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The Smart City-Line in Saudi Arabia: Issue and Challenges

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Abstract: As a futuristic emblem, smart cities represent a goal to provide all of the services required for a high-quality existence while conserving natural resources to the maximum extent possible. It turns out that the "Line City in Saudi Arabia" is the most famous and modern of these smart cities in terms of preserving 100 percent natural life, owing to the fact that they rely totally on natural energy and do not use any automobiles. The issues and challenges that have been highlighted will assist in the improvement of municipal management. One of the most generally implemented projects in the field of smart cities is the technological and integrative developments of the use of sensors and data collecting in conjunction with rising difficulties aimed at enhancing human well-being and improving human livelihood. This is especially true in Saudi Arabia, where visitors can arrive quickly by just walking through the checkpoints, resulting in a journey of little more than a few minutes to reach any regular destination. It also splits the city into many different levels of the ground, enabling for the conservation of natural excess energy.

Keywords: *Saudi Arabia, Artificial Intelligence, smart city, THE LINE, Neom.*

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1. Introduction

NEOM is the most ambitious undertaking ever in the world. The NEOM project symbolizes a bold step forward in the advancement of humanity, as well as an embodiment of a vision that depicts what the future will look like in terms of technology. NEOM is a reflection of creativity in the field of environmental preservation, and NEOM will be a destination and home for individuals who have desire and want to be a part of creating a new model for extraordinary living. The Saudi city of Neom has embraced the LINE project, which it hailed as a model for what urban communities may be in the future and as a strategy that promotes a healthy balance between human and natural environments. This is a typical drive and readiness toward promoting smart city implementation in Saudi Arabia. IBM defines a "smart city" as the use of information and communication technology to perceive, analyse, and integrate the vital information of running cities. Additionally, smart cities can respond to a variety of needs, such as daily life and environmental preservation as well as public safety and city services (Chu et al., 2021; Qin et al., 2010).

The City of THE LINE will be comprised of interconnected cognitive communities that will be strengthened by artificial intelligence along a 170-kilometer stretch of land, within which will be an environment free of noise and pollution, as well as free of automobiles and traffic congestion. In addition, it is a direct answer to the issues of urban expansion that are impeding the advancement of civilization, such as deteriorating infrastructure, environmental pollution, and urban and population sprawl, among others. Management of NEOM projects must be implemented with the resources that are easily available in today's environment. In addition to being large and spacious, the area where the NEOM project will be executed offers optimal conditions for the generation of electricity from renewable sources such as solar and wind energy (Alkeaid, 2018).

2. Related Work

NEOM After the rapid development of artificial intelligence (AL) in all fields of machine learning (ML), deep learning (DL), natural language processing (NLP), and others, life has become easier. One of main the advantages of smart cities is characterized by digital services and integrated information control systems that allow improving the environment and urban management processes with its infrastructure and characterized by a high-tech infrastructure.

The application of computing systems includes the use of several technologies, including the Internet of Things, artificial intelligence, and network robots. Among the developments emerging at present, for example, smart dust, wearable computers, and smart buildings. The main advantages of a smart city are the ability to improve the urban environment using advanced digital technologies. Urban infrastructure that contains sophisticated devices and generates large sets of data and processes that data (Mukhametov, 2020).

A smart city is required because, in the REmap energy transition case, investments in the energy system by 2050 will require USD 120 trillion, a rise of USD 27 trillion from the Reference Case (Gielen et al., 2018). As a global leader in the energy sector, the European Union places a high value on renewable energy sources like wind, solar, and geothermal energy. As a result, the creation of a smart city with a hybrid energy system is necessary to meet the growing demand for health care facilities in this type of city (Karthick et al., 2021). For example, a "smart city" could represent the total amount of energy needed to meet the needs of the country's inland consumption by integrating renewable sources into the energy system toward clean and sustainable processes (Hoang & Nguyen, 2021), which can be achieved through optimised multi-energy systems in mixed-use districts (Klemm & Vennemann, 2021). Energy efficiency and renewable energy integration in a smart city can be achieved (Sabory et al., 2021). Alagar, & Thirumal (2021) provides a list of smart city solutions that can ensure a "PV-Wind-DG-Battery" for the Hybridization of energy systems with zero energy buildings.

This is what will be done in the smart city NEOM (The Line), which is in the Kingdom of Saudi Arabia. Life is smart cities is facilitated by the development of information and communication technology in general and artificial intelligence in particular. Artificial intelligence provides possibilities to replace humans in complex and dangerous activities. But smart cities start from the smart human capital and thus smart cities result from the interaction of intelligent people with artificial intelligence, as shown in Figure 1. Furthermore, the greatest successes in various tasks such as “speech recognition”, “autonomous vehicles”, “image classification”, “machine translation”, and “question answering systems” have been achieved through a high degree of integration and a mixture of ideas between “artificial intelligence (AI)”, “neuroscience”, “machine learning (ML)”, and other multiple fields. The advancement of a society is done not just by increasing the capabilities of artificial intelligence, but also by maximizing the societal benefits that AI can provide (Coker, 2019).

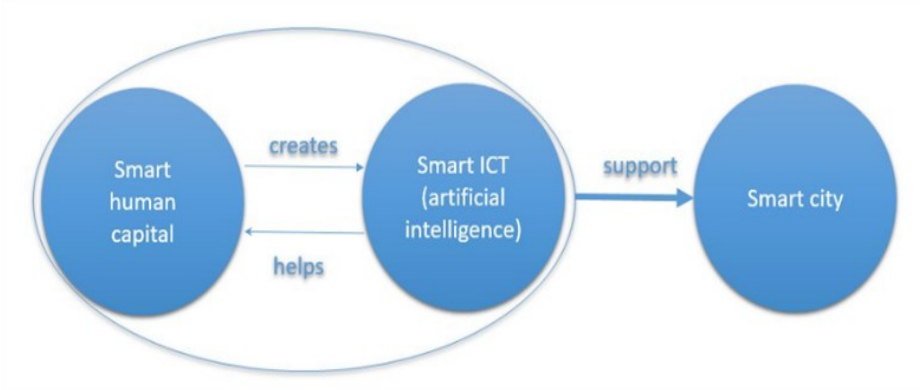


Figure 1. Smart people, smart ICTs, and smart cities (Coker, 2019)

In Agarwal et al. (2015), the researchers were interested in providing some basic concepts of artificial intelligence for the development of smart transportation systems in smart cities in India, and they also presented three different methods of computational intelligence for the artificial intelligence system: Neural Network (NN), Fuzzy System (FS), Genetic Algorithm (GA). And finally, they reached some applications of artificial intelligence to develop the intelligent transport system in the smart cities: "Smart Public Transport System", "Smart Traffic Information System", "Intelligent Traffic Management and Control System", "Safety Management and Emergency Systems", "Smart Parking Management System", and "Smart Pavement Management System" (Agarwal et al., 2015).

On the other hand, in the European Union (EU), innovations based on artificial intelligence have been employed to increase renewable energy (RE), which is viewed as a potent resource for future global development in terms of climate control and resource depletion. Where the source of this renewable energy is whether it is wind, biomass, or solar energy, and analyzing the efficiency of the processes that convert renewable energy to use in the formation of an intelligent ecosystem (Serban & Lytras, 2020).

Among the applications of artificial intelligence in smart cities is smart management to provide lighting and control public lighting. So that it is visually comfortable for the population by observing the various environmental factors that affect the determination of the appropriate lighting for a particular area, such as weather conditions and time, whether it is at sunrise or sunset and movement pedestrians (De Paz et al., 2016). Some problems are facing smart cities that use artificial intelligence (AI) and machine learning (ML), including a smart healthcare system in a smart city, ensuring the best communication services for 5G and beyond (B5G),

effective use of unmanned aerial vehicles (UAVs), cybersecurity, and the efficient use of energy for smart grids (SGs) (Ullah et al., 2020). Among the smart city technologies, intelligent video surveillance (IVS) has become more popular and is a very important feature in smart cities and is required for the safety of the population and to prevent the occurrence of crimes, as the IVS system was designed using bypass neural networks. If there is an emergency, such as a fire, an attack by enemies or thieves, or an intrusion detection, this system instantly sends an alert to the appropriate authorities.

Experiments were carried out to determine the maximum number of data sets that might be used for a video surveillance test. In the study, it was discovered that the proposed monitoring system has a very low rate of false alarms (Janakiramaiah et al., 2020). Innovative smart city policies affect urban innovation as it has been concluded that these policies positively affect the economic and cultural growth of countries, as major companies of various nationalities and local authorities participate in such projects as well as local companies and aim to transfer public technology to local needs (Caragliu & Del Bo, 2019).

Accordingly, upon completion of the NEOM project, it will lead to an increase in economic and cultural growth in the Kingdom of Saudi Arabia. As one of the algorithms used in smart cities is the genetic algorithm for municipal waste collection developed in the smart city to improve the logistical procedure for waste collection. The researchers used the implementation of the special genetic algorithm, where the most efficient methods of garbage trucks are calculated. These algorithms are incorporated into an open-source simulation framework that can be further developed and improved in the future (Fujdiak et al., 2016).

3. Methodology

The research methodology within the context of this paper dwells on the procedural approach to exerting the issues and challenges related to the Smart City-Line in Saudi Arabia by thorough exploration study. The procedural approach to addressing the concerns and challenges associated with the Smart City-Line in Saudi Arabia is presented in Figure 2.

Searching for scholarly publications that deal with smart cities in general and NEOM cities in particular is the first step in the process depicted in Figure 2. This is a survey of recent literature in which the current concerns and challenges linked with smart cities are discussed in detail. According to the Figure 2, step 2 entails the synthesis of current challenges linked with smart cities, while the last phase entails the incorporation of various perspectives on smart cities.

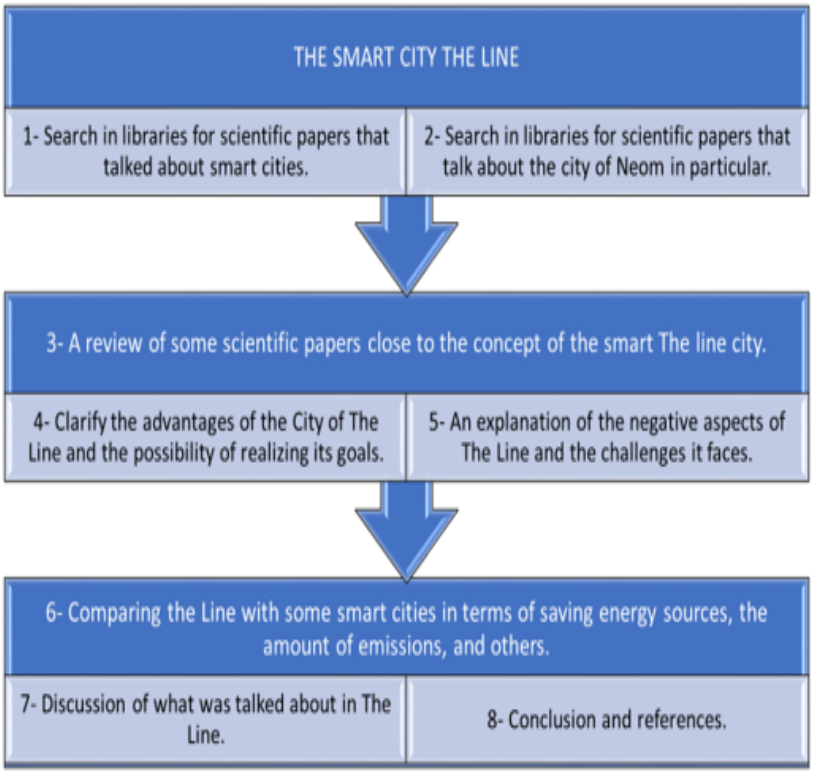


Figure 2. The Smart City Line
Source: authors' own conception

3.1. The General Overview and Concept of NEOM

NEOM is a project described to make as "a place of the future, where the brightest minds and the best talents are given the freedom to explore new ideas and push the boundaries of what is possible, all because of the power of imaginative thinking and a supportive environment" (Neon, 2021). These are the words that began with the founding of the city of NEOM. The abbreviation of NEOM consists of two parts: the first is the Latin word "neo" meaning new, the second part: M is the beginning of the word future in the Arabic language "Mustaqbal", then the meaning of NEOM is the "new future". A strategic location was chosen for the city of Neom, on the Red Sea coast of the Kingdom of Saudi Arabia, next to the Gulf of Aqaba and its beautiful views, and near the Suez Canal where there are maritime trade routes. The reason for choosing the site is to make NEOM a global center for commerce, innovation, and knowledge. The geographical location, with its climatic characteristics and topography, contributed to the selection of the

new land to create the city of Neom, which has a picturesque nature, an unbroken coast with pristine beaches and coral reefs, many wonderful islands, mountains that are covered with snow during the winter, quiet desert, moderate temperatures, and the air of the Red Sea. The reason for making NEOM a unique economic region is that it controls a unique location in the northwestern region of the Kingdom of Saudi Arabia, which includes land within the neighboring Egyptian and Jordanian borders, and 10% of world trade flows through the Red Sea (Attia et al., 2018).

Since Neom is a transnational city and a developing economic zone that stretches along the northern coast of the Red Sea of the Kingdom of Saudi Arabia, on the borders with Jordan and Egypt, it has been designated as a transnational city and an economic zone. Based on observations and air quality dispersion models, this study examines meteorological parameters and air pollution dispersion in the NEOM area. To simulate the fate of air contaminants, The Hybrid Single-Particle Lagrangian Integrated Trajectory "HYSPLIT" model was used. The spatial and temporal distributions of air pollutant concentrations in the NEOM area were studied using a three-year continuous data set simulated by WRF - HYSPLIT.

The diurnal dispersion and distribution of contaminants in the NEOM area is dominated by strong land and sea breezes caused by differential heating. Due to lower boundary layer heights in the spring and winter, spatial distributions of pollutant concentrations indicate maximum concentrations. Since background emissions (such as dust and vehicle pollution) are not available in this area, the model's estimated emissions only include major industrial sources. Due to lower boundary layer heights in the spring and winter, spatial distributions of pollutant concentrations indicate maximum concentrations. Since background emissions (such as dust and vehicle pollution) are not available in this area, the model's estimated emissions only include major industrial sources (Dasari et al., 2018).

On the other, The Neom mega-project region is on the Arabian Plate's northwestern edge, between the Red Sea divergence and the Gulf of Aqaba-Dead Sea transform boundary. Several major regional tectonic features, including the “Red Sea”, “Gulf of Suez”, “Gulf of Aqaba-Dead Sea fault system”, and a large number of recorded earthquakes, dominate the study area. The tectonic structure of the Neom mega-project must be assessed due to its economic and developmental importance. To achieve these goals, geological, geophysical, field investigation, and seismological data were combined. Extensional structures, such as natural faults and horizontal shear zones of vertical planes, are part of the sinistral strike-slip regime of the study region. Because of its economic and developmental

importance, assessing the tectonic structure of the Neom mega-project is crucial. These objectives were achieved by combining geological, geophysical, field investigation, and seismological data. Extensional structures such as natural faults and horizontal shear zones of vertical planes are part of the sinistral strike-slip regime in the study region (Kahal, 2020). The meteorological and gravitational earthquakes data were used to explore the main tectonic trends that may affect this region to assess the geographical risks in the NEOM area, and the results were that future earthquakes of Mw 7.0 are predicted to have peak ground accelerations (Mettam & Adams,1994; Mogren, 2020). It is also possible to reach the city of Neom in an eight-hour flight by 70% of the population, and it can also be reached by crossing the Suez Canal and the communications road, all of which contributes to the success of the project (Attia et al., 2018).

The communities will be self-sufficient and reflect the personality of Smart energy is the approved initiatives to ensure that renewable energy sources are used and energy is used efficiently. Renewable energy is linked to the diversification of energy sources to achieve self-sufficiency and sustainability. Energy efficiency is a function of the energy and storage management system. Recent advancements in energy storage technologies include a diverse range of options for various applications. The Energy warehouse (EW) idea, which is a massive modular energy storage device that is operated and managed, was born out of this. Electronic warfare, with appropriate size and location, can offer significant technical and economic benefits for NEOM including reducing the difference between demand and supply within small networks, not only for stabilizing, but also for suppressing frequency distortions, reducing losses, reducing congestion, and increasing efficiency (Albalawi et al., 2019).

Solar panel capacity from NEOM, here it is assumed that NEOM has three power stations with a tower of size (14.164 km2) and each solar power station has a capacity of 370 MW and has three towers with a height of 459 feet. Each tower has about 100,000 propellers mirrors surrounding it. The three towers' solar power plants have a capacity of 1.11GW. But if NEOM does not reach the required capacity, the battery will be designed normally. Energy batteries play a crucial role as they store excess energy that is not in use. Also, some batteries are used as portable power banks. It can be considered that the battery experience is subject to technological progress from time to time. The underground natural battery is a recent technological development in which energy is stored below ground level. The natural battery is used to store renewable energy using carbon dioxide from the power plant. Similarly, in another study, sensitivity analysis of a hybrid fuel

cell battery system was carried out in order to supply a small community in the major Saudi Neom city in the Kingdom of Saudi Arabia, where the location of Neom, which is distinguished by its high average level of solar radiation, was taken into consideration (Rezk et al., 2020).

A conceptual hybrid model for of a hospital in the future city of NEOM was proposed. It's a hybrid model comprising of Cofire biogas generators, diesel generators, a solar PV array, and battery storage. An analysis of the pregnancy requirements of an independent hospital was carried out through the use of a simulation. The energy storage method is based on the technology used by Tesla batteries. The mixed hospital model was tested using the natural resources of Neum, with a load demand of 250 kWh / day and an average daily hospital waste amount of 0.6 tons based on Tesla batteries (Alotaibi et al., 2019). It was determined that using renewable energy in conjunction with conventional energy would result in the lowest possible carbon emissions of approximately 84 percent of the less diesel consumption (Alotaibi et al., 2019). The authors presented an analysis of the feasibility of wind energy in the city of NEOM in Saudi Arabia, which will use only renewable wind energy. The probability density function was appropriate for the simulated winds for the NEOM region during the period 2014-2018. It was concluded that wind energy systems would be suitable for commercial operation. Thus, the potential annual saving of CO2 is about 106 metric tons (Alfawzanet al., 2020).

NEOM is a "new future" city that runs entirely on renewable energy. Artificial intelligence technology will provide all of the energy required to match the integrated demand from solar photovoltaics, solar thermal energy, wind energy, and battery energy storage. As a result, the solar heat weight is expected to rise. Concentrated solar power is the only renewable energy source with scalability benefits. Unlike solar PV and wind, which are both intermittent and unreliable, necessitating expensive and environmentally damaging external energy storage via batteries, CSP can be supplied with an internal energy storage via molten salt, making it a far more cost-effective and environmentally friendly option. Amplification of the solar field and thermal energy storage (Boretti, 2020). Solar thermal power with internal thermal energy storage using molten salt is a major problem for the development of NEOM-compliant renewable energy systems, that is a major obstacle for the development of renewable energy technologies (Boretti, 2020).

The story of NEOM city begins on October 24, 2017, when the Crown Prince Mohammed bin Salman announced the launch of NEOM, a futuristic megacity, at the "Future Investment Initiative" conference in Riyadh, Saudi Arabia. Promoters of the project hope to mark a new land

with a multitude of unique growth opportunities that will help NEOM become a global hub for trade, creativity, and information. Transportation, food production and distribution, healthcare, the internet of things, and interactive air can all lead to NEOM's residents living a unique lifestyle (Farag, 2018; Strunk & White, 1979).

Artificial Intelligence (AI) is being invested in, developed, and integrated into the new mega-city of NEOM. NEOM seeks to less than integrate artificial intelligence and robotics integrated into every element of citizens' daily life in order to earn money from crucial economic sectors of the future. Consequently, when moving from a hydrocarbon-based economy to artificial intelligence, it is more economical. What is happening in NEOM may correspond to Vision 2030 about how AI will affect the world outside a crossroads built on sand. In 2025, global revenues from artificial intelligence are expected to rise to $ 90 billion, with a growth rate of 45 percent each year. Long-term estimates also indicate that artificial intelligence will contribute to achieving 14 percent growth of global GDP by 2030, "the equivalent of an additional $ 15.7 trillion" (Hassan, 2020).

Some major risks are affecting the implementation plans of the NEOM electronic city project in the Kingdom of Saudi Arabia (Grab et al., 2018).

• Political implications: External influence concerning the role of states in the region, the project may face significant headwinds from regional competitors and Internal influence.

• Economic considerations: Internal considerations and External considerations.

• Social-cultural implications: Human-human relations and Human-robot relations.

• Technological issues: Development of nascent technology and Financial implications and Creating a network of cutting-edge technology segments.

• Ecological questions: Legal considerations (Grab et al., 2018).

Al-Gasawneh and Al-Adamat (2020) present the structural equation modelling method of partial least squares was used to survey 150 persons. To investigate the impact of social media activity on the relationship between an intended trip to NEOM' in the Kingdom of Saudi Arabia and the image of the city that the passengers saw, and as a result, it was discovered that there is a positive relationship between the image of the destination and the intentions of the visitors. The study also discovered that the use of social media had an impact on the destination image, which led to an increase in the likelihood of travelers choosing to visit the city (Al-

Gasawneh & Al-Adamat 2020). Accordingly, this increases the economic growth of the city of Neom through the demand for tourism in this beautiful city, with its distinctive attraction, stunning views, and events that will be held for tourists from all places.

The NEOM project is a brand-new smart megacity concept. In the context of a project management information system (PMIS), the researcher proposed a model of essential success factors for the NEOM project. The crucial success factors that can influence the success of the NEOM project were derived from four case studies of smart city initiatives (Barcelona, Copenhagen, Dubai, and Manchester). The study's performance was determined by four crucial factors: data quality, information, and communication technology infrastructure quality, project management quality, and environmental quality. They were unable to completely extrapolate the final findings to a wider smart city evaluation. The findings, on the other hand, can be applied to the NEOM project in part. The findings will assist decision-makers in better understanding the factors that can improve the likelihood of a NEOM project's success (Altahtooh et al., 2018).

The paper review the features of the Line revolution in urban life: THE LINE, a million-person city with a 170-kilometer long that retains 95 percent of the natural world within NEOM, with no vehicles, no highways, and no carbon emissions. THE LINE is a never-before-seen solution to urbanization that combines walkable neighborhoods with public parks and the natural landscape to create hyper-connected communities. It is a 21st-century and beyond the paradigm of urban design and livability in harmony with nature.

THE LINE will transform urban life as we know it, allowing NEOM is expected to develop into a major economic engine for the Kingdom of Saudi Arabia, the region, and the world. The ideals of environmental responsibility will be enshrined in business legislation to encourage sustainable and regenerative development activities, and the facility will be powered entirely by renewable energy. All everyday essentials would be within a five-minute walk. Communities will be built around people, not vehicles, and will be easily accessible and planned for accessibility and walkability, resulting in serene and beautiful vistas. Physical and digital infrastructure flows beneath the surface of the line, protecting it from the elements and ensuring that essential utilities and transportation services are not compromised. The three layers of the land in THE LINE represent the work entity that will be on it. So that the pedestrian layer is the highest, followed by the services layer, which is a hidden layer of

infrastructure, and then the last layer that represents the transport layer. Providing high-speed means and transportation supported by artificial intelligence as it will work with the technologies of the next generation as shown in Figure 3.

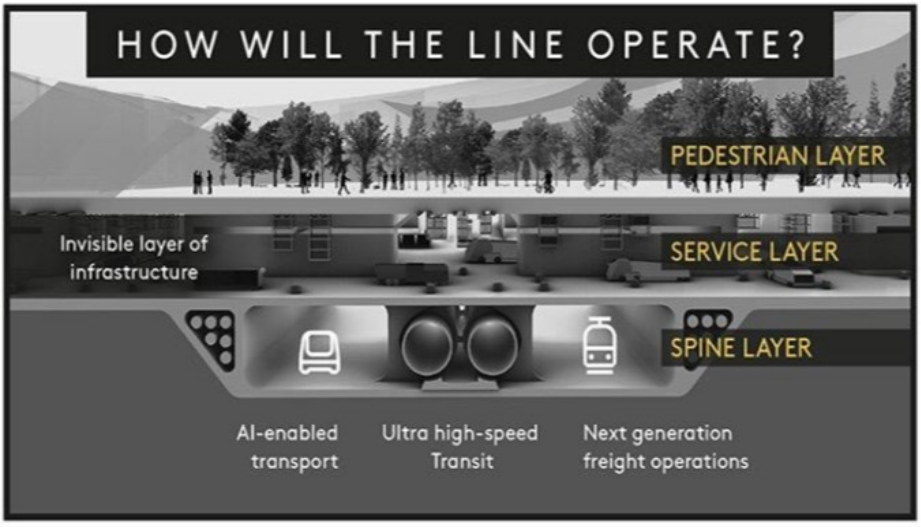


Figure 3. Layers of THE LINE (Neom, 2021)

The infrastructure spine will provide neighborhoods along THE LINE with ultra-high-speed rapid transit access. Open space, parks, gardens, the natural environment, and sustainable food production can all be effortlessly combined in societies that live in harmony with nature. All businesses and communities on THE LINE are hyperconnected thanks to a digital architecture that combines artificial intelligence and robotics that learn and grow. It is planned to use the data from NEOM to construct a predictive model with an accuracy rate in excess of 90 percent framework that will provide residents and businesses with ever-improving services (Neom, 2021).

3.2. The Creation of a City without Roads and Cars

NEOM's revolutionary approach to contemporary urban planning is put on display, and is able to demonstrate its innovative approach to modern urban planning with this project. People and nature will reclaim the area occupied by the car by using infrastructure that works in harmony with the environment. Creating peaceful and aesthetically pleasant landscapes, in order to ensure that communities are constructed around people, not vehicles, and are easily accessible and walkable, people-centered design must be

implemented. With renewable energy sources ranging from wind to solar, communities will be powered by a cleaner and more sustainable environment.

When towns are designed with the needs of people in mind rather than cars, they are more easily accessible and designed to be walked around. This method puts the pedestrian first. Everything a person needs may be found within a five-minute walk for locals. Infrastructure and support services, such as transportation, utilities, digital infrastructure, and logistics, will be integrated seamlessly into dedicated spaces running along THE LINE in an unseen layer. High-speed transportation will make life easier and less stressful for everyone by eliminating the need for long journeys (Neom, 2021).

3.3. Building Around the Nature and Features of the Line

The basic idea of building around nature in a place that is built for people to live, work and innovate in one place, boosting economic diversity to attract investors and create job opportunities that reach 380,000 jobs from future jobs to contribute an average of 84 billion dollars to the gross domestic product by 2030, improving the quality of life, Figure 4.

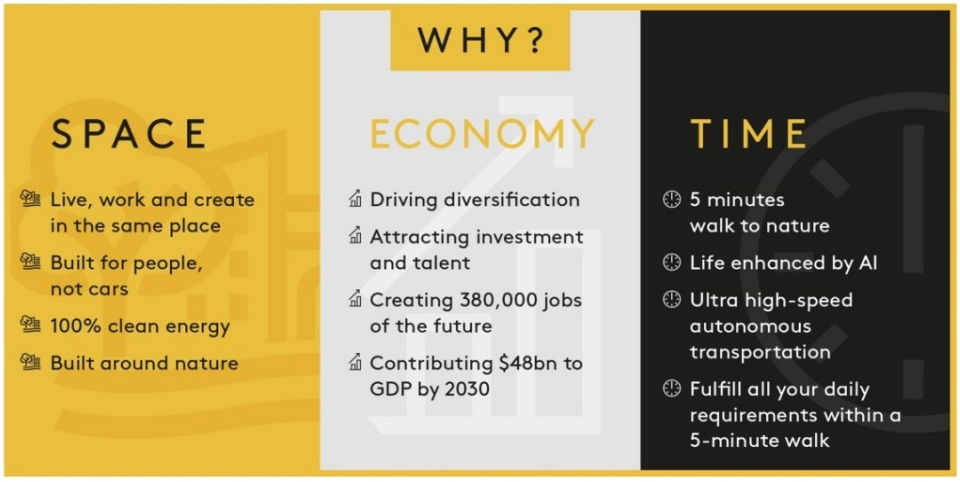


Figure 4. The most important characteristic of THE LINE is the location and economy (Neom, 2021)

To reach THE LINE, you need an average of four hours of travel by plane to about 40% of the world's population, and this purpose of nearly half of the world's population makes access easy, which increases its distinction in terms of location, as in Figure 5.

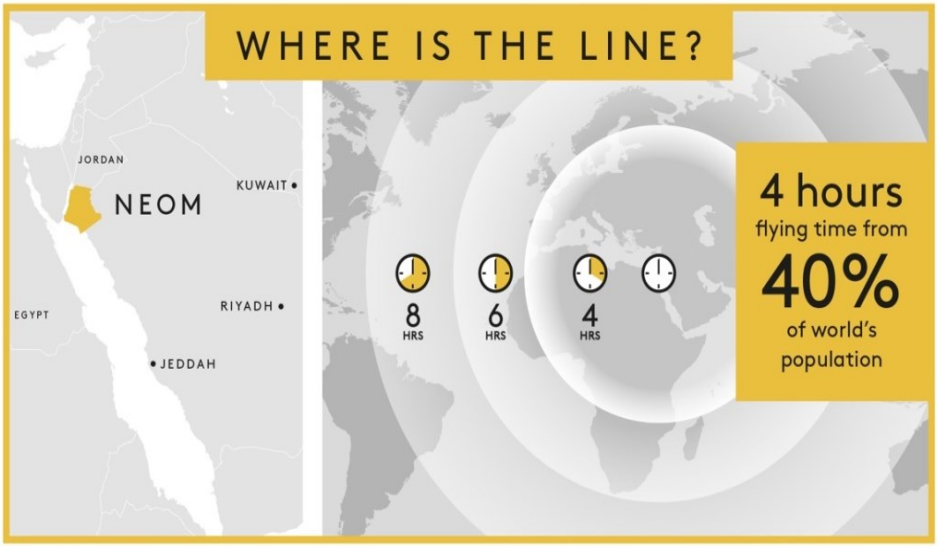


Figure 5. THE LINE city location of the world (Neom, 2021)

Also, one of the advantages of this smart city, despite its length of 170 km, the length of access from the farthest point to the farthest point is only about 20 minutes, and it also preserves 95% of nature in NEOM lands and 100% of the renewable energy, as we see in Figure 6.



Figure 6. Some of its distinctive characteristics (Neom, 2021)

The city of THE LINE competes, so it excels by moving on foot, so a person needs to reach all his daily needs at a rate of five minutes. while in New York it is estimated 10 minutes by 2050 and 15 minutes walking from within the neighborhoods in Paris by 2030. The rate of walking in Melbourne will be 20 minutes by 2050 also as shown in Figure 7.

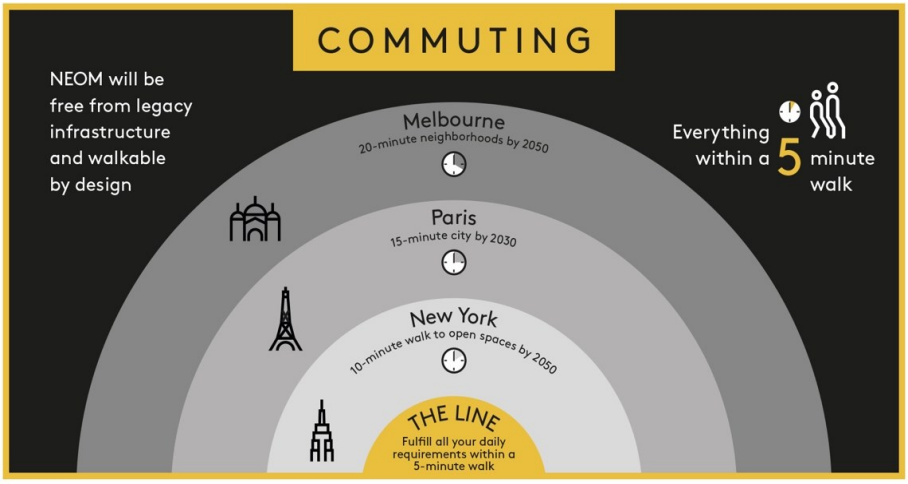


Figure 7. Commuting in THE LINE (Neom, 2021)

More than 168 hours are wasted annually in ten cities due to congestion caused by cars. Figure 8 represents a comparison between six of the most famous cities in the world and the increase in congestion in them over the past decade and THE LINE city by 100% because there are no cars or streets in them.

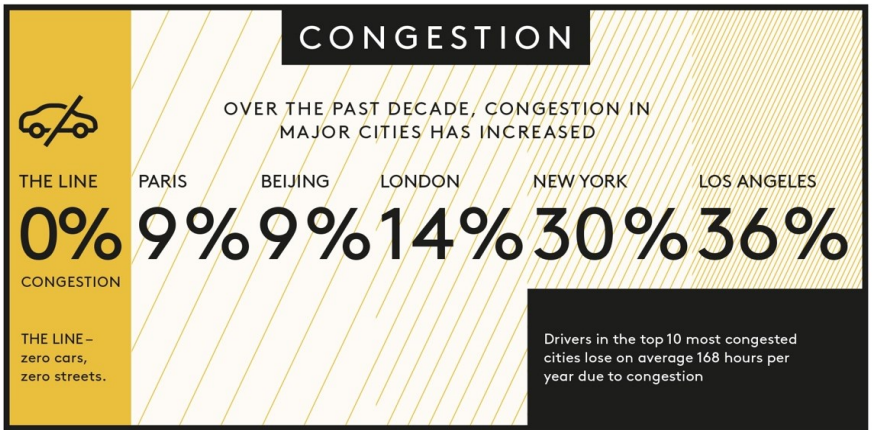


Figure 8. The degree of congestion compared to global cities (Neom, 2021)

The City of THE LINE, with what it offers of protection for the wild and marine nature, is the most protected by 95% compared to countries trying to preserve nature at varying rates, as in Figure 9 according to the definition of the International Union (IUCN) of protected areas.

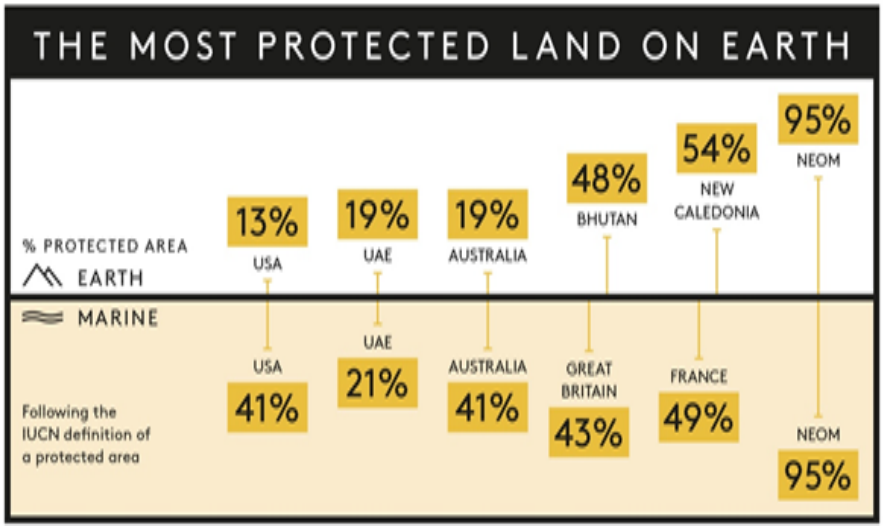


Figure 9. Comparison in terms of environmental protection (Neom, 2021)

3.4. The Ideal Crossroads of the World in The Model

The line is distinguished by that it connects four distinctive ecologies. The place extends along the beaches and is characterized by the presence of exotic nature and continues to extend to the southeast of Neom as it reaches beyond the Red Sea islands, and the abundance of places and natural reserves shown in Figure 10.



Figure 10. The region is coastal (Neom, 2021)

The following area is also distinguished by the coastal desert region by its relatively flat land, its interior areas in which THE LINE is the axis in it, which is a corridor between the north and south of the project, and it is the main meeting point for the transportation routes in THE LINE as in Figure 11.

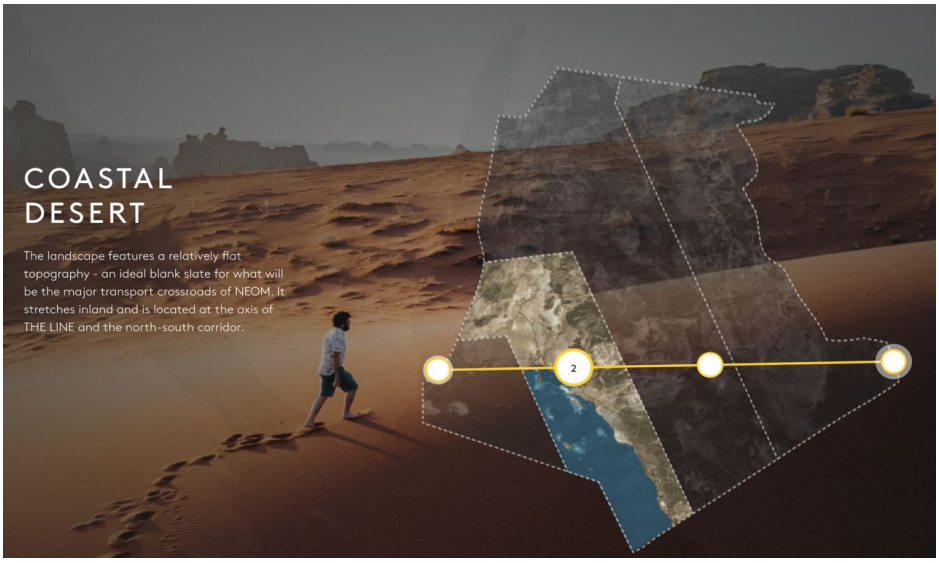


Figure 11. The meeting point of transport routes (Neom, 2021)

The mountain region, the most famous of which is Jebel al-Lawz, and some mountains may reach 2500 meters in height, and the mountain is one of the least populated areas in it due to its geological nature, Figure 12.

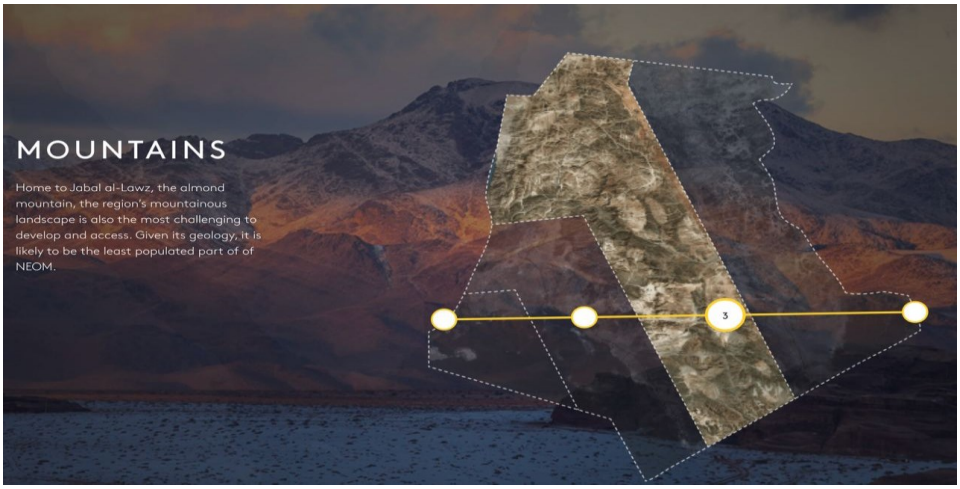


Figure 12. Mountain's region (Neom, 2021)

Here are the high valleys that connect the regions of the Kingdom of Saudi Arabia with the eastern region of Neom. These valleys are characterized by rocky layers interspersed with sandy plains, and these valleys are related to the province of Tabuk, as in Figure 13.

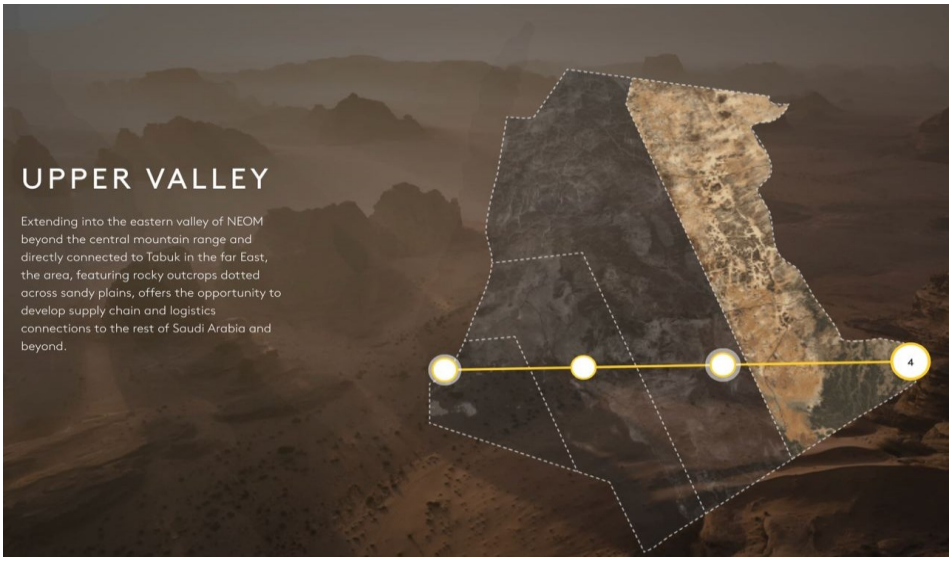


Figure 13. Valleys and plains (Neom, 2021)

4. The Challenges Associated with NEOM

The city described appears to be a fantastic concept that is also feasible, or to put it another way, fantastic in a realistic way. The effects of pollution and traffic accidents kill people every day, and this new way of living is meant to limit the number of people who die in these circumstances. Given that life will end at some time, this will result in the extension rather than the saving of the lives of around 8 million people. It is actually providing clean water and food to an ever-increasing population that poses the most significant challenge for us as a species, as we are doing little to address the underlying problem of overpopulation.

A day will come when our planet's ability to generate enough food and water for all of us will be jeopardized, and we will be forced to adapt. Despite the fact that it will be camouflaged as something else, its believe that the next world war will be fought for the security of food and water supplies and resources. Despite the fact that the new city concept is commendable, it will only serve to exacerbate the fundamental problem of an uncontrolled and limitless population constrained by a finite supply of food and water; however, the elimination of pollution from transportation and road fatalities is commendable. Humans, on the other hand, have only been given a certain supply of water, which is vital to our survival as a species despite our potential ability to produce more food than we consume.

What we can generate is limited in terms of how much more we can generate. A temporary solution may be provided by melting ice caps, but only if we all recognize that there are simply too many people on the earth at any particular time. In order to make a positive contribution to the preservation of the human species, I have decided to forsake the delights of raising children and raising grandkids. This is not a straightforward argument to make, as you will see. When it comes time for our elected representatives to make difficult decisions, they will find themselves in an even more difficult situation than they were previously. Therefore, whether you agree with it or not, you must accept it as a fact of life and move on. It is imperative that we as a nation and as a people solve this issue, and the longer we wait, the more difficult it will become.

5. Conclusion

According to what was previously talked about, when the NEOM project is fully completed in 2025, this will be within the framework of the ambitious aspirations of Vision 2030 to transform the Kingdom of Saudi Arabia into a leading global model in a variety of areas of life, with a

particular emphasis on the development of the future city. The Line that provides a life that puts the human being on top of its priorities. It is characterized by an ideal geographical location that is characterized by wonderful nature, sustainable energy, and easy-to-access services, and thus the artificial intelligence technology is important and deeply influencing. Regarding the view of the Kingdom of Saudi Arabia, considering that artificial intelligence is the one that revolutionizes urban life to transform the state. The life that cannot be achieved by relying on hydrocarbon fuels. Thus, through this research, we can expect that artificial intelligence will make a qualitative leap in the development of the Kingdom of Saudi Arabia in technology in the future.

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