

Values Of Sustainable Development Of (Vision Of KSA 2030) And The Application Of The Urban Design Of The Capital, Riyadh-KSA, Towards The Sustainable Energy

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Abstract

Considering that the urban population will continue to grow and reach 68 percent of the world's total population by 2050, sustainable urbanization (SU) is currently a major concern for many cities worldwide, according to an estimate by UNDESA 2014. Riyadh has grown into one of the largest cities in the Gulf region. According to the General Statistics Office, the city's population is expected to grow from 7 million residents to 10 million by 2030. Urban designers are now faced with innovative environmental, cultural, physical and financial problems as a result of the rapid industrialization of the city and population growth, and new methods and processes are required to ensure the long-term sustainability of the city and its region. This study aims to determine the factors that inhibit or promote sustainable urbanization in Riyadh and suggest a framework for sustainable urbanization (SU) that can guide the subsequent development of the city. In the survey taken from the people of Riyadh, government and urban development officials, scientists and scholars were used to collect data. Poor cooperation among urban planners, low public awareness, archaic urban planning laws and regulations, environmental degradation (such as air quality and poor waste management), Growing population, property unaffordability and ethnic disparities impede sustainable development. These conclusions are supported by empirical data that can advise stakeholders on the constraints and possibilities for sustainable urbanization.

Keywords: Sustainable Development, (The Vision of KSA 2030), Urban Design , Capital, “Riyadh, KSA”, Sustainable Energy.

1. Introduction

1.1. Background of Urbanization

Miller (2014) stated that transforming agrarian agricultural societies into industrial societies, ultimately serving economic development, characterize urbanization. Numerous academics have described modernization from a financial perspective, arguing that it is a phenomenon involving the migration of people from agriculture to urban areas. According to McGranahan and Satterthwaite (2014), modernization across the country indicates that urban areas have achieved a higher proportion of the total population than rural areas. Another way to characterize it is relocating rural residents to urban “areas (Peng et al. 2014)”.

The above definitions of urbanization suggest that industrialization or financial expansion equates to population. Indeed, the stylized three-stage development paradigm is presented by Miller (2014) and begins with agrarian civilization while transitioning to an industrial

culture and the service-based sector. Thus, the framework anticipates that industrialization results from modernization as living standards rise, more job opportunities become available, and agricultural migrants flood metropolitan areas with economic opportunities and ways to improve their position in life. However, They argued that modernization processes in many developing countries, particularly Africa, have invalidated the stylized three-stage development framework based on modernization in African cities because many cities have been created without industrialization. McGranahan and Satterthwaite (2014) note that World Bank studies show that Development in Africa is occurring without growth. According to the findings, the cities were chosen to represent the socioeconomic issues plaguing Europe. Following the previous explanations of urbanization, it is clear that urbanization is driven by population expansion (due to migration or high fertility) and industrialization or economic growth. These characteristics can be seen in Riyadh's urbanization management, which will be described in more detail in the coming sections.

UNDESA (2014) defined that growth rates are increasing globally as the proportion of the urban population continues to rise relative to the rural balance. The United Nations Department of Economic and Social Affairs (UNDESA) 2018 World Urbanization Trends study presents statistics showing that modernization has picked up faster than expected in the early 1950s. In contrast to the 1950s, when 30% of the world's population lived in urban areas, in 2018, 55% lived in urban areas. Also, according to projections, 68% of the world's population will live in cities by 2050.

1.1.1. Sustainable Urbanization

Lin and Yang (2006) provided the awareness that settlements are the primary cause of land, air and water pollution has led to sustainable development. In addition, metropolitan areas consume more energy, food, and natural resources than rural areas. The United Nations Environment Program (UNEP), the World Wildlife Fund (WWF), and the International Union for the Conservation of Natural and Organic Capital started from the year on 1980. Initially, they consolidated this idea and the environmental responsibility in urban expansion and development. As a result, many interpretations of a sustainable metropolis have evolved, and a sustainable city considers how its outcome will affect the surroundings of current and future civilizations.

Newman and Kenworthy (1999) explained that a sustainable city involves minimal elimination of waste, soil, water, and air pollution, along with minimal food, water, and energy use. In eco-conscious cities, urban activities' environmental impacts often correlated inversely with the social equity and livability. It was highlighted the close connection between those factors. By recognized this interconnection, it's vital to improve social equity and livelihoods while minimizing the repercussions of urban development initiatives. A direct outcome of the modernization is the conversion of forest and agricultural areas into sites for urban development, a trend frequently observed in many metropolitan areas, especially in tropical and economically challenged regions.

Al-Shihri (2013) determined that urbanization under the parameters of ecologically sound development is what the term "sustainable urbanization" means. It is a situation where the growing population of municipalities and cities has become aware of protecting ecosystems and providing equal jobs, essential services, housing and social amenities in relevant urban areas. Long-term sustainable urbanization or urban growth improves cities' psychological and biological well-being. A strategic plan that considers the needs of current and future generations of city dwellers creates sustainable development. Environmental, social and economic considerations are responsible for development's pillars or guiding principles. Integration of minorities, persons with disabilities (PWDs) and the poor, public safety and security, better schools and public understanding of long-term viability are vital challenges surrounding the social component of responsible urbanism. Instead, a green economy, equitable resource distribution, decent housing, efficient public transportation, and appropriate economic rules and regulations form the financial foundation of sustainable

urbanism. Preserving natural performance, including healthy air and water features, is at the heart of the environmental component of sustainable urban development. Other aspects of that foundation include efficient waste handling and disposal, reduction of pollution, and conservation of resources.

Protecting the environment is central to the responsible urbanization model on three grounds. Regarding urbanization, regional fragmentation and urban sprawl represent the primary causes of environmental problems. Depletion of renewable resources, pollution of the atmosphere, catastrophic events, improper waste disposal, scarcity of fresh water and decline of plant and animal species are just a few examples of environmental problems. Unplanned urbanization, especially in developing countries, has led to substantial income, and financial inequality has fueled the need for a financial component forming sustainable urban development. Economic sustainability also focuses on developing human, artificial and intellectual assets using environmentally friendly methods and resources. Social responsibility considers how urban people interact with their natural environment. Indicators of social viability are residents' access to necessary services, including housing, employment opportunities, public transport, schooling, medical services, honest and public areas, and social exclusion.

1.1.2. Urbanization in the Gulf Region

The majority of peoples located in the area encompassed by the Gulf Cooperation Council (GCC), comprising Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the UAE. Those countries are comparable because they are tropical regions with arid or semi-arid climates. Like Riyadh, many cities in the Gulf region had indigenous cultures that settled into their lifestyle before they became urbanized. According to Ramadan (2015), income generation before urbanization included fishing in coastal areas and regional trade with India with different parts of the world. The region has one of the fastest-growing metropolitan populations in the world and 10 millions of people in the world's population resided at Saudi Arabia. In addition, the GCC is one of the largest urbanized regions in the world, with 70% of its population living outside cities. Kuwait and Qatar, in particular, are almost entirely urbanized. Internal relocation and overseas migration of workers from abroad, driven by the region's economic growth and subsequent job opportunities, are the main drivers of rapid urbanization across the GCC. The urban population of GCC countries is multiplying compared to their overall societies. Information on population growth in GCC countries from 1970 to 2050 is shown in Table 1.

Country	Total Population			Average Rate of Population Growth	
	1970	2010	2050	1970-2010	2010-2050
World	3,685,777	6,908,688	9,194,984	1.58%	0.72%
Dev. Country	2,678,300	5,671,460	7,874,742	1.89%	0.82%
Arab Region	127,865	359,273	598,174	2.62%	1.28%
Bahrain	220	807	1,277	3.30%	10.15%
Kuwait	744	3,051	5,240	3.59%	1.36%
Oman	747	2,905	4,878	3.45%	1.30%
Qatar	111	1,508	2,316	6.74%	1.08%
Saudi Arabia	5,745	26,246	43,658	3.87%	1.28%
UAE	225	4,707	8,253	7.90%	1.41%
Total GCC	7,792	39,224	65,622	4.12%	1.29%

Table 1: Urbanization of Population Growth

1.1.3. Urbanization in Riyadh

General Authority for Statistics (2016) reported that When King Abdul Aziz designated Riyadh as the largest city in the Kingdom of Saudi Arabia in 1900, it grew into one of the

largest cities in the Gulf region. By 2016, Riyadh's population had grown to nearly 6 million, with a tribal community 12,000. 2020 the city's population is expected to reach 8 million (Figure 1). Riyadh has shifted from an ethnic minority to the manufacturing capital of KSA, where small-scale agriculture and nomadic pastoralism were the primary sources of income. The oil crisis affected the city's growth, as infrastructure initiatives such as building hospitals and schools were financed with oil exports. As a result, people from different countries and rural areas migrated to Riyadh for work. In terms of urbanization, this is consistent with patterns seen in other cities. McGranahan and Satterthwaite (2014) link rural-urban migration and the financial expansion of urban areas. People often migrated to more profitable areas, which changed in Riyadh once the oil industry's success gave the city the funds it needed to improve its infrastructure and provide basic amenities.

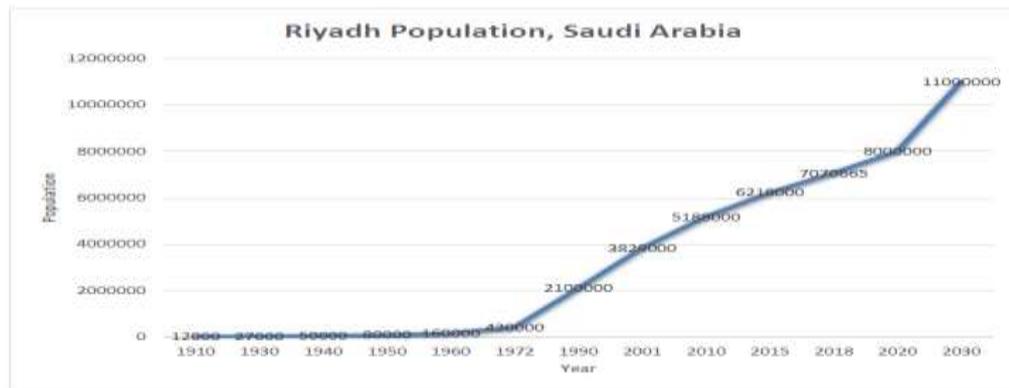


Figure 1: The population of Riyadh

1.2. Sustainable Urban Development

The idea of eco-friendly responsibility and sustainability arose from recognizing that the planet's ecological assets are being rapidly destroyed due to the world's growing population. According to Al-Shihri (2013), consumer demand for more and better products is increasing, which puts more pressure on the environment and the earth's resources. These concerns led to the UNGA Conference on Environmental Issues and Long-Term Development held in Stockholm, Sweden, in 1972. One of the summit's resolutions and participants at the event further pledged the need to protect environmental integrity as a fundamental human right. It is preserving the natural world for future generations. Another is mechanisms that support sustainable development, such as energy conservation, controlled urban growth, cheaper transport options, public transport networks, regulated land use, reduced pollution, reduced congestion, improved health and improved infrastructure equitable development. Amidst the talk, 70 distinct visions of sustainability in various academic fields have emerged. One of the essential definitions of a sustainable future is a process in which the amount of pollution is smaller than nature's cleanup capacity, and the use of renewable assets does not exceed its reproduction rate.

The three main pillars of long-term growth are the foundation from which residents of rapidly urbanizing cities can significantly benefit. Economic viability, sustainable development and cultural viability are the three elements or foundations that must accompany peace. According to McGranahan and Satterthwaite (2014), cities aware of these factors can benefit significantly from urbanization. They also note that strategies in developing countries to reduce rural-urban mobility are desirable for improving these characteristics. People (social sustainability), profit (economic sustainability) and earth (environmental sustainability) are three synonyms used to define each aspect of responsibility in different contexts (Al-Shihri 2013).

Arcadis (2016) provides several social sustainability measures in its Urban Sustainability Index, including health (obesity and life expectancy), work-life balance, dependency ratio,

housing costs and equal income. On the other hand, measures of the planet's environmental sustainability include water use and the proportion of renewable energy sources. These include the probability of natural disasters, air pollution, greenhouse gas emissions, biodiversity, recycling costs and cleanliness. Economic Sustainability (Profit) examines the financial effects of urbanization, GDP per capita, business friendliness, infrastructure (congestion traffic), mobile and broadband availability, and international corporate relations.

1.2.1 Sustainable Urban Development in Riyadh

The most recent assessment of Riyadh's progress in terms of sustainable urban development can be found in the 2016 Sustainable Cities Ranking. The purpose of the index is to assess a city's potential as a place to live and its environmental and economic health (Arcadis 2016). In terms of equitable development as cities, it considers whether the various elements of sustainable development work together rather than examining each separately. In the 2016 edition, 100 cities worldwide were analyzed and ranked according to their performance in three sustainability aspects. Riyadh is ranked 76th globally and sixth in the Middle East, one place ahead of Jeddah. The city fared well regarding social stability due to its low crime rate, somewhat balanced dependency ratio, and relative cost-effectiveness. With its extensive communication infrastructure and mainly immune to natural disasters, Riyadh also performs highly on the financial reliability factor. It is despite knowing that it could do better on several economic sustainability indices, particularly its facilities for transportation. However, due to various factors/indicators, it enormously gains the overall sustainable development component. These factors include low levels of green space, high energy use and greenhouse gas emissions. Saudi Arabia's second-largest city, Jeddah, is also plagued by similar environmental problems. Unlike Riyadh, Jeddah is very vulnerable to flooding. The town, ranked 81st overall, also has business-friendly climate and transportation system issues.

1.3 Aim

The study aims to investigate and comprehend the elements that promote and obstruct sustained urbanism in desert towns using Riyadh.

1.4 Research Objectives

- (i) To study sustainable urbanization's (SU) financial, social, and ecological aspects in Riyadh.
- (ii) To determine the difficulties when preparing for sustainable urbanism in Saudi Arabia
- (iii) To analyze the forces that promote and hinder effective development in desert cities like Riyadh;
- (iv) To create a paradigm regarding ecological urbanism that will guide future urban expansion in Riyadh and other desert towns.

1.5 Research Question

- (i) What are the problems with preparing for SU in Saudi Arabia?
- (ii) What factors contribute to and impede Riyadh's sustained urbanization?
- (iii) What financial, community, and environmental elements are Riyadh's SU (sustainable urbanization)?
- (iv) What would constitute an SU structure that governs the eventual growth of urbanization in Saudi Arabia?

2. Literature Review

2.1 Characterization of Urbanization in Kingdom of Saudi Arabia

Al-Shuwaiqat et al. (2006) mentioned as cities represent economic and social turbines that enhance the infrastructure of a region, urbanization is often considered a strategy to facilitate financial development. While affecting the delivery of urban services, including transport, waste management and drinking water, this process improves or improves housing shortages. An economic system dependent on petroleum money has influenced Saudi Arabia's urbanization processes. Rapid population growth prevailed in the 1970s due to petroleum riches spurring government investment and constructing roads and housing. Ten years later, this trend began to decline due to falling petroleum prices, which led the central government to review its spending. The government then developed new ideas for urban expansion, including providing jobs and facilities for growth. External variables did not have a significant impact during this Period. There are social dimensions of sustainability in "Kingdom of Saudi Arabia" (KSA), but they have progressed significantly according to academics. With this in mind, administrations need to recognize that the environment is an essential component of sustainable and effective urban planning, even though the topic has not received much attention in developing urban areas in the Kingdom of Saudi Arabia. Nations cannot grow politically, financially and technologically if urban areas rely on non-renewable resources. One method of achieving sustainability is climate impact assessments, which gained prominence in the Arabian Gulf and much of the world in the 1990s. However, in the global setting, "Kingdom of Saudi Arabia" has a higher urbanization rate than most populous Arab countries, including Egypt, the Nation of Iraq, and Syria.

2.2 Monitoring Urban Development and Land Use

Abou-Korin and Al-Shihri (2015) suggested that Urban planning problems have been caused by urban sprawl caused by the rapidly expanding cities of the Arabian Gulf. Saudi Arabian communities such as Riyadh and Dammam are emerging as metropolitan centres that require additional territory. Urbanization has caused lasting land impacts as neighbourhoods adapt to growing populations. Formerly used agricultural properties have been converted to accommodate institutional, commercial, transportation and recreational facilities. Expanding economic zones was the goal of land reclamation operations that formed a clear pattern along the Arabian Gulf coast. Those methods are ineffective and kill the aquatic life in the waters of the Arabian coast, leading to food shortages in the future. Long-term problems caused by accelerated urbanization harm the natural environment due to chemical waste generated by industry, which affects land morphology. According to several studies, the area should soon be considered uninhabitable, and pollutants will increase health hazards.

2.3 Riyadh's Growth and Expansion

Aina et al. (2008) noted that satellite imagery continuously assesses land use in Riyadh through image classification. The need to increase the quality of classified images to provide reliable representations of the progress of urban development and modified land use to help the environment to improve sustainability in Riyadh. An additional advantage of frequency control is that it creates a functional classification system for generating empirical findings. They suggested using zoning in a semi-arid climate such as Riyadh and seeing how imagery using zoning can be used to develop urban development concepts specifically for Riyadh.

Aina et al. (2008) determined that photographs assessed by investigators, Riyadh's urban area grew from 24 square kilometres in 1970 to 700 square kilometres in 2005. Such a hyperbolic pattern is responsible for leap-frog development, which results in a part of the property remaining vacant for an extended period and other parts of the land being irregularly divided without a clear indication of their purpose. Also, since 1976, the Tamman metropolitan area has been subject to property works and improving guidelines

and structures that have helped the spread (Abou-Korin & Al-Shihri, 2015). But there were many situations where those laws were violated, thereby affecting land employment and urban development.

2.4 Sustainability Initiatives, Needs, and Challenges in Riyadh

Choguill (2008), there is no clear answer as to whether Riyadh is a sustainably designed metropolis because it is one of the most unusual cities in the entire Middle East region. The city has seen tremendous socioeconomic progress, but this has come at the expense of its natural environment and resource allocation. These significant achievements include increased income and productivity over the past 20 years, the development of public facilities and infrastructure, including hospitals and health systems, reduced illiteracy levels and increased life expectancy.

Salam (2013) discussed that the government's efforts to address some of the problems brought about by urban development and discrimination against foreigners are a noticeable trend in Riyadh. As of 2010, 1.9 million expatriates live in Riyadh compared to 4.5 million citizens. As a result, Riyadh was the second largest city hosting expatriates in Saudi Arabia. Gamboa (2008) argued that the city's culture is divided by race and money. The city is home to employer-run housing developments that provide low-income housing for workers. Compared to their Saudi equivalents, foreign workers earn very few dollars. When the town distributed parcels of property to residents, a divide was established between high-income and low-income households. Low-income families, often with large families, were allocated less land than the wealthy with higher incomes. Due to this process, the structure of the Muslim society was disrupted by the formation of residential divisions based on economic status. However, the literature shows that Riyadh is engaged in several environmental awareness programs, especially considering the city's projected population increase and current and future demands. Currently, the Riyadh Economic Agency is responsible for managing urban sprawl. Its mandate is to curb explosive growth to ensure the city's sustainable development (Aina et al., 2008).

Alshuwaiqat and Aina (2005) established that the Saudi government had incorporated eco-friendly concepts by creating structures that consider the environmental impacts of urban building activities. Hussain and Khalil (2013), any comprehensive sustainability strategy should include database tools, database research development, emissions monitoring and simulation of fixed and portable sources. These findings suggest that multi-criteria decision-making (MCTM) methods should be used and should be cost-effective. Monitoring should occur at the local and national levels to review regulations and indicate the effects of environmental activities, with data being aggregated in one place. Many elements of the environment, such as air, water supply, and land, must be monitored, researched, and modelled.

2.4.1 Sustainable Urbanization for Health and Environmental Well-Being

WHO (2015) showed that the degradation of ecosystems caused by pollution and the wastage of resources is one of the earliest problems linked to urbanization. Because of the importance of our surroundings to guarantee the safety of the next generation, urban planning and sustainability are increasingly concerned with the effects of humanity's actions on the environment. According to Martin (2008), urbanization and modernization substantially impact microbiological and biological functions in the global ecosystem. For example, authorities should ensure that metropolitan areas are managed sustainably to save the environment. Similarly, the WHO advocates that attention should be paid to environmental issues at the socioeconomic level.

Choguill (2008) stated that the combination of financial, social and environmental components of an urban system results in a sustainable future. A subtle piece of responsible

urbanization is the discussion of renewable and non-renewable materials in terms of ecological health and sustainability. As forests and food depend on sunlight for maintenance and production, communities in green environments do not face problems. However, desert cities have limited non-renewable resources such as water and energy. For example, water is considered complex because it has to be supplied. Therefore, water extracted from waterways and other resources should not exceed the restoration rate. The effects of urbanization on the natural environment have resulted in a decline in quality of life and health. Health risks, poverty and reduced quality of life are caused by the inability to collect large amounts of garbage and the lack of basic practical activities Bansal et al. (2015).

Abou-Korin (2011) provided that rapid urbanization in arid regions such as Saudi Arabia has degraded agricultural and aquatic ecosystems, impacting local populations' ecological balance and well-being. The collapse of existing environmental and planned regulatory structures characterize this urbanization. It limits opportunism compared to practical urban expansion and poses a risk to land and aquatic habitats. The study shows that agricultural and coastal clearing harm the Dammam region's aquatic and marine landscapes.

2.4.2 Social Justifications for Sustainability

Zhang (2015) justified that sustainability is critical to social well-being and healthy socioeconomic development, favouring the environment and conserving resources. Many academics provide compelling arguments for the societal need for sustainable urban development. According to Choguill (2008), a sustainable future includes:

A) Assistance for people experiencing poverty, who frequently have little choice but to harm the environment by misusing non-renewable resources like water. B) The idea of cost-effective growth using emerging financial parameters that do not undermine efficiency or breakdown the surroundings; C) Healthcare control; D) the creation of self-reliant expansion within the limitations of biodiversity, notably non-renewable savings; and E) People-centered efforts and the growing awareness that humans are also beneficial

OKM et al. (2017) defined that the solid social case for sustainable development is made by The academic proposal that advanced sustainability initiatives support and promote a balance between human demands and the capacity of natural resources. As a result, human-powered lifestyles that use fewer resources are becoming more widespread. As humans ultimately use biodiversity for their livelihoods, argues that the most effective efforts consider social and cultural contexts. Consequently, sustainable urban regulations must be rooted in the need to contextualize development in terms of socio-cultural factors. These models should consider the urban population's norms, behaviours and value systems.

Asheim et al. (2001) make a strong case for the value of sustainability in society. According to the authors, sustainability is the key to ensuring that future generations have the same Earth resources and social luxuries that we do now. Instead, they make an ethical case based on societal notions of justice and equality. According to their research, only the sustainable behaviour of the current generation can ensure future fairness and efficiency in any particular technology field. Therefore, sustainability not only helps the residents of urban areas today but also provides long-term viability by eliminating the expected adverse effects of current neglect.

2.5 Structure of the Organisation of Riyadh

Althabt (2013) defined that the Amara Governorate and regional divisions form the provincial government in Saudi Arabia under the supervision of their respective centralized departments, of which the local governments are a part. As a result, municipalities do not have complete control over urbanization, although authorities handle a significant portion of those duties. The Riyadh High Authority for Development (HCDA) and the Executive ADA (Ariyath Development Authority), which supports the HCDA, are two examples of

cross-cutting institutions and departments in Riyadh's overall structural system, as shown in Figure. At the local level, the main goal of the governor and labour allies is to operate the region following KSA's laws and policies. As a result, they are responsible for maintaining law and order, safeguarding public safety, ensuring people's freedoms and liberties, and effectively promoting Riyadh's long-term social and economic development. The Local Committees, the Provincial Council and the Director of the Center agree to cooperate. Riyadh's organizational structure lacks fiscal divisions between municipal and central governing authorities. Thus, throughout 2003, federal spending on municipal infrastructure construction, concessions, and regional incentives generally accounted for 8% of the total. Local council representatives should carry out continued responsibilities with the support of the Ministers of Education and Health.

(i) Gather all the available assets to the town and decide whether to employ them most effectively.

(ii) Establish objectives for usage, identify the origin of extra funds, and resolve any municipal financial difficulties. - Align every development plan with the spending plan.

2.6 Sustainable Urbanization: A Review

A literature review is essential in any investigation because it helps narrow the research area by identifying information gaps the study can fill. The four research inquiries that frame the current research are the main emphasis of this summary of the available evidence. Issues are organized into themes or sub-themes that serve as a road map for the literature search. Difficulties related to urban design and development are deeply explored through academic literature.

2.6.1 Barriers to sustainable urbanization

Al-Surf et al. (2016) determined that poor community engagement in urban development and implementation has been cited throughout previous research as one of the barriers to Riyadh experiencing sustainable development. In the survey, most Saudi citizens did not know sustainability or how to implement it. Similarly, Bajaber (2017) observes that people are generally not consulted when establishing policies in Riyadh and across KSA. It supports claims made in previous research that development-related decisions often originate at more significant levels of management. Contrary to the fact that these strategies were not initially always inspired by the needs and wishes of the local population, these plans were later implemented by the leadership of the municipality (Garba 2004).

Bidgood et al. (2017) reported that the negative impacts of Riyadh's rapid development are exacerbated due to the insufficient involvement of communities in urban development and operations. Also, several studies have emphasized the need to update Saudi Arabia's urbanization laws and regulations. Its forthcoming Saudi Cities Project (2016) laments the lack of flexible rules that could help address the difficulties posed by Riyadh's growing population, linked to increases in fertility rates and domestic and foreign immigration to the city.

Al-Surf et al. (2013) found that the lack of government regulations and instructions on a green environment hinders the use of renewable resources throughout the building industry. Policies governing land use are an example of ineffective measures that have facilitated urban growth. Based on 's research found that asset allocation rules have led to a situation where many assets remain idle in Riyadh as investors wait for asset information to increase. Furthermore, the public sector has a large amount of property to encourage the growing construction of large houses to meet the rising demand for accommodation. Another problem associated with urbanization is that the housing industry, which has been hit hard by Riyadh's rapid growth, requires new rules and regulations.

3. Methodology

The research uses a qualitative method because, in contrast to quantitative analysis, it can explain a concept through sources, reveal different facts and arrive at a unified understanding of the study within specific contexts. Relatively opposed to extensive data analysis, appropriate use of quantitative information from personal conversations, document analysis, and field studies should help the investigator better understand the problem. This methodology enables researchers to distinguish between expertise, dispositions, and skills related to the phenomena under study (Alyahmad & Saleh, 2013). This method aims to design a structure that regulates the development of an ecologically sound community. It will be accomplished by creating sustainable urban practices and regulations that coordinate the efforts of the triangle of clients, including consumers, stakeholders, and the state.

Interpretive thinking, the theory of research, was the driving force behind using a quantitative method. It contrasts positivism, which asserts that the universe is socially produced and can only be explored through subjective evaluation. According to the positivist (Soiferman, 2010), social reality, on the contrary, is external to the observer, who can only measure its properties objectively. According to their experiences, religious beliefs, and other cultural backgrounds, individuals have different perspectives on promoting sustainable development in Riyadh. They facilitate sustainable urbanization in Riyadh, and embracing an interpretive scientific framework enabling researchers to gather such a wide variety of perspectives is critical. In addition, the researcher used a method known as inductive analysis to develop the research inquiries and conduct the subsequent study. The technique begins with inference and ends with a hypothesis based on inductive reasoning or observations or trends found through data collection. Through interviews with residents, government officials and academics involved in Riyadh's urban planning, the investigator should identify a trend in the current phenomenon. Based on the research objectives for the study, the researcher can infer the answer to the sustainable development of Riyadh with this trend by Thomas (2006).

In reaction to the first research issue, scholars, government experts, and citizens of Riyadh consider environmental issues as obstacles to potential urbanization in the city. It following trend results from similarities or differences in the opinions of the three groups of respondents. After observing a pattern in these concepts, the researcher can conclude that environmental ecology is a significant obstacle to sustainable urbanization and should be addressed by national and local governments to facilitate sustainable urbanization. The inductive technique sometimes called the bottom-up method, is often used in qualitative inquiries because interpretation is subject to interpretation, and investigations are often flexible (Creswell 1998).

3.1 Research Design

Patton and Cochran (2002) influenced the measurement method in the study's design, and the quantitative research aims to understand a specific aspect of social interaction. It is the case for a survey aimed at understanding respondents' views on the increasing urbanization of Riyadh. The 25 items in the questionnaire were divided into four categories based on the study's topics and the study's goals. Questions were developed following exploratory research, which would benefit from revision or addition by piloting the interview. The researcher gave survey questions to the participants, who then answered them.

3.1.1 Questionnaire

1. The framework of sustainable urbanization is used to get the development of Riyadh city.
 - a) Disagree b) Strongly Disagree c) Intermediate d) Agree e) Strongly Agree.
2. The ecological factors in society are determined by using the model of sustainable urbanization.
 - a) Disagree b) Strongly Disagree c) Intermediate d) Agree e) Strongly Agree.

3. The vision of 2030 focused on preparing a sustainable urbanization strategy to create a sustainable society in Saudi Arabia.
a) Disagree b) Strongly Disagree c) Intermediate d) Agree e) Strongly Agree.
4. Sustainable urbanization eliminates the difficulties and promotes the forces to develop in the desert city.
a) Disagree b) Strongly Disagree c) Intermediate d) Agree e) Strongly Agree.
5. The financial, community and environmental factors contributed to enhancing sustainable urbanization in Riyadh.
a) Disagree b) Strongly Disagree c) Intermediate d) Agree e) Strongly Agree.
6. The government initiated new ideas for urban expansion, providing jobs to the individual and growth of the infrastructure facilities.
a) Disagree b) Strongly Disagree c) Intermediate d) Agree e) Strongly Agree.
7. The political parties should effectively plan for a sustainable city's growth depending on climate change.
a) Disagree b) Strongly Disagree c) Intermediate d) Agree e) Strongly Agree.
8. The urban development section should monitor the land usage of agricultural properties while using the commercial trade.
a) Disagree b) Strongly Disagree c) Intermediate d) Agree e) Strongly Agree.
9. The government provides proper health and good environmental condition to Saudi Arabia's individuals.
a) Disagree b) Strongly Disagree c) Intermediate d) Agree e) Strongly Agree.
10. The government created the structure between urbanization and sustainability in the organization's development of Riyadh City.
a) Disagree b) Strongly Disagree c) Intermediate d) Agree e) Strongly Agree.
11. The welfare facilities influence the techniques to expand urbanization in Saudi Arabia.
a) Disagree b) Strongly Disagree c) Intermediate d) Agree e) Strongly Agree.
12. The expenses of oil and petroleum resources were properly used in the welfare development.
a) Disagree b) Strongly Disagree c) Intermediate d) Agree e) Strongly Agree.
13. The technology is employed to take sustainable energy sources from the earth in a limited amount to avoid disaster.
a) Disagree b) Strongly Disagree c) Intermediate d) Agree e) Strongly Agree.
14. Technology drives the sustainable development of urbanization using natural resources.
a) Disagree b) Strongly Disagree c) Intermediate d) Agree e) Strongly Agree.
15. The government established the modern smart city by expanding sustainable urbanization growth in Riyadh.
a) Disagree b) Strongly Disagree c) Intermediate d) Agree e) Strongly Agree.
16. Urbanization controls the challenges of the natural energy source to determine a sustainable city.
a) Disagree b) Strongly Disagree c) Intermediate d) Agree e) Strongly Agree.
17. Sustainable urbanization (SU) frequently uses renewable and non-renewable materials for ecological health and the environment.
a) Disagree b) Strongly Disagree c) Intermediate d) Agree e) Strongly Agree.
18. Sustainable energy declared the initiative sources and to balance the capacity of natural sources and human demands.
a) Disagree b) Strongly Disagree c) Intermediate d) Agree e) Strongly Agree.
19. The Urban Department followed the rules and regulations to maintain the usage of natural resources in Riyadh City.
a) Disagree b) Strongly Disagree c) Intermediate d) Agree e) Strongly Agree.
20. The sustainable city regulates the social and cultural context of bio-diversity in the growth of urbanization.

- a) Disagree b) Strongly Disagree c) Intermediate d) Agree e) Strongly Agree.
21. The local region effectively promotes long-term social and economic development in Riyadh.
a) Disagree b) Strongly Disagree c) Intermediate d) Agree e) Strongly Agree.
22. The government facilitates sustainable urbanization in Riyadh and embraces an interpretive scientific framework for the city's growth.
a) Disagree b) Strongly Disagree c) Intermediate d) Agree e) Strongly Agree.
23. The technique is used to measure renewable energy usage in the human environment to increase sustainable life existence.
a) Disagree b) Strongly Disagree c) Intermediate d) Agree e) Strongly Agree.
24. The government authorities and citizens of Riyadh consider environmental issues as obstacles to potential urbanization in the city.
a) Disagree b) Strongly Disagree c) Intermediate d) Agree e) Strongly Agree.
25. The government authorities maintain law and order, safeguard public safety, ensure people's freedoms and effectively promote Riyadh's long-term city.
a) Disagree b) Strongly Disagree c) Intermediate d) Agree e) Strongly Agree.

3.2 Sampling and Participants

The investigator used purposive sampling to select the sample members and the number of participants. Such sampling technique, often called individual, specific or assessment collection, depends on the researcher's judgment in selecting the research items (Sharma 2017). According to research, these units can be events, data bits, cases/entities or people. The subjects of this study are human beings, i.e. residents of Riyadh, scholars and government experts. Some examples of various purposive sampling techniques are population-level collection, occupational sampling, highly variable selection, homogenous sampling, extreme/variable case sampling, and casual case sampling.

Sampling with the most significant variance was used to determine these research individuals. This type of purposive sampling, also known as multivariate sampling, attempts to gather different perspectives regarding a phenomenon under research. Applying maximum variance sampling in this investigation enabled the research to understand multiple perspectives in promoting sustainable urbanization in Riyadh. Using this sampling technique, the researcher gathered various viewpoints, from the most mundane to the most unusual or extreme. The sample under investigation, therefore, displayed a diverse spectrum of traits, phenomena, characteristics and behaviour. According to Sharma (2017), this is one of the results of using the maximum variance model.

3.3 Data Collection

A survey with six experts, eight residents of Riyadh and six scholars was carried out as the initial stage of the data collection process. These individuals were randomly selected from Nemar, Al-Naseem, Al-Olayyah, Al-Tiriya and Al-Madar. A study aims to learn more about a potential research topic or problem. This preliminary investigation seeks to understand a possible research topic or issue. Like any empirical research, this initial investigation aims to fail to draw concrete findings on promoting sustainable urbanization in Riyadh. In addition, preliminary analysis helps lay the groundwork for a definitive study by establishing the methodology and sampling structure of the initial research.

Survey subjects were sent open-ended questions to elicit their perspectives, views, and knowledge about variables that could promote or hinder Riyadh's sustainable urbanization. In the present research, broad concerns were a proper method as it allowed the investigator to assess the participant's views on the sustainable urbanization of Riyadh. The respondents' feelings, opinions and understanding of the subject allowed them to incorporate more details into their answers. In addition, using open-ended questions prevents response to the error that sometimes occurs with closed-ended questions. Participants are more likely to ignore questions in the latter type of inquiry and select an answer from a list of options that may not accurately reflect their opinions, feelings, or familiarity with the research issue.

The sample size was increased for the primary experiment to include 30 residents of Riyadh, 20 professionals and 20 professors. These respondents were selected through snowball sampling after the participants of the research study made recommendations to the researcher. The selection, often referred to as network reference collection, involves participants referring the investigator to more individuals or potential participants who may be able to help or be willing to engage throughout the study (Penrod et al. 2003). It is a valuable tactic when other sampling methods make it impossible for the researcher to reach prospective respondents. The biggest problem with adopting maximum variance and landslide selection as part of purposive sampling is that this type of selection is subjective and subject to the possibility of analyst influence. Snowball Effect Selection depends on responses that identify potential participants, which increases the likelihood of Sampling error and lack of representation based on the broader population. In this situation, individuals selected by other participants tend to have similar qualities, characteristics, or perspectives on the subject of study (Penrod et al. 2003). It was true for this study, as most of the residents selected through random sampling shared similar traits and characteristics.

4. Analysis

The most recent Nvivo software, Nvivo 12, was used to assess the data quantitatively. The project has proven successful in evaluating, understanding and describing social processes. According to QSR International (2018), Nvivo is suitable for analyzing semi-structured and unstructured data, including questionnaires, assessments, fieldwork notes, journal articles, audio data, web pages, and video formats. After transcribing the data into Riyadh locals (R), experts (E), academics (A) and official documents (OD), records were kept in several files with the names of the three groups of participants questioned for the study. Microsoft Word. Later, these files were gradually loaded into NVivo, starting with information about the citizens of Riyadh. Survey responses were categorized into each of the participant groups according to the six research concepts that emerged from the survey questions. As a result, along with a document containing the questionnaires and respondents' responses, each participant group had a paper that focused on their introductions to the four topics.

Automated classification of transcripts is essential for this information processing. Each survey question was converted to Microsoft Word's Headline 1 form before being imported into NVivo, although participants' responses were left in the standard format. Four patches reflected the six main survey topics before the automated categorization began. The option labelled "aggregate coding for child nodes" was chosen to allow each component to be coded with its specific survey findings. The investigator could link each node to the corresponding survey responses from each respondent as a result. For example, the respondents' comments on Theme 1 (Barriers and Drivers of Sustainable Urbanization) were categorized under the Barriers node. The investigator identified specific themes and sub-themes that frequently emerged after analyzing each of the respondents' comments. The investigator is inspired by the following program on the current elements by right-clicking on the existing nodes, also known as parent nodes, and creating a new node or child theme, also known as child nodes.

5. Findings

Consistency and reliability are essential because quantitative analysis relies heavily on historical, descriptive, and personal information. Similarity or probabilistic reliability is called when the study results are repeated. Validity is the fairness or accuracy of the results of a study. Reliability, sometimes called trustworthiness, is closely linked to fact and measures the credibility and trustworthiness of study results based on the quality of the data obtained. Therefore, only the research participants should determine whether the results are internally reliable. It explains whether the participants in the focus groups who reviewed

the research results and the suggested model for sustainable urbanization were used for confirmation in this research. At the opposite pole of the range is applicability, which refers to the external validity of measurement survey results. Suppose the consumer of the analysis applies the findings of that study to different situations, such as comparable contexts, conditions, and people. In that case, it is said to have met the flexibility requirement (Leung 2015). Based on the investigator's explanation of the purpose of the study, the audience will be able to generalize and use the results as planned, which meets the multidisciplinary standard within the setting of this research.

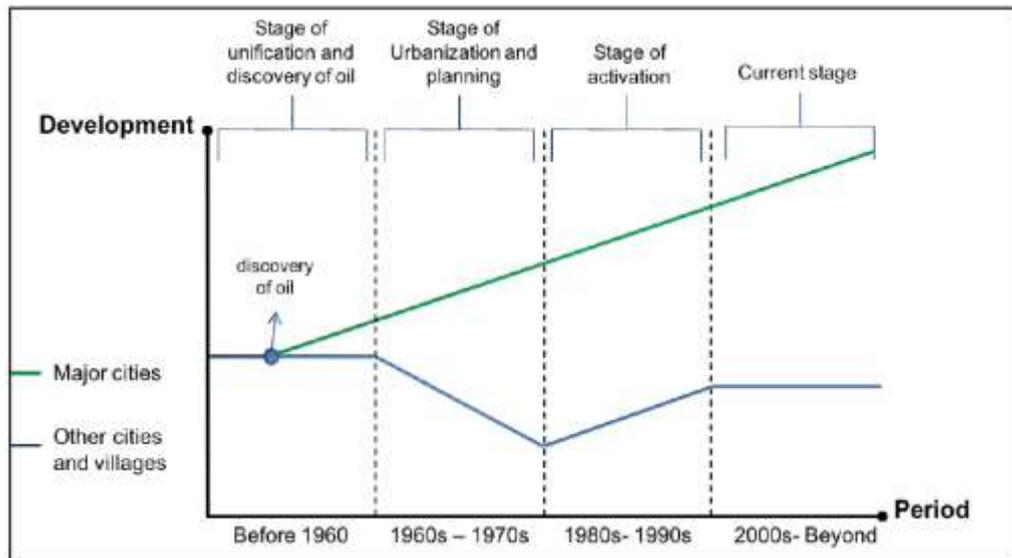


Figure 2: Development of Urbanization in the Time Interval

The graph shows the result of the city's rapid expansion and changes in the overall financial system of Saudi Arabia over the past 20 years. Riyadh's GDP has increased twentyfold, reaching nearly 60 million riyals. Various variables influence this economic growth, including population expansion and employment opportunities. Urban and social progress, especially due to the asymmetry in geographic distribution and urban growth, has increased, particularly in the Saudi Arabia region regarding its population and housing and social, environmental development and sustainability in Riyadh in Figure 2.

The reliability research validates the data collection process that satisfies the validity standard. The study is repeated using the same techniques, and the results are expected to be the same. Because changes in study settings and contexts are a common feature of quantitative inquiry, describing elements of examinee changes or contingencies is essential to further interpret results (Leung 2015). Such details are critical for future researchers who wish to conduct a similar study. In this study, Saudi Arabia emphasizes the possibility of moving away from reliance on oil as an energy resource, which will be demonstrated in implementing parts of the survey assessment.

6. Conclusion

When the different perspectives of each group of participants about social, environmental, political, physical nature and financial variables affecting the sustainable development of Riyadh. They have also given their views on plans to improve living conditions in the city. Interestingly, although there are variations in occupation, geography, ethnicity and Period in Riyadh, some of their perspectives are similar. The following themes from this chapter are arising: The growing population has influenced urbanism socially and is expected to do so; contaminants pollutants, the air, water shortages, and a shortage of fossil fuels are the primary ecological problems impacting Riyadh; It is recognized that there is a need for multi-stakeholder participation in urban policy and planning creation; Lack of public

understanding on a variety of topics (such as renewable energy, affordable housing, and water conservation) could pose a barrier to achieving sustainable growth; Renewables progress and development when they become sustainable inappropriate laws and regulations considering the needs and issues of citizens. Sustainable development and accessible housing are imperatives in Riyadh.

As a result, information obtained from experimental research is essential in identifying issues that require more in-depth investigation throughout the main study. Comments were included in a questionnaire in the primary survey designed to capture these concerns. Also, the preliminary research revealed some data collection issues that may arise in the main study. One of these difficulties is the cultural taboo against women being interrogated alone, unaccompanied by or without the consent of a male family member. Another difficulty was a language barrier that prevented most Riyadh citizens from understanding sustainable urbanization policies.

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