PROJECT CONCEPT NOTE

CITY PLANNING LABS

TECHNICAL SUPPORT FACILITY FOR NATIONAL URBAN DEVELOPMENT PROGRAM INDONESIA
INTRODUCTION

City Planning Labs - building capacity for integrated, evidence-based spatial planning and investment decision-making, helping cities achieve sustainable and inclusive economic growth.

1. BACKGROUND

The cities that emerge from Indonesia’s rapid urbanization will be key determinants of the country’s overall economic development and competitiveness, as well as their inclusiveness and environmental sustainability. There is reason to be cautiously optimistic about Indonesia’s urban future. However, without strategically planned investments, policy interventions, and institutional capacity, mismanaged urbanization could become an obstacle to sustainable growth.

Indonesia has been no exception to the rapid urbanization experienced in many East Asian countries. With average annual urbanization rate estimated at 4.2% between 1993 and 2007, Indonesia is urbanizing faster than its Asian counterparts, such as China (3.8%), India (3.1%) and Thailand (2.8%). This has made Indonesia one of the most urbanized countries in Asia, with an urban population share of 54% in 2010. Projections of urbanization suggest that this figure will increase to 68% by 2025. These statistics tell a powerful story of structural transition in Indonesian society, from predominantly rural and agricultural society into more urban, manufacture and service based economy.

However, Indonesia has yet to achieve the economic returns to urbanization that other countries have achieved. For every additional 1% that the country urbanizes, it achieves just 2% of additional GDP growth, whereas other countries in the region achieve 6-10% GDP growth per 1% of urbanization.

Under the National Urban Development Program (P3N), currently under preparation, the Bank is engaging directly with large cities through investments in transformative infrastructure. The Bank has initiated direct engagements with local governments, targeting large and medium cities and metropolitan areas with populations over 500,000.

In addition to investment support, a key component in P3N is building technical and institutional capacity in cities and metropolitan authorities, which will take the form of City Planning Labs.

The City Planning Labs core module will be initially implemented in four cities: Surabaya, Palembang, Denpasar and Balikpapan, with two additional modules in each city, based on local demand and willingness to dedicate resources.

CITIES:

Surabaya: Surabaya is the second largest city in Indonesia, and the capital of East Java Province. The city has become one of the main ports of Java, which connects the western to eastern part of Indonesia. Surabaya comprises of 31 kecamatan (sub district), with total area of 326.81 Km². The city is the core of Gerbangkertosusila metropolitan (Gresik, Bangkalan, Mojokerto, Surabaya, Sidoarjo and Lamongan), with estimated total metro population of 9.1 million people.

In 2010, the population of Surabaya was 2.76 million people, with population density of 8,462 people per Km2. The average population growth rate from 2000 to 2010 is 0.63% annually, and average size of household is 3.6 people per household. Its unemployment rate in
2010 was 10%, which was higher than the national average.

The economy of Surabaya is dominated by hotel, trade and restaurant sector (43%), followed by manufacture (22%) and transport and communication (10%). GRDP per capita in current price for 2010 was IDR 64,279,710 (USD 6,766), which was significantly higher than Indonesia’s GDP per capita (USD 2,850). The city has experience relatively constant economic growth in the last five years. In 2010, the economic growth was 7.1%, which was higher than national growth rate of 6.1%. The economy is expected to continue to grow, albeit at slightly lower rate, since Surabaya is struggling to create jobs for the existing work force and immigrants that come into the city.

**Palembang**: Palembang is the capital of South Sumatera province. The city comprises 16 kecamatan (sub-district), with a total area of 400.61 Km². Palembang borders Kabupaten Banyu Asin to the east, west and north, and Muara Enim to the south. The topography of Palembang is mostly flat lowlands, located at 8 meter above sea level. There are four rivers passing through the city: Musi (the largest), Komering, Ogan, and Keramasan, with total of 108 tributaries.

In 2011, the population of Palembang was 1,481,814 people, with an average annual growth rate of 1.76% over the last decade. The population density is 3,698 people per Km². The unemployment rate of Palembang in 2011 was 10%, and most of the population works in tertiary sector.

The economy of Palembang is dominated by manufacture sector (43.8%), trade, hotel and restaurant sector (17%), followed by service sector (12.8%). GRDP per capita in current price for 2010 was IDR 32.6 million (USD 3,430), which is higher than the national GDP per capita (USD 2,850). The economy grew at 7.4% in 2010, and 10.8% in 2011. Oil refinery and fertilizer are the most prominent industries of the city. As with other oil related economies, Palembang is also susceptible to energy price fluctuation and was deeply affected by 2008 global economy crisis.

**Denpasar**: Denpasar is the capital of Bali province, making it an important hub to other tourism sites in Bali island. The city comprises 4 kecamatan (sub-district), with total area of 127.98 Km². The city had reclaimed land of 380 Ha, or 2.27% of its total area. Denpasar is bordered by Kabupaten Badung to the west and north, and Kabupaten Gianyar to the east, with Badung Strait to the south. The topography of Denpasar is mostly sloping to the south, between 0 – 75 meter above sea level. Denpasar has 10 Km of coastline, which is prone to abrasion. The city also makes an effort to maintain the 10 rivers that pass through the city through community participation in keeping the rivers clean.

In 2010, the population of Denpasar was 788,589 people, with a population density of 6,171 people per Km². 31% of the population lives in Kecamatan Denpasar Selatan (South Denpasar), 29% lives in Denpasar Barat (West Denpasar), while North and East Denpasar house 22% and 15.5% of total population, respectively. The unemployment rate of Denpasar in 2011 was 6%, and 79.8% of the population works in tertiary sector.

The economy of Denpasar is dominated by trade, hotel and restaurant sector (37.4%), followed by finance sector (14%) and transport and communication (12.8%). GRDP per capita in current price for 2010 was IDR 15.85 million (USD 1,668), which is lower than national GDP per capita (USD 2,850). The economy grew rapidly at 16.2% in 2010, and has always been growing above 13% annually over the last 4 years. As the economy relies heavily on tourism, it is susceptible to global economic downturn and security issues.
Balikpapan: Balikpapan is the second largest city in East Kalimantan province, which gains its economic importance as the oil refinery and base operation for multinational mining service companies. The city comprises of 5 kecamatan (sub districts), with a total area of 503.3 Km². Balikpapan is bordered by Kabupaten Kutai to the north, with Makassar Strait to the south and east side, and Kabupaten Penajam Paser Utara to the west. 85% of Balikpapan’s area is hilly, while flat planes are mostly located along the coast. Due to its topography, the land is prone to erosion. To avoid landslide, the government of Balikpapan plan to limit development to only 48% of its area, leaving 52% as green space (Spatial Plan 2012-2032).

In 2010, the population of Balikpapan was 557,579 people, with a population density of 1,108 people per Km² and average annual population growth of 2.1% in the last five years. Most of Balikpapan’s population is in the productive age group (15-64 years old), where the workforce constituted of 46.5% of population.

The economy of Balikpapan is dominated by manufacture sector (51%), followed by trade, hotel and restaurant (16%) and construction (15%). GRDP per capita in current price for 2010 was IDR 44,850,051 (USD 4,721), which was significantly higher than Indonesia’s GDP per capita (USD 2,850). As a refinery and mining services city, Balikpapan’s economy is susceptible to global energy prices. Economic growth has fluctuated heavily during the last five years, with growth at 12.4% in 2008, followed by 1.7% in 2009, due to global oil crisis. The economy has bounced back, with 5.19% growth rate in 2010 and 9.7% (preliminary figure) in 2011.

2. RATIONALE

The City Planning Lab (CPL) is envisioned as the driver of improved integrated and evidence-based spatial, development and investment planning.

Local governments in Indonesia understand the importance of improved data and technical analysis for strategic, evidence-based, integrated planning and decision-making. In the attempt to address this need, technical assistance to cities usually takes the form of isolated studies which, while they may be helpful in the short term, often do not systematically increase cities’ technical capacity, or improve urban management on an ongoing basis. Instead, in order to make technical assistance under P3N more sustainable, it will be anchored in a dedicated facility in each partner city, called the City Planning Lab.

The CPLs aim to establish technical capacity at the municipal level to provide reliable analytic support to a city’s planning, policy and infrastructure decisions, and to enable access to leading technical assistance in urban management, analytics and planning systems. The focus of the facilities will be to build up technical and institutional capacity in city planning and regulatory agencies to produce reliable and up-to-date data about the cities, well-informed plans, effective public investments, and to support the enforcement of development regulations. The facilities will operate by offering a menu of technical engagements for
immediate as well as long-term projects on a demand-driven basis. CPLs will seek strong support and cooperation from the City Government with the aim of becoming technically and materially self-sustainable within two to three years.

By acting as a single ‘nerve center’ or focal point for analytical work across a range of sectors, touching on spatial growth, land use, land markets, slums, economic competitiveness, and climate and risk resilience, the CPL will help to habituate city leaders to thinking about urban management in an integrated, holistic way, allowing them to meet a range of needs through select but strategic interventions.

As described in detail under the ‘core’ module, the CPL will facilitate coordination through various agencies, with the Directorate General of Spatial Planning, Ministry of Public Works (MPW) at the center of the technical engagement at the national level, and Bappenas playing an important coordinating and advisory role, and donor support from the World Bank. At the local level, the CPL will have dedicated staff from various local government agencies, as well as external experts with long-term commitments to working with the Lab. It will also establish working relationships with academic and research institutions. It will conduct technical studies in modular form to respond to immediate needs, while also serving as the venue for the transfer of technical knowledge and the building of local capacity in the longer term.

3. OBJECTIVES

In the short term, the CPL will (i) provide “just in time”, demand driven data and analysis that can feed into immediate decisions, and (ii) streamline ongoing urban management functions, such as building permitting and tax-related functions.

In the medium term, it will provide cost-effective analytics to cities that can feed into planning and investment decisions, reducing the expense involved in contracting consultants during each planning cycle.

In the long term, the CPL will build local technical capacity, by gathering expertise from Indonesia and international sources to work closely with local staff. Over time, external involvement will diminish as local capacity strengthens.

MPW will facilitate an ongoing objective alongside those mentioned above to demonstrate and disseminate the value of this approach more broadly to local governments throughout the country.

4. SCOPE OF ACTIVITIES

The proposed activities of the CPL will be conducted in modular fashion, each pertaining to a different sector. The proposed sector modules are:

A. Instituting the City Planning Lab & Spatial Growth Analytics (core module)
B. City Economic Competitiveness
C. Slum Analytics and Management Systems
D. Climate and Risk Resilience Planning Systems
E. Monitoring Land and Real Estate Markets

While the details of the activities will differ, they will all take a common approach, which will involve (i) data gathering; (ii) inputting new and existing data into an integrated cross-sectoral data platform; (iii) using data in ongoing urban management functions; (iv) analyzing the data; and (v) working with city leaders to help them use the insights from data analysis in planning and decision-making.

In addition, the Ministry of Public Works will lead an overarching component involving three key activities: (i) preparation of guidelines for establishing CPL, (ii) a capacity building program beyond the core cities, and (iii) dissemination activities.
The detailed outputs, budget, timeline and potential risks for each module are discussed separately. A summary is provided below:

A. **City Planning Labs & Spatial Growth Analytics (core module)**
   *Four cities (Surabaya, Palembang, Denpasar, and Balikpapan): USD 730,800*

   **Major outputs:**
   - Geospatial database
   - Support to detail planning process
   - Pilot of a new permitting decision support platform.
   - Report on spatial accessibility of urban services
   - Report on urban expansion trends, 2000-2010
   - Report on land value impacts of infrastructure
   - Report on infrastructure demands over 10 years

B. **City Economic Competitiveness**
   *Two cities: USD 320,850*

   **Major outputs:**
   - City economic competitiveness review
   - City economic planning and decision support capacity building
   - 2-4 Workshops for public-private dialogues
   - City economic competitiveness dashboard

C. **Slum Analytics and Management Systems**
   *Two cities: USD 236,600*

   **Major outputs:**
   - Slum Information Database, incorporating all collected data
   - Survey materials
   - Report outlining slum management strategies
   - Planning of pilot implementing programs for selected sites
   - Report outlining (a) the process of slum formation, as observed through case studies; and (b) recommendations for strategies for preventing slum growth in specified areas

D. **Climate and Risk Resilience Planning Systems**
   *Two cities: USD 250,000*

   **Major outputs:**
   - Data inputs on disaster risk into city’s geospatial database
   - Customization of the InaSAFE software tool based on user needs
   - Report outlining the drivers of disaster and climate risk to core sectors and areas/neighborhoods, with risk-sensitive micro zoning maps, and recommendations for resilient land use and infrastructure investment planning

E. **Monitoring Land and Real Estate Markets**
   *Two Cities: USD 246,000*

   **Major outputs:**
   - Cadastral real-estate database, showing each land parcel with its associated buildings, occupants’ demographics, accessibility characteristics and valuation estimates.
   - Land and property market assessment report
   - Housing segmentation study report
   - Impact analysis report, documenting the observed real estate value impacts of selected infrastructure investment projects
   - Hedonic pricing analysis, explaining variations in land and real estate values based on the spatial attributes and accessibility
SECTOR MODULE A:
CITY PLANNING LABS AND SPATIAL GROWTH ANALYTICS

NATIONAL URBAN DEVELOPMENT PROGRAM
TECHNICAL SUPPORT FACILITY
INDONESIA
1. BACKGROUND

1.1 CONTEXT

As Indonesia urbanizes, the forms of its metropolitan areas will have profound and long-lasting socio-economic and environmental consequences. Present urban expansion can, on the one hand, foster economic growth, offer better opportunities to citizens and improve regional and international connectivity. On the other hand, rapid urban expansion also brings about important challenges, such as poor integration of complementary land uses, exhaustion of urban resources and social inequality.

In order to overcome such challenges and harness the opportunities, Indonesian cities need a capacity to analyze the current growth trends, understand their underlying forces and forecast their future consequences. At present, a number of medium and large-scale cities in Indonesia, where a large share of urban growth is occurring, lack the analytic capacity to examine how and much they are growing, what factors drive the growth and change, where and what types of public infrastructure investments are needed, how well past policies and investments have performed, and how future plans can be informed by current development trends. This leads to uncoordinated planning and enforcement efforts, inefficient use of scarce resources, and poor returns on infrastructure investments.

The lack of basic urban information systems impedes the necessary information sharing across different city departments, making decision coordination and planning enforcement difficult to achieve. Without reliable information and analytics, scarce public resources cannot be effectively allocated and policies cannot be effectively designed nor enforced to address key urbanization issues. In order to support efficient, sustainable and equitable urban growth in the next decade, it is critical for Indonesia’s cities to invest into new information, analytic and regulatory systems of urban planning and development.

1.2 IMPLEMENTING P3N TECHNICAL ASSISTANCE THROUGH CITY PLANNING LABS

As part of the National Urban Development Program (P3N), the World Bank aims to support the Government of Indonesia in establishing City Planning Labs (CPLs) in medium and large-scale cities, starting with four pilot cities in 2013 – Denpasar, Palembang, Surabaya and Balikpapan.

The CPLs will house a number of planning support activities for a wide range of urban problems that are divided into several modules. The central focus of the labs is to provide reliable Urban Spatial Growth Analytics and to upgrade information management for Regulatory Enforcement Systems. The focus of the Spatial Growth Analytics Module will be on analysis that provides a clear practical benefit to cities, which can serve as inputs into decision-making around policies and investments, and which can eventually be carried on by the cities independently. Provisioning the right amount of land and utility systems for future housing needs, for instance, can reduce the development of slums and save costly legal land readjustments later. Positioning key infrastructure, such as new roads, in places that generate the greatest and the most equitable benefits to landowners, can lead to a rise in land values and rental incomes that greatly exceed the initial investment.

Paralleling analytic work, the technical facility will also assist city planning enforcement agencies to transition into a transparent, electronic permitting and enforcement workflows. A great deal of planning and development regulation today is paper based and fragmented between different approval

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1 Denpasar (metro population 1.8 million), Palembang (metro population 1.6 million), Balikpapan (population 0.6 million) and Surabaya (metro population 5.6 million) have been selected due to their their existing planning efforts, their fair results in coordinating planning efforts with the central government, and their keen interest in the initiative.
processes, making it difficult to have a holistic overview of developments that are being approved. A number of spatial planning agencies have voiced that the present enforcement system also fails to integrate critical information between enforcement and planning groups in local governments, hampering their capacity to carry out approved plans. These two activities are described as part of the core CPL concept note below.

Additional CPL activity modules are described in separate concept notes as follows: A) Land and Real Estate Market Monitoring Module; B) City Economic Competitiveness Analytics Module; C) Slum Analytics and Management Systems Module; D) Climate and Risk Resilience Planning Systems Module. Human resources, technical infrastructure and data management systems will be hosted by a single CPL facility in each city and shared by the activities of all analytic modules.

Section three of this note describes three related steps of the proposed CPL implementation process:

i. Developing City Planning Labs as institutionalized municipal platforms for spatial analysis, integrated and evidence-based spatial development and investment planning.

ii. Implementing core urban spatial growth analytics (as well as other analytic modules described in separate concept notes) and using the outputs in planning activities.

iii. Establishing an effective data exchange system between spatial planning and enforcement agencies for an improved and automated planning enforcement framework for core urban land use and construction permitting functions.

2. OBJECTIVES

The primary objective of setting up the support facilities at municipal governments is to establish technical capacity to measure, analyze and respond to urban development pressures in an evidence-based and timely manner. By supporting evidence-based decision making, capacity building in urban analytics and more seamless information sharing across city departments, we expect the CPLs to lead to substantial cost savings in spatial management and enforcement, plans that are aligned with the city’s aspirations, more effective enforcement of planning goals, as well as greater multiplier effects on infrastructure investments in the medium and long run.

The initial core activity of the facility is urban growth analysis, the objectives of which include to:

- Project future growth, based on existing trends, and forecast the future demand for land uses and amenities.
- Help integrate projected demographic and economic changes into Masterplans and Detail Plans.
- Communicate information relating to future spatial plans over web-based maps to other related agencies to strengthen regulatory enforcement.
- Foresee infrastructure requirements from current trends and help avoid supply shortages by proposing possible planning responses.
- Conduct spatial cost-benefit analyses of public investment decisions.
- Evaluate the social and environmental impacts of public investments.
- Assess the equality of public investment distribution across all demographic and income groups.
- Provide accurate and reliable geospatial data to private sector developers and individual stakeholders.

The upgrading of regulatory enforcement systems module of the facility aims to improve information sharing and information capture between planning and regulating arms of the local government in order to develop a more effective and transparent decision chain for carrying out
the city’s planning intentions. The objectives of the proposed regulatory technical assistance are to:

- Analyze the present paper-based regulatory processes for building permits and change-of-use permits in local spatial planning offices.
- Develop a comprehensive action plan to upgrade the present permitting system to computerized databases that allow permitting officers to instantly access approved planning information about parcels under question via a simple web interface.
- Implement a pilot data capture system for building permits and change-of-use permits that will record each approved permit in a database and automatically update the city’s GIS parcel and building map layers with accurate information.
- Display Masterplan and Detailed plan information to landowners publicly over a web-based map server, without requiring personal consultations to find out the allowable buildable volumes on site.
- Evaluate the effectiveness of the above pilot schemes with respect to more effective regulation and adjust the system implementation accordingly.

The CPLs will additionally offer the World Bank and other donor organizations a valuable platform for predicting and tracking the impacts of transformative infrastructure investments in Indonesian cities.

3. **SCOPE OF ACTIVITIES**

Addressing the goals and challenges discussed above, the three steps to implement the CPL activities outlined in this note are:

i. **Establishing City Planning Labs**: This involves providing assistance to the city on institutional setup, data collection, software and hardware and human capacity.

ii. **Implementing Spatial Growth and Change Analytics**: This involves developing the preliminary analytical work on spatial growth monitoring, and proposing activities for future phases, to be conducted by the City Planning Lab with external assistance.

iii. **Improving Planning Enforcement Systems**: This involves assisting the cities’ spatial regulatory agencies to implement computerized information and permitting systems that are synchronized with spatial information with other city agencies.

3.1 **ESTABLISHING THE CITY PLANNING LAB**

3.1.1 **Software and Data Platform**:

To fulfill their primary goal of assembling, maintaining and distributing large geospatial databases, the City Planning Labs need a data platform that satisfies four fundamental requirements. The platform should:

- Allow the data to be stored and management in a well-organized way
- Allow the data to be shared across different departments or with members of the public over internet browsers
- Enable all data management operations to be performed from a local networked computer
- Enable the end-users to interact with the datasets, by querying their attributes, overlaying different data layers, using simple base-maps to situate the information, and sharing personal information layers on published maps.

The capacity to operate basic spatial functions (e.g. spatial search, measurement or proximity search, attribute table joining etc.), would be desirable additional functions for the end users, though not a first-order priority. Combined, these basic requirements necessitate setting up a GIS map server platform.
Figure 1: Screen capture of a QGIS open-source data platform work environment.

Figure 2: City Planning Lab partnerships framework.
There is a considerable list of open source and proprietary GIS server technologies. Proprietary technologies include ArcGIS Server, ArcGIS Online and MapInfo Spatial Server, while open source options include GeoServer, GeoNode, and PostGIS. The World Bank’s Platform for Urban Management and Analysis (PUMA), currently under development, is also a potential open source option for the City Planning Labs. Based on the vital and desired functionalities, cost and budget limits, and the platform’s flexibility for scaling up, a few options will be introduced to the Lab. While setting up the data platform should be tackled at the outset of the lab, its maintenance and potential expansion – given the envisioned collaboration with a larger number of government departments – will continue throughout later phases. It is possible, for instance, to start off with a proprietary off-the-shelf system that requires little setup time, such as ArcGIS Online, while the staff are technically trained to set up a more long-term open-source system.

Apart from the platform for geographic data, general software (e.g. text editors) and operating system, the lab requires two types of desktop software tools for assembling data and conducting analysis:

- Spreadsheet software with basic statistical analysis capabilities (e.g. Microsoft Office Excel, Access; Open Office Calc, Base)
- GIS desktop software (e.g. ArcGIS, MapInfo, QGIS)

These desktop tools are available both as proprietary and open source, with different functionality. The potential options will be introduced to the lab, based on the required capacities.

3.1.2 Institutional Arrangements:

Organizational location: A few different options are available in terms of situating the City Planning Lab within the existing local government. The exact institutional setup would be tailored to the preferences of the local governments. An effective institutional model would be to have the Lab located within Bappeda, who would provide the physical space and some of the basic investments in setting up the Lab. It is recommended that both Bappeda, as well as the Department of Spatial Planning, would provide two full time staff members to work as part of the Lab team.

In order to ensure coordination across agencies, it is recommended that the Lab be advised by an Advisory Committee convened by the Mayor, with members from Bappeda, Spatial Planning, Public Works, Revenue, BPS, BPN and other planning related agencies or city departments. The committee may also include representatives from neighboring jurisdictions or regional governments, in order to ensure coordination across the whole metropolitan area. In addition to coordinating between city agencies and departments, the advisory committee will liaise between CPL and the Ministry of Public Works in order to inform the national level spatial planning by local analysis, data and plans. CPL in each pilot city will also assist the local governments by informing their planning enforcement systems of national plans. This committee would likely meet once every month or two in order to set the strategic direction for the work of the Lab. It is not recommended that the advisory committee intervene with the daily operations of the lab, which could be done more efficiently by the CPL staff.

Partnerships: The Lab would establish institutional partnerships with external entities in order to facilitate knowledge exchange. For example, there may be MoUs signed with Indonesian universities to foster collaborative projects between students and the Lab, internships or part-time positions for students who may work at the Lab for short periods, or research projects conducted by universities that complement Lab activities. MoUs may also be signed with agencies at other levels of government, including data sharing agreements with BPS or BPN. In addition, consultants would be hired to work closely on specific analytical areas on a project basis. During the first two years of the implementation
phase, outside consultants and partner organizations will be required to collaborate closely and transfer knowledge and skills to the CPLs. The World Bank team would play an ongoing advisory role, which would phase out over time. In this way the Lab would gradually become technically proficient and self-sufficient to support all necessary spatial analytic support function for the cities, and form the means by which the city interacts with key partners in urban planning and management.

![Figure 3 City Planning Lab staffing.](image)

**Staffing:** In the first phase, the Lab is recommended to have 6-7 full time staff. This would include the following:

i. **Director:** responsible for managing the daily activities of the Lab. Ideally the Director would be an individual with a Master’s or higher degree in urban planning or a related field, and approximately ten years of experience in urban planning in Indonesia, who is familiar both with the kinds of analytical tools and approaches that the Lab will use, as well as with the functioning of local governments in Indonesia, and has experience in starting up new institutions or ventures. This individual would most likely be hired from outside the government.

ii. **Representative of Bappeda:** responsible for coordinating with Bappeda’s spatial planning activities. This would be someone with at least 3 years of experience in the local government, who is familiar with the operating procedures of the department. He or she would be assigned to work with the Lab full time.

iii. **Representative of Department of Spatial Planning:** responsible for coordinating with Department of Spatial Planning activities. This would be someone with at least 3 years of experience in the local government, who is familiar with the operating procedures of the department. He or she would be assigned to work with the Lab full time.

iv. **2-3 technical staff:** responsible for data gathering, managing databases, and using software tools to perform the analysis. These individuals would need to be highly proficient in ArcGIS and AutoCAD. They should have some background in urban planning, policy, geography, architecture or other relevant field. At least one of these should have experience in setting up and managing data servers. These individuals would most likely be hired from outside the government.

v. **An administrative assistant.**

These individuals would be involved in the functioning of the Lab full time from its establishment onwards. In subsequent phases, more staff may be added as necessary.

**Equipment and Space:** In its first phase, it is recommended that the Lab be situated in a space of approximately 40 sq. m., with a desk and a computer station for each full-time staff as well as one additional work station for visiting consultants, and a small meeting area. The equipment necessary would include a computer for each work station, a laser color printer / scanner, a 36-in color plotter, a large-format scanner, and a 46-in flat-screen display for presentations.
3.2 SPATIAL GROWTH AND CHANGE ANALYTICS

3.2.1 Analytics:

A core objective of the SP Module of P3N- TSF is to provide spatial analyses and evidence-based decision support to different city agencies and outside constituencies. The CPL will play an important role here. The spatial information gathered and analyzed by the CPL should enable the city to keep track of the growth and changes in its overall development, to monitor its land and real-estate markets, and to forecast and monitor the impacts of its planning interventions. The analytics performed by the CPL will be used as a basis for the city’s Masterplanning and detailed planning efforts, for setting the priorities and predicting the impacts of public financing and infrastructure investments, and for making reliable spatial information available to various planning and enforcement decision makers (i.e. building permitting office) on a continuous basis. The Bank’s staff and outside technical experts will work closely with the local CPL teams over the first two years to transfer technical knowledge and to build up the skills needed to perform the information management and analytics autonomously.

For the first year of operations, the CPL aims to achieve the following analytic outcomes:

- **3.2.1.1 Phase 1 (Months 1 to 6):**

  Creating interactive geospatial databases: Existing spatial datasets are uploaded to an online map server for interactive viewing by different city departments. The interactive viewing should be web browser-based, not require any additional software from end users. This will allow stakeholders to overlay different spatial data (e.g. current built-out areas and the existing Masterplan) and to query simple attributes about the map elements by clicking on them (e.g. click on a parcel to see its area, ID, etc.). The exact list of existing datasets to be uploaded will be decided together with the city planning agencies based on availability (e.g. high-resolution satellite image, street centerlines, Figure 4: Example analysis output: accessibility to jobs within a 10min walking range from each building in Cambridge and Somerville, MA. Source: City Form Lab.
building footprints, parcels, schools, hospitals etc.).

- **Urban growth analysis**: The growth of the metropolitan area and its corresponding population from year 2000 to 2010 will be obtained (from the World Bank’s ongoing East Asia and Pacific Urban Flagship activity) and used to analyze the spatial extent and rate of the city’s growth in the past decade. The previous decade’s expansion areas will be overlaid with current building and land-use data in order to analyze how much land was consumed by different land-use categories. This analysis, combined with regional economic and demographic forecasts, will subsequently be used as a reference to develop likely estimates for growth in the current decade, from 2010 to 2020.

3.2.1.2 **Phase 2 (Months 7 to 12):**

- **Accessibility analysis**: Existing spatial information on public facilities and resources (e.g. drinking water sources; drainage points; schools; hospitals; markets; transit stops) will be used to estimate accessibility to these resources in different parts of the city. This analysis should illustrate underserved areas and provide an empirical basis for future public investments.

- **Support to planning**: As the planning agencies (Bappeda) of the participating cities engage in developing detailed plans (1:5,000 scale) from their current Masterplans (1:25,000 scale), the CPL will help develop the supporting spatial analysis required to achieve the goals of detailed plans. Palembang planners indicated that they need to develop 16 detailed plans for the different parts of the city, indicating the allowable land-uses, building heights, building coverage, infrastructure changes and buildable areas in different parts of the city. CPL analyses will help choose the areas in need for public investments (i.e. new roads, transit stops, schools, flood protection, etc.); for determining the likely economic growth poles in the city; and for forecasting the needs for different land-uses at the detailed plan scale during the next five years. The planning agency (Bappeda) can integrate these inputs to detailed plans and associated legal development regulations.

- **Impact analysis**: CPL will additionally develop impact analyses for ongoing public investment projects, such as choosing the exact location for the second bridge in Palembang, for locating sanitation and water facilities in Denpasar, collaborating with Public Works in choosing the placement of a new toll road, etc. on a per need basis.

3.2.1.3 **Phase 3 (Months 13 to 18):**

- **Projections**: More accurate and up-to-date spatial data will allow the CPL to start developing more accurate forecasts for near-term and long-term projections on land use requirements, housing needs, transportation demand, infrastructure needs etc. Analytics outlining such needs will help the cities prepare for potential problems (i.e. housing shortages, congestion) before they occur in the future. CPL staff will a long term (20 year) forecast for the city’s growth and start analyzing planning and policy responses needed to accommodate the projected growth.

3.2.2 **Data:**

Spatial and development plans cannot achieve their envisioned goals without accurate projections of supply and demand for housing, infrastructure and services, and forecasts for broader socio-economic and environmental situations to which planners must respond. Private sector developers and individuals can also make better decisions and contribute to the progress of the city if they have access to accurate data on how the city is growing and changing, and potential risks and bottlenecks. One of the primary objectives of the City Planning Lab in the four pilot cities is piecing together a comprehensive geospatial database from both the existing data and new data sources. A large
body of data currently exists in local and national agencies; however, the absence of a well-structured collaborative information system has obstructed the flow of appropriate information among the government departments and the public. A considerable amount of data has not yet been digitized, prohibiting the data from being shared or used for computer-based analysis.

The City Planning Lab aims to fill this gap by assembling existing data through a close collaboration with municipal agencies, and initiating collection mechanisms for new datasets. The Lab will develop an online platform to which government departments can contribute data they collect or record. The contributors, in return, will have access to more comprehensive and linked datasets, benefiting their own operations.

Apart from continuous updating of the database, another important task for database maintenance is the verification of the accuracy of data. Accuracy verification will be a continuous task for CPL staff.

The first phase of data collection will involve identifying existing datasets, obtaining data from multiple departments, and integrating the data to standardized formats. This process will involve a significant digitization effort – e.g. generating GIS maps with useful attribute tables from the current paper maps showing allowable building regulations. Some early data collection activities will require external support. In the second phase, the Lab will start to build databases by joining different datasets together – e.g. adding land values, land uses and establishment locations to the building dataset. The third phase will be mostly dedicated to field surveys for filling in the missing data and collecting new data.

The use of government accounting and registries (e.g. data recorded for permitting or land and real estate transaction taxation) constitute an important future source of reliable and up-to-date data. Piloting the collection of such data is discussed further below.

3.2.3 Communicating Planning Goals

Beyond performing analytic work to support ongoing planning, development and regulation work in the city, the CPL also aims to gather, document and visualize the planning goals that form the basis of Masterplans, Detail Plans and other spatial development initiatives. CPL’s analytic work is impactful only if it is well aligned with the city’s goals and initiatives. Yet such goals are often unclear and dispersed among multiple agencies. CPL could provide a venue that collects and visualizes the different initiatives and goals graphically in order to help disseminate the ideas across departments and to the general public. This can be done through web-maps, infographics and printed publications that are shared across the city’s departments.

3.3 PLANNING ENFORCEMENT

3.3.1 Restructuring the Planning Enforcement Procedures:

Any government accounting and registry procedure naturally leaves a trace of data behind, which could be effectively used if a proper structure for the flow of data is developed. The structure of the existing planning enforcement systems in Indonesian cities, however, does not allow for the effective and efficient utilization of these registry and accounting records. Planning enforcement procedures are still paper-based and the lack of a standardized national addressing system makes it difficult to integrate them with other spatial databases.

This concept note proposes restructuring four planning enforcement procedures – permit regulations (building permit, change of use permit, etc.); zoning regulations; incentives and disincentives; and the imposition of sanctions – as a pilot initiative in the four cities.

CPLs will develop a detailed assessment of the current enforcement mechanisms at the local spatial planning agencies and propose comprehensive improvements to digitize and streamline development-permitting processes.
CPLs will carry out a pilot implementation of a data capture system in building permitting and change-of-use application procedures that will demonstrate an integrated information flow for keeping a city’s geospatial building and land-use data up to date.

3.3.1.1 Building and Change-of-Use Permitting (Phases 1 and 2):

Building and change-of-use permits are potentially the best source of data for keeping a city’s spatial database up to date, as such permits capture changes in all legal development activities. In order to actively harness these data, the permit issuance procedures in Indonesian cities need to be restructured.

During the first two phases, the CPL will perform a detailed assessment of the present permitting procedures in the Department of Spatial Planning and develop a plan for updating the processes to digital standards. The new procedures will allow each permit to be recorded in a digital database, which can be referenced via parcel and address indicators and geographic coordinates to other existing databases (e.g. parcel, building and business location databases). This is expected to produce two important benefits. First, linking permitting with existing geospatial data will allow permitting officers to instantaneously retrieve approved planning information about the permit sites under question, eliminating an information gap between planning goals and enforcement. Second, a continuous updating of building and use data based on permitting procedures will also significantly lower the on-ground or aerial surveys required in the future for data updating.

3.3.1.2 Phase 1 (Months 1 to 6) deliverables:

- Assessment of new building and change-of-use permitting. CPL will document and evaluate the current procedures for issuing new building permits and change-of-use permits at the local spatial planning agencies, producing a report of the current workflows and potential opportunities for improvement. The report will also outline the success rate of the current planning enforcement system, overlaying legal spatial plans with issued permits on the ground.

3.3.1.3 Phase 2 (Months 7 to 12) deliverables:

- Recommendations and activity plan for a new permitting decision support platform. CPL will produce a report outlining recommendations for a new, digital permitting decision support platform that will allow permitting and enforcement agents to seamlessly access cross-linked information about planning regulations for parcels, buildings, zones in the city. The report will also outline a proposal for making general planning and zoning regulations accessible to land-owners and developers via an online portal.

3.3.1.4 Zoning Regulations and Spatial Plans (Phase 3):

Zoning regulations and spatial plans are currently not fully shared with the public, which has imposed an unnecessary work load on the Department of Spatial Planning, who communicates this information on a case-by-case basis to interested property owners. Prior to applying for any building permit, property owners are required to submit an inquiry about allowable coverage, height, use, and setbacks for each property. A planning officer retrieves this information from paper-based documents and communicates back to the requestor in written form. Such zoning information, which is publicly available in most developed countries, can also be made publicly available in Indonesia.

3.3.1.5 Integrating Registry and Accounting Records into the cities Spatial Database (Phase 3)

As discussed above, one of the primary objectives of The City Planning Labs is to piece
together and maintain a comprehensive geospatial database. In addition to readily available data, additional spatial information harnessed from the government accounting and registry documents offer important potential sources for expanding the datasets and keeping them up-to-date. Building permits, for instance, can be used for updating the building dataset in real time and in the most accurate and cost-efficient way. This requires proper digital and spatially referenced registries that could be linked with the CPL databases. Transaction data from local tax services or notary offices could allow land and real estate value datasets to be updated each time a transaction is made. Such mechanisms are common in developed countries’ planning systems.

The City Planning Labs will not only be collectors of data, but they will also provide participating government departments (local and national) with integrated and updated geospatial databases, built upon the data provided by individual agencies themselves. Bappeda, for instance, will benefit significantly from registry and permit data from the Department of Spatial Planning (Dinas Tata Kota), which can be used for preparing the detail plan of sub-districts. As the permit information is currently not transferred to Bappeda in a ready-to-use manner (it is not digital nor spatially referenced), Bappeda instead uses open-source satellite images to update its building datasets, leading to outdated and inaccurate information.

3.3.1.6 Phase 3 (Months 12 to 18) deliverables:

- **Planning enforcement portal.** By the end the third phase the CPL, in collaboration with Bappeda and Department of Spatial Planning, will prepare and publish currently available maps of zoning regulations and spatial plans to the general public on designated websites. Since the information is legal and explicitly stated, this upgrade is expected to relieve an unnecessary burden of private consultancies.

- **Pilot program for permitting decision support platform.** CPL will implement a pilot program for permitting decision support that will test an integrated digital workflow for permitting officers. The platform should allow permitting officers to instantaneously retrieve approved planning information about the permit sites under question, providing a more integrated planning and reinforcement workflow. Each issued permit should automatically update building and land-use data in the city’s building and parcel databases. This pilot program will be implemented on two permitting procedures in each city: new building permits and change-of-use permits. The pilot program seeks to understand the existing data flows, and the required procedures for integrating and maintaining a real-time database between different city departments. After evaluating the first phase pilots, CPL aims to scale such efforts up in the second phase.

3.3.2 Digitizing Historic Data

While keeping track of the registry and accounting records offers an up-to-date capture of the existing condition of a city, it is not sufficient for understanding the current trends and forecasting their future changes. This requires several datasets of spatial conditions over time. These snapshots can be collected gradually over time. The existing planning enforcement systems have been collecting valuable data, although many of them are not digital or in an appropriate format for analytical purposes. During the first and second phases of the project, the City Planning Lab will collaborate with municipal government departments and agencies to first map available historic data, and to then digitize and integrate these historic data with current conditions.

3.3.3 Planning Tools

The availability of close partnerships with outside institutions (e.g. CPLs in other cities, the World Bank, outside consultants) also offers a unique
opportunity to collect and document information about planning tools and implementation mechanisms in other successful cases. Such tools may include zoning regulations, incentive systems, building guidelines etc., which could potentially be implemented in the city as part of planning initiatives. CPL can help disseminate knowledge about such tools to different stakeholders in online and print publications. Keeping an up-to-date overview of planning goals and their related implementation tools will help CPL ensure that the analytics performed are aligned with the city’s needs.

4. RISKS

Potential risks include the following:

i. Difficulty in transferring skills in a sustainable manner: Local governments in Indonesia often lack the technical expertise necessary to perform the kinds of analytical work proposed for the Lab. For this reason, much of the work in the early phases will be done by external consultants. There is a risk that knowledge will not be sufficiently transferred to the local government counterparts involved in the Lab. In order to address this risk, the Lab will involve local officials as key team members from the beginning, and will be overseen by the mayor or a local government agency. Any external consultants will be required to work closely with the local officials in the Lab. Every technical assistance activity will have the dual objective of producing the analytical output itself while simultaneously training local staff to perform such analysis. This will ensure sustainability of skills in the Lab.

ii. Lack of coordination with other agencies: There is a risk that while the local staff directly involved in the Lab will adopt new analytical approaches, the overall urban planning and management systems will carry on with business as usual. This risk will be most effectively mitigated if there is a high-level champion for the Lab, ideally the mayor, the head of Bappeda, or a board consisting of heads of various departments (see section on institutional arrangements), to ensure the proliferation of analytical approaches and operating procedures developed in Lab throughout the rest of the government.

5. OUTPUTS

5.1 PHASE 1:

At the end of Phase 1, the Lab should have a physical space, with hardware and software equipment with full-time staff set up. The outputs of the phase 1 analytical activities will be as follows:

- An interactive online geospatial database, featuring datasets that are already available for the lab, will be ready for use for different city departments on web-browsers.

- A short report will outline the 2000-2010 urban expansion increase in the given city and the likely growth scenario for the current decade based on urban extent and population data from World Bank’s ongoing East Asia and Pacific Urban Flagship activity.

- A report assessing the current procedures for issuing new building permits and change-of-use permits at the local spatial planning agencies, describing the current workflows and potential opportunities for improvement.

5.2 PHASE 2:

- A spatial accessibility databases will be analyzed at the individual building level, illustrating how easily households in different parts of the city can access critical urban resources – drinking water sources; drainage points; schools; hospitals; markets; transit stops. The results will be described in a short report and in graphic material (e.g. paper-based and online maps) that can be shared with various city departments.
Based on collaboration with the detailed planning team in the respective city, CPL staff will support the development of the detailed plans with spatial analyses. CPL analyses can help choose the areas in need for public investments (i.e. new roads, transit stops, schools, flood protection, etc.); for determining the likely economic growth poles in the city; and for forecasting the needs for different land-uses at the detailed plan scale during the next five years. These analyses will be determined on a per-need basis and documented in written and online reports with supporting geospatial evidence.

CPL will produce a report and supporting geospatial data, outlining the likely land-value impacts of ongoing public investment projects, such as the addition of a second bridge in Palembang, for locating sanitation and water facilities in Denpasar, choosing the placement of a new toll road, etc.

Recommendations and activity plan for a new permitting decision support platform. CPL will produce a report outlining recommendations for a new, digital permitting decision support platform that will allow permitting and enforcement agents to seamlessly access cross-linked information about planning regulations for parcels, buildings, zones in the city.

5.3 PHASE 3:

CPL will produce a report, which analyzes the directions and magnitudes of the effects that different land improvement strategies have on land and real-estate values in the respective cities. The report, based on hedonic price models, will indicate how access to critical infrastructure (roads, water, transit) and land-use linkages (commerce, jobs, parks) affect land prices and real estate sales.

Forecasts will be prepared in the form of a written report and supporting graphic material to describe land use requirements, housing needs, transportation demand and infrastructure needs for the next 10 years in the city.

CPL will compose a report and hold a workshop with various city planning related departments to describe the results of the digital data integration and capture pilot program through planning enforcement mechanisms. The report will outline the successes and shortcoming of the pilot program and make concrete recommendations for the expansions and automation of the data capture system in the future.

CPL, in collaboration with Bappeda and Department of Spatial Planning, will prepare and publish currently available maps of zoning regulations and spatial plans to the general public on designated websites.

CPL will implement a pilot program for permitting decision support that will test an integrated digital workflow for permitting officers. The platform should allow permitting officers to instantaneously retrieve approved planning information about the permit sites under question, providing a more integrated planning and reinforcement workflow. Each issued permit should automatically update building and land-use data in the city’s building and parcel databases. This pilot program will be implemented on two permitting procedures in each city: new building permits and change-of-use permits.

6. BUDGET & TIMELINE

This module will be carried out in three phases of six months each. The total cost for four cities is estimated at USD 730,800. (A detailed budget breakdown is attached.)

7. TEAM

In addition to full time staff members listed above, additional expertise required for
providing consultation to the spatial growth analytics module will include:

i. IT/GIS Server Specialist
ii. Urban Economist
iii. Urban and Regional Planner
SECTOR MODULE B: CITY ECONOMIC COMPETITIVENESS

NATIONAL URBAN DEVELOPMENT PROGRAM
TECHNICAL SUPPORT FACILITY
INDONESIA
1. BACKGROUND

Indonesia’s cities remain a challenge – and a major opportunity. The Indonesian economy has performed strongly over the past decade. The country has also been rapidly urbanizing, but has been unable to fully capture the productivity benefits from agglomeration.

Improved capabilities at the municipal/urban level are the key to unlocking the potential for improved economic competitiveness of Indonesian cities, since

i. **The size and diversity of Indonesia calls for customized strategies for sustained economic growth.** This is true particularly in the current political environment where risk aversion among decision makers at the national level ahead of the 2014 elections means that reforms at the city-level have a greater chance for success.

ii. **Cities can influence the business environment considerably, thanks to decentralization and partial devolution of regulatory authority.** According to the Subnational DB study (2012), obtaining a construction permit in the city of Bandung, for example, takes on average 44 days, while in the capital Jakarta, less than 150 km away, the same procedure takes on average 158 days, more than 3 times as long. To start a business in the city of Palangka Raya, 27 days are needed for the official procedures, while the same steps in Jakarta take almost twice as long, 45 days. These variations indicate that cities have the ability to improve the regulatory environment independent of reforms (or lack thereof) at the national level.

iii. **City land use and infrastructure planning can directly and significantly impact the cost of doing business** especially rental cost, ease and cost of brownfield expansion of businesses and access to last mile infrastructure (road, power, broadband etc). Examples of notable success (and failure) of international cities can provide guidance as to what can be done to enhance city competitiveness and make best use of comparative advantages. Locally appropriate policies are needed to provide the simple, transparent, and supportive operating environment that businesses need to succeed and grow.

2. OBJECTIVES

The objective of the City Economic Competitiveness Module of the National Urban Development Program (P3N) is to enable client cities to actively guide and foster their municipal and regional economic development through superior planning and decision making and deep consultation with private sector stakeholders. Success indicators include the number and quality of jobs available in the city (and surrounding areas, as applicable), the improvement of productivity in targeted sectors, and the inclusiveness of economic growth (target measure TBD) within the city.

The module’s components will be achieved by helping cities (i) get smarter about understanding trends in their regional economy, and the impacts that public policy, investment and planning decisions have on their economic prospects; and (ii) work with the private sector to leverage this newfound understanding to initiate a series of local reforms/policies/investments. Activities will focus on building institutional capacity to significantly strengthen the targeted cities’ competitiveness planning and analysis capability, as part of the City Planning Labs (CPL), as well as on market sensing and working closely with the private sector to ensure that the cities’ efforts on planning and analysis are well targeted. Since the achievement of this component’s objectives ultimately depends on the private sector’s response to the cities’ improved planning, the involvement of and dialogue with the private sector from the start is critical.
3. SCOPE OF ACTIVITIES

In keeping with the other CPL modules, the activities in this module will be conducted in three phases of six months each. The module comprises four components, which will span all three phases, though at varying intensity. The module is designed on the basis of World Bank’s past experience with such programs, latest literature on the subject, and our own initial assessment of the cities. An overview of the key products that will be produced under the four components is in the table below.

i. City Economic Competitiveness Review: city-level economic review and comparison across cities, sectoral studies and in-depth analysis.

<table>
<thead>
<tr>
<th>Component</th>
<th>Phase 1: 0-6 months</th>
<th>Phase 2: 7-12 months</th>
<th>Phase 3: 12-18 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>City economic competitiveness review</td>
<td>City Economic Competitiveness Review of pilot cities including comparative analysis</td>
<td>Sectoral studies, possibly based on additional data</td>
<td>In-depth analysis</td>
</tr>
<tr>
<td>Capacity building</td>
<td>Integrating city economic data with the core spatial planning platform; map economic analysis to core spatial data platform</td>
<td>Building analytical capacity at CPL; map economic analysis to decisions at city level</td>
<td>Transferring lead of activities to CPL</td>
</tr>
<tr>
<td>Consultative workshops / PPD</td>
<td>Early consultations with private sector; formulating top hypotheses on constraints and policy levers</td>
<td>Decision on key sectors and policy options</td>
<td>Institutionalizing dialogue; decision on action plan for policy initiative</td>
</tr>
<tr>
<td>City initiatives and dashboard</td>
<td>External case studies</td>
<td>Policy options</td>
<td>Policy finalization and decision, incl. action plan</td>
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Component 1: City Economic Competitiveness Review

Local government intervention to boost competitiveness should start with a clear understanding of the market and the main spatial and sectoral drivers of city economic growth. This report aims to do an in-depth study of the city’s economy.

Description: The City Economic Competitiveness Review attempts to answer the following questions – (a) what is the state of the local city economy in terms of GDRP, GDRP per capita (as a proxy for productivity), GDRP mix, total jobs, average wages, and exports and their growth over last 10 - 20 years; (b) how does the economic performance of the city compare to peers and what are city’s strengths and weaknesses including education and skill level of workforce, land pricing, regulatory environment; (c) what are the spatial and sectoral drivers of city’s economic performance and competitiveness; (d) which are the sectors where the city can be considered or has potential to be
nationally and globally competitive; (e) for the top sectors, what are the market failures and major barriers to growth across regulation/policy, skills, infrastructure (including land), technology and access to finance?

Methodology: To answer the different questions stated above, the work on the report will consist of both quantitative and qualitative studies. It will build on existing work and on expertise by the World Bank and development partners. It will also involve collaboration with stakeholders from different government agencies, private sector, universities, and industry associations.

- Trends in city’s economic performance will be based on data from statistical agency (BPS) and data available with local government agencies. For example, it is instructive to contrast the rate of growth in jobs, productivity and exports of a given city with its peers in Indonesia and potentially from outside Indonesia to determine a city’s strengths and weaknesses and their key drivers. Based on data from BPS, we have compared the growth trajectories of top Indonesian cities in Figure 1. Between 2000 and 2010, Palembang’s real GDP grew 3.3 percent per annum (behind most cities) due to only 2.1 percent per annum growth in productivity (using the proxy of real GDP/capita). Denpasar’s productivity growth was even lower at 1.7 percent per annum between 2000 and 2010. Denpasar’s GDP growth is more respectable at 6 percent per annum driven by 4.2 percent per year growth in population.

- Sector specific analysis: To analyze drivers of economic performance, sector specific data will be used. In particular, we would like to identify the traded and resource based industries² that are true source of competitiveness. World Bank has developed tools and surveys which can be used to drive this analysis. Some of the major tools, which we are likely to use for this analysis will include Sector feasibility checklist, Enterprise Survey, Value chain mapping, Porter’s five forces, Market trends, and Cost Analysis (same as cost-structure benchmarking). Figure 2, 3 and 4 are illustrative slides on methodology used for sector analysis.

  - Leveraging Sub-national doing business (SNDB) database and insights, which was earlier work done by World Bank and IFC with the pilot cities
  - Interviews with mayors, planners on top economic priorities, initiatives underway, challenges faced, city administration organization structure, decision rights, KPIs and incentives
  - Interviews with industry associations, major private sector players, investors, banking analysts, and central bank

² Michael Porter’s work on competitiveness and clusters (e.g., US Cluster mapping project) talks about 3 types of industries -

Competition may come initially by exploiting resource advantage (resource based industries), and may come sustainably by developing traded industries. One way to analyze these local versus non-local industry concentration in a given city or cluster is to look at industry share of total output of the cluster and compare it to national averages. Palembang’s share of rubber and palm oil industry output to total Palembang GDP would be way above the national average across clusters – making them Palembang’s competitive sectors.
- Literature and case study survey of work done by World Bank, donors, partner institutions, academics, Indonesian think tanks
- Study of government masterplans including MP3EI (masterplan for accelerated regional development), RPJMN and city plans
- Additional, targeted data collection for in-depth and sectoral studies, if needed and as agreed to with all stakeholders

**Timeline and phases:** The work on the City Economic Competitiveness Review will span across all three phases. However, the first version of the report, based on existing data and key informant interviews only, will be completed during Phase 1, in order to support the dialogue and generation of policy options during the subsequent phases. The analysis will then be deepened and focused on agreed-upon sectors during phases 2 and 3. This may include additional data collection in the cities, if it turns out that such data is needed to complete the analytical work.

**Component 2: Capacity building**

**Description:** This part of the module links CPL outputs to the planning process, budget and resource allocation, land use, governance, and private sector decision support. The completion of the City Economic Competitiveness Review should translate into an ongoing capability and become an input into all the planning related to the cities’ economic development. The new analysis and insights from the review should be linked to action on the ground by (a) agreement on immediate initiatives and (b) permanent linking of new data and analyses to ongoing decision making by the city government and other players. This can be achieved by capacity building at Bappeda and other relevant institutions through on-the-job personnel training, setting up appropriate decision analysis tools, and institutional changes to ensure application of results.

**Methodology:**

- Map all controllable decisions at a city level, current data and facts used for those decisions, current information gaps, and specific lab outputs that will bridge this gap. This step will use process maps/decision rights and other tools
- One-time intervention to agree on immediate initiatives for private sector development followed by other institutional interventions that improve decision making to support private sector development on an ongoing basis. This is essentially transforming the way Bappeda works and will be typically achieved through internal decision making workshops involving all relevant stakeholders.

**Timeline and phases:** The work on capacity building in this module will be especially closely coordinated with the activities of other modules, which also have capacity building as a key component across the three phases. It should be noted that the goal is to transfer the lead of the city economic competitiveness work to the CPL during Phase 3. Support of the work and of the CPL can continue, but the aim is to have the city government fully in the driver seat by that time.

**Component 3: Consultative workshops and Public-Private Dialogue (PPD)**

**Description:** The consultation with the private sector is critical throughout, since the success of this module is particularly dependent on the private sector’s reaction to the policy initiatives (and, later on, to the associated infrastructure investments). This module envisions, in addition to ongoing, informal consultations, 3-4 workshops that will involve all key stakeholders, including government agencies, private sector players of companies of different sizes (large, medium and small), representation from all major sectors, industry associations and other experts and academics. The workshops should serve the purpose of both information sharing (from the City Economic Competitiveness Review) and getting feedback.
Timeline and phases: Proposed workshops and touch points (including timeline) include:

- **During Phase 1:** initial workshop to discuss project setup, objective and vision sharing, collecting top hypothesis on challenges faced and solutions (in terms of controllable local decisions)

- **During Phase 2:** workshop to discuss initial results from the City Economic Competitiveness Review, including comparison to peers; seeking input and agreement on sector prioritization. In addition, methodology and approach for remaining work can be shared and feedback sought.

- **During Phase 3:** After the expanded version of the City Economic Competitiveness Review has been finalized, this workshop is the major event that discusses results, implications, city’s plans going forward and gets feedback from players. Subsequent formal periodic PPD program will be established.

Component 4: City initiatives and dashboard

**Description:** This component represents in effect the culmination and combination of the first three components. The output of this component puts the insights and recommendations into practice in the form of policy decisions and other initiatives that are agreed upon and an implementation plan to execute the initiatives. The proposed dashboard is a tool to achieve these objectives by bringing the critical information together, while the content of the actual policy decisions and initiatives will of course be customized to each city. Eventually, it is expected that the City Planning Lab will help prioritize and structure the investment projects for the city. The dashboard will have three sections –

- city overall economic indicators;
- city top sectors indicators;
- city economic competitiveness initiatives scorecard

While the final policy formulation itself is an output that will be developed during Phase 3, this component offers the opportunity to demonstrate what the City Economic Competitiveness module can do from the very beginning. During Phase 1, case studies of successful cities can be discussed with stakeholders to illustrate what might be possible and to motivate the stakeholders’ further engagement. During phases 2 and 3, the development, discussion and finalization of policy options are a culmination of the work done as part of the analysis, capacity building and dialogue.

The dashboard itself will be generated starting during Phase 3 and periodically by CPL thereafter. There will be formal setting (perhaps a quarterly steering committee review) where the Mayor of the city will review the dashboard with all relevant stakeholders to take stock of progress and make important decisions. This could be combined with review of other modules of the P3N.

**Methodology:** For city wide economic indicators and sector specific indicators, we will leverage Bank’s deep experience in helping cities and creating Mayor’s dashboards along with deep consultation with all stakeholders. For the third aspect on initiatives, World Bank has significant experience in design and delivery of project monitoring and evaluation (M&E) framework. Typically, the framework includes metrics at input, output, outcome and impact level.

**Timeline and phases:** While some discussion of case studies will take part in Phase 1, the work of this component will start in earnest during Phase 2 and intensify during Phase 3.
An analysis of Indonesian Cities reveal wide variation in economic performance

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<td>9</td>
<td>Bogor</td>
<td>306.9</td>
<td>5.5</td>
<td>13</td>
<td>Medan</td>
<td>5.1%</td>
<td>4.9%</td>
<td>4</td>
</tr>
<tr>
<td>10</td>
<td>Medan</td>
<td>306.9</td>
<td>5.5</td>
<td>13</td>
<td>Medan</td>
<td>5.1%</td>
<td>4.9%</td>
<td>4</td>
</tr>
</tbody>
</table>

A more nuanced story of Indonesian growth over last decade (2000-10)

- Palembang real GDRP grew 3.3% p.a. (lower than the national average) driven one third by population growth and 2/3 by productivity growth
- Denpasar real GDRP grew 6%, but most of it came from population growth (4.2% p.a.) with productivity growth declining (1.7% p.a.)

Source: BPS, Team analysis

Figure 1: Ranking of Indonesian Cities on Economic Performance (2000-10)

Export Performance tool can be used to identify competitive sectors

Case study: Identifying Guatemala’s top exports (World Market Share vs. Growth in World Demand)

Figure 2: Methodology illustration (export performance tool)
Value Chain Mapping tool helps during in-depth study of a chosen sector

Case study: Shrimp Value Chain in Northeast Brazil

Figure 3: Methodology illustration (value chain mapping tool)

Cost analysis tool helps identify challenges faced by a specific sector

Case study: Quantifying and prioritizing constraints in Guyana

Figure 4: Methodology illustration (cost structure analysis tool)
4. **RISKS AND MITIGATION**

The project has a few key risks which have been highlighted in the table below, along with mitigation measures.

<table>
<thead>
<tr>
<th>Key risks</th>
<th>Potential mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>The data for comprehensive analysis does not exist (i.e. quality of analysis is limited due to data gaps)</td>
<td>Creative combination of different data sources will seek to quantify any remaining data gaps and the resulting uncertainty in the analyses</td>
</tr>
<tr>
<td>The data exists but is not delivered, due to coordination failures</td>
<td>Getting a client owner, possibly at MoF or MPW, to act as influential coordinator between agencies</td>
</tr>
<tr>
<td>The data is of poor quality</td>
<td>Data quality tests underway and design of project contingent on agreement on data quality</td>
</tr>
<tr>
<td>Delays or failure to adequately staff the CPL with right talent</td>
<td>Availability of CPL physical space and staff commitment to be used as an engagement criteria with clients</td>
</tr>
<tr>
<td>Project monitoring and governance risk (e.g. Mayor’s dashboard is not used in practice)</td>
<td>Bank will insist on formal institutional arrangements to ensure project monitoring discipline</td>
</tr>
</tbody>
</table>

5. **OUTPUTS**

As indicated above, the following outputs will be produced as part of the City Economic Competitiveness Module:

i. City economic competitiveness review

ii. City economic planning and decision support capacity building

iii. 2-4 Workshops for public-private dialogues

iv. City economic competitiveness initiative roll out and monitoring dashboard

6. **TEAM**

In addition to the regular staff of the City Planning Lab, the expected composition of the technical assistance team specific to this activity is as follows:

(i) Senior Economist, team leader,
(ii) Finance and PSD Specialist,
(iii) Economist,
(iv) Professor of Economics, University of Indonesia,
(v) Head, Competitive Industries Practice,
(vi) Practice Manager, Competitive Industries Practice.

7. **BUDGET AND TIMELINE**

The total budget for the three phases of city competitiveness component for two cities is estimated to be **USD 320,850** including staff, consultant and travel costs. Approximately two-third of cost is concentrated for travel and on the ground work, while a third is for pre and post mission desk based analytics.

The approximate breakdown of the budget along the three phases is USD 121,500 for Phase 1, USD 107,980 for Phase 2, and USD 91,370 for Phase 3.

Significant emphasis is being put on design and implementation (approximately 2/3 of budget) rather than data analysis.

Implementation of the module emphasizes using local expertise complemented with the World Bank’s international knowledge and experience. Bank staff cost (including international experts) is approximately 50% of the budget, while the rest is expected to cover costs of Indonesian experts and consultants and travel.
The module envisages 8 week-long missions to the two cities. To maintain the momentum and continue to build the needed relationships, as well as to provide capacity building on the competitiveness module to the city planners in the City Planning Lab, a local consultant will be hired to be the person on the ground in both cities.
**Annex: Assessment of Data environment**

It must be noted that some of the non-government databases in the table below have solid historical data but weak prospects of periodic updates in future (e.g. KPPOD).

<table>
<thead>
<tr>
<th>Area</th>
<th>Description</th>
<th>Coverage</th>
<th>Period</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>General/background information</td>
<td>City/Kabupaten in Figures; published annually</td>
<td>All cities and kabupaten, nationwide</td>
<td>1990 - 2010</td>
<td>BPS</td>
</tr>
<tr>
<td>General/background information</td>
<td>Household Survey (Susenas)</td>
<td>All cities and kabupaten, nationwide</td>
<td>1976 - 2010</td>
<td>BPS</td>
</tr>
<tr>
<td>Manufacturing sector</td>
<td>Census of medium and large manufacturing companies (with employees more than 20)</td>
<td>Nationwide. Numbers available at city/kabupaten level</td>
<td>1990 - 2010</td>
<td>BPS</td>
</tr>
<tr>
<td>Manufacturing sector</td>
<td>Survey of micro (1 – 4 employees) and small (5 – 20 employees) manufacturing companies</td>
<td>Nationwide. Numbers available at provincial level</td>
<td>2010, 2012</td>
<td>BPS</td>
</tr>
<tr>
<td>Manufacturing sector</td>
<td>Number of small industry establishments and employees</td>
<td>Palembang, Denpasar; available at kecamatan (sub-district) level</td>
<td>2002 – 2012 (varies)</td>
<td>Palembang in Figures; Denpasar in Figures (BPS)</td>
</tr>
<tr>
<td>Services</td>
<td>Survey on manufacturing and non-manufacturing firms in Economic Census</td>
<td>Nationwide</td>
<td>2006</td>
<td>BPS</td>
</tr>
<tr>
<td>Business climate</td>
<td>Subnational doing business assessment on metrics such as days, cost, number of procedures to obtain licenses and permits</td>
<td>14 cities (2010) 20 cities (2012)</td>
<td>2010, 2012</td>
<td>WB – IFC</td>
</tr>
<tr>
<td>Business climate</td>
<td>City/kabupaten rankings and Autonomy Award on economic development, public service, and local political performance</td>
<td>C/K in East Java, Central Java, DI Yogyakarta, South Sulawesi</td>
<td>2009 – 2012</td>
<td>Jawa Pos Institute Pro-Autonomy (JPIP)</td>
</tr>
<tr>
<td>Labor</td>
<td>Labor Survey (Sakernas): survey of employment status, field of work</td>
<td>Nationwide</td>
<td>1976 - 2010</td>
<td>BPS</td>
</tr>
<tr>
<td>Banking</td>
<td>Credit trend lines by sector and by size of firm</td>
<td>Palembang, Denpasar</td>
<td></td>
<td>Bank Indonesia Regional Offices</td>
</tr>
<tr>
<td>Local economy</td>
<td>Gross Domestic Regional Product (GDRP) by economic sector</td>
<td>Nationwide. Numbers available at city/kabupaten level</td>
<td>1990 – 2010</td>
<td>BPS, WB</td>
</tr>
<tr>
<td>Other</td>
<td>Enterprise Survey Transportation Survey Manufacturing Survey SME Survey (underway)</td>
<td>Varies</td>
<td></td>
<td>WB</td>
</tr>
</tbody>
</table>
1. BACKGROUND

Like many rapidly urbanizing countries, Indonesia has seen the growth of informal settlements in many of its cities. The Ministry of Public Work estimates that a quarter of the urban population (roughly 25 million people) lives in slums and informal settlements. While the growth of slums is an indicator of the economic draw of urban areas, it is also a sign of inefficient land and housing markets, and unequal access to urban services. Addressing existing slums is critical to alleviating urban inequality, while prevention of future slum growth and protection of land rights is essential to attracting investment to cities.

Some Indonesian cities have taken innovative and progressive approaches to slum upgrading, and through policies and small investments have managed to upgrade slums into viable neighborhoods for poor urban communities. In-situ upgrading of slums is not always possible, however, since they are often located on risk-prone or contested land.

Most cities are forced to try to address the issue of slums in the absence of vital information. Cities often have no systematic way to answer basic questions about slums, such as:

i. What are the primary causes of slum formation in the city?

ii. How do slum dwellers make location choices?

iii. How have recent government policies or actions (e.g. housing policies, infrastructure and service provision, slum upgrading, formalization, land sales, etc.) affected slum residents and the formation of new slums?

iv. How does a slum household’s intention to invest in or otherwise upgrade their dwelling correlate with other factors, such as tenure security, income, duration of residence, etc.?

v. What determines prices/rents in slums, e.g. tenure security, distance from various amenities, etc.?

vi. How can slum areas be classified in terms of their origins, characteristics, or expectations of future growth, in order to devise the most appropriate government responses?

In order to answer these and other questions, slum analytics and management systems will be a key strategic activity of the City Planning Lab (CPL). The slum information database produced as part of this work will be an important input into decisions on investments in basic infrastructure and services, helping devise appropriate interventions and target them to areas of greatest need. It will also help cities devise more effective slum policies and regulations.

Performing this activity as part of the broader City Planning Lab initiative will take advantage of several synergies, as the findings will both feed into and benefit from the analytical work in parallel modules. The findings on distribution of slums will support the work on spatial growth analytics, which in turn will help provide spatial context to the growth of slums. It will also be a strong indicator of where the demand for affordable land is likely to be highest, which will add value to the land market analytics module. The slum analytics and land market analytics together can help the city identify and proactivity respond to high demand for land before new slums emerge. The module on disaster and climate risk resilience will help identify vulnerable slums. Not only will these synergies provide efficiency through shared data and analysis, they will also ensure that the analysis done by the CPL as a whole puts special emphasis on the most disadvantaged populations.

2. OBJECTIVES

The main objective of this module is to assist partner cities in improving the management of
Slum areas, using detailed information and mapping of slum areas and vacant lands. Technical assistance provided under the module will consist of three components with specific objective as follows:

Component 1: Slum mapping and information systems:

The objective of this component is to help the city develop and maintain a geo-referenced database of slums, using satellite imagery and other data sources to provide an overview of the slum situation, as well as a survey in selected areas recording attributes such as legal status, year of construction, quality of construction, disaster risk, price/rent, access to urban services, access to transportation networks, etc. This database would be managed and maintained within the City Planning Lab, and would allow slum-related policies to be informed by an empirical understanding of the needs of slum communities.

Component 2: Slum management framework:

The objective of this component is to use the analysis emerging from the City Planning Lab’s database developed in component 1 to formulate a medium-term program for a citywide strategy and investment program targeting existing slum areas. This includes identifying slum areas that are suitable for in-situ upgrading, and those which are vulnerable to disaster risk and where resettlement may be required. This slum management framework would outline strategies for community participation, institutional capacity building, and investments.

Component 3: Managing new slum growth:

The objective of this component is to work with city leaders to develop strategies to prevent growth of new slums in areas identified as vulnerable to disaster risk or planned for public use.

3. SCOPE OF ACTIVITIES

In keeping with the other CPL modules, the activities in this module will be conducted in three phases of six months each. Component 1 will be completed at the end of phase 1. Components 2 and 3 will begin at the start of phase 2 and will carry over into phase 3 (see timeline below). The duration of the complete module is 18 months.

Component 1: Slum Mapping and Information Systems

This component will be divided into three stages, as follows:

1A: Creation of a basic Slum Information Database

This stage will involve the creation of a basic version of the GIS database on slums (a part of the CPL’s broader database) populating it with all information on slums that can be derived from satellite imagery and field visits. The goal will be to develop a preliminary picture of the situation in the city with regard to slums. The tasks for this component in this stage would include:

i. Gathering existing spatial data on the location of slums in the city from government and other sources;
ii. Converting the above data into standard, non-proprietary formats (e.g. shape files, KML files), digitizing paper maps where necessary, and recording the associated metadata;
iii. Using satellite imagery (e.g. Google Earth) to identify possible slum areas in the city;
iv. Conducting field visits to these areas for verification (with photographic documentation of slum areas during visits);
v. Using data collected from all the preceding steps to create a GIS map of slums in the city. Each slum area will be represented as a polygon depicting the boundaries of the slum area, and associated with a table of
attributes reflecting all the available data for each slum; and

vi. Uploading all unclassified data to the local government website in the form of PDFs and GIS files, as well as to an open source web-based mapping service (e.g. OpenStreetMap).

1B: Additional secondary data collection

This stage will involve gathering additional secondary data that can help develop a more complete picture of the characteristics of slums and slum households, and inputting this data into the Slum Information Database. Tasks during this phase will include:

i. Gathering and inputting into the database, in the standard format, all available data on demographic and socio-economic characteristics of slum and non-slum households, citywide land ownership, zoning, disaster risk, transportation infrastructure and routes, utilities (water, sanitation, drainage), and other relevant data;

ii. Adding all unclassified data collected during this phase to the open source web-based mapping service used in component 1A.

1C: Primary data collection and analysis

This stage will involve conducting household surveys to collect primary data in selected slum areas, to further develop the database and contribute to a more robust understanding of the slum areas. Tasks during this phase will include:

i. Designing a methodology and questionnaire for a household survey, covering a significant number of random households in selected, high-priority slum areas. (See Annex section for an indicative list of the kinds of household attributes that may be included.)

ii. Gathering feedback on the survey design and site selection from local government counterparts and external stakeholders and refining it accordingly;

iii. Conducting the household survey, while also recording constraints faced while conducting the survey (e.g. households inaccessible, households declining to respond, gender/age bias in respondents, etc.);

iv. Adding all information to the Slum Information Database, with metadata;

v. Analyzing the data obtained from all phases, through regression analysis and other means, in order to answer the questions listed in the ‘Rationale’ section above and others.

Component 2: Slum Management Framework

This component aims to formulate a medium-term program for a city-wide strategy and investment program targeting existing slum areas. Activities in this component would include:

i. Identifying slum areas that are suitable for in-situ upgrading, and those which are vulnerable to disaster risk and where resettlement may be required.

ii. Creating the typology of existing slum areas based on its characteristics such as type of dwelling, dwellers, tenure status, land ownership, etc., identified and analyzed in Component 1 above.

iii. Developing strategies based on the typology of area, which includes site analysis, building and urban design, land management, financial assessment, and temporary shelter. This would utilize the phase 1 outputs of the other CPL modules.

iv. Outlining strategies for community participation, institutional capacity building, and investments for pilot sites, selected based on discussion with the city government.

v. Developing a program of future activities to implement the selected strategies, in coordination with related government agencies.
Figure 1 A and B: The City of Sao Paulo in Brazil has a sophisticated online housing information system called HABISP featuring maps with data on slums and other low-income housing.
Component 3: Managing New Slum Growth

This component aims to develop strategies to prevent the formation of new slums in areas of high risk or those reserved for public use.

Activities in this component will include:

i. Together with the team working on the disaster risk module of the CPL, identifying all currently vacant land in the city that is: (a) prone to disaster risk (using existing data); or (b) identified in the current city spatial plan as usable for public purposes, documenting the ownership status of all such land (private or public, and if public, which agency), and inputting this data into the Slum Information Database described above;

ii. Developing an understanding of the process by which land is encroached by slums in the city, using case studies or other means;

iii. On the basis of this understanding, making recommendations for strategies to safeguard the land identified in task (i) above. These recommendations should address:
   a) reforms to regulations;
   b) reforms to enforcement procedures;
   c) capacity building of relevant institutions;
   d) reforms to the process of land use planning;
   e) public awareness strategies; and
   f) community-based prevention and participation strategies.

iv. Working with local government agencies to help them implement the recommended strategies.

Workshops

In order to ensure that the technical assistance activity is useful to the city at every stage, the team will conduct workshops in order to share the results of the work done so far, as well as to receive guidance from government leaders on future directions.

i. A kick-off workshop will be held in order to discuss the work ahead and establish working procedures;

ii. An interim workshop will be held in month 7, to share the findings and recommendations of all activities completed up to that point, including all of component 1, and to develop plans for the collaboration with the counterparts for the remaining duration.

iii. A wrap-up workshop will be held at the completion of all activities, to discuss plans for government agencies and/or donors to carry on the work, and reflect on lessons learned.

4. RISKS AND MITIGATION

The primary risk with this activity is that the information from the database built as part of the first component and the recommendations that emerge from the second and third components will not be mainstreamed into either the day-to-day decision making with regard to municipal actions affecting slums, or into the long-term visioning and planning for the city.

The team will address this potential risk by working closely with the staff of various city agencies during the various activities, under the City Planning Lab framework, as well as periodically consulting with city leaders through workshops, in order to ensure that the data collected and the recommendations for slum policy are relevant to the city’s needs.
5. **OUTCOMES**

The following outputs are expected from the technical assistance:

**Component 1: Slum Mapping and Information Systems**

i. All data gathered during all three stages, with metadata, transferred to the Bank team and to the relevant government agency as digital files in a standard format, and uploaded to an existing online mapping service;

ii. A report describing: (a) hosting options; and (b) future enhancements to the database.

iii. All materials associated with survey, including:
   a) completed questionnaires (may be in original language of survey, may be scanned hard copies);
   b) a spreadsheet displaying the data collected; and
   c) a report briefly describing methodology and constraints, and summarizing the findings.

**Component 2: Slum Management Framework**

i. A report outlining typology of existing slum areas in the city and strategies for its management.

ii. Selection of slum area sites as pilot projects for implementing strategies and the programming of activities for implementation.

**Component 3: Managing New Slum Growth**

i. Layers in the GIS database mapping vacant land, hazard-prone vacant land, and vacant land zoned for public use, with all available associated data, including ownership;

ii. A report outlining:

   a) the process of slum formation, as observed through case studies; and
   b) recommendations for strategies for preventing slum growth in disaster-prone or strategic areas, as described earlier.

6. **TEAM**

In addition to the regular staff of the City Planning Lab, the expected composition of the technical assistance team specific to this activity is as follows:

i. Urban Planner as Team Leader
ii. Social/Low-income Housing Specialist
iii. Economist
iv. Community Development Specialist
v. GIS Specialist
vi. Urban Design Specialist
vii. Governance/Institutional Specialist

7. **BUDGET AND TIMELINES**

This module will be carried out in three phases of six months each. The total cost for **two cities** is estimated at **USD 236,600**. This is broken down into phases of USD 109,800, USD 74,700, and USD 52,100 respectively. (A detailed budget breakdown is attached.)
Annex: Data Collection

The following is an indicative list of the kind of information gathered from primary and secondary sources and input into the slum information database:

Slum attributes:

1. Name
2. Location – jurisdiction
3. Location – description (urban core or fringe area)
4. Year of establishment
5. Area of slum (sq. meters)
6. Land use surrounding slum (residential/commercial/industrial/other)
7. Physical location of slum (along road/along railway tracks/river side etc.)
8. Legal status of slum (provide details)
9. Ownership of land
10. Estimated population
11. Estimated no. of households
12. Primary source of water
13. Primary sanitation facility
14. Primary means of garbage disposal
15. Connectivity to citywide water supply system (fully/partially/not connected)
16. Connectivity to citywide storm-water drainage system
17. Connectivity to citywide water sewerage system
18. Flooding risk (no flooding/floods 15 days a year/15-30 days/more than 30 days)
19. Frequency of garbage disposal
20. Frequency of clearance of open drains
21. Condition of access road to slum (paved/unpaved, motorable/unmotorable)
22. Condition of internal roads
23. Distance from nearest motorable road
24. Street light availability

Household Attributes:

1. Name of slum
2. Address (house no., street)
3. Existence of formal street addressing
4. No. of family members
5. No. of school-age children
6. No. of disabled people
7. Land tenure status
8. Type of structure (permanent/temporary)
9. Construction material used in floor
10. Construction material used in roof
11. Source of light
12. Source of cooking fuel
13. Source of drinking water
14. If piped water, duration of availability during the day
15. If outside source of water, distance from dwelling
16. Existence of toilet facility
17. Bathroom facility
18. Condition of road in front of house
20. No. of years in current dwelling
21. Migrated from (urban/rural)
22. Reason for migration
23. Migration type (seasonal/permanent)
24. No. of earning adult family members
25. No. of earning non-adult family members
26. No. of non-family adult members (specify if renter)
27. Avg. monthly income of HH
28. Avg. monthly expenditure of HH
29. Debt outstanding as on date of survey
30. Educational qualifications/training of adult members
31. Employment status (self-employed/salaried/casual labor/others)

32. Place of work (within/ outside slum)
33. Length of daily commute
34. Mode of daily commute
35. Monthly earning
36. Source of income
37. Income-generating activity within dwelling unit (home-based industry/commerce)
38. If unemployed, main reason for unemployment
39. Acquisition of dwelling unit (self-built/bought/rented)
40. Price/rent of dwelling unit
41. Income from renting space in dwelling unit
42. Intention to invest/upgrade dwelling
43. Intention to move away
44. Major constraints to formal housing

Business attributes

1. Type of business
2. Average monthly/annual earnings
3. Seasonal/regular
4. No. of household members employed
5. No. of hired employees
6. Resource needs of business (water/power)
7. Waste produced by business
8. Means of waste disposal
9. Spatial needs of business (must be easily accessible to public, e.g. in a market place/space needed for production or processing/other)
10. Intention to expand (none/more employees/more space)
SECTOR MODULE D: DISASTER AND CLIMATE RESILIENT PLANNING ANALYTICS

NATIONAL URBAN DEVELOPMENT PROGRAM
TECHNICAL SUPPORT FACILITY
INDONESIA
1. BACKGROUND

Indonesia’s rapidly growing urban population is particularly vulnerable to natural disasters. More than 110 million people in roughly 60 cities, mostly located in coastal areas are exposed to hazards including tsunamis, earthquakes, flooding and impacts of climate change. With nearly 70 percent of Indonesia’s population expected to live in urban areas by 2025, coupled with the increasing wealth of the population, Indonesian cities are increasingly vulnerable to both large-scale and persistent natural hazard events.

The limited capacity of urban centers to absorb new residents because of lack of fundamental infrastructure investments has also resulted in the creation of many unplanned settlements. Inadequate zoning and lax enforcement led to the occupation of many hazard-prone locations. The Ministry of Public Work estimates that a quarter of the urban population (roughly 25 million people) lives in slums and informal settlements. Indonesia’s unique geological setting and the complexity of its population settlements has generally led to more disasters causing greater damage (loss of life, economic impacts etc).

Although hazardous natural events cannot be prevented, the severity of their consequences can be minimized or even avoided through disaster and climate sensitive urban development coupled with better community preparedness and enhanced coping capacity to achieve greater city/urban resilience. Climate change and variability in the near and long term can only increase the level of risk. In addition to higher intensity meteorological events such as floods and droughts, the climate also influences food production patterns and outputs, creating additional uncertainty in the event of a disaster that further exacerabtes its impact.

While there is growing awareness of the need to address the impact of climate variability and change, more accurate identification of vulnerability and evidence-based response and adaptation measures must be developed. Cities also often lack the fiscal capacity to initiate programs that require sophisticated technical expertise and dedicated investment.

In preparation for addressing topic, World Bank team has engaged in disaster and climate risk reviews in six cities. The purpose was to take stock of the baseline information on climate and disaster risks and identify critical gaps in addressing the cities’ risk sensitive planning and investment needs thereby setting the priorities for this proposed module on disaster and climate resilient planning analytics.

The current urban planning practice in Indonesia still consider hazards and risks from disaster and climate change only as constraining parameters in the selection of sites suitable for development. Where the risks originate and how existing growth trends and investment will impact or be impacted by the pattern of disasters have not been thoroughly analyzed during the planning process.

As part of the objective of National Urban Development Program (P3N) to establish technical capacity to measure, analyze and respond to urban development pressures in evidence-based and timely manner, a Disaster and Climate Resilient Planning Module is needed to address the following challenges:

- The gap in high-resolution hazard and exposure information required for a detailed city-level planning;
- The absence of policy instruments and practical guidelines to introduce disaster and climate resilient practices into detailed spatial plans and city level infrastructure investments decisions.
- The lack of customized geospatial analytical tools to conduct risk analysis that can easily integrate various data sources and facilitate the implementation of risk sensitive planning;

Addressing these issues will be a key strategic activity of the City Planning Lab (CPL) to take
advantage of several synergies, as the findings will both feed into and benefit from the analytical work in parallel modules. The Spatial Growth Analytics and Slum Analytics and Management Systems modules provide data that when combined with the climate and disaster risk analytics can provide valuable insights into the largest potential threats to the city’s future growth.

2. OBJECTIVES

The primary objective of the Disaster and Climate Resilient Planning Module is to provide essential risk information and analytics to measure, analyze and identify options to address urban development pressures from disaster and climate related hazards. The overarching objective of the work across the three components will be building the capacity of local agencies in undertaking thorough and integrated but practical analysis incorporating disaster and climate risk management options into city investment program. The methods and approaches used during these activities may be adopted and continued by local agencies beyond the timeframe of this engagement and become standard practice in the city’s approach to resilient urban management inclusive of land use and infrastructure planning. The specific goals that will be fulfilled include:

Component 1: Filling risk information and data gaps

This component will compile or develop baseline hazard and asset exposure data as essential inputs for climate and disaster risk analyses that inform planning and investment decisions. Priority areas identified in the climate and disaster risk review through area-focused and risk-based approach as needing higher resolution data will be addressed developed by combining several potential information sources. Expert sources at technical agencies or universities, as well as participatory methods to engage the community and civil society are critical to developing robust hazard and exposure data. There will be an element focused on improved data sharing and management. In coordination with the core CPL, this will include both the platform software that can integrate with other P3N activities and the policies that can be established for city agencies in line with the guidelines set out in the National One Map Initiative of the Geospatial Information (BIG).

Component 2: Establishing capacity to carry out detailed land use planning and infrastructure investment screening

This component will specifically build the capacity of targeted cities to implement the three options for disaster and climate risk management through translating the preventive, avoidance, and adaptive approaches into practical targeted investment under the slum management and urban growth modules of the City Planning Lab of the National Urban Development Program (P3N). This is to enable the use of risk information to support resilience in key sectoral operations such as land-use zoning and infrastructure planning. In coordination with regional divisions of the Ministry Public Works’ DG Spatial Planning, a pilot of detailed risk-sensitive spatial planning will be carried out to showcase evidence-based planning enforcement/action instruments.

Component 3: Developing tool for practical Climate and Disaster Risk Analysis

This component will enable the integration of risk information into the City Planning Labs data platforms and analytical capabilities based on the guidelines developed in Component 2. The risk data can be accessed by analytical modules to support different planning functions within the city government (e.g., zoning, infrastructure, community actions/development). The current Indonesia Scenario Assessment For Emergencies (InaSAFE) which is still focused on contingency planning application will be expanded with additional analytical modules. This component will use the baseline risk information generated in the first component as the data stream.
Figure 1A and B: The InaSAFE tool which supports better disaster risk reduction decision-making by providing a simple yet rigorous approach to analyzing the likely effects of future disaster events or climate change scenarios.
3. **SCOPE OF ACTIVITIES**

The activities in this module will be conducted over a span of 18 months split into three month increments for initial planning purposes.

**Component 1: Baseline Risk Information and Participatory Mapping**

This component will be divided into three sub components, as follows:

1A **Baseline information on hazards**

This sub-component will involve the creation of a basic version of the GIS database, and populating it with all information on key hazards. National-level agencies such as BNPB, Badan Geologie, and BMKG as well as Universities are producing highly technical, scientific information on hazards and risk. However, with improved coordination and capacity development, cities can take better advantage of existing information and be aware of gaps and need to invest in better data to support local level resilience activities. New hazard information needs will be identified during phase 1 of the risk review. For example, if a city is planning micro drainage investments, ideally there needs to be a detailed flood hazard model to develop risk-sensitive design standards as well as the necessary micro zoning in the surrounding areas.

The tasks for this component in this phase would include:

1. Gather existing spatial data on hazards affecting the city from government and other sources identified in the risk review; Convert the above data into standard, non-proprietary formats (e.g. shapefiles, KML files), digitizing paper maps if necessary, and recording the associated metadata;
2. Develop new scenario or probabilistic hazard data based on the specific needs defined in scoping phase;
3. Confirm that all hazard data is formatted in InaSAFE-compatible files;
4. Determine data sustainability issues including methods for updating, guidelines for licensing and official usage. This activity would be coordinated with the core CPL components.

1B **Participatory mapping to develop baseline administrative boundaries, public asset inventory of critical infrastructure, and past hazard event or hazard prone data.**

This sub-component will involve gathering information to create a GIS enabled database of Kelurahan and RT-RW (ward/neighborhood) boundaries, public assets including critical infrastructure, and detailed GIS data of past hazard events. The methodology will follow BIG’s draft Standard Operating Procedures developed under the Participatory One Map Initiative (POMI). Tasks during this phase will include:

1. Evaluate the resolution of freely available satellite imagery through OpenStreetMap platform;
2. Establish working group of technical stakeholders for the participatory mapping, provide training for group to learn OpenStreetMap tools and platform;
3. Gather existing spatial data on RW-RT, public assets from government and other sources, perform basic validation and/or conversion into standardized GIS format;
4. Organize community workshop with OpenStreetMap training to gathering information on critical infrastructure for baseline data;
5. Collect data on past hazards to develop maps of hazard prone areas at the RW-RT level;
6. Conduct quality assurance and validation of each data set.
Institutional data management and sharing

It is necessary to establish good protocols for data sharing between government stakeholders and with the broader community of civil society, private sector.

i. Workshop with key stakeholders to review existing data sharing process and to present options for implementing;

ii. Customization of data sharing agreements based on workshop feedback.

Component 2: Resilient Land Use Planning and Infrastructure Investment Guidelines

The risk-based and area focused land use planning component aims to: i) identify and mitigate the root cause of disaster risks embedded in existing land development practices through regulated use of land in hazard-prone areas and building codes, ii) promote controlled urban growth without generating new risks, ‘building back better’ through rebuilding and upgrading infrastructure using hazard-resistant construction in accordance with a comprehensive plan. In close coordination with an operationalized risk-based land use planning mechanism supported by the Ministry Public Work’s Directorate General of Spatial Planning, cities can be supported in make detailed spatial plan as the basis for locational decision of investments that have the primary purpose of risk reductions such as urban drainage and flood control or screening mechanisms that would introduce resilience criteria in infrastructure design, construction and economic development more broadly. The activities under this component will include:

i. Dissemination of the detailed risk-sensitive spatial planning principles and guidelines and their practical implications to city operations and urban management;

ii. Visioning exercises and mentoring to catalyze a holistic analytical-based planning process informed by the data developed in Component 1 in which disaster and climate risk management serve as the norm for balancing city’s growth and community resilience (i.e., green development) for key investment in city services such as utility, transport/mobility and natural landscape and water management;

iii. Conduct participatory planning workshop targeting selected high-risk areas in the cities to present sectoral implications and options for rezoning, redevelopment and adaptive investment. This exercise will reinforce the use of detailed spatial planning process as action instrument to ‘enforce’ the spatial plan;

iv. Develop risk-sensitive planning and investment guidelines through the translation of the vulnerability and site planning spatial analysis into detailed zoning map and its descriptive land use designation and restriction.

Component 3: Climate and Disaster Risk Analysis Tools

Using the hazard and asset exposure data collected in Component 1, it will be possible to conduct a baseline risk analysis for the city. It is important that capacity be built within the CPL to easily use the results and conduct various secondary analyses related to planning and urban management. This project will leverage the InaSAFE tool which supports better disaster risk reduction decision-making by providing a simple yet rigorous approach to analyzing the likely effects of future disaster events or climate change scenarios. Under this component, this tool will be adapted and applied in support of analytics for various risk sensitive land use and infrastructure investment planning. The activities under this component will include:

i. Expand user need assessment based on priorities identified in the risk review for spatial analysis of disaster and climate risk impacts to support various city level sectoral and area-based planning;

ii. Design of user-friendly GIS functionality within the software architecture of
InaSAFE that is compatible with the spatial data infrastructure of the CPL;

iii. Develop demonstration version testing of InaSAFE in the CPL to show results of baseline analysis;

iv. Customize modular tools to support integration of risk analytics into detailed spatial planning and infrastructure investment screening as defined by the guidelines in Component 2; and

v. Training and integration of the tool into the CPL’s core functions.

Workshops

In order to ensure that the technical assistance activity is useful to the city at every stage, the team will conduct overview workshops in order to share the results of the work done so far, as well as to receive guidance from government leaders on future directions. The workshops are also important opportunities to foster partnerships between the local government leaders, CPL, Universities, and Civil Society groups. These meetings will be in addition to the participatory activities embedded within individual components.

i. A kick-off workshop will be held in order to discuss the work ahead and establish working procedures including government leadership for the participatory mapping exercises of Component 1;

ii. An interim workshop will be held in month 7, to share the findings and recommendations of all activities completed up to that point, including all of component 1 and 2, and to develop plans for the collaboration with the counterparts for the remaining duration.

iii. A wrap-up workshop will be held at the completion of all activities, to discuss plans for government agencies and/or donors to carry on the work, and reflect on lessons learned.

4. RISKS AND MITIGATION

The primary risk with this activity is that the information from the database built as part of the first component, the analytics from the second and the recommendations that emerge from third components will not be mainstreamed into either the day-to-day decision making with regard to municipal actions building disaster and climate resilience, or into the long-term visioning and planning for the city.

The team will address this potential risk by working closely with the staff of various city agencies during the various activities, under the City Planning Lab framework, as well as periodically consulting with city leaders through workshops, in order to ensure that the disaster and climate risk data collected and resilient planning guidelines are relevant to the city’s needs.

5. OUTPUTS

The following outputs are expected from the technical assistance:

Component 1: Baseline Risk Information and Participatory Mapping

i. All data gathered during all three stages, with metadata, transferred to the Bank team and to the relevant government agency as (a) digital files in a standard format, (b) uploaded to an existing online mapping service, (c) selection of hard copy maps for key data sets professionally designed for display in city offices;

ii. Partnership agreements, data sharing between key data providers and the CPL. Establish an extended network of technical experts to provide future advisory services on climate and disaster risk assessments.
iii. A report describing: (a) hazard modeling methodology, including resolution and limits of use for output hazard maps data, (b) strategy for the maintenance and/or updating of the data, (c) summary of the data sharing and management workshop;

iv. Materials associated with the participatory mapping exercise, including:
   d) Field survey templates;
   e) Extracted and GIS files;
   f) Customized training materials; and
   g) A report briefly describing survey and quality assurance methodology, roster of trained volunteers and city staff, and summarizing the findings.

Component 2: Resilient Land Use Planning and Infrastructure Investment Guidelines

i. A report outlining:
   c) the drivers of disaster and climate risk to core sectors and areas/neighborhoods;
   d) risk-sensitive micro zoning maps; and
   e) recommendations and practical roadmap for implementing the resilient landuse and infrastructure investment guidelines.

Component 3: Climate and Disaster Risk Analysis Tools

i. A report outlining the users’ needs assessment findings and design criteria for the customization of the InaSAFE tool.

ii. Users’ manual, support documentation, and detailed training materials for InaSAFE.

iii. Fully deployed and bug tested installation of InaSAFE software on CPL servers.

6. TEAM

In addition to the regular staff of the City Planning Lab, the expected composition of the technical assistance team specific to this activity is as follows:

7. BUDGET AND TIMELINE

This module will be carried out in three phases of six months each. The total cost for two cities is estimated at USD 250,000. (A detailed budget breakdown is attached.)
Annex: Data Collection

The following is an indicative list of the kind of information gathered from primary and secondary sources during the scoping phase:

<table>
<thead>
<tr>
<th>Types of Data</th>
<th>Source</th>
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<tr>
<td><strong>Physical condition of the city</strong></td>
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<tr>
<td>Topography</td>
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<td>Total population by age</td>
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<td>Density</td>
<td>Statistic Agency</td>
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<td>Growth and projection</td>
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SECTOR MODULE E: MONITORING LAND AND REAL ESTATE MARKETS

NATIONAL URBAN DEVELOPMENT PROGRAM
TECHNICAL SUPPORT FACILITY
INDONESIA
1. BACKGROUND

As in many rapidly urbanizing economies, the net worth of new constructions in the real estate market of Indonesia constitutes one of the largest sectors of annual investment and contributors to the GDP. The share of the construction sector in the GDP was 10.4 percent in 2012 – approximately a 90% increase from a 5.5-percent share in 2000 (Bank Indonesia, 2013). Real estate and construction sectors are among the major drivers of economic growth, along with transportation, communication and finance sectors. Growth in the construction sector, for instance, has outpaced the total annual GDP growth between 2000 and 2012 been by a factor of 1.45 times on average (Bank Indonesia, 2013). Between 2007 and 2011, 36 to 43 percent of all annual construction occurred in real estate products (Suraji, Pribadi & Ismono, 2012). Although an accurate assessment of the total value of the real estate market in Indonesia is not available due to lack of reliable data, a rudimentary estimation based on The Wealth of Nations Dataset of the World Bank (2005) suggests that urban land and structures that occupy it constitute approximately 20 percent of Indonesia’s $4.36 trillion total wealth. Given its durability, this large bundle of assets forms an important part of long-term national assets in Indonesia.

Given the considerable importance of the land and real estate market for the economy, Indonesia’s cities would benefit from ensuring their efficient functioning. At present, however, most medium and large-scale municipal governments in Indonesia lack the institutional capacity to monitor the performance of their land and real estate market, or assess the impact of their policies and regulatory decisions on this market. The cities are unable to forecast the rapidly increasing demand for residential, commercial and industrial land for Masterplans and land use plans, and supply consequently does not meet demand. Resilient economic growth in Indonesia cannot be achieved without informed land and real estate policies that guarantee the availability of affordable space in demanded locations for living, working as well as recreation. As land and real estate markets provide space for all economic activities, they naturally impact various sectors of the economy. An inadequate provision of residential land, for instance, may inflate housing prices everywhere and trigger an increase in informal settlements, which in turn reduce the population’s spending capacity for transportation and other vital expenditures.

In the absence of an understating of how real estate and land markets function, rapidly urbanizing cities of Indonesia expand on natural resources and agricultural land even before all existing urban land and infill development sites are exploited. Furthermore, lacking reliable data and analytics on land and real estate markets, Indonesian cities are unable to foresee and prevent abrupt fluctuations and bubbles in these markets. Lacking an empirical understanding of metropolitan growth, argues David E. Dowall (1995), leads to a “blind flight” for local governments and a failure to effectively deal with rapid population change and land development.

In order to address these limitations and necessities, this concept note proposes to integrate a Land and Real Estate Market Monitoring Module to the planned activities for the P3N City Planning Lab facilities in two pilot cities in Indonesia. It discusses the needs and objectives for necessary land and real estate market monitoring and lays out the proposed activities.

This module is envisioned to be closely integrated with CPL’s core Spatial Growth Analytics module, since the way that physical expansion and internal restructuring take place, is largely determined by and reflected in the land and real estate market. Cities grow or change internally when the supply side of the market responds to changes in demand for different land uses by a) converting peripheral non-urban land to urban

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4 The total wealth estimate includes human and natural resources.
use, b) changing land-use designations internally, c) adding infill development and densifying, or d) changing occupancy levels on existing land uses. All these scenarios are monitored in the proposed Spatial Growth Analytics module.

The present module is also connected to the Slum Analytics and Management Systems module, which collects and analyzes data on the informal housing and commercial land uses.

2. OBJECTIVE

The primary objective of CPL’s land and real estate market monitoring module is to enhance the resilience and efficiency of these markets through supporting evidenced-based planning, policy and investment decisions. This includes projecting future demand for land and different types of real estate products – residential, commercial, industrial, institutional – and integrating the projection into Masterplans, detailed plans and regulatory development policies. Reliable information about the projected demand will allow municipal planning agencies to make sure that enough affordable land and real estate will be supplied in desired locations, and that the agricultural to urban land use conversion along with the destruction of natural resources is not over exploited.

The module will also help cities foresee and prevent potential bubbles and sudden fluctuations in the land and real estate market. This requires an understanding of how the land and real estate market performs in the context of the broader capital market, and how the real estate space and asset markets are related. The module will help local governments of the pilot cities foresee the impact of shifts in other sectors of the economy on the real estate market, and conversely predict shifts in other sectors of the economy triggered by real estate and land market changes.

The module will also inform the local finance and tax agencies of the current and projected state of the land and real estate market, and of investment/revenue opportunities, which can help improve the efficiency of their mortgage plans and taxation systems respectively. CPL staff, together with infrastructure and transportation departments, will explore value capture taxation systems as potential ways of unlocking financing for much needed infrastructure improvements.

3. SCOPE OF ACTIVITIES

Addressing the objectives above, the activities for the Land and Real Estate Market Monitoring module in the two pilot cities are proposed as follows:

3.1 PHASE 1: COMPILING THE LAND AND REAL ESTATE DATABASE (MONTHS 1-6):

In line with the core module, the CPL will first assemble all real-estate and land market related datasets that already exist in different government departments, integrate them and host them for cross-departmental viewing on an online map server. Existing datasets that are important for monitoring the land and real estate market include:

- **Cadaster:** land parcel dataset containing ownership, occupancy, use – by sub-type e.g. single family, multifamily and mixed residential – coverage, FAR, and assessed value data. Additional attributes, such as size, frontage and distance to nearby amenities can be calculated for each land parcel by CPL staff.

- **Buildings:** building footprints containing ownership, occupancy, use (by built area and sub-types), past sales transactions and assessed values. A reliable building dataset that distinguishes building types is needed for evaluating the total supply of different types of real estate products on the market. Overlaying the building dataset with the cadaster will also provide the total supply of land that is available for development within the currently urbanized extent of each city.
Figure 1: Example analysis: Distribution of building types in Singapore.

Figure 2: Example dataset: Price range of flats offered by the Housing Development Board in Singapore.
Source: HDB.
• **Road Network**: the road network is essential for performing accessibility measurements for each building and parcel. Location, or more accurately the accessibility of a location, is the main indicator of land and real estate value.

• **Public Transit networks**: In addition to road-level accessibility, land values also depend on available transit options. All forms of public transit (e.g. bus, minibus, regional lines) can impact land and real estate values.

• **Points of Interest**: accessibility to amenities and businesses is also known to impact land and real estate values. Proximity to commercial destinations and other desirable venues or establishments, such as parks, hospitals, or museums – can be measured on the available road and transit networks in different parts of the city.

• **Census and Household Survey Data**: these datasets are essential for estimating the demand side of the market.

• **Rents and prices**: Available sales and rental prices for different property types (e.g. housing, retail) and subtypes (e.g. 1-Bedroom Apartment) will be collected from the main brokerage firms in each city. If possible, then each observed transaction should also indicate how long the unit was on the market and illustrate other general characteristics of the larger building complex the unit is part of. This data may be available at address level resolution, at a zone or street-level resolution.

• **Upcoming developments**: Information should also be collected about all real estate development projects that are currently under construction or otherwise planned to be completed. Approximate type and size of each development should be listed and an approximate date of delivery recorded. This will allow the CPL staff to account for future supply additions in estimating the needs for land and real estate products in five-year and twenty-year master plans.

• **Defining Analytic Zones**: The first step for conducting property market analysis is to divide the cities into value zones based on their location, accessibility, uses, assessed values, and morphological properties – e.g. plot size, frontage, FAR. The type of land and buildings in each zone should be as homogenous as possible. The census data and household survey data will be associated to each zone.

• **Supply and Demand Estimation**: The data collection efforts in Phase One will be concluded by developing a supply and demand estimation for different real estate products in each zone, providing a fundamental basis for both real estate analysis and spatial planning. The supply of land includes non-developed lands that are available for development, as well as lands that can be converted to other uses or densities – e.g. conversion of single family housing to multifamily housing. The analysis will yield an estimated supply and demand overview for different real estate products in different parts of the city based on assessed values. The estimation of the demand side of the market, however, will rely on census data and household surveys (e.g. household size, and household income), as well as financing options. The latter will require collecting data from local banks and mortgage brokers. Although the assessed values may be significantly lower than the real values, they can provide an indication of spatial shifts in the market. The results will be later compared to and synthesized with the land and property market surveys in Phase Two.

### 3.2 Phase 2: Surveys (Months 6-12):

In the second phase of the project, CPL will carry out two surveys with local real estate brokers to compile a database of observed real estate market transactions and to develop an
understanding of the segmentation of households by housing market access.

- **Land and Property Market Assessment:** CPL will carry out a land and property market assessment survey using the methodology outlined in Dowall’s 1995 Land Market Assessment (LMA) and a simplified update from 2010. The survey involves interviewing experienced land brokers in each city to determine the prices for prototypical land parcels in different parts of the city. These property values are expected to differ from official assessment estimations, which often undervalue properties for tax reasons. One additional improvement to Dowall’s original LMA strategy is to exploit more easily accessed satellite imagery in the categorization of housing stock. Bertaud (2008) outlines this approach and draws attention to the importance of incorporating considerations for transportation infrastructure and urban growth patterns in LMA. CPL staff will be trained to carry out the survey periodically in the future and to use the results of the surveys as the basis for evidence based policy recommendations in the land and housing sectors, and to also enable infrastructure projects to be developed and financed in a more integrated manner from the outset.

- **Housing Market Segmentation Study:** CPL will perform a household survey that assesses the mechanisms through which people access housing in different income groups. The study is expected to yield important information about actual housing demand and supply for different unit types. Disaggregating housing demand into market segments (based on income or on other criteria) is an important step in understanding how the housing market functions as a whole, and in identifying the distribution and trends of demand across segments. Different segments of the population access and combine the basic inputs into housing (Land, Finance, Materials and Labor) using a range of different methods. Analyzing these different variables and streams of supply, as well as the bottlenecks they face, is a crucial step in formulating more precise and targeted Government housing programs.

These two survey activities will follow the approach outlined in the recent World Bank document, “Land and Property Market Assessment - Housing Market Segmentation Study: Existing Tools and Survey Strategy”.

### 3.3 PHASE 3: LAND AND REAL ESTATE ANALYTICS (MONTHS 12-18):

The analytics proposed below will form the basis for real estate and spatial planning in the pilot cities. In addition to being a platform for conducting land and real estate analytics, CPL will assist the pilot cities in incorporating the analysis into their real estate and spatial planning.

- **Accessibility and Land/Real Estate Value analysis:** Along with the accessibility analysis in the core module, CPL will analyze the impact of accessibility to surrounding land uses and amenities on land and real estate values. This analysis will extend in the final phase to a full hedonic pricing model that takes into account all major determinants of land and real estate value.

- **Impact analysis – before-after comparison:** CPL will evaluate the impact of key infrastructure investments on land prices – e.g. a new road or a public hospital – by comparing historic land value data before and after development. Controlling for other factors that can affect land values (e.g. city-wide shifts, inflation), the before and after comparisons offers a useful methodology for evaluating the multiplier effects of public infrastructure, which can be used for supporting investment decisions in the future.

- **Hedonic Pricing Model:** The full hedonic land price model is an extension of two pervious analyses – impact analysis and accessibility
analysis described above. When a sufficient amount of spatial information and land / real-estate market data have been collected, CPL will be able to develop spatial hedonic pricing models to analyze variations in land and real estate values. Initially, the analysis could focus on explaining the direction and magnitude of infrastructure and service amenities on land values. How do new roads, sanitation facilities, transit systems, plot sizes and demographic characteristics impact land values? How far in space do such effects reach (e.g. how far can a parcel be from a paved road to have a value impact)? Such analyses should become regular activities at the CPL, accompanying all significant public investment projects and planning initiatives. Hedonic land value analyses can also form a basis for potential value capture regulations in the future.

• **Projections:** Using the hedonic model and examining the current trends in the land and real estate markets, CPL staff will develop evidence-based forecasts for near-term and long-term changes in land and real estate values that are likely to result from foreseen developments. Additionally, using hedonic pricing models, CPL staff will work across municipal departments to investigate the financial feasibility of a pilot value capture taxation program around a planned infrastructure investment project.

4. **RISKS AND MITIGATION**

The primary risk concerning the activities proposed above involve the reliability of the gathered land and real estate market data and the validity of the estimations that result from these data. In order to address this risk, we have proposed to collect the data from various sources, which will allow CPL staff to cross check the results. In Phase One, various datasets are collected from existing sources, including the assessed land and real estate values from DG Tax and BPN. In Phase Two, similar information is collected through personal surveys with experienced local real estate brokers. Even though the surveys can only cover limited parts of the city, consistent offsets and interpolations can be used to adjust all officially assessed data accordingly.

5. **OUTPUTS**

The following outputs are expected from the land and real estate market module:

- **A cadastral real-estate database.** All spatial data gathered in the first phase of the project will be compiled into an online geodatabase, showing each land parcel with its associated buildings, occupants’ demographics, accessibility characteristics and valuation estimates.

- **A land and property market assessment report.** The report will present the findings on demand and supply for different real estate products (e.g. residential, commercial, industrial land) and provide the basis for evidence based policy recommendations in the land and real estate sectors.

- **A housing segmentation study report.** The report will outline the demand and supply for different types of housing units and outline discrepancies between availability and need. The segmentation study will enable policy makers to detect which demand categories (e.g. low income residents) are most burdened by inefficiencies in the market and point to solutions that can be used to address these inefficiencies.

- **Impact Analysis Report.** The report documents the observed real estate value impacts of selected infrastructure investment projects undertaken by the city. The exact choice of projects (e.g. road construction, bridge or a facility) will be made together with local planning agencies on a per-need basis. The results of the study are expected to inform what multiplier effects future investments could have and how the benefits are spatial distributed.
Hedonic Pricing Model Results. A report describing the controlled multivariate analysis results of land and real estate values in the respective cities. Hedonic price models explain variations in land and real estate values based on the spatial attributes and accessibility conditions of buildings and land parcels. These results can be used to estimate the likely market effects of future plans and infrastructure investments, forming the foundations of a sound real estate market policy.

6. TEAM

In addition to full time staff members listed above, additional expertise required for providing consultation to this module will include:

i. Urban Economist
ii. Housing and Real Estate Planner
iii. Market Analyst Specialist

7. BUDGET & TIMELINE

This module will be carried out in three phases of six months each. The total cost for two cities is estimated at USD 246,000. This is broken down into phases of USD 50,000, USD 140,000, and USD 56,000 respectively. (A detailed budget breakdown is attached.)

8. REFERENCES

Dowall, D. 2010. Literature Review and Proposed Methodological Approach, Land Markets in Latin American and Caribbean Cities. Inter-

American Development Bank: Washington, DC.
CITY PLANNING LABS

BUDGETS

All values in USD

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<th>Cost</th>
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## Table 2: Breakdown of budget for analytical tasks

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<tr>
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<td>- Data purchases</td>
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<td>- Ground checking (buildings)</td>
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<td>- Ground checking (businesses)</td>
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<tr>
<td>- Remote sensing land use inference for the specific cities</td>
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<tr>
<td>- Creating a population database for the metro area</td>
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<td>3. Growth Analytics:</td>
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<td>- Analyzing 2000-2010 urban growth and future growth trend</td>
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<td>4. Accessibility Analytics:</td>
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<td>- Creating spatial accessibility database</td>
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<td>- Mapping key resources from ground surveys</td>
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<td>- City-wide street centerline data updating</td>
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<td>- Assessment of the current procedures for building/change-of-use permits</td>
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<td>- Identifying underserved areas</td>
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<td>- Preparing and publishing zoning and spatial plans on designated websites</td>
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<td>- Piloting permitting decision support</td>
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<td>7. Projections:</td>
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<td>- Spatial employment database generation</td>
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(B: CITY ECONOMIC COMPETITIVENESS – SEE TEXT OF MAIN NOTE)
## C. SLUM ANALYTICS AND MANAGEMENT SYSTEMS – 2 cities

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### D. CLIMATE AND RISK RESILIENCE PLANNING SYSTEMS – 2 cities

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<td>Baseline information on hazards</td>
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### E. MONITORING LAND AND REAL ESTATE MARKETS – 2 cities

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<td>- Housing Market Segmentation Study</td>
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<td>4 - Land and Real Estate Analytics:</td>
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<td>- Accessibility and Land/Real Estate Value analysis</td>
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<td>- Impact analysis</td>
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<td>- Hedonic Pricing Model</td>
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<td>SUBTOTAL:</td>
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* Covered in the CPL and Spatial Growth Analytic module’s budget