Real estate price index: a model for the Philippines

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1. Introduction

Real estate price index (REPI) is a valuable tool for countries in assessing and valuing real properties. Valuations of real properties are used for different purposes - acquisition and disposal, mortgages, taxation, land and property management, among others. Most countries however do not have an established system of real estate prices. In fact, there is no international standard practice for real estate pricing at present.

The Philippines is in need of a real estate price index, given the shortcomings of the existing zonal valuation system of the government and the impact this has on government revenue, financial stability, land allocation and use, policies, and legislation. The present property values are found to be grossly undervalued because of the lesser understanding of valuation practices and market trends in the property industry.

The National Statistical Coordination Board (NSCB), the agency mandated to coordinate statistical matters in the country and to develop statistical frameworks and indicators, took on the task of exploring approaches to come up with a real estate price index system model for the Philippines. The general objective of the exploratory study is to help address the bigger problems of real estate valuation in the country. Specifically, the study aims to develop an appropriate REPI system. The price index should provide a consistent measure of price developments over time. It should be able to serve the needs of different users - government, banks, real estate developers/sellers, etc. In developing the appropriate price index, the study took a number of factors into consideration, such as, existing real property market conditions, availability of data, and applicability of the methodology to the country. The real estate price index system as suggested will be an evolving model since this will undergo changes or refinements as work on the index progresses.

This paper presents the steps taken to determine the methodology for compiling the real estate price index in the Philippines, required data, proposed methodology, and future activities to institutionalise the system.

2. Conditions of real property valuation in the Philippines

The initial step was to conduct a review of the present conditions of the real property industry and real estate valuation in the Philippines.

Land and property administration in the Philippines faces a critical problem of an inefficient and inequitable property market that constrains economic development, reduces opportunities for the poor, and discourages sustainable management of resources.[2]

One of the main causes of the problem is an inefficient, outdated zonal valuation system. According to a 2002 World Bank Study, such a system led to the gross under-valuation of real estate properties

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[2] Inter-Agency Coordinating Committee (IACC) of the Philippine Australian Land Administration and Management Project, "Land Administration and Management Report", February 2000.

greatly affecting government revenue and land allocation.[3] While the system itself is not wrong the implementation of the process is not perfect. The inefficiency of the process is prevalent in the provinces/municipalities.

The property market is characterised by multiple systems of valuation imposed by different government agencies. Depending on the purpose, this system resulted in two or three different pricings for the same property. These varying approaches can be traced to the multiple legislations/policies that support different purposes of land/property administration.

Real property prices in the Philippines (just like other countries) are very diverse owing to factors such as location, type, and features of the property. On an aggregate level, the mix of real estate transactions by type has a bearing on the total price. Other factors, such as, urban development, the entry of foreign investors in the property market, lower interest rates, and emergence of new housing and mortgage practices also contributed to the differences in prices.

The present state of property valuation can be attributed to outdated legislations and practices. Contributing to this sad state of real property valuation in the country is the lack of trained appraisers, and lesser understanding and appreciation on the part of local government officials on the proper pricing of real estate properties in their localities.

The property market in the Philippines is poorly informed on property movements.[4] There is lack of statistics/data needed for property administration and management which is a key factor in improving the property market.

All of these point to the need to establish a comprehensive property administration database and reliable REPI system to (1) serve as guide to those concerned agencies, and (2) bring about a fair efficient and effective valuation system that is comparable internationally.

3. Conceptual framework

The study also looked into the scope and coverage of real estate as applied in the Philippines. It took into account the existing market conditions to determine the structure of real estate properties/ transactions which can serve as framework for the REPI.

3.1 Scope and coverage

Real estate in the Philippines encompasses: (1) the land and/or buildings or other improvements permanently attached or annexed to land, including the rights and interests thereon; (2) rural, sub-urban and urban land areas, and the development thereof, such as residential, commercial, industrial, institutional, agricultural, forest land, aqua-cultural or combinations of such rights and interests; (3) resorts, land reclamation, building or housing projects, either for individual or condominium ownership, memorial parks, recreational, townhouses, clubhouses, and other similar nature.[5] Given the extensive coverage of real estate, the study focused only on the most common types of agricultural, residential, and commercial properties.

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[3] "Real property taxation in the Philippines", a report written by Milwida Guevara, and contained in *Land taxation in practice: selected case studies*, March 2002, as case study no 8, compiled and edited by Richard M Bird and Enid Slack of World Bank.

[4] Property movements is a general term used to refer to any of the following: real property reclassification eg agricultural to residential; transfer of ownership eg from government to private individuals, donations, and developments/improvements to a property.

[5] The definition of real estate was taken from the Rules and Regulation Governing Real Estate Practice in the Philippines of the Department of Trade and Industry, defined under its Ministry Order no 39 - Rules and Regulations Governing the Licensing and Supervision of Real Estate Salesmen, Brokers, Appraisers and Consultants, and Realty Service Organisations.

3.2 Present classification/structure of market

Real estate transactions in the country take the following four forms: (1) sales; (2) rental/lease; (3) donations; and (4) mortgages. These transactions apply to the different types of real estate properties as classified under government laws, rules and implementing guidelines, statistical data collection, policy uses, financing institutions, and classifications as followed by private assessors.

Valuation of real estate distinguishes between the value of the land and the value of the improvements. The latter refers to dwelling units, buildings and structures, and other structures. Land is classified by the Department of Environment and Natural Resources (DENR) according to land use as follows: (1) forest land; (2) agricultural land; (3) built-up land; and (4) other lands.

The Bureau of Internal Revenue (BIR) applies a market-based classification. The general classification adopted is as follows: (1) agricultural; (2) residential; (3) commercial; (4) industrial; (5) general purpose; (6) government land; and (7) area for priority development. Agricultural lands - are principally devoted to planting/raising of all types of crops/livestock and poultry, fishpond, and other agricultural uses including timberlands and forest land. Residential properties on the other hand, include land or buildings principally used for habitation. They are classified into residential regular and residential condominium. Similarly, commercial properties are classified into commercial regular and commercial condominiums. Industrial properties include factories, warehouses, and other structures used for manufacturing and industrial uses. General purpose land refers to rawland, underdeveloped and undeveloped areas which have potential for development into residential, commercial, industrial, institutional, etc and must not be less than 5,000 square metres. On the other hand, government lands include those owned/held by the government. And lastly, area for priority development include those areas utilised for socialised housing certified by the Housing and Land Use Regulatory Board (HLURB), Presidential Commission on Urban Poor (PCUP); and, National Housing Authority (NHA).

The National Statistics Office (NSO) in the Census of Population and Housing (CPH) provides a highly disaggregated categorisation of dwelling units (residential units) as follows: (1) by type of buildings: single house, duplex, apartment, accessoria, condominium, row house, etc; (2) improvised ("barong-barong"); (3) other housing units/natural shelter, boat, hotel, lodging house, dormitory, etc; (4) institutional units (hospital, convent, school dormitory); and (5) other collective living quarters (military camp, etc). Categorisations are also available by location or by type of use ie, commercial, industrial, and agricultural.

Other types of market segmentation that can affect pricing of properties are location, life of the asset, features of the property, social factor, and type of business in the case of commercial units. Location can be regional, provincial, city, municipality, or urban or rural. Tenurerial status (ownership/operator) is also applied to group properties but for purposes other than valuation.

Properties in the Philippines are transferred through - transfer in compliance of the law (Agrarian Reform Act), donations, direct transfer from seller to buyer or through an intermediary/broker, and succession.

3.3 Proposed composition of the real estate price index

In coming up with the index the structure in Table 1 is suggested as preliminary. It took into consideration the features of existing classifications, availability of data, and market requirements.

Table 1

Real estate structure: Philippines

Classification	Category	Sub-category	Remarks
A. Agricultural	By type of crop/type of farm A.1. Temporary crops A.2. Permanent crops A.3. Livestock A.4. Poultry A.5. Other farms By location (regional, provincial, city, municipality)	By size By age By cost	For sales and rent prices of land only
B. Forest	By type of forest land (plantation forest, public and private forest land) By location (regional, provincial, city, municipality)	By size By age By cost	Covers only rent of economic/production forest[1]
C. Residential	By type of project C.1. Residential regular C.2. Residential condominium By location (regional, provincial, city, municipality)	By cost By size By type of structure By number of floors By age By social category (high-end, mid-income, low-cost socialised)	Sales, mortgage and rent prices of land and improvements
D. Commercial	By type of project D.1. Commercial regular D.2. Commercial condominium By location (regional, provincial, city, municipality)	By size By type of structure By number of floors By age By cost	Rental and sales prices of land and improvements
E. Industrial	By type of project (warehouse, factory building, bank) By location (regional, provincial, city, municipality)	By type of structure By size By age By cost	Initially include only areas within Special Economic Zone

[1] Economic/production forest includes residual dipterocarp forest, rangelands for grazing, mangrove areas for fishpond, areas under industrial forest plantation, multiple-use zone, and buffer zones for special land uses.

4. Assessment of data

A basic consideration in determining the method is to know which data are available. Thus, an assessment of available data on property valuations was undertaken. Based on the initial property composition described in Part III, the results of the assessment show that the following government agencies can be tapped to provide the data requirement for the index.

4.1 National Statistics Office (NSO)

The NSO conducts the CPH once every 10 years. It has two components; Census of Population and Census of Housing. The 2000 CPH was the 11th population census and fifth housing census of the Philippines. The past four housing censuses covered the years 1960, 1970, 1980, and 1990. The census is designed to take an inventory of the total population and housing units in the country and to collect information on their characteristics. Specifically, the Census of Housing, a subset of the CPH, provides information on the stock of housing units, geographical location, structural characteristics,

and available facilities. With some improvements, the CPH can provide the structure of housing units by type, and by location that form the basis for the weights.

The ***Family Income and Expenditure Survey*** (FIES) is another survey that collects data on housing characteristics and expenditures of households on rent, and repairs and maintenance for the house. It is a triennial survey.

One element in the ***consumer price index*** (CPI) is rent. The rent data are collected monthly and are available at the national, regional, and provincial levels. The NSO also processes the building permits, which are administrative forms required to apply for permit to construct/repair buildings and structures.

4.2 Land Registration Administration (LRA) and Register of Deeds

The LRA through the Register of Deeds maintains records of all property titles in the Philippines. All property transfers, including mortgages, have to be registered with the Register of Deeds every time a transaction takes place. The forms that accompany property transfers carry information on the values, history, characteristics like size, location, boundaries, etc, of the property, which can be used as basis for the index. While compliance to this regulation is almost total, these forms are not processed and tabulated at present for reporting purposes because of lack of resources. There is an ongoing World Bank Project that is addressing the processing problems of the LRA forms. The issue here is confidentiality of data.

4.3 Records of provincial/city/municipality assessors

The local real estate assessors also keep their own records of property declaration forms for purposes of taxation in their respective localities. These forms are filled only when the property is first registered and assessed by the new owner, which are updated when there are reported improvements to the property. The property values are assessed upon registration and are only reassessed every time there are improvements to the property or when a change in ownership of property occurs.

The assessors do a validation check of the property declaration occasionally to determine whether the correct taxes are being collected. However, most of these assessors lack the needed training for property valuation as well as fuller understanding of existing property market conditions.

4.4 Bureau of Internal Revenue (BIR)

The BIR is authorised to determine, for internal revenue purposes, the fair market value of real properties by zones/areas, in consultation with competent appraisers from both the public and private sectors. In determining the market value of the property it requires that the value of the land asset be separated from the value of improvements. As mentioned in Part III there are seven major classes of properties followed by the BIR.

Measuring the fair market value under the system is based on records of most recent actual sales/transfers/exchanges of properties appearing in administrative documents filed with the BIR and LRA; private records of banks, realtors, appraisers, etc in the locality; and records of provincial/ city/municipal assessors. However, the BIR zonal valuation system has its limitations. These limitations are as follows:

1. valuations are performed at different periods with no uniform year of conduct by municipality;
2. there is high probability of undervaluation due to political intervention;
3. there are no professional qualifications or standards for local assessors; and
4. the valuation is used for tax purposes only which does not address issues on market distortion.

The zonal valuation system can benefit from the availability of the REPI because it can give signals of wrong values in the system. Based on the results, while the values can be understated the trends were proven to be consistent with available prices. The new zonal values which benefited from the recent improvements showed higher property values.

4.5 Other data sources

The Housing and Land Use Regulatory Board (HLURB) gathers land use plans of municipalities, which include information on plans for commercial centres, markets, schools, hospitals to be built in the area. These can also be used to provide more disaggregated information about land property characteristics. However these data still need to be processed to come up with a series on stock of land.

Other land information like Geographic Information System (GIS) data produced by the National Mapping and Resource Information Authority (NAMRIA) can also be used as reference, however, disaggregation of data may not give the required classification.

The Land Management Bureau (LMB) of the DENR takes charge of all government properties (land, buildings, and structures) including the rental of government buildings and maintains records of these. The DENR also monitors forest lands through the timber licensing agreements, which can be used to provide rental values for forest lands.

The Philippine Exports Zone Authority (PEZA) administers most industrial areas and keeps records of these properties. It determines and approves rentals in industrial estate.

4.6 Data problems

- Given the results of the preliminary assessment, data required for the compilation of the REPI can come from both survey and administrative-base data. However, all the available data, specifically the administrative-base data are unprocessed and need to be organised and cleaned. Some require further processing to make them useful for the REPI. But the potential of the administrative-base data is good if the compliance and implementation of these systems are strengthened, properly monitored, and improved. There is a need to revise/restructure some of the outdated forms used to make these administrative-base data more efficient and useful.
- Surveys, on the other hand, require certain improvements to include additional information to meet the requirements of the REPI.
- The surveys and administrative-base data can be improved to complement each other. The two datasets can be used to cross-check the information collected.
- The problem of representation of the results was not adequately tackled in this report because the experimental study estimates were done on an aggregate level.

5. Proposed real estate price index methodology

While the development of an appropriate model for the REPI is still a work in progress, the following preliminary approach is proposed, which will continue to be improved as more data become available and as the NSCB Staff gain more experience on real estate price indexing. The proposed methodology benefited from the results of the exploratory study on various approaches, extensive data assessment and previous experiences on land valuation.

5.1 General strategy

- The work will be done in stages. For a start, two cities will be selected as pilot areas to test the applicability of the approach, which can be replicated later in other areas once the method has been approved for adoption.
- Maximise the use of available administrative and survey data for the compilation of the REPI. Processing of administrative data will be undertaken if necessary.
- Consult with experts on the methodology and have the results validated by public officials/local assessors and private groups to ensure institutionalisation of the model.

- Undertake high-level advocacy/coordination to assure full cooperation of concerned agencies. Relatedly, institutional support has to be established to facilitate work on REPI.
- NSCB will assume the task of compiling the REPI to avoid biases in the estimates and to ensure acceptability and sustainability of the index.
- Enhance capability of compilers and users of the REPI to address the inadequacies of existing property valuation systems.
- Link with ongoing efforts to improve the land administration system to facilitate work on the REPI.

5.2 Data sources

Data will come from the following administrative and survey data:

- 2000 CPH and Census of Agriculture from NSO for stock of dwelling units and housing characteristics;
- BIR zonal values tables, records of the tax declarations, reports on capital gains (sale of assets);
- LRA records on actual sales/transfers/exchanges and mortgages of real estate properties;
- CPI and FIES for prices of rent and housing expenditures on house repairs and maintenance;
- Provincial/city/municipal assessors records and data on local properties;
- NSO building permits;
- DENR statistics on rent of economic/production forest;
- LMB for records on government properties and rent;
- Private records of banks, realtors and appraisers;
- HLURB licenses to sell and land use plans by municipalities;[6] and
- PEZA for data on industrial properties.

5.3 Methodology

5.3.1 Assumptions

- that the composition/structure (property mix) of stock of real properties remains constant over a certain period of time, say five years;
- that the unit values derived from the LRA/BIR actual sales/transfer/exchanges of properties reports are representative of the sub-category where they belong; and
- that the records of stock of properties with the local assessors offices are adequate for REPI purposes.

5.3.2 Estimation

a. Stock of real estate properties

To estimate the stock of real estate properties, the following data will be collected, cleaned, and processed.

[6] Licenses to sell can provide information on the appraised values of properties, while information from land use plans can provide data on weights to be used in aggregating the REPI.

– Residential properties - NSO's 2000 CPH, records of provincial/city/municipal assessors, LRA records.

– Industrial properties - PEZA, Bases Conversion Development Authority, Clark Development Corporation, Subic Bay Metropolitan Authority records.

– Commercial properties - HLURB, records of provincial/city/municipal assessors.

– Agricultural land - BIR, records of provincial/city/municipal assessors.

– Other purposes - BIR, records of provincial/city/municipal assessors, and LMB.

These records are more than adequate for the REPI, except the possible under-valuation of the properties registered, which can be validated with private records of banks, realtors, appraisers, etc.

For purposes of valuing the stock of properties, the zonal valuation will initially be used, but this will be updated for inflation based on CPI rent.[7]

b. Prices

– Two levels of real estate price indices will be constructed - (1) the sales prices index, and (2) the rental prices index. Both indices will be built based on the composition set in Part III of this report.

– Initially two approaches have been identified based on available data. Prices will be estimated for each sub-category identified in Table 1. If further breakdowns in composition are required, these will be incorporated in the estimation.

– For sub-categories where actual sales/transactions data from the LRA and local assessors records are available, prices will be derived directly by dividing the actual sales or rental prices by the number of units transacted/total area transacted.

– In cases where there are no transactions that occurred in certain areas, prices or trends in prices nearby/adjoining areas can be adopted/applied.

– Rental prices, on the other hand, will use actual rental prices from the CPI. For certain commercial buildings, benchmark rental prices can be established initially based on local government records. Succeeding annual rents will be estimated using trends of rental prices of similar government buildings, which are being managed by LMB. PEZA will provide rental prices of properties located in industrial zones. Rental prices of agricultural and forest lands can be obtained from the Department of Agriculture (DA) and DENR.

– Where current sales prices data are sometimes not available for certain areas, these can be estimated through the simple hedonic - based price method using variables, such as trends of CPI rental prices, derived rental prices of commercial/industrial properties or prices of construction materials plus prices of labour. These can be validated against available real estate prices of private assessors, realtors, and banking institutions.

c. Index

Price estimated for each sub-category will be aggregated using the Laspeyres index method with 2000 as base year.

For illustration, consider five asset types (*k*) categorised into asset type 1, 2, …, 5 (agricultural, forest, residential, commercial, and industrial). Each category is broken down into subcategories (*j*) (eg temporary crops, permanent crops, livestock etc under category (1) agricultural; public plantation forest and private plantation forest under category (2) forest; and, so on). These subcategories consist of different types of assets (*i*) (eg palay, corn, etc under temporary crops; citrus, banana, coconut etc under permanent crops etc). These subtypes of assets (*i*) have different prices in different locations

[7] Initial exercises showed a high correlation between trends of zonal values and CPI rent.

and for different types of ownership, and size (eg palay 1, 2, 3, …, *n*; corn 1, 2, 3, …, *n* etc). Thus, the REPI is generally constructed using four levels of asset categorisation.

For a four (4) - level of asset categorisation, the following steps are applied:

Step 1

Compute price relatives (PR) for each of the asset types at the most detailed level. For asset types $i = 1, 2, \ldots, n$ of a subgroup, this is given by:

$$\text{PR}_{\text{asset type } i} = (\text{current price}_{\text{asset type } i} / 2000 \text{ price}_{\text{asset type } i}) \times 100$$

Take for example, assets under type A of the Residential sub-category. Price relatives of asset types 1 and 2 are computed as:

$$\text{PR}_{\text{asset type 1}} = (\text{current price}_{\text{asset type 1}} / 2000 \text{ price}_{\text{asset type 1}}) \times 100$$

$$\text{PR}_{\text{asset type 2}} = (\text{current price}_{\text{asset type 2}} / 2000 \text{ price}_{\text{asset type 2}}) \times 100$$

Step 2

The price index for the third level of asset category is the weighted average of the price relatives belonging to that group, that is, for asset types $i = 1, 2, \ldots, n$ under the asset sub-category, the index given by:

$$\text{Index}_{\text{sub-category } i} = \sum(\text{PR}_{\text{asset type } i} \times W_{\text{asset type } i}) / \sum W \text{ all asset types under sub - category } i.$$

The weight (W) used is the base year values of the asset types and is computed as the product of the base year price and its corresponding quantity in the base year such that,

$$W_{\text{asset type } i} = 2000 \text{ Price}_{\text{asset type } i} \times 2000 \text{ Quantity}_{\text{asset type } i}$$

Continuing the example in Step 1, for n assets under type A of the Residential sub-category we have,

$$\begin{aligned}\text{Index}_{\text{Residential type A}} &= \sum(\text{PR}_{\text{asset type } i} \times W_{\text{asset type } i}) / \sum W \text{ all asset types under subcategory A} \\ &= [(\text{PR}_{\text{asset type 1}} \times W_{\text{asset type 1}}) + (\text{PR}_{\text{asset type 2}} \times W_{\text{asset type 2}}) \\ &\quad + \cdots + (\text{PR}_{\text{asset type } n} \times W_{\text{asset type } n})] / W_{\text{asset type 1}} + W_{\text{asset type 2}} + \cdots + W_{\text{asset type } n}\end{aligned}$$

Step 3

The aggregate index for the second level category is the weighted average of the indices for the different asset types in Step 2. The method is done as in Step 2 with the weights as the sum of the weights belonging to the second level category. For asset types under the second level category j, $j = 1, 2, \ldots, m$, the index is given by:

$$\text{Index}_{\text{sub-category 1}} = \sum(\text{Index}_{\text{type } j} \times W_{\text{type } j}) / \sum W \text{ all asset types under sub - category } j$$

To get the aggregate index for Residential Assets,

$$\begin{aligned}\text{Index}_{\text{Residential}} &= \sum(\text{Index}_{\text{asset type } j} \times W_{\text{type } j}) / \sum W \text{ all asset types} \\ &= [(\text{Index}_{\text{type A}} \times W_{\text{type A}}) + (\text{Index}_{\text{type B}} \times W_{\text{type B}}) + \cdots + (\text{Index}_{\text{type } m} \times W_{\text{type } m})] / \\ &\quad [W_{\text{type A}} + W_{\text{type B}} + \cdots + W_{\text{type } m}]\end{aligned}$$

Step 4

The aggregate index for real estate is calculated as in Step 3 using weights corresponding to the different second level asset categories. For asset types without sub-categories, the index is automatically the index resulting in Steps 1 and 2. Thus the Real Estate Index for $k = 1, 2, ..., l$ asset categories is given by:

$$\text{Index}_{\text{Real Estate}} = \sum(\text{Index}_k \times W_k) / \sum W_k$$

The Real Estate Index with base year 2000 is given by:

$$\begin{aligned}\text{Index}_{\text{Real Estate}} = [&(\text{Index}_{\text{Agricultural}} \times \text{Weight}_{\text{Agricultural}}) + (\text{Index}_{\text{Forest}} \times \text{Weight}_{\text{Forest}}) + \\ &(\text{Index}_{\text{Residential}} \times \text{Weight}_{\text{Residential}}) + (\text{Index}_{\text{Commercial}} \times \text{Weight}_{\text{Commercial}}) + \\ &(\text{Index}_{\text{Industrial}} \times \text{Weight}_{\text{Industrial}}) + (\text{Index}_{\text{Others}} \times \text{Weight}_{\text{Others}})] / \\ &[(W_{\text{Agricultural}} + W_{\text{Forest}} + W_{\text{Residential}} + W_{\text{Commercial}} + W_{\text{Industrial}} + W_{\text{Others}})]\end{aligned}$$

6. Future directions

Draw up a project proposal and work program for the development and institutionalisation of the REPI model in the Philippines that will include the following activities:

Preparatory activities

- Identify the pilot cities for the estimation of REPI.
- Set up the institutional framework for the REPI. This will include the creation of an inter-agency committee/technical working groups to facilitate the work on the REPI.
- Advocate the uses of the REPI for taxation, legislation, policy formulation, and land and property management.

Data preparation and improvement

- Collect, clean, process, and organise data for the index.
- Address problems on data for both the administrative base and survey data. This will involve changing/improving some of the forms and compliance mechanisms.

Estimation

- Develop the composition (property basket) for the REPI.
- Develop and improve the methodology for the REPI.
- Present the initial results and methodology for the REPI to the NSCB Executive Board for approval and endorsement to the Department of Finance and the National Economic Development Authority (NEDA). The same should likewise be presented to the different stakeholders for comments and feedbacks.

Computerisation

- Computerise compilation and dissemination of REPI.

Documentation

- Document the REPI model for replication.
- Develop an institutionalisation plan for REPI.

Capability building

- Attend training on all aspects of land and property valuation to equip the compilers with the necessary skills needed to do property pricing.