Improving the Analytical Capacity of the Indonesia's Housing and Real Estate Information System

BASIC INFORMATION

PROJECT NAME
National Affordable Housing Program (NAHP P154948)

GLOBAL PRACTICE
Urban, Disaster Risk Management, Resilience and Land

REGION
East Asia Pacific

COUNTRY
Indonesia

GEOGRAPHICAL SCOPE
National

COUNTERPARTS
Ministry of Public Works and Housing

INDONESIA

GSCP SUPPORT OVERVIEW

TITLE
Support the Development of the Housing and Real Estate Information System

OBJECTIVE
To provide analytical support to the NAHP's Housing and Real Estate Information System (HREIS) technical assistance activity, including (i) integration of housing data into a unified database, (ii) development of housing indicators and dashboard, and (iii) preparation of a technical report on affordable housing market trends, constraints and opportunities.

SUPPORT PERIOD
July 2021-March 2022

GSCP INPUT
US$ 18,000 (expert time), 3 virtual missions

OUTPUT
- Technical report on affordable housing market trends, key indicators, and dashboard design
- Presentations on housing data fundamentals with key housing indicators and housing information of a smart city
- Contribution to the NAHP Implementation Support Mission Aide Memoire

CONTEXT

Indonesia is undergoing a major and rapid structural transformation into an urban manufacturing- and service-based economy. About 158 million people – 57 percent of Indonesians – live in cities and towns in 2020 and by 2046, approximately 220 million people – over 70 percent – will live in cities. Urbanization has the potential to be a major driver of prosperity and inclusiveness in Indonesia, but realizing this potential requires bold institutional reforms. The rapid growth of urban areas has put pressure on infrastructure, basic services, land, housing, and the environment; it has also eroded the livability of cities and reduced the prosperity gains from urbanization.[1] The large increases in urban population, combined with a dearth of affordable housing options for lower-income households, has led to overcrowding and the expansion of slums characterized by substandard housing, inadequate access to basic services, poor health, and vulnerability to disaster risks.[2]

The Indonesian government has developed a broad set of policies and institutions to support affordable housing, but these have not yet been effective in improving housing conditions at scale. An efficient housing delivery requires access to an integrated database and key housing indicators that allow both the public and private sectors to assess housing needs and find the most cost-effective and structurally and technologically efficient ways to fulfill those needs. In particular, access to reliable and timely housing-related data and indicators can help the public sector make informed regulations and policy decisions and better target government housing subsidy programs.

The World Bank is financing the National Affordable Housing Program (NAHP) in support of the Indonesian Government's ambitious "One Million Homes" Program (Satu Juta Rumah), which aims to provide adequate and affordable housing for all Indonesians. Under the project, the Government initiated in November 2019 the development of a Housing and Real Estate Information System (HREIS)[3], which aims to establish an integrated database and information system to guide housing policies, programs, and decision-making that can help improve the Indonesian housing market as a whole. The system is designed to serve the needs of all relevant housing stakeholders and will initially focus on affordable housing.

CHALLENGES

The lack of transparent, spatially-tagged information on land and home prices and their legal status is a major barrier preventing municipal governments from undertaking critical large-scale urban-based Public-Private Partnerships affordable housing projects. HREIS is essentially a Big Data project that aims to serve as a repository of reliable and up-to-date consumer housing needs and demand. Its goal is to offer housing and real-estate data on both supply and demand sides, including pricing and spatial data, by consolidating housing data that are currently scattered across different institutions in Indonesia. Coordination

and data sharing between these institutions are currently limited. Further, even though relevant housing data have been collected by various institutions, they have not been optimally utilized due to the lack of the methodology for data analysis, and thus good analytics are not readily available when needed. In this context, the World Bank team asked the Global Smart City Partnership Program (GSCP) to provide technical support and guidance on data collection and establish a robust approach to producing and coherently presenting timely, reliable and serviceable data analytics, trends, and indicators.

APPROACH

To more effectively integrate and analyze various housing-related data and develop housing indicators, GSCP experts reviewed the existing HREIS website and dashboard, as well as analytical works conducted by the HREIS team. They then provided inputs to make the dashboard more informative and user-friendly. Given the Ministry of Public Works and Housing (MPWH) privacy policy, the HREIS team was not able to provide all required data to the experts, and thus only sample data was provided. As such, GSCP experts were not able to fully analyze specific data, which limited the depth of the team's recommendations. Further, all the data fields were in Bahasa Indonesia, which made it challenging for the experts to understand the data directly. Nevertheless, GSCP experts searched for a flexible way to use the dataset, while the World Bank team helped with translating key data and information. In particular, continuous discussions were held with the HREIS team and Indonesian officials on housing stock and price, and household reference, among others. It is noteworthy that the HREIS team produced a cookbook detailing how they developed the system. They also conducted a separate survey to estimate the intention of owning a new home among Indonesians. Both the cookbook and survey enabled GSCP experts to provide more useful advisory services.

The experts generated a technical note addressing the main challenges in developing countries and proposing methodologies of measuring housing affordability and availability, focusing on low-income groups, and assessing housing needs using housing classifications. They recommended key indicators to be analyzed as well as sample and mockup analytics using random data, to demonstrate what analyses using certain indicators would entail. They also provided guidance and inputs and introduced methods of analyzing housing density, affordability, and burden as well as other key indicators related to housing demand and supply.

The GSCP experts, MPWH, and HREIS team met virtually at different stages of implementation in order to understand the client demand and data system's status, monitor the HREIS development progress, and discuss recommendations prepared by the GSCP experts. In the end, the recommended indicators from the cookbook and analytics were incorporated into the HREIS dashboard.

FIGURE 1. RECOMMENDED KEY INDICATORS FOR THE HREIS DASHBOARD

HOUSING STATISTICS

Housing status

- Housing tenure (e.g., rate of ownership, owner-occupied, etc.)
- Duration of stay
- Housing level of service
- Housing Area per Capita
- Housing Supply Ratio
  - Housing-to-Housing Ratio: number of housing units per number of household
  - Housing-to-Population Ratio: number of housing units per number of people

Housing inventory characteristics

- House by price (sale price, rent)
- House by size, number of rooms, number of bathrooms
- House by service (water, sanitation, electricity, gas, heating, internet, etc.)
- House by form (single-detached, multi-unit, apartment, etc.)
- House by structure (reinforced concrete structure, steel structure, wooden structure, etc.)
- House building characteristics (plot size, building coverage ratio, floor-area ratio, floors, parking lot, earthquake resistance, etc.)
- House by level of service (formal & satisfactory, formal & substandard, informal & sub-standard, etc.)
- House by housing supplier (e.g., private, public, subsidized, etc.)
- Housing vacancy ratio

Housing cost burden analysis

- Housing cost burden by personal/household/family income
- Housing cost burden by percent of expenditure on housing payment
- Housing cost burden by age
- Housing cost burden by household size

Housing needs assessment

- Housing status by housing cost burden
- Housing status by income group
- Forecast affordable housing gap

Housing sale

- Number of housing sales
- Number of new home sales
- Housing price (index)

Housing construction

- Housing permits
- Housing starts
- Housing construction cost

Finance

- Housing investment
- Mortgage/interest rate
- Outstanding mortgage
- Loans/non-performing loans

Population and economy

- Population (residents characteristics)
  - Population trend and projections
  - Population (change) by birth, death, inflow, and outflow
  - Population (change) by age
  - Population or household/family (change) by income (decile)
  - Household trend and projections
  - Household by type (e.g., single, couple, parent with child, etc.)
  - Household by the number of members
  - Household by household head type (e.g., father, mother) and age
  - Household by income and expenditure
- Economy
  - Gross domestic product (GDP), gross regional domestic product (GRDP), GDP per capita, GRDP per capita
  - Job change
  - Employment rate
  - Saving rate
  - Poverty rate

RESULTS

Support from the GSCP has enhanced the HREIS dashboard development for user interface as well as analytics. The recommendations were able to guide the HREIS team in analyzing different indicators from a housing perspective instead of an IT-based approach, enabling the team to produce robust analyses of the key indicators to support evidence-based decision-making in the housing sector. The engagement experience with the Indonesian client in developing HREIS was shared in other countries such as Mongolia.

Specifically, during the implementation of the HREIS technical assistance, one of HREIS's features (Housing Queue) was socialized and piloted in several cities to assess the effectiveness of the housing queue system in determining the list of priorities for housing support, such as identifying the households that most urgently required it. Through prioritization based on data, the government is expected to improve the targeting of government housing programs and demonstrate how data systems increase the efficiency and effectiveness of housing planning, which is aligned with the smart city program.

LESSON LEARNED

Developing a system like HREIS is a commendable achievement in its own right. But this engagement demonstrates that developing a system for digitizing data is one thing; producing insightful analytics that can guide public and private decision-making processes is another. Critically, by pairing a competent team of system developers with housing sector experts, this engagement filled the gap in housing analytics and serves as a major lesson for other cities and countries considering a similar system.

MOVING FORWARD

HREIS can serve as a platform to integrate housing data from different cities and provide them with the required data from relevant stakeholders. As with any system, HREIS will also benefit from continuous enhancement, specifically to collect more data and produce analyses that can provide insights on housing challenges and potentials to support governments in crafting evidence-based policy and programs, developers and lenders in making investment and lending decisions, and consumers in making purchase and sale decisions. The first step ought to be clarifying who will be responsible for managing the HREIS dashboard in the long run.

The Global Smart City Partnership Program (GSCP) started in 2018 to help World Bank Group teams and clients make the best use of data and technologies for improving city planning, management, and service delivery. This engagement brief was prepared based on a desk review of a GSCP completion report, field travel reports, presentations, technical notes, and other project outputs, as well as selected interviews with the World Bank Group teams.

[1]   Roberts, Mark, Frederico Gil Sander, Sailesh Tiwari. 2019. *Time to ACT : Realizing Indonesia's Urban Potential.* Washington, DC: World Bank. https://openknowledge.worldbank.org/handle/10986/31304

[2]   World Bank. 2014. *Development Policy Review 2014: Indonesia: Avoiding the Trap.* Jakarta: World Bank.

[3]   https://hreis.pu.go.id/portal_hreis/