

## “THE LINE” – THE BIGGEST INFRASTRUCTURE PROJECT IN THE HISTORY

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**Abstract.** *"The Line" is an architectural concept, a marvel of modern ambition, promises to revolutionize urban living on a scale never seen before. But lurking beneath its grand vision lies a shroud of mystery. This paper discusses, who is behind this monumental project, and can it truly reshape our cities as we know them. As the project unfolds and urban landscapes evolve, "The Line" is poised to make a profound impact, reshaping the very essence of urban planning. It transcends its status as a mere endeavor, symbolizing human innovation and our unwavering commitment to progress. This article represents the new ideas and risks of the architectural design, which is currently in the process of implementation. "The Line" challenges societal norms, encouraging a reevaluation of our lifestyle and environmental interactions. Whether it triumphs or falters, "The Line" will be remembered as a testament to visionary ideals and the tenacity required to translate them into reality.*

**Keywords:** architectural concept, city planning, linear city, technologies, urban living

### Introduction

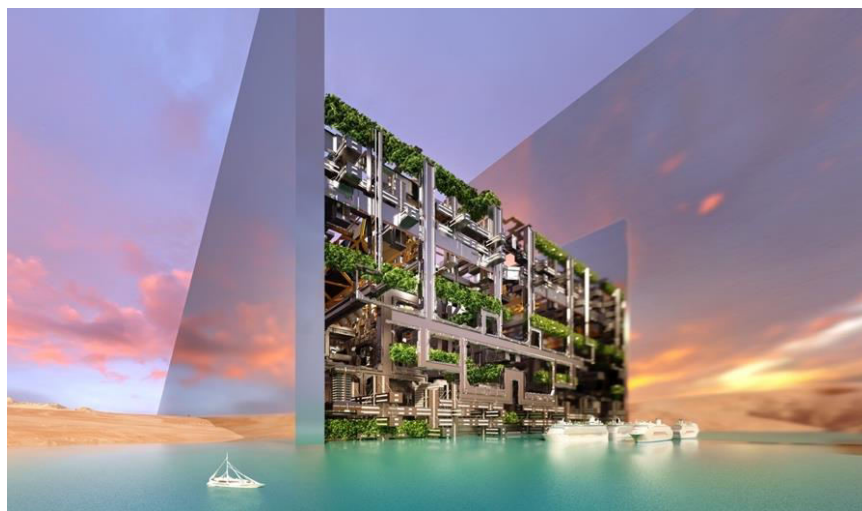
"The Line" is a building proposal that garnered significant attention, often mistaken for a metaverse project but is, in fact, a real endeavor. Initially announced in 2021 by Saudi Arabia's Crown Prince Mohammed bin Salman, The Line represents the nation's most ambitious “pie-in-the-sky” megaproject to date. Envisioned as a self-sustaining linear city stretching over 100 kilometers from the Red Sea to the city of Tabuk, it features two parallel 500-meter tall buildings (Fig. 1). The concept aims for a car-free, roadless, and emission-free environment. The centerpiece of "The Line" would be two 500-meter-high buildings spanning 170 kilometers, making them the largest ever constructed (Fig. 2). These mirrored skyscrapers would enclose a city strip where residents could access amenities within a five-minute walk and nature within two minutes. The entire city is planned to run on renewable energy, with 95% of the land preserved [1, 2] (Fig. 3).



Figure 1. The placement of «The Line»



**Figure 2. Image of «The Line»**



**Figure 3. The layout of «The Line»**

### **Current news of "The Line"**

However, there's limited public information about the actual progress of construction. Recent updates reveal significant advancements, with approximately 20% of the vital infrastructure completed. This includes crucial roads, offices, and logistics hubs. Satellite images show visible progress along the project's length, with foundations nearly traced from end to end on Google Maps (Fig. 4). Excavation rates are at an unprecedented scale, with up to 1 million cubic meters of earth being removed weekly. Piling work for the main structure has also started, with over 4,500 piles installed in one section alone [3]. The Line's dedicated underground rail system known as The Spine has also received some major changes. As of June 2023, the overall scope of the entire system has significantly been reduced. For one, the total length of the underground tunneling to be done has been reduced by more than 30 kilometers. Additionally, the total number of stations was reduced from 48 to just nine. With all this progress going on, how exactly will Saudi Arabia fund it? And which companies are involved? The project is financed by Saudi Arabia's Public Investment Fund, with several international companies involved in the construction. Saudi Arabia's sovereign wealth fund which is directly controlled by the crown prince. At the moment this \$700 billion dollar sum remains the primary driver behind the constant progress [4]. Current Contracts with other companies mainly involve the excavation and foundation work. Some notable names include the Keller Group from the UK, Bauer from Germany, and the French Bachy Soletanche [5, 6]. Meanwhile, the state-owned construction company PowerChina is responsible for the current piling work being done on the marina [7].

Finally, Italian contractor Webuild and Saudi's own Sajco have recently been awarded the contract to build a high-speed rail line that will connect The Line to Oxagon.

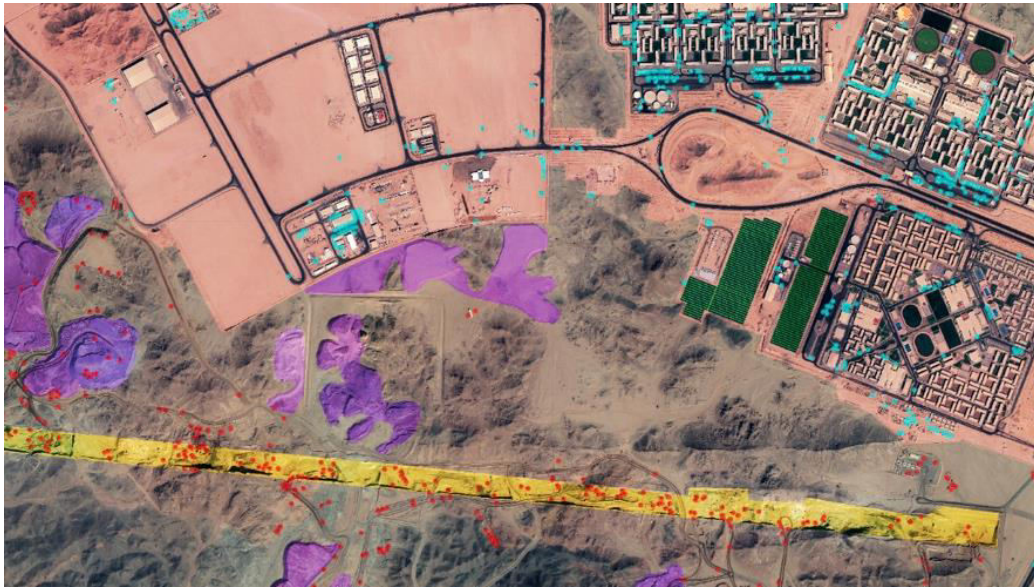


Figure 4. The current construction works of «The Line»

### Implementation risks

However, despite the progress, there are criticisms regarding sustainability and human rights violations, which could impact the project's future. Critics raise concerns about its impact on the environment and question whether it's the best use of resources, suggesting that improving existing infrastructure might be a more sustainable approach.

An expert from the University of New South Wales suggested that building the entire city could result in a carbon footprint of up to 1.8 gigatonnes of CO<sub>2</sub>, which is over four times the UK's annual emissions. This approach of stacking all city elements vertically on such a large scale is simply unsustainable [8].

Additionally, there are significant human rights concerns. Several experts assert that residents were compelled to vacate their homes to accommodate the construction site. The United Nations Human Rights Office reports that some protestors received lengthy prison sentences, and three individuals are at risk of imminent execution after being sentenced to death, quote “imminent risk of execution”. This has definitely become a hot topic that will also affect the project itself [9].

170-kilometre wall sounds problematic, because this design affects the natural habitat. I mean, if the focus is really on green technology and its design for sustainability, why does it literally cut through the surroundings? It looks like it's forcing its way into this irregular terrain and it doesn't even take advantage of the coast, which seems like the most natural thing to do.

Also there's thousands of instances throughout the world where natural habitats have been fragmented from roads or buildings. It stops animal migration, it kills off weaker animal species, it limits genetic diversity, it creates inbreeding, which creates genetic disorders. This giant mirror of wall is going to reflect the light and it's going to create these two really hot heat zones. And it's going to fry everything around it, not to mention birds flying into it.

### Conclusions

From an architectural perspective, the line as a concept is not new. What sets this city apart is its heavy reliance on technologies that are not yet fully developed. Many cities are already taking steps to reduce car usage and promote walkability.

There is no doubt, that this project is going to push the boundaries of technology. They're already making some really interesting advancements in desalination technology. However, building a city from scratch instead of addressing existing issues is not a sustainable solution.

Many parts of Saudi Arabia lack proper sewer systems, and the country is already rife with failed or abandoned projects. The focus should be on improving existing infrastructure and the lives of current residents.

A bold project such as «The Line» is the ability to stir up the conversation and make us question and rethink how a city should look like. The Line is a pretty bold idea. It's supposed to be. Perhaps bold ideas are necessary to address the challenges of urban development. Not all of Saudi Arabia's ambitious plans, such as robot maids, artificial moon or flying cars, may come to fruition. However, creating more efficiently managed cities with access to nature and amenities is a goal worth pursuing.

The evolution of contemporary cities is shaped by a blend of factors that significantly influence them. These factors encompass economic, political, natural and urban, technological, socio-cultural, and demographic aspects. Any concept for shaping the city of tomorrow must consider these factors. It is only through a harmonious integration of these elements, which impact the creation of urban structures based on ideological principles, that the desired outcomes can be achieved.

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