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EFFECTIVE TRANSPORTATION PLANNING – IMPLICATIONS FOR SOCIO-ECONOMIC DEVELOPMENT IN NIGERIA

ABSTRACT

Planning for effective development in the various sectors of Nigeria is a herculean task. Especially in the aspect of transportation which forms a vital part of living. Transportation systems in Nigeria over the years and since independence has continued on a relatively slow pace and experienced a lot of problems. Inadequacies in this sector has grossly affected urban centres across the nation and as such greatly influenced the country's economic and social growth.

It is imperative to note that transportation is a key element and major driver of development – economically and socially among other benefits. This view held by transportation engineers, scholars and professionals is clearly illustrated in the growth of developed countries. The economic status of advanced countries such as the United States of America, Germany and other African countries such South Africa is being examined to show the impact of effective transportation planning to economic and social development.

This paper explores the transportation planning process and the importance of transportation planning to the social and economic environment in Nigeria. It ventures further into the definition, structure and form of transport infrastructure in other countries relating them to the prevailing situation in Nigeria and thus by extension examines the problems of urban transit systems in the country as well as factors that impede growth and development in the sector. Strategies for addressing urban transportation systems in Nigeria would be treated stressing the importance of participation by the government and public (commuters).

Transportation, put simply, is mobility – the inherent characteristic of moving from one point in space to another which occurs solely in living entities and by extension goods and services. A look at the urban and regional system shows that individuals, people as families, and people as groups are actively involved in a variety of activities that are achieved by engaging first in movement. There exists a functional criss-crossing of urban activities as no settlement is a self-contained unit.

The transportation sector is a very delicate aspect of the physical system which involves a lot more than just systems and infrastructure. Aderamo, 2012 states that; “Transportation planning is the hub of the economy, and that it connects people and makes people and places accessible and enhances social, economic and cultural interactions”. This definition of transportation clearly expresses its importance to the economy and the social spheres of the urban fabric. Socio-economic development of a place thus, is hinged on the free flow of activities in the urban and regional system.

Cities are locations having a high level of accommodation and concentration of economic activities and are complex spatial structures that are supported by transport systems (Rodriguez, 2009). The most important urban transport problems take place when transport systems for a variety of reasons cannot satisfy the numerous requirements of urban mobility. Urban productivity is highly dependent on the efficiency of its transport system to move labour, consumers and freight between multiple origins and destinations. These result in congestion and environmental problems. Among the most notable urban transport problems are;

- Traffic congestion and parking difficulties;
- Longer commuting;
- Public transport inadequacy;
- Difficulties for non-motorised transport;
- Less public space;
- Environmental impacts and energy consumption;
- Accident and safety;
- Land consumption and freight distribution.

Other problems facing urban transportation involve the dominance of automobiles.

With respect to the economy, efficient transport systems provide economic and social opportunities and benefits that result in positive multipliers effects such as better accessibility to markets, employment and additional investments. Conversely, deficiency in transport systems in terms of capacity or reliability can have an economic cost such as reduced or missed opportunities. Efficient transportation reduces costs, while inefficient transportation increases costs. The impacts of transportation are not always intended, and can have unforeseen or unintended consequences such as congestion. Transport also carries an important social and environmental load, which cannot be neglected.

The social sphere of the environment on the other hand involves the individual attitudes of commuters, economic health and quality of life of inhabitants of the area. Not only does the transportation system provide for the mobility of people and goods, it also influences patterns of growth and economic activity by providing access to land. Public policy concerns like air quality, environmental resource consumption, social equity, land use, urban growth, economic development, safety, and security are concerns of the system also. Transportation planning recognizes the critical links between transportation and other societal goals. It requires developing strategies for operating, managing, maintaining, and financing the area's transportation system in such a way as to advance the area's long-term goals.

The aim of this study is to examine the process of transportation planning and the implications of this process to the socio-economic structure of cities. This paper outlines the issues facing urban centres in Nigeria and their solution.

THE TRANSPORTATION PLANNING PROCESS

Transportation planning is the development of a comprehensive plan for the construction and operation of transportation facilities. It is a cooperative process involving users of the system – business community, community groups, environmental organisations, commuters, freight operators, and the general public through a proactive public participatory process.

This dynamic and continuous process should be methodical as opposed to political, where decisions on construction and operation of transportation facilities are taken by political functionaries to gain short term popularity which often leads to piecemeal if not stale growth and development as is seen in Nigeria today. The process comprises of various elements as is found in the model planning process. Although similar, the model comprises of elements which are unique to transportation. The process as described in the fig. 1 illustrated below comprises of; statement of goals and objectives, identification of needs, generation of alternatives, evaluation of alternatives and implementation of alternatives. It looks simple yet it is complex because it contains sub-issues that must be considered to achieve optimum success.

Transportation is intended to help cities and other areas anticipate problems and avoid them. Some of these problems of utmost importance include; congestion, economic development and safety. The model transportation planning process as explained by Department of Transportation, United States; must include a comprehensive study and analysis of the existing conditions, forecast of future population, employment growth, and identification of growth avenues in the city or area. Thirdly, long term plans and short term programs of alternative capital improvement and operational strategies for moving people and goods must be developed. The next step involves estimating the impact of recommended future improvements to the transportation system on environmental features including air quality. Lastly, a financial plan for securing sufficient revenues to cover costs of implementation strategy must be developed.

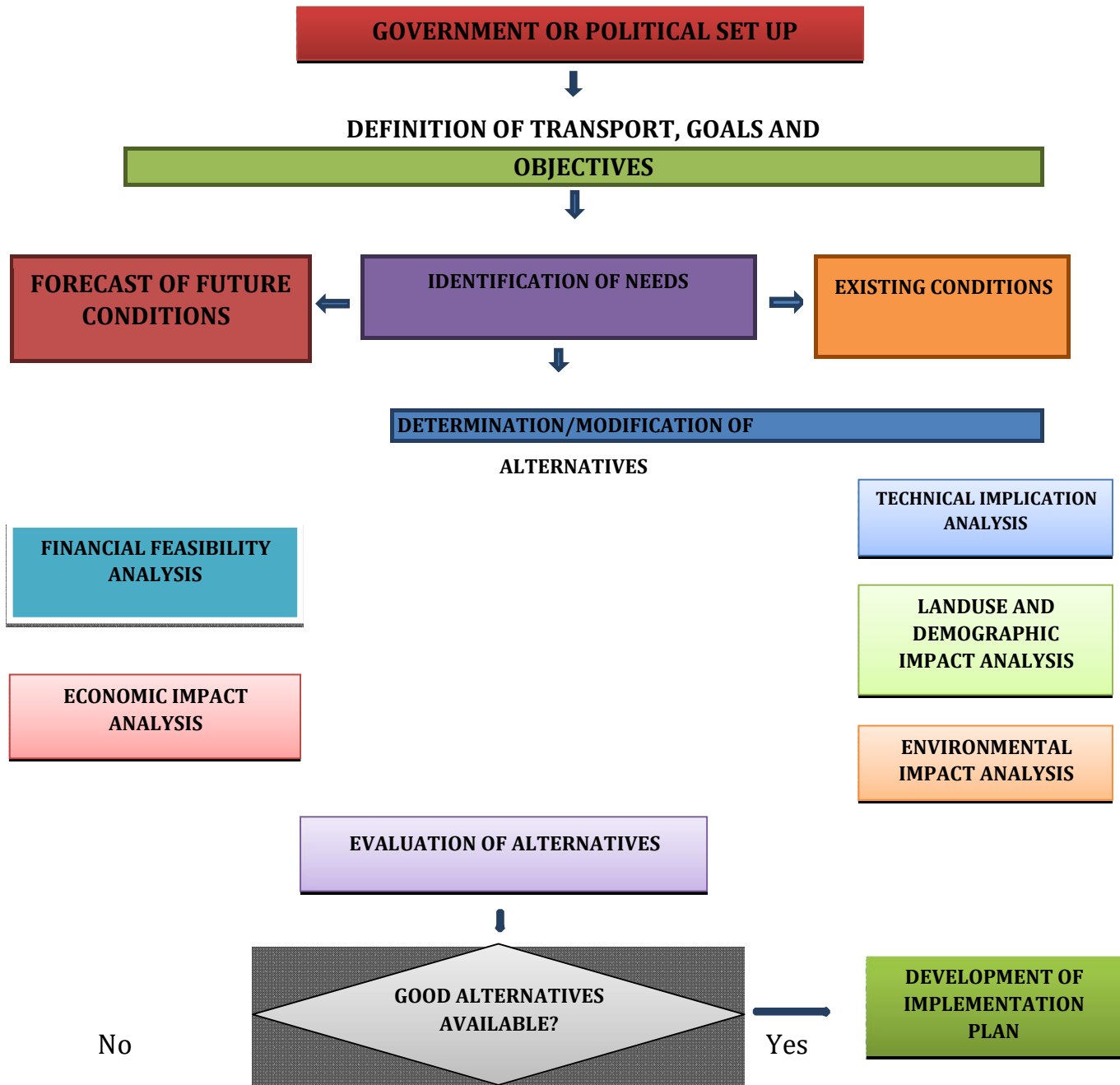


FIG. 1. TRANSPORTATION PLANNING PROCESS

ECONOMIC IMPACT OF TRANSPORTATION PLANNING IN DEVELOPED COUNTRIES

UNITED STATES

Transportation in the United States is facilitated by road, air, rail and water networks. Road transport infrastructure in the country is duly maintained to improve performance and usage as well as other modes of transportation infrastructure. Although transport congestion in the country as at 2009 cost the country almost \$87.2 billion, the economic costs of traffic congestion increased by 63% over the past decade. The country wastes 2.8 billion U.S. gallons of fuel each year owing to traffic congestion.

According to the U.S. Department of Transportation (DOT), Transportation is a vital part of the U.S. economy and is underscored by the fact that more than \$1 out of every \$10 produced in the U.S. gross domestic product (GDP) is related to transportation activity. This includes all aspects of transportation, including the movement of goods and purchase of all transportation related products and services as well as movement of people. Employment in the transportation and material moving industry accounted for 7.4% of all employment and was the 5th largest employment group in the United States.

SOUTH AFRICA

South Africa's seaports are known as one of Africa's biggest and busiest. 96% of the country's exports are conveyed by sea and eight commercial ports are conduits for trade between South Africa and its partners as well as hubs for traffic to and from other parts of the world. The total road infrastructure is about 747,000km constituting the longest network in Africa and is managed, controlled and constructed by the country's governmental system and other agencies. Public transit in the country also integrates rail, taxi and bus services in cooperation with private operators.

The situation in Africa, South Africa to be exact attributes its competitiveness in the global market to their well-developed transport infrastructure. It is regarded as a crucial engine for economic growth and social development and the government has unveiled plans to spend billions of rands to improve the country's roads, railways and ports.

STRUCTURE AND FORM OF TRANSPORTATION INFRASTRUCTURE IN NIGERIAN CITIES

The major road transport infrastructure in Nigeria consists of 32,000 km of Federal highways including seven major bridges across the Niger and Benue Rivers, the Lagos ring road, the third mainland axial bridge; 30,500 km of state roads; and 130,000 km of local roads (Buhari, 2000). As at June 1996, only 50% of the Federal roads and 20% of the State roads were in reasonably good condition and an estimated 5% of local rural roads freely motor able. The rehabilitation programme carried out by the Petroleum Trust Fund (PTF) in the years 1996 to 1999 covered selected portions of the Federal roads totalling about 12,000 km, along with township roads in about 18 selected cities. Even this programme however has now lost its steam. Meanwhile overuse and lack of maintenance are further eroding the quality of the rest of the Federal highway network.

A nation- wide survey was conducted by the Central Bank of Nigeria (CBN) on the state of highways in the country in December 2002. The survey revealed that the road network, as at December 2002, was estimated at 194,000km. Most of the roads were in a bad condition, especially those in the South Eastern and North Western parts of the country. Some of the roads, constructed over 30 years ago, had not been rehabilitated even once, resulting in major cracks (longitudinal and transverse), depressions, broken down bridges and numerous potholes that make road transport slow and unsafe (CBN, 2002).

Faulty designs, lack of drainage and very thin coatings that are easily washed away, excessive use of the road network, given the underdeveloped nature of waterways and railways which could serve as alternative means of transport, absence of an articulated road programme, and inadequate funding for road maintenance are reasons for the poor state of Nigerian roads. The effects of the inadequate maintenance and renewal of equipment and facilities is visible in all subsectors: inadequate condition of the roads and the need for their subsequent reconstruction; inadequate replacement and maintenance of vehicles, contributing to high social costs of atmospheric pollution, resulting in high operating costs. In turn, such excessive operating costs, by decreasing net operating revenues, make

timely replacement of vehicles difficult. Railways on the other hand, suffered lack of necessary resources to keep track, rolling stock and maintenance facility in reasonable conditions has led to a very serious deterioration of the railway system. Similar problems affect inland waterways affecting their ability to perform useful functions.

According to Olomola (2003), inadequate provision of transport infrastructure and services provide a basis for explaining the incidence of poverty across various Nigerian communities in both urban and rural areas. The categories of transport problems that can be identified are: bad roads, fuel problem (high fuel price, shortage of fuel supply and consequential high transport cost), traffic congestion (long waiting time, bad driving habits, hold-ups), and inadequate high passenger capacity/mass transit vehicles. It is clearly established that inadequate transport facilities and services as well as the constraints imposed on the mobility and accessibility of people to facilities such as markets, hospitals and water sources have grave implications on deepening poverty levels. Thus, there is need for urgent policy measures to address the prevailing travel and transport problems.

The vast majority of Nigerian national transport movements are performed through the road and air transport sub-sectors, with railway and inland waterways playing important, although secondary, roles. In the international transport, sea transport is the principal transport mode, while air transport, together with coastal shipping and road transport, as link with neighbouring countries, are the principal passenger carriers. Today, road transport accounts for more than 90% of the country's goods and passengers movements (Filani, 2002).

STRATEGIES FOR ADDRESSING URBAN TRANSPORT SYSTEMS IN NIGERIA

Transport systems world over – in developed or developing countries face a variety of problems which many studies have failed to take cognisance of. Some studies are rather particular instead of holistic and as such neglect of wider range of problems in relationship with other suffice. But urban transport problems are not best solved in a piecemeal fashion. Intimate and inseparable interrelationships exist between transport and geographic locations. Thus, any realistic solution to urban transport problems must take into consideration the interdependence between the form of a city and its transport system.

Innovative solutions must be implored to effectively handle matters involving transportation.

Besides, urban transport problems, like other city problems in developing countries require innovative solutions Gauraw, Young and Khisty (1998) suggested three policy strands involving practices, innovations and sustainable development and emphasised that the three strands could substantially reduce economic, environmental and social costs of some of the negative trends and impacts of urban transportation systems in developing countries. Additionally, caution must be exercised by developing countries in learning from the mistakes made in developed countries such as the United States and to develop solutions specific to their own needs as opposed to simply copying approaches used by developed countries.

A major cause of traffic problems in Nigeria is the city structure which predates the advent of automobiles. Structural pattern of the roads, especially in the traditional areas of the city and the unplanned growth and haphazard land-use distribution, impose serious constraints on movement and the facilities provided. Therefore there is need for a comprehensive understanding of the structural pattern of an urban area and the traffic carrying capability of the roads in order to tackle its transportation problems.

In order to reduce urban transportation problems in Nigerian cities, effective traffic management measures and other remedial measures to improve traffic circulation in the cities must be adopted. This can be achieved through an understanding of the structure of the cities, their route forms and

transport needs. The following specific measures are also suggested where necessary:

- I. Adequate drainage facilities should be provided in areas lacking. Inadequacy in this aspect results in occasional flooding of roads during the rainy season thus affecting traffic flow and reduces road life span pot-holes develop on the roads.
- II. Off-street parking facilities should be provided in designated areas of our cities. When off-street parking facilities are lacking, results is onstreet parking in-turn reducing the width of roads leading to obstruction of traffic flow. Off-street parking is necessary especially along those roads with a high concentration of activities.
- III. Provision of traffic lights at major road junctions in the cities because of large volumes of traffic especially at peak periods. Other road junctions should be provided with “STOP” signs at appropriate arms of the junctions.
- IV. To reduce pedestrian-vehicular conflicts in the cities. This could be achieved by creating barriers, overhead footbridges or under passes. Zebra crossings should be provided on major roads in our cities.
- V. Provision of enabling factors to Road Maintenance Agencies to carry out their duties. Roads that need rehabilitation should receive government attention.
- VI. There has not been any comprehensive transportation study for many urban centres in Nigeria. Thus the volumes of traffic along many of the urban routes in our cities are not known. A time-series data on the various components of urban traffic is of great importance to city planners interested in future transport planning. Traffic flows along major roads in our cities need to be monitored regularly so that the design capacities of those roads are not exceeded.

At the national level, it is being suggested that the country adopts “Best Practice” which involves using the best techniques that have been tried and shown to be effective. Such techniques include using cleaner fuels, retrofitting engines, improving public transportation, coordinating interdepartmental efforts and enforcing stricter traffic rules. It has also been suggested that managing traffic and travel demand, forming publicprivate partnerships and using traffic calming and alternative fuels would help in reducing transportation problems in our cities. In addition, promoting non-motorised modes of transportation, integrating land-use and transportation

planning, inspecting and maintaining vehicles, increasing education levels and controlling urban population growth will go a long way in reducing urban transportation problems in developing countries (Aderamo, 2012).

TRANSPORTATION AND ECONOMIC OPPORTUNITIES

Since the inception of the industrial revolution notable transportation developments have been linked to growing economic opportunities. Transport modes have been developed or adapted at each stage of human societal development. The first trade routes established a basic system of distribution and transactions that would eventually be expanded by long distance maritime shipping networks and the setting of the first multinational corporations thus showing that economic growth comes as a result of the composition of a variety of transport systems working in sync. Major flows of international migration that occurred since the 18th century were linked with the expansion of international and continental transport systems that radically shaped emerging economies such as in North America and Australia. Transport has played a catalytic role in these migrations, transforming the economic and social geography of many nations. Concomitantly, transportation has been a tool of territorial control and exploitation, particularly during the colonial era where resource-based transport systems supported the extraction of commodities in the developing world and forwarded them to the industrializing nations of the time. More recently, port development, particularly container ports, has been of strategic interest as a tool of integration to the global economy as illustrated in the case of China. While some regions benefit from the development of transport systems, marginalization sets in for others through a set of conditions in which inadequate transportation plays a role. It is pertinent to note that transportation in itself is not development but, the lack of transport infrastructures is a constraint on development. As is the case in developing countries, lack of transportation infrastructures and regulatory impediments jointly affect economic development by conferring higher transport costs, among other issues. A poor transport service level can also negatively affect the competition between regions and corporations and thus have a negative impact on the regional added value and employment. Investment in transport infrastructures is therefore a tool of regional development, particularly in developing countries and for the road sector. The standard assumption is that

transportation investments tend to be more wealth producing as opposed to wealth consuming investments such as services. Still, several transportation investments can be wealth consuming if they merely provide convenience, such as parking and sidewalks, or service a market size well below any possible economic return, with for instance projects labelled "bridges to nowhere". In such a context, transport investment projects can be counterproductive by draining the resources of an economy instead creating wealth and additional opportunities. Efficient and sustainable transport markets and systems play a key role in regional development although the direction of causality between transport and wealth generation is not always clear. In a number of regions around the world, transport markets and related transport infrastructure networks are seen as key drivers in the promotion of a more balanced and sustainable development of the region or even the entire continent, particularly by improving accessibility and the situation of weaker regions and disadvantaged social groups. There is also a tendency for transport investments to have declining marginal returns. While initial infrastructure investments tend to have a high return since they provide an entirely new range of mobility options, the more the system is developed the more likely additional investment would result in lower returns. At some point, the marginal returns can be close to zero or even negative, implying a shift of transport investments from wealth producing to wealth consuming. A common fallacy is assuming that additional transport investments will have a similar multiplying effect than the initial investments had, which can lead to capital misallocation. This means quite understandably that the economic impacts of transport investments tend to be significant when infrastructures were previously inexistent or deficient and marginal when an extensive network is already present. Therefore, each development project must be considered independently.

TRANSPORTATION AND SOCIAL DEVELOPMENT

Access to essential products of society such as health care, education and employment are related to personal mobility and access to adequate transportation. Communities lacking mobility options are seen as less developed. This makes it even more difficult for them to access support and opportunities and makes it more difficult for governments to achieve the Millennium Development Goals, particularly reducing global poverty,

combating epidemic diseases, reducing child mortality rates and introducing universal primary education. Access to goods and services depends not only on the physical availability of infrastructure (such as tracks, roads, and bridges) but also on access to vehicles and transport services, both public and private. Factors affecting access include location, cost, and frequency of services, journey time and physical accessibility.

Transport provisions and social development is often seen as working in harmony based on its relationship when formulating transport policies, planning, procurement, monitoring and evaluation. Social development in the transport sector focuses generally on:

- Improving access to transport for everyone;
- Mitigating the negative impacts of transport on society and communities (such as involuntary resettlement, pollution etc.) while maximising the opportunities that transport can present i.e. access to jobs, markets, education, etc.
- Using transport to promote and achieve social inclusion and cohesion;
- Reducing the social and health risks and dangers associated with transport;
- Sharing the social, economic and cultural benefits of transport more equally;
- Improving the design of transport systems and equipment so that they meet the needs of all, including users with specific needs (such as women, children, poor people, handicapped people, etc.);
- Ensuring public participation and representation in transport planning and decision-making.

SUSTAINABLE TRANSPORT AND SOCIAL EQUITY

A sustainable transportation system allows the basic access and development needs of people to be met safely and consistent with human and ecosystem health and promotes equity within and between successive generations; it is affordable, operates fairly and efficiently, offers a choice of transport mode, and supports a competitive economy, as well as balanced regional development; and, it limits emissions and waste within the planet's ability to absorb them as defined by the European Union Council of Ministers of Transport. In this vein, sustainable transport systems have the potential to facilitate achieving the Millennium Development Goals (MDGs), particularly, poverty alleviation and hunger, achieving universal primary education, gender equality through improved mobility, improving health, ensuring environmental sustainability and developing partnership through linking people and places.

CONCLUSION

In summary, transportation as a means to an end and not an end in itself enables people and businesses to access services and a whole lot of other interests while creating a more sustainable economy and healthy environment. Advances in transportation technology have had a very substantial impact on long distance and less regular travel. With the advents of the railways, intercity buses, air services and private cars, travel at long distance is now common, not only for extended vacations but even for a single day of weekend trips. As mobility increases, the ability to travel long distances has enabled people to travel to other sections of the country and even to other countries which have different cultures, dominant industries and patterns of living undoubtedly causing a very considerable effect in the level of understanding of different groups and the mutual respect of one socio-economic group for another. This has also helped to bring nations with multiple cultural heritages together. The increase in speed of transportation and the reduction in the costs of transportation have resulted in a much wider variety of special patterns for human activities. The world has been reduced into a global village as a result of development in transportation technology.

Economic activities on the other hand are primarily concerned with the production, distribution and consumption of goods and services, which are of value to human. People must use the natural resources of the earth to satisfy the necessity of life, to provide food, clothing and shelter to the teeming population of the country not only for these basic necessities but also to use the resources to make life more pleasant, comfortable and rewarding. These resources are not usually found all in one place and no location is well endowed with all the resources. Thus, there is the universal need to transport some of these natural resources from places where they are abundantly available to areas where they are needed but not available. Most communities now consume food items produced in distant places because the cost of transportation is low. Such communities may exchange these distant products with the ones they produce locally. As a result of reduced cost of transportation, there have been some substantial shifts in the location or points of extraction of raw material. For example the location of Kaduna Refinery in Nigeria, far away from the oil producing areas is economically attractive because of the cheapness of transportation.

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