

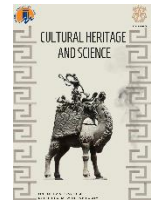
## PAPER DETAILS

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# Unlocking urban regeneration projects: A case study of Royal Railway Station in Phnom Penh, Cambodia

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## Abstract

Drawing on theories that encourage compact urban patterns and propose walkable and transit-oriented developments, the article argues that the creation of calibrated pilot projects embedded in the neighborhood grain have the potential to stimulate cultural changes and promote practices that encourage the conceptualization of more sustainable and equitable cities in Southeast Asia. In this context, the article presents the case of the renovation of the old railway station terminal in Phnom Penh (the capital of Cambodia). The building is located in an area that forms a central node in the overall urban structure and could serve as a driving force for the activities of the emerging Central Business District, insisting on the western edge of the historic European quarter designed during the French Protectorate period in the early 20th century. Although small in scale, this initial regeneration and conversion of the building into a place capable of hosting more diverse activities can be seen as the first phase of a larger multimodal hub that, combined with a public park, would provide the city with the vital green infrastructure needed to support recent transformations, taking into account not only public interests but also the various private stakeholders.

## 1. Introduction

This paper examines literature from the past 25 years, comparing prior research on the urban development of Phnom Penh and reinterpreting it by analyzing the socio-economic mechanisms that have molded the city's current form. Existing publications and reports are reviewed in light of the most recent theories and practices of urban regeneration, including Landscape Urbanism and the “second wave” of New Urbanism. Assumptions surrounding these theories, which may not originate from a local perspective, are reassessed.

The paper highlights the lack of implementation of current urban planning instruments, primarily introduced through the aid of global agencies and consultants. It explores potential scenarios by examining emerging phenomena. It supplements these observations with interviews, notes, and photographs taken in the field, capturing the design experience forged in collaboration with local professionals and key decision makers.

It examines the insights gained by Cambodian practitioners who have returned to the country and draws its conclusions from the necessity of unleashing

the potential of a green infrastructure network located amidst the city's firm urban fabric grid. The analysis has been carried out over the past four years with the help of architecture students from the Urban Lab at the American University of Phnom Penh.

## 2. Method

### 2.1. Historical overview

In the 1800s, the French colonial expansion introduced railways into Indochina region, with the aim of exploiting the region along Mekong River. This initiative aimed to connect the current territories of Laos, Thailand, Vietnam and Cambodia [1]. In Cambodia, two railway lines were constructed during this period (Figure 1). The initial line linked Phnom Penh to Poipet on the Thai border, while the second connected the capital to the port city of Sihanoukville [2].

In 1865, Phnom Penh was a small port on the banks of the Tonle Sap, Mekong, and Bassac rivers when it became the official capital of the country under the French Protectorate. The city's image, which had been dominated by wooden and thatched architecture, was completely transformed. The French administration

implemented customary land laws where public and private properties were separated [3]. The original rural settlement underwent reconfiguration with the

introduction of an organized grid road system and the construction of administrative buildings [4].



**Figure 1.** Railway lines built during the period of the French protectorate, superimposed on the current morphology of Cambodia, courtesy of AUPP Urban Lab (2023).

Between the 1920s and 1930s, Ernest Hébrard, who led the Architecture and Urban Planning Service in Indochina, redeveloped the entire city encompassing the boundaries of the initial French Protectorate settlement. Right on the southern border, in the heart of the so-called Chinese quarter, Hébrard designed a new central market (Phsar Thmey). The market acted as a trading hub and was encircled by multiple rows of commercial shop-houses [5].

Ernest Hébrard's proposal for the expansion of Phnom Penh introduced a contemporary transportation system. The roads were converted into a broad and unified grid that radiated from the central districts, allowing for fast traffic flow. In addition, the city implemented measures of self-sufficiency, like establishing railway stations and ports. As more roads were constructed, official linear parks were introduced across the city's central stretches of major boulevards.

The city was partitioned into districts including the Chinese quarter, European quarter, Vietnamese quarter, and Cambodian quarter (Figure 2). Each district had distinctive traits and served a specific purpose for the city and its residents. The European quarter was comprised of administrative and government

establishments. The Chinese quarter was acknowledged in the business area encircling the central marketplaces. The Cambodian district was identified by the Royal Palace, National Museum, pagodas, and other Khmer religious landmarks. The eastern peninsula was designated as a New European district for industrial purposes.

In 1932, the railway station was built as a representation of modernization for the Kingdom. Together with the Central Market and Phnom Penh Cathedral, the station created the city's Art Deco architectural 'triangle'. The station had a direct connection to the Tonle Sap River through the Verneville Canal. This canal was regarded as an arm of the river that extended below the Pont de Verneville. Afterwards, in 1932, the canal was converted into a landscape garden. The garden became widely recognized as the 'Station Garden' [6].

As suggested by Chheng and Asano [6], the rationale behind Ernest Hébrard's plan to transform the canal into a boulevard was to bridge the social divide between the north bank, which was occupied by the French, and the south, which was inhabited by the Chinese and Cambodian populations.





**Figure 2.** Boundaries of the ethnic districts in the 1930s, superimposed on the current urban fabric of Phnom Penh, courtesy of AUPP Urban Lab (2023).

The railway station in Phnom Penh was among the initial projects to bring early European modernist architecture to Indochina (Figure 3). The terminal building, which is a mere two floors tall, possesses a reinforced concrete structure whereas the exterior design reflects tropical style that shows clear inspiration from Art Deco, with ornamental latticework and wooden windows for lighting and ventilation regulation. It was created by French architect Jean Debios, who also played a role in the development of the central market project alongside Victor Chauchon and, together with Ernest Hébrard, in the Raffles Hotel Le Royal. The main hall features six parabolic arches that support a high ceiling. According to Osborne [7], Jean Debios played a crucial role in designing the structures of the railway station and new central market. It's possible that Jean Debois took inspiration from modern structures of his time, such as the Wroclaw Market Hall, which Richard Pluddemann designed between 1906 and 1908. This market hall also had parabolic reinforced-concrete arches. Above the arches, an extra office floor is situated which is connected to the ground floor by a staircase on the shorter side of the edifice. Additional service pavilions and train sheds were installed in the areas surrounding the tracks. The railway station began operation in 1932 and the terminal building has remained relatively unchanged since then. After Cambodia gained independence in 1953, the railway system reached its peak along with significant economic growth. Several railway lines received support from French, West German, and Chinese investments. However, operations ceased in 1970 due to the outbreak

of civil war, and the railway was then restricted solely for military usage [2].

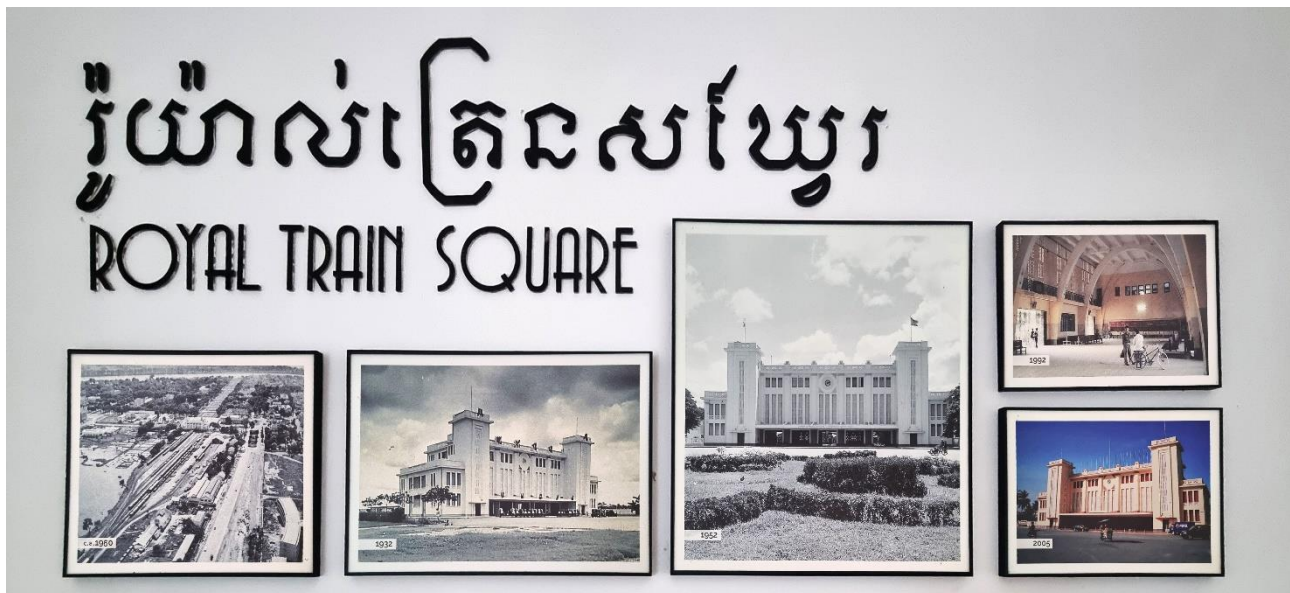
In 1975, after assuming power, the Communist Party of Kampuchea reconvened at the venue to deliberate on the obligatory exodus of the population from the capital to dispersed rural cooperatives and work camps nationwide [8]. In 2009, the Australian company Toll Holdings was awarded an exclusive 30-year concession for the railway, resulting in its outsourcing, and renaming as Royal Railway Station [9].

When AusAID and ADB began the restoration of the station's terminal building in 2010, the facade's colors had already been altered. The initial white walls were painted a pale yellow, while the windows and latticeworks were changed to red and white respectively. The new works presented a façade in lighter straw yellow, with green paint embellishing the windows and some cornices. Around 2017, the building's facade was restored to its original white color. The colors of the fixtures and windows from previous interventions were kept, except for the upper floor windows and the cornice of the front canopy, which were painted blue. The interior has undergone considerable changes, such as the replacement of the original wooden box office with different arrangements and materials on several occasions. A bar was added to the main hall in 2019.

## 2.2. Entering the New Era of Globalization

In 2001, property ownership regulations were amended by the National Assembly with the Land Law's





**Figure 3.** Railway station and depot from 1932 to 2005 – Exhibition at Royal Train Square, courtesy of Train Square Company Ltd.

approval, causing an influx of capital into the country. Large-scale interventions followed models borrowed from industrialized countries and major Asian cities. The modernization of infrastructure, supported by international experts, and Cambodia's entry into the WTO in 2004, led to an increase in property speculation and a rise in land value [10]. The filling of Boeung Kak reservoir in 2008 by Shukaku Inc was driven by fierce competition, limited land availability in the central districts, and insufficient government funding. As part of a 99-year lease to develop 130 hectares, the company relocated approximately 4,250 households [10]. In

addition, the disappearance of traditional activities in the city center and the demolition of historic buildings has been documented by Khmero since 2000 [11].

Changes in land use have led to an increase in the urban density of the area and the construction of high-rise buildings [12]. The OCIC Tower, situated amidst the railway station and new central market, was finalized in 2009, followed by Exchange Square and Vattanac Capital in 2018. These ventures constitute the nucleus of Phnom Penh's nascent Central Business District (CBD) (Figure 4).



**Figure 4.** The emerging CBD of Phnom Penh, 2023.

### 3. Phnom Penh urban structure

As stated earlier, towards the end of the 19<sup>th</sup> century, the city's development took a compact form along the riverbanks' axis due to significant changes introduced during the French Protectorate (Figure 5). The

riverbanks were stabilized to create a linear arrangement of buildings, the principal dam, and the river port.

A technique foreign to Khmer architectural customs, 'polderisation', helped to reclaim land for construction purposes. The landscape was converted into dense

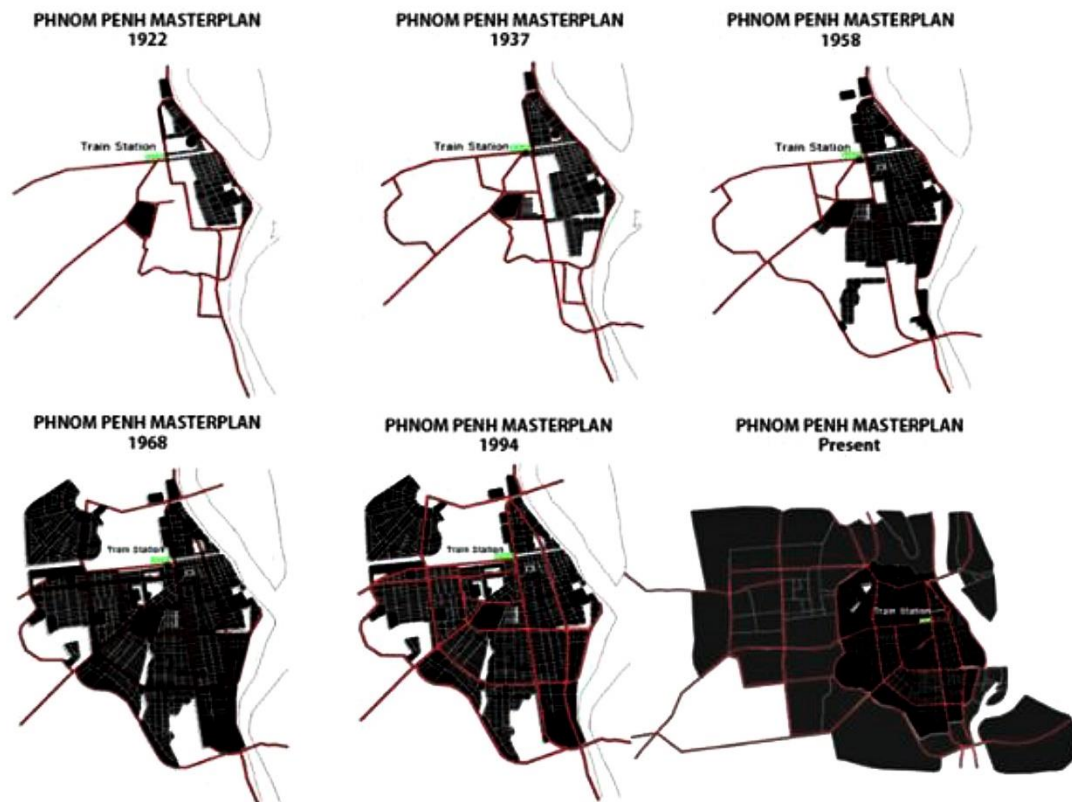
European Quarter, situated in the north of the city and partially surrounded by a canal. Phnom Penh underwent a transformation into a divided city with two urban hubs: the royal palace and the 'white' administrative center following a Western colonial model. A third zone emerged between these two centers, known as the market area [13]. After achieving independence, the Cambodian planning called for a flexible and open approach. However, Vann Molyvann, the leading architect and planner in the post-independence period, unsuccessfully pursued to develop an alternative urban infrastructure in Phnom Penh [14]. Nonetheless, under the patronage of King Sihanouk, the influential architects of New Khmer Architecture thrived, turning an unknown city into a modern capital in the heart of Southeast Asia [15].

Vann Molyvann served as the state architect from 1957 to 1971. He aimed to blend Cambodian tradition with his knowledge of French architecture in both vernacular and monumental architecture. However, there were limited materials available in Cambodia, and

there was a shortage of civil engineers, surveyors, and other professionals required at various stages, from design to completion [16]. A group comprising of Gerald Hanning, Vladimir Bodiansky, Vladimir Kandarouff, Um Samuth, and Khoun Khun-Neay designed a collection of practical and stylish public structures that fulfilled the demands of a developing, autonomous Cambodia [17].

The French introduced a linear street and block layout that was extended towards the south-west of the city. The initial alignments along the riverfront to the east resulted in an irregular street network, due to legal ownership issues and the high cost of building on marshland. Over the following decades, Phnom Penh's formal and informal areas grew in parallel [13].

Figure 5 offers a basis for visually examining the trends of urban expansion in Phnom Penh. According to the investigation carried out by Mialhe et al. [18], the city's enlargement occurred in multiple directions from the initial urban center, particularly towards the rivers and west of Chaktomuk.



**Figure 5.** Maps of urban expansion from 1922 to the present day, courtesy of AUPP Urban Lab (2023).

Investment in regional transportation systems began in the 1980s. The movement of people and goods in ASEAN cities, driven mainly by manufacturing and exports, is highly dependent on public and private transportation. Consequently, mega-urban regions tend to develop along transport corridors [19].

As recorded by Asian Development Bank [20], demand for light vehicles doubled in a 4-year period between 2013 and 2017 due to robust economic growth and rising per capita income. Due to this ongoing trend, the increase in urban traffic leads to congestion and

increased air pollution. The transport infrastructure has been insufficient to accommodate the amplified demand. Even though feasibility studies are ongoing to suggest mass transit options for Phnom Penh, most public transport systems in Cambodian cities are still inadequate [21].

As is well known, Transit Oriented Development (TOD) was introduced in urban theory by Peter Calthorpe in the late 1980s and is generally defined as a mixed-use community that promotes living near transport services and reduces reliance on car travel



[22]. Therefore, studies conducted for the World Bank in 2017 [23], along with those prepared by the Japanese Cooperation Agency JICA in 2014, propose to revolutionize the infrastructure system by integrating a Transit Oriented Development (TOD) model into the city's master plan [24].

#### 4. Prospects of further development: The role of the Railway Station area

The Royal Railway Station area is situated adjacent to the Boeung Kak reservoir, along Russian Boulevard towards the airport. It maintains continuity with several university campuses and the garden city of Toul Kork district. As mentioned, the events of the Civil War interrupted this form of expansion, which only resumed in the early 2000s, when the country finally achieved solid political stability. Today, however, the city tends to grow and develop in a polycentric manner towards its outer regions. This trend is driven by financial investments from private companies that primarily focus on constructing residential areas and new satellite towns [25].

The station acts as an urban node situated between the Old City and the forthcoming Central Business District, referred to as “Phnom Penh City Centre”, and which will be built on the reclaimed land of the Boeung Kak reservoir. In 2019, Train Square Company Ltd., began renovating the building and surrounding area to convert it into a commercial hub, capitalizing on the station's strategic location and ADB's previous refurbishment work between 2009 and 2010. The company planned to convert the railway into a 3,000 square meter retail and commercial area named 'Royal Train Square'. The proposal included shops, cafes, restaurants, banks, office, and exhibition space.

The management and consultants held an initial meeting in early 2019 to discuss the refurbishment of the station. Archetype Cambodia was hired as the lead designer to conduct a feasibility study and propose a conceptual design. The discussions were facilitated by a Dutch consultant who focused on beautifying the building's exterior through the use of luminous signage on the façade. The Archetype team suggested minimizing the use of signage and instead incorporating LED lighting strips concealed along the building's existing decorative frames (Figure 6). This approach was intended to enhance the original character of the Art Deco facade. The project then sought to reorganize the interior spaces by removing most of the partitions. It proposed to expose the modernist reinforced concrete structural elements to create a new perception of the interior. This would add greater depth and permit more flexible use of the space. The functional program thus remained open, and the ticket office was relocated to one of the temporary stands intended to occupy the main foyer and offer bars, bistros, and shopping arcades (Figure 7).

The two wings of the mezzanine were allocated for a small restaurant and a wine bar. The floor above the foyer and below the roof was intended to be wired and used as offices and art galleries (Figure 8). In addition, the columns and floors underwent structural consolidation while preserving the original floor tiles.

Furthermore, the stairwells were fitted with two panoramic lifts. Externally, glass structures have been incorporated into the building to accommodate shops and bars. Two garden areas were planned, along with commuter parking for up to 200 cars and 400 motorcycles and the integration of a bus terminal. The anticipated expense of the project was at least 3 million USD.

The project experienced delays in its initiation due to the relocation of the airport to the southern part of the city, as well as setbacks in the development of the New Phnom Penh City Centre. Additionally, the uncertainty caused by the COVID-19 pandemic led to some reluctance in investment.

The refurbishment of the mezzanine and upper floors was postponed, while the ground floor foyer was transformed into an art gallery and multifunctional venue. Amid the pandemic lockdown, the station was deemed an essential service and remained operational, with the inaugural exhibition launching in 2021. In a controlled manner, events were organized primarily to advance Cambodia's nascent NFT market, the Cambodian Children Fund's student workshops, and Metaestetica Lab's digital and participatory art experiments (Figure 9). The station currently operates as a provisional events center. Undoubtedly, the opportunities arising from these first modifications pave the way for broader proposals. The area can be used for socializing and promoting culture now that it has been returned to the city.

The space behind the refurbished station, presently serving as a car park, and the vacant areas along the platforms, hold the potential for establishing an urban linear park, thereby offering the city much-needed green infrastructure to bolster the developments made in recent years.

The project put forth by the Urban Lab at the American University of Phnom Penh goes beyond, visualizing the formation of a new combined commuter hub, expanding on the idea proposed by the Archetype Cambodia team for the old station (Figure 10). The objective is to revitalize the area, generate funds for the construction of a public park, and provide sports facilities.

It may seem idealistic to propose prioritizing landscape infrastructure as a means of stimulating investment. However, as stated by the director of Train Square Company Ltd. during our interview, it is crucial to seek out investors and tenants who are receptive to an alternative vision, thereby preventing the fragmentation of Phnom Penh's historical town center. This method can guarantee not only immediate returns on investment but also long-term profitability.

It is clear from the words of the director that he envisions the Railway Station as a lively destination, integrating business and leisure areas in the heart of Phnom Penh's CBD. The venue should enable people to “have a good time”, dine, and enliven the neighborhood life, particularly in the evenings after work has ended. Moreover, it appears that the director has taken inspiration from similar, successful examples in other cities worldwide, such as Washington Union Station and Amsterdam Central Station.

He recognizes that one actor alone cannot change the face of the area. The construction project needs to be coordinated with the proposed activities of the Royal Railway of Cambodia to establish a high-tech and logistics hub beside high-rise mixed-use buildings. The

potential reinstatement of the city's central park, lost due to the infilling of Boeung Kak reservoir and not yet included in the riverside's development, brings utopia within sight.



**Figure 6.** Royal Railway Station, Façade, courtesy of Vincentiis B. (2021).



**Figure 7.** Royal Railway Station, Ground Floor Hall, courtesy of Vincentiis B. (2021).



**Figure 8.** Royal Railway Station, First Floor, 2022.





**Figure 9.** Royal Railway Station, Event, 2022.



**Figure 10.** Phnom Penh's Railway Station extension project, courtesy of AUPP Urban Lab (2023).

Synergies to construct an intermodal station could also be developed with the city's public administration, drawing inspiration from European examples like the Logroño Transport Hub and Park in Spain. According to its designers, “abalos + sentkiewicz”, this form of urban operations for developing a substantial public green area that balances historical centrality has the potential to create pole of attractions.

After all, in 2014, the Japan International Cooperation Agency (JICA) predicted that the intersection of Monivong and Russian Boulevard, where the railway station is situated, could serve as a central hub for the surface public transport network [23]. Additionally, the National Strategic Development Plan for 2019-2023 strives to advance the country's economy through the enhancement of transport infrastructure and connectivity. Furthermore, a study conducted by Yat Y., Wang, G. et al. [26] revealed that most young citizens in Phnom Penh acknowledge the environmental advantages of urban green spaces. The latest Country Planning Framework 2021-2025, produced by GGGI [21], highlights the transport industry as a fundamental element of Cambodia's national strategies. Lastly, in

2018, Phun reported that Phnom Penh authorities were considering alternative mass transit systems to alleviate traffic problems and accommodate increasing traffic flows. The Phnom Penh government, with foreign technical assistance, is evaluating other transit systems, including bus rapid transit, light rail transit, SkyTrain, tramways, and even motodop paratransit [27].

## 5. Conclusions

As explained earlier, the station area is situated in a large, mostly undeveloped location at the heart of the transportation network, not only in the city but also in the entire region. This area has been significant since the inception of the modern city, which emerged during the French colonial period and grew in the initial 15 years after the attainment of national independence. As illustrated by diagrams created by the Urban Lab at the American University in Phnom Penh, the area comprises the southern boundary of the former Boeung Kak reservoir.

In 2008, the entire reservoir was reclaimed and now this location acts as a vital junction point for the east-



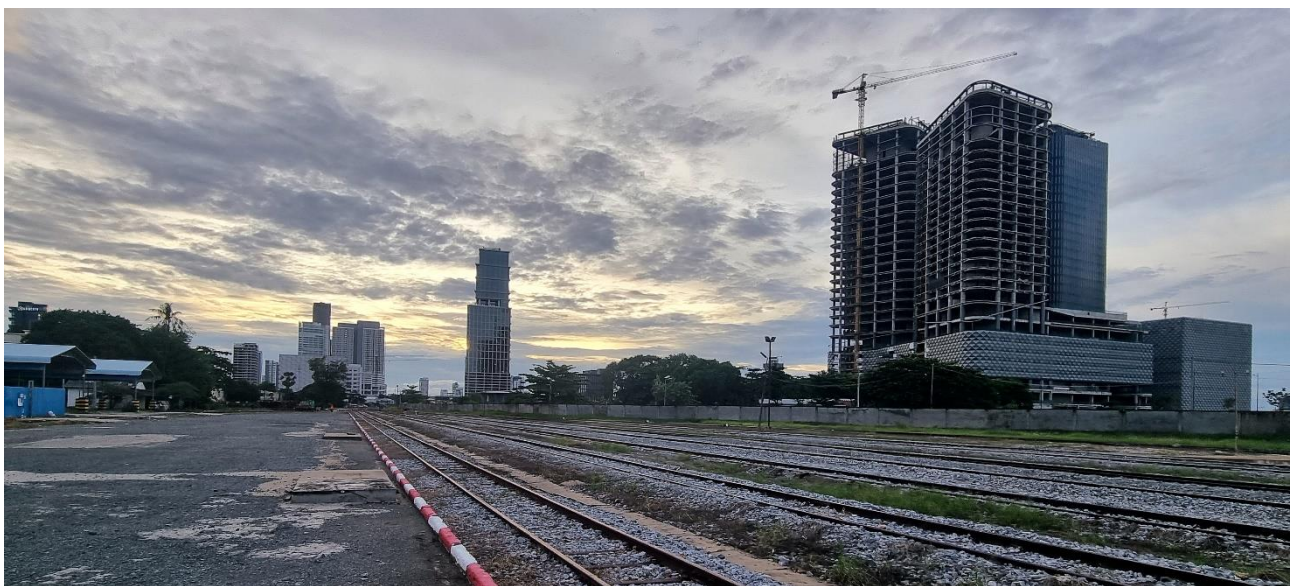
west axis of the linear park in the Old City (Figure 11). It stretches from the city's riverbank to Russian Boulevard, where several of the most significant high-rise structures have recently been erected (Figure 12), facilitating the formation of the initial Central Business District (CBD).

It is widely acknowledged that a well-connected network of green infrastructure is essential for promoting compact development [28]. It aids in the reduction of air pollution and efficiently facilitates drainage [29]. It can support the creation of 'third places'

that offset the increasing global trend towards the privatization of home life [30], which also had an impact on Phnom Penh. Above all in Southeast Asia, this approach cannot be limited to suburban areas alone, but can serve to regenerate historic centers. Indeed, the rethinking of this infrastructure has the potential to introduce an alternative identity into an urban fabric that still carries symbolic connotations associated with the colonial past.



**Figure 11.** Phnom Penh's emerging urban green network.



**Figure 12.** Phnom Penh's railway station area on southern boundary of the former Boeung Kak reservoir, 2023.

Furthermore, the attention to local practices of spatial production that have already been adopted but not yet

formalized in Cambodia might suggest a shift from controlling the transformation of the city through a



statutory master planning to a framework approach that guides the negotiation of pilot projects among multiple stakeholders. Finally, the emergence of a public open space in the form of urban parks can compensate for the exploitation of the increasingly dense urban fabric, promoting a concerted public-private partnership, typical of Southeast Asia, from which Cambodia has drawn its development models and which is now generally investing in Europe, as demonstrated by the use of project finance instruments in Italy and projects managed by originally semi-public companies, such as Lyon Confluence in France [31].

Several studies and proposals have been conducted based on the primary research thanks to the collaboration between the Phnom Penh and Paris Municipalities. Moreover, consultants from the Global Green Growth Institute (funded by Korean cooperation) have reiterated the importance of public-private partnerships in the latest comprehensive proposal of priority actions outlined in the Phnom Penh Sustainable City Plan 2018-2030 [32]. However, it is yet to be clarified whether there is a real intention on the part of the stakeholders involved to implement the plan and provide the necessary financial resources.

In addition, the Build4People group, helmed by German academics and consultants from the University of Hamburg, primarily concentrates on sustainable development's behavioral shift, as well as sustainable building practices, neighborhoods, urban greening, urban climate, sustainable urban transformation and transdisciplinary transformation. The group puts forth multidisciplinary research that is implementation-oriented and inclusive of participation from government, businesses, and civil society. In their vision, objective transdisciplinary research can be accomplished through designing collaborative activities and products to support the transformative shift of Phnom Penh's urban development trajectory towards higher levels of sustainability and livability [33]. The first attempt to implement this strategy is still under discussion for an area to the south of the capital controlled by one of Cambodia's largest property groups, Peng Huoth. This area is situated on the outskirts of the city, and the proposal is still at a preliminary stage.

The railway station project, initiated in 2019 with the support of the Train Square Company Ltd, presents tangible opportunities. Located in a densely populated area, it serves both private stakeholders and the public administration due to its crucial transportation service to the population. The conservative restoration has engaged in a dialogue with the city's historical heritage whilst offering the potential to convert a small building into a significant commercial hub within the Central Business District. Currently, the intervention is restricted, but should be considered as the core of a far-reaching expansion plan on a principal axis that has structured the growth and transformation of Phnom Penh for almost a century.

### Acknowledgement

I am grateful to the design team of Archetype Cambodia, which assisted me as the Lead Concept

Designer, for the 2019 renovation of Royal Train Square. I would like to commend Train Square Company Ltd. and its Director, Mr. Scott Ball, as well as the Event Project Manager, Mr. Li Pin, for their exceptional bravery in converting their project into a space for public art events and exhibitions during the pandemic. For over a year, these events have been among the few safe opportunities for public art exhibitions and social gatherings in the city through collaboration with Krama NFT Marketplace, Cambodian Children's Fund, and Metaestetica Lab.

As responsible for the research conducted by the AUPP Urban Lab at the American University of Phnom Penh, I express gratitude to all the students who participated. Specifically, Sean Pichara's contribution was integral to the elaboration of this article and the included diagrams, while Kakada Lyhor's thesis significantly contributed to the design of the station extension proposal.

### Conflicts of interest

The authors declare no conflicts of interest.

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