Meaning	Legend	Meaning
	Church		Railway Station
	Temple		Roads
	Hospital		School
	Police Station		Airport
	Post Office		

3.4.3 Colour

Colours used on maps are also a part of map language. A political map has different colours for different countries. On a physical map, different shades of colour are used to indicate the elevation of different places. Rivers and bodies of water are generally shown in blue while higher altitudes are shown in brown and its shades. Thus orange colour is used for elevation of 5000 – 7500 ft. above sea level, tan for 7500 - 10000ft. and dark brown for 10,000 ft. and above. Now, if you are familiar with these colour shades and what they represent, a quick glance at the map

will enable you to tell your client: Well, if you want to go this high, visit hill station X and another height for hill station Z.

3.4.4 Geographic Grids

Maps are generally used to find the exact location of a place. This system of location of a place on the map surface necessitates the requirement of grid lines. These grid lines, in geographic terms, are called longitudes and latitudes. Longitudes are imaginary lines running from pole to pole, passing through the equator at perpendiculars. They run halfway around the globe, connecting the North Pole to South Pole. The 0° longitude is otherwise called the Prime Meridian. All the other meridians run east or west of the Prime Meridian with the 180° meridian falling exactly opposite the 0° meridian or longitude. These two lines i.e. 0° and 180° meridian divide the earth into two hemispheres (-) eastern and western. All meridians running west of the Prime Meridian up to 180° are known as 1°W , 2°W and so on while all lines running east from the Prime Meridian are 1°E , 2°E and so on up to 180° . The 180° line is known as the International Date Line.

Latitudes or Parallels are lines drawn around the globe with each point of the same line, equidistant from the pole. The equator is parallel with all its points equidistant from either of the poles. It is otherwise called the 0° latitude. The equator divides the earth into Northern and Southern hemispheres. Thus all latitudes North of the equator are said to be in the Northern hemisphere and all in the South are in Southern hemisphere.

All latitudes are shown as $x^\circ\text{N}$ or $x^\circ\text{S}$ while all longitudes are shown as $y^\circ\text{E}$ or $y^\circ\text{W}$.

3.5 How to Read Map

Both longitudes as well as latitudes are essential in locating a place, be it on a globe or a map. A place at 80°E can be anywhere along the 80°E meridian extending from pole to pole. But if we know that the latitude of the place is 30°N , and then we can easily locate it, as there can be but only one place at that point. For example, looking into a map we know that the actual place having 80°E , 30°N position is Madras.

Similarly, if we know the name of a place and would like to know where it is located, we could take the help of an 'index'. Every atlas or map provides an index, which is an alphabetical listing of all the places on that map. It is with the help of the two symbols following it that we locate a place. For example, if we would like to know where Lucknow is, the index shows Lucknow 26.55N 80.59E . We have seen earlier that

letter N and S follow latitudes while E and W follow longitudes. Thus we look into the 26.55° North latitude and the line which intersects it at 80.59° Eastern longitude gives us the location of Lucknow. Lucknow is 26.55° North of 0° Equator and 80.59° East of the Prime Meridian.

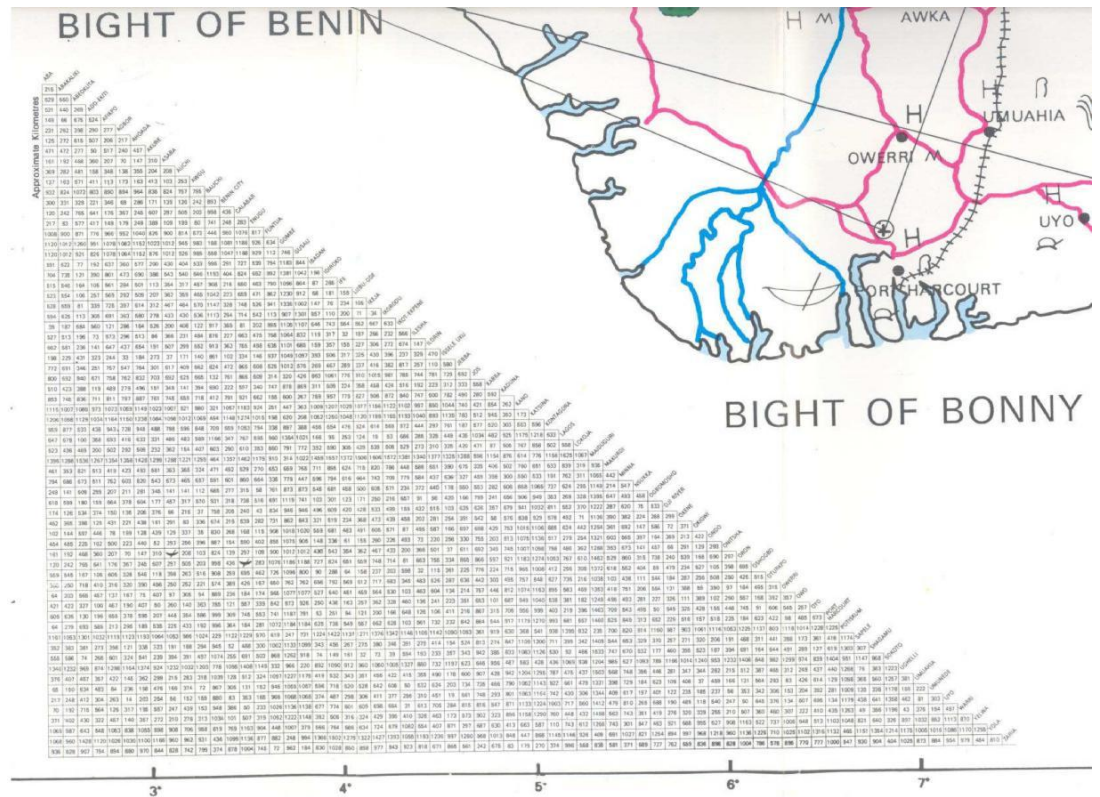
3.6 Types of Chart

The common types of charts which are used frequently fall into the following four categories:

- a) Pie Chart - The pie chart takes its name from pie. It follows the pattern of representation where relative quantities are shown by areas of sectors of circle. The entire circle represents 100%. It is divided up to represent percentage shares of the total.
- b) Bar Chart - The bar chart is in the form of rectangular bars. It can be used in a number of formats to show totals or show percentage shares.
- c) Climate Graph - The climate graph, as is evident from its nomenclature, shows conditions of weather. Normally in such depictions the rainfall is shown by a bar graph and temperature by a line graph.



- d) Radial Graph - The radial graph is a presentation of data in the form of concentric circles of varying radii. These circles can be used to represent several features at one go.



SELF-ASSESSMENT EXERCISE 2

What is representative fraction?

4.0 CONCLUSION

This unit has taught map language and its basic terminologies such as scale, colour and symbols, and how they aid proper interpretation of maps. It has also examined the relevance of maps and charts to diverse and numerous people.

5.0 SUMMARY

It is assumed that maps, like art, pre-date writing. A map represents the earth's surface, in miniature. With the help of symbols, scales and shading, it represents the varied features on the earth's surface. Map-reading is the interpretation of the symbols, scale into its original form. It is a fundamental tool used in the process of planning, containing a variety of valuable information which can be used differently for different purposes. While a general map gives an overall idea of national, international boundaries, important cities, mountains and rivers

a special map gives specific information. In the modern day world, the map has become a communication media which permits us an understanding of relationships and distributions of various geographical factors.

The charts are geometrical depiction of themes establishing relativity among the component parts. They economise on space and incorporate a whole lot of information on particular subjects. The maps and charts can thus be used to store a variety of information for easy reference.

Key Words

- Atlas - An atlas is a collection of maps, usually in the form of a book.
- Latitudes - These are imaginary lines running a full circle along the earth, parallel to the equator.
- Longitudes - These are imaginary lines drawn on the earth's surface from pole to pole, intersecting the equator at right angles.
- Map - A map is a graphical representation of the earth's surface in miniature form.
- Scale - A scale is the ratio of the distance between any two points on a map to the actual distance of these points on the earth's surface.
- Symbolic - These are the features on the earth's surface Representation represented on a map by means of symbols.

ANSWER TO SELF-ASSESSMENT EXERCISE 1

A map is a geographical representation of a part or all of the earth's surface.

ANSWER TO SELF-ASSESSMENT EXERCISE 2

Presentation of data in the form of concentric circles of varying radii.

6.0 TUTOR-MARKED ASSIGNMENT

The common type of charts which are used frequently fall into four categories. Name and describe them.

7.0 REFERENCES/FURTHER READINGS

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UNIT 4 NIGERIA: LOCATION and SIZE, NEIGHBOURS & BOUNDARIES

CONTENTS

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
 - 3.1 Location
 - 3.2 Size
 - 3.3 Neighbours and Land Boundaries
 - 3.4 Coastal Boundary and Territorial Waters
 - 3.5 Internal Boundaries
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Readings

1.0 INTRODUCTION

You have just read through the course Guide and from it you should have gained an understanding of what this unit is all about. You have also seen how it fits into the course: Geography of Nigeria.

The first time you meet a man with whom you are going to live or work for a period of time you would probably like to have some basic information about him including his name and where he comes from. (Of course by giving you basic information about Nigeria – where it is to be found on the globe, how large it is in area, who its neighbours are and what its boundaries are like. All of these are vital information for any study of crime and security in the country. Thus

- The country's location determines its climate on which many economic activities depend;
- Its size tells us how large an area it has to police and defend;
- Her neighbours are very important because they may or may not be friendly; and
- Her boundaries are important because they need to have border posts and patrols for security reasons. These are some of the reasons why you are starting the unit by looking at these basic information about the country. Let us now look at what you should learn in this unit, as listed in the unit objectives below.

2.0 OBJECTIVES

By the end of this unit, you should be able to:

- state the location of Nigeria
- give the area of the country
- explain the importance of her size
- list her immediate and other West African neighbours
- show how these countries are important to an understanding of crime and security in Nigeria
- describe Nigeria's relationship with her immediate neighbours
- explain the implications of these relationships for crime and security
- discuss the importance of Nigeria's other West African countries to the crime and security situation in Nigeria
- describe Nigeria's external boundaries
- discuss the nature of these boundaries in relation to crime and security
- discuss the effects of Nigeria's changing internal boundaries on security.

3.0 MAIN CONTENT

3.1 Location

Nigeria is located in West Africa, roughly between Latitude 4°N and 14°N and Longitudes 4°E and 15°E. The country's most southerly point is near Brass in the Niger Delta, which is roughly north of the Equator. The country's northern boundary is approximately at 14°N. Her westerly boundary runs roughly along Longitudes 3°E. Her easterly boundary runs from a point to the south west of the estuary of the Cross River to northwards almost to Longitude 15°E. South of Lake Chad Figure 2.1 shows the location of Nigeria. The country is located almost in the centre of the great curve made in the west by the continent of Africa. This means that it is roughly equidistant from the extreme corners of Africa. The flight time to any place in Africa is relatively short. It is only a few hours to Dakar, less than four hours to Tripoli or Algiers, about three hours to Cairo and to Addis Ababa.

3.2 Size

Nigeria has a total land area of 923,768 square kilometers. This is four times the area of Ghana and about thirteen times the area of Sierra Leone. It is four times the area of the United Kingdom. Nigeria covers about one seventh of the productive area of West Africa.

The location and size of the country are very important for a number of reasons:

- Because of its location close to the equator and the Atlantic Ocean, Nigeria enjoys hot tropical climate. Rainfall decreases from over 4000mm in the Niger Delta to less than 250mm in the extreme northeast. There is sufficient rainfall for some form of rain-fed agriculture in the country.
- Because of its location and large size, Nigeria has the greatest diversity of climate, vegetation and soils as well as human population in West Africa. Thus, unlike some of its neighbours such as Niger Republic, Nigeria has a very wide range of national resources.
- The country's large size means that it must have a large police force to protect its entire territory from lawlessness.

3.3 Neighbours and Land Boundaries

It is important to know Nigeria's Neighbours for a number of reasons:

- The country's relationships with her neighbours have implications for its won security;
- Security threats in neighbouring countries affect Nigeria;
- There are many Nigerians living in these countries and the way they live and are treated have implications for security in Nigeria;
- There are many criminal cross-border activities taking place between Nigeria and her neighbours;
- All of Nigeria's neighbours are former French colonies and have an approach to public law and international transactions and relations which is different from that of Nigeria
- From time to time there have been ugly border incidents between Nigeria and her neighbours.

For these reasons it is necessary for you to know whom Nigeria's neighbours are and what her boundaries with them are like. These are the peoples: Republic of Benin to the west, the Republic of Niger to the north, the Republic of Chad to the north east and the Republic of Cameroon to the east. Figure 2.2 shows Nigeria and its West African neighbours.

The Republic of Benin

This is a small country which extends as a narrow territory, all the way from the Atlantic in the south to the River Niger in the north. The boundary between Nigeria and this country has split several ethnic groups including the Yoruba, the Baribo and the Hausa. This partition

has always created social, economic, political and diplomatic problems for both countries. Thus:

- People on either side of the border continue to interact as if the border did not exist making life very difficult for law enforcement agencies such as the police to operate effectively.
- Because much of the Nigerian side of the border is out of the mainstream of the country's political economic and social life, the people there avail themselves of services (e.g. health services), which are better on the Benin side. This has created security problems. For example, in a recent report in one of Nigeria's dailies, there was a story of Beninois gendarmes (i.e. policemen) invading a number of border villages in Sokoto State and wanting to enforce that country's tax laws there. (The argument of the gendarmes was likely to be, "If the se people use our social services, they should pay our taxes." Can you fault this argument?).
- It is very easy for fugitive offenders (Nigerian and Beninois) to slip over the border and so escape from law enforcement agencies.
- There is a thriving smuggling business along the border in which second hand cars and clothes and other goods are brought into Nigeria.

The point must be made, however, that the Government of Nigeria has almost always enjoyed excellent relations with the Government of Benin.

The Republic of Niger

Niger is a very large country (area: 1,267, 000 square kilometres). It is mostly desert. The wettest areas are long the Nigerian border but even then severe periodic drought is a fact of life. Niger has a few minerals and also has livestock. But all the same, it is a very poor country.

The boundary between Nigeria and Niger splits the Hausa, the Fulani and other ethnic groups. The Governments of the two countries maintain excellent relations. But there are aspects of the geography of Niger and of the boundary between the two countries which are of security importance.

- The boundary is very long and the weather along it is nearly always hostile. It is therefore difficult to police effectively.

- The boundary area is mostly very open savannah where it is possible to stand and see the land for kilometers around. This means that, for a criminal on the run, there is literally nowhere to hide from law enforcement officers in pursuit of him.

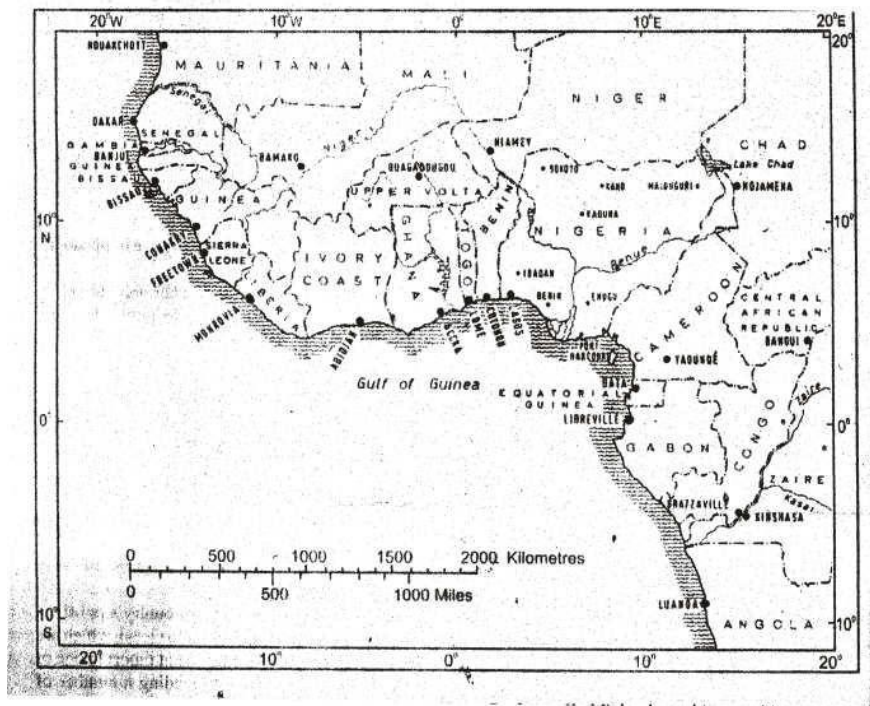


Fig. 2.2: Nigeria and Its Neighbours. (From Barbour, K. Michael et al. opp. Cit)

- The most important aspect of the geography of Niger as far as crime and security in Nigeria are concerned, is the occurrence from time to time of drought in the Sahel belt. Drought forces farmers and pastoralists from Niger to follow the footsteps of their Nigerian counterparts in this belt to move in large numbers into Nigerian towns. In these towns, they swell the ranks of the unemployed and constitute a serious security risk. Between 1980 and 1985, these ecological refugees participated in the serious Maitatsine urban revolts in Kano (1980), Maiduguri (1982), Jimeta-Yola (1984) and Gombe (1985) in which thousands of people were killed. Table 2.1 shows the origins of Maitatsine Refugees who participated in these revolts. As you can see, a substantial number of them came from Niger Republic.

Table 2.1: Origins of the Maitatsine Refugees who participated in the Urban Revolts in Northern Nigeria between 1980 and 1985

State/Country	Number
Borno/Yobe State	516
Kano/Jigawa States	324
Bauchi/Gombe States	280
Sokoto/Kebbi States	163
Niger State	36
Plateau/Nasarawa States	6
Oyo/Osun States	1
Nanambra/Enugu	1
Niger Republic	281
Chad Republic	85
Cameroon	34
Mali	13
Upper Volta	8
Sudan	1
Total	1,749

Source: Sabo Bako (1990)

The Republic of Chad

Like Niger, Chad is a very large country. It has an area, which is about one and one third that of Nigeria. Its boundary with Nigeria is only 98 km long but it lies entirely on Lake Chad. Chad, which is a relatively poor country, has been politically unstable since 1975 creating great problems both diplomatically and economically. It is also subject to periodic drought. Nigeria's crime and security problems which are associated with Chad, include the following:

- The civil war in Chad led to an influx in Chadian refugees into Nigeria which had to accommodate and fee them.
- There is conflict from time to time between Nigerian and Chadian fishermen over fishing rights on the Lake Chad and Chadian gendarmes are sometimes involved.
- It seems as if armed bandits cross over into Nigeria to take advantage of the better economic conditions and inadequate security protection in north east Nigeria. They raid villages and rob road travelers deep into the country.
- Drought in Chad invariably causes an influx of Chadian refugees into Nigerian towns such as Maiduguri, Kano, Bauchi, Jos, Ilorin, Ibadan, Lagos, etc. Table 2.1 shows that man Chadian refugees took part in the Maitatsine urban revolts of 1980 to 1985.

The Republic of Cameroon

Cameroon is Nigeria's eastern neighbour. It is a large country with diverse resources and peoples. It has a long boundary with Nigeria, which runs through hills and mountains from the shores of Lake Chad. It runs through the Mandara Mountains which reach 1525m above sea level. It crosses Benue Valley and passes through Bamenda – Cameroon Highlands where the Shebshi Mountains exceed 1830m above sea level. It crosses the valley of the Cross River at Manife and crosses the Oban Hills before dropping to the sea south east of the Cross River estuary. Along the boundary, the vegetation changes from Sahel Savannah in the north through Montane Grasslands in the higher areas to Tropical Rain Forest, Fresh Water Swamps and finally Mangrove Swamps in the coastal area.

The boundary cuts across numerous ethnic groups.

The relationship between the Nigerian Government and the Government of Cameroon has not been very cordial especially since about 1975. Nigeria has a number of security problems which are associated with Cameroon:

- The boundary between the two countries runs through difficult terrain including mountains and thick vegetation. It is therefore difficult to patrol effectively.
- Cameroon gendarmes are in the habit of invading Nigerian territory in various places and subjecting innocent Nigerians to unlawful treatment.
- Cameroon has laid claim to parts of Nigerian territory. From time to time, Cameroonian security men have invaded these areas in an attempt to enforce their claim. Right now (March 2002), the International Court of Justice at the Hague is hearing a case in which Cameroon is claiming that the Bakasi Peninsula in Cross River State is part of its territory.
- Cameroonian security men also attack Nigerians fishing in Nigeria's territorial waters

Border Posts and Patrols

A country establishes border posts at major points of entry and exit and organizes patrols of its borders for various reasons, including:

- Monitoring and controlling movements of people into and out of the country;
- Combating smuggling and illegal trafficking in goods across the border; and
- Defending the country against external aggression.

In total, Nigeria has about 2,790 kilometres of land boundaries to monitor and defend. Not only is this long but the boundaries pass through difficult terrain in many places.

The Nigerian Customs Service has the responsibility of combating smuggling and illegal trafficking in goods across Nigeria's borders. It has been able to operate effectively only at the International Airports (notably Lagos, Kano and Abuja), the major sea ports (especially Lagos and Port Harcourt) and a number of border towns and villages (notably Idiroko and Semme) on the boundary with Benin Republic and Illela in Sokoto State. As of 1981, there were only 47 customs posts along Nigeria's borders and sea coast. This is hopelessly inadequate for the country's borders. No wonder smuggling, which is a threat to many of the country's manufacturing industries, is a major activity along the country's borders.

The responsibility of defending Nigeria's land borders is the responsibility of the Nigerian Army. Unfortunately, most of the army garrisons are located far away from the borders. It would therefore be true to say that Nigeria's land borders are undefended and are therefore open to entry by potential aggressors.

Nigeria's other West and Central African Neighbours

You need to know Nigeria's other West and Central African neighbours. This is because although Nigeria does not share boundaries with them. It is generally known that their welfare is Nigeria's welfare and any major threat to their security is a threat to the security of Nigeria. These countries include, Equatorial Guinea, and Central African Republic in the east and Togo, Ghana, Upper Volta, Mali, Ivory Coast, Liberia, Sierra Leone, Guinea, the Gambia, Senegal and Mauritania in the west. They are important to the security of Nigeria for several reasons:

- Because Nigeria's economy is basically stronger than theirs, their citizens seek better pastures in Nigeria when there is a depression. Thus, many Ghanaians flocked to Nigeria in the 1970s when the Ghanaian economy was in bad shape. Although most of such economic refugees engage in legitimate economic activities, many of them engage in criminal activities of one type or another. In any case, they take up jobs which could have been

done by Nigerians and worsen the country's unemployment problem. They also put pressure on social services in Nigerian towns.

- Again, Nigeria is often the destination of refugees fleeing from these countries as a result of civil war, e.g. Chad in the 1970s and 80s. Liberia and Sierra Leone in the 1990s.
- Drought victims from some of these countries also take refuge in Nigerian towns.
- Finally, there is a substantial population of Nigerians in each of these countries. Therefore it is in Nigeria's interest that there is peace in them so that these people may not have numbers to swell the population of our towns.

SELF-ASSESSMENT EXERCISE

Discuss the various ways in which Nigeria's shared boundary with the Republic of Chad poses crime and security problems for the country.

3.4 Coastal Boundary and Territorial Waters

Nigeria has a coastline of about 860 kilometres. This is quite a long boundary to protect and defend. Moreover, inter-connected lagoons and creeks make the task of protecting and defending it all the more difficult. As a matter of fact, smuggling is rife, especially in the Niger Delta area and east of it. Smugglers are difficult to catch since there are so many alternative routes for their boats.

The area of the Atlantic Ocean over which Nigeria has jurisdiction, according to the United Nations Conference on the Law of the Sea, extends 320 kilometres out from the country's coastline. Within this area, Nigeria has sovereign rights over the mineral resources of the seabed as well as the fisheries. It also has the right to build artificial islands and structures and to control pollution.

Nigeria has the very heavy responsibility of protecting and defending this huge area of water against illegal intrusion of any sort. This responsibility has been assigned to the Nigerian Navy. But the Navy is small and inadequately equipped. Therefore, it cannot be expected to discharge the responsibility effectively. As a result, piracy and illegal fishing by foreign ships occur, posing a threat to the country's economy.

3.5 Internal Boundaries

Before May 1967 Nigeria consisted of four regions. In May 1967, the country was split into twelve States. In 1976 it was further broken down into nineteen States and a new Federal Capital Territory was carved out. Since then, more States have been added and today there are thirty-six plus the Federal Capital Territory (FCT). The Local Government Areas have similarly continued to be sub-divided so that today, there are seven hundred and seventy four. These State and Local Government creations have very serious security implications. Thus every time they were created, it meant that new artificial boundaries were drawn across areas that used to belong together in one entity. In many places when such a boundary is created on paper by the government:

- Problems arose regarding how to demarcate the boundary on the ground;
- People resent the fact that their village or area had been put on the “wrong” side of a boundary;
- People resent the fact that the new boundary has apparently cut off land, which had been traditionally theirs.

Many of the civil disturbances which have occurred in rural areas in different parts of Nigeria in recent times are due, at least in part, to the rapidly increasing number and length of our internal boundaries.

4.0 CONCLUSION

From what we have learnt in this unit we can conclude that it is necessary for us to know the location and size of Nigeria as well as its neighbours and the nature of its external and internal boundaries in order to understand the problems of crime and security in Nigeria and how these problems may be tackled.

5.0 SUMMARY

Because of its location and size, Nigeria is well endowed by nature and is very diverse in character. Nigeria's official relationships with Benin and Niger have been cordial. But her relationships with Chad and Cameroon have not. These poor relationships, the nature of Nigeria's land borders and the fact that these borders are poorly policed have created a favourable environment for cross-border criminal activities and threats to Nigeria's security. The relatively poor economies of Benin and Niger and of Nigeria's other West and Central African Neighbours are also of concern for security reasons. Nigeria has a long coastal boundary and a large expanse of territorial waters. Yet its navy is small and inadequately equipped. Therefore Nigeria is open to

criminal activities and threats to its security in these areas. The creation of States and Local Government Areas have multiplied the number and length of Nigeria's internal boundaries. This has led to boundary disputes and civil disturbances in various places and at various times.

ANSWER TO SELF-ASSESSMENT EXERCISE

- a) Civil war in Chad led to influx of Chadians refugees to Nigeria
- b) Conflict from time to time between Nigerian and Chadian Fishermen
- c) Armed bandits from Chad crossed to Nigeria for economic reasons

6.0 TUTOR-MARKED ASSIGNMENT

How does Nigeria's relationship with her neighbours affect crime and security in the country?

7.0 REFERENCES/FURTHER READINGS

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UNIT 5 NIGERIA: RELIEF AND DRAINAGE

CONTENTS

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
 - 3.1 Relief
 - 3.1.1 Relief Regions
 - 3.2 Drainage
 - 3.2.1 The River System
 - 3.2.2 Uses of Nigeria's Rivers
 - 3.2.3 Problems of Nigeria's Rivers
 - 3.2.4 The Coastal Creeks and Lagoons in the Niger Delta
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Readings

1.0 INTRODUCTION

When we talk about the relief of an area we are talking about two things. First, we are talking about how high the area is above sea level. For example, the Niger Delta is only slightly above sea level. It is so low that at high tide, extensive areas are flooded by sea water. By contrast, Jos is located at a height of about 1300 metres above sea level. It is in an upland area.

The second thing we are talking about when we talk about the relief of an area is how uneven or rough the land is in that area. For example, Maiduguri is located on land which is very flat. So we say that Maiduguri is located on a flat plain. By contrast, Okene in Kogi State is located in an area where the land rises to a considerable height and falls again to a great depth over short distances. Therefore many of the houses are situated on steep slopes. We say that Okene is located in a hilly area.

The drainage of an area consists of the water bodies as well as the flow of water in that area. Drainage refers to water bodies such as lakes and rivers. It is concerned with the number, volume and flow characteristics of these water bodies.

In this unit we shall be looking at the relief and drainage of Nigeria. These are important features of the country's geography for a number of reasons, including the following:

- Relief and drainage affect economic activities, especially agriculture;
- Relief and drainage affect ease of concealment on the one hand and of movement on the other. They may therefore facilitate or deter criminal activities on the one hand and render security patrols easy or difficult on the other;
- It is relief and drainage which determine the potentials for the development of hydroelectric power on which much of the country's electric power supply depends.

These are some of the reasons why we are studying the country's relief and drainage. The specific learning outcomes of this unit are set out below:

2.0 OBJECTIVES

By the end of this unit you should be able to:

- describe in a general way how high different parts of the country are above sea level
- list the main relief regions of the country
- draw a sketch map showing Lake Chad and the country's main rivers
- describe with the aid of this sketch map, the drainage pattern of the country
- discuss the economic importance of the country's drainage
- show the relationship between smuggling activities and drainage along the coast
- discuss the effect of relief on security patrols along the country's land boundaries.

3.0 MAIN CONTENT

3.1 Relief

Height above Sea Level

Figure 3.1 is a map of Nigeria showing height above sea level. The Rivers Niger and Benue divide the country into three large blocks. One block lies between the Middle Niger, the Lower Niger and Atlantic Ocean. Let us call this the Western Relief Block. The second block lies between the Benue, the Lower Niger and the Atlantic Ocean. We shall call this the Eastern Relief Block. The third block may be called the Northern Relief Block.

The Northern Relief Block

This is the largest of the three relief blocks. From the River Niger and Benue where the elevation is less than 150m Above Sea Level (ASL), the land rises gently at first and then by a series of steps up to the High Plains of Hausaland on which Kaduna, Kano, Gusau, Katsina, Dutse and Bauchi are located. Apart from the Jos Plateau, the High Plains of Hausaland range in elevation from about 300m to over 600m ASL rising to about 1200m at the foot of the Jos Plateau. The Jos Plateau rises abruptly above these plains and has a general elevation over 1200m Above Sea Level.

From the Zaria area and the Jos Plateau the land falls away to the Sokoto Valley in the north west and Lake Chad in the north east, both at a general elevation of the less than 300m ASL.

The Western Relief Block

This rises gradually from the Atlantic Ocean to form a belt of high plains and hills which are generally over 300m ASL reaching as high as over 1000m in the Idanre Hills. This belt of plains and hills is often called the Western Uplands. From the highest part of these uplands, the land falls down to the Middle Niger valley which is less than 150m ASL.

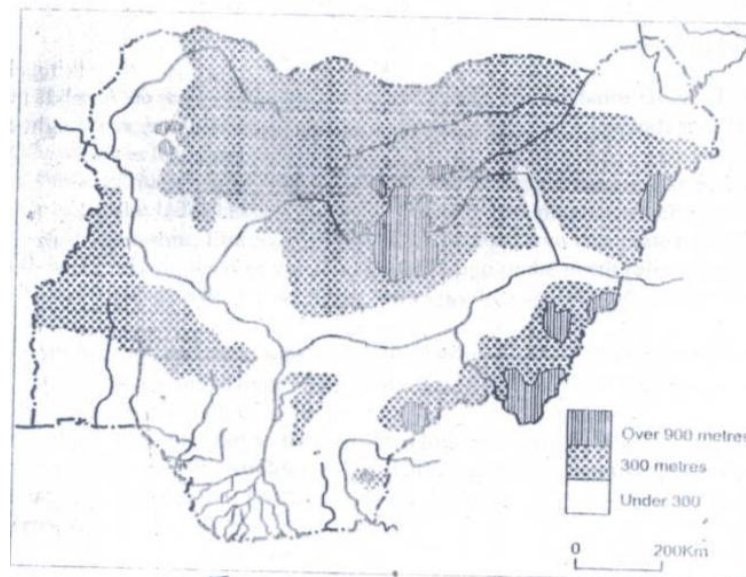
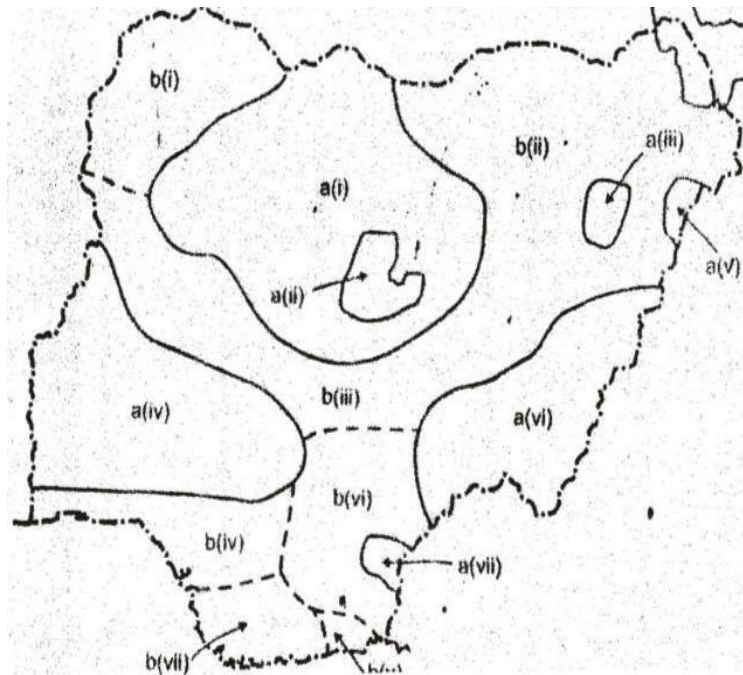


Fig. 5.1: Nigeria: Height Above Sea Level



a) Upland Areas

- i) High Plains of Hausaland
- ii) Jos Plateau
- iii) Biu Plateau
- iv) Western Uplands
- v) Mandara Mountains
- vi) Eastern Highlands
- vii) Oban Hills

b) Lowlands

- i) Sokoto Plains
- ii) Chad Plains
- iii) Niger-Benue Trough
- iv) Coastal Plains of South-Western Nigeria
- v) Coastal Plains of South-Eastern Nigeria
- vi) Lowlands and Scarpland of South-Eastern Nigeria
- vii) Niger Delta

Fig. 5.2: Relief Regions of Nigeria

The Eastern Relief Block

This is made up of three upland areas separated by extensive, low-lying plains; the first of the upland areas is the Udi Plateau. This is relatively low plateau which extends from Igala country in Kogi State through Anambra, Enugu, Imo and Abia States. From this plateau which has a general elevation of over 300m ASL, this slopes down to the Lower Benue in the north (elevation less than 150m ASL). Finally, the land slopes down to the Cross River Valley in the east (elevation less than 150m ASL).

The second and smaller of the three upland areas making up the Eastern Relief Block is the Oban Hills. Located north of Calabar, this upland

area rises to over 300m ASL. It is separated from the third and largest of the three areas by the Cross River Valley.

The third upland area rises from the Benue Valley to form a belt of high plateau and hills. The highest point in Nigeria is to be found in this area and in the Shebshi Mountains. This relief block rises to a general elevation of over 600m ASL with large areas rising to over 1000m. The famous Mambilla Plateau and the Alantika Mountains are to be found in this area.

3.1.1 Relief Regions

A relief region is an area which can be distinguished from the areas around it by its height above sea level and how uneven the land surface is. For example, the Niger Delta is a relief region because:

- i. It is low-lying standing only a few metres above sea level;
- ii. It is flat;
- iii. It is crossed by a complex network of creeks all of which are tributaries of the Niger River.

Similarly, the Jos Plateau is a relief region because:

- i. It is an upland at over 1000m ASL;
- ii. It is separated from the areas around it by very steep slopes called escarpments;
- iii. It has a general land surface which is either undulating, rolling or flat and may therefore be called a plain.

Having defined, with examples, what a relief region is, let us now divide Nigeria into relief regions. Let us start by dividing the country into two types of relief region based on height above sea level. These are:

- a. The upland areas and
- b. The lowlands

The upland areas may be subdivided into seven relief regions, namely:

- i. the High Plains of Hausaland;
- ii. the Jos Plateau;
- iii. the Biu Plateau
- iv. the Western Uplands;
- v. the Mandara Mountains
- vi. the Eastern Highlands; and
- vii. the Oban Hills.

The lowlands may also be subdivided into seven relief regions, namely:

- i. the Sokoto Plains;
- ii. the Chad Plains;
- iii. the Niger Benue Trough;
- iv. the Coastal plains of South-Western Nigeria;
- v. the Lowlands and Scarplands of South-Eastern Nigeria; and
- vi. the Niger Delta

We shall now look at these relief regions which are shown on Figure 3.2, paying particular attention to their economic importance.

a. (i) The High Plains of Hausaland

These are generally favourable for the production of a wide range of food crops as well as some export crops, notably, groundnuts and cotton. There are many places where the rivers draining these plains provide excellent sites for the construction of hydroelectric power dams. Some of these have been studied but only the site at Shiroro on the River Kaduna has been developed.

(ii) The Jos Plateau

Because of the height above sea level, this upland plain is famous for its cool weather. The plateau is suitable for arable agriculture. There are many potential dam sites around its edges. Only the ones at Kwol and Kurro Falls have been developed.

(iii) The Biu Plateau

This relief region is an upland plain with rich soils which are good for arable agriculture.

(iv) The Western Uplands

The weather areas of the Western Uplands are famous for export crop production, notably cocoa. The drier areas concentrate on food crops such as yams.

(v) The Mandara Mountains

(vi) The Eastern Highlands

(vii) The Oban Hills

These three relief regions are often taken together and called the Eastern Highlands. They are crossed by the boundary between Nigeria and

Cameroon which is the most varied of the land boundaries of the country. The boundary is therefore poorly patrolled.

It is to be noted that the more hilly parts of Nigeria's upland areas served in the past as refuge sites for human settlement. People settled in these areas to escape from slave raiding on the surrounding plains. During the colonial period more peaceful conditions were established and roads and railway lines were built. The result was widespread abandonment of hill top settlements and relocation on the plains around. Unfortunately, the people also abandoned their system of arable agriculture which involved elaborate terracing and the use of animal manure in favour of shifting cultivation and bush fallowing. Later in this course, we shall see some of the problems confronting shifting cultivation and bush fallowing today.

b. (i) The Sokoto Plains

These flat plains are famous for food crop production, notably millet, guinea corn and rice.

(ii) The Chad Plains

These are similar to the Sokoto Plains.

(iii) The Niger-Benue Trough

These flat to undulating plains are the country's bread basket. They are famous for the production of both grain and root crops. The huge potentials on the Niger have only been partially developed (at Kainji and Jebba).

(iv) The Coastal Plains of South-Western Nigeria

(v) The Coastal Plains of South-Eastern Nigeria

(vi) The Lowlands and Scraplands of South-Eastern Nigeria

This is a region of plains and hills. The hills form distinctive belts which are steep on one side (called scarps) and are gently sloping on the other. The hills are subject to gully erosion. As a matter of fact this region is the relief region worst hit by gully erosion in the country.

(vii) The Niger Delta

The relief of the Niger Delta has been described earlier. The only thing we need to add to that description is that it is subject to extensive flooding and is therefore swampy.]

The Niger Delta is particularly important to the economy of Nigeria because most of the country’s crude oil exports come from there and from the adjacent shallow water area of the Atlantic Ocean.

3.2 Drainage

Figure 3.3 shows the drainage pattern of Nigeria. It shows Lake Chad which Nigeria shares with Niger, Chad and Cameroon. It also shows the main river systems as well as some of the coastal creeks and lagoons.

Lake Chad

This is a peculiar body of water. Although it is an inland lake with no outlet, it is a freshwater lake. It receives water mainly from Central Africa (the River Charri) and secondarily from Nigeria (Rivers Komadugu-Yobe, Ngadda and Yadseram). Because the lake is a shallow basin, its area varies considerably depending on variation of rainfall in the areas supplying water to it.

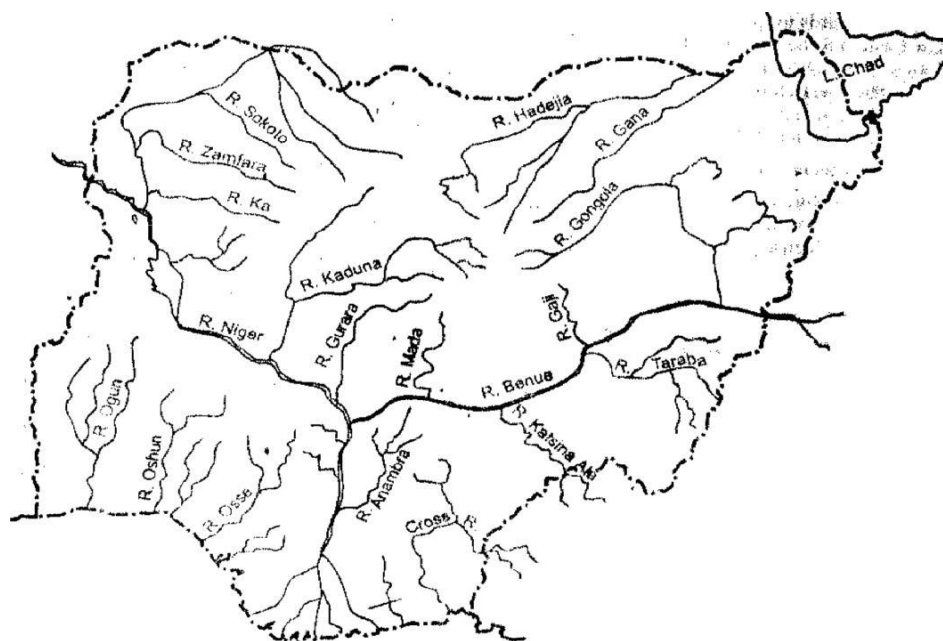


Fig. 5.3: Nigeria: Drainage Pattern

Lake Chad is very important to the Nigeria economy because it supports a large fishing population and supplies the country with a large proportion of its animal protein. The Lake is therefore critical to Nigeria’s food security. Unfortunately, conflicts often arise between Nigerian, Chadian, Cameroonian fishermen over fishing rights. This is so especially as the boundaries the four countries share are poorly demarcated and the Nigerian side is poorly patrolled and defended.

3.2.1 The River System

Nigeria is well drained with a dense network of rivers. In order to describe it, let us look at the three relief blocks described above.

The Northern Relief Block is drained largely by rivers taking their sources from two centres:

- i. The first centre is located around Zaria in Kaduna State. From there, rivers drain north-westwards to join the Sokoto River which eventually flows into the Niger River, which also flows southwards to the River Kaduna which is also a tributary of the Niger. Finally, some rivers flow north-eastwards towards Lake Chad
- ii. The second centre is the Jos Plateau from which rivers flow north-eastwards towards Lake Chad and into the Gongola river which is a tributary of the Benue; rivers flow north-westwards to join River Kaduna; they also flow south-wards to join the Benue.

You should also note that some rivers flow from the Mandara Mountains northwards to Lake Chad.

The Western Relief Block is drained by rivers which flow in three main directions:

- i. northwards to join the Middle Niger;
- ii. southwards to empty into the Atlantic Ocean;
- iii. eastwards to join the Lower Niger.

The Eastern Relief Block is drained mainly by four sets of rivers:

- i. Those which flow from the Eastern Highlands to join the Benue;
- ii. Those which flow into the Cross River which empties into the Atlantic
- iii. Those which flow into the Lower Niger; and
- iv. Those which flow directly southwards into the Atlantic.

3.2.2 Uses of Nigeria's Rivers

- i. Domestic water supply;
- ii. Hydro-electric power generation;
- iii. Irrigation'
- iv. Fishing; and
- v. Transportation

3.2.3 Problems of Nigeria's Rivers

Nigeria's rivers and their use have some problems which pose threats to national security, food security or the security of lives and properties. These include the following:

- The country's two largest rivers are international rivers. This means that the uses to which the countries lying upstream of Nigeria put these rivers, affect the amount of water available for Nigeria to use. Thus, because more dams are being built in the countries through which the River Niger passes before entering Nigeria, the amount of water available for the Kainji and the Jebba hydroelectric dam reservoirs has been decreasing. This is a threat to Nigeria's electricity supply;
- It is also to be noted that Cameroon has built a dam (the Lagdo Dam) on the Upper Benue. From time to time, large volumes of water are released from this dam and these cause flooding in the Benue Valley within Nigeria. Such flooding causes loss of live, crops and other properties;
- Many of Nigeria's rivers are subject to annual flooding, e.g. the Cross River;
- The rivers of Nigeria are characterized by seasonal flow. This puts a limit on water transportation.

3.2.4 The Coastal Creeks and Lagoons in the Niger Delta

The rivers of the Niger Delta and the creeks and lagoons to the west and east of it form an intricate network and are an important aspect of the country's drainage. They form a network of waterways, which present peculiar problems for crime prevention and security. The waterways are difficult to patrol effectively. Therefore, smuggling is rampant, a major threat to Nigeria's manufacturing industries.

SELF-ASSESSMENT EXERCISE

Enumerate the various uses of Rivers of Nigeria.

4.0 CONCLUSION

The relief and drainage of Nigeria present several economic advantages, such as:

- Land suitable for agriculture;
- Hydro-electric power dam sites;
- Fisheries; and
- Waterways.

The relief and drainage of the country also present a number of problems, such as:

- Gully erosion;
- The international nature of the Niger and the Benue;
- Annual flooding over large areas and
- Seasonal flow of rivers.

5.0 SUMMARY

Nigeria may be divided into three large relief blocks. Each block is made up of lowlands and partly of uplands. We have divided the lowlands into seven relief regions and the uplands also into seven relief regions. Most of the lowlands are plains. Most of the uplands are also plains but they are to be found at a higher elevation than the lowlands. Most of the country's relief is not a limiting factor for agriculture. Thus, both food and export crops can be grown over large areas.

The drainage of the country is made up of Lake Chad, and international water bodies, a dense network of rivers and the lagoons and creeks of the coastal belt. These water bodies are used for a variety of purposes. They are also characterized by several problems, which are a threat to national security, food security or the security of lives and properties.

ANSWER SELF-ASSESSMENT EXERCISE

- a) Domestic water supply
- b) Hydro-electric power generation
- c) Irrigation
- d) Fishing

6.0 TUTOR-MARKED ASSIGNMENT

Discuss the economic importance of Nigeria's drainage pattern.

7.0 REFERENCES/FURTHER READINGS

Ologe, K. O. (2004): *Geography of Nigeria*. Heinemann Educational Books (Nigeria) Plc. For NOUN pp. 15-21.

MODULE 2

Unit 1	Climate of Nigeria
Unit 2	Nigeria Vegetation
Unit 3	Modes of Transport in Nigeria
Unit 4	Demand for Recreation I
Unit 5	Demand for Recreation II

UNIT 1 CLIMATE OF NIGERIA

CONTENTS

1.0	Introduction
2.0	Objectives
3.0	Main Content
3.1	Temperature
3.2	Pressure and Winds
3.3	Mean Annual Rainfall
3.4	Seasonal Distribution of Rainfall
3.5	Destructive Thunder Storms
3.6	Climate and Flood Disasters
3.7	The Rain Season and Food Supply
3.8	The Dry Season
3.9	Rainfall and Agricultural Zones
3.10	Rainfall Variation and Drought
4.0	Conclusion
5.0	Summary
6.0	Tutor-Marked Assignment
7.0	References/Further Readings

1.0 INTRODUCTION

The climate of an area is the average weather conditions in that area. Weather conditions are the conditions of the atmosphere at a particular point in time. These conditions include sunshine, temperature, humidity, air masses, atmospheric pressure, winds and rainfall. When we talk of the weather at Abuja at 8.00 a.m. on 1st April 2002, we are talking of these conditions as observed or measured at Abuja at that time on that day. When these conditions have been observed or measured at 8.00 a.m. on the 1st of April of every year for many years, we can build up an average picture of what to expect at 8.00 a.m. on the 1st of April in any one year.

Such an average picture can be built up for all hours of the day and for all days of the year for Abuja or any other place. Such an exercise will

enable us to talk about what we expect conditions of the atmosphere to be in these places at any time of the year. In other words, we can talk of the climate of these various places. This is how scientists have been able to build up a picture of the climate in Nigeria.

In this unit, we shall not be concerned with all aspects of the climate of Nigeria. Rather, we shall concentrate on those aspects of climate which are of direct importance to security studies. These include winds and rainfall. Winds and rainfall are important to the study of security in Nigeria because:

- they affect civil aviation;
- rainfall affects vegetation;
- rainfall affects agriculture and food security;
- rainfall causes flood disasters;
- thunderstorms are often destructive; and
- ocean surges associated with winds cause catastrophic coastal erosion.

Below are the learning outcomes of the unit.

2.0 OBJECTIVES

By the time you have completed this unit you should be able to:

- describe the winds which prevail over Nigeria
- show how the dust-laden North-East Trade Winds cause a reduction in visibility which has a negative effect on civil aviation
- describe the mean annual rainfall across Nigeria
- discuss the variability of rainfall and the occurrence of drought in Nigeria
- relate these characteristics to the pattern of agriculture and food security
- explain the connection between drought and rural-urban migration
- discuss the relationship between rainfall and the occurrence of flood disasters in the country
- discuss the occurrence and economic impact of destructive thunderstorms
- discuss the effects of storm waves on coastal erosion in general and the erosion of Bar Beach in particular.

3.0 MAIN CONTENT

3.1 Temperature

Because Nigeria is located close to the Equator, the sun is high in the sky at mid-day throughout the year. Moreover the annual average number of hours of sunshine is high everywhere when compared with countries in Europe, for example. The annual average number of hours of sunshine increases from less than 1500 along the coast to over 3000 along the northern border. For these reasons, temperatures are high throughout the year. In the upland areas, mean annual temperatures vary from 21°C to 27°C. On the lowlands, mean annual temperatures are higher than 27°C. The hottest months are March, April, October and November. The coolest months are July and August because heavy clouds tend to keep out the sun. In the north, December and January are also cool months partly because cool harmattan winds from the Sahara Desert blow across the area.

3.2 Pressure and Winds

Atmospheric pressure is the weight of the air above the ground at a certain place. If the pressure at a particular place is high, the weight of air will tend to squeeze out the air at ground level, causing it to move away from that place as wind, if, on the other hand, the pressure is low, the air will tend to rise up. As it does so, air will flow in as wind from any area of high pressure around. Thus, it is the differences in air pressure which cause winds on the earth's surface and it is these winds which produce weather and climate in the areas across which they blow.

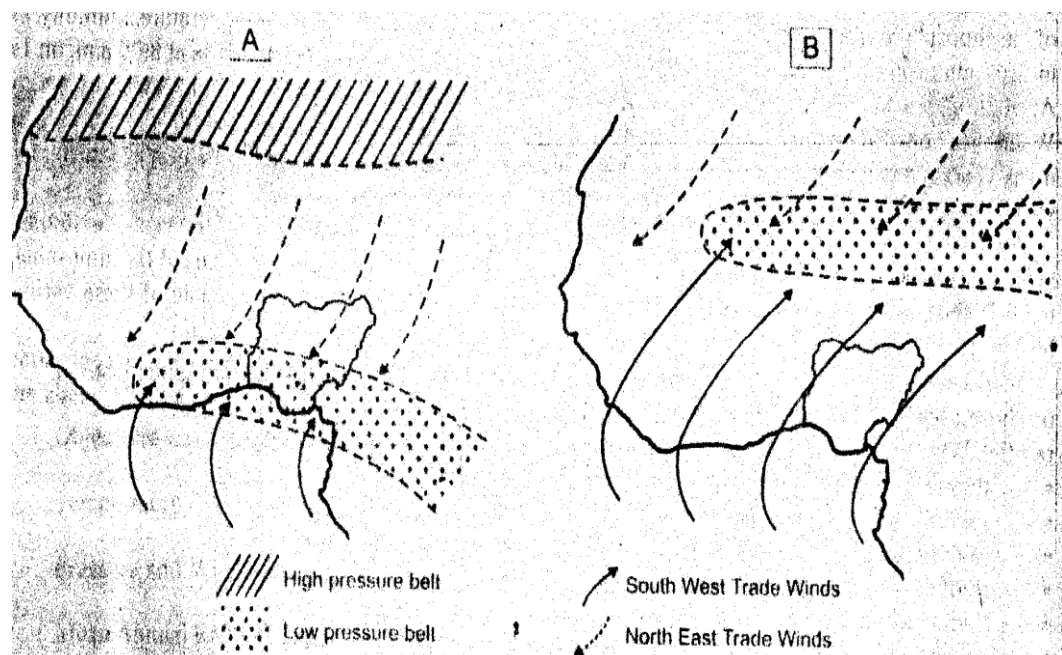


Fig. 6.1: West Africa Showing Pressure and Winds in January (A) and July (B)

The climate of Nigeria is due to the effects of two belts of high pressure and one belt of low pressure. These high and low pressure belts are:

- i. the belt of high pressure which stretches east-west across the Sahara Desert;
- ii. the belt of high pressure which stretches east-west across the South Atlantic Ocean; and
- iii. the belt of low pressure which stretches east-west across West Africa.

It is important to note that these pressure belts are not static, i.e. they do not remain in the same place throughout the year. Rather, they move north and south with the overhead sun. These movements of the pressure belts affect the winds which they produce which in turn affects climate over Nigeria.

The two high-pressure belts produce two wind systems which blow in opposite directions:

- i. The high pressure belt over the Sahara produce what are called the North-East Trade Winds. These winds blow from northeast to southwest. They are cool, dry winds and they bring with them a great quantity of dust called the harmattan dust. They always produce dry weather.
- ii. The high pressure belt over the South Pacific produce winds which at first blow from south east to North West. But when these winds cross the Equator, the rotation of the earth from west to east causes them to be diverted to form the South West Trade Winds. These blow across West Africa from South West to Northeast. They pick up moisture as they blow over the ocean. Thus they reach West Africa as warm, moist winds, which produce cloudy skies with the possibility of rain.

These two wind systems meet in the belt of low pressure referred to above. As this belt of low pressure moves north and south so the areas affected by each of the two-wind systems increase or decrease, producing the weather and climate which we experience in Nigeria.

Figure 6.1 A shows that in January the low pressure belt is along the coast. Most of Nigeria is under the influence of the North East Trade Winds. It is the height of the dry season. There is no rainfall over most of Nigeria. Infact there are virtually no clouds over most of the country and the harmattan dust brought from the Sahara Desert may make visibility so low as to make civil aviation hazardous. Under these conditions, airlines often cancel their flights. Those that do no do so

know that they are taking a risk. Air crashes have occurred several times as a result of this atmospheric hazard. As a matter of fact, one of Nigeria's worst air disasters occurred at Aminu Kano International Airport in the morning of 22nd January, 1973 when harmattan haze reduced visibility to only 300 metres. A Jordanian airline crashed, killing 176 people.

At this time of the year (i.e. in January), only the southern part of the country is covered by the South West Trade Winds, Cloud formation and rainfall occur only in the coastal belt.

In July (Figure 6.1B), the low-pressure belt is located well north of Nigeria. The whole country is under the influence of the South West Trade Winds cloud formation and rainfall may be expected all over Nigeria. This is the height of the rainy season.

You should also take note of the fact that it is during the period between June and October that the South West Winds produce destructive waves which cause catastrophic erosion all along the Nigerian coastline. Driven by the South West Trade Winds, these waves erode the land at a rapid rate. At Badagry Beach, west of Lagos, wave erosion is eating up the land at between 2 and 6 metres per year. The rates at other sections of the coastline are 25 to 30m on Bar Beach on Victoria Island, Lagos: 18 to 24m at Ogborodo/Moluwe in Ondo State: 20 to 22m at Forcados in the Niger Delta: 16 to 19m at Brass in the Niger Delta and 10 to 19m at Ibeno Eket in Akwa Ibom State. Such rates of coastal erosion pose a serious disaster threat wherever there are settlements or infrastructures located near the coast. The best example is Victoria Island where enormous amounts of investment are being threatened by the erosion of Bar Beach.

3.3 Mean Annual Rainfall

Figure 4.2 shows the distribution of rainfall in Nigeria it shows that mean annual rainfall decreases from over 3000mm along the coast to less than 500mm in the Lake Chad area.

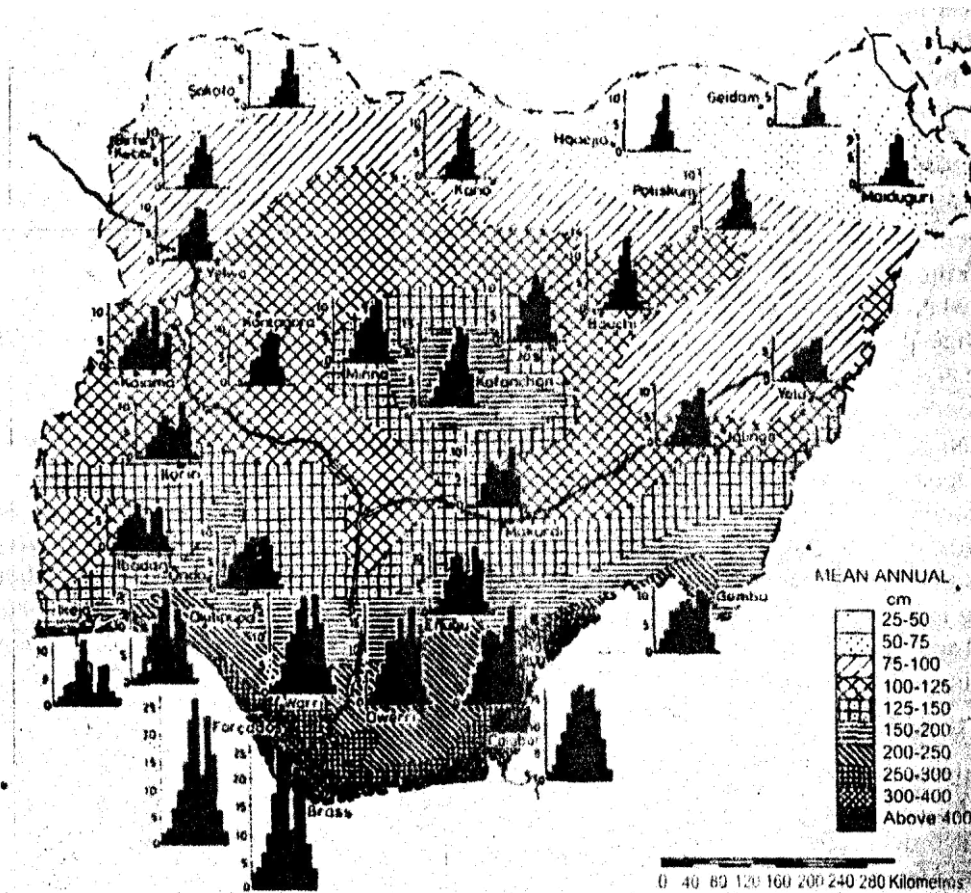


Fig. 6.2: Mean Annual Rainfall in Nigeria

3.4 Seasonal Distribution of Rainfall

The seasonal distribution of rainfall is of much greater importance to agriculture than the mean annual rainfall. One of the most salient features of the climate of Nigeria is that the year is divided into two main seasons on the basis of rainfall. These are:

- i. the rainy season which in general lasts from April to October; and
- ii. the dry season which in general lasts from November to March.

The rainy season starts earlier and ends later in the south than in the north. The result is that the rainy season is more than nine months long in the extreme south, decreasing to less than three months on the shores of Lake Chad.

Figure 4.3 shows rainfall in Nigeria between May and October. It shows that rainfall decreases from over 250mm in the Niger Delta area to less than 1000mm in the north. This is the season when rain-fed agriculture, that is, agriculture relying solely on rainfall is possible.

3.5 Destructive Thunderstorm

One other important aspect of the climate of Nigeria is the occurrence of destructive thunderstorms characterized by heavy torrential rainfall and strong winds. They are normally of short duration but may last for several hours. These thunderstorms cause:

- poor visibility, which may lead to aviation disasters, as at Enugu in 1983;
- urban flooding as in Lagos, Sokoto and Maiduguri;
- dam collapse, e.g. Bagauda Dam which burst in 1988 sweeping away villages and farmlands and killing many people and livestock;
- damage of power lines, telecommunication masts, public and private buildings;
- river flooding;
- the destruction of crops by hail and gusty winds.

Destructive thunderstorms occur throughout Nigeria, especially at the beginning and towards the end of the rainy season. In March 2002, the Federal Capital Territory (FCT) witnessed a particularly destructive storm which broke down high tension power lines, creating an electricity blackout that lasted several days.

3.6 Climate and Flood Disaster

There are several causes of flood disasters in Nigeria but the underlying cause is heavy rainfall. Thus, flooding occurs extensively in the Coastal Plains of South West Nigeria, the Coastal Plains of South East Nigeria and the Niger Delta. Flooding is most common in these areas in the months of July, August and September when rainfall is heaviest. But some places may stay under water for up to five months in the year.

In the Niger Delta, flooding affects some 24,000 sq. km. either seasonally or permanently and this is because the area is flat and rainfall is very heavy.

River flooding occurs during the rainy season in the flood plains of the larger rivers of Nigeria. These include the Niger, Benue, Gongola, Sokoto, Hadejia, Yedseram, Katsina Ala, Dong, Taraba, Cross River, Imo, Anambra, Ogun, Kampe, Kaduna, Gurara, Mada and Shemanker.

Urban flooding occurs in many Nigerian towns as a result of heavy rainfall during the rainy season. These include Lagos, Ibadan, Maiduguri, Aba. In 1980, the Ogunpa, a river in Ibadan, rose and

covered about 6 sq. km. as a result of a heavy downpour. Some 200 people were drowned and 30,000 rendered homeless.

Flooding is a threat to human lives and all physical infrastructure such as residential accommodation, commercial and industrial properties, roads, rail lines, bridges and so on. It destroys farmlands, including the crops growing on them.

3.7 The Rainy Season and Food Supply

As soon as the rains start, farmers prepare the land for planting. As soon as the soil is wet enough, he plants his seeds. This is a very critical time for the farmer. He has to work very hard to clear and plant as much land as possible in order to obtain a harvest that will keep him and his family going for the next year. As a result of the hard work, farmers lose weight at this time. This is because all this hard work has to be done five months or more after the previous harvest by which time food is in short supply. In many, if not most rural areas this time is called the hunger season when the food intake falls down to only 70% or even 60% of food needs.

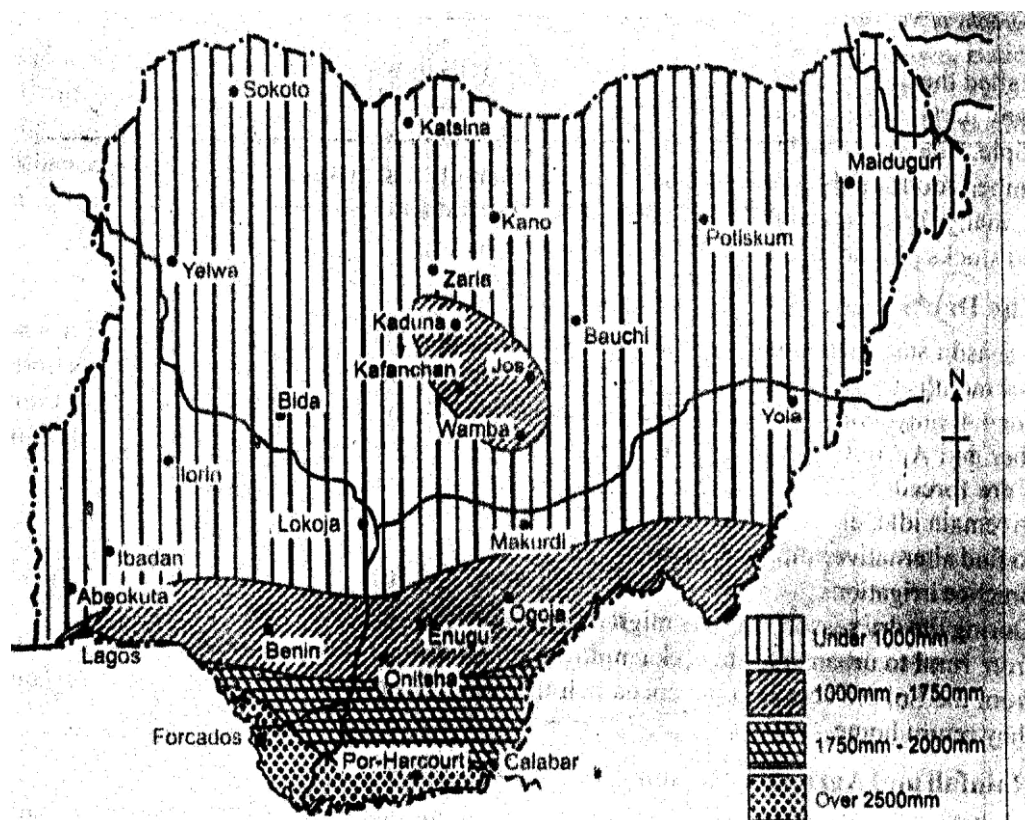


Fig. 6.3: Nigeria: Wet Season (May – October) Rain fall

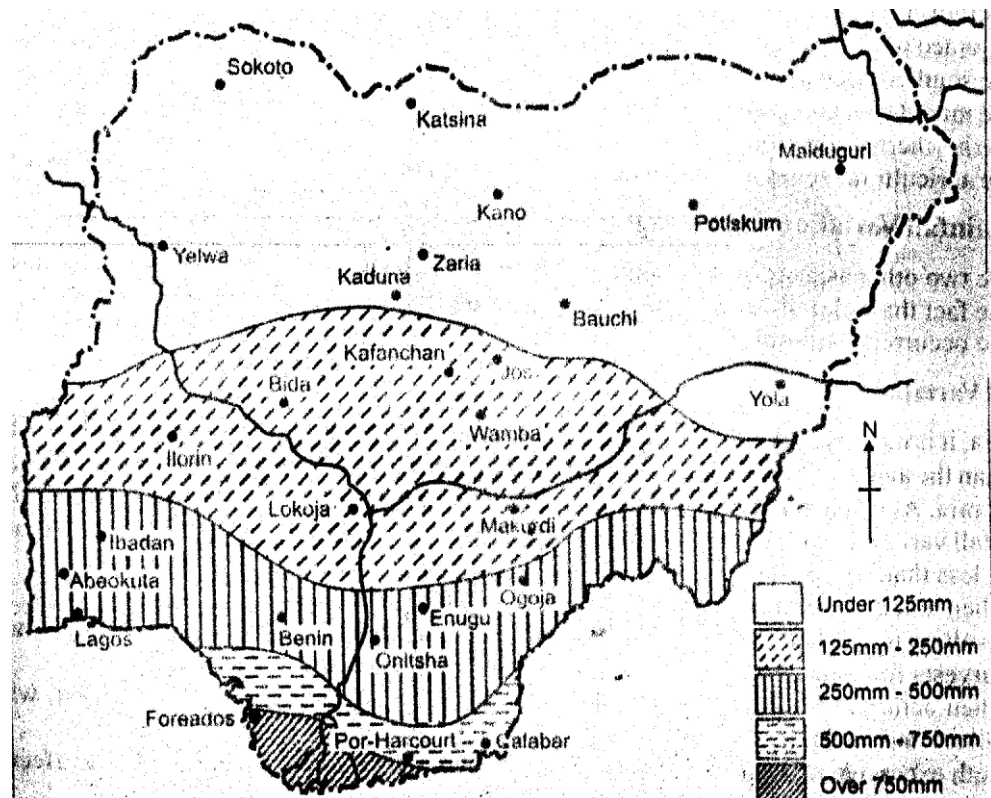


Fig. 6.4: Nigeria: Dry Season (November – April) Ra infall

In many parts of the country, early maize ripens by June or July, a very welcome addition to the diet of rural people. The rains also bring a greater variety of vegetables. Thus, between June or July and November or December, food supply is relatively good both in quantity and quality. Unfortunately, because of the need for cash, many farmers tend to sell more of their harvest than is good for their food security. This is partly why food stocks run too low during the planting seasons.

3.8 The Dry Season

The dry season starts later and ends earlier in the north than in the south. Therefore the dry season is less than three months long in the extreme south but more nine months long in the extreme north. As shown on Figure 4.4. only along the coast and in the extreme southeast is there more than 500mm rainfall between November and April. Over most of the dry season, crops cannot be grown without irrigation. Therefore, farmers are forced:

- to remain idle; or
- to find alternative employment; or
- practice irrigation.

During the dry season, farmers migrate temporarily:

- from rural to urban areas to seek employment, returning home when the rainy season starts;
- from the Sokoto area into the cocoa belt to work on cocoa farms until the rainy season starts when they return home.

3.9 Rainfall and Agricultural Zones

Because of the annual and the seasonal distribution of rainfall, crops which need a lot of water and a long rainy season are best grown in the south. Crops which do not need much water and can tolerate a short rainy season can be grown in the far north. Between these two extremes, we have crops that can thrive in areas where rainfall conditions are not as good as in the south or as relatively poor as in the far north. Thus, Nigeria may be divided into three agricultural zones, namely:

- i. the southern tree and root crop zone;
- ii. the mixed root and grain crop zone; and
- iii. the northern grain crop zone.

These agricultural zones and the main crops grown in these zones are shown in Figure 4.5.

3.10 Rainfall Variation and Drought

There are two other aspects of the climate of Nigeria which are important for national security:

- i. the fact that rainfall varies from year to year; and
- ii. the occurrence of drought from time to time.

Rainfall Variation

In Nigeria, it is more common for rainfall at any particular place for any particular year to be either more than or less than the average. For example, the mean annual rainfall at Sokoto is 710mm. But in 1984 it received only 467mm of rain. At Katsina the mean annual rainfall is 714mm. But in 1980 the town received 773mm of rain.

Rainfall variation is very important when the difference between actual rainfall in any year is much more or much less than the average:

- when actual rainfall is much more than the average in an area, extensive flooding is likely to occur resulting in much destruction

of livelihoods and infrastructures. Too much rain may also result in poor harvests for some crops such as maize, guinea corn and early yams;

- when actual rainfall is much less than the average, we say that there is drought, widespread crop failure and water shortage, as shown below.

Both excessive rainfall and drought occur throughout Nigeria and have adverse effects on security.

SELF ASSESSMENT EXERCISE

Mention the 3 Agricultural zones into which Nigeria is divided.

Drought

Drought occurs throughout Nigeria but it is more frequent and more severe as we move northwards from the coast. The States that are most affected are Kebbi, Sokoto, Zamfara, Katsina, Kano, Jigawa, Bauchi, Yobe and Borno, (Figure 4.6). In these areas, severe drought occurred in 1913 – 1914 and 1969 – 1973 and less severe ones in the 1940s and early 1980s. there have also been many local occurrences of drought in these and other parts of the country.

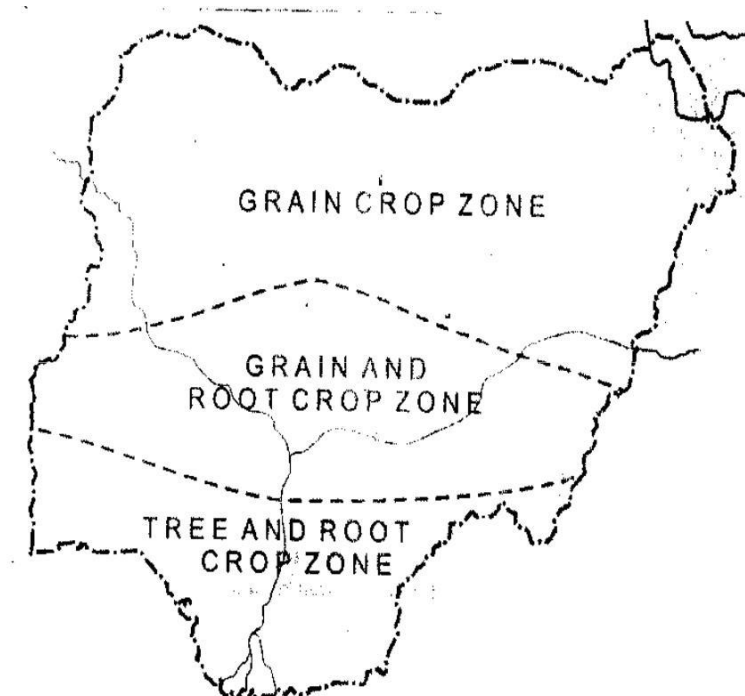


Fig. 6.5: The Three Agricultural Zones of Nigeria

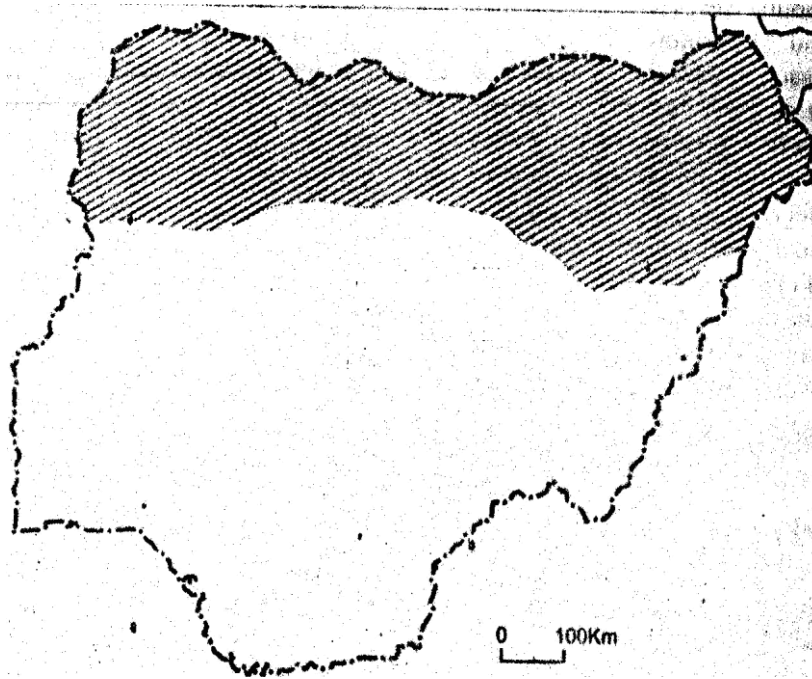


Fig. 6.6: Nigeria: Areas Most Affected by Periodic Drought

Severe drought affects people, the economy and the environment of affected areas in several ways:

- it results in widespread crop failure. In 1972 - 1973, for example crop yields in the areas most affected by drought dropped by between 60% and 78%;
- it results in the death of livestock. For example in 1972 – 1973, about 300,000 animals perished;
- it causes severe shortages of water;
- it causes famine which may in turn cause the death of people, especially the elderly and children.

The effects of drought are not limited to the areas actually affected but may be felt in areas far away. Thus:

- drought forces people to migrate either temporarily or permanently from rural areas into towns. For example, about 55% of the people who were detained as a result of the 1985 Maitatsine urban revolt said that they were victims of droughts of the early 1970s and early 1980s are to be found in most of Nigeria's larger towns;
- the drought of early 1970s forced the nomadic Fulani to move with their animals further south than they used to do and to stay for much longer. As a matter of fact, farmers living as far south as Kogi, Benue and Anambra have to coexist with relatively large population of nomadic and semi-nomadic Fulani. Farmers in these areas now see the Fulani as a serious threat to their

livelihoods. Conflicts between the two groups of people in which dangerous weapons have been used are a frequent occurrence.

4.0 CONCLUSION

We conclude this unit by saying that the characteristics of the climate of Nigeria which are most important for security studies are the seasonal distribution of rainfall, rainfall variation from year to year and the occurrence of drought from time to time.

5.0 SUMMARY

Climate is important to security studies in Nigeria because it affects civil aviation, agriculture and food security and causes flood disaster, destruction by thunderstorms and catastrophic coastal erosion.

Temperature is relatively high throughout the year in Nigeria. The country's climate is controlled by two wind systems: the South West Trade Winds and the North East Trade Winds. Mean annual rainfall decreases from the coast inland. Much more important to agriculture are the following:

- rainfall is seasonal, with the wet season decreasing in length from the coast inland and a dry season which increases from the coast inland;
- rainfall varies from year to year; and
- drought occurs from time to time.

These facts affect the types of crops that can be grown in different parts of the country. They affect employment in rural areas. They also affect food supply.

Other aspects of climate which are important include:

- the occurrence of harmattan haze which is hazardous to civil aviation;
- the occurrence of destructive thunderstorms; and
- the occurrence of ocean and storm waves which cause catastrophic coastal erosion.

ANSWER TO SELF ASSESSMENT EXERCISE

- a. the southern tree and root crop zones
- b. the mixed root and grain crop zone
- c. the Northern grain crop zone.

6.0 TUTOR-MARKED ASSIGNMENT

What is the effect of drought on Nigerian Climate?

7.0 REFERENCES/FURTHER READINGS

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UNIT 2 NIGERIAN VEGETATION

CONTENTS

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
 - 3.1 Vegetation Cover
 - 3.2 Vegetal Resources
 - 3.3 Deforestation
 - 3.4 Forest Conservation
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Readings

1.0 INTRODUCTION

Vegetation means the plants which cover an area. Thus, when we talk of the vegetation of Nigeria, we are talking about the type of plants covering the country. These plants are made up principally of trees and grasses of various shapes and sizes.

There are several reasons why you need to know something about vegetation:

- Vegetation is what protect the land against harsh weather and against erosion of the soil;
- Vegetation supplies us with a wide range of products, including timber, firewood and fruits of various kinds;
- Vegetation provides habitats for wild animals.

Wildlife which is another name for wild animals such as elephants, deer and antelopes, is important for several reasons:

- Wildlife supplies about 13% of the animal protein consumed in the country;
- Hunting of wildlife is an important occupation in some areas;
- Wildlife has recreational value. For example, many people visit our Game reserves and National Parks to derive pleasure from viewing wild animals in their natural habitat;
- Tourism based on wildlife could provide employment for rural people and bring foreign exchange to the country.

The objectives of this unit are stated below:

2.0 OBJECTIVES

By the end of this unit, you should be able to:

- draw a map of Nigeria showing the main vegetation belts
- describe the main characteristics of these vegetation belts
- discuss the importance of vegetation to the country's economy
- explain the main causes of deforestation in the country's economy
- discuss the main consequences of deforestation.

3.0 MAIN CONTENT

3.1 Vegetation Cover

There are two main types of vegetation in Nigeria: forest and savannah. Forest is a type of vegetation which is dominated by woody plants called trees. These trees grow so close together that their crowns touch one another completely covering the ground. Because this cover prevents most if not all the rays of the sun from reaching the ground, grasses are either absent or few.

Savannah is a type of vegetation in which the ground is covered by grasses among which there may be some trees. Such trees may grow close together, forming a woodland or they may be far apart, forming a parkland.

In Nigeria, these two types of vegetation occur as east-west belts. The forest belt, covering about 20% of the country is to be found in the wetter south, extending inland from the coast. The mean annual rainfall is over 1300mm and the rainy season is at least eight months long. The Savannah belt covers the rest of the country where the mean rainfall is less than 1300mm and the rainy season is less than eight months long.

Each of these two vegetation belts is divisible into three vegetation zones as shown on Figure 5.1. Let us now look at the main characteristics of these vegetation zones.

Mangrove Forest

This type of vegetation covers a zone which is about thirty to fifty kilometers wide along the coast.

Because:

- The land is flat;
- Mean annual rainfall is very high;
- There are many lagoons and creeks which often overflow their banks;
- Sea water rushes onto the land during high tides;
- The area is waterlogged and the swamp waters are salty. Only plants which stand these conditions can grow in this area.

The vegetation is dominated by the mangrove trees of which there are several species. Reaching the heights of only 2.5 metres on land which is relatively dry, mangrove trees usually attain heights of ten to fifteen metres. They grow close together, forming a tangled mass with many roots which stick out of the swampy soil. Coconut palms grow profusely along the coastal beaches.

One of the species of mangrove, the red mangrove, yields wood which is used for pit props. Other species are used for boat and canoe building.

The mangrove swamp forest had not, until recently been greatly modified by man for several reasons:

- there are relatively few people living in the zone and so deforestation has been limited;
- access is difficult because there are few roads, the land is swampy and the vegetation is virtually impenetrable;
- the high temperature and the abundant supply of water ensure that plants grow quickly again when they are cut down.

However, since the 1960s petroleum exploration and exploitation have led to clearing of the vegetation in many areas to make way for access roads, pipelines, oil installations and housing development.

Fresh Water Swamp Forest

The environment is very similar to that of the Mangrove Swamp Forest except that the tide does not reach the zone. Therefore the swamp is fresh water swamp and fresh water plants are to be found. The most common of these plants is the raffia palm, much valued for the wine that is tapped from it and also for its leaves which are used in craft industries.

Tropical Rain Forest

Except in the area of the Niger valley where it is narrow, this vegetation zone extends across the country from the Benin border to the Oban Hills. High temperatures, high rainfall and a long rainy season, combine to favour plant growth throughout the year. In its natural form, the vegetation is dominated by a great variety of tree species with the crowns that are arranged in three distinct layers or storeys:

1. **The Ground Storey:** As the name implies, this is found at the ground level and consists of shrubs, herbs and some grasses. These form a dense tangle wherever they have access to sunlight, as along roads, rivers and man-made clearings.
2. **The Middle Storey:** This is made up of trees which grow to heights of eighteen to twenty-four metres. Their branches often intertwine and their crown forms a continuous mass or canopy which shuts out the sun from the ground storey. There are many hundreds of species of these trees and at any one time some are shedding their leaves, others are flowering and yet others are bringing forth new leaves. Over all, the forest appears evergreen.
3. **The Top Storey:** The top storey is made up of large trees, thirty to sixty metres tall, shooting above the middle storey. Their crowns form a discontinuous canopy over the forest. They include trees of great value for their timber, such as iroko, mahogany, afa and Sapele.

In addition to the plants which form the three storeys, there are many other plants in the tropical forest which depend on other plants for their food or for support or for both. They include:

- i. Parasitic plants which attach themselves to other plants and derive their food from them;
- ii. Saprophytes which attach themselves to dead plants and get their food from them;
- iii. Climbers which grow from the ground and climb their way up the trunks and branches of other plants; and
- iv. Epiphytes which also climb up other plants but have roots that dangle in the air.

Because of human activities tropical rain forest such as has been described above is now to be found mainly in a few remote areas. It occurs as a narrow broken belt just to the south of Ondo and the Idanre Hills, stretching from the Osun Valley to the Benin River in Edo State. It also occurs between the Cross River and the Nigeria-Cameroon border

as well as in the foothills of the Obudu Plateau. The human activities which have contributed to the disappearance of Tropical Rain Forest from most of the areas it used to cover include:

- Food crop cultivation
- Establishment of export crop plantations (cocoa, oil palm and rubber);
- Lumbering;
- Establishment of exotic tree plantations (such as teack and gruelina);
- Road construction; and
- Urbanization.

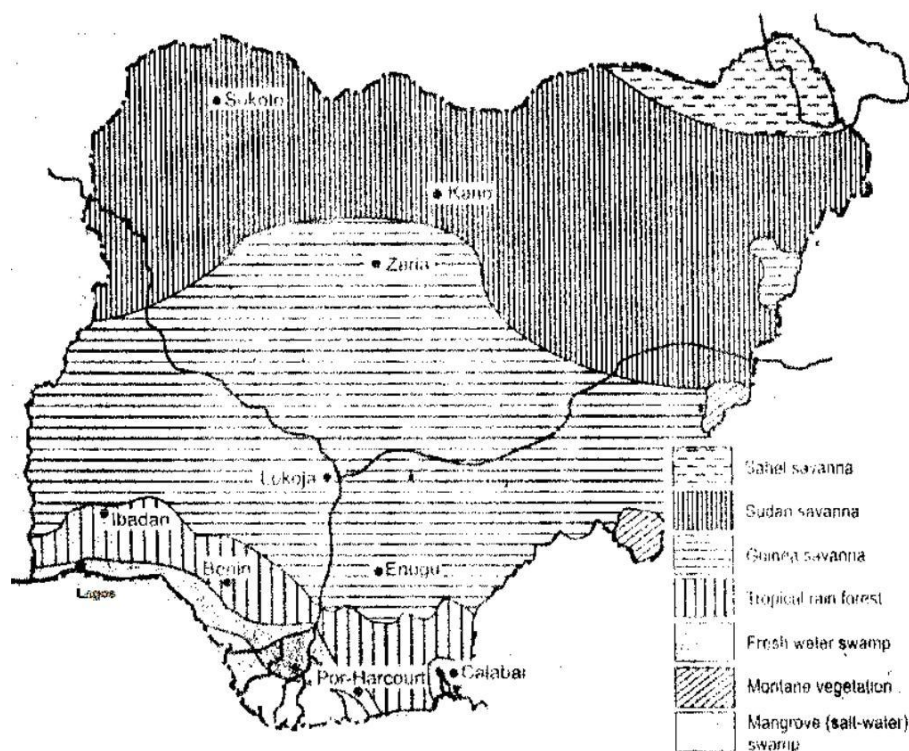


Fig. 7.1: Vegetation Belts of Nigeria

Guinea Savannah

This is the widest of the vegetation zones of Nigeria, covering almost half its area. It is found in areas with a mean annual rainfall of between 1000 and 1500mm and a rainy season of six to eight months. The vegetation is made up of tall grasses and trees which vary in density from place to place. The most of which, have umbrella-shaped canopies become smaller as we move northwards. They shed their leaves during the dry season.

The Guinea Savannah is extensively burnt during the dry season.

In the wetter parts of this vegetation zone, forest vegetation occurs along river valleys where soil moisture conditions are better than on the uplands around. These forests are called gallery forests.

Sudan Savannah

Sudan Savannah covers areas where the mean annual rainfall ranges from 650 to 1000mm and the dry season is six to eight months long. The vegetation consists of short grasses, 1.5 to 2 metres high and scattered trees which are much smaller than those found further south. Trees include the acacia, the baobab and the dum palm.

The Savannah belt is heavily populated and covers large areas, the natural vegetation has been replaced by farmland and fallow land.

Sahel Savannah

This is found in the extreme northeastern corner of the country where mean annual rainfall is less than 650mm and the season is longer than eight months.

The vegetation cover is mainly grass, which is short and tussocky. The most important tree is the acacia. Tall trees are to be found on the seasonally flooded areas around Lake Chad. The area supports a large population of cattle, sheep and goats.

Montana Vegetation

This is a special type of vegetation found on the Jos Plateau and on the eastern Highlands. It consists of short grasses and very few trees.

3.2 Vegetal Resources

A country's resources are those things, natural as well as man-made, which the country has and can use to increase its wealth. Therefore, the vegetal resources of a country are these things which the vegetation covers of the country supplies which can be used to increase its wealth. The vegetation cover of Nigeria supplies it with a great variety of useful products. These include:

- **Firewood.** This is easily the most important source of energy in the rural areas of Nigeria as well as among poor urban residents. There is a booming trade in firewood in Nigerian towns such as Kano, Maiduguri, Sokoto, Jos, etc. Sometimes the firewood is first converted into charcoal which is easier to transport.

- Wood for furniture, building, tool handles, packing cases, sculpture, etc. For a long time, Nigeria was a major exporter of tropical timber. But depletion of the rain forest and a rapid increase in the rate of domestic use of timber has forced the government to ban timber exports.
- Transmission poles for electricity and telephone lines.
- Oil and fat extracts from plants such as the oil palm and the shea butter trees.
- Beverages and stimulants such as palm wine.
- Tannin and deges for the textiles and leather industries.
- Fruits, leaves, roots, flowers and nuts, which are eaten as food.
- There are over 170 woody plants of nutritional importance in the forest zone alone. These plants are major and cheap sources of vitamins, minerals, carbohydrates and fats.
- Fodder for domesticated animals. Much of Nigeria's livestock industry depends entirely or almost entirely on natural grass and tree leaves.
- Medications. Herbalists or traditional healers depend to a large extent on plant resources for the drugs they use.
- Honey. Much of the honey consumed in the country is collected from the wild.
- Meat from the wildlife.

The list of useful products derivable from our vegetation cover has by no means been exhausted. We may summarize by simply saying that Nigeria's natural vegetation provides us with:

- Very many useful products;
- Employment for many people who gather these products;
- Income for people who sell these products and for government which gets tax on trees felled for timber.

All of these benefits of our natural vegetation are unfortunately being lost at an increasing rate as a result of deforestation.

SELF ASSESSMENT EXERCISE

Mention some human activities that have contributed to disappearance of Tropical Rain Forest in Nigeria.

3.3 Deforestation

Deforestation is the removal of forest and other natural vegetation from an area without replacing it. It is on the increase in Nigeria as a result of

population growth and the increased tempo of economic activities such as:

- Timber exploitation
- Farming
- Urbanization
- Bush burning
- Firewood collection
- Grazing
- Construction of roads, dams and other infrastructure
- Oil exploration and exploitation

3.4 Forest Conservation

By the late 1800s and early 1900s, British officials were already concerned about the rate of deforestation and the possibility of Nigeria's natural vegetation being unable to supply the benefits described above. The colonial administration decided on a policy of creating forest reserves. These are areas which are set aside and in which certain activities such as farming and timber exploitation are not allowed. In some, called game reserves and National Parks, hunting is not allowed.

The colonial administration planned to reserve 25% of Nigeria's land area. In the end, only about 10% of the country was set aside as reserves and these are scattered all over the country. This percentage is small compared with the percentage of the land reserved in countries such as France (25%), U.S.A (33%) and Japan (67%).

Unfortunately, even the small area of Nigeria which has been reserved, is under tremendous pressure from the human activities listed above and some forest reserves or parts of them are being exploited.

4.0 CONCLUSION

In conclusion, we can say that the vegetation cover of Nigeria is of great importance to the physical environment of Nigeria as well as to the economy, especially in rural areas where it supplies employment, income and many useful products. Therefore the threat posed to the vegetation by human activities is a threat to the economies of our rural areas.

5.0 SUMMARY

About 20% of Nigeria is covered by forest of which there are three types: Mangrove Swamp Forest, Freshwater Swamp Forest and Tropical Rain Forest. About 80% of the country is covered by Savannah which may be sub-divided into Guinea, Sudan and Sahel Savannah and Montana Vegetation.

The vegetation of Nigeria is important because it provides people with:

- Very many useful products;
- Employment in rural areas; and
- Income

The natural vegetation of Nigeria is being removed at an alarming rate as a result of human activities. The colonial administration set aside about 10% of the country as forest reserves but these forest reserves are under increasing pressure from these same human activities.

ANSWER TO SELF ASSESSMENT EXERCISE

- a. Food crop cultivation
- b. Lumbering
- c. Road construction

6.0 TUTOR-MARKED ASSIGNMENT

Enumerate the usefulness of some vegetal resources.

7.0 REFERENCES/FURTHER READINGS

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UNIT 3 MODES OF TRANSPORT

CONTENTS

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
 - 3.1 Rail Transport
 - 3.1.1 Historical Development
 - 3.1.2 Characteristics and Organization
 - 3.1.3 Traffic Patterns and Trends
 - 3.1.4 Prospects
 - 3.2 Road Transport
 - 3.2.1 Historical Development
 - 3.2.2 Structure and Organization to Road Development
 - 3.2.3 Road Transport in the Third National Development Plan
 - 3.3 Air Transport
 - 3.3.1 Nigeria Airways and Fleet Strength
 - 3.3.2 International and Domestic Traffic
 - 3.3.3 The Role of Air Transport in Nigeria's Development
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Readings

1.0 INTRODUCTION

This unit focuses on three important modes of transport in Nigeria (as related to tourism) which have played and are playing, and will continue to play very significant roles in the social, political and economic and tourism development in Nigeria. The three modes are rail, road and airline, all of which require conscious policies, heavy capital investments and continuous maintenance organizations to bring into existence their networks, terminals and rolling stocks and to keep these and other supporting industries functioning effectively to the satisfaction of more than 95% of the transport needs of this country.

Each of these modes will be discussed briefly in each of the three sections into which this unit has been divided with specific reference to their historical development, characteristics, developmental impact on the Nigerian economy and the prospects and programmes of the Nigerian governments for their further development.

2.0 OBJECTIVES

A tourist can travel by a variety of means. Hence, it is necessary for both the tourist as well as the tourism professional to familiarize themselves with the various modes of transport. After reading this unit, you should be able to:

- learn the stages of development of various modes of transport
- identify the different modes of transport
- appreciate the importance of transport in the promotion of tourism
- understand the need of a national transport policy.

MAIN CONTENT

Rail Transport

3.1.1 Historical Development

The advent of the railway marked the beginning of the modern system of wheeled transportation in Nigeria. Unlike in European countries, Nigeria jumped the chariot stage by changing from human portorage to rail transport in the long-distance movement of people and commodities across land.

The railway was begun in 1898 with the Lagos-Ibadan line which was completed in 1901 and later extended to Jebba in 1909. With the opening of the Jebba Bridge, the Lagos-Jebba line was linked in 1915 with the Kano-Baro line which had earlier been completed in 1911. East of the River Niger, another line had begun from Port Harcourt, reaching Enugu in 1916 and was later extended to Jos and Kaduna, thus linking the Western and Eastern lines. Jos was linked with Zaria in 1912 by a narrow-gauge line designed for the evacuation of tin from Jos Plateau. This narrow-gauge line, called the Bauchi Light Railway was closed in 1957. Apart from the two main lines, branch lines were also built from Zaria to Kaura Namoda, Kano to Nguru and Ifo to Idogo.

The conception and development of the Nigeria Railways were motivated by strategic as well as commercial reasons. It was the hope of the planners that the extension of the railway to northern Nigeria would facilitate the economic development of the territory and the evacuation of its agricultural exports, namely cotton, groundnuts, shea-nuts, hides and skins (Tanuno, 1964).

In 1953, a World Bank Mission visited Nigeria and recommended an extension of the railways or the construction of a heavy traffic highway if Nigeria was to meet an anticipated expansion of agricultural production in the north-eastern part of the country. The mission observed that the choice between road or rail transport for the new area must be based on the total cost of either mode to the community and on the possibility of making the users of the facility share the cost. Stressing the need for a decision to take into account the traffic potential of the developing north-east, the mission concluded that the railway alternative was likely to prove more advantageous in the end. The government opted for the railway which was begun in 1958. In 1962 the first section of this 644 kilometre Bornu Extension was completed with the opening of the Kuru-Gombe line, while the remaining section was opened in 1964. With the addition in 1966 of a 9.6 kilometre branch line from Alesa Eleme Oil Refinery to Elemenwa in the Port Harcourt to Enugu line, Nigeria now has a total of 3505 kilometres of single-track, metre-gauge railway connecting the two principal seaports, Lagos and Port Harcourt, with the major urban centres in the interior.

3.1.2 Characteristics and Orgainsation

The Nigerian Railways are wholly owned by the Federal Government. Starting as a government department in 1898, the railways became a statutory body in 1955 when the Nigerian Railway Corporation assumed full responsibility for managing and operating the railway systems as a commercial undertaking, although the Federal Government still retains general powers of control over its policies and rates. By linking the major producing and heavily populated parts of the country with one another and with the two premier sea ports, the Nigerian Railways provide opportunities for long-haul bulk traffic between the northern and southern parts of the country. However, the axle load permissible on the rail system is limited by several stretches of the light-weight rail, while operating speeds are restricted by long distances of curved track and steep gradients (Fed. Republic of Nigeria, 1975).

In terms of rolling stock, the Nigerian Railway Corporation owns the entire fleet of locomotives, goods wagons and passenger coaches in use in the country. Its stock of locomotives has increased from 273 mainline and shunting locomotives in 1955 to 353 in 1974. As a result of a vigorous dieselization programme, the number of steam locomotives has been reduced from 273 in 1955 to 176 in 1974 while the diesel locomotives have increased from zero in 1955 to 177 in 1974. The total stock of goods used for revenue traffic had exceeded 6000 by 1975 while passenger coaches used for scheduled trains were expected to be over 400 by 1975 (Fed. Rep. of Nigeria, 1975).

In terms of the actual number locomotive engines in use, the position calls for improvement. Both the steam and diesel engines have a depressing record of breakdown which seriously affects the availability rates of the engines. For instance, in 1974, the availability rates were only 18% for steam and 54% for diesel engines, the principal reason being the high incidence of defects and the large proportion of engines under or awaiting repairs in the maintenance department. With growing dieselization, the Corporation should be able to take advantage of the lower running cost and greater kilometerage of the diesel engines. With the diesel engines having an average cost per engine-kilometre of about one-fourth those of steam (since 1967) there is no reason why the steam engines cannot be phased out completely to enhance the overall efficiency of the system.

Traffic Patterns and Trends

Federal government investments in the Nigerian Railways have been increasing steadily, especially since independence. During the 1962–68 plan, a total of ₦43.3 million was invested in the railways, while the 1970–74 plan witnessed an investment of ₦18 million out of an allocation of ₦81 million made to them.

Unfortunately for the railways, there has been a growing decline in its performances over the years with attendant operating deficits in its accounts. The Corporation's freight lifting have steadily declined from 3,051,000 tones in 1961–62 to 1,451,000 tonnes in 1971–72 before picking up to 2,010,000 tonnes in 1973–74. Similarly, the number of passengers has shown a downward trend from 12 million in 1962–63 to 4,670,000 in 1973/74.

Three main reasons can be adduced for this decline in the performance of the Railway Corporation. In the first place, as the nation's road network improves, bigger, faster and more comfortable trucks and passenger buses capture more freight and passengers from the railways, especially in the areas of light divisible goods for which the railways has no inherent advantages over road transport. Secondly, there has been a steady decline in the production and, therefore, the exportation of those traditional export crops (particularly groundnuts, cotton and hides and skins) which used to form a significant proportion of the export freight moved by the railways. This has largely been due to increasing domestic processing and absorption of these crops by local industries.

The third and perhaps the most significant reason has been the deterioration of the railways goods transport services. While the first two factors are palm produce, kolanuts, livestock, cement, coal, numerous farms produce and, since 1971, petroleum products moved in

bulk-tank wagons between the two port cities (Lagos and Port Harcourt) and the major inland depots like Kano, Kaduna, Zaria, Jos and Maiduguri. The overall savings in road traffic accident reduction and lower transfer costs achieved by not using the next available mode, that is, road transport, appears very considerable, though difficult to quantify.

With the reduction in the exportation of groundnuts and cotton largely due to decline in production and increased processed by local industries, the share of export trade in the railway goods traffic had dropped from a peak of 55% in 1968/69 to 13% in 1973/74. With increasing competition from road haulers, this trend has enabled the railways to carry more local products on its internal traffic especially since 1971. This trend would, however, seem to augur well for the attainment of a nationally integrated economy, in the sense that most of the products being transported internally serve a vital role by complementing the nutritional and industrial needs of the different ecological zones of the country.

Prospects

The Federal Government has correctly diagnosed the problems of the Nigerian Railways (already discussed above), and is prepared to effect a drastic modernization of the system. To this end, a total sum of ₦986 million has been allocated to the railways during the current plan period. Out of this amount, ₦785.4 million is earmarked for completing the first phase of the construction of a standard 1.435-metre gauge railway system, parallel to the existing lines. A total of 960 kilometres is supposed to be completed by 1980, assuming that the gross underspending that was experienced by the railways during the 1970 – 74 periods is avoided.

These railway development projects would include two new lines – the Ashaka railway extension to the Bauchi Cement Factory, on which ₦10 million should be spent, and the 194 kilometre Oturkpo-Ajaokuta extension on which ₦108 million should be spent. The latter extensions help to transport cokable coal from the Lafia area to the proposed iron and steel complex at Ajaokuta (Fed. Rep. of Nigeria, 1975, p. 234-247).

With the current efforts at achieving complete dieselization and modernization of the railway gauge to conform with international standards, one can hope for a brighter prospect and more effective role for the Nigerian railways.

SELF ASSESSMENT EXERCISE 1

In your own opinion, enumerate reasons that led to the low level of operations of the Nigerian Railways.

Road Transport

3.2.1 Historical Development

In its report *The Economic Co-ordination of Transport Development in Nigeria*, the Stanford Research Institute aptly stated that “the economic history of Nigeria is largely the story of the opening up of its vast areas by various forms of transport, resulting in economic growth which, in turn, stimulated the demand for transport” (Robinson, 1961, p. 36). Indeed, one can go further to say that the twentieth century developmental history of Nigeria is the history of the extension and consolidation of the frontiers of social, political and economic development by means of road transport.

The history of road transport in Nigeria dated back to the first decade of this century when the existing bush paths were developed into motorable routes which were designed to serve two main objectives. First, they were meant to extend the commercial hinterlands opened up by the government railways for the evacuation of local export products, by linking up the nearest urban centres with the major railway stations. In this way, Oyo was linked with Ibadan in 1906 by a railway operated road transport service and later, Oshogbo with Ife, Ilesha and Ogbomosho (Walker, 1955). The second objective was to “reduce the strain thrown on the inland provinces in the provision of porters” for the British colonial officials.

After an initial period of slow growth, occasioned by financial and manpower constraints, the total length of road constructed and maintained by the governments and native authorities rose to about 51,000 km in 1964 and 74,000 km in 1960, out of which only 11% were tarred (Robinson, 1961, p. 137). By the end of the current plan period, there should be at least 100,000 km of roads of all classes in the country.

3.2.2 Structure and Organization of Road Transport

With the exception of community roads in the rural areas of the country, the planning and the development of the trunk and feeder roads are the responsibilities of the federal, state and local governments, all of which have been giving road development a well-deserved priority both in the development plans and in the annual capital programmes that have been earmarked for road development by the federal and state governments

during the Third National Development Plan. Overall, the nation is planning to spend one out of every six naira on the development of roads during the 1975–80 plan period. This will amount to 72.84% of the total plan allocations to the entire transport sector.

Apart from the road networks and terminals which are public property, almost every other aspect of the road transport industry in Nigeria belongs to the private sector. The ownership and the operation of the goods vehicles are the responsibility of private entrepreneurs, although some state and local governments participate in the provision of passenger bus services on both intra-urban and inter-city routes. The bulk of passenger transportation is, however, still performed by private companies and individuals with vehicles ranging from the five-seater passenger cars to the 60-seater air-conditioned luxury buses.

The federal and state governments exercise supreme control and supervision over the licensing of drivers, the importation, registration and licensing of all types of motor vehicles, and the regulation and orderly flow of traffic. All these are achieved through the agencies of the licensing authorities, the vehicle inspection units of the Ministry of Works, the Nigeria Police Force, the law courts and the Board of Customs and Excise.

3.2.3 Road Transport in the Third National Development Plan

The planning, development and maintenance of the road transport system vis-à-vis the other modes of transport available in the country have been largely conditioned by the principles of equity and efficiency, and the possibility of limiting public investments to mere provision of basic infrastructural facilities while the private sector provided the mobile facilities for the internal movement of goods and persons. While it is true that “private road transport companies can be induced through government regulations to operate at optimum scales” (Filani and Osayimwese, 1974, p. 391), it appears that there is no escape from public mass transit system in the urban centre, if the growing traffic chaos, congestion, delays and the attendant manpower and material losses are to be arrested. Unfortunately, however, the Nigerian experience in the provision of mass transit in the urban centres has been a dismal failure. For passenger and commodity movements outside the major urban centres, a properly regulated private-sector system can adequately cope with the existing traffic on rural-urban, rural-rural and inter-urban routes. There are indications that satisfactory progress is being made in these areas, with the exception of some rural-rural and rural-urban routes which are poorly served by vehicular transportation. In such cases, the gaps seem to have been created by the inability of the

local governments or communities to develop the existing footpaths into motorable roads.

SELF ASSESSMENT EXERCISE 2

Discuss how significant the road transport is to tourism in Nigeria.

Table 1

Roads Designated as	Percentage Participation		
	Federal	State	Local
Federal	90	10	-
State	50	50	-
Local	33⅓	33⅓	33⅓

3.3 Air Transport

Transportation today constitutes one of the major features of the economic development of Nigeria as it does for any other country. In recent years the country has experienced an unprecedented general economic boom which has led to the increased diversification of industrial and commercial activities. Thus the movement of goods and people has become critical to the continued development of the country’s economy. Because of its inherent advantage of speed, air transport has played a big role in passenger transport, especially, and has therefore contributed to the country’s development. The boom in the economy has enhanced the standard of living of many Nigerians such as businessmen and women, and professionals, who now travel by air not only to different parts of Nigeria, but also to various parts of the world.

The general increase in the demand for air transport and the Federal Government’s realization of its potential role in Nigeria’s continued economic development have resulted in ever increasing capital investment in the aviation industry. For the past fifteen years capital investment in air transport has been skyrocketing. For example, in the 1962–68 National Development Plan, capital expenditure on air transport (Civil Aviation and Nigeria Airways) amounted to ₦13.9 million (Fed. Rep. of Nigeria, 1962). This figure increased about four-fold to ₦51.3 million in the Second National Development Plan, 1970 – 74 and constituted 10.6% of the total capital investment in the transport sector (Fed. Rep. of Nigeria, 1970). In the current Third National Development Plan (1975 – 80) a total of ₦ 527.9 million was earmarked for air transport and represented 7.2% of the total investment on the transport sector (Fe. Rep. of Nigeria, 1975). In other words, capital investment in air transport in the Third Plan is about 38 times that of the First National Development Plan 15 years previously.

3.3.1 Nigeria Airways and Fleet Strength

Nigeria Airways was established in October 1958 as a joint venture between the Nigerian Government, Elder Dempster Lines, and the British Overseas Airways Corporation (BOAC) with shareholdings of 51, 32 $\frac{2}{3}$ and 16 $\frac{1}{3}$ % respectively (Stanford Research Inst. 1961). The Airways thus took over the operation of domestic flights from the disbanded West Africa Airways Corporation (WAAC) which had been operating commercial aircraft within the country since 1946 (Filani, 1975a). In 1963 the Nigerian Federal Government bought out the other share-holders and Nigeria Airways became wholly-owned by the Nigerian government. The airline has a monopoly for providing domestic air services in Nigeria. It is also the national flag carrier for international services along the West African Coast the airline operates flight to Abidjan, Accra, Robertsfield, Freetown, Bathurst and Dakar and also on the recently opened routes to Lome, Niamey, Cotonou and to Nairobi, Kenya. The Nigeria Airways is in pool agreement with British Caledonian Airways and together they account for over 50% of Nigeria's international traffic to London, Rome, Amsterdam, Frankfurt and New York.

In 1967 Nigeria Airways operated a fleet of nineteen aircraft consisting of two each of Boeings 707 and 737 and one DC 10-30 aircraft used mainly for international flights; seven F.28 jets, and seven Fokker F.27 propeller aircrafts used mainly on domestic routes. The F.28 aircraft operate the West African Coast Services and the major lines of domestic services from Lagos to Kaduna-Kano; Benin-Enugu, and to Port Harcourt-Calabar.

Apart from Nigerian Airways other major international airlines which operate flights to Nigeria include Lufthansa, UTA, Swissair, Scandinavian Airlines, KLM, Aeroflot, British Caledonian Airways, Ethiopian Airlines, Air Zaire, Air Afrique, thereby linking Nigeria with the world's socio-economic and political centres. Within Nigeria itself, several charter companies operate additional flight in small aircraft from Lagos to the main economic centres in the southern parts of the country. Such companies include Pan African Airline, Aero Contractors Company, Delta Maritime and Aeronautical Company and Tropical Aircraft Sales Limited which provide non-schedule air-taxi and cargo services to locations approved by the Government; Bristol Helicopters Limited charters helicopters to the oil companies. Also some individuals, missionary and business groups, the Federal and State Government functionaries operate small fixed aircraft (Filani, 1975a).

3.3.2 International and Domestic Traffic

Within the last one and a half decades Nigeria has witnessed an enormous expansion in both domestic and international traffic. However, most of it has been in domestic traffic which has accounted for more than 70% of the total air traffic handled by Nigeria Airways. A comparison with other major African airlines shows the predominance of the domestic traffic. Research shows that of the eleven major airlines in Africa in 1972, Nigeria ranked 8th in terms of total number of passengers carried but fifth in terms of aircraft departures. Of the 286,769 passengers carried 200,628, or 70%, were in domestic flights. In other words more than two-thirds of passengers handled by the Airways were in domestic flights. On the other hand for airlines such as Air Algerie, Tunis Air, and Egypt Airlines more than two-thirds of their total passengers were carried on international flights. Which indicates that these airlines had a stronger and better foot-hold in international air traffic market than their Nigerian counterpart. The high percentage of domestic traffic for the now defunct East African Airways was due to the fact that services among the three countries – Uganda, Kenya and Tanzania were then regarded as domestic.

Table 2: African Air Statistics 1972

Airlines	Number of Passengers Carried			% of Total	Aircraft Departure
	All services	Inter-national	Domestic		
Air Algerie	788,995	507,964	281,031	35.6	14,327
Egypt Airlines	623,139	477,470	145,669	23.4	15,660
E. African Airways	563,673	209,447	354,226	62.8	25,757
Tunis Air	375,055	320,561	54,494	14.5	6,871
Air Zaire	327,798	91,542	236,256	72.1	8,054
Libyan Arab Airlines	327,242	184,956	142,286	43.5	7,415
Ethiopian Airlines	228,532	125,001	163,551	56.7	21,439
Nigeria Airways	286,769	86,141	200,628	70.0	14,484
Zambian Airways	230,085	18,557	161,528	70.2	10,810
Sudan Airways	133,424	73,863	59,561	44.6	9,062
Ghana Airways	131,738	51,858	79,880	60.6	5,638

Source: International Air Transport Association: Annual Statistical Report of World Air Transport Statistics, 1972

In terms of freight carried, Nigeria Airways did better on international flights. In the same year, 1972, 2355 tonnes of freight were carried by the airline. Of these 1643, or 69.8%, were on international flights while only 712 tonnes, or 30%, were in domestic flights. Thus, in 1972, while most of Nigeria Airways' passengers were on domestic flights most of its freight traffic was international.

A comparison between the total number of passengers carried and the number of aircraft departures shows that the average number passengers per aircraft departure for Nigeria Airways was only 20 compared with Air Algerie which recorded 54 in the same period. This low figure shows Nigeria Airways' poor performance in attracting passengers. This poor performance is however, more on international routes than on domestic routes, which have been recording high load factors comparable to world averages (Filani, 1975a).

Table 3: Percentage Share of International Air Freight between Lagos and Kano Airports 1960 – 1973

Year	Total Freight Percentage Share (Tonnes)							
	In-coming	Out-ward	Incoming			Outward		
			Lagos	Kano	Others*	Lagos	Kano	Others*
1960	741	451	87.2	12.2	-	78.3	21.7	-
1961	944	668	70.8	14.9	14.3	71.7	15.3	13.0
1962	1,040	782	86.5	8.5	5.0	78.8	11.5	9.8
1963	1,056	932	90.9	9.1	-	93.0	6.2	0.8
1964	1,506	1,055	90.0	10.0	-	83.5	15.3	1.2
1965	1,759	1,265	89.7	10.1	0.2	86.2	12.9	0.9
1966	1,592	1,303	90.1	9.9	-	87.1	12.2	0.7
1967	1,713	915	90.5	9.5	-	82.3	17.7	-
1968	1,913	1,325	88.1	11.9	-	79.3	20.7	-
1969	2,146	1,467	88.0	12.0	-	75.7	24.3	-
1970	4,227	1,521	81.3	18.7	-	93.2	6.8	-
1971	4,489	2,282	89.2	10.8	-	91.9	8.1	-
1972	4,001	1,165	87.8	12.1	0.1	84.5	15.5	-
1973	3,781	1,185	89.3	10.7	-	84.3	15.7	-

*Includes Maiduguri and Calabar throughout.

Sources: F.O.S Annual Abstracts of Statistics, Lagos, Nigeria, 1973.

3.3.3 The Role of Air Transport in Nigeria's Development

In a rapidly developing economy like that of Nigeria, the role of air transport cannot be overemphasized. In recent years air transport has contributed towards progress in commercial and other business transactions. However, the importance of air transport lies more in its future potential than in its past contributions to the nation's development.

4.0 CONCLUSION

The transport system in Nigeria still has a long way to go as far as development is concerned.

5.0 SUMMARY

- This unit has introduced you to a broad profile of different modes of transport existing in Nigeria (excluding water and pipeline transport).
- Starting from railway to air travel every travel, every mode of transport is important keeping in mind, the different physical conditions of our country and varied interests and demands of the commuters.
- What we need today is to develop an integral plan in order to move forward creatively and economically.
- With technology advancing everyday, transport industry needs reorientation accordingly and this is an essential pre-requisite for the development of tourism.

ANSWER TO SELF ASSESSMENT EXERCISE 1

- a) improvement of the nation's road net work
- b) steady decline in traditional export crops
- c) deterioration of the railways goods transport services

ANSWER TO SELF ASSESSMENT EXERCISE 2

It's significance can not be over emphasized in that without good transport system, tourism can not be practiced at all since peoples movement depends on effective transportation system.

6.0 TUTOR-MARKED ASSIGNMENT

Explain the roles being played by:

- i. the Private Sector and
- ii. the Federal and State governments in road transport network in Nigeria.

7.0 REFERENCES/FURTHER READINGS

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UNIT 4 DEMAND FOR RECREATION I

CONTENTS

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
 - 3.1 Land use
 - 3.2 Economist's Concept
 - 3.3 Land Management
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Readings

1.0 INTRODUCTION

At end of unit 1 of Module 2, we discussed the Pilgrimage and the grand Tour that is linked with wealthy social elite for culture, education and pleasure. All those words are related to tourism and recreation. In any society, there will normally and definitely be a demand for recreation, even though the degree of demand may vary from one society to the other, depending on the degree of civilization and level of development. This unit focuses on the demand for recreation.

2.0 OBJECTIVES

At the end of this unit you should have known much about:

- land use for recreation
- the economist's concept of land use
- how land is best managed for the purpose of tourism
- recreation and the relative pressure on rural land.

3.0 MAIN CONTENT

3.1 Land Use

Before contemplating the use of land for recreation either in the strategic terms of resource allocation or the tactical terms of optimum use of the existing pattern of resources, consideration must first be given to the question of the demand for recreation. A general introductory discussion of the demand for outdoor recreation quickly gives way to consideration of the nature of demand, its measurement and, finally, its relationship to use.

The outstanding characteristic of the changing pattern of demand for rural land over the past 50 years or so has been the multiple nature of demand for the tangible and intangible commodities which it provides. In addition, there is growing disparity between the demands placed upon rural land by rural communities, which may be considered directly dependent on the land, and by urban society, only indirectly dependent on it for everything other than countryside recreation. In this latter content, the justification for providing resources for outdoor recreation is largely dependent on the nature and extent of demand, much of it arising from urban areas (fig. 1)

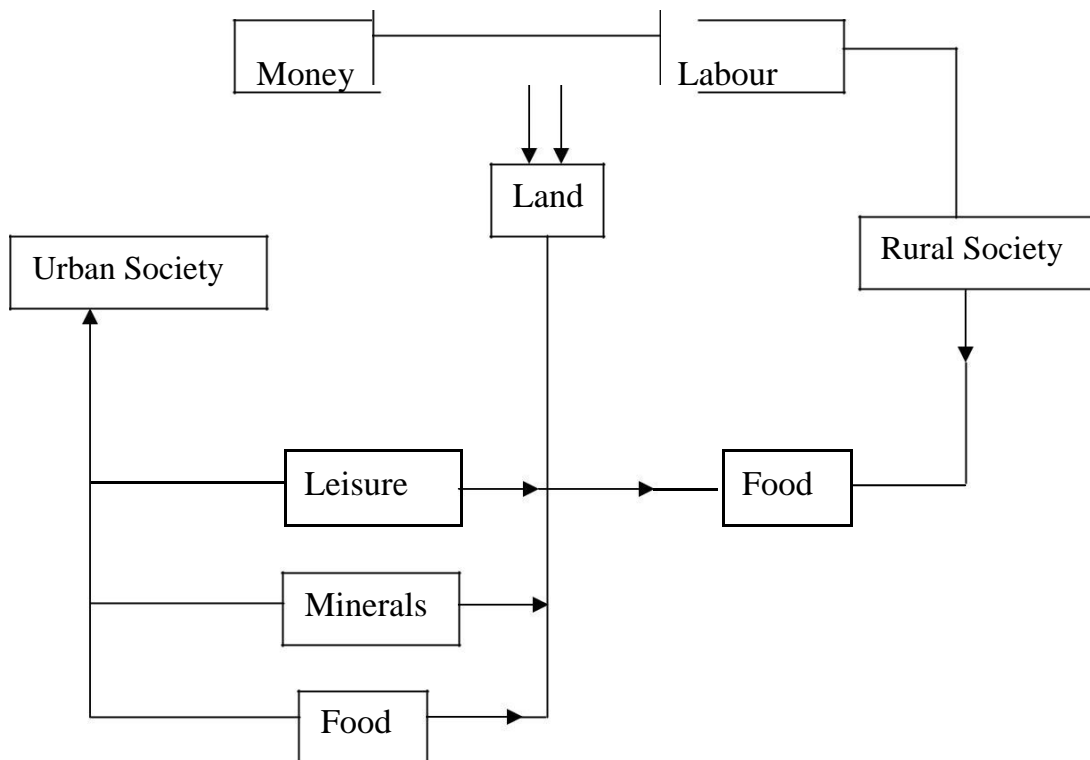


Fig. 1: The relative pressures on rural land

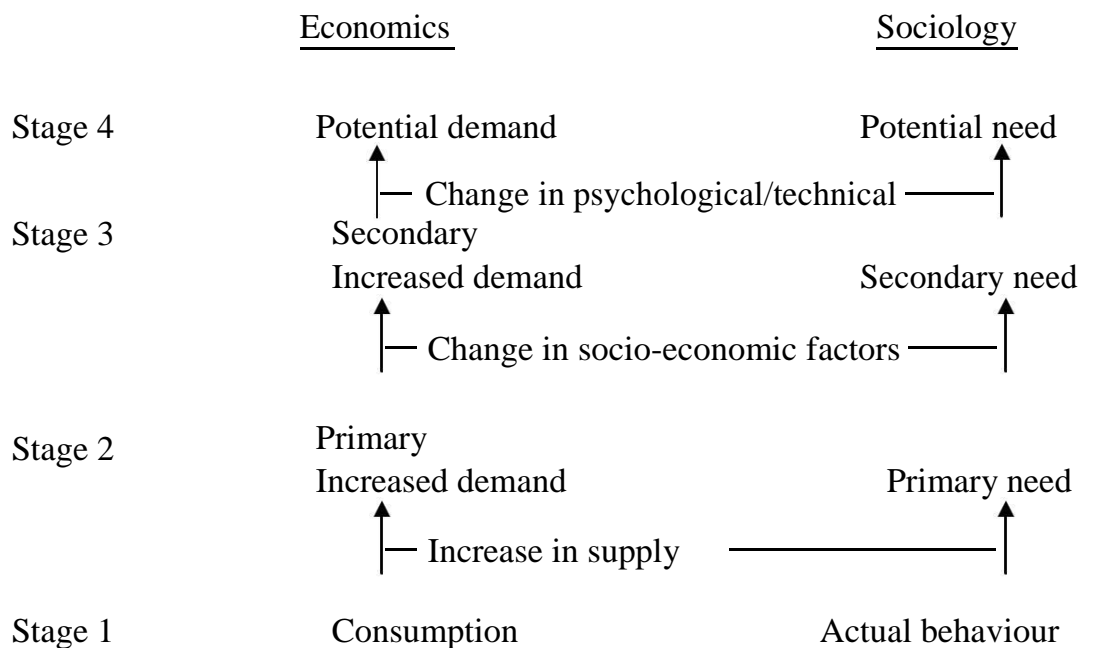
The global nature of the demand for outdoor recreation is of interest to the recreational land manager in that it provides him with a general framework within which more detailed consideration may be fitted, although as the British Tourist Authority/Keele University Pilot National Recreation Survey 1967 states of the pattern of recreation activity, only quite local and therefore limited and restricted studies are likely to reveal its full detail'. Despite the implied criticism of local studies, the static (i.e. non-distributive) nature of outdoor recreation means that for most practical purpose the national view must quickly give way to local study. Nevertheless we shall continue temporarily with an overall view of demand for recreation.

Numerous authors have commented on the lack of clarity in the general application of the term 'demand' to phenomena varyi ng from actual or

existing behaviour to potential or latent behaviour. An example often cited is that the number of visits to a site is not a measure of 'demand' but of actual behaviour or consumption and may simply be a component of real demand. Much of the confusion arises through the use of different terminologies to describe similar phenomena and is particularly apparent between economics and sociology.

At the first or lowest level of demand, where supply and demand are assumed to be in equilibrium, the economist's definition of consumption (site attendance) equates with the sociologist's definition of actual behaviour. This may, however, be a false situation; actual behaviour will be governed by the availability of facilities. Once these have reached full capacity, an ostensibly stable situation may conceal a frustrated demand. If excess demand exists, increasing the supply of facilities by creating new facilities or increasing the capacity of existing ones allows that demand previously frustrated by inadequate supply to be satisfied. This secondary level of demand may be termed the 'primary increased demand' by the economist, or 'primary need' by the sociologist. So far, we have been assuming that the underlying factors of demand - social and technical factors - remain constant this may not be so and changes on these underlying factors may lead to increases in demand. Changes in the socio-economic factors underlying demand (family incomes, leisure time, etc.) which increase demand, bring us to the third level of secondary increased demand or secondary need and further increases resulting from psychological or technical changes ultimately allow demand to increase to the highest level of potential demand or potential need (fig. 2)

Demand for Recreation



STUDENT ASSESSMENT EXERCISE 1

Why is the demand for outdoor recreation of interest to the recreational land manager?

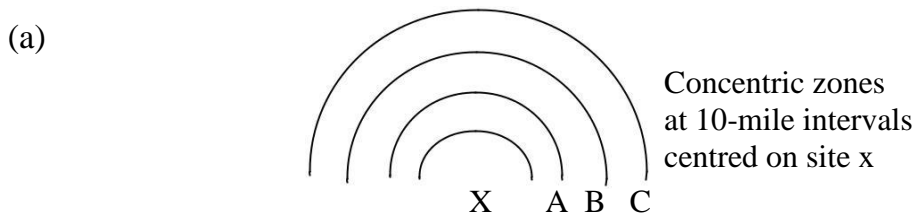
3.2 Economist's Concept

The rigour of the economist's concepts of demand, though valuable for analysis of precise, clearly definable matters, may be less useful in dealing with complex problem which, when dismembered into simple components, lose the inherent complexity around which the problem revolves. Paradoxically, the aggregate demand approach of the economist may be of less relevance to the site manager than the individual-orientated approach of the behavioural scientist. Nevertheless, the rigorous approaches adopted by recreation economists have resulted in clarification of some of the initially nebulous problems surrounding recreation demand. For example, one of the first problems encountered in submitting the consumption of recreational services to economic analysis is the difficulty of defining the commodity consumed and, second, assigning a value to that commodity.

The contribution of Clawson and Knetsch in 1966 was a major advance in this respect. They introduced the concept of the 'recreation experience', a composite commodity comprising:

- a) Anticipation and planning of the trip;
- b) The journey to the site;
- c) The on-site stay;

Recreation land Management

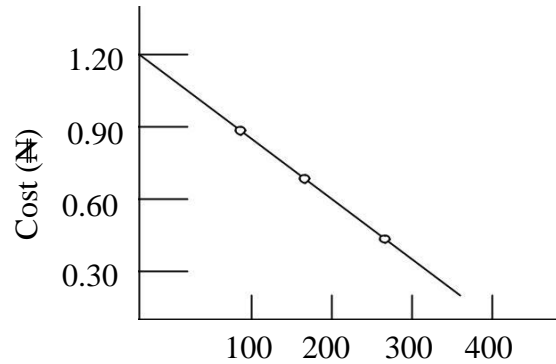


(b)

Linear zone	Distance x (m)	Cost of trip (N)	No of trips/week
A	10	0.30	300
B	20	0.60	200
C	30	0.90	100
D	40	1.20	0

Fig. 3

Change (₤)	Total no of Visitors
0	600
0.30	300
0.60	100
0.90	0



- d) The return journey;
- e) Recollection of the trip

This led in turn to estimation of the total benefit of the recreation experience and the price, or cost, of deriving that benefit. Initially, the derived price was expressed in terms of the cost of undertaking the journey. The simplest unit of measurement of the number of recreation experiences per site simply consists of the number of visits per unit of time to the site in question, while the cost of the trip for a non-priced site may be assessed by reference to a costed, distance-decay function. Plotting the cost of the trip against the number of trips per unit period of time, produces a derived demand curve (figs. 4 and 5).

The analysis may be extended to embrace a situation where a charge is made for use of the site in which case the total cost of the trip is the sum of the travel costs and the entrance-charge to the site. In consequence visitors from zone A now behave as visitors from zone B previously behave, with corresponding changes in the total number of visitors attending the site as the price varies (fig. 5). It should be noted that this analysis reflects the effects of changes in price. Numerous studies have been undertaken in Britain and elsewhere to examine this Clawson-type demand curve.

Clawson and Knetsch recognized, however, that demand for recreational facilities constitutes only part of the total demand encompassed by the recreation experience. Consequently site costs must be seen in the context of the overall cost of the trip. Although this and other techniques of demand analysis laying heavy emphasis on the travel behaviour of potential visitors may be capable of some adaptation of the value of potential visitors may be capable of some adaptation in attempting to reflect the true cost of travel (involving estimates of the value of time, ease of accessibility to the site, etc.), recreation participation is fundamentally a matter of individual rather than aggregate behaviour. Furthermore, the commodity is not of a uniform, homogeneous nature but determined by the perception of the individual: site attractiveness, the existence of substitute facilities and, above all, quality of

management are critical factors which if isolated from the analysis must detract from the overall utility of that analysis to the recreational land manager. Clawson and Knetsch themselves point out that 'if one knew all relationships involved and had reasonably accurate data for the magnitude of each factor in a given situation, one could estimate the volume of recreation that would be demanded, or how many visits a particular site would receive'.

The demand paradox faced by the recreational land manager rests on the problem of aggregating demand. The manager cannot manage for each individual visitor preference is necessary but the degree of aggregation is variable from site to site and manager to manager. Economic analysis takes little account of this variability of aggregation while the manager must determine the degree of aggregation which will be consistent with his management policy.

3.3 Land Management

A land manager cannot reasonably be expected to be thrust into the position of managing or developing recreational facilities with absolutely no knowledge from other sources. He must have some knowledge before he can exercise management judgment. Even the most sophisticated demand analysis leading to the construction of a demand model will ultimately simply constitute an aid to decision-making for the manager. Arguably the manager's own subjective opinion of the pattern of potential demand may offer an equally useful avenue of guidance, if properly analyzed. The use of subjective management. The argument is, rather, that oversimplified answers to complex problems may offer the manager little more than he started with; indeed, he may, for a variety of reasons, be persuaded to adopt what is ostensibly 'the' answer without adopting the qualifying assumptions that go with it. In this event he may be better advised to retain the inherent complexity of the problem and an appropriate form of analysis which will accept that complexity, e.g. the application of Bayesian techniques to subjective probability could allow the manager to make his own subjective assessment of a situation on the basis of the information available to him, i.e. retaining the inherent subjectivity of his assessment, but then processing that opinion in a rational and systematic way. Nevertheless, the use of such techniques do not dispense with the need for site-specific data which is an essential prerequisite for management planning.

Recreational land management is centred on the needs of the visitor (or consumer) at a given site. The commodity is created on site and is consumed there. The closeness of the relationship between manager and visitor is behaviour of the individual in an attempt to discover what makes him behave as he does.

Three of the basic issues in the psychology of consumption are:

(1) Motivation, (2) Perception and (3) Learning. Self-fulfillment probably constitutes the most widely postulated derived need motivating individual demand for recreation although there are many other 'drives' which motivate action. Perception - the interpretation of sensations - and learning are both subject areas susceptible to wide-ranging argument as to their relative and total significance. However, it is interesting to note that one of the principal areas of attention in the field of outdoor recreation- that of 'interpretation' - places fundamental reliance on learning, understanding, perception and motivation in encouraging the protection and conservation of valuation resources and, thereby, fulfilling an essential role in relation to resource management.

The social psychologist may equate 'motivation' with the impetus to current behaviour, while 'cognition' determines the nature of that the one most difficult to quantify yet which probably preoccupies managers most is the latter, 'attitudes' -potential behaviour lying at the focus of management planning.

Inevitably the recreational land manager is managing for groups of participants. Individuals assume a group identity the distinguishing features of which are of primary importance to the manager: frequency of interaction between members; patterns of behaviour distinguishing members of an identifiable group; patterns of behaviour distinguishing members of an identifiable group; individual association with groups and identification of a group by external observers. The status of a group or members within it, and the roles played by group members, may be significant to the manager in identifying visitor behaviour and communicating with existing and potential visitors. In this latter respect the manager must also be aware that for directed information to be well received by his intended audience it must be made consistent with the perceived role of the individuals in that audience. Leaving aside for a moment the problem of communicating with potential visitors, communication with on-site visitors is often ineffective, no matter how well intended audience. Consequently it becomes almost impossible to present the message in a manner appropriate to the audience.

SELF ASSESSMENT EXERCISE 2

Mention 3 of the basic issues in the psychology of consumption.

In the research into the demand for outdoor recreation there is a gulf between knowledge of existing and potential patterns of demand, i.e. latent demand. Recreational land management is a relatively recent discipline in a state of flux -who accurately forecast the rise and fall of

ten-pin bowling, the popularity of grass skiing or hang-gliding? How far removed these phenomena appear to be from previous patterns of behaviour. But although it is hazardous to identify patterns of latent demand by automatic extrapolation from studies of existing patterns of demand, the manager is investing capital and expertise in attempting to satisfy the demands of tomorrow's visitors as well as today's, effectively, he has two options: either he accepts a paucity of data and, therefore the inherent uncertainty of the situation and adopts management techniques appropriate to conditions of uncertainty (these are often mathematically complex); or he clarifies the area of uncertainty to enable himself to employ the rather simpler management techniques appropriate to conditions of relative certainty. It is this latter approach which we shall examine further in attempting to relate latent demand to land use.

Emphasis within the public sphere of countryside recreation has, since the National Park movement, and before, been placed on providing an environment of high natural attractiveness in the belief that this plays a major contributory role in the enjoyment of recreation. This assumption is, however, questionable, it being equal likely that for those enjoying countryside recreation emphasis is placed not on being, ipso facto, in the countryside but being actively or passively occupied in the countryside which forms a pleasant and attractive environment in which recreation may be enjoyed often in concert with others and often using equipment of one form or another. 'It seems that in many American families leisure time is used not so much for resting and relaxing as to acquire a great variety of skills and interests as well as social contacts.'

The continuing problems of evaluating demand effectively has given rise to criticism of the public sector, in particular, for failing to provide facilities for all sections of the community, criticism arising essentially from non-explicit management objectives in relation to the spectrum of need which exists. As discussed already, at the primary level need tends to be expressed in terms of participation. Provision geared to satisfying this level of need results in stereotyped facilities of the most basic nature – often simply a site and access to it. The visitors are left to their own improvisation to derive their own specific enjoyment from the site, in that the facilities do not provide entertainment, simply a pleasant environment in which visitors recreation for those visitors most prepared to entertain themselves – often the higher socio-economic groups. The example illustrates the potential confusion which arises in investment decisions and management policy in attempting to reconcile imprecise concepts of demand with unclear management objectives.

While there may be a tendency for the public sector to allow potential demand some expression by attempting to satisfy the primary level of demand: the private sector attempts to solve the same problem by

linking entrepreneurial ability with aggressive marketing techniques then quantifying its management effectiveness in converting latent demand into effective demand. Of these two approaches the latter presents a more serious attempt to probe the facets of latent demand. The techniques of marketing management offer the recreational land manager – in the public or private sector – greater immediate potential in exploring this nebulous area of which the manager must be aware even if he chooses not to exploit it.

4.0 CONCLUSION

In this unit, we have been able to examine land use in relation to recreation demand, the economist's concept of demand and how land could be managed in response to recreational demand.

5.0 SUMMARY

The importance of land availability cannot be over emphasized in tourism and recreation. Any form of tourism including recreational activities depends majorly on land availability since tourism and recreation can not be practiced in the air.

ANSWER TO SELF ASSESSMENT EXERCISE 1

Multiple nature of demand for tangible and intangible commodities which it provides.

ANSWER TO SELF ASSESSMENT EXERCISE 2

Motivation, perception and learning

6.0 TUTOR-MARKED ASSIGNMENT

The contribution of Clawson and Knetsch introduced the concept of 'the recreation experience' a composite commodity mention and discuss in just few lines each of the five composite community.

7.0 REFERENCES/FURTHER READINGS

Miles, C.W.N. and Seabrooke, W. (1977). *Recreational Land Management*.

UNIT 5 DEMAND FOR RECREATION II (MARKET RESEARCH)

CONTENTS

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
 - 3.1 Information Collection
 - 3.2 Consumer Orientation
 - 3.3 Participatory Research
 - 3.4 Selective Marketing Approach
 - 3.5 Marketing Plan
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Readings

1.0 INTRODUCTION

At the tail end of unit 7 the unit touched the idea of marketing in linking entrepreneurial ability with aggressiveness in converting latent demand into effective demand. As a follow up, this unit discuss some of the things you should know about market research as far as demand for recreation is concerned.

2.0 OBJECTIVES

After going through this unit, you should be able to explain:

- the collection of information about markets
- consumers comprising them
- consumer orientation
- how to carry out research in support of your marketing activities
- selective market approach
- the marketing plan.

3.0 MAIN CONTENT

3.1 Information Collection

The collection of information about markets and the consumers comprising them, its subsequent analysis and processing into the most convenient form for making management decisions is known as market research'. Information may be acquired directly by observation or

surveying and from secondary sources. Consumer observation may be a fruitful source of information for outdoor recreation, being particularly useful when researching at a fixed location whether this be a souvenir shop, country park or National Park. Various recording techniques such as time-lapse, aerial or infrared photography enable a wide variety of information to be objectively and systematically recorded. A wide variety of mechanical monitoring devices are available to assist the manager in 'observing' visitor behaviour, facilitating the subsequent identification of trends shown up by the collective results. Photographic evidence may also form the basis for surveying techniques.

Much market information arises from the use of surveys of one form or other and the choice of surveying techniques may have substantial influence on the effective identification of the potential market available: its size, the their perception of the commodity concerned. Much market research is applied to strategic aspects of demand on a national or regional scale. The manager, concerned with a fixed location and without the problem of overall allocation of the commodity, may be able to eliminate certain general market characteristics by predefining them, e.g. the geographic distribution of potential visitors. The use of secondary where he or she is new to recreational land management or is attempting to establish a new facility with limited previous experience of that enterprise.

In certain circumstances, the market for a product may be of greater significance than the product itself. It is certainly true in recreational land management that there are numerous examples of modest beginnings being expanded by attention to market requirements rather than simply conserving original resources. Two good examples of this being found at Beautieu, Hampshire, and Dodington near Chipping Sodbury.

SELF ASSESSMENT EXERCISE 1

What is the effect of survey on marketing?

3.2 Consumer Orientation

This consumer orientation may be viewed in marked contrast to the production orientation of the traditional enterprises associated with the rural environment -notably agriculture and forestry. In these cases emphasis is placed on maximizing output, particularly by harnessing new technology, and minimizing production costs. The satisfaction of customer demand by a greater market orientation to management calls for the subsequent co-ordination of the production or supply processes influencing the visitor.

The overall features of any perfect market are beyond the influence of individual suppliers and although the market for outdoor recreation is by no means perfect the restricted sphere of influence of each facility means that, in general terms, the market is beyond the control of a single operation. As far as the market itself is concerned we start with the fundamental truism that differences do exist between visitors. The initial implication of this will influence the management policy of the recreational land manager in that invariably choices will be made by the manager, explicitly or not, between potential visitors. This process of market identification and selection is known as market segmentation.

At the one extreme of absolute market differentiation it may be said that each individual visitor constitutes a significant market segment by virtue of the uniqueness of his needs. At the other extreme lies the policy of undifferentiated marketing where the peculiarities of individual visitors are ignored, attention being given to their common qualities in an aggregated market approach. Not surprisingly these extreme policies seldom occur. In the former case, the cost of tailoring production and investment to the needs of every individual visitor is prohibitively expensive while ignoring all individualistic factors, considering only the broadest market segment of the market, as in the latter case, may lead to situations of frustrated demand in the smaller segments and hyper-competition in the larger ones. Whether a differentiated or undifferentiated marketing policy is adopted, the necessity for market analysis remains.

In recreation enterprises the manager needs to identify categories of visitors with differing interests, susceptibilities, behaviour, etc. Certain conditions attaching to market research have been identified by Kotler which, as they become fulfilled, increase the relevance and usefulness of visitor characteristics or behaviour. The three conditions which he specifies are as follows:

- (1) Measurability - the degree to which information exists or is obtainable on various buyer's characteristics.
- (2) Accessibility - the degree to which the firm can effectively focus its marketing efforts on chosen market segments.
- (3) Substantiality - the degree to which segments are large enough to be worth considering for separate cultivation.

The difficulty associated with the first condition boils down to the effective identification of visitor preferences. Price for price and given equal opportunity, would visitor prefer, for example, to purchase an ice-cream or feed the dolphins? The second and third conditions are often associated with identifiable market segments and must be sufficiently substantial to warrant special marketing considerations (to some extent

this will be a function of the objectives of management), although it may be possible to identify a market segment which is inaccessible in isolation to others.

One of the justifications put forward for the rudimentary nature of many of the outdoor recreation facilities provided by the public sector and for the hesitancy of private landowners to commit land and capital to recreation provision is the fickle nature (elasticity) of demand bearing in mind the expense of specialized facilities and the unsettling significance of the substitute effect. Whether or not this intuitive argument is justifiable, the manager who has effectively utilized a policy of differentiated market segmentation has the advantages that; first, he is in a position to identify and compare marketing response differences of the various market segments to guide the allocation of his total marketing budget; and third, he can make finer adjustments to his enterprise management and marketing appeal.

3.3 Participatory Research

Research into participation in outdoor recreation has suggested a number of factors which have been shown to have an effect on site attendances and, as mentioned before, these simply correspond to many of the variables commonly used as a natural basis for market segmentation in many spheres of commerce, 'because they have proved to be good predictors of differential buyer response' (Kotler). A non-exhaustive list of segmentation variables, some which may not have been subject to research with specific reference to outdoor recreation, are given below with some comments by Kotler to explain their significance

- 1) Geographic variable (e.g. climate, infrastructure, population density and distribution): 'most sellers recognize geographic variations within their market.' Land managers have always contented with these variables and are probably as adept in considering them as other managers though their specific relevance to recreational enterprises may be relatively new.
- 2) Demographic variables (e.g. age, sex, income, occupation, education): have long been the most popular basis for distinguishing significant groupings in the market place. One reason is that these variables correlate well with the sales of many products; another reason is that they are easier to recognize and measure than most other types of variables. This suggests that the research in the field of recreation demand is now catching up to the levels accepted in business management.

- 3) Personality variables (e.g. gregariousness, conservatism, leadership, domesticity): 'for some products and brands, personality variables may lie at the bottom of differences in buyer behaviour... yet the final proof of the extent of personality segmentation must rest on statistical evidence. Sorely needed is a better set of tests for measuring personality difference'. Obviously the same problems exist in relation to recreation although some sites (mainly privately run) do attempt to obtain this type of visitor data. The noteworthy implication here is that business managers, aware of the inadequacies in this area, are seeking to improve their methods of assessment.
- 4) Buyer-behaviour variables (e.g. usage rate, buyer motive, visitor loyalty, price sensitivity, quality sensitivity): 'Variables which describe one aspect or another of the buyer relation to a specific product may be called buyer-behaviour variables ... and can be quite useful in segmenting a market.' This fairly mild comment conceals what constitutes possibly the most important category of variables for outdoor recreation, indeed the inter-relation of several of these factors may be the key to the optimum utilization of recreation resources in the light of the whole spectrum of demand to which they are subject.

Having considered the variable likely to have an influence on the existing or potential market, the manager should be in a position to determine his marketing strategy. He may decide upon an undifferentiated marketing policy, concentrating only on the factors common to the entire market; he may decide to market to all segments, adopting different plans for each (differentiated marketing) or to concentrate his marketing effort on specific market segments (concentrated marketing). In most recreational land management instances a concentrated marketing strategy is likely to prove the most practicable. Both undifferentiated and differentiated strategies are likely to be hampered by restraints on the availability of resources - unless they are outweighed by other factor such as the unique attractiveness of the site - and by the accessibility of the market which is likely to be constrained by geographic factors, if nothing else.

3.4 Selective Marketing Approach

In any selective marketing approach the manager must evaluate each segment to establish the value of operating in any given one. Each segment should be considered separately, then the potential of each, when aggregated together, will be a prime determinant of the marketing policy. An initial sieving will reduce the number of segmentation variables to those most significant to any given site and at this stage the

manager must identify conflicting variables which must either be reconciled or over-ridden. For example, on a site where emphasis is placed on a high-quality 'image' the fact that visitors may prefer to purchase cheap, but inferior souvenirs may be incompatible with the general image.

The marketing policy which is evolved should be worked into the management plan for the whole project and the manager must decide on the degree of market orientation to which the management plan will be subject. In so doing he must also distinguish between matters within that policy which may be implemented within the scope of site management and those which may require separate attention, which for the sake of definition will be referred to as 'marketing' in a specific sense. The selection of market segments will be facilitated by quantitative evaluation of demand stemming from those segments.

When a manager is faced with providing facilities to satisfy a composite demand complicated by cross elasticities of demand, he needs to define his market in a systematic manner which identifies its components without necessarily reducing complexity of their interaction. The discussion so far has rested on relatively quantitative aspects of demand. Further analysis is required to yield more quantitative data for market planning: three primary dimensions of demand measurement are suggested. Those dimensions are the nature of the product itself, its potential geographic distribution of the commodity. There has been a proliferation of management terms to describe different facets of demand relevant to different management purposes - goals, target, quotes, forecasts, etc. Most of these terms are applied to the market for a product or service or the share of that market available to a particular enterprise.

The recreational land manager may define the demand for the site and facilities offered for recreation over a given time period as the volume, in a known geographical area in a static marketing environment under a defined marketing programme. Volume of consumption is frequently expressed as a number of visitors to the site. Such a measure is useful when the site is relatively homogeneous - i.e. no outstanding feature - although preoccupation with visitor numbers may serve to encourage homogeneity in the provision of facilities. When the site or facilities on it are priced financial income or turnover may be appropriate measures of consumption. Problems of definition in this matter may arise where, for example, a car carrying a family group of five arrives at a site, three of the group leave the car and enter the site leaving the remaining two in the car: despite the fact that all five may benefit from the recreational experience, should the two persons remaining in the car be counted as visitors? The answer will depend on the management objectives for the

site - if they are simply geared to provide public enjoyment the answer is likely to be 'Yes', but if they are also seeking to derive financial revenue the answer will be 'No'. Similarly management objectives will determine the matter of defining the visitor spectrum which may embrace all or part of the total market. The geographic definition of the market area should be as explicit as possible and for the local market this does not normally present difficulty. However, the opportunity should not be lost of identifying as yet unforeseen areas of demand, possibly remote from the site but from which demand may nevertheless materialize.

Most managers will be operating in an environment defined by a framework of political, legal and financial constraints over which they have little or no influence. Nevertheless, changes in these factors may have a far-reaching influence on management planning and therefore, when forecasting market demands, the manager be aware of the factors to which he plans will be sensitive and the extent to which changes in these variations will invalidate his forecasts. This sensitive will, among other things, be a function of the time period over which the plan extends - the larger the term, the greater the likelihood of forecasts being adversely affected by unforeseen influences. The time period over which demand is to be forecast. Having considered the effect of the external management environment, the internal environment, i.e. that over which the manager has complete control, will also influence market demand. For example, variations in price and/or quality are likely to result in changes in demand (depending on the elasticities of demand) and the rate of change will indicate the sensitivity of the market to those changes. The extent to which management plans are orientated towards the behaviour of the market will determine responsiveness to market changes.

The degree to which marketing-orientated management can influence market demand must lie between the limits identified by the level of primary demand (site attendance) which occurs without stimulating demand and total potential demand. The difference between these two limits represents the marketing sensitivity of demand. If the planned or forecast level of demand for a site exceeds primary demand, that forecast will be determined by the market demand equating to a given level of marketing effort. Similarly where there is competing supply for specified market segments, it is likely that the proportion to the specified market segments, it is likely that the proportion to the marketing effort there (normally measured by reference to the budget allocated to marketing), the effectiveness of that expenditure and the elasticity of the market share with respect to effective marketing effort. In forecasting the planned market share for an enterprise, some estimate must also be made of the magnitude and efficiency of the expenditures

of competitors on their own marketing plans. In a credible base for estimating future market shares, but stability is seldom present in the marketing of recreation facilities and in more volatile circumstances forecasts must be made from assumptions which are likely to require continual revision. Depending on the site capacity of the site will be dependent on the marketing activity incorporated in the management plans for the site.

Once the potential market has been fully defined, the data may already be available to enable total market potential to be measured but the forecasting of future demand for a particular site is likely to be rather more difficult. The more unstable the demand, the more hazardous forecasting becomes, yet at the same time accuracy becomes increasingly important and forecasting procedures are likely to become more elaborate. The planning process is fully dependent on the information fed into it. Any manager must, therefore understand the problems of forecasting in order to be a position to evaluate the forecasts upon which he must make his decision.

The three facets of behaviour which form the basis for forecasting demand are:

- (a) past behaviour - in that this may condition future behaviour;
- (b) present behaviour - in that this behaviour may continue; and
- (c) people's opinion of the future behaviour of themselves or others.

The numerous techniques which have been developed to forecast demand stem from these three basic elements. Time series analysis and statistical demand analysis are two examples of forecasting techniques based on the results of past behaviour. The former simply examine the underlying causal factors of demand although some, if not all, may emerge from analysis of the patterns of consumption over time and is particularly useful where the factors underling demand are stable. The techniques is based on scrutiny of the time series of past visitor attendance (or consumption) to yield indications of future behaviour, and to be fully exploited there needs to be a systematic variation in consumption over a given time period. Such variations may be described as trends, cyclical, seasonal or random. In relation to demand analysis, trends identify the continuing effect of variations in demand. They are, therefore, normally of a long-term nature often arising as a result of external factors. The isolation of cyclical variations is more likely to be relevant to medium-term forecasting, while seasonal variations may be used to describe any recurrent pattern of consumption and more frequently relate to short-term fluctuations. Any time series is likely to include variations with an apparently random frequency of occurrence

and it is part of the analyst's job to determine any systematic patterns in the series.

Orthodox time-series analysis normally involves the reduction of a pattern of consumption in the given time into the four variation categories: - trends are conventionally expressed in absolute terms and the others in a percentage of the trend variation. Orthodox analysis has been amended to facilitate rapid yet extensive application of the techniques by 'approximation' factor - exponential smoothing' - to yield a forecast which averages past consumption but gives greater weighting to more recent sales levels. In other words, a fairly simple method of updating sales forecasts. Time-series analysis is inadequate when it becomes necessary to discover a direct relationship between patterns of consumption and patterns of demand. Statistical demand analysis provides a means of uncovering these relationships in attempting to analyze the significance of the factors that affect the demand for a site. Indeed, even when it is inadequate as a forecasting technique, the knowledge of these factors which this analysis is likely to generate will be useful to the manager. One aspect of statistical demand analysis is that it does not necessarily seek to analyze every factor influencing demand but the 'main' factor.

Given the existence or availability of appropriate data, an equation is constructed which best fits the data. The derivation of this equation (sometimes referred to as a demand model) can be greatly facilitated by the use of computers and this has been instrumental in increasing the use of this type of forecasting. There is, however, a continued danger that if a model has been successfully applied in the past its continued use may replace independent judgment, a problem inherent in this forecasting technique is the relevance of the demand equation to future demand as more data becomes available. Apart from the adequacy of data in respect of the number of variables under consideration, there are several other problems of which the manager should be aware. The first, multicollinearity, occurs when some independent variations are not independent of one other and their effects are difficult to isolate. In such cases it may prove necessary to drop one of the collinear variables or to attempt to express them in terms which may reduce the effective collinearity, e.g. expressing them in relative units (e.g. a measure of relative difference). An uneven distribution of forecasting errors (residuals) resulting from application of the demand model gives rise to a shortcoming known as 'autocorrelation of variables'. Although it may be impossible to overcome any residual errors, they should only arise as a result of the influence of random variables; consequently any constant mal-distribution would suggest that some systematic variable remains unidentified. Finally, it may be found that there is no single demand equation which satisfactorily reflects the actual pattern of demand. For

example, the effect of pricing and advertising may have independent influences on demand. This is referred to as 'two-way causation' and required re-examination of the demand equation and possibly to formulation of additional equations to construct a satisfactory demand model.

Passing mention has been made to the study of visitors' behaviour. In the present context this may also form part of a forecasting technique where this behaviour can be analyzed with a view to determining systematic patterns. Generally the object of such research is to determine visitors' actual responses to situations of choice which may vary, in fact, from say the selection of routes within a site to the selection of products in the souvenir shop. Observation may be continuous and exhaustive (in analysis of even, - possible choice at all times) through the probable resource requirements, for such a blanket approach normally militates in favour of a more selective approach. As often as not the objective of the survey will resolve this question, for a single retail good such as a particular product in the shop the market may be tested by providing the 'choice' and monitoring consumer reaction to it. Where it is necessary to monitor responses to a complete choice spectrum, such as routes within a site, selectiveness may be achieved by restricting the area of study. 'Market testing' of this nature may be useful in evaluating short-term visitor reaction.

Possible the most obvious forecasting technique, yet probably the most difficult to apply successfully, is that of asking people what they believe they (or-others) will do. There are three primary sources for opinion surveys: first, visitors, themselves; second, management staff in contact with the visitors; and third, expert opinion. There are numerous practical limitations to forecasting from these sources and always the over-riding problem of assessing the value of largely subjective data in relation to its cost of collection. The cost will of course be dependent on the extent of the survey - particularly size of survey - and the method of interview.

Self-expression on the part of visitors of their opinions and intentions is limited in so far as there may be an inability or lack of willingness to define and communicate information, and the ultimate question must be: will visitors actually dealing with visitors has the intuitive attraction that staff are likely to be both knowledgeable and co-operative. However, for a variety of reasons their opinions are invariably subject to bias which may be difficult to identify or counteract in a small sample of the size which might be expected at most recreational sites. Where expert opinion is readily available, it may provide an attractive variation on the staff survey. It can be quickly and cheaply surveyed and is likely to be capable of producing balanced views. Nevertheless, the analyst is faced with opinion not fact, and the problem of identifying good and bad

opinion becomes even more critical with what is likely to be capable size. A further consideration is that opinion is most credible when used to produce a composite view and cannot easily be analyzed to derive dissected views. Consequently the use of opinion surveys is more appropriate for aggregated, rather than breakdown, forecasting.

Numerous problems beset attempts to forecast demand and the manager must be continually aware of when to adjust his forecasting methods to respond to (or ignore) these problems, new demand factors may arise at any time for any site. Dependent and independent variables may be equally difficult to forecast. The demand equation may lack subtlety in the manner in which variables are incorporated in it; for example, a model incorporating a simple income variable may conceal the fact that total income may be less relevant than its distribution. The selection of particular forecasting techniques will be influenced by a variety of internal and external considerations such as availability and reliability of data or the stability of demand. As the questions of future demand to which forecast answers are sought become increasingly complex, their solution may require a combination of techniques. The results of forecasting can invariably be improving (or introducing improved) forecasting techniques. Such improvements generally have to be bought and the effectiveness of this expenditure should therefore, be evaluated beforehand. The inadequacies of present methods must be examined with regard, for example, to the extent of present levels of error, their management significance and the sensitivity of present forecasts to variations in the underlying assumptions on which they are based.

A simplified example may help to outline the main considerations on preparing a marketing plan as part of an overall management plan.

3.5 Marketing Plan

Nonesuch Park in the central midlands includes a Georgian mansion overlooking a lake set in 49 acres of landscaped parkland. A fighter aircraft of First World War vintage is stored in an old barn and is capable of restoration. A number of wartime curios have been assembled in the house over the years. It was decided to exploit the recreational potential of the park, the house and grounds were opened during the spring and summer of last year as an initial experiment to test the market. After an encouraging response a more accurate assessment of potential usage is now sought.

Some primary data is available from the following sources:

- 1) A visitor survey was undertaken by a group of students.

- 2) On the summer bank-holiday (which marked the highest daily attendance) a set aerial photographs of the site were taken.
- 3) Informal discussion with visitors.

Secondary data for an evaluation procedure is available from a variety of sources:

- Stage 1 - define local conceivable market.
- Stage 2 - consider market strategy.
- Stage 3 - define market segments by application of segmentation variables
- Stage 4 - determine marketing policy.
- Stage 5 - prepare marketing plans
- Stage 6 - promoting the plan and implementing the marketing programme

Stage 1

Definition of the total market: this is not the place for weak hearts and so to avoid underestimation the population of the country is taken here.

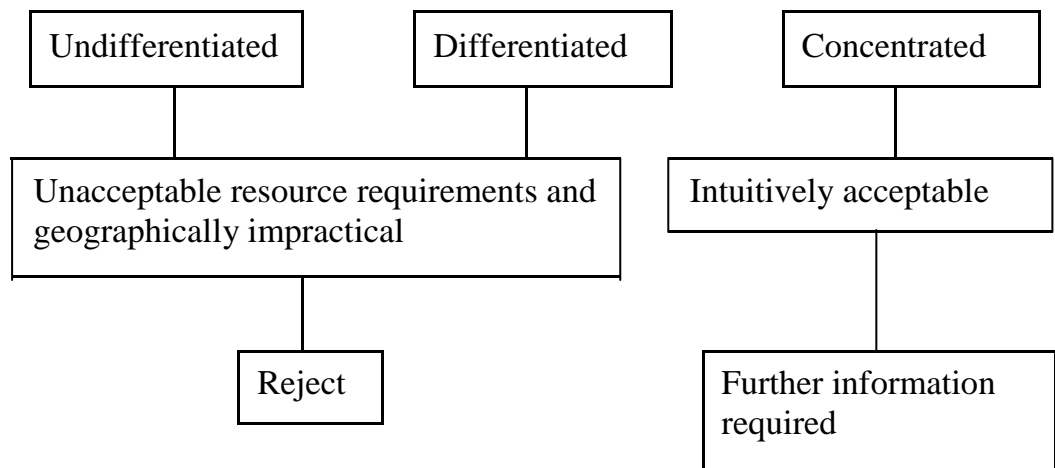


Fig. 10.1: Marketing Strategies

Stage 2

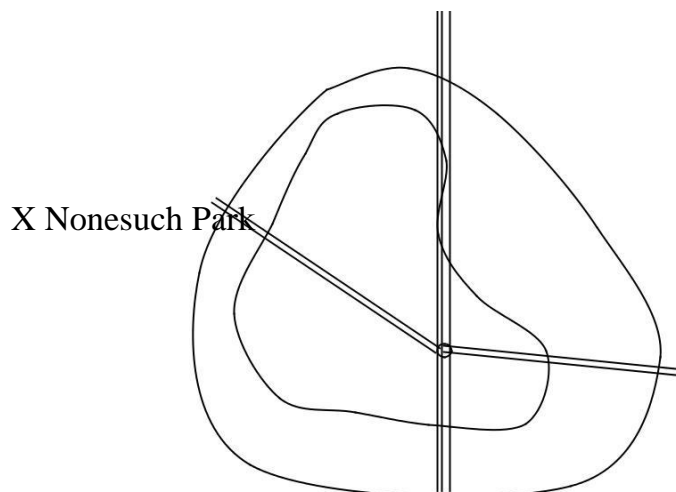
Market strategy is shown in fig. 1: Initially, undifferentiated approaches may be adopted in order to stimulate primary demand by making the maximum number of people aware of the existence of the facilities. If this approach may be said to have been adopted for the first season, the present requirement is to review this strategy. Limited financial resources and lack of homogeneity of both the commodity and the market militate towards a selective approach. Some form of concentrated strategy appears most practicable.

Stage 3

Definition of market segments: At this stage the potential market is reduced into segments by the application of segmentation variables.

(1) Geographic variables

- (a) The local and regional road network facilitated north - south traffic movement, but east - west circulation is less easy. (The M1, 5 miles away, presents a considerable barrier.)
- (b) Site access is good but unsignposted.
- (c) Transport services are poor - the nearest rail and bus links are respectively 12 and 4 miles away. (The visitor survey indicated that 95 per cent of visitors traveled by private vehicle or walked and this is borne out by observation.)
- (d) Location - primary and secondary data indicates that the maximum expected journey time for day-visitors to the site is 45 minutes, (one commercial site in the region works on a 1 hr 15 min maximum time.) on-site data indicates a significant number of visitors calling in to break a longer journey, particularly for north -south routes. The application of appropriate forecasting techniques, notably statistical demand analysis would facilitate the preparation of a map defining the extent of the present and foreseeable market for day-visitors which might appear as in fig.2.



- Boundary of present market area
- Boundary of foreseeable market area

Fig. 10.2: General location of Nonesuch Part

Although it is unlikely that the wider market for passing visitors can be identically mapped, an alternative mapping notation may be useful, e.g.

using a base map for,. Say, British individual visitor origins may be identified by pins giving an idea of their distribution.

(2) Demographic variables:

After the first season the outstandingly significant factor relating to the visitors themselves was that almost all visitors reached the site on foot or by car. Car-ownership would appear to imply certain levels of income and occupational status of groups attending the site. It was also found that the groups in the cars were family groups with, therefore, a relatively high overall percentage of children. Apparently at surrounding sites a variety of socio-economic factors have been found to have a bearing on site attendance. The distribution of actual and potential visitors conforming to the car-ownership requirement may be mapped on the market base map. (It may also be worth while identifying similar areas outside the likely market area, if by advertising and promotion they could be attracted to the site.)

(3) Personality variables:

- (a) It had been intuitively envisaged that the site would attract individual family groups, yet the interest expressed by, for example, local coach firms, has been unexpectedly large. (At the moment the facilities are inadequate to cope with a rapid influx of large numbers of visitors.) Sources of group visits (coach companies, educational establishments, etc), can be mapped though further identification may be necessary.
- (b) An apparent reluctance has been noticed on the part of visitors to seek for themselves - in the house, for example, there has been a strong demand for guided tours.

(4) Visitor behaviour Variables:

- (a) Visitors were identifiable by two distinct groups, namely, local day-visitors and passing visitors.
- (b) Attendance was highly susceptible to weather conditions and at times resulted in serious 'peaking'. Attention will need to be given to market incentives to iron out obvious peaks and identifying suitable facilities less sensitive to the effect of weather.
- (c) Some visitors were spending up to 5 hours on the site, particularly on return visits, a factor which may be exploited in a variety of ways.
- (d) At the souvenir counter in the house there was strong demand for low-quality (and relatively low-price despite high mark-up) merchandise. In general the interaction of price sensitivity and

quality control) emphasis will be placed on maintenance of quality as a management objective.

Stage 4

Determination of marketing policy: Geographical factors indicate some form of concentrated marketing policy. The segments from which greatest benefit may be expected from concentrated marketing have already been discussed in stage 3. Now, however, the cost of marketing to each segment must be evaluated in relation to the likely benefits to be derived. As concentration increases marketing policy must become more integrated with overall management. There are two matters which must, in particular, be determined at this stage. These are, first, the time periods to which marketing will be expected to operate and, second, overlap of competition in intended market segments then, having identified levels and sources of competition, the extent to which competition should be active or aggressive.

Stage 5

Preparation of marketing plans: first, the market factors to which management effectiveness is likely to be susceptible must be identified. At the same time the degree of error likely in their estimation must be assessed. The obtaining of pertinent data must be incorporated in the plan, consequently areas of information requiring quantitative data (e.g. for market forecasting or monitoring management efficiency) must also be identified. The plan must be capable of identifying past behaviour (incorporating comparable evidence) and seeking opinion on future behaviour to forecast future levels of demand. It must also be capable of incorporating onsite information on visitor behaviour, suitable analyzed, into the plan and be flexible enough to enable this information to result in continuous reappraisal of the plan. Above all, at the planning stage, the marketing objectives are coupled with the resource management objectives which will be considered later.

Stage 6

Implementation and promotion: In any market-orientated management research is simply one of the starting-points in the management process. Numerous decisions must consequently be made as part of that process but these decisions are less central to the specific matter of demand forecasting which is the subject of this chapter.

4.0 CONCLUSION

We've been able to know what market research is, it has shown us how information could be acquired. It has also examined how consumer orientation may be viewed in market contrast to the production orientation etc. It also talked about selective market approach and marketing plans.

5.0 SUMMARY

This unit has been able to furnish us with necessary information about: markets, the consumers comprising them, consumers orientation and such effects on choice and demand, methods of carrying out research and the marketing plan.

ANSWER TO SELF ASSESSMENT EXERCISE

It provides effective identification of the potential market available.

6.0 TUTOR-MARKED ASSIGNMENT

Mention and explain briefly the 4 segmentation variables as given by Kotler.

7.0 REFERENCES/FURTHER READINGS

Miles, C. W. C. and Sebroke, W. (1977). *Recreational Land Management*.

MODULE 3

Unit 1	Site Evaluation
Unit 2	Visitor and Site Monitoring and Control

UNIT 1 SITE EVALUATION

CONTENTS

1.0	Introduction
2.0	Objectives
3.0	Main Content
3.1	Land Value
3.2	Accessibility
3.3	Annual Physical Capacity
3.4	Carrying Capacity
4.0	Conclusion
5.0	Summary
6.0	Tutor-Marked Assignment
7.0	References/Further Readings

1.0 INTRODUCTION

It was said earlier on that all issues concerning tourism, leisure, recreation etc. are related to land use. The practices of any of such activities are done on the surface of the ground and not in space, invariably. Any particular point of interest where the activity out is to be carried out is referred to as 'destination or site. There is a need to evaluate any site that is meant to be used for such purposes, and so its well discussed in this unit.

2.0 OBJECTIVES

By the time you finish going through this unit, you should have become very familiar and know things about:

- value of the land resources available to the recreational land manager
- how accessible the site is to those whose will be patronizing it
- the maximum number of users it could accommodate.

3.0 MAIN CONTENT

3.1 Land Value

The value of the land resource available to the recreational land manager will be dependent upon the types and intensities of use to which they can be subjected. 'Use' represents the interface of supply and demand, though general terms such as 'recreation demand' or 'recreation carrying capacity' are too unspecific at the enterprise level. The interface is not uniform and often land-use decisions will be arrived at by laying greater emphasis on supply or demand, i.e. resource-determined or activity-determined uses. Satisfying any demand for outdoor recreation presupposes the availability of a suitable site; conversely, supply-determined land-use decisions are investigated on the assumption that either demand already exists, or is reasonably capable of being generated - stately homes are a typical example of site with the resources which offer a focus for immediate recreational use.

Site evaluation in the present context refers primarily to those natural resources associated with any site having recreation as one of its potential uses; examples include: land, water, landscape quality, buildings. Land appraisal is traditionally a financial exercise based on the presumption that land has value because it can earn rent in some form or other, and that land will move to its most profitable permitted use. It is clear, therefore, that site evaluation must be related to predetermined or foreseeable uses. It should also be systematic, imaginative and yet as objective as possible.

Only in the case of rural land does the physical identity of the land assume anything more than superficial significance in the evaluation procedure, in urban-type development if we think of the most profitable permitted use to which a site may be put, the greater the reliance placed on consumer attraction - namely site attendance (as in the case of retail or entertainment facilities) - generally, the greater the importance of consumer accessibility. In other words, the number of substitute locations is inversely proportional to the degree to which consumer accessibility becomes critical. However, in some circumstances consumer accessibility may be counterbalanced by accessibility to factor inputs (raw materials, etc), the same is true, largely, for sites for recreation facilities, though in the case of countryside recreation where sites, by definition almost, are relatively remote from urban centres, reduced accessibility may be counterbalanced by site attractiveness. At this point, however, the individual, unique properties of the site become increasingly important, and with this implicit reduction in the homogeneity of the sites being evaluated, the process of evaluation may become contentiously subjective.

For many land uses it may be possible to synthesize an ‘identikit’ specification incorporating all the relevant factors for the site which conforms most closely to an ‘ideal’. Against such fairly objective yardsticks potential site may be compared, but in these cases the site ‘use’ can generally be expressed simply and explicitly and market conditions accurately assessed. Where clearly predetermined notions of use and site requirements exist for outdoor recreation, the same type of processes may be applied. Such instances lead on to the problems of site selection and procurements but, although the selection and appraisal of primary sites may be central to recreation planning, for the land manager this is a specialist province of little immediate relevance to those already possessing a site which, ideal or not, requires managing. In these cases the primary feature of the site concerned is its fixed location. The combined significance of location and accessibility is fundamental to any site evaluation.

The location of the site in relation to the people who it is envisaged will use it is obviously central to the preparation of any management plan. A 30-mile radius has proved to be a significant and often adopted measure of the distance that day-visitors will travel by car at weekends. But this type of general yardstick can be misleading if, for example, the location and attraction of substitute facilities is not taken into account to modify this rule-of-thumb (see, for example, fig. 10) and other experience in Britain indicates greater variation in the maximum range of influence of site. Moreover, actual physical location may be no more significant than the perceived location of the site to potential visitors in the catchment area. Indeed, cognitive distances may be more significant in relation to visitor attendance than actual distance. There is much work still to be done on the concept of ‘cognitive’ or ‘mental’.

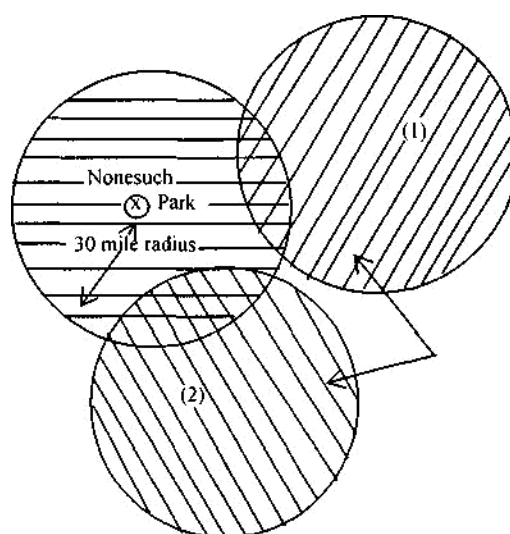


Fig. 11.1: Overlapping influence of competing sites

Mapping relating location and socio-economic factors to obtain some insight into the processes of spatial behaviour.

Attempts have been made to measure site accessibility for recreation projects in objective terms. For example, by assessing the proximity and standard of roads in the vicinity of the site (see M. Blacksell, *Recreation v. Land Use: A Study in the Dartmoor National Park*, Exeter Essays in Geography, 1971) or the number of roads and road junctions in the vicinity of the site (see B. Cracknell, 'Accessibility to the Countryside as a Factor in Planning for Leisure', *Regional Studies*, Vol. 1, 1967). Although the manager is likely to have an intuitive working knowledge of the accessibility to sites under his control, the importance of this factor does warrant more than subjective awareness. Furthermore, external accessibility up to the site will often be directly linked to the internal accessibility determined by the infrastructure of the site itself and should, therefore, be considered as an integral part of the visitor flow network.

SELF ASSESSMENT EXERCISE 1

Explain what you understand by site evaluation.

3.2 Accessibility

Though accessibility and location make an essential contribution to the unique nature of any piece of land, rural land has a more complex internal identity composed of all the factors influencing its productive or aesthetic potential. The manager's perception of how these components interact with one other and his awareness of the possible combinations available to exploit will influence his own assessment of the potential value of the land at his disposal for recreational use. For most types of rural land use, knowledge and experience exists to enable those factors influencing the suitability of land for that use to be identified and possibly, the relative significance of those factors to be measured; soil fertility for example, constitutes a major consideration in evaluating land to be used for farming. Although as a planning strategy it may be important to conserve areas of high fertility for agricultural use, in a land management context prospective may compete financially to own such land. But more pragmatically, the farmer is more likely to be preoccupied with the problem of making the best of the land actually available to him even though this may not be of the highest fertility; he may, indeed, be able to offset the effects of lower fertility by, for example, above-average management.

There are numerous factors recognized and accepted as having a significant potential influence on the suitability of land for recreation.

Without even attempting to input a value to that land for that use, knowledge of these factors must be applied in an analytical and systematic manner to evaluate the potential of specific sites for recreation. Potential surface analysis is one established example of such an approach the aim of the technique being to use surface potential as a yardstick against which independently derived strategies could be measured. First developed in the Nottinghamshire - Derbyshire sub-regional Planning Study, it was later applied to studies of informal recreation in Sherwood Forest and South Wales. However, identification of use-potential is not necessarily enough to stimulate the exploitation of that potential without further quantification. Like the farmer, the recreational land manager may not be concerned with the management of a prime site but the management of any given site good, bad or indifferent. The process of resource evaluation which he must undertake falls into two parts:

- (1) Identification - of factors likely to have any significant potential for recreational use.
- (2) Assessment of value - of all the relevant factors individually and in combination.

Unfortunately, the recreational land manager cannot benefit to the same extent as the farmer from centuries of accumulated knowledge of the identification and evaluation of resource potential. If he has a particular recreational use in mind, his task is easier in that he should be able to stipulate, fairly readily, any natural resource requirements. Otherwise, his main preoccupation should be to ensure the optimum exploitation of all the resources at his disposal and in this his initial appraisal must be exhaustive in identification, objective in evaluation and systematic throughout.

The extent or capacity of land to meet the demand for agricultural produce is initially determined by the inherent productive capacity of that land for growing those commodities best suited to the prevailing natural conditions. But referring to the 'capacity' of rural land to supply recreational foods and services is a fundamentally different concept and, therefore, requires some discussion. There are numerous definitions of 'recreational carrying underlying the various authors' interests in recreation. However, a frequently adopted working definition is that found in the Countryside recreation Research Advisory group publication, Countryside Recreation Glossary, 'the level of recreation use an area can sustain without an unacceptable degree of deterioration of the character and quality of the resource or of the recreation experience'. Thereafter four different types are identified as: (a) physical capacity; (b) ecological capacity; (c) economic capacity; and (d) perceptual capacity. Sub-dividing the general definition in this way,

encourages an appreciation of the many different facets of capacity which collectively or individually may determine the factors which limit further exploitation of available resources. Subsequent definitions have tended to follow this taxonomy, although the four together, in some respects, constitute an unnatural grouping; physical and ecological capacities relate to the site and the natural resources on it (i.e. with a supply orientation). They are concerned with changing conditions over time and tend, therefore, to be useful in relation to resource-orientated planning. Economic and perceptual capacities, particularly the latter, tend to be determined by visitor behaviour and are correspondingly demand-orientated.

3.3 Annual Physical Capacity

Annual physical capacity (A.P.C) may be defined as 'the maximum number of user use periods per unit area which can be accommodated on a site during a typical year without causing irreversible physical damage to the site, users or equipment'. However, the usefulness of this definition is limited to providing a management yardstick for normative planning; in this context average daily carrying capacity may be simply derived by dividing the annual figure by the number of days in the season. The notion of sustained physical capacity (S.P.C) per unit area may be more useful to the site manager and this may be taken as the maximum number of user unit which can be accommodated on a site at a point in time, suitable for the use without causing risk of exceeding the annual physical carrying capacity assuming normal patterns of usage:

S.P.C. x user periods of which participation possible = potential A.P.C.

This definition introduces the need to determine a point of irreversible physical damage. Although that point may be capable of being defined in fairly absolute terms, it is likely to be largely academic. Most managers will be seeking an intermediate point representing an acceptable level of change to natural resources.

Although this may imply a value-judgment on the part of the manager, a more objective view may be developed by resorting to ecological carrying capacity defined in the Countryside Recreation Glossary as 'the maximum level of recreation use, in terms of numbers and activities, that can be accommodated before a decline in ecological value, assessed from the ecological viewpoint'. But here again this definition has been criticized for failing to take sufficient account of any acceptable degree of ecological change away from the desired ecosystem. It appears that, in general, definitions of ecological capacity tend to on an acceptance of three conditions, namely that:

- (1) There is a most desirable state.
- (2) There is a degree of change away from this which is only just acceptable.
- (3) Both of these are matters of judgment.

The determination of the ecological changes resulting from differing intensities and frequencies of a recreation activity on the ecosystem does at least provide the manager with an opportunity to bring greater objectivity to the decision as to what ecological change may be acceptable to him for a particular site. In view of the probable variability of this assessment on the part of the manager, he will effectively have four probable attitudes to adopt:

- (1) Endure that recreational activities exert a minimal modifying influence on the ecosystem.
- (2) Attempt to retain the essential characteristics of an ecosystem but otherwise accept changes resulting from recreational use.
- (3) Replace those elements of an ecosystem which are more susceptible to pressure from recreational use by components more resilient to recreational activities, implicitly favouring the recreational use where this conflict with ecological elements.
- (4) Ignore ecological changes resulting from recreational pressure. It almost goes without saying that these policy options will vary from site to site and manager to manager; they will be strongly influenced by the planned period over which the decision will operate and may even vary within sites which can be zoned in relation to recreational and ecological requirements.

Having considered briefly the limitations on recreational carrying capacity which are primarily functions of the natural properties of the site, two other facets of capacity remain - perceptual and economic capacity - whose determinants extend beyond the site itself. The United States of America Conservation Foundation sees perceptual capacity as 'the most subtle and difficult, but in many ways the most important component of carrying capacity'. In the light of such statements it is ironic that definitions of perceptual capacity are so often vague. However, the countryside Recreation Glossary provides a starting definition: 'the maximum level of use, in terms of numbers and activities, above which there is a decline in the recreation experience from the point of view of the recreation participant', and goes on to point out that 'different users may have a different view of the perceptual capacity of the same area according to their activity'.

If a potential visitor observes that a site is too crowded for his liking he will proceed to one where his expectations are fulfilled. Accordingly, overuse of a site could be prevented by the user's reluctance to swell the

number of visitors but this is totally inadequate expectation for rational management. First, this type of self-regulating system assumes not only an excess of supply over demand, but also availability of alternative substitute facilities. Second, if visitor density is permitted to increase unchecked, the site will eventually attract crowd-tolerant users whose attitudes and behaviour may differ from visitors comprising the market segment for which the facilities were originally planned. While the manager should be fully aware of visitor attitudes to all factors influencing visitor perception, there is a danger that intuitive assessments on his part are likely to be erratic and misleading. If personal judgment is the only basis on which this appraisal can be achieved, efforts must be made to adopt systematic and objective methods of assessment to the monitoring of visitor attitudes and preferences.

The optimal economic capacity of a recreation facility is more difficult to define than that for many other productive processes. The Countryside Recreation Glossary defines economic capacity purely in terms of multiple land use. Considering recreation alone, the benefits derived by the consumer are themselves dependent on the capacity of the site or facilities: in other words, the characteristics of the commodity vary with the level of output. It may be possible to utilize transformation functions to describe the possible substitutions of one product for another and so to derive an optimum mix of facilities given a limited spectrum of alternatives from which to select. In single land-use terms little more can be defined as economic capacity than that it represents a limiting constraint to recreation development where economic criteria are followed in developing and managing the facilities - i.e. where marginal costs are equated with marginal benefits and reallocation of productive resources would not advance any user groups on to a higher level of indifference without a greater loss elsewhere.

SELF ASSESSMENT EXERCISE 2

Give the definition of Annual Physical Capacity (A.C.P.).

3.4 Carrying Capacity

Many definitions of recreation carrying capacity are tailor-made to suit specific requirements and tend to be an amalgam of the main elements already described. For some management purposes physical and ecological capacity may be synonymous, indeed 'environmental capacity' - some-times referred to in planning studies - which exceeds where further use of the site would result in a loss of amenity, incorporates physical, ecological and perceptual elements of capacity.

Awareness of the constituents of recreational carrying capacity is simply the manager's first step in assessing the planned capacity of the site.

The matter of planned site capacity will be returned to later, meanwhile we continue with the question of evaluating the natural resources of the site. For a given site whose natural resource components may be considered fixed in supply, objective quantification and evaluation of those resources may be more difficult than measuring the availability and extent of labour and capital necessary to exploit their full potential. However, unsystematic or subjective approaches to the problem of evaluation may lead to land-use decisions for which the full spectrum of alternative strategies has not been investigated. A simple example of one basis for classifying recreational site potential is found in O.R.R.R.C (Recreation for America, 1962) with the following components:

- a) High density recreation areas;
- b) General outdoor recreation areas;
- c) Natural environment areas;
- d) Unique natural areas;
- e) Primitive areas;
- f) Historic and cultural sites.

Although the classification may be crude, it does at least introduce a systematic element: here, for example, resources are classified in accordance with their physical suitability for a range of recreational uses (of a type often referred to as resource-based activities). It is assumed that the natural characteristics of the resource environment will be sought by visitors and, therefore, these use policies are imputed to natural zones. For land management purposes this type of classification is too simplistic to be useful. Further information on location, accessibility and market appraisal must be incorporated before a realistic use classification can be derived. Recreational land use is, after all, a function of resource and user characteristics being incorporated together. One of the first attempts to consider these together was that of Clawson and Knetsch (Economics of outdoor Recreation, 1969) which has formed the basis for much of the current thinking on the planning and management of resources for outdoor recreation.

A first step which a site manager may take in embarking on the evaluation of resources potential is the preparation of a resource inventory which should identify not only surface features, but also any underlying feature having a significant influence on surface use. In its most simple form this need amount to little more than a list of resource components. On more difficult sites this 'list' may become unwieldy and lose meaning. It may, therefore, be advantageous to carry out some

preliminary zoning of the site and classify resources in relation to those zones.

The primary objective of the evaluation procedure is to identify and rank the differing potentials of the land surface at the manager's disposal for recreational use. And although the concept of surface potential differs from the productive potential normally associated with rural land the practice of appraising agricultural land is relevant to the recreational land manager, particularly in relation to the use of natural zoning to bring order to the resource inventory. Farming has evolved its own natural zone - fields - and agricultural land is invariably assessed not as a whole, but on a field-to-field basis. The recreational land manager must seek some similar means of dividing the site into identifiable components. As yet a conventional means of subdivision has not been evolved and so the process will vary from site to site but may, for example, be based on natural feature - lakes, mountains, etc. - or by reference to existing patterns of use as, for example, in the O.R.R.C. classification already mentioned. Once a method of zoning has been settled on and applied the land manager, who may be interested in the recreational potential of his land either as an alternative to or in addition to other possible uses, will be in a position to identify areas of land-use conflict - where, for example, agriculture and recreation and recreation may clash (or, indeed, where they may be mutually complementary). Even at this preliminary level the land manager has information which may systematically clarify certain strategic land-use decisions paving the way for policy and plan formulation.

Ultimately site appraisal must proceed to the question of identifying and evaluating the natural resources of the site. Identification, will in many instances pose few problems: - Fig. 11, though by no means definitive lists some factors which may typically contribute to a resource-based site evaluation and may form the basis of a checklist providing the primary components of most resource inventories. In different circumstances identification may be a major obstacle, particularly as the resources involved become increasingly unique. One such difficulty may be created by sheer scale - Mount Snowdon though unique in its way is no more so than a rare alpine orchid hidden on its slopes. Another problem may be caused by the variability of dimensions involved quantifying the resource itself. Here, however, there are devices available to assist the manager in this problem: once the manager can designate the dimensions which most effectively describe the resource in question, there are 'scanning machines capable of extracting from one form of data (e.g. maps or photographs) and expressing it in a different form (e.g. length of hedgerow per unit area of the site, area of water, etc.).

Undoubtedly, quantification of unique resources of a wide variety of resources is exacerbated by the lack of comparable units of measurement. There is a tendency, therefore, to resort to purely descriptive analysis to build a 'picture' of overall resource potential. This may be systematic but it is inherently subjective. Without going to the level of sophistication previously mentioned it is possible to restore some objective to the more pragmatic approach by presenting the descriptive analysis in tabular form and incorporating in the table or matrix a scoring system for each resource component identified. Fig. 11 illustrates very simply how such a scoring or weighting system could be started. Subjectivity may remain but at least the manager attempting to impose some order on it. The weighting factor or factors will be determined by the particular perspective which the manager adopts towards the resources at his disposal. His perspective will, of course, be coloured by the management objective under which he operates: environmental capacity may, for example, be the over-riding constraint on the potential use to which the resources may be put; the weighting would then be very heavily biased in favour of environmental considerations. It is equally likely, however, that the manager will be more flexible in his attitude to the capacity constraints to be imposed on

Weighting factor*	3	2	1	0	-1	-2	-3
Site factors							
Area							
Topography							
Aspect							
Climate							
Geology							
Vegetation							
Landscape quality							
Area of open water							
Water courses							
Physical features (e.g. caves)							
Location							
Accessibility							

* Internal weighting factor

Fig. 11.2: Evaluation matrix

Recreational land Management potential use. He may then prefer to apply a different weighting procedure for each of the four facets of recreational carrying capacity. These can then be superimposed on one another to identify particularly sensitive (or particularly insensitive) features so that the manager can formulate development policies in a

more selective manner. Ultimately, analysis of the natural resources contained by the site should be designed to reveal any attributes of the site contributing to its recreational potential.

This sphere of resource evaluation is debatably the area of greatest technical difficulty for the recreational land manager. It is also the area probably best served by external expertise in the, any specialist facets of resource evaluation, expertise ranging from that of the ecologist to that of the landscape architect. The land manager should consider carefully the benefit he may be able to derive by taking advantage of the advice of such experts. At the same time he is bound to reflect that he may have to buy this information or advice and, being a prudent manager, will assess the benefit of the assistance obtained in the light of the cost of obtaining it.

The manager may be able to inject greater objectivity into his own resource evaluation by making use (with an appropriate degree of circumspection) of independent yardsticks. An example of this is the M.A.F.F.'s Agricultural Land Classification which assesses the agricultural productivity of land, taking into account various physical factors likely to influence productivity - in some instances the factors which bring out the crops also bring out the visitors, though such analogies are by no means watertight!

At this point it is necessary to re-emphasize that ultimately the value of available resources for recreation will be dependent on the use to which they can be put, and the process resource evaluation comes up against demands expressed in terms of activities and pursuits that those resources can or should withstand. Most activities already appear in various classifications which themselves constitute useful. Inevitably, however, the usefulness of activity data is dependent on the classification applied to it and, in fact, there is little to indicate that a very sophisticated classification is likely to be any more effective than one of a simpler type. Once grouped, activity types can be analyzed to determine resource requirements will be of immediate significance in generating a spectrum of activities which the site is physically capable of sustaining to some degree: participant requirements become increasingly relevant in the subsequent evaluation of alternative activities.

Rarely will a site be devoid of any recreational potential. In general, therefore, comprehensive development of the site should be designed to secure the optimum exploitation of the initial potential. The intensity of use to which a site may be subject is defined by its ability to accommodate visitors within any predetermined management constraints. *In* modifying any absolute measures of site carrying

capacity by incorporating management policies, we arrive at the notion of planned site capacity and the associated phenomenon of 'peaking' to which every form of recreations susceptible in one form or another. This will be considered further in relation to management planning.

SELF ASSESSMENT EXERCISE 3

Mention and explain a first step which a site manager may take in embarking on the evaluation of resource potential.

4.0 CONCLUSION

We can see clearly that land is very valuable in tourism activities like leisure, recreation etc. we have also seen that location of the site in relation to the people who will use it is obviously central to the preparation of any management plan. In addition accessibility and location makes an essential contribution to the unique nature of any piece of land.

5.0 SUMMARY

This unit has examined exhaustively, the value of land, accessibility to any particular site and the carrying capacity as well.

ANSWER TO SELF ASSESSMENT EXERCISE 1

Those natural resources associated with any site having recreation as one of its potential uses.

ANSWER TO SELF ASSESSMENT EXERCISE 2

ACP – The maximum number of user use periods per un it area which can be accommodated on a site during a typical year without causing irreversible physical damage to the site, users or equipment.

6.0 TUTOR-MARKED ASSIGNMENT

Mention and explain briefly 5 bases for classifying recreational site potential.

7.0 REFERENCES/FURTHER READINGS

Miles, C.W.N and Sebrooke, W. (1977): *Recreational Land Management*.

UNIT 2 VISITOR AND SITE MONITORING AND CONTROL

CONTENTS

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
 - 3.1 Control
 - 3.2 Monitoring
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Reading

1.0 INTRODUCTION

The primary aim of venturing into tourism or recreational site, which is entrepreneurial in nature is to attract and hence invite visitors who are interested in making use of such sites for their own enjoyment, even though at a price. Any such site so established requires adequate monitoring to keep and preserve the facilities so provided for a reasonable life span before replacement etc. This will definitely be applicable to any other business enterprise.

2.0 OBJECTIVES

After going through this unit, the student would be able to explain:

- who visitors are
- the reason(s) visitors patronize recreational sites
- how to monitor and control recreational sites

3.0 MAIN CONTENT

3.1 Control

When all is said and done, when the owner's objectives have been formulated, the management and financial plans prepared and recreational project launched, the immediate aim of on-the-spot management is the provision of a lasting service for the public which may be nothing greater than the opportunity for them to take air and exercise in the countryside, or nothing less than the chance to be interestingly entertained in a variety of ways. The public will have to be made to feel welcomed, provided with, at any rate, the basic necessities,

tea and lavatories, and the individuals who make it up given such information as they may need to enable them enjoy the site to the full. Beyond this point, information may be extended towards education on the one hand, or advertisement on the other. This chapter is not concerned with education or with commercialisation, but with information and control.

In the sphere of control the manager must try to do at least three things. First, to display the site, and in the process ensure that visitors approach the various facilities in the way or by the route he has chosen (so as, for example, to minimize overcrowding and the degradation of the site), second, to prevent wear and tear by over use and, third, to exclude visitors from, or discourage them from using certain paths or certain areas. These areas may be permanently tender (e.g. for scientific or safety reasons) or only temporarily so because, for example, they need to be given time to recover from over use or from degradations of the climate.

Management may approach the problem of controlling people innocently, by waiting to see how the public use or damage a site before doing anything about it, or intelligently, by anticipating events and as far as possible taking the necessary protective steps before any damage or misuse occurs. In practice, intelligent anticipation will have to go hand in hand with innocent hesitation. At least the permanently tender areas are probably easily identified at the start and the layout of the park and of the tracks and paths modified accordingly. Both anticipating and subsequent control, however, depend upon how the visiting public may be expected to behave; this has been observed both in the field by those engaged in recreational land management and by devotees of the behavioural sciences in a variety of situations.

As he begins the process of resource and people management, the manager must cease to look at the visitor as a statistic which may give rise to, or be induced to mitigate, financial problems, but as a person, like unto himself, who has feelings, thoughts and habits, who in coming to the enterprise is seeking the satisfaction of some need or purpose but who is, none the less, susceptible to influence. Where possible the manager should attempt to assess and understand the attitude of those who come to his domain. Probably most of them, when they visit the countryside, are simply looking for some peace and tranquility and for a change from their normal routine. They may enjoy this change in anumber of ways actively or passively, but the majority will have made their choice of venue deliberately and will have come to the particular site with some idea of what is offered: furthermore, although the manager is advise to look upon his customers as individuals, most of them will in fact have come in groups, of which the family group will

predominate, so that there will be a need to provide for and control the group rather than a single person. As far as family groups go there is likely to be a wide age range within the group - parents and children of varying ages - whose ideas of recreation will differ. It will be necessary, therefore, to consider what provision may give the greatest satisfaction of the greatest number without intruding unduly upon the pleasure of the remainder. Parents on an outing are often slaves to their children and the greatest service which can be done for them is to offer some reasonably sage occupation for the children, while the parents are left free to go their own ways or at least to watch their children, idly and at leisure. Such provision may be an adventure playground or no more than grassy open space. The former will provide for games-playing while the older members of the party lie on the grass.

Varieties of visitor behaviour need to be studied. They will depend upon facilities provided (how do people treat a museum, and how do they treat an open picnic-place?) and the socio-economic groups the visitors come. In this context it is worth noting that provision for outdoor recreation generally is made on the assumption that different social-class groups have, like different age groups, different recreational targets and, furthermore, that country parts are sought and used but the upper socio-economic groups rather than by the others.

To many people, unfamiliarity with the countryside breeds apprehension, a feeling of being in a wilderness not quite to be trusted. They will avoid what appears to be unpleasant or fearsome until their curiosity, interest and desire to explore overcome their apprehension, unfamiliarity and the about a strange new world. Indeed route, particularly in the open as opposed to dark woodland, can all used as characteristics and patterns of behaviour that the manager must make himself familiar. For example, water, lone trees and hillocks attracts, dark coniferous woodland repels. An unfamiliar shape on the skyline may become the objective of a walk and may, indeed, be used to direct attention from closer, more vulnerable areas: but the points of attraction themselves may in the end have to be protected from the depredations of the enthusiastic thousands. Most students of behaviour are now familiar with the fact that in an enclosed space people tend to choose to sit or settle by the edge rather than in the middle and consequently a picnic area with plenty of edge will give greater satisfaction to more people than a uncompromisingly open are. Indeed, the amount of edge can be increased not merely by indenting the boundary, but by planting clumps of trees or bushes in the open centre. Many people like to picnic by their cars partly, perhaps because they do not then have to carry the picnic things far (often furniture as well as food and drink), but partly also because in the vicinity of their cars they are on familiar ground and more easily able to establish a defensible space around them.

Some people like crowds, other avoid them. The visitor to the countryside who has not come to be entertained, but rather to make his own entertainment, will probably belong to the category of crowd-avoiders but one individual's concept of a crowded site will be very different from another's so that to the multiple of crowd-avoiders there is no single satisfaction. However, even among this group there will be a number, and probably a large number, to whom an empty site is unattractive and even perhaps a little sinister. An open site looks more crowded than one which has a degree of cover; naturally, for all those present can be at once. Woodland can, therefore, 'absorb' more people and still seem less crowded than a field, but enclosed site may indeed suffer more physical degradation than the open one for the very obstacles which hide the people channel them onto well-worn paths.

Multiple use of a particular facility may promote wear. Water attracts both because of the various uses to which it may be put (sailing, rowing, fishing, etc) which of themselves draw spectators, and because of the sense of untroubled, uncrowded peace which it gives to those who sit or walk by it; but walkers may damage the banks of a river or lake or make the footpaths muddy and unattractive. It is necessary to tame the banks and pathways for the sake of spectators when those using the water (sailors and fishermen) may be little concerned over the presence of mud, which in any event may keep possibly unwelcome spectators away? What in this event is the primary use of the water area?

The views of practitioners on how to stop the public from spreading litter vary from centre to centre. Some there be who maintain that litter-bins or baskets must be provided, others that their presence merely encourages the deposition of rubbish somewhere on the site (and not necessarily into the receptacles) and thereby discourages the far better habit of taking litter home. It is indeed strange that visitors who will willingly carry a heavy picnic basket with them are often unwilling to parties, however, agree that a permanently clean site encourages the public to keep it clean - possibly through fear of ridicule as much as through appreciation of a common duty - and that a site carrying uncleared litter-bins (for whatever reason) impresses the visitor with the obvious unconcern of management and invites a less or even defiant behaviour.

The apparent (not necessarily the actual) attitude of management in virtually every sphere dictates visitor behaviour to some degree. The extent to which a site appears cared for and to which the facilities provided on it are looked after will influence the manner in which the visitors treat them. So the attitude of management matters and in the eyes of the visitor 'management' is not just the unseen administrator but is physically represented by every employee of the concern and of the

concessionaires on the site. It matters, therefore, how the maintenance man behaves and how well or badly he does his job. The attitude to the canteen staff is taken, at any rate in part, as an indication of the attitude of the organization as a whole. The discourtesies of a badly run concession will be attributed by the public to the main enterprise in the same way as the pleasure afforded by any well-managed department within the whole. The price of success is eternal vigilance.

As mentioned above, in managing a recreational area, the attitude of management is all-important. Techniques used to control visitors will vary with the objectives of management. An area needing protection from the public will not be generally open to the public who may be excluded positively by physical barriers and warning notices (both of which draw attention to the existence of the protected area), or negatively by the simple process of 'hiding' the area, not calling attention to it by making access difficult or providing a strong counter-attraction.

One of the problems of control arises where management has an ambivalent attitude towards the visitor - as someone to be attracted in and provided for and at the same time, someone whose very presence causes disturbance to and at the same time, someone whose very presence causes disturbance to and degradation of the site and whose sought, on those grounds, to be excluded. The on-site manager must in no way be uncertain about the attitude he should adopt, and the ultimate controller or owner must make his intentions clear, realizing however that the on-site management attitude may change from that of welcoming the visitor to that which over the years has become proprietarily with a duty it is to protect the area, its flora and fauna from the depredations of the now unwelcome public. Therefore, in devising methods of visitor control the 'marketing attitudes' of the proprietor will have to be taken into account.

Physical control presupposes some element of exclusion, and this may start off-site which the negative-approach method of not advertising, or of restricting advertising, of diverting attention somewhere else, making access difficult or indeed, imposing a charge, or higher charge, for entrance. On-site control is that which must be exercised to influence the behaviour of the visitor once he has arrived, and this may take many forms some of which have already been referred to above.

The site may be so laid out that the visitor, without his being aware of it, is directed along a particular path which itself is open and unfenced; one method of doing this is to allow grass to grow or gorse and bushes to flourish in some areas while elsewhere vegetation is cut short., alternatively the visitor may be either excluded from an area or discouraged from entering it by permanent or temporary fencing;

indeed, in some cases rough, easily climbable fencing may be successfully and deliberately used as a 'people-sifter', as may ditches or moats, stiles and kissing-gates all of which may, to a greater or lesser degree, discourage certain classes of visitor (e.g. the elderly or those already hampered by prams and push-chairs) while not positively prohibiting access to all.

Features and points of interest may be provided for the power which they have to draw visitors to them. They may be visible over a long distance or their hidden presence may be advertised. Although hardly points of special interest, lavatories, cafes and ice-cream stall all have their devotees.

People tend to enjoy proprietorship and many may be expected to adopt a local park area as something special to themselves, and in the process become, in one way or another, protective towards it: they, and even strangers, may be encouraged into a sense of belonging by, for example, giving or adopting specific trees or shrubs.

Predominant, and often most misused, among control devices are the ubiquitous notices or other paraphernalia which attempt to exercise positive authority to those giving information and advice. They may be categorized as follows:

- (1) Notices which give orders usually with at least the implication of sanctions being taken against those who fail to obey (the 'Trespassers will be prosecuted' type of notice, most of which are in fact prohibitory). Too many of these notices may raise resentment and rebellion in the breast of even the mildest visitor.
- (2) Notices which make requests but which neither threaten nor imply dire consequences if those requests are ignored.
- (3) Notices which give information about the site or facilities or events of which visitors may take advantage or not as they please.

The information may be factual and straightforward or it may, on the other hand, be deliberate misinformation such as the now well-known 'Danger – adders' notice, or the more refined and meaningless 'Oxymoron and Anacoluthon set here: trespassers beware', which some information is given other information may be deliberately omitted (might this be termed zero information?), such as not referring to certain aspects of a site or leaving off a map certain places or facilities which in fact exist. Publicity notices may emphasize certain aspects of a site with the object of drawing people to them and thereby reducing pressures on other areas. Lastly there is the interpretive notice which is designed to educate rather than inform.

Notices themselves have a certain drawing power and may be used for this secondary purpose as well as for their prime purpose of ordering, requesting, informing or educating. A carefully sited notice can, therefore, be used to divert attention from something or draw attention to itself, thus to an extent the visitor. The drawing power of a notice will tend to degrade the site on which it stands and management needs to be aware of this.

SELF ASSESSMENT EXERCISE 1

Mention 3 things a manager should do in the sphere of control.

3.2 Monitoring

Monitoring visitor behaviour and visitor preferences must play an important part in the management of a recreational complex, for only by a knowledge of what visitors do, what they want and how they view the facilities provided can management tactics be devised and where necessary change. Monitoring must be a two-way exercise as much concerned to find out how the running and presentation of the site strikes the visitor as to find out how the visitor treats the site. Visitor behaviour can be ascertained by observation and often the reasons for it by questioning; visitor preferences and the visitor's view of management can really only be measured by direct contact. Talking to or questioning visitors can, of course, be undertaken with the aid of preset questionnaire which, particularly where specific information is required, should prove satisfactory to management, though it is not always welcomed by those questioned. A general view of visitor-reaction, however, may be more satisfactorily obtained by the apparently casual observer talking informally to groups of people as opportunity arises, but here the preset questionnaire may not be particularly appropriate for it is often hard to anticipate the points which visitors may wish to express an opinion and visitors directly approached with a set of questions may not answer absolutely truthfully (possibly out of misplaced concern).

Formal, or apparently informal, monitoring by specially selected people is no doubt valuable equally valuable is the information collection daily by staff working on the site, who should be encouraged to regard this sort of monitoring as part of their normal duties - provided, of course, that they can be made to understand that they are not expected to carry out a sort of daily inquisition.

These methods of visitor monitoring require a degree of perception on the part of the observer or questioner as well as the observed or questioned, and an awareness on the part of the observer/questioner that

this factor may lead to errors arising from ambiguous interpretation. There are, of course, methods of monitoring which rely on mechanical devices; cameras and metres measuring traffic flows are two obvious examples. The use of mechanical devices is also pertinent to monitoring in a different context, namely, monitoring the state of the site itself.

Financial monitoring is of primary importance in assessing commercial effectiveness and overall efficiency of management. The monitoring of visitor behaviour and visitor attitudes is also of paramount importance but an underlying assumption in both of these may be that the physical resources of the site remain unchanged. Use implies change and, although this change may be imperceptible in the short run its existence is inevitable. For a variety of reasons resource changes may go unperceived by the manager: they may be so slow that recollection of original conditions may deteriorate as fast or faster than the resources themselves. A change in site manager may take with it any previous awareness of the changing condition of the site - the new manager implicitly tends to start his mental data-bank from the point at which he takes on the responsibility of management. No matter how slow or apparently imperceptible the change in natural site resources, it is likely to be far longer-lasting than the relatively transient changes in financial conditions or visitor behaviour.

We have seen how in adopting different criteria for assessing recreational carrying capacity a site manager may be relatively unconcerned with the deterioration of the natural elements of the site, preferring, for example, to replace them with less sedative - even artificial - substitutes. However, the more directly concerned he becomes with countryside recreation, the more he is likely to be concerned also with resource conservation: it will increase in importance as an objective of management. But if management is to be explicitly assessed, mere acceptance of change does not negate the need to identify and measure changes which actually occur. This is the essence of monitoring.

SELF ASSESSMENT EXERCISE 2

Explain what you think could be the effect of a change in site manager on the condition of the site.

We have seen in unit 4 of Module 2, how site resources can be identified and evaluated. The extension of this appraisal process to form a basis for site monitoring is fairly apparent considering that identifying any deviation from the initial values is part of the monitoring function consequently the resource inventory which should exist for any

operating enterprise is the most obvious starting-point for assessing the changing and shifting value of the natural resources of the site.

Monitoring is a relative process, its function being to chart patterns of change, and the first requirement for a monitoring system is a firm datum against which future change can be measured. Although the inventory goes a long way to providing a point of reference for future comparisons, it can only be expected to fulfill the task adequately if it has been prepared in first instance with a view to filling this additional role. The most obvious 'extra' to be included with the resource inventory is a photographic record (with, of course, precise update precise location of each shot). The pictographic record can be easily updated from time to time - effectively producing a long-term time lapse sequence of photographs. Even the simplest visual record can be useful in identifying macro-deterioration of resources. More sophisticated variations such as infrared photography or the various techniques of aerial photography, though invariably evaluating the price of the information, may yield valuable additional information - still of a visual nature. For many monitoring systems this depth of information may be sufficient for management purposes, since monitoring itself is not synonymous with evaluation - simply with measurement of change.

The process of change extends beyond this visual level to changes in the ecosystem of the site manager particularly concerned with ecological capacity will require information on the ecological change resulting from recreational use of the site. The monitoring of these changes follows the same principles, namely, to identify and carry out an initial evaluation of the resources and then to assess changes in those values. Again the importance of the original resources appraisal is apparent - it is difficult and costly to require of the monitoring system a greater degree of detail and analysis than that incorporated in the original appraisal. The primary variables influencing an ecosystem appear to be (a) species diversity, (b) uniqueness of classes of elements and (c) area.

In the instance, when resource management assumes such a high priority in establishing management policy for the site, the site manager appointed is likely not only to be interested in natural history himself, but to have had some specific background training (whether it be academic or practical or both), enabling him to apply specialist expertise to recreational land management. In other circumstances, when for one reason or another a non-specialist site manager has none the less an interest in ecological/physical carrying capacity of the site, there are probably few areas related to his general expertise so richly served by dedicated and competent technical advice on questions concerning the monitoring of ecological changes. The manager's responsibility then

becomes one of coordinating outside experts and above all of providing them with an adequate brief.

To find the answers to questions on the uniqueness, extent and diversity of species requires a high degree of technical competence, particularly when the questions may be related to such diverse topics as soil, water, vegetation, animal life, mineral features or archaeological remains. Similarly, expert external advice (if economically justifiable) may play an invaluable role in establishing an efficient resources monitoring system. In these circumstances the manager must ensure that the information delivered to him is presented in the form which will accord best with his own management requirements - he may be ready to admit to not having the specialist experience of an outside expert but, by the necessary land management perspective in presenting his expertise.

In all this there are two paramount considerations of which sight should never be lost, namely the overall role of the monitoring system and the degree of flexibility which the system incorporates. Monitoring is not an end in itself, just one of the means enabling that end to be achieved. It is all too easy to establish a monitoring system which is simply an information dustbin - it goes in, is stored and may never see the light of day again. This is not only pointless, it is extremely wasteful of management resources. The information must be capable of almost automatically stimulating management action. It should invariably feed back to the primary operations of management - appraising objectives and policies, implementing any corrective action into the plan and imposing, if necessary, controls on future plans. If the manager is attentive to this role, he will be conscious of the need for either:

- (a) maintaining continuity of response to monitored information; or
- (b) establishing performance thresholds which when exceeded will trigger appropriate management actions

The former can be extremely expensive to maintain, while the latter presupposes the ability to predict future events. Often a newly established monitoring system may have to rely on continuous appraisal until an action threshold can be identified in the light of experience. Flexibility - the second prerequisite of an effective management system - must be present to enable the unforeseen circumstance or outcome to be incorporated in the overall functioning of management. Very often unforeseen events can be picked up most quickly by efficient monitoring. In fact, the most unforeseen events are likely to be the product of management activity itself - the laying out of a grass car park may cause more damage to the sward than a full season's operation. The very act of improving facilities may create considerable detrimental side-effect. To

consider again the grass car park, erosion during long periods of dry weather may be insignificant in comparison with the damage which may occur during a short period of moderate usage during wet weather.

Monitoring may be viewed as the all-seeing, all-knowing heart of management, but management, it can never be a substitute for management itself

4.0 CONCLUSION

Control and monitoring plays a very vital role in the management of a site. This process ensures that the visitors comply with the rules and regulations that guides the use and operation of the facilities provided and for the smooth running of the site.

5.0 SUMMARY

This unit has stressed the need for control and monitoring of visitors' activities at any site and all that the land manager needs to do to ensure effective but judicious use of the facilities.

ANSWER TO SELF ASSESSMENT EXERCISE 1

- a) Display the site
- b) Prevent wear and tear by over use
- c) Exclude visitors or discourage them from using certain paths or certain areas

ANSWER TO SELF ASSESSMENT EXERCISE 2

A change in site manager may take with it any previous awareness of the changing condition of the site.

6.0 TUTOR-MARKED ASSIGNMENT

A permanently clean site encourages the public to keep it clean - discuss

7.0 REFERENCES/FURTHER READINGS

Miles, C.W.N. and Sebroke, W. (1977). *Recreational Land Management*.