Prefeasibility Study For
The Development
of New Economic City in Punjab, Pakistan

Phase 3 – Proposed Implementation, Financial Model and Expected Impacts

Submitted to:
The Urban Unit
Government of the Punjab, Pakistan

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In collaboration with
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Prefeasibility Study for Development of a New Economic City in Punjab, Pakistan – Phase 3 Report

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1. Introduction

The purpose of the prefeasibility study is to examine the demand and viability of the proposed development of a New Economic City (NEC) by the Government of Punjab. The initial part of the study analyses the need for a new city to address the challenges currently faced by Punjab as a result of rapid urbanisation. It also investigates targeted demand for the development of an NEC to provide complementary economic activities and enhance the competitive advantage of the Province of Punjab and Pakistan as a whole.

The NEC project is a greenfield development aimed at creating an efficient city that seeks to minimise the adverse effects from Punjab’s economic and population growth. The proposed development seeks to alleviate the negative consequences of urbanisation (e.g., traffic congestion, unplanned and difficult to control urban sprawl including slums), and address demand for quality public and infrastructure services and offerings (e.g., high-speed Internet, smooth trash collection, efficient public services such as business permits, and access to quality and affordable housing).

Four potential objectives guiding the planning of the NEC are as follows:
1) Generating sustainable investments (i.e., foreign and domestic, large-scale and small) and other economic outcomes derived from the investments.
2) Diversifying Punjab’s industrial and urban development and business support infrastructure.
3) Responding to the pressures of urbanisation with smart, proactive and visionary urban planning concepts and practices that promote economic growth, livability, sustainability, and resilience.
4) Expanding opportunities for diverse work-live-play activities in the region.

Objectives

The objectives of the Phase 3 report are:
1. Assess the financial investment and potential returns from development and ongoing economic activities of the NEC
2. Project the economic benefits that will accrue as a result of the development of the NEC
3. Propose possible development models and financial options which may be considered for the development of the NEC
4. Develop a high level phasing and timeline for the development of the NEC
5. Identify potential risks which stakeholders will need to review and implement appropriate mitigation measures
Overview

Pakistan is the sixth most populous country in the world with 191 million people and a per capita income of US$1,410 in 2015. Its GDP per capita places it in the lower middle-income country category, with per capita GDP growing at about 3% per annum since 2010 (The World Bank 2016). With an abundance of natural resources, Pakistan is one of the largest commodity producers in the world (Central Intelligence Agency 2016).

Punjab holds the majority of the population at 56%, making it the most densely populated province in Pakistan (490/km² compared to the second highest province of Sindh at 390/km²). It is second only to Baluchistan in size (205,344km²) and is located at the northwestern edge of the Indian geologic plate in South Asia. Lahore is the provincial capital of Punjab and the largest city in the province (Punjab Board of Investment & Trade 2013).

In addition, Punjab is a key driver of the national economy, responsible for approximately 59% of National GDP (Punjab Board of Investment & Trade 2013). Punjab and Sindh are the fastest growing provinces in Punjab, with Rawalpindi and Multan the fastest growing cities in Punjab (Shah, Malkwai and Mason 2015).

Due to this rapid growth in terms of population and industrial activities, the key cities of Punjab are facing severe challenges and constraints due to the fast pace of urbanization, of which, many are unplanned. As a result, there is a need to assess the demand for development of a New Economic City in Punjab which will help to alleviate the urbanization stress placed on existing cities.
2. Possible Models and Approaches for City Development

Overview

The development of a new city will involve the investment of tremendous amount of resources and is a huge endeavour by any government. As a result, many governments are constraint by these factors. In order to sustain economic growth and meet the challenges imposed by development and urbanization, there is a need to evaluate and consider the various approaches that may be adopted for city development. In this section of the report, three primary development models are detailed with an analysis into the advantages/disadvantages of each, as well as the financing options which may be considered.

Primary Development Models

There are three primary development models identified for the New Economic City, namely the government-led development model, the public-private partnership model (PPP) and the private sector ownership model. Each funding and model has varying advantages and disadvantages.

![Figure 1: Types of Project Development Models](image)

Due to the considerable size of the NEC project, it is likely that the project will employ the use of more than one development model, depending on the aspect of the city
being developed and the funding models used to finance the construction of the NEC. Differing development models can be utilised for fundamental city infrastructures such as electricity, roads, public transport systems and water distribution networks, as opposed to deal structures for housing or commercial development.

**Government Ownership Development Model**

**Overview**

Projects developed under the government ownership development model are funded by and owned by the federal or provincial government, regional authorities, state or province owned entities, or any other appointed government owned organization. Economic or financial returns on these projects and other fixed asset investments are secondary to the overall purpose of the project, which is oftentimes aligned to augment or support larger economic and social agendas or objectives at a provincial or national level.

Implementation of this development model often involves the establishment of a special unit, division, agency, or organization in or under the governance structure of an existing government department or agency. This entity will be tasked with the mandate of the master planning and alignment of the project to the government’s overarching strategy for the province’s or nation’s socio-economic development, and will dictate the designing, building and operation of the project. The goals of the prime policy for the project should be in line with the development of a regional economic catalyst, creation of employment, improvement of citizen living standards and augmentation of overall economic growth for the region or nation.
Implementation of the NEC project can utilize such models for the development of
government housing and industrial parks, where the Government of Punjab takes
control of these aspects of city development. The mandated government entity then
engages the private sector in the construction and subsequent maintenance of these
housing or industrial developments, dissecting the project into segments, opening
tender processes and awarding them to companies, directly impacting the economy.
Investments into these projects can be recovered over time by leasing the fully
constructed properties to tenants.

Financing Model

The government ownership model requires financing from the national or provincial
government authorities in charge of the project. The government can either fund the
projects using their own monetary reserves, government/treasury bonds, or by seeking
external credit from international organisations such as World Bank, Asia
Infrastructure Investment Bank (AIIB), Asian Development Bank (ADB) or the
International Monetary Fund (IMF).

Developed nations prefer to self-finance projects operating on this development model,
as this eliminates all liability to external international organisations, giving them full
control over the process. In contrast, developing nations seek financial support from
the international financing institutions in the form of country/national loans. This
process can be time consuming, as entities such as World Bank and AIIB have high
standards of due diligence and take careful consideration of every project before
making the decision to release funds.

Multiple projects in Pakistan are currently funded on this model, with the Tarbela 5
Hydropower Extension Project and National Motorway M-4 (Shorkot-Khanewal
Section) Project financed by AIIB and ADB.

Advantages and Disadvantages

The primary advantage of the government ownership development model is the
control that the governing authorities have over design, resourcing, timeline, and
implementation of projects in accordance to policy mandates. Since the involvement
of private parties is limited to the construction and maintenance of the projects, the
government/authority is in a position to manage the costs and ensure the achievement
of deliverable timelines.

This advantage of control is essential in the development of projects and is the main
reason why planned cities such as Shenzhen, Navi Mumbai and Chandigarh began
their initial implementation phases with this model. Countries such as China, Singapore and Malaysia regularly adopt this development model in their public housing and industrial park developments.

The key downside to this ownership model is that of financing. The government ownership development model requires that the government/authority has the funds necessary to initiate and implement the project, resulting in projects operating on this model becoming expensive endeavours for the economy and on taxpayers. Even though the eventual costs of development can be recovered through various revenue/pricing models, the recovery period of initial capital expenditures can be spread across a significantly long timeline before full recovery of capital can be achieved.

This makes the government ownership development model more feasible to governments with adequate financial reserves to inject into projects, and becomes an issue for developing nations with limited access to deep financial resources. Such developments put short term strains on state reserves, and the model can be deemed a relatively challenging model for adoption for developing nations.

Financing obtained from international financial institutions such as World Bank or ADB take time to materialise, with countries having to first meet the stringent and arduous due diligence processes and standards of these financial bodies before the funds are made available to the applicant. While the interest rates set by these organisations are typically low, loans taken from these institutions count towards national indebtedness and affect the applicant nation’s economic reserve figures and its ability to raise funds or take on additional debt.

Private Sector Ownership Model

Overview

The private sector ownership model refers to a business undertaking in which the dominant goal is to achieve a return on financial investment from the eventual infrastructure constructed for the project, either by means of sales, rental, or other commercial arrangements that generate monetary profit. In this model, the government hands over complete development authority to the private sector. This model can be implemented by a plethora of varying methods, ranging from the sale of government land with specific land-usage regulations to a private developer to the allocation of land, permits, and governmental approvals to private sector companies. Private sector companies capable of taking up this ownership model are few, and are usually large enterprises with robust financial resources.
These companies need to have sufficient financial resources to lobby and acquire development projects from the government, and also to design, build, operate, and maintain the eventual properties. Successful implementation case studies of this development model are uncommon, since the emphasis of pure-for-profit enterprises on economic returns may be in conflict and deviate substantially from the government’s socio-economic interests and goals.

Example of projects operating on a private sector ownership model is Indonesia’s practice of granting licenses and power purchase agreements between state-owned PT Perusahaan Listrik Negara (PLN) and Independent Power Producers (IPP). These IPPs are companies or consortiums that fulfil a set of prerequisites set out by PLN on the size, financial performance, access to capital, management expertise, project track record, and intra-country credit and business ratings, and have secured the necessary government approvals and agreements allowing them to construct power plants in specific locations. The private consortiums need to prove financial ability to see the developments to turn-key status, upon which PLN will proceed to purchase electricity from the private power plants at a pre-determined price agreed upon before the beginning of construction.

Projects implementing this model mostly utilise a Build-Operate-Own (BOO) methodology, where the awarded private sector company develops the project to completion and subsequently, operates and assumes indefinite ownership of the completed property, earning the benefits associated with the operation and business of the completed project.

**Financing Model**

The private ownership model releases the government of all financing responsibility, placing the burden of funding the project solely on the private sector company the project is awarded to. The responsibility of funding the project is transferred to the private sector, which in turn, funds the project via a plethora of varying methods, either through fund-raising through capital markets activities, intra-company finances or via debt market solutions such as project financing or corporate bond issuance.

**Advantages and Disadvantages**

The advantages of the private ownership model range from cost savings on government spending to the theoretical speed of which the projects allocated to the private sector can be developed. By entrusting full responsibility of development to the private sector, the government relieves itself of the burden of funding the projects.
directly, and can even bolster reserves by allocating projects to companies at a cost. The private sector companies, upon obtaining the relevant approvals and licenses, are expected to fully fund the project to completion.

This ownership model also is perceived to be a fast-track for project completion timelines, since pure-for-profit organizations are more aggressive in pushing for economic benefits and would want to complete project construction in order to begin seeing income.

Disadvantages of the model are twofold: a lack of control in project development and potential conflicts of interests between the private sector and the government. Since the private sector ownership model is the direct opposite approach to development as compared to the government ownership development model, the main disadvantage implied would be a lack of government authority and supervision of the development and eventual operations of the project properties. Even though this can be mitigated by setting up prerequisites and regulations to be complied with by the private sector companies seeking to obtain such projects, once the project is handed over to the recipient company, the government loses control over the development and operations of the project entirely.

Potential conflicts of interests between the financial objective driven private sector and the government are also significant disadvantages the government may face in the implementation of this ownership model. As mentioned in the previous section of the report, private sector objectives may potentially be in conflict with government socio-economic policy implementation. As an example, many IPP consortiums in Indonesia have secured approvals and power purchase agreements by at first agreeing to low electricity prices, then subsequently renege after obtaining the licenses, citing infeasibility and asking for renegotiations of the power purchase prices, slowing down the Indonesian government’s plans for 99.7% national electrification ratio by 2025.

The Case of Lavasa, India

The case of Lavasa provides a clear example of a failed private sector ownership project. The Lavasa Corporation secured the rights to build a privately owned city 50 kilometers from the existing Indian city of Pune. The mega project was planned to house 300,000 citizens, occupying a land area of 100 square kilometres (Lavasa Corporation 2014).
The city of Lavasa never managed to develop according to plans. The construction of the project saw stoppages due to complaints of hill cutting and quarrying activities that were hazardous to the environment, evidence that private sector interests can get in the way of development and conflict with government policies. Announced plans with prestigious organisations such as Oxford University and Manchester City Football Club fell through, and Lavasa Corporation postponed their Initial Public Offering (IPO) plans thrice since project commencement (Business Standard 2016).

Lavasa’s current population remains well below its targeted population, as the city failed to secure anchor industry leading companies as investors, limiting economic growth and employment opportunities.

Public-Private Partnership Model

The public-private partnership model serves policy goals similar to the government ownership development model, with clear alignment to government socio-economic policies and objectives. This model attempts to marry government regulations and goals with private sector expertise and capabilities, and is the in-between business model utilised by many nations around the world for project development. Following the private sector model, private entities seeking to win PPP projects have to adhere to set prerequisites and demonstrate expertise and financial capacity to bring the project to turnkey status. The key difference lies in the period of ownership or operating benefits ceded to the private entity upon completion of construction. PPP projects are structured such that the private sector only operates and/or owns the developed...
properties for a set period of time, before having to transfer ownership and operating rights irrevocably back to the incumbent government without compensation.

Pakistan has seen sizable investment into PPP projects, with USD 35.4 billion worth of investments injected into the country from 1995 to 2015 (World Bank - PPI 2016). The bulk of these investments were made into ICT and electricity infrastructures.

This model has various applications, with structures differing with reference to the type of development project, government capabilities and resources, private sector expertise and know-how, and size of the project. Examples of PPP project structures are as follows:

- **Build-Operate-Transfer (BOT)**

  In the BOT structure, the awarded private entity is mandated by the relevant governmental bodies to construct and thereafter, operate and maintain the asset for a fixed period of time before transferring the asset back to the government. This application is commonly seen in infrastructure projects such as tolled motorways, electricity production and networks, and other fundamental infrastructures of city, regional or country level importance.

  Benefits or revenues generated from the constructed asset is due to the private company during the fixed period before the transfer date, and the private entity is responsible to raise the necessary finances in order to complete construction and operate the asset. The private entity evaluates the financial viability of the project by
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projecting revenues generated from the operations of the asset and determining project value in comparison to cost.

- **Build-Own-Operate-Transfer (BOOT)**

The BOOT structure is essentially similar to the BOT structure, with the only difference that the private entity derives income from the asset as a legal owner before transferring the asset back to the public administration or government body in charge. Other aspects of this project structure are the same as the BOT model and its applications are also commonly seen in public infrastructure projects. The ownership aspect of this structure serves to attract private sector entities that would prefer to be able to consolidate their accounts and are drawn by fixed period fixed asset ownership to bolster their balance sheets.

- **Build-Lease-Transfer (BLT)**

The BLT structure tasks the awarded entity with the financing and construction of the project, after which the entity is allowed to lease the completed asset to a lessee enterprise with the needed expertise to operate the development, earning leasing income for a fixed period of time until the date of transfer. Upon the date of transfer the entity loses its claim to leasing income generated by the asset. The BLT model allows the private sector entities to construct projects that they might not necessarily have the expertise to operate, and removes operating risks from project risk considerations.

**Financing Model**

Financing for the PPP model relies heavily on the private sector's ability to raise funds and demonstrate financial capability to ensure project performance. The primary difference herein from the private ownership model is that of the government setting financial prerequisites on companies seeking to obtain awards of PPP projects. Because the project will be eventually transferred back to the government, private sector companies are expected to present their financials and meet requirements stipulated by the governing authority managing the projects.

This can entail providing proof of funds from banks, or credit letters of promise demonstrating financial capacity to the relevant authorities, satisfying certain criterion on industry expertise, and having strong company ratings from recognised rating agencies. As such, the private sector is forced to first prepare itself financially for the project. In the private ownership model the private sector company assumes complete ownership of the project, but in the PPP model the government remains a stakeholder, allowing it to set controls to ensure suitability of private sector partners.
Advantages and Disadvantages

The PPP model carries clear advantages in terms of project control, financing, and completion timeframes. Deemed as a partnership between the government and the private sector, this model allows for the governing bodies to vet and determine the amount of time and benefit it wants to cede to the private sector before eventually taking over full ownership and control of the developed asset, all without having to carry the burden of financing the project. It is important to note, however, that private entities will often ask for a form of guarantee from the government for the project to mitigate its financing and other related risks.

Relying on the expertise of the private entities in construction and related assembly processes, governments are able to see projects achieve turn-key status as the private sector pushes to complete projects quickly to begin generating revenue and recover their costs.

The main disadvantage is that of the government having to cede the considerable operational income derived from the asset for a fixed period of time, resulting in a perceived loss of income for the government during that time period. These income streams are sizable to make the project feasible for the private sector, which is primarily driven by financial profits.

The Case of King Abdullah Economic City (KAEC)

As presented in the Market Demand and Analysis Report, King Abdullah Economic City (KAEC) is a city planned in 2005, intended to alleviate congestion from major population nodes in Saudi Arabia and diversify the Kingdom’s economy away from its reliance on the oil and gas industry. Requiring a total investment of USD 93 billion, the development of KAEC was announced in 2005, but due to global financial conditions, saw development come to a standstill in the years preceding 2012, only completing 15% of development progress in 2015 (Attwood 2014).

<table>
<thead>
<tr>
<th>Main Company</th>
<th>Primary Subsidiaries</th>
<th>Secondary Subsidiaries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emaar Properties PJSC</td>
<td>Emaar Dubai LLC</td>
<td>Unlisted in this table</td>
</tr>
<tr>
<td></td>
<td>Emaar Investment Holdings LLC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Emaar Retail Group LLC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Emaar Hotels &amp; Resorts LLC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Emaar Industries &amp; Investments LLC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Emaar Technologies LLC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Emaar Malls Group PJSC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Emaar Hospitality Group</td>
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</tbody>
</table>
The entire city works on a Public Private Partnership (PPP) development structure and the project company appointed for development is Emaar the Economic City (EEC), owned by Emaar Properties (EP), a major global property developer based in Dubai, United Arab Emirates, founded in 1997. Emaar Properties is a public joint-stock company listed on Dubai Financial Market.

EP established a dedicated project company, Emaar the Economic City (EEC), to perform the role of the main real estate conglomerate and master developer appointed to secure funds from the private sector and create, plan, and construct developments in KAEC, manage operations and maintenance of developments, and acquire land for KAEC and transfer titles.

**Real Estate Regulations**

<table>
<thead>
<tr>
<th>Land Ownership &amp; Development</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Master developer, Emaar Properties will establish a project company, Emaar the Economic City</td>
<td></td>
</tr>
<tr>
<td>Project company is required to offer 30% of issued share capital to retail investors</td>
<td></td>
</tr>
<tr>
<td>100% foreign land ownership is allowed</td>
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</table>
### Real Estate Regulations

<table>
<thead>
<tr>
<th>Foreign Investment Restrictions</th>
<th>Restrictions include:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• The manufacture of military materials &amp; equipment,</td>
</tr>
<tr>
<td></td>
<td>• Oil exploration and production,</td>
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<tr>
<td></td>
<td>• Security, real estate brokerage, and land transportation services (except trains)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project Land Ownership</th>
<th>Master developer to acquire land for KAEC and transfers it to project company</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project company will then:</td>
<td>• Develop land for sale or</td>
</tr>
<tr>
<td></td>
<td>• Lease land to investors or</td>
</tr>
<tr>
<td></td>
<td>• Retain ownership of land to manage developed properties</td>
</tr>
</tbody>
</table>

**Figure 6: KAEC Real Estate Regulations (Economic Cities Authority n.d.)**

The development of the city is overseen by Economic Cities Authority (ECA), formerly a subsidiary of Saudi Arabian General Investment Authority (SAGIA), the Kingdom of Saudi Arabia’s (KSA) main investment arm. The ECA ensures competitiveness in economic sectors, supports investment within KAEC and other economic cities and makes certain that government services are efficiently provided to inhabitants of each planned economic city, including KAEC. The ECA falls under the authority of SAGIA, a central government agency set up to attract investment into the Kingdom and diversify the country’s economy.

The board of SAGIA comprises key members of the Saudi Arabian Government and ministries, with multiple ministries including the Ministry of Commerce and Investment, Ministry for Labour, Tax Department, and the Public Transport Authority represented by various members of the board. Members of the SAGIA board are listed in the figure below.

<table>
<thead>
<tr>
<th>H.E. DR. MAJID A. AL QASABI - Chairman</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minister of Commerce and Investment</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>H.E. DR. ABDULRAHMAN BIN MOHAMMED</th>
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<tbody>
<tr>
<td>Governor, Saline Water Conversion Corporation Saudi Arabia</td>
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<tr>
<th>H.E. DR. ABDULAZIZ AL OHALY</th>
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<tbody>
<tr>
<td>President of the Public Transport Authority</td>
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<table>
<thead>
<tr>
<th>AHMED AL-HUMAIDAN</th>
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<tbody>
<tr>
<td>Deputy Minister For Labour</td>
</tr>
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<table>
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<tr>
<th>DR. AABED BIN ABDULLAH AL-SAAD</th>
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17
SAGIA is tasked with the mandate of overseeing the attraction of foreign investment in to Kingdom of Saudi Arabia and create the necessary modern infrastructure to foster a competitive business environment for other industries to flourish in the Kingdom.

With the Royal Decree No (A/19) issued on 25 February 2010, the ECA, led my Secretary General Mr. Mohanud Abdul-Mohsin Helal, was appointed as the only and primary government entity in charge of administering governance and regulating all the 4 planned economic cities to be built in the Kingdom. The ECA is responsible for governance, regulation, and supervision of all four of the planned economic cities in Saudi Arabia, namely KAEC, the Knowledge Economic City (KEC), Prince Abdul Aziz Bin Mousaed Economic City (PABMEC), and Jazan Economic City (JEC).
Each economic city has an appointed Master Developer. For example, Saudi Aramco plays the role of EEC in the development of JEC, the next largest economic city project sanctioned by SAGIA for the Kingdom of Saudi Arabia. Each Master Developer then appoints contractors and consultants for each project.

SAGIA originally planned for six economic cities to be developed in the country, but revised this plan down to four cities due to global economic headwinds and a lack of investment pouring into the country, particularly during the years of the Lehman Brothers collapse.

**Figure 9: KAEC Appointment Holder Scopes of Work**

**NEC Implementation Model Recommendations**

**Development Model Overview**

Pakistan is no stranger to PPP projects, having seen USD 35.4 billion of PPP investments into the country over the last 20 years. Pakistan has also demonstrated capability to secure infrastructure project funding from international finance institutions such as AIIB and the World Bank.

Frost & Sullivan note that the NEC project will be a large project in scale and size, and would likely require a significant sum of investment. Due to the scale of the investment
required to develop a city for 2 million residents, the Government of Punjab can opt to either develop the NEC utilising:

1. A city-wide PPP development model or,
2. A hybrid development model incorporating government ownership and PPP models for various aspects of city infrastructure and building

**Option 1 – City-Wide PPP Development Model**

The KAEC PPP development model presents a strong case for city-wide PPP development. Since the scale of the NEC project is significant, passing the mandate of financing to the private sector would allow the Government of Punjab to relieve itself of financing burdens and select a private sector company capable of taking the NEC project to completion. The Government of Punjab can also form a joint venture company with the selected private sector entities to form a Master Developer company, operating the model as a hybrid–like city-wide PPP model. Once a suitable Master Developer is appointed, all responsibility falls on the private sector to fund, develop, operate and market the project to attract foreign investment.

In order to ensure the success of this model, the Government of Punjab has to attract and thoroughly vet private sector applicants for financial capacity, expertise, track record and commitment. The eventually appointed Master Developer would need to be of a significant size and have a strong track record of city building, which is not commonly seen in the private sector.

In order to attract strong Master Developers, Frost & Sullivan proposes a BOOT structure for the PPP contract to the private sector, as the ownership aspect of the BOOT structure would allow the private sector company to benefit from property and asset appreciation, especially so in the developing economy of Pakistan. The BOOT structure would also allow the company to consolidate ownership into their balance sheets.

The BOOT model will require that the appointed Master Developer acquires the land required for the NEC from the Government of Punjab, thereafter leasing plots of land to secondary private sector developers under long-term leases or developing the land for sale or engaging in other revenue driving activities.

**Option 2 – Hybrid Development Model**

Implementing a mixed hybrid development model for the city would allow the Government of Punjab to control and own the development of key infrastructures for
the NEC. In this model, the Government of Punjab takes on the responsibility of funding and building the basic infrastructures for the NEC and has the flexibility to decide which aspects of city development to utilize PPP models for and which aspects to fund, build, control and own directly.

PPP contracts can be awarded to various private parties or consortiums in the private sector for various infrastructure developments such as power plants, telecommunications networks, water distribution networks, transport systems, and waste management systems, leveraging on private sector expertise and financing to develop certain portions of the NEC. The Government of Punjab would then fund and build segments of the city such as government residential developments, awarding Design and Build contracts to private sector construction companies.

This model is feasible if the Government of Punjab has the adequate financial capabilities to finance the projects or is able to secure funds from international institutions such as ADB, AIIB, or the World Bank. Many countries around the world including Malaysia, Indonesia, New Zealand, China, and India utilize this model to develop their cities, allotting PPP contracts for various portions of city building to the private sector. Examples of such projects include the China-Singapore Suzhou Industrial Park and the Datansha Island Urban Redevelopment project in Guangzhou.

This model could also include the possibility of a government agency performing the role of the Master Developer, and subsequently awarding PPP tenders to the private sector for specific developments of the New Economic City. This arrangement would mean the amalgamation of the Project Company and Government Implementing Agency. This model is used in Singapore, where the Urban Redevelopment Authority (URA) plans land usage and development, builds a masterplan for the entire city of Singapore, and awards tender contracts to the private sector for the development of residential and industrial development land plots. Master-planning of districts and precincts is currently performed by the Singaporean Government, and offered on a plot-by-plot basis to developers in the private sector.

In the case of the development of the NEC, the Urban Unit could potentially serve as the Master Developer for the city, performing the same role as the URA in Singapore, merging the roles of the Government Implementing Agency and the project development company, allowing it to operate in the same function as Emaar in KAEC. This would in turn, provide more control for the government on the development of the NEC. Subsequent tender offerings for city developments such as power plants, transmission lines, cable networks, residential developments and industrial parks can then be appropriated to the private sector via BT, BOT or BOOT development models.

Recommendation: Option 2 – Hybrid Development Model
The Consultants recommends that this hybrid PPP model with the Government Implementing Agency also performing the role of the Master Developer would be most suitable for the development of the NEC given the local landscape and greater control which the Government would have in the master planning and overall development of the city.

Alternatively, the Master Developer can also be organized as a joint venture company between the Government of Punjab and a private consortium in which both government and private sector own and operate the Master Developer entity. This would allow the Government of Punjab to have transparency and control over the activities of the Master Developer, and exert influence on the projects awarded to various private sector parties for specific areas of city development. It is important to note that there has not been a comparable joint venture entity of such proportions implemented previously due to the sheer size and scope of the NEC project. This would be significantly more difficult to execute and is not recommended for the NEC project.

The subsequent portions of this section will address the options the Government of Punjab should consider in order to (1) finance the development of the NEC, (2) form a governance body to regulate the NEC, (3) implement PPP planning and structuring, and (4) attract PPP partners.

Financing Model

In regard to the financing model for NEC development, Frost & Sullivan recommends that the project be funded in the following methods depending on the over-arching development model chosen by the client for the NEC.

In a government ownership and PPP hybrid development model:
- Government borrowings to fund the government ownership aspects of city development, if any or,
- Private sector project financing options for the PPP aspects of the city

In a city-wide development model:
- Private sector project financing options for the PPP aspects of the city

Project Financing

Project financing comes mostly in the form of debt financing, as equity financing is more expensive than debt to project shareholders. In general, PPP projects involve 70% to 95% financing using debt instruments, with financing institutions taking on
stringent due diligence, forecasting project cash flows and structuring debt agreement contracts to the project company (International Bank for Reconstruction and Development / The World Bank, Asian Development 2014).¹

Utilizing debt financing allows the project company or government entity to take on projects of a larger scale than it otherwise would have been able to and limits investment risk on the entity. Many appointed project companies seek non-recourse project financing, meaning the lenders are paid with company revenues without recourse to equity holders. This method of debt financing is attractive to the project companies, and should be considered in the implementation of the NEC PPP structuring.

Frost & Sullivan notes that though attractive to private sector project owners, non-recourse project financing is more expensive than government borrowings, and over-leveraged projects are highly susceptible to defaults and bankruptcies. In order to mitigate such risks, the Government of Punjab could require project consortiums or the Master Developer to either go for an Initial Public Offering (IPO), or ask the project companies awarded PPP contracts to put up corporate guarantees.

Figures 10: Recommended PPP Structure

¹ We have assumed 100% debt financing in financial projections, with sensitivity analysis on the final weighted average cost of capital.
In the event the government or Government Implementing Agency also assumes the role of the project company or Master Developer, the government would need to set up off-take agreements or financial guarantees to private sector entities or consortiums bidding for PPP tender contracts. This helps alleviate the risk undertaken by the private sector on large scale projects such as township developments or industrial parks.

<table>
<thead>
<tr>
<th>Master Developer</th>
<th>King Abdullah Economic City</th>
<th>Prince AbdulAziz Bin Mousaed Economic City</th>
<th>New Cairo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company Type</td>
<td>Emaar the Economic City</td>
<td>Al Mal Investment Company</td>
<td>Eagle Hills Properties LLC (Emaar)</td>
</tr>
<tr>
<td>Timeline</td>
<td>2006-2029</td>
<td>2009-2025</td>
<td>2015-2027</td>
</tr>
<tr>
<td>Planned Population</td>
<td>2,000,000</td>
<td>300,000</td>
<td>2,000,000</td>
</tr>
<tr>
<td>Estimated Total Investment (US Billions)</td>
<td>93</td>
<td>8</td>
<td>80</td>
</tr>
</tbody>
</table>

Figure 11: Listed of Planned Cities and Master Developers

In the case of all of Saudi Arabia’s four economic cities, SAGIA mandates that all Master Developers including EEC, Al Mal Investment Company, Knowledge Economic City Company and Saudi Aramco need to be listed on the Saudi Stock Exchange and are required to offer 30% of company issued share capital to retail investors. This allows the government to control the debt to equity ratio of the project companies, allows for transparency and enforces adherence to the government’s laws and regulations.

The Government of Punjab needs to ensure that the PPP project structure is “bankable”, meaning that the project operating cash flows must be enough to not only service the debt but also allow for an acceptable profit margin for the project company. This directly affects banks’ decisions on whether or not to fund the NEC project or any of its components in a hybrid development model. The bankability of the project is a key consideration to financing institutions and is vital to the NEC project.

PPP Preparation and Governance

Land Acquisition
Preparing the NEC project for PPP would first and foremost, require the Government of Punjab to first acquire the land on the selected site. A detailed Land Acquisition and Resettlement Action Plan (LARAP) would be required to ensure not only the social and economic well-being of citizens and families being displaced, but also to keep land acquisition costs to minimal sums.

![Figure 12: Land Acquisition Consideration Factors](image)

The land expropriation process may be rather time consuming, especially in the event where the client decides to develop the NEC in more populated sites. The LARAP will have to take into consideration the ownership of the site land marked for acquisition, and in certain cases, enter into negotiations with parties holding ownership rights to the land. The Government of Punjab may also consider setting up resettlement assistance programs, including transportation, food, shelter, and social services, apart from the compensation for the land and homes that the host population needs to be displaced from.

The process of preparing this LARAP should be started as early in the project development planning cycle as possible to assess the physical and economic displacement impacts the project would have on the affected human population. Only after the completion of the LARAP can the process of actual land acquisition begin. This process of land acquisition should be conducted by the government and not the eventual PPP partners or Master Developer.

**Implementation and Regulatory Authority**

Concurrently, an implementing and regulatory authority needs to be set up by the Government of Punjab to oversee and supervise the development of the NEC. Similar to SAGIA and the ECA in the case of KAEC, this authority will be given full jurisdiction for all matters within the NEC and will be in charge setting the Government’s
requirements asked of potential PPP partners, structuring the PPP terms and regulations, appointing the Master Developer, and conducting the day to day management of the development of the NEC. The governing authority would also be involved in subsequent dealings between the Master Developer and other private sector developers building various portions of the NEC.

The governance of the NEC would also include the planning of tax, housing, financing, and other sundry policies that would affect citizens and businesses in the NEC. This will require collaboration with other relevant federal or national authorities or agencies to address various city level issues.

The Implementing and Regulatory Authority for the NEC will report to the Board of Directors (Governing Body) which will set the strategic direction for the development of the city. This Board of Directors will comprise of senior members of government, as well as esteemed private sector individuals and academics. Ensuring that the relevant government ministries are involved in the Board will facilitate the consideration of all aspects of city development.

It is also important to have small working groups which specialises in various aspects of city development (e.g. smart cities, SEZs) to provide advice to the Board as well as the Implementing and Regulatory Authority. These working groups of experts or panels will comprise of established local and international experts.

In the event where a hybrid PPP development model is selected, the government Master Developer should also take on the role as the implementing authority, albeit subject to the governing Board of Directors and working groups advising the Board. Since most city development, safety, and other regulations are held at federal and provincial levels, the government entity performing the dual role of regulator and project company would have to continue working closely with these other regulating entities to ensure compliance to existing laws and regulations for the NEC.
The responsibilities of the Implementing and Regulatory Authority for the NEC should be as follows:

- Implement a strategic business plan for the NEC that ensures economic viability and attractiveness to foreign and domestic investment;
- Seek public and/or private funding for implementation of the master plan and evaluate master developers and potential PPP partners;
- Acquire and prepare the land required for the NEC project;
- Interact with local, provincial, and national government bodies and agencies;
- Review architectural designs and site plans for conformance with zoning ordinances and master plan objectives;
- Serve as a coordinating agent for infrastructure planning;
- Govern the NEC with regulations and laws in line with the purposes of the master planning and the Province of Punjab;
- Collaborate with the Master Developer and other relevant bodies to identify and attract investors to the NEC

City Operating Model
Shown in Figure 9, the KAEC operating model utilizes a mixed regulatory system, where the Saudi Arabian Government ministries govern the transport, education, utilities and telecommunications aspects of the city, with the exceptions of the ministries of Labor, Interior, and Meteorology and Environment, which work directly with the Economic cities authority to oversee manpower, security and environmental aspects of the city. The ECA has full authority over the port and real estate agency in KAEC, independent of other ministries within the Kingdom. This mixed regulatory model can be cumbersome and difficult to set up and eventually enforce.
An alternative operating model would be to have the relevant ministries and national government bodies oversee all various aspects of the NEC, only allowing the NEC Governing Agency authority over real estate regulations and supervision of the Master Developer. Demonstrated in figure 10, all other aspects of city operations would be governed by the respective provincial and federal ministries of Punjab and Pakistan, as with all other existing cities.

This decentralized operating model would allow simplicity in the setting up of the governing agency for the NEC operations and would allow the NEC Governing Agency to focus on regulating real estate matters and overseeing the Master Developer and the other sub-developers tasked to construct various aspects of the city. This operating model is also more efficient since the existing government ministries have in-depth expertise in their various fields and would be able to govern the various aspects of the city in a more effective way.

**Attracting and Evaluating Potential Master Developers and PPP Partners**

The governing entity appointed by the Government of Punjab for the NEC project would need to structure the NEC project to be attractive to the master developer, as well as develop a set of prerequisite standards that private enterprises would have to meet in order to be considered for the tender process for the PPP project.

Examples of prerequisites that the governing entity can set for PPP tenderer companies include but are not limited to: minimum figures applied towards companies’ financial capability and cash flows, minimum sizes to the companies’ previous projects, credit ratings on the companies by accredited and recognised ratings agencies, and proven track records of projects completed and operational in the region or in the country. These prerequisites serve to weed out the smaller enterprises which would be too risky to appoint as master developers.

Master developers for the NEC project would have to be very significant in size. Emaar Properties, the master developer for the KAEC project is the largest company listed on the Dubai Financial Market with a USD 15.8 billion in 2015 and is 29% owned by the government of Dubai. Other potential investors include consortiums comprised of multiple developer companies, each specialising in various aspects of city infrastructure.

<table>
<thead>
<tr>
<th>Company</th>
<th>Country</th>
<th>Business</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emaar Properties</td>
<td>UAE</td>
<td>Real Estate Conglomerate</td>
</tr>
<tr>
<td>DP World</td>
<td>UAE</td>
<td>Real Estate Conglomerate</td>
</tr>
<tr>
<td>Sembcorp</td>
<td>Singapore</td>
<td>Real Estate Conglomerate</td>
</tr>
<tr>
<td>Keppel Land</td>
<td>Singapore</td>
<td>Real Estate Conglomerate</td>
</tr>
</tbody>
</table>
Table: List of Potential Master Developers and PPP Partners

<table>
<thead>
<tr>
<th>Saudi Aramco</th>
<th>Saudi Arabia</th>
<th>Oil &amp; Gas Conglomerate</th>
</tr>
</thead>
<tbody>
<tr>
<td>China Shandong International Economic &amp; Technical Cooperation Group Ltd. (CSI)</td>
<td>China</td>
<td>Infrastructure Conglomerate</td>
</tr>
<tr>
<td>Beijing United Construction Group</td>
<td>China</td>
<td>Construction Conglomerate</td>
</tr>
<tr>
<td>DongFang Electric Co.</td>
<td>China</td>
<td>Electricity Conglomerate</td>
</tr>
</tbody>
</table>

Figure 7: List of Potential Master Developers and PPP Partners

It is worth noting that many of these large scale enterprises capable of taking up megaprojects such as the NEC project are publicly listed companies partially or majority-owned by governments. Emaar is 30% owned by the Dubai Government, and Sembcorp is 49% owned by Temasek Holdings, the sovereign wealth fund of the Republic of Singapore. Dongfang Electric Co. and CSI are state-owned enterprises falling under the jurisdiction and governance of the Chinese central government. These enterprises are the most likely partners for the appointment of a Master Developer and or partners in consortiums large enough to handle a project of the NEC’s size, or large investment requirement aspects of the city such as power plants or highway infrastructures.

The case of KAEC, Master Developer EEC acquired the land from the SAGIA and proceeded to award projects to companies such as Siemens and Cisco Systems for the construction of key city infrastructures such as IT networks and electricity grids under the oversight of SAGIA. The project company established by the Master Developer to develop the KAEC project has to go for an Initial Public Offering, issuing 30% of its share capital to the public and retail investors and raising cash through this exercise. In the case of EEC, the shares were oversubscribed by 2.82 times (Hanware 2006). Such a regulation is interesting as it allows the project company to raise funds via issuance of equity to the public, and can be considered as an option for the future appointed Master Developer and Project Company to bolster funding for the NEC project.

Structuring the PPP Contract

Essential components that make up the PPP contract for the NEC include setting up performance requirements, defining payment mechanisms, setting adjustment clauses, outlining dispute resolution measures, and defining contract termination terms. These serve to determine the overall structure of the contract to the project company and needs to factor in all the recommendations set out in the sections above.
Frost & Sullivan strongly recommends that the terms of the PPP contract for the NEC or for its components be structured by the NEC governing entity to enhance attractiveness to Master Developers and PPP partners. Deal term structures can vary according to the type of development and infrastructures awarded to the Master Developer or private sector company. We suggest that the NEC PPP contract structure includes the following terms to attract strong developers in the private sector:

- Subsidies to land acquisition costs to the Master Developer
- Extension clauses to timeline for BOT or BOOT projects
- Tax incentives on profits
- Repatriation allowances to the enterprise’s country of operations
- 100% foreign land ownership
- Assistance from the Government of Punjab in marketing the project
- SEZ incentives in industrial areas within the NEC
- Financial guarantees by the Province (for certain cases)

In the same vein, PPP terms also need to be set in order to ensure project performance and ensure that the appointed Master Developer or project companies adhere to timelines and completes the development of the NEC project. Such terms can include:

- Penalties in the case of non-performance or delays
- Termination clauses
- Timely periodical progress reporting
- Claw back clauses for land and other assets
- Other protection clauses in the event of financial default

**Decision Matrix**

In summation of the previous sections, the Government of Punjab has multiple structural options for the development of the NEC project. Frost & Sullivan recommend that the client considers either a hybrid model of externally funded government ownership along with PPP model, or a pure PPP development model in order to see the NEC project come to fruition. This is graphically represented in the figure below:
Risks Considerations for the Government

In any mega development, there are numerous risks which will affect the investment and stakeholders. It is important to plan ahead and identify some of these risks which may derail the development of the NEC. The table below highlights the key risks, as well as potential mitigating actions which may be introduced.

![NEC Development Model Decision Matrix](image-url)
<table>
<thead>
<tr>
<th>Risks</th>
<th>Mitigating Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk of financing strain on Provincial or National reserves for government owned projects</td>
<td>Allocate more projects to the private sector, handing them funding responsibility</td>
</tr>
<tr>
<td></td>
<td>Seek aid from international finance institutions such as ADB, World Bank and AIIB</td>
</tr>
<tr>
<td>Risk of appointing weak private sector partners who ultimately cannot bring the project to completion</td>
<td>Impose stringent background checks on potential partners, and setting high prerequisites on financial capability, minimum project track record, management expertise and credit rating</td>
</tr>
<tr>
<td></td>
<td>Set regulations to make sure project company is a public company listed on a stock exchange to ensure transparency</td>
</tr>
<tr>
<td></td>
<td>Set claw back clauses in PPP agreements to ensure the government is able to either terminate or replace the partner with another in the event of non-performance</td>
</tr>
<tr>
<td>Risk of private sector utilising an overly high gearing ratio to perform the project, over-leveraging and risking default</td>
<td>Require project company to offer a certain percentage of their issued share capital to the public</td>
</tr>
<tr>
<td></td>
<td>Imposing regulations on minimum debt to equity ratio for the projects awarded</td>
</tr>
<tr>
<td>Risk of misalignment between private sector objectives and government goals</td>
<td>Ensure that the NEC governing entity has full control and jurisdiction of the project and its development milestones</td>
</tr>
<tr>
<td></td>
<td>Structure monitoring and reporting processes and requirements between the project company and the NEC governing entity</td>
</tr>
</tbody>
</table>

Figure 9: Risk Considerations from Perspective of the Government

Risks Considerations for the Master Developer

If the development of the NEC were to be taken on by a Master Developer based on a PPP model, there are several key risks which is highlighted in the following table.
<table>
<thead>
<tr>
<th>Risks</th>
<th>Mitigating Actions</th>
</tr>
</thead>
</table>
| Risk of financing the development of the project and/or raising funds required | Seek the help of the NEC governing entity in marketing the project domestically and internationally  
                             | Ask for government guarantees for certain aspects of city building (e.g. Power plant) |
| Risk of project not attracting population or key industrial players to the NEC in the planned timeframes | Work closely with the NEC governing entity and the Provincial government to work out incentives and regulations that allow for the attraction of businesses and citizens  
                             | Sign deals with large targeted industrial players before full commencement of construction |
| Risk of political shocks or changes in the country                  | Ensure that legal agreements allow for the company to continue operations in the event of political changes or shuffles in the government |

**Figure 10: Risk Considerations from Perspective of the Master Developer**

**General risk considerations and mitigation strategies**

**Macroeconomic Risks**

**Description**

Such risks relate to global and market specific macroeconomic factors such as economic growth, financial market landscape etc. Such risks are especially of concern at the set-up stage of the NEC as an adverse macro-economic environment could dampen investor interest and result in slow uptake. While some mitigating strategies may reduce the impact of such a risk, they would be unable to influence the probability of such an occurrence.

**Mitigating Strategies**

- Target mix of both national and international investors
- Target investors from a mix of geographies internationally
- Target investors from a mix of industries
Sectoral Risks
Description
While macroeconomic risks looks at macroeconomic factors, sector risks looks at the economic performance of individual sectors. Despite a backdrop of global economic growth, there are sectors that may suffer from declining demand, especially in the case of the introduction of disruptive technologies (e.g. film cameras impacted by digital cameras). Cities that are dependent on few industries are vulnerable to the performance of those sectors. The decline of mining towns in tandem with the downturn in the mining sector is one such example.

Mitigating Strategies
• Focus on a mix of high-growth and mature sectors
• Change focus if long term outlook for focus sectors is negative
• Target a mix of start-ups, SMEs and mature companies
• Facilitate moving up the value chain to niche and competitive segments

Implementation and Operational Risks
Description
This refers to risks associated with the set-up and operating the NEC – factors such as delays in building, environmental impact, inability to find anchor investors, etc. However, compared to other risks, this is a risk that can be significantly mitigated with the right approach.

Mitigating Strategies
• Robust feasibility studies to assess positive/negative impact of implementation
• Continuous benchmark against best practices
• Continuous monitoring of progress
• Setting up an in-house compliance team
• Designing contracts with defined KPIs for contractors
• Phased roll-out and opening
• Active and updated rescue plans
• Investment in back-up facilities

Competition Risks
Description
Competition risks arise from changes in strategies or policies of competing locations that may result in investors fleeing to that destination – for e.g. Vietnam’s joining the TPP has resulted in several investors either exiting Batam, Indonesia, or not considering it for further investment.

**Mitigating Strategies**
- Continuous benchmark against best practices
- Monitor trends and adopt strategies such as moving up value chain, reducing dependence on incentives etc.

### 3. Land Use Considerations and Development Phasing

**Land Use Considerations**

**Approach**

A robust spatial planning strategy for a new city consists of four primary building blocks:

i) What to build?
ii) How much to build?
iii) When to build?
iv) Where build?

This report, being at a pre-feasibility stage, will only focus on blocks (i), (ii), and (iii), with (i) and (ii) being addressed in the Land Distribution Plan and (iii) being addressed in the Phasing Plan. Block (iv), the detailed plan of the placement of the individual infrastructure, will only be developed in later stages of the project.

In developing the land distribution and phasing strategies for the NEC, there were four main key considerations, which are laid out in the figure below and elaborated upon in the following four sub-sections.
Regulations

The land distribution plan for any planned city in Pakistan would not only need to adhere to the regulatory framework governing urban projects in the country, but also build a coherent road map for sustainable city development. The three main pillars of sustainable city development are as follows (UN-Habitat 2015):

1. Economic Development
2. Social Progress
3. Environmental Responsibility

Regulations should include clustering of industries, services, and educational institutes, with a focus on ensuring mobility and developing transport infrastructure. Such planning serves to foster strong economic growth within the city.

To maintain social progress, governments should design policies aimed at addressing poverty reduction, making land affordable to citizens, develop a spatial framework delivering basic services to all residents, and preferably encourage social mixing and mixed land use. Overarching plans should be made on areas marked for leisure and parks.

Standards should also be set to protect natural resources, water, agricultural land, and eco-systems. Regulations should be set to reduce urban sprawl by pushing progressive densification along with land market regulations to optimise land use, and
reduce congestion. Planning for higher average gross density would also help in maximising the reach of infrastructures (UN-Habitat, Siemens 2013).

<table>
<thead>
<tr>
<th>Country/City</th>
<th>Development Highlights</th>
<th>References</th>
</tr>
</thead>
</table>
| Singapore    | - Protection of Sungei Buloh Nature Reserve  
- Implementation of 3-G playgrounds in residential areas  
- Cleaning up of the Singapore River  
- Developed neighbourhood and town parks | CLC – Liveable and Sustainable Cities  
| Australia - Melbourne | - Largest tram system in the world  
- Policies protecting biodiversity and environment regulations on land use on the coast and on alpine land  
- Higher land use density around transport nodes | Melbourne Planning Scheme  
| Denmark - Copenhagen | - Locating large commercial and cultural buildings < 600m from train stations  
- Promoting use of bicycles and developing cycle track network  
- Finger expansion spatial planning for urban growth | Urban Planning in Copenhagen  
The City of Copenhagen’s Bicycle Strategy 2011-2025  

The figure above shows the examples of Singapore, Melbourne, and Copenhagen, cities which are consistently deemed to be the top most liveable and sustainable cities in the world, and the developments and policies set in place in their urban and spatial planning. In addition to this, future development plans for the NEC must be in conjunction with the Punjab Spatial Strategy when it has been finalised.

**Implications for the NEC**

The figures below lay out the relevant approximate planning guidelines given the considerations laid out in the section above. The land allocation for Hong Kong and Singapore have also been provided as a point of reference.
Prefeasibility Study for Development of a New Economic City in Punjab, Pakistan – Phase 3 Report

<table>
<thead>
<tr>
<th></th>
<th>Hong Kong</th>
<th>Singapore</th>
<th>Guidelines for NEC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>36%</td>
<td>22%</td>
<td>30 – 40%</td>
</tr>
<tr>
<td>Industrial/Commercial</td>
<td>16%</td>
<td>22%</td>
<td>20 – 30%</td>
</tr>
<tr>
<td>Institutional</td>
<td>12%</td>
<td>21%</td>
<td>10 – 20%</td>
</tr>
<tr>
<td>Land Transport</td>
<td>NA</td>
<td>17%</td>
<td>10 – 20%</td>
</tr>
<tr>
<td>Open Spaces</td>
<td>12%</td>
<td>16%</td>
<td>10 – 20%</td>
</tr>
</tbody>
</table>

Figure 13: Guidelines for Land Allocations in Preliminary Design of a New City

Strategic Imperatives

‘Strategic Imperatives’ refers to the main strategic aims that the NEC project aims to achieve. These are derived from by the TOR laid out by the Urban Unit, as well as the findings from the Phase 1 Report.

Inputs from TOR

The TOR has provided guidance that the NEC ought to have capacity for at least 2 million residents, with the aim to mitigate unplanned urban sprawl, congestion and poverty.

Inputs from Phase 1 Report

The Phase 1 Report established that there was demand for the development of an NEC, and that building a new city would be more effective than strengthening existing cities. In particular, the figure below is an extract from the report, detailing the key gaps in Pakistani urban infrastructure that should be addressed by the NEC in order to maximise its value-add to the country.

<table>
<thead>
<tr>
<th>Weakness</th>
<th>Desired future state set by Pakistan and Punjab Governments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infrastructural issues</td>
<td><strong>Pakistan Vision 2025</strong></td>
</tr>
<tr>
<td></td>
<td>• Increase proportion of population with access to improved sanitation from 48% to 90%</td>
</tr>
<tr>
<td></td>
<td>• Energy: double power generation to 45,000 MW and provide uninterrupted, affordable and clean ‘energy for all’ – electricity access from 67% to 100%</td>
</tr>
</tbody>
</table>

2 Source: Planning Department, Hong Kong
3 Assessment of land allocated for urban usage. Does not include land allocated for reservoirs.
4 Source: Urban Redevelopment Authority, Singapore
5 Does not include land allocated to defence and reservoirs
<table>
<thead>
<tr>
<th>Weakness</th>
<th>Desired future state set by Pakistan and Punjab Governments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Make Pakistan hub of regional trade and commerce</td>
</tr>
<tr>
<td></td>
<td>• Increase road density from 32 Km / 100 Km² to 64 km / 100 Km², and share of rail from 4% to 20% of freight handling in the country.</td>
</tr>
<tr>
<td>Shortage of housing</td>
<td><strong>Pakistan Vision 2025</strong></td>
</tr>
<tr>
<td></td>
<td>• Increase proportion of population with access to improved sanitation from 48% to 90%</td>
</tr>
<tr>
<td></td>
<td><strong>Punjab Growth Strategy 2018</strong></td>
</tr>
<tr>
<td></td>
<td>• Achieving all Millennium Development Goals and targeted Sustainable Development</td>
</tr>
<tr>
<td>Limited spatial planning and limited land for industrial and commercial use</td>
<td><strong>Pakistan Vision 2025</strong></td>
</tr>
<tr>
<td></td>
<td>• Increase annual exports from US$25 billion to US$150 billion</td>
</tr>
<tr>
<td></td>
<td>• Increase Diaspora investment (via remittances) in private sector to $40 billion</td>
</tr>
<tr>
<td></td>
<td><strong>Punjab Growth Strategy 2018</strong></td>
</tr>
<tr>
<td></td>
<td>• Achieving 8% economic growth in Punjab by 2018</td>
</tr>
<tr>
<td></td>
<td>• Increasing annual private sector investment in Punjab to USD17.5 billion by 2018</td>
</tr>
<tr>
<td></td>
<td>• Creating 1 million quality jobs every year in Punjab</td>
</tr>
<tr>
<td></td>
<td>• Increasing Punjab’s exports by 15% every year till 2018</td>
</tr>
<tr>
<td>High regulatory compliance costs</td>
<td><strong>Pakistan Vision 2025</strong></td>
</tr>
<tr>
<td></td>
<td>• Control of Corruption (bottom 13th percentile)</td>
</tr>
<tr>
<td></td>
<td>• Rank in the top 50 countries on the World Bank’s Ease of Doing Business Rankings</td>
</tr>
</tbody>
</table>

**Figure 14: Summary of Key Weaknesses (Potentially Addressable by Urban Development)**

In addition, the Phase 1 report also highlighted the potential of Pakistan leveraging key regional developments to catalyse economic development. In particular, the development of CPEC, in conjunction with close ties with China, represents an opportunity for Pakistan to attract investment and as a destination for exports. The developments in surrounding countries also opens the possible opportunity for the NEC to develop into a logistics hub as land-locked Central Asian countries use the CPEC route to access sea-borne trade routes.

**Implications for the NEC**

The NEC needs to allocate sufficient land to ensure adequate residential options, and to ensure that basic utilities such as electricity and sanitation are robust as these are big barriers to growth in Pakistan at the moment. This was addressed in the land
distribution plan through allocating one-third of all land for residential developments, and allocating land for multiple water filtration plants, a power plant and two combined effluent treatment plants. Also, funds were allocated for the laying of all infrastructure necessary for water supply, sewage and drainage, electricity and gas distribution throughout the NEC.

In order to ensure that the NEC is able to leverage on economic developments but within and outside of Pakistan, it needs to have sufficient linkages to land, sea and airborne trade. These were addressed in the land distribution plan by allocating land for an airport, railway station and dry port to ensure maximum connectivity for the NEC.

Lastly, the imperative to use the NEC to reduce issues of overcrowding in other population nodes in Punjab highlights the importance of allocating sufficient land to ensure work-live-play options and to attract a diverse spectrum of the demographic. This was done at a broad level in the land distribution plan by allocating land for different parts of the demographic, including schools, universities, public services, open spaces, and land for different type of industries and commercial activities.

**Demand from citizens and enterprises**

‘Demand from citizens and enterprises’ refers to the relevant outputs from the surveys conducted in Phase 1. The following points summarise the key output from the surveys:

**Importance of Utilities**
- Enterprises surveyed indicated that the provision of power/electricity, security, utilities, residential options, and sufficient industrial land and commercial office space were the most important factors they would look for in the NEC.
- Factors such as access to international markets and proximity to railway and an international airport were deemed relatively less important compared to the other factors.

**Preference to relocate**
- The majority (59%) of citizens surveyed indicated that they would rather relocate to the NEC rather than commute on a daily or weekly basis from their current residence.

**Housing**
- 63% citizens want to live in private land housing or gated community. Only 20% want high rise apartments and only 17% want government housing
Timing of relocation

- About 40% of enterprises would move within 1 year of the NEC opening, with another 40% within 1 to 3 years
- About 21% of citizens would move within a year and 60% within 1 to 3 years

Implications for the NEC

The lessons learnt from the surveys are broadly a repetition of the insights gained under ‘strategic imperatives’. In addition to ensuring that there is robust and sufficient energy infrastructure, it is critical that sufficient land be allocated for residential developments.

While the surveys revealed an enthusiasm among respondents in terms of relocating to the NEC, a more conservative approach in the phasing plan was employed in light of the analysis of benchmarked cities, which revealed that a city aiming to attract a final population of about 1 million people would take a period of at least 30 to 40 years, and able to attract no more than 25% of the target population every 10 years. Nonetheless, the enthusiasm across respondents for the NEC is an encouraging sign and was taken into account when calibrating the Phasing Plan.

Best Practice

‘Best practice’ refers to principles derived from secondary research and the benchmarking of leading planned cities analysed in the Phase 1 report. The insights for this section are divided into those for Land Distribution and Phasing Plans.

Land Distribution Plan

The list of best practices listed below are based on the analysis of benchmarked cities in Phase 1 and secondary sources:

1. Criticality of key infrastructure in attracting and retaining migrant populations, with continuous development in tandem with population growth;
2. Provision of suitable housing options for residents of all income levels;
3. Provision of public services in healthcare in maintaining the population growth, and provision of education services in encouraging migration of families and supplying industries with skilled workers;
4. Creation of safe, high quality living environments that accommodate a range of lifestyles and offer a vibrant mix of land uses;
5. Maximisation of connectivity at both national and international levels;

---

6 (Anjuman 2001, UN Habitat 2014, City of Cape Town 2012, Urban Redevelopment Authority (Singapore) 2013)
vi) Emphasis sustainability in urban design.

Phasing Plan

All the benchmarked cities used a phased approach to develop the planned city, over a period of between 30 to 40 years, with each phase of development focusing on a specific part of the city to develop clustering and economies of scale. The importance of industrial development cannot be understated due to its role in both generating revenue and attracting workers and their families.

Analysis of other New Cities from the Phase 1 report was the primary guiding factor when developing the phasing plan for the NEC. Particular attention was placed on the population take-up rates of Navi Mumbai and Chandigarh due to their comparability to the envisioned NEC in terms of total targeted population, proportion of target population already residing in the area in Year 0 and general socio-economic characteristics.

<table>
<thead>
<tr>
<th></th>
<th>Total Population (million)</th>
<th>% of total population</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Year 0</td>
<td>Year 10</td>
</tr>
<tr>
<td>Navi Mumbai</td>
<td>1.12</td>
<td>14</td>
</tr>
<tr>
<td>Chandigarh</td>
<td>1.06</td>
<td>11</td>
</tr>
<tr>
<td>Ansan</td>
<td>0.7</td>
<td>38</td>
</tr>
<tr>
<td>Shenzhen</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>Togliatti</td>
<td>0.7</td>
<td>35</td>
</tr>
</tbody>
</table>

Figure 15: Population Take-up Rate for Benchmarked Cities

An analysis of Navi Mumbai and Chandigarh reveals that, accounting for the population that is already residing in the area, the population take-up rate is relatively slower in the first 10 years, before picking up at a fairly uniform rate for the subsequent years. Navi Mumbai’s ability to achieve a faster take-up rate compared to Chandigarh may be due to its proximity to the economic hub of Mumbai.

Implications for the NEC

The land distribution plan for the NEC seeks to incorporate the best practices for spatial planning as much as possible by providing the infrastructure and developments

---

7 KAEC was not included as it is still under development
necessary to enable the city to flourish. Moving forward, as evidenced in the other benchmarked cities, the attraction of big corporations to set up operations in the NEC would be critical in acting as ‘magnets’ to in turn attract both labour and other downstream businesses.

The phasing approach for the NEC is spread out over a period of 40 years. With the exception of core infrastructure which is developed in the first wave, all other infrastructure and developments are spread out over the 40 years. This was done to ensure that the NEC is developed at a measured pace, to ensure that there are sufficient services and utilities for the population, and that the overall supply is proportionate with demand.

**Proposed Land Distribution Plan for NEC**

The total land area assumed available for the NEC is 300km², which is equal to 74,100 acres. The land distribution plan can be scaled up according to the final selected site. It must be noted that not all the planned developments and infrastructure will be financed by the master developer. The details of which developments will be financed by the master developer are provided in the ‘financing’ section below.

The table below provides a proposed land distribution plan, in line with international benchmarks for development of sustainable cities and objectives of the NEC highlighted in previous sections and modules.

<table>
<thead>
<tr>
<th>Land Use Zones</th>
<th>Land Allocation (%)</th>
<th>Land Allocation (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>30 – 40%</td>
<td>22,230 – 29,640</td>
</tr>
<tr>
<td>Industrial/ Commercial</td>
<td>20 – 30%</td>
<td>14,820 – 22,230</td>
</tr>
<tr>
<td>Institutional</td>
<td>10 – 20%</td>
<td>7,410 – 14,820</td>
</tr>
<tr>
<td>Land Transport</td>
<td>10 – 20%</td>
<td>7,410 – 14,820</td>
</tr>
<tr>
<td>Open Spaces</td>
<td>10 – 20%</td>
<td>7,410 – 14,820</td>
</tr>
</tbody>
</table>

**Figure 16: Proposed Land Distribution Plan for NEC**

**Key Features of the NEC**

Through a demand analysis, study of the competitive dynamics of Punjab and the region, as well as our secondary research and review of international case studies, we have identified several key features and economic focus areas for the NEC which can form the core of the city. If developed properly, they can potentially become catalytic infrastructure that will drive the growth and economic development of the NEC.
The phasing plan for the NEC is based on a realistic projection of the population take-up rate, with reference to the cities benchmarked in Phase 1. It is proposed that the NEC be developed in four waves of 10 years each, with the first wave broken up into two sub-waves of 5 years to ensure that the pace of infrastructure development is in line with the slower population take-up rate. The figures below illustrate the projected population take-up rate and proposed phasing plan for the NEC. The phasing plan for each of the individual developments is detailed in the financial model section.
Figure 18: Projected Population Take-up Rate for the NEC

<table>
<thead>
<tr>
<th>Year</th>
<th>Wave 1a</th>
<th>Wave 1b</th>
<th>Wave 2</th>
<th>Wave 3</th>
<th>Wave 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>10</td>
<td>5</td>
<td>10</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>5</td>
<td>10</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>10</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>15</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>20</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>30</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>35</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>40</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
</tr>
</tbody>
</table>

Figure 19: Proposed Phasing Plan for the NEC
4. Financial Considerations for Development of the NEC

Overview

Developing a new city involves substantial investment of resources and effort and in many cases, can also result in negative impact on the socio-economic conditions of existing populace in the selected site of the new city. Resettlement of assets and people will involve substantial time and cost. These costs considerations will need to be taken into consideration in terms of the planning and development of the new city.

This section of the report focuses on a financial analysis for the development of the NEC to assess its viability and potential returns to stakeholders.

Financial Considerations for the NEC

Key Assumptions

Infrastructure Development Schedule

As explained in the ‘Phasing’ section, the NEC will be developed over four waves of 10 years each. The figures below provide the development schedule of key infrastructure and developments in the NEC. Infrastructure for which 100% is completed in Wave 1a is seen as fundamental infrastructure that is necessary for the NEC to commence operations. In addition to these, the master developer will undertake the land acquisition costs for the entire NEC, as well as constructing the basic utilities infrastructure for water supply and treatment, sewage and drainage, electricity and gas distribution.

Industrial Area

The majority of the developments in the industrial area will be developed by the master developer. 50% of factory plots will be developed and leased out while the remaining 50% will be sold off as bare land. This will be the same arrangement for administrative buildings. Land has been allocated for the development of a power plant, but this is subject to the electricity needs of the NEC at the time of development, otherwise the land can be used for factory plots. It is assumed that the Power Plant will be funded, constructed and operated by a sub-developer, in exchange for revenue generated from operations.
Net City Area

In a similar model to the industrial area, the majority of the basic infrastructure in the Net City Area will be built by the master developer. While 100% of the residential lots will be sold off as bare land to sub-developers, 50% of industrial and commercial plots will be developed and leased by the master developer. Land will also be sold off for development of private schools, universities, and reserved areas. In terms of transport infrastructure, roads and transport terminals will be developed by the master developer. Land has been allocated for an airport, railway station and dry port to be developed and operator by a sub-developer. The final decision on whether to build an airport and dry port will be dependent on the selection of the final site and the proximity to any existing transport nodes. For the purpose of this analysis, it is assumed that we will proceed with these developments.
Financing and Economic Parameters

The figure below illustrates the assumed financing and economic parameters used for the calibration of the financial model.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Assumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real land value appreciation rate</td>
<td>1% per annum</td>
</tr>
<tr>
<td>Nominal Cost of Debt</td>
<td>14%</td>
</tr>
<tr>
<td>Inflation Rate</td>
<td>7.8%</td>
</tr>
<tr>
<td>Loan payoff period</td>
<td>20 years</td>
</tr>
<tr>
<td>Frequency of payments</td>
<td>Yearly</td>
</tr>
<tr>
<td>Source of Capital</td>
<td>100% Debt</td>
</tr>
<tr>
<td>Terminal value calculations</td>
<td>Gordon Growth Model (Perpetuity)</td>
</tr>
</tbody>
</table>

**Figure 22: Financing and Economic Parameters**
Overall Results

The financial projections for the NEC deliver a Nominal Internal Rate of Return of 14.6%, Net Present Value of PKR 231,200,422,041 and payback period of 25 years. This illustrates that, under the parameters laid out in the sections above, the NEC is financially viable.

Revenue Generation

The master developer for the NEC will generate three sources of revenue: i) sale of bare plots of land, ii) lease of building space (industrial and commercial), iii) charges for provision of water supply and sewage services\(^8\).

---

\(^8\) As per local norms, it is assumed that the master developer is unable to charge for the provision of either electricity of gas.
As illustrated in the figures above, the spikes in the figure illustrating revenue generation for NEC over time are due to the sale of land at the beginning of each wave. The occupancy rate for lease of building space is assumed to increase every year by 20%, peaking at 90% to account for a vacancy rate of 10%. The take-up rate from sale of land is assumed to be spread out uniformly over a period of 5 years.
Overview of Expenditure

The figures below provide the breakdown of the expenditure for the project. Capital is the largest source of expenditure, followed by financing and operating expenses. However, while capital expenditure is concentrated on the two years prior to every wave where there are construction, financing and operating costs are spread out throughout the project lifecycle.

![Figure 27: Breakdown of Expenditure](image)

![Figure 28: Breakdown of Expenditure Across Time](image)
Capital Expenditure

Capital expenditure is concentrated in the two years before the start of each wave, with construction expected to take 2 years for each wave. The majority capital expenditure is incurred in Wave 1a, due to the need to construct key infrastructure.

In terms of breakdown by type of infrastructure, the majority of the infrastructure cost is in developing the industrial plots and roads, as well as the two combined effluent treatment plants.
Financing Expenditure

The project is financed through 100% debt at 14% nominal interest rate per annum for a period of 20 years. In line with the development of the city, it is assumed that loans are taken in 5 tranches to finance the capital expenditure in each of the waves, with the spikes in the finance expenses in the figure below reflecting the taking on of a fresh loan.
Operating Expenditure

The operating expenditure for the master developer is assumed to be limited to the cost of operating and maintaining the buildings leased out. This is estimated to be 10% of the lease revenue. The operating expenses for all other infrastructure in the NEC is not borne by the master developer and will be funded through taxation, which is also not collected by the master developer. We are also assuming the master developer’s earnings are tax-free.
Sensitivity Analysis

This section details the sensitivity of the IRR, NPV and payback periods projected in the model to changes in key parameters. There are three scenarios explored for each parameter: Base, Low and High cases. The model used above is based on Base amounts.

Weighted Average Cost of Capital (WACC)

Given that 100% of capital for the project is from debt, the projected outcomes are highly sensitivity to the WACC. We see that a change in 2% points leads to large swings in both the IRR and NPVs. This illustrates the vulnerability of the project to changes in interest rates in the country. An approach to mitigate this risk is to diversify its sources of capital to include equity.

<table>
<thead>
<tr>
<th>WACC (nominal)</th>
<th>IRR</th>
<th>NPV (PKR)</th>
<th>Payback period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base: 14%</td>
<td>14.6%</td>
<td>231,200,422,041</td>
<td>25 years</td>
</tr>
<tr>
<td>Low: 12%</td>
<td>13.8%</td>
<td>976,024,861,098</td>
<td>25 years</td>
</tr>
<tr>
<td>High: 16%</td>
<td>15.5%</td>
<td>-121,092,207,254</td>
<td>25 years</td>
</tr>
</tbody>
</table>

Figure 33: Sensitivity Analysis for WACC

Real Land Value Appreciation Rate

The main sources of revenue for the master developer are the income from selling parcels of bare land and leasing building space. Therefore, the real land value appreciation rate is the only source of income growth, leading to the model having high sensitivity to changes in the projected land value appreciation rate.

A way to reduce this risk would be to spread out the land acquisition, as currently all land acquisition is done at the start. However, while diversifying risk, this approach would increase the capital expenditure of the project if land prices started to increase unexpectedly.

<table>
<thead>
<tr>
<th>Real land value appreciation rate</th>
<th>IRR</th>
<th>NPV (PKR)</th>
<th>Payback period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base: 1%</td>
<td>14.6%</td>
<td>231,200,422,041</td>
<td>25 years</td>
</tr>
<tr>
<td>Low: 0%</td>
<td>13.7%</td>
<td>-91,026,541,174</td>
<td>29 years</td>
</tr>
<tr>
<td>High: 2%</td>
<td>15.7%</td>
<td>721,371,687,220</td>
<td>24 years</td>
</tr>
</tbody>
</table>

Figure 34: Sensitivity Analysis for Real Land Appreciation Rate

---

In line with our recommendations, we have assumed 100% debt financing. However, the sensitivity analysis for the WACC quantum serves as an indicator for changes in either the debt interest rate, or the impact of the changing the debt-equity financing mix.
Development Timetable

There have been three scenarios hypothesized for the development timetable for the NEC. DT(B) envisions a slower pace of development while DT(C) envisions a faster pace. We see that the IRR and NPV are less sensitive to the changes in the development timetable as compared to WACC or changes in real land value.

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Wave 1a</th>
<th>Wave 1b</th>
<th>Wave 2</th>
<th>Wave 3</th>
<th>Wave 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Year 5</td>
<td>Year 10</td>
<td>Year 20</td>
<td>Year 30</td>
<td>Year 40</td>
</tr>
<tr>
<td>DT(A)</td>
<td>15%</td>
<td>10%</td>
<td>25%</td>
<td>25%</td>
<td>25%</td>
</tr>
<tr>
<td>DT(B)</td>
<td>10%</td>
<td>5%</td>
<td>20%</td>
<td>35%</td>
<td>40%</td>
</tr>
<tr>
<td>DT(C)</td>
<td>20%</td>
<td>20%</td>
<td>30%</td>
<td>30%</td>
<td>30%</td>
</tr>
</tbody>
</table>

Figure 35: Development Timetable Scenarios

<table>
<thead>
<tr>
<th>Development timetable</th>
<th>IRR</th>
<th>NPV (PKR)</th>
<th>Payback period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base: DT(A)</td>
<td>14.6%</td>
<td>231,200,422,041</td>
<td>25 years</td>
</tr>
<tr>
<td>Low: DT(B)</td>
<td>14.5%</td>
<td>189,169,365,058</td>
<td>28 years</td>
</tr>
<tr>
<td>High: DT(C)</td>
<td>14.8%</td>
<td>367,715,740,335</td>
<td>24 years</td>
</tr>
</tbody>
</table>

Figure 36: Sensitivity Analysis for Development Timetable

Occupancy Rates for Leased Property

The occupancy rates determine the quantum of the building lease revenue. Given that building lease revenue makes up the majority of the revenue generation, the model is highly sensitive to changes in the occupancy rate. In particular, the terminal vacancy rate (year 5 onwards) is particularly important. Risk in this area can be mitigated by ensuring there is sufficient demand for developments before commencing on construction.

<table>
<thead>
<tr>
<th>Occupancy Rate</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5 onwards</th>
</tr>
</thead>
<tbody>
<tr>
<td>OR(A)</td>
<td>20%</td>
<td>40%</td>
<td>60%</td>
<td>80%</td>
<td>90%</td>
</tr>
<tr>
<td>OR(B)</td>
<td>15%</td>
<td>30%</td>
<td>45%</td>
<td>60%</td>
<td>75%</td>
</tr>
<tr>
<td>OR(C)</td>
<td>30%</td>
<td>60%</td>
<td>90%</td>
<td>95%</td>
<td>95%</td>
</tr>
</tbody>
</table>

Figure 37: Occupancy Rate Scenarios
### Sensitivity Analysis for Occupancy Rates

<table>
<thead>
<tr>
<th>Occupancy rates</th>
<th>IRR</th>
<th>NPV (PKR)</th>
<th>Payback period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base: OR(A)</td>
<td>14.6%</td>
<td>231,200,422,041</td>
<td>25 years</td>
</tr>
<tr>
<td>Low: OR(B)</td>
<td>14.2%</td>
<td>51,702,828,562</td>
<td>27 years</td>
</tr>
<tr>
<td>High: OR(C)</td>
<td>14.8%</td>
<td>317,693,457,713</td>
<td>25 years</td>
</tr>
</tbody>
</table>

*Figure 38: Sensitivity Analysis for Occupancy Rates*
5. Economic Benefits of Developing the NEC

Overview
The NEC will generate significant positive economic benefits, not only for the province Punjab but also for Pakistan. These impacts range from greater employment, a growth of the higher value-added sectors that will be important drivers of Pakistan’s economy in the coming decades, and increased exports and tax (corporate and income) revenues. Catalytic infrastructure and economic activities for the NEC will include the dry port, which will play a complementary role to both the new Gwadar Port and the existing Karachi Port. Due to CPEC developments, it is envisioned that there is potential for the Dry Port in the NEC to play a key role, servicing and supporting logistics and transportation services for Punjab, Neighboring Provinces, as well as the hinterland of Western China and the Commonwealth Independent States (CIS).

Furthermore, the introduction of a high tech industrial and services zone in the NEC will promote economic activity for the region and develop the manufacturing and assembly activities necessary to serve market demand in the region and globally.

With this vision in mind, these activities will contribute to the economic development for Punjab and result in significant economic benefits and a positive socio-economic impact on the populace.
Economic Benefits due to Construction of the NEC

The development of the NEC is expected to generate at least direct expenditures of PKR 1.67 trillion from 2018 to 2055, over a period of around 40 years. During this period, the estimation is that around 850,000 employment places will be created. Labor income from the employment impacts associated with the construction of the various buildings within the LKP is projected to be around PKR 122 billion. The income tax revenue (assuming all employed pay income tax of 20% and corporate tax of 25%) would be PKR 66 billion over the period of construction.

Economic Benefits of the NEC

To estimate the economic benefits which the NEC can generate, there is a need to identify the potential economic activities proposed for the NEC. The following table provides a breakdown of these activities and the respective Value Added generated.

<table>
<thead>
<tr>
<th>Economic Activity</th>
<th>Employment</th>
<th>Value Added</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial</td>
<td>691,600</td>
<td>117,660,000,000</td>
</tr>
<tr>
<td>Commercial</td>
<td>316,500</td>
<td>99,930,000,000</td>
</tr>
<tr>
<td>Key Infrastructure &amp; Activities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hospitals</td>
<td>1,900</td>
<td>950,000,000</td>
</tr>
<tr>
<td>Airport Terminal</td>
<td>12,800</td>
<td>13,520,000,000</td>
</tr>
<tr>
<td>Dry Port</td>
<td>4,600</td>
<td>4,770,000,000</td>
</tr>
<tr>
<td>Minerals Processing Plant</td>
<td>600</td>
<td>2,930,000,000</td>
</tr>
<tr>
<td>Government</td>
<td>30,000</td>
<td>3,770,000,000</td>
</tr>
<tr>
<td>Education</td>
<td>14,000</td>
<td>1,760,000,000</td>
</tr>
<tr>
<td>Tourism &amp; Leisure</td>
<td>93,000</td>
<td>17,660,000,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,165,000</strong></td>
<td><strong>262,950,000,000</strong></td>
</tr>
</tbody>
</table>

Assuming that the NEC is fully colonized, we expect the Value Added generated by the city to reach PKR 263 billion and generate around 1.2 million jobs in the city. Total wage income is estimated at around PKR 168 billion.

The economic activities within the NEC will also generate considerable tax income for the government. If the city is fully colonized, tax revenue from labour will be PKR 42
billion and annual corporate tax is modestly estimated at PKR 65 billion (assuming a 35% corporate tax and 25% income tax rate).

Spread over a period of 50 years, the economic benefits which will accrue as a result of the NEC is depicted below.

![Figure 41: Cumulative Time Series of Economic Benefits due to NEC](image)

Other Socio-Economic Benefits

**Attract investments to Punjab**

The development of the NEC will offer opportunities for investment to both domestic and foreign investors. Taking into consideration the developments of CPEC, the overall investment climate and attractiveness of Punjab and Pakistan is enhanced significantly. Furthermore, there is a large and maturing middle-class market in Pakistan to draw in potential investors. Taken together, the overall market size (by import of goods) for the South Asia, CIS, Africa and Middle East region is almost USD 1.7 trillion a year. There is potential for the NEC is to tap on this greater market demand and attract investments and facilitate the development of the key industries which will tap on this opportunity.

**Facilitate the development of the economy towards higher value added activities**
CPEC provides Punjab with an opportunity to develop into a logistics hub for goods from within Pakistan, China, the Middle East, and surrounding land-locked countries (e.g., Afghanistan) to be shipped via the Gwadar Port. Hence, the NEC can be developed into an economic and industrial hub offering a secure business environment, high reliability, and quality power supply, which provides an attractive value proposition and nexus for businesses looking to tap into these new opportunities.

With increasing financial and non-financial costs to businesses in China, there is a gradual shift in labour-intensive industries out of the country. Some of these value-added manufacturing activities could be enticed to relocate to the new city, tapping on the CPEC infrastructure and connectivity. Discussions with institutional stakeholders and academics in Pakistan highlight several industries that show promise and interest from potential investors, including logistics, IT, light manufacturing, textile, agro-processing, etc.

As seen in numerous global examples, cities or economic hubs sited and aligned to trade routes can become re-export hubs, where raw materials, processed materials or manufactured sub-components are imported, value added through further processing/assembly and subsequently re-exported to international markets. In the case of the NEC, the current situation provides a ready platform for it to be developed into an entrepôt for the region.

**Uplift the social and economic environment for the populace**

Regional developments are opening up several economic pathways for Punjab. The NEC can potentially bring about benefits to the populace in terms of provisioning of good quality jobs, new developments in affordable residential (public) housing, and access to power, quality sanitation and portable water. Over time, there will also be appreciation of property values which can help to enhance the wealth of locals due to economic growth and development. However, this will require the introduction of policies to ensure equal opportunity access and inclusive wealth distribution.

**Address challenges due to urbanization**

Due to rapid urbanisation, cities in Pakistan face a host of hurdles limiting growth. Challenges include the provisioning of adequate housing, public infrastructure, quality transport networks, proper sanitation and healthcare facilities. The pervasive presence of informal settlements and slums in parts of the cities compound the issue further, significantly diminishing the quality of life for citizens.
In terms of housing, rapid urbanisation and severe shortage of existing land for (re)development have led to inadequate supply of affordable housing in Pakistan. With demand for housing far outstripping supply, the country faced a shortfall of 10 million homes in 2014. The housing situation in Punjab is similar, with a housing shortage of about 2.5 million units. In fact, demand for urban housing, primarily from low-income families and individuals in the 5 largest cities alone are projected to increase to nearly 5.8 million units by 2035.

The New Economic City is anticipated to create new opportunities and source of land, potentially circumventing existing spatial constraints and facilitating the development of affordable housing for residents.
Appendix

Guidelines for Social and Environmental Considerations

The NEC should be developed on the principles of providing a good standard of living and structured socio-environmental aspects of city infrastructure put into careful consideration. Frost & Sullivan has identified several criteria for the development of the NEC, encompassing the social, economic and environmental qualities/considerations that an economic city should satisfy.

Environmental Aspects of the NEC

The NEC should be developed with a clear emphasis on environmental-friendliness. The planning of the city should take into consideration existing environmentally-damaged urban portions within site boundaries and plan for rehabilitation or total redevelopment to reduce pollution or contamination in the NEC. The city should also have nature parks and areas with greenery, much like Central Park in New York City. Such parks not only serve to marginally improve the quality of air in the city, but also had to citizen happiness as a place of recreation.

The infrastructure of the NEC should ideally utilise zero carbon technologies in energy production in conjunction with traditional power generation sources, employing the use of solar panel technology where possible. Such is a feasible option given the harsh summer climates of Punjab and can supplement energy supply.

Figure A-42: NEC Environmental Considerations
Another aspect of infrastructure the NEC should encompass is resource conserving waste and water management systems. Waste and recycling networks and systems should be considered by the Government of Punjab in the planning of the city’s infrastructure development. Implementing such systems and networks in the city’s infancy reduces the likelihood of pollution and future waste issues, as citizens move into the NEC and are already presented convenient and ready options to dispose of their waste.

Frost & Sullivan also recommends urban planning to promote walking, cycling, and public transportation to reduce traffic congestion and vehicle carbon emissions. Urban nodes should be spatially planned around urban retail centres to reduce the need for driving, cycling lanes can be introduced to non-central business district roads, and the NEC governing authority can choose to impose certain tariffs on vehicles permitted to drive within city administrative boundaries. Implementing a robust public transportation system will also help to alleviate traffic congestion and carbon footprint of the NEC.

The above mentioned infrastructures should be designed such that further expansion, improvements, or upgrading can be done easily without a complete overhaul of the initially developed networks or systems.

**Social Aspects of the NEC**

The Government of Punjab should offer government subsidised housing options for early movers into the NEC, allowing for affordable residential alternatives for citizens and supplementing the attraction of citizen migration into the city. This is an important consideration given that many portions of the NEC development will be in structured in a PPP development model, and private developers do not have the incentive to provide lower cost housing due to focus on profit generation.
Other social aspects of the city include the provision of ample public services, including but not limited to security and law enforcement agencies and networks, hospitals and healthcare facilities adequate to handle the population, public parks and playgrounds for families, and educational institutions for the citizen population. As seen in the case of Chandigarh laid out in the Market Demand and Assessment Analysis report, the city is split into various residential sectors, with public services facilities located in each residential node. This ultimately served useful to raise the standard of living in the city, and is something that the planning of the NEC should incorporate in its eventual urban planning.

The NEC governing authority should also implement a grievance reporting system whereby citizens can easily approach the relevant authorities to air their issues and report any mismanagement or mistreatment. This also helps in the governance model of the city, ensuring that the eventual Master Developer or Project Companies appointed in the PPP model are being socially responsible.
Initial Assessment of Potential Industries and Economic Activities for the NEC

Criteria for choosing an industry

1) Leverages comparative advantage
   a. Location, natural resources, labour supply

2) Capabilities
   a. Labour Supply, infrastructure (problems with inconsistent power), cost of development, is there existing expertise

3) Investor interest
   a. Mainland China, Europe, Middle East, USA

4) Demand
   a. Domestic, International (Especially China) \(\rightarrow\) What are the market trends

5) Achieves country’s strategic aims
   a. Employment generation (ie labour intensive)

What do we need to know for each industry?

1) Is it location dependent?
   a. Near hinterland
   b. Near hub

2) Which sub-sectors to focus on?

3) What are the infrastructural requirements?

4) What are the labour requirements?

5) What are the regulatory requirements?

6) If industry already exists
   a. What are the current industry restraints?
   b. Is it possible to diversify into higher value part of the value chain?

Inputs

1) Stakeholder Interviews
2) Surveys
3) UU/P&D

List of possible industries

1) Location Dependent
   o Textiles and Leather
   o Agro-processing: Livestock and Crops

2) Location Independent
   o Automotive
   o Services (ICT, Logistics, storage/warehousing, wholesale & retail)
   o Education and training
   o Mining processing
<table>
<thead>
<tr>
<th>Industry</th>
<th>Does Pakistan have a comparative advantage?</th>
<th>Does Pakistan have capabilities? (Manpower, Infrastructure, Regulations)</th>
<th>Is there investor interest?</th>
<th>Is there demand?</th>
<th>What are the constraints?</th>
<th>Does it tally with the country’s strategic aims?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Textiles and Leather</td>
<td>Yes (for textiles and leather but not clothing) (Journal 2015), (Shahab 2013)</td>
<td>Yes, currently a major industry, with significant potential for further growth. Labour intensive and low demand of energy (Melorose, Perroy, and Careas 2015) Pakistan the 9th largest exporter of clothing outside of US (WTO, 2014)</td>
<td>Yes, especially in higher value products (interview with China-Pakistan Chamber of Commerce)</td>
<td>Domestic International</td>
<td>Wage rates in Pakistan are higher than some countries such as Bangladesh and Cambodia (Chaudhry, Macchiavello, and Chaudhry 2016) Energy Shortages (Hamid, Nabi, and Zafar 2014)</td>
<td>Yes, further development of the garment sector viewed as beneficial due to job creation (Chaudhry, Macchiavello, and Chaudhry 2016)</td>
</tr>
<tr>
<td>Agriculture (Livestock)</td>
<td>Not generally, but has comparative advantage in nearby gulf countries and dairy products from</td>
<td>Yes, especially in higher value products (interview with China-Pakistan Chamber of Commerce)</td>
<td></td>
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</thead>
<tbody>
<tr>
<td></td>
<td>Pakistan compete well in South Asian Countries. Cheese has made inroads into high-income countries (Sultan 2014)</td>
<td>Chamber of Commerce</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td>Advocated by the World Bank (Bank et al. 2016)</td>
<td></td>
<td></td>
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<tr>
<td>Agriculture (Crops)</td>
<td>Pakistan has comparative advantages in Cereals, Cotton, Mangoes, Kinnow, Dates and, to a lesser extent, Citrus, Guava and Apples(Sultan 2014)</td>
<td>Agriculture is a mainstay of Pakistan’s economy, with The share of agriculture in Gross Domestic Product (GDP) constitutes 21 % and “agriculture generates productive employment opportunities for 45 % of the country’s labour force, and 60 % of the rural population depends upon this sector for its</td>
<td>Yes, especially in higher value products (interview with China-Pakistan Chamber of Commerce)</td>
<td></td>
<td>Low Productivity</td>
<td>Vulnerable to climate changes and changes in food price</td>
</tr>
<tr>
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<tr>
<td>Cement</td>
<td>Almost all the inputs like raw materials and labours, required for the production of cement, are easily available in the vicinity or within the country at cheaper rates. (Ali et al. 2015) Main two raw materials are limestone and gypsum</td>
<td>Pakistan currently ranked among world’s top 10 cement exporting countries (Hendrik G. van Oss 2015) Pakistan has large limestone reserves (Lasbela-khuzdar and Zinc, n.d.)</td>
<td>livelhood.” (ITC 2013)</td>
<td><strong>Domestic</strong> High demand from CPEC Projects High demand from Pakistan Public Sector Development Projects (Role et al. 2015)</td>
<td>Lacking innovation (need to adopt modern/advanced technology), lack of funds, lack of professional expertise (Ali et al. 2015)</td>
<td></td>
</tr>
<tr>
<td>Automotive</td>
<td>Comparative advantage is unclear. However, focus would be on the domestic market However, this sector is advocated by the World Bank (Bank</td>
<td>Estimated value added is about 5% of total value added in the manufacturing sector in Pakistan (Sector 2012) Employment: about 215,000, about 4% of total</td>
<td><strong>Domestic</strong> There is tremendous growth potential for production of motor vehicles, with substantial reliance on imports. (Sector 2012)</td>
<td></td>
<td>Highly protectionist policies discourage domestic and foreign competition and allow for small, inefficient yet profitable domestic</td>
<td></td>
</tr>
<tr>
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<tr>
<td>ICT – Hardware manufacturing, BPO, IT services</td>
<td>et al. 2016). Reported to have tremendous growth potential (Sector 2012)</td>
<td>employment in the manufacturing sector (Sector 2012)</td>
<td></td>
<td>High demand for quality local parts (Nag 2014)</td>
<td>automobile producers*. (Sector 2012) Requires stable energy supply</td>
<td></td>
</tr>
<tr>
<td>ICT – Hardware manufacturing, BPO, IT services</td>
<td>Advocated by the World Bank (Bank et al. 2016) Manufacturing of hardware for ICT infrastructure in Pakistan Developing hubs for IT software programming</td>
<td>The IT professional services (ITPS) industry generates direct employment for over 120,000 people. There are about 5,500 IT graduates a year from 45 universities. (Hameed 2006)</td>
<td></td>
<td>Requires good internet signal and power source</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Services – Finance and Insurance, Transport and Storage, Wholesale and Retail Trade, Public Administration, Defence</td>
<td>NA – Driven by domestic demand Transport &amp; Storage and Wholesale &amp; Resale would depend on the location of the NEC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>NA – Driven by domestic demand</td>
<td></td>
<td></td>
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### Industry

<table>
<thead>
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<th>Is there investor interest?</th>
<th>Is there demand?</th>
<th>What are the constraints?</th>
<th>Does it tally with the country’s strategic aims?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mining processing</td>
<td>World class large scale minerals can be found throughout Pakistan.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>The Federal Government of Pakistan regards mining as a priority sector and has recently in cooperation with the Provincial Governments issued a National Minerals Policy (NMP). (Toergte and Curtis 2013)</td>
</tr>
</tbody>
</table>