CHAPTER 10: Planning for Urban and Regional Facilities

Abstract

The rising concerns over environmental and sustainability issues are a cause for concern in urban and land-use planning. The extremely changing climatic conditions resulting in flooding, are exposing the ills of poorly located facilities. Poor facility location has resulted in huge losses, especially when tested by natural occurrences. Rising population growths and urban challenges require efficient facility planning to save future generations from suffering disasters due to poor planning. Early scholars propounded various theories to aid the planning and location of facilities and these were relevant in the olden days but with the volatility of the modern world and the rising urban challenges, they seem to have failed to endure the test of time. Population growth and urban expansion demand the adoption of spatial and urban management plans that regulate infrastructure facility location. Facilities that meet and absorb the rising urban demands have become a huge necessity and this makes their location of great importance. The sustainability factor brings in the need for harmonious development that ensures facilities are not in conflict with the natural environment. Thus, the chapter discusses the urgency of proper facilities planning in both the regional and urban setups. The study uses desktop research exploring the previous works on facility planning and location models that have been dominant in the urban planning arena. The modern-day location systems that have proven to be of huge relevance in the facilities planning have been discussed and recommended in the study.

INTRODUCTION

The planning for facilities is one of the most important aspects to consider in urban development, from siting smallest land-uses to the most significant ones (Eterovic and Ozgul, 2012) and this has a bearing upon the success and sustainability of the community. Terouhid, Ries and Fard (2012) denote that methods applied in the location of facilities are crucial in determining optimal use of various facility types. With the changing climate and modernisation, sustainable facility location has become an imperative consideration.

Corruption is among the top evils that have resulted in the ill-location of facilities in urban and regional areas. Most land developers are after money more than sustainable development and have located vital land-uses in unsafe and sensitive areas that continue to cause challenges in cities. With the existing urban development bias, most rural areas continue to suffer poor accessibility to the most important facilities due to distance. Poor facility location has resulted in huge losses, especially when tested by natural occurrences. Because of poor facility planning, many uses have been misplaced with most residential units, for example, located in wet sensitive areas that are prone to flooding. However, with the changing climate conditions, floods and cyclone occurrences have become prevalent which has affected misplaced facilities, thus a call for effective facilities planning.

BACKGROUND AND OVERVIEW

The location of facilities is equated to location analysis which has been dominantly used before the introduction of the sustainability concept. With the changing environment in urban areas, climate and social arena, facilities planning had become one of the important issues to tackle in the decision-making process. Terouhid, Ries and Fard (2012) denote that facilities planning needs to balance moving facilities away from undesired areas and pulling them where demand is high to maximise usage. As observed by Allen (2015), amenities improve the well-being of communities as they are what makes the places welcoming and attractive, accommodating both working and living usages. Amenities such as open spaces, parks, shops and other specific facilities bring value to a community. As population growth continues to increase, many people migrate to the cities for various socio-economic reasons but resulting in a shortage of facilities in cities. Judyta (2016) recommends sustainable planning that promotes a quality standard of living. Providing proper access to infrastructure facilities is one of the important measures for managing urban problems (Strange *et al.*, 2008). Provision of urban facilities, including road networks, sewerage and water supplies, are of prime importance in promoting aesthetics and local investments in the area (Jalowiecki, 1992).

Terouhid, Ries and Fard (2012) argue the need for a more sustainable approach to the management and allocation of facilities in planning. Traditionally, the location managers have focused on economic factors primarily in the placement of facilities. But, with the growing need for

sustainable development, many factors, such as social and environmental considerations, need to be considered to foster sustainable facility planning. DeCoster (1998) defines facilities as general buildings and materials brought together to provide the desired service. Thus, in placing facilities in a certain area, it is important to consider various factors such as usability, accessibility and safety, among many other factors. Poor facilities planning tends to result in long-term costs in the future and even lead to the abandonment of services or ghost towns. Bieganska *et al.* (2011) argue that the lack of proper spatial and facilities planning is a detriment to sustainable urban growth as uncontrolled informal settlements and urban sprawling often expand in the absence of decent facilities. Where there is poor planning of facilities, there tends to be high emigration levels of local citizens as people seek well-planned developments that attract growth. Thus, to boost urban viability and retain residents, careful consideration is of necessity in the allocation of facilities in land use planning.

CONCEPTUAL FRAMEWORK

Various concepts that help inform the study include facilities planning, location, urban, rural and regional facilities. These bring an understanding and appreciation in the relevance of proper planning of facilities.

PLANNING FACILITIES

Tompkins *et al.* (2010) denote that contemporary planning of facilities acknowledges a:

> facility as an important and dynamic requirement to achieve successful, adaptable facilities that are flexible to a new use. Planning facilities is a relevant procedure that helps city planners to ensure they prioritise and optimise conflicting goals and land-uses within a given space while optimising resource usage (Benjamin, Ehie and Omurtag, 1992).

Dawal *et al.* (2010) explain the planning of facilities as the carefully considered decisions made to locate, distribute and arrange various uses and services to achieve optimal utilisation of the urban environment. Well planned facilities harbour the aspects of flexibility, adaptability, modularity, environmental/energy friendliness and upgradability, which are important aspects that promote sustainability (Tompkins *et al.*, 2010). However, it is imperative for a holistic approach to creating such facilities and this includes the absolute

integration of socio-economic and environmental aspects that enhance economic progression.

As observed by Kasilingam (1998), facilities planning focuses on two major aspects of location, which focuses on determining the most suitable location for a facility and layout which is concerned with proper design and arrangement of facilities within one major facility for optimal use. Valen and Buser (2018) denote the importance of organisational participation in the location of enterprise businesses as this also helps foster continued sustainable economic development. Successful urban design is not only about a unique built environment, but also about a facility that satisfies the purpose for which it was made.

URBAN FACILITIES

As cities are after achieving sustainability (Brebbia and Galiano-Garrigos, 2017), the presence of viable and vibrant urban facilities tops the measurable indicators of urban sustainability. Risova and Pous (2018) postulate that quality of life is a popular subject in geography and planning that is to a greater extent a determinant of facilities' availability. Urban facilities encompass various objects within an urban environment that are designated to provide supportive services to the urbanites. Salaj *et al.* (2018) emphasise the importance of facility management as a way of improving the quality of the built environment with well-placed residential, commercial and other facilities. The provision of urban facilities is crucial to the innovation of integrative public and private services that meet human needs. Urban facilities encompass the 'place, space and people that are relevant in the management of facilities' (Michell, 2013). Infrastructure facilities make up the urban precinct and require proper planning and maintenance to maintain optimal functionality and aesthetic value.

The emergent field of urban facilities management is seen as a flexible platform that enables new, innovative integration of private and public sector services to benefit society at the urban precinct scale.

In the same manner that the physical infrastructure at the singular building (micro) level, is a crucial aspect in the spatial experience of users of the building and therefore plays a significant role in the social processes between users of that building, the same is true at an urban precinct (macro) level. Hence in embracing the underlying concepts around space, place and people that underpin facilities management, it

can be argued that the physical infrastructure of an urban precinct is a critical feature in the spatial experience of the said urban precinct and, therefore, in the attainment of sustainable cities. Moreover, the relationship between space, place and people in terms of an urban precinct has a considerable role to play in the creation of sustainable cities. To date, the facilities management response to the sustainable cities agenda has tended to focus on the maintenance of resources and ecological support systems; the long-term sustainability of the profession; sustainable life cycle planning and management of facilities; the reduction of energy consumption in existing facilities; and the need to develop tools for monitoring building performance. It is imperative to have an improved understanding of the relationship between buildings, people and the urban precinct, thereby facilitating the development of an increased understanding of sustainable cities.

RURAL AND REGIONAL FACILITIES

Rural areas suffer various challenges depending on their location and environment. Jamshed *et al.* (2020) reveal that most rural areas are vulnerable to droughts and flooding such that they require imminent help that reduces their vulnerability and ensures maximum risk reduction. When it comes to facility accessibility, Brovarone and Cotella (2020) denote that rural areas have accessibility challenges to services because of scattered developments and poor infrastructural developments. This makes the accessibility factor the first and urgent need that should be met in facility planning in rural regions. Rural and regional facilities are less concentrated as compared to urban areas. Dijkstra and Poelman (2014) reveal that development facilities and infrastructure in rural areas are few because of population concentration. Accessibility is a crucial factor in the siting of rural and regional facilities. As observed by Brebbia and Galiano-Garrigos (2017), most facilities are not accessible, which lowers facility planning effectiveness. Most people in rural areas suffer from a lack of accessibility to important facilities as they are located away from residences. Most children have failed to attend schools due to long and unsafe distances. Thus, the need for proper facilities planning. Apart from poor facility accessibility in the rural areas, there are many challenges of poor maintenance and renovations of the existing facilities due to poor funding (Lawrence, 2001).

Research has shown that compatible facilities are usually located closer together, while incompatible facilities may be located further apart. Figure 1 shows the level of facility compatibility.

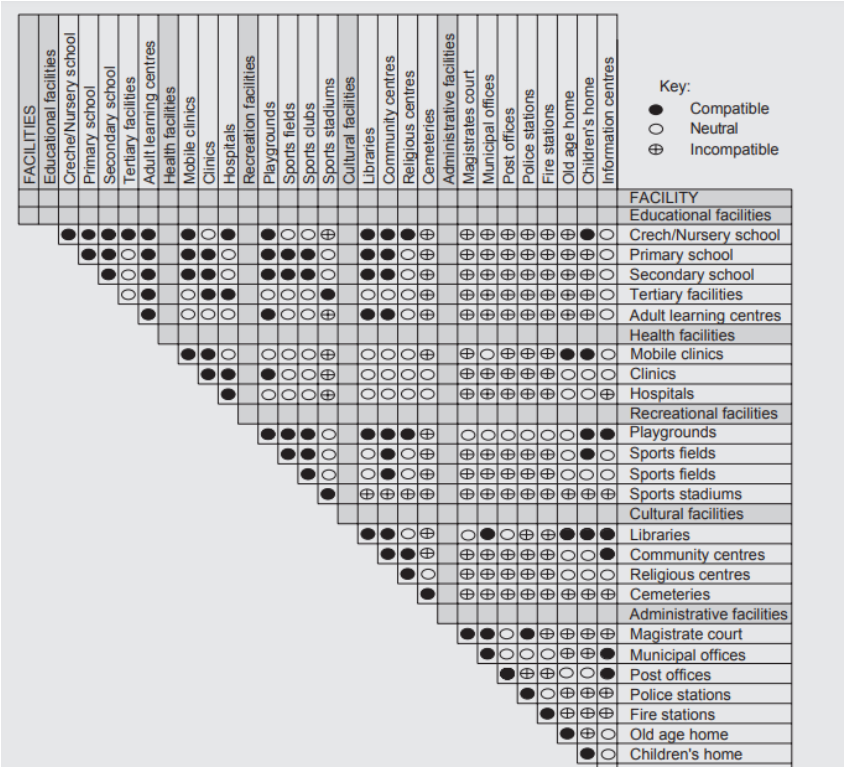

Figure 1: The facility compatibility matrix.

Key – Compatibility – interrelationships between facilities exist

- Neutral – no interrelationships between facilities
- Incompatible – facilities unsuitable to be located close

(https://www.csir.co.za/sites/default/files/Documents/Chapter_05_05_Vol_I.pdf)

Compatible facilities such as nursery and primary schools, share a close relationship and are usually located closer together. Fire stations are usually incompatible with many uses such as clinics and hospitals, schools and community centres and as a result, they may be located away from city centres and in Harare, a fire station is located in the industrial area of Workington, that is a bit out of the city centre. Leonardi (1981) further notes that factors such as taxation, pricing and expansion and reduction contribute to deciding where to locate facilities. Central Business Districts (CBDs)are usually characterised by

high rentals and this may deter facility location. Facilities that could cause pollution, like heavy industry, may be located out of town, and examples are the Workington and Graniteside industrial areas in Harare. Incentives and lower taxes may be introduced by the government to encourage investors to locate their shops out of town to stir economic activity. A good transport network also contributes to development as various public and private facilities may be located along major roads that may link the city centre and town.

It is, however, important to note that community involvement in the location of urban and regional facilities is critical. Lack of community involvement when it comes to the location and construction of new public investments of urban infrastructure may lead to protests by the locals as they resist new developments (Wesolowska, 2016). Also, since the 1970s, the development trend has been shifting from manufacturing to service industries that are usually located in or near urban areas (Farahani *et al.*, 2019). In this regard, people get affected as facilities get located near them. In such cases, public consultations become necessary, especially when developments involve or affect people.

Public consultations are necessary for the views of the local people to be involved in the development and by involving them, resistance to change is reduced. An example is that of the reconstruction of biodegradable Municipal Solid Waste treatment facilities in Zurich that took two years and this involved consulting designers and specialists, carrying out open days and festivals to explain the process and the publishing of newspapers and internet articles and after the consultations, the construction process took 12 months (Wesolowska, 2016). This shows that although they may take too long, public consultations and awareness are an important part of the citing and location of facilities, especially in or near people's locations.

LOCATION

As observed by the *Webster Dictionary,* location relates to the position marked for a given purpose to which a function is to be designated. Terouhid, Ries and Fard (2012) define facility location as the placement of facilities optimally through minimising costs and maximising benefits gained because of the placement. A location can be the city, countryside or any specific area within. Location decisions have changed with time. In the industrial era, economic agglomeration

factors were the dominant aspects that determined facility location (Asssink and Groenendijk, 2009). However, with globalisation and modernisation, "soft", socio-economic issues have replaced the former in facility location decision-making. With proper planning, locational benefits can be gained. Kasilingam (1998) reveals that location is of vital importance as it plays the role of minimising costs and transportation when the facility is located in a strategic position. Tompkins *et al.* (2010) define facility location as its placement in a specific area to which it can perform its intended functions and in proximity to the intended user.

LOCATION THEORIES

Location theories are concerned with the geographic location of economic activity in an urban area or a country. Location theories address questions of what economic activities are located where and why. They also answer the questions of why urban areas are located in the places they are and why they are spaced in a certain arrangement. Space and distance have a bearing on how a system, e.g. an economy, works and this affects how facilities are distributed spatially (Capello, 2011).

VON THUNEN

Since the early 19th century, decisions regarding the location of facilities have always been a concern with theorists trying to understand economic activities and their relation to space and distance (Capello, *ibid.*). Thus, location decisions have always oscillated around distance, rent and economic agglomerations to try and understand the reasons businesses locate in a specific area and not another. The major determining factor has been the optimisation of costs and profits. As observed by Legros, Brunelle and Dube (2016), Von Thunen was one of the early founders of location theories in around 1842.

Von Thunen introduced the bid-rent geographic-economic theory that explains the change in demand for land as observed by distance from the CBD. The theory was developed in the era when agricultural production was the dominant activity when no major technological developments had taken place. The notion behind this was that horticultural produce was located close to the centre where products would be bought before going bad. Cattle farms would be located on the outskirts as they walked easily to the market. Thus, the CBD has always attracted high prices and many customers, such that even in

modern times, businesses and retail outlets consider the CBD to be the most viable location for their outlets with heavy industries located on the outskirts in modern-day planning (*ibid.*).

ALONSO

Alonso expanded the model in 1964 to include the rent-distance relationship in the centre. As propounded by Alonso (1964), rent acts are 'a function of distance to the centre'. However, the relationship grows to be more complex with distance influencing cost and production. As observed by Alonso (*ibid.*), the costs are broadened into the transaction, cultural, transportation and opportunity costs. To that end production relates to distance towards the centre that contributes towards agglomeration economies (Legros, Brunelle and Dube, 2016).

The changing times, globalisation and modernisation have led to a need for sustainable location planning. Terouhid, Ries and Fard (2012) allude to the importance of sustainability aspects as a proposed model for location and facility planning. Figure 2 is a schematic diagram that summarises the sustainability aspects that ensure liveable environments.

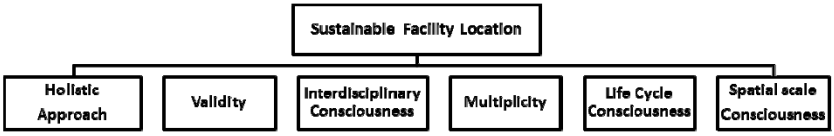

Figure 2: Sustainability aspects ensuring liveable environments *(Terouhid, Ries and Fard, 2012)*

The sustainable facility location model is a proposed model on the location that captures multi-aspects of comprehensive development. This is explained by its holistic approach in planning, interdisciplinary consciousness and multiplicity. The adoption of sustainability in a location of facilities promotes the functionality of facilities and prolonged lifetime.

TECHNIQUES FOR DETERMINATION OF FACILITY LOCATION AND SITING

Various techniques can be used in determining the location and siting of facilities. These include Geographic Information Systems (GIS), Global Positioning Systems (GPS), Threshold Analysis, Factor Analysis and Resource Base Analysis.

GEOGRAPHIC INFORMATION SYSTEMS

GIS is one of the popular systems used in the location of facilities and other land-uses as it provides detailed information through aerial photographs, charts, ground information and satellite images which are of significant importance in the allocation of facilities in planning. Garg (2008) defines GIS as a computer system designed for the collection, management and retrieval of spatial information taken from various sources. Schurle, Boy and Fritsch (1998) reveal that in GIS, the major focus is on managing and analysing existing spatial data which is relevant for facility location and management. GIS makes planning for urban and regional facilities an easy task as it is rich in information that pertains to land-use allocation through suitability analysis (Church, 2002). It provides an important aspect of location research. Such relevance has seen a rise in demand for GIS software as it plays an important role in location. The planning of facilities usually works with population numbers within an area and land availability (Yeh and Chow, 1997). However, such standards in planning focus on the space needed but seldom give specifics on where a facility must be located. Thus, GIS chips in through 'open-space planning' that helps in providing a better understanding of a specific problem by testing different scenarios, parameters and constraints (*ibid.*).

GLOBAL POSITIONING SYSTEMS

The US Department of Transportation (2000) explains GPS as a satellite-based navigation system, controlled by the US Department of Defence, that transmits signals on position, velocity and time. The popularity of the use of GPS has arisen due to various socio-economic challenges that are continuously increasing such as jail cases that require maximum supervision to which the software makes necessary. As observed by Brown, McCabe and Wellford (2007), GPS makes use of geographic coordinates that help in the identification of street locations. This enables facility allocation easier through place finding as the software provides the spatial jurisdictional information at the presently requested time (Marsh and Schilling, 1994).

THRESHOLD ANALYSIS

Threshold analysis, as observed by Hewings (1975), provides insights towards time-cost analysis in land development. Malisz (1972) highlights that threshold analysis was pioneered by B. Malis around the early sixties in Poland as an urban planning tool. There are at least two types of thresholds, which are 'grade (a result of site conditions) and

'stepped' (resulting from limitation in infrastructural services). Threshold analysis is used in various situations urban and land-use planning. In cities, it is used to formulate and compare different strategies necessary for the development of cities and making comparisons between various sites for residential uses. Threshold analysis takes three stages, which are problem identification, analysis and results in interpretation.

In the problem-setting, there is area definition and the identification of assumptions on a proposed area for locating a facility. In the analysis stage, crucial thresholds are defined and cost charts prepared. A structured plan is formulated that shows the results of the analysis. In planning, thresholds are the physical boundaries or limitations faced by expanding cities, and the costs encountered in overcoming the limitations are regarded as threshold costs. It is a tool for assessing development possibilities. Threshold analysis focuses on scarcity in determining the land available for development and that being utilised. In the occurrence of urban growth and expansion, threshold analysis enables the proper allocation of various facilities assessed on the level of demand and accessibility and service within a specified threshold to minimise costs and maximise gain.

FACTOR ANALYSIS

Balasundaram (2009) defines factor analysis as the collection of statistical ways to reduce correlated information to understandable dimensions. It is a procedure applied to simplify questions and classify them into variables (DeCoster, 1998). It analyses the correlations among the variables which are the factors. It is used for data reduction and the evaluation of various dimensions of given variables. Exploratory Factor Analysis (EFA) and Confirmatory Approaches are the two common types of factor analysis (Balasundaram, 2009). It is formulated to reduce data attributes to smaller dimensions. Through identification of 'factors' that describe the correlation, among many variables, decision-making is made effective as influential factors such as projected human behaviour towards a certain facility, is analysed before its placing. Factor analysis is another relevant tool in the placement of urban facilities.

RESOURCE BASE ANALYSIS

Madhani (2010) explains RBA as the assessment and interpretation of existing resources in a specific area before placing a facility to

determine the capabilities of sustenance for future facilities. RBA attempts to answer questions regarding the capability of an environment to provide inputs and resources that ensure a continued viable area. Usually, decisions on locating facilities are dependent on the endowed resources within an area. Many towns have developed where there were mineral deposits and this has continued to attract development. Comparatively, areas, where there are no resources, are left behind and suffer under development.

CASES AND EXAMPLES

There are various cases and examples where facility management has been considered a relevant tool in planning.

WARAW, POLAND

Warsaw is Poland's largest and capital city. Population growth in Polish cities has been swelling particularly in Warsaw (Central Statistics of Poland, 2014). This has been witnessed by large groups of people migrating to cities because of various socio-economic reasons. As a result, Judyta (2016) highlights that municipalities were pushed to ensure sustainable development that absorbs the large populations without compromising the existing facilities. As observed by Strange *et al.* (2008), the priority was to ensure equal accessibility to the facilities such as sewerage, water and road networks. Where there is a properly developed infrastructure in an urban system, more economic development is attracted. However, lack of it drives a lot of people away (Jalowiecki, 1992).

This justifies the migration to urban centres where there are more facilities than in rural regions. Finding the most suitable location for facilities has been difficult for Warsaw. There was the need to consult community members before the siting of facilities. Poor facility location usually has detrimental effects on people. Thus, for sewerage, transport and water facilities, there was a need to acknowledge the public contribution and consent as the facilities are in close vicinity to their residences (Fraczak, 2010). This usually takes time, but it is a worthy cause for future sustainability. Judyta (2016) argues that social factors need to be consider to make sure waste facilities are sustainable and thus he recommends the need to include environmental, social and economic factors. Petts (2000) recommends public participation in facilities planning as was done in Warsaw.

DISCUSSION

Understanding the importance of place, space and facilities are imperative in the creation of the intended urban art designed for social development (Moreira, 2014). Place and space is more than about 'where', but when, how, what and why this ought to be (Agnew and Livingstone, 2011). With the swelling up of the population in urban areas, more challenges arise that affect the quality standards of living for the people. Due to this, a more proper and convenient choice of location for a facility is of necessity. However, as the process is time-consuming, many cities are reluctant to carry out the proper strategy which then hinders future sustainable development. As revealed by Garg (2008), to enable such development, it is imperative to integrate sufficient spatial information using Geographic Information Systems (GIS) and other tools that enable the development of interactive and user-friendly rural development facilities (Ward, Lowe and Bridges, 2003).

Instilling development in rural areas requires sufficient motivation, especially to meet the needs of the societies to maximise the performance and viability of placed facilities such as schools and commercial centres (Biriescu and Babaita, 2013). With rising concerns for sustainability and equity, the issue of facility location calls for rural consideration rather the urban bias. Ward, Lowe and Bridges (2003) argue that the existing differences in needs between rural and urban needs do not give a reason for the urban bias. However, the concerns are the same and all to do with accessibility to essential services. With the understanding of spatial disintegration in rural development (with facilities so dispersed and distanced from people), the location of facilities needs to be approached in a manner that solves disparities and meets the needs of the people. There is a tendency to focus solely on agricultural facility development in rural areas. Although rural economies are backed up by agricultural activities, that should not be reason enough to focus only on the development of agricultural facilities. Ward, Lowe and Bridges (*ibid.*) argue that such planning and development is not enough, but rather should bring in comprehensive approaches that are multi-sectoral.

The adoption of IT in facility planning has become an important strategy to achieve sustainability. With the use of electrical devices and the development of building envelopes that lower the consumption of energy, climate change effects are retarded while protecting user

safety (Suriyarachchi *et al.,* 2018). Atta and Talamo (2020) argue that the use of ICT in facility management has eased a lot of challenges through improving management from the usual traditional processes. With data-driven mechanisms, it becomes efficient to monitor facility management. However, the world continues to revolve which may even render some infrastructural facilities of less importance. With the introduction of 'online learning and business' platforms, there is less need for people to meet physically as quicker channels are used. Also, the COVID-19 pandemic has proven to the world that being physical, e.g. in school facilities, is not the only way to learn. The many lockdowns that are being enforced are promoting the use of ICT. There remain some pockets in the world where physical facilities are still important. Rural areas suffer from poor, inadequate and inaccessible infrastructure facilities.

Apart from the shortage of facilities, the lack of proper maintenance and operations on the facilities is a forgotten important aspect that affects facilities seen by short lifespans (Ox and Murray, 2014). Oyadele (2015) argues that most developing countries decry poor facility design, availability and construction as their problematic situations. However, poor maintenance of facilities after their delivery is the major challenge as most facilities in developing nations are suffering decay, abandonment and disrepair. Where there is poor maintenance culture, the efforts put forward to promote facility development are fruitless (Adedokun, 2011). The demand for infrastructure facilities continues to swell uncontrollably. But, with poor provision and maintenance of facilities, sustainable development and achievement remain a mystery. Without proper management and maintenance, the lifespan of facilities is shortened. Abandoned infrastructure facilities are as good as the absence of infrastructure.

Zhang, Zhou and Mao (2019) highlight that the unequal distribution of facilities leads to spatial inequity. Sustainability is characterised by an equal distribution of primary facilities. However, the continued disparities in facility distribution may lead to failure to achieve sustainable development. With the rising population levels in most urban areas, the available facilities be overcrowded and, therefore, it is imperative to consider additional facilities. Several overcrowded cities are suffering waste disposal and water treatment challenges as the existing facilities are failing to cater for the increasing masses of the human population. It is imperative to break a balance between the

availability of facilities and their functionality. The poor distribution of facilities leads to either overutilisation or underutilisation. Okoroma and Enyoghasim (2012) denote that facility distribution requires all factors, like users and manpower placed in place. In the educational system for both rural and urban areas, the distribution of schools needs to consider the availability of teachers. With the high rate of rural-urban migration many teachers leave the rural regions for cities, still leaving the schools underutilised and less effective.

The poor and most difficult terrains have a huge contribution to the distribution of facilities in most rural areas. Aderamo and Magaji (2010) argue that areas of poor surface conditions are poorly connected and this results in less provision of public facilities such as hospital, school and road facilities. Improving road networks in rural areas is one venture that can aid their development. As compared to the urban areas, where many connections allow for infrastructural investments, rural areas still have a long way to go (Nnamdi, 2012). There is a strong relationship that exists between well-established road networks and the availability of facilities. The skewed development biased towards urban centres means fewer facilities in rural areas. Sedenui *et al.* (2016) argue that public facilities such as hospitals, are concentrated in developed areas than here they are most needed. Equal development needs to balance the distribution of facilities in the most needful areas and this case, rural areas need to be prioritised.

CONCLUSION AND FUTURE DIRECTION

The chapter sought to bring to light the importance of planning for facilities in both urban and regional areas. The previously developed models on location and facility siting made a huge contribution towards the understanding of reasons behind facilities locating certain places. With the changing trends globally, location approaches must become comprehensive to include all factors that solve real-world problems. One such approach is the inclusion of sustainability in facility location decisions. It is a general phenomenon that people find it better to have certain facilities located near their homesteads. This brings the ‘mixed-use approach into huge relevance as it goes in hand in hand with sustainable urban development. Facility location decisions have a mandate to consider future human needs of environmental, ecological, socio-cultural and economic factors into consideration.

Lessons learnt:

- Sustainability is a crucial factor in facilities planning and when incorporated, many facilities will not suffer abandonment and decay.
- Effective maintenance of facilities prolongs their lifespan and usability.
- Accessibility is a crucial factor in facilities planning and should be considered mainly in rural and regional areas
- The adoption of technology in facility planning is crucial in easing the process of 'proper location' finding as GPS and GIS, among other methods make it easier.