

## HOUSING PRICE INDEX

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# Housing market exhibits more signs of slowdown in the fourth quarter of 2021

House prices continued to decline in the fourth quarter of 2021, at a much faster rate than what was recorded in the third quarter. The Kenya Bankers Association-House Price Index (KBA-HPI), showed that house prices contracted by a higher rate of 3.99 percent during the quarter, compared with a contraction of 3.70 percent in the third quarter (Figure 1).

'hoto/ Ralph Kayden

The steady decline in house prices broadly reflects the headwinds in the economy that influenced both demand and supply characteristics of the market. With demand remaining depressed, the change in house prices was not drastic, partly because of the downward stickiness of prices; a typical characteristic of the housing market. At the same time, the sharp drop in prices during 2021 reflected subdued investments that limited the rollout of new supply with easing demand.

As a result, the broader construction and real estate sector manifested declines in the growth trajectory in the fourth quarter of 2021. In particular, while the real estate sector expanded by 5.7 percent in the fourth quarter

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## The Numbers at a Glance





## More signs of slowdown exhibited in Q4 of 2021

Figure 2a: Cement production

and consumption

#### ...continued from page 1

compared to 7.1 percent in the third quarter, growth in construction dropped to 6.0 percent from 6.7 percent over the same period.

The sector's performance was on the back of some of the notable changes in its indicators. For instance, cement consumption (a supply-side proxy) continued to contract, to lag production in the fourth quarter. In particular, cement consumption declined to 778,088 MT in December 2021 from 856,980 MT in September 2021, as production declined to 791,050 MT from 866,344 MT in September 2021 (Figure 2a). Nonetheless, the sector saw mild demand support through the credit growth, as lending to the building and construction sector slightly edged up to 1.9 percent in December 2021 from 0.5 percent in September 2021. However, growth in loans to the real estate sector continued with to decelerate, to 0.6 percent in December 2021 from 2.9 percent in September 2021 and 3.2 percent in July 2021 (Figure 2b).



On the back of the outlined broader developments in the sector, the intersection of the demand and supplyside developments of the housing market resulted in a softening of prices; consistent with a market correction trend observed from the recent past. Other overarching concerns during the period, included the relatively low levels of concluded housing market

#### Figure 3: Evolution of the KBA House Price Index

130

120

115

110

105



Moving Base Index (Q-o-Q)

Figure 2b: Sectoral credit to the real estate, building and construction sector (Y-o-Y, percent)



transactions against expectations from the switch in April 2021 at the Lands Registry to an electronic system of processing of title transfers.

Based on the KBA HPI index (See Technical Note for the methodology), the house price growth sustained a downward trend (Figure 3).



**Table 1: Price Movement Series** 

	fixed base*	moving base
Q4-2018	119.48	127.00
Q1-2019	114.30	123.56
Q2-2019	109.17	121.47
Q3-2019	108.02	118.76
Q4-2019	109.04	118.04
Q1-2020	106.87	117.44
Q2-2020	106.66	117.20
Q3-2020	106.63	117.11
Q4-2020	107.60	117.37
Q1-2021	108.69	115.23
Q2-2021	108.19	113.32
Q3-2021	110.33	109.13
Q4-2021	109.35	104.77

\* Base Period Q1\_2013



## Apartments in the lower market segment continued to dominate, albeit slightly contracting

ousing transactions in the lower market segment, and particularly apartments, continued to dominate during the fourth quarter. In the fourth quarter of 2021, housing transactions in the lower-market segment accounted for 58.8% of all transactions, compared with 70.1% in the third quarter.



Conversely, completed transactions in the mid- and high-market segments registered significant improvements, with total transactions rising to 26.8% and 14.4% in the fourth quarter from 19.7% and 10.3% in the third quarter (**Figure 4a**).

With respect to house type, apartments dominate, and their share rose, accounting for 56.8% of all the completed transactions in the fourth quarter from 47.0% in the third quarter of 2021. On the other hand, the share of bungalows contracted by half compared to the previous quarter to account for 13.3% of all transactions in the fourth quarter. The share of Maisonettes, however, rebounded to 29.2% in the fourth quarter compared to 22.2% in the previous quarter. Lastly, townhouses, which have been characterized by dormancy since the first quarter of 2021, registered a resurgence, with their share of total transactions standing at 0.9% (Figure 4b).

The divergence in the proportions of house types by region and across types, continued to characterize the dynamics in the market and the interaction between consumer preferences and the affordability of the houses.

Figure 4: Quarterly Comparison of Regional and House Type Distributions



Figure 4a: Quarterly distribution of house transactions by region (%)

Figure 4b: Quarterly distribution of house transactions by house type (%)





## House prices by region and type of house characterised by sizeable differentials

ariations in property prices are evident along house type and market segments. First, sizeable differences across house types exist, with the average cost of a maisonette standing at Kes. 12.15 million, while that of apartments and bungalows stood at Kes. 9.38 million and Kes. 6.69 million, respectively. Second, variations in costs across the different market segments are further evident. The average price of a property in the high-market segment is three times that in the lower-market segment and twice the cost of one in the mid-market segment. In particular, the average cost of a house in the high-market segment stood at Kes. 20.95 million, while houses in mid-market and the low-market seament stood at Kes. 9.85 million, and Kes. 8.17 million, respectively (Figure 5). Significant heterogeneities by region (hence segment) and house type reflect a segmented market for the houses traded during the period.

### In addition, there were variations in plinth area across regions and

Region2

Region3



house types. Across regions, the average plinth area of up-market houses transacted during the period was the highest, at 2,225.5 square feet, compared to 1,777.2 square feet and 1,398.5 square feet in the mid-market and low-market segments, respectively. Across house types, townhouses have the largest plinth area at 5,709.0 square feet, maisonette's plinth area at 2,631.2 square feet, while bungalows and apartments had average plinth area at 1,631.4 square feet and 1,283.9 square

feet, respectively. While not dominant, townhouses were the highest- priced, driven by their structural benefits of providing larger plinth area; a key house demand feature particularly pursued by the mid to up-market segments buyers.

Further, disaggregation of the property value and plinth area by house type and across region reveals further heterogeneities (Figure 7g and 7b). Nonetheless, the trends observed in the preceding section are sustained.



3.000 -

2.000 ...

1.000

1283.9

1631.4

Wasonette

Townhouse

region and by house type

#### Figure 6: Average plinth area across the Figure 7: Average property value area across the region and plinth area





#### Figure 7b: Average Plinth Area Across Region by House Type



2,500

2,000

1,500

1,000

500



## Identification of the drivers of house prices using a Hedonic Regression

**Based on the hedonic regression analyses (whose results are presented in Table 2')**, a significant portion of house prices variations can be explained. The results suggest that house prices continued to reflect movements in its fundamentals.

Overall, the model's goodness of fit measure; depicted by the F-statistic (F (9, 84) =28.08), whose probability was below 5%, was satisfactory, suggesting that the model estimated fits the data well. More importantly, the fundamental drivers of house prices included in the model jointly explain about 79.0 percent of the observed house price variations.

The hedonic regression estimates for the fourth quarter of 2021 reveal two main patterns about the attributes of shadow prices, consistent with those from previous periods:

- First, the structural characteristics including plinth area, the number of bedrooms, bathrooms, and floors are established to drive average house prices significantly. In particular, it is observed that an additional 10 percent increase in the plinth area is associated with a 2.9 percent increase in the average house prices, all other factors remaining largely unchanged. Similarly, a 33 percent increase in the number of bedrooms (say 1 more bedroom for a 3-bedroomed unit) on average increases the average price by 8.95 percent<sup>2</sup>. House prices are also noted to increase with number of bathrooms, with a 10% increase in the number of bathrooms associated with an average house price increase of 4.4%, all other factors/features remaining the same (**See results in Table 2**).
- Second, region/segment differences, as well as the type of house are also noted to be significant drivers of house price variations during the quarter. In particular, house price variations were highest in region 3, followed by region 2 and lowest in region 1.
- Based on the sizes of regression coefficients, the three most important drivers of house price changes (ranked from the most to the least important) include the house type (with townhouses being the highest priced), number of bathrooms, location of the house (with a house being in the up-market- region 3 - being the highest priced) relative to other areas and the plinth area.

The computation of the KBA-HPI is underpinned by estimating the weights and the shadow prices. The weighting scheme applied to the shadow prices varies from one quarter to another and relates to the units transacted during the quarter (See **Technical Note** for details).

The weights applied in the case of quantitative attributes (i.e., plinth area, number of bedrooms, number of bathrooms, and number of floors) are their respective averages, and proportions are applied as weights in the case of the qualitative attributes (i.e., type of house, and the region). The qualitative and quantitative parameters, that drive the house price change and feed into the construction of the KBA-HPI, are based on an estimation of a hedonic regression. The regression generates the shadow prices or marginal contributions, taking cognizance of the heterogeneous nature of housing goods best characterized by their attributes.

The hedonic regressions recognize that a dwelling is composed of a bundle of characteristics for which no market for them exists, as they cannot be sold separately, so the prices of the characteristics are not independently observed. The demand and supply for the properties implicitly determine the characteristics' marginal contributions to the prices of the properties.

## Technical Note

The index follows a Laspeyers index method. In this method, the index is computed by getting the ratio of the estimated current quarter price from the hedonic method (multiplied by the weights of the preceding quarter) to the price of the preceding quarter (multiplied by the respective weights of that quarter).

The weights of the quantitative variables are obtained by getting their respective mean values. For the dummy variables however, their weights are computed as the proportions of the number of houses possessing a certain attribute to the total number of houses. Thus the index is computed by the formula:

$$Index = \sum_{i=1}^{n} w_{i} \frac{P}{P} = \frac{\sum_{i=1}^{n} w_{0} P}{\sum_{i=1}^{n} w_{0} P}$$

Where;  $P_{\perp}$  is the shadow price from the estimated hedonic function for the current quarter;

*P*<sub>o</sub> is the shadow prices from the estimated hedonic function for the preceding quarter;

And  $W_0$  are the weights of the respective variables for the preceding quarter.



<sup>1.</sup> For comparison purposes, the hedonic regression estimates for the first quarter to third quarter of 2021 are presented in Tables 3, 4 and 5, respectively annexed to this report.

<sup>2.</sup> That is 0.27% times 33%.



## Table 2: Housing Price Index Drivers for Quarter 4 of 2021

Number of obs = 94.00	MS	df	SS	Source
F(9, 29) = 28.08	3.86	9.00	34.72	Model
- Prob > F = 0.00 R-squared = 0.790	0.11	84.00	9.23	Residual
Adj R-squared = 0.762	0.47	93.00	43.95	Total
Root MSE =0.335				

Coef Std. Err. t - stats [95% Conf. Interval] P>|t| Constant 13.24 0.44 30.24 0.000 12.37 14.11 Inplintharea 0.29 0.07 4.27 0.000 0.15 0.42 Inbedrooms 0.27 0.16 1.67 0.099 -0.05 0.59 No. of Bathrooms 0.44 0.12 3.63 0.000 0.20 0.68 No. of Floors 0.01 0.15 0.03 0.974 -0.30 0.31 **House Type Dummy** 0.13 0.11 1.25 0.213 -0.08 0.35 housetype1 housetype2 -0.17 0.18 -0.98 0.331 -0.53 0.18 0.99 0.35 2.79 0.007 0.28 1.69 housetype4 **Regional Dummy** region1 0.08 -1.82 0.073 -0.31 -0.15 0.01 region3 0.44 0.12 3.76 0.000 0.21 0.67

### Notes:

- 1. For comparison purposes, the hedonic regression estimates for the first quarter to third quarter of 2021 are presented in Tables 3, 4 and 5, respectively annexed to this report.
- 2. That is 0.27% times 33%.





## Table 3: Housing Price Index Drivers for Quarter 3 of 2021

Number of obs $=$ 112.0	MS	df	SS	Source
F(9, 29) = 17.4 Prob > F = 0.0	3.53	9.00	31.75	Model
R-squared = 0.60	0.20	102.00	20.60	Residual
Adj R-squared = 0.57	0.47	111.00	52.35	Total

Root MSE = 0.372

	Coef	Std. Err.	t - stats	P> t	[95% Conf. Interval]	
Constant	12.85	0.50	25.89	0.00	11.87	13.83
Plinth Area	0.26	0.08	3.29	0.00	0.10	0.42
No. of Bedrooms	0.62	0.21	2.88	0.01	0.19	1.04
No. of Bathrooms	0.15	0.07	2.18	0.03	0.01	0.29
No. of Floors	0.07	0.03	2.19	0.03	0.01	0.13
Regional Dummy						
Region 1	-0.21	0.11	-1.82	0.07	-0.43	0.02
Region 3	0.35	0.19	1.89	0.06	-0.02	0.73
House Type Dummy						
Apartment	-0.10	0.12	-0.76	0.45	-0.34	0.15
Bungalow	0.02	0.14	0.17	0.87	-0.25	0.30
Flats	-0.12	0.23	-0.51	0.61	-0.57	0.33

### Notes:

- 1. All the Quantitative variables (Plinth Area, No. of Bedrooms, No. of Bathrooms, No. of Floors) enter the hedonic regression function in their natural logarithm. The house price is also expressed in its natural logarithmic form.
- 2. Reference categories for the dummy variables for house types and region were maisonettes and region 2, respectively.





## Table 4: Housing Price Index Drivers for Quarter 2 of 2021

Source	SS	df	MS	Number of obs $=$ 37.00
Model	25.53	8.0	3.19	F(9, 29) = 14.67 Prob > F = 0.00
Residual	6.09	28.0	0.22	R-squared = 0.807
Total	31.62	36.0	0.88	Adj R-squared = 0.752

Root MSE = 0.466

	Coef	Std. Err.	t - stats	P> t	[95% Conf. Interval]	
Constant	13.77	0.17	81.85	0.00	13.44	14.10
plinth area	0.402	0.146	2.750	0.010	0.103	0.701
No. of bedrooms	0.697	0.493	1.410	0.169	-0.313	1.708
No. of bathrooms	-0.760	0.687	-1.100	0.279	-2.168	0.649
No. of floors	0.399	0.338	1.180	0.248	-0.293	1.092
Regional Dummy						
Region1	-0.474	0.211	-2.250	0.033	-0.906	-0.042
Region3	1.043	0.254	4.110	0.000	0.523	1.563
House Type Dummy						
Apartment	-0.818	0.434	-1.880	0.070	-1.707	0.071
Bungalow	-0.663	0.326	-2.040	0.051	-1.330	0.004

**Notes:** All the Quantitative variables (Plinth Area, No. of Bedrooms, No. of Bathrooms, No. of Floors) enter the hedonic regression function in their natural logarithm. The house price is also expressed in its natural logarithmic form





## THE DEFINITION OF THE SUB-REGIONS

#### **REGION 1**

Athi River, Mlolongo, Mavoko, Nakuru, Ngong, Ruaka, Syokimau, Embakasi, Kahawa Wendani, Thika, Mtwapa, Utange, Kitengela, Kiembeni, Nyeri, Likoni, Eldoret, Ruiru, Kilifi,Thika road (Kasarani, Roysambu, Ruaraka), Meru, Bungoma.

#### **REGION 2**

Thindigua (Kiambu Road), Kiambu, South B, South C, Kabete, Komarock, Imara Daima, Membley, Buruburu, Rongai, Waiyaki Way (Uthiru, Regen, Kinoo, Kikuyu), Mbagathi road, Ngong Road, Langata.

### **REGION 3**

Kileleshwa, Kilimani, Lavington, Westlands, Spring Valley, Riverside, Milimani (Kisumu), Milimani (Nakuru), Runda, Karen, Garden Estate, Parklands, Ridgeways, Muthaiga, Loresho, Kitisuru, Adams Arcade, Nyali, Mountain View, Nyari.

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