Saudi Arabia is making significant strides in the development of smart cities.4-Riyadh ranks 30th globally among smart cities, according to the IMD Smart City Index.7-Sustainable Solutions: Examples of such solutions include the integration of renewable energy sources, energy efficiency (in construction and processes), sustainable mobility, the integration of the IoT and smart systems, and advanced and efficient infrastructures.This growth is a testament to the country's commitment to leveraging digital information and technological instruments to generate efficiencies, boost economic growth, and enhance urban sustainability.Smart cities leverage a variety of engineering technologies and infrastructure to optimize urban living, enhance sustainability, and boost economic development.The systems engineering process ensures that solutions are embraced by a consensus of stakeholders, while being explicitly defined and managed from conception to commissioning, to operations to retirement.2-The city is integrating technologies such as passive infrared sensors, light-emitting diodes (LEDs), light-dependent resistors (LDRs), and Arduino microcontrollers.These technologies and infrastructures collectively contribute to the advancement of smart cities and urban development, fostering the evolution of smarter and more resilient urban environments.Four major cities in Saudi Arabia, namely Riyadh, Makkah, Jeddah, and Medina, are undergoing transformation into smart cities.In addition, the Ministry of Municipal and Rural Affairs (MOMRA) launched the nation's first smart cities program, an ambitious initiative to drive smart transformation in Saudi cities.The study examines various technological solutions, their impact on infrastructure, and the implications for sustainable and efficient urban living.3-NEOM's infrastructure will utilize AI, robotics, and human-machine fusion to deliver greater predictive intelligence and enable faster decision making across all NEOM sectors.In the initial phase of the program, 17 cities comprising almost 72 percent of the Kingdom's population have been selected for carrying out smart urban projects.3-Energy Infrastructure: Energy Infrastructure produces and delivers energy, primarily electricity and gas, for powering virtually all services and needs, processes, and comfort.Jeddah: 1-Jeddah is implementing smart streetlights (SSLs) to improve energy efficiency and reduce government electricity costs.These initiatives are part of Saudi Arabia's Vision 2030, which aims to leverage technology to improve the quality of life for its citizens and create a more sustainable future.The focus is on creating smart sustainable cities (SSC), expanding human, social, and environmental capital investments beyond just focusing on technology.The country's smart initiative is based on the use of information and communication technologies in six dimensions: economy, people, environment, living, mobility, and governance1.The results show that all four cities are successfully transitioning into smart cities, with the highest progress evident for smart economy and the lowest progress for smart mobility.Here are some key aspects: 1-Systems Engineering Approach: Smart city planning covers a wide range of human factors, stakeholder communities, applications, and technologies.2-The Built Environment: This refers to the city's buildings, parks, and public spaces, including schools, firehouses, police stations, and hospitals.5-Integration of Technology in Civil Engineering: This research explores the intersection of smart cities and civil engineering, investigating how the integration of technology contributes to urban development.2-The city will use one of the most advanced 5G technology in the world, to enable the proactive exchange and analysis of data between NEOM residents and city infrastructure.In conclusion, the rise of smart cities in Saudi Arabia, particularly

in Riyadh, Jeddah, and NEOM, is a significant development.This commitment to innovation and sustainability positions Saudi Arabia as a leader in the global smart city movement.The Smart Cities market in Saudi Arabia is projected to grow by 9.20% from 2024 to 2028, resulting in a market volume of US$1.28 billion in 20283.Sensors applied throughout the city--in its transportation, energy, and water systems, for example--aid the city in making decisions about traffic patterns, resource development, and building plans.2-The city is using artificial intelligence, the Internet of Things (IoT), and big data to enhance urban services and facilitate the lives of citizens.NEOM: 1-NEOM is creating the world's leading cognitive cities that rely on leading technology for digital services.The technologies of microgrids and energy storage, as well as photovoltaic and wind generation, are increasingly making an impact in this domain.6-Smart Infrastructure: Smart Cities rely on data collected by what is often referred to as smart or intelligent infrastructure.Riyadh: 1-Riyadh is developing smart infrastructure to provide advanced services to its citizens.3-The use of ICT and IoT in day-to-day activities and city infrastructure is crucial to the development of the smart city.This initiative aims to improve the quality of life and create a sustainable environment.The progress of these cities is assessed using 57 indicators based on national and international information and literature.4-Telecommunications: Today, telecommunications is critical for citizens' safety and well-being, as well as for the economic vitality of the business community.Among these cities, Riyadh has made the most progress in the six smart city dimensions.HVAC, security, and lighting are all important parts of this domain.It will be interesting to see how these projects evolve and the impact they will have on the country and its citizens in the coming years.3-Smart systems are being used to manage traffic and predict crises.

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