AJLP & GS
African Journal on Land Policy and Geospatial Sciences

*e-ISSN : 2657-2664, Vol.6, Issue 4, September 2023*

*https://revues.imist.ma/index.php/AJLP-GS/index*

*https://doi.org/10.48346/IMIST.PRSM/ajlp-gs.v6i4.41546* *Category of the manuscript : Articles*

***Received in**:* 16 July 2023 **Revised in:** 13 August 2023 ***Accepted in**:* 16 August 2023

# Environmental Attributes Consideration During Property Valuation in Tanzania: Professional Valuer's Perspectives

**[1]Yusuph Abdi Iddi, [2]Upendo Matotola**

[1] Real Estate Analyst, yusuphmdogo@gmail.com, Dar es Salaam, Tanzania

[2] Ph.D., Lecturer, Ardhi University, uchamuriho@gmail.com, Dar es Salaam, Tanzania

***ABSTRACT***

**Context and background:**

With the advent of rising global initiatives to address climate change and sustainability, interest in addressing theoretical and practical alignment of how professional valuers consider environmental attributes has become the focus of much attention. Yet the overlap between consideration and non-consideration of environmental factors might significantly impact the value.

**Goal and objectives:**

This paper evaluates the perceptions of professional valuers on the consideration of environmental features during their valuation.

**Methodology:**

Data to inform the study was collected through questionnaires distributed to 89 randomly selected valuers registered with the VRB. The collected data were analyzed by using SPSS, and Cronbach's alpha was used to determine the reliability of the questionnaire survey. The relative importance index was used to rank the importance of environmental factors, whereas the Chi-square test was used to examine existing practices in terms of prominent tools and methodologies used to incorporate environmental attributes into their valuation assignments.

**Results**:

The study reveals that, in Tanzania, there is a growing consciousness of the need to consider environmental attributes in practice though indicated that there is a challenge with how they consider these attributes using prominent valuation techniques in place. The study suggests that valuers and other stakeholders are eager to learn how to consider and integrate environmental features and contemporary valuation techniques to provide up-to-date estimates to support informed decision. The study recommends introducing Environmental, Social, and Governance (ESG) factors in terms of their theoretical foundation and practical implication on property valuation studies.

***Keywords:***

*Property Valuation, Sustainability, Climate Change, Valuation Methods, Tanzania*

## 1. INTRODUCTION

As the issues of the environment become more prominent, the need to accurately determine the impact of environmental attributes on the market value of the real estate is required. As there is significant research into the design and construction of buildings and the subsequent benefits of these buildings, particularly environmentally, there is an apparent 'inconsistency with how professional valuers consider environmental attributed during property valuation' (Lorenz & Lützkendorf, 2008). The relationship between the environment is increasingly important to the real estate valuation community.

With the advent of rising global initiatives to address climate change and sustainability, interest in addressing theoretical and practical alignment of how professional valuers consider environmental attributes has become the focus of much attention (Lin & Mohan, 2011). Yet the overlap between consideration and non-consideration of professional valuers is largely not surveyed. Therefore, addressing the significance of considering environmental attributes in property valuation becomes the main focus of this study.

The influence of environmental factors on the value of the property is widely defined by the needs of property market participants such as health, well-being, security, long-term investment, high scenic value, and high living standards (Bergman, et al., 2020). Thus, a professional valuer will need to develop knowledge of such possible implications to advise clients particularly as the world introduces strategies aimed at mitigating the impacts of climate change.

But environmental factors and their benefits are not traded in the market, hence making it hard for professional valuers to adopt them separately during valuation assignments (Cappucci, 2018). This is because, the concepts are still emerging especially in developing countries where there exists little research which shows to what extent valuers consider environmental factors separately in their valuation process (Abdullah, et al., 2020). There is limited empirical data on environmental attributes that should be involved in property valuation, but as the industry develops, this may change as predicted by various researchers (Lützkendorf & Lorenz, 2005). However, it is going to take the changing attitudes of professional valuers to bring about serious change in the property industry.

This study seeks to answer; what are the significant environmental factors professional valuers consider when ascertaining property values which will pave the way for sustainable property valuation practices. The study asses the current perception of professional valuers and how they consider these environmental factors in their practices, assuming that just like how these factors are considered in developed economies and bring significant impacts on value, would drive the advancement of their practical skills in Tanzania.

The study hypothesized that the current practice in Tanzania still lags in the use of contemporary valuation practices used to consider environmental factors in their valuation due to the stagnant dependency on traditional methods of valuation.

## 2. AN OVERVIEW OF ENVIRONMENTAL ATTRIBUTES AND PROPERTY VALUATION

The primary concern for property performance that valuers should understand is; environmental impacts: the influence of water, wind, temperature, and other environmental conditions on an asset (Lin & Mohan, 2011). However, this paper does not cover the entire spectrum of environmental issues that have given rise to the global environmental agenda, but the environmental attributes which have been stipulated in property valuation literature for professional valuers to consider during a valuation assignment.

The extent of these attributes on the value of properties varies between location and locality due to the heterogeneous nature of the real estate market. The first attribute is Location, which is one of the major environmental factors discussed widely. Robinson (2005) ascertains that locational qualities have a significant impact on the building's value whether beneficial or bad. Recent environmental impacts that should be assessed during a valuation assignment include setbacks from waterways caused by growing floods and sea level risks in properties below sea/river level.

The second attribute is Accessibility which is another key environmental feature with a significant impact on all property types (Waddock, Graves, & Worzala, 2011). The authors continue arguing that, accessibility has an impact on both individuals who live in the building (tenants) and those who come to see it (buyers). Changes in fiscal and regulatory transportation regulations make it critical for environmental and economic performance that property is accessible via a variety of modes of transportation, particularly public and mass transportation for both people and goods (Lorenz, 2006).

Professional valuers should consider where properties are constructed whether it is brownfield land, site water management, watercourse setbacks, site development, and other aspects (RICS, 2009). The RICS Guide Book, (2020) ascertain that the existing environmental concern which has relevant to standing properties on land use feature are: (a) Properties on previously built land may generate issues of potential contamination, resulting in a financial outlay and/or insurance against future difficulties; and (b) Soil erosion, flood (tidal, fluvial, and surface water), wind, and other climatic activities may expose land to increasing consequences of climate change, with the rising expense of treating these impacts decreasing net income.

But environmental attributes and their benefits are not traded in the market, hence making it hard for professional valuers to adopt them separately during valuation assignments (Cappucci, 2018). This is because, the concepts are still emerging especially in developing countries where there exist few types of research which show to what extent valuers consider environmental attributes separately in their valuation practices (Abdullah, et al., 2020). This also includes the methods adopted by professional valuers in developing countries where they don't take into account both the use and non-use values of environmental factors (Babawale, 2011).

Various authors studied the five traditional methods of valuation and their application in consideration of environmental factors in ascertaining property values (Babawale, 2011). In debating on which are appropriate methodologies, Lorenz (2006) argued that the traditional methods result in distorted values

which do not reflect all environmental factors. His study draws attention to contemporary methods as appropriate in considering environmental factors where he was analyzing the usefulness of traditional and modern methods to property valuation. The contemporary methods are quoted to be environmentally friendly (Oyalowo & Babawale, 2011), in considering both qualitative and quantitative features of the properties, making it easier to analyze the relationship between the environment and property prices.

Despite there being the meeting of minds between researchers on environmental factors as shown above, there exists still various challenges in practice such as environmental factors are inseparable and contain a multitude of components; and assessing and analyzing individual elements of natural environments fail to produce comprehensive result due to interaction between environmental phenomenon and people (Cappucci, 2018). Some of the environmental factors cannot be priced due to their nature, therefore making it hard for professional valuers to foresee their present and future monetary worth precisely (Kimmet, 2006). This is because the profession is limited by the problem of lack of data (accurate data) leading to distorted estimation of value, simplified reporting, and uncertainty to the applicability of approaches (Kucharska-Stasiak & Olbinska, 2018).

## 3. METHODOLOGY

Data obtained for this study were from a survey collected from fifty professional valuers in Tanzania. The sample size was selected using the combination of both simple random sampling and stratified random sampling based on the categorical classification of professional valuers under the Valuers Registration Board (VRB). This was done through the process of breaking the population of registered professional valuers into three categories which are: Full Registered Valuers (FRV), Provisionally Registered Valuers (PRV), and Technician Valuers (TV). Random selection from each stratum was performed and combined into a single research sample to estimate population parameters. The researcher distributed (89) questionnaires in total, where fifty (50) were completed and returned. The response rate represents 56.2% which is above the satisfactory response rate of 50% or more (Dillman, 2000) and between 18% and 60% (Morton., et al., 2012).

In addressing the study, the survey questionnaire of closed-ended questions was designed containing three sections. In the first part, the professional valuers were asked to provide information about their demographic characteristics in terms of educational qualifications, professional status, years of industry cognitive experience, and area of specialization, amongst other information. In section two, a Likert scale was structured containing all environmental attributes for determining property values in Tanzania. A scale of 1 to 5, representing highly insignificant to highly significant, was adopted. The last section was structured to assess the relationship between environmental attributes consideration and valuation methodologies which are prominent in Tanzania.

The environmental factors which were obtained were tested using Cronbach's alpha in Table 1 below to determine internal consistency with how they were disaggregated in the questionnaire survey. Cronbach's alpha values vary from 0 to 1, with values above 0.70 indicating valid reliability (Hair, 2010). Cronbach's alpha value of 0.928 was attained for this research. These numbers are higher than the

acceptable threshold of 0.70, indicating that the responders are consistent internally. This means that accurate conclusions can be drawn from the data gathered.

***Table 1*** Reliability analysis of the variables

| Overall Cronbach's alpha reliability = 0.928 | |
|---|---|
| Environmental attributes | Cronbach's alpha if an item deleted |
| Land use | 0.914 |
| Location | 0.914 |
| Accessibility | 0.914 |
| Energy use | 0.926 |
| Services | 0.916 |
| Design | 0.917 |
| Building materials | 0.913 |
| Waste management | 0.927 |
| Environmental regulations | 0.927 |

## 4. FINDINGS AND DISCUSSION

The findings discussed in this part are the information collected from the questionnaire survey which was distributed to professional valuers in Tanzania. The statistical analysis methods used to analyze the acquired data and draw inferential conclusions from the questionnaire surveys are Cronbach's Alpha, Mean Score, coefficient of variation (COV), and chi-square. These statistical analyses were carried out using SPSS software version 20.0 (SPSS Inc., Chicago, USA). Data was coded in Microsoft Excel (Microsoft, USA) before being imported into the SPSS software for analysis and certain calculations.

### 4.1. Environmental Factors to Consider During Property Valuation in Tanzania

In the real estate valuation community, the relationship between the environment and its impact on property market value is becoming increasingly essential (Myers, et al., 2007). Consideration of environmental factors during property valuation by professional valuers is perceived differently by the different stakeholders due to the heterogeneous nature of real estate properties (Shapiro, Mackmin, & Sams, 2012). Currently, there is limited empirical data on environmental attributes that should be involved in property valuation, but as the industry develops, this may change as predicted by various researchers (Lutzkendrof & Lorenz, 2005). As a result, the current study aims to establish the current state of how professional valuers consider environmental features, the methodology, and the way forward in Tanzania's real estate market.

Table 2 below highlights the descriptive statistics measures of each of the variables through testing MS Ranking and COV of the ordinal scale we provided in the study. We measured this using a 5-point Likert scale and respondents ranked their choice from an ordered scale of 1 – highly insignificant to 5 – highly significant. The analysis indicates that land use is the most significant considered factor as it has scored a COV of 0.26, whereas the least significant factor is environmental regulation as it scored a COV of 0.39. Furthermore, the result indicates that the variation between environmental factors is low which

suggests a high agreement among professional valuers on the significance of considering it during their valuation.

Additionally, the MS ranking of location, accessibility, and land use are strongly considered important during valuation, where energy use, services, building quality, building material, and waste management are significant, while the environmental regulation factors scored a value of indifferent. The highest-ranked attribute (location) has been investigated widely in the literature. This attribute was ranked highly important to consider by professional valuers with an MS of 4.49 which confirms a study by Wilkinson and Archer (2000) that suggests location as an important factor to consider during property valuation.

The other two highly significant attributes which are also ranked second and third in the overall environmental factors list are accessibility and land use, with MS of 4.32 and 4.27, respectively. This can be justified in the sense that; real estate stakeholder considers the use of the property and the accessibility to various location in the property market. For example, when making residential decisions, a tenant of a home buyer would consider the use of the property and neighborhood as well as the distance from the property to areas i.e., CBD, schools, workplaces, and health centers. Han, et al., (2002) reported that property in land use with good characteristics commands a high value. Also, Kauko (2002) established that accessibility is a significant factor to consider during property valuation.

***Table 2*** Ranking of the Importance of Environmental Factors during the Valuation

| Environmental factors | Mean score | COV | Overall ranking | Critically |
|---|---|---|---|---|
| Land use | 4.27 | 0.26 | 3 | H. significant |
| Location | 4.49 | 0.26 | 1 | H. significant |
| Accessibility | 4.32 | 0.28 | 2 | H. significant |
| Energy use | 3.54 | 0.31 | 8 | Significant |
| Services | 4.05 | 0.27 | 4 | Significant |
| Building quality | 3.95 | 0.27 | 6 | Significant |
| Building materials | 4.00 | 0.27 | 5 | Significant |
| Waste management | 3.65 | 0.30 | 7 | Significant |
| Environmental regulation | 3.35 | 0.39 | 9 | Indifferent |

**Note:** H. significance is highly significant

### 4.2. Methodological Shortcomings

The assumption that a valuer's familiarity with certain valuation methods automatically translates to their consideration of environmental factors is an insufficient generalization. In this case, the familiarity and amount of usage correspond to the most often used method, which later, we will translate to their application in consideration of environmental factors in Tanzania.

Table 3 below on the level of usage of the conventional methods by professional valuers in Tanzania indicates that many (84%) always employ the cost method in their valuation. This conforms to the case in other property markets in Africa, where the cost method is the most widely applied method among the traditional approaches (Maseleku, 2021; Oladejo, et al., 2015). The income and the comparison

methods are used regularly as valuers indicated 68% and 48%, respectively. The investment and residual methods are the least adopted methods, as they both illustrated 74% and 44%, respectively, where professional valuers insisted on not practicing these methods at all. This supports the findings of Abidoye (2017) and also corroborates the position of some researchers (Abidoye, 2016; Babawale & Oyalowo, 2011; Jenkins, 2000; Lorenz & Lutzkendorf, 2005;) that the traditional methods of valuation are simple in approaches because they are dependent on the availability of market information and the valuers' subjective judgment, and thus fail to consider all the environmental factors for the past, present and future property performance.

***Table 3*** Adoption of Conventional Methods of Valuation

| Valuation methods | Always | | Regularly | | Not at all | |
|---|---|---|---|---|---|---|
| | n | % | n | % | n | % |
| Comparison method | 20 | 40.0 | 24 | 48.0 | 6 | 12.0 |
| Cost method | 42 | 84.0 | 7 | 14.0 | 1 | 2.0 |
| Profit method | 10 | 20.0 | 18 | 36.0 | 22 | 44.0 |
| Income method | 8 | 16.0 | 34 | 68.0 | 8 | 16.0 |
| Residual method | 2 | 4.0 | 11 | 22.0 | 37 | 74.0 |

### 4.3. Valuers' Awareness of the Methodological Shortcoming

Professional valuers were asked to indicate if they are aware of how conventional methods accounts for environmental features during their application. Table 4 below shows that the professionals are not aware of how conventional methods of valuation account for environmental factors extensively in their practice. The information indicates that all respondents (100%) are not aware that comparison, cost, and income methods account for all environmental factors intensively, while 84% and 80% of the professional valuers hold the same stand on investment and residual methods, respectively. This conforms to the findings of Komu (2017) and also corroborates the position of other researchers (Abidoye, 2016; Babawale & Oyalowo, 2011; Jenkins, 2000; Lorenz & Lutzkendorf, 2005; Mwasumbi, 2014) that the traditional methods of valuation are simple in approach, because they are dependent on the availability of market information and the valuers' subjective judgment, and thus are not able to account for all property performance factors i.e., non-market factors.

***Table 4*** Awareness of Conventional Methods Shortcomings

| Valuation methods | Aware | | Not aware | |
|---|---|---|---|---|
| | Frequency (n) | Percentage (%) | Frequency (n) | Percentage (%) |
| Comparison method | 0 | 0.0 | 50 | 100.0 |
| Cost method | 0 | 0.0 | 50 | 100.0 |
| Profit method | 8 | 16.0 | 42 | 84.0 |
| Income method | 0 | 0.0 | 50 | 100.0 |
| Residual method | 10 | 20.0 | 40 | 80.0 |

The conventional methods rely much on past and present market data in concluding the values of properties. We examined these methodologies and their relationship with professional valuers' characteristics and their awareness of these methods in considering the environmental factors they ranked above. Table 4 below shows the relationship between professional valuers' educational level, their level of professional experience, and how they consider environmental factors using conventional valuation methods. The findings indicate that the professional valuers' educational level, years of experience, and consideration of environmental factors had a significant statistical relationship with the comparison, the cost, and the income methods of valuation with a p-value of 0.000 in the three instances. This indicates that the awareness of these three-valuation methods' inability to account for environmental factors could be attributed to valuers' educational qualifications. For the investment and residual methods, their p-value of 0.514 and 0.303, respectively, which are greater than 0.05 depicts a non-statistically significant relationship between professional valuers' education and accounting for environmental factors using them. This indicates that most of the professional valuer's awareness of the practical shortcoming of residual and investment methods is low since the methods are not preferable in the Tanzania property market, hence not able to conclude whether they can use them in accounting for environmental factors.

***Table 5*** Chi-square Test for Shortcomings of Conventional Methods in Considering Environmental Factors and Valuers' Profile

| Valuation methods | $x^2$ value | Degree of freedom (df) | *p*-value |
|---|---|---|---|
| *Educational level* | | | |
| Comparison method | 0.000 | 3 | 0.000 |
| Cost method | 0.000 | 3 | 0.000 |
| Profit method | 2.292 | 3 | 0.514 |
| Income method | 0.000 | 3 | 0.000 |
| Residual method | 3.637 | 3 | 0.303 |
| *Level of professional experience* | | | |
| Comparison method | 0.000 | 2 | 0.000 |
| Cost method | 0.000 | 2 | 0.000 |
| Profit method | 6.897 | 2 | 0.032 |
| Income method | 0.000 | 2 | 0.000 |
| Residual method | 1.576 | 2 | 0.455 |

**Note:** a- No statistics are computed because the method is constant

### 4.4. Challenges and Measures in Consideration of Environmental Factors in Property Valuation

Table 6 illustrates who is to hold the highest responsibilities for the shortage of explicit accounting of environmental features during property valuation practices. The analysis indicates that the educational institutions are responsible for low awareness and assessment of environmental factors with an MS score of 3.68, followed by real estate professionals themselves with an MS score of 3.58, and professional bodies i.e., VRB came third with an MS score of 3.18. This conforms with the findings reported in Table

5 above that educational institutions and professional bodies are accorded utmost attention by the concerned professional valuers as well other stakeholders in property valuation. The other additional factor which received a high MS (ranked 2nd) is the individual valuers who have not been prospective enough to be updated on the emerging issues in the environment and real estate valuation globally.

***Table 6*** Who is to blame?

| | Level of agreement (%) | | | | | Mean score | Standard deviation | Rank |
|---|---|---|---|---|---|---|---|---|
| Factors | SD | D | N | A | SA | | | |
| The Academic institutions are responsible for the lack of awareness and adoption of environmental factors in the valuation | 12.0 | 10.0 | 16.0 | 22.0 | 40.0 | 3.68 | 1.406 | 1st |
| Real estate professionals are responsible for the lack of awareness and adoption of environmental factors in the valuation | 8.0 | 12.0 | 20.0 | 34.0 | 26.0 | 3.58 | 1.230 | 2nd |
| Valuation Board and Professional Bodies are responsible for the lack of awareness and adoption of environmental factors in the valuation | 12.0 | 24.0 | 18.0 | 26.0 | 20.0 | 3.18 | 1.335 | 3rd |
| The Valuers' level of education is responsible for the lack of awareness and adoption of environmental factors in the valuation | 38.0 | 20.0 | 22.0 | 10.0 | 10.0 | 2.34 | 1.349 | 4th |
| The Valuers' years of professional experience are responsible for the lack of awareness and adoption of environmental factors in the valuation | 40.0 | 16.0 | 26.0 | 12.0 | 6.0 | 2.28 | 1.278 | 5th |

**Note:** SD – Strongly disagree, D – Disagree, N – Neutral, A – Agree, SA – Strongly agree

Furthermore, Table 7 below reflects the opinion of the professional valuers on the measures that could enhance the assessment of environmental factors in practice. Of the five indicated measures, the introduction of environmental features (ESG Components) in property valuation studies and its application in property valuation practices, as well as compulsory attendance of the valuers in the training, seminars, and workshops organized by VRB or AREPTA, was ranked first with an MS value of 3.76. This stand corroborates the earlier findings (see Table 4 and Table 5) on the importance of the educational system and the applicability of local property market segmentations. This still amounts to the need for basic educational training for real estate undergraduates to keep them updated with the current trends in the international property valuation practice (Mooya, 2015).

Also, the partnership between Tanzanian real estate professional bodies and international professional bodies i.e., AfRES and RICS were ranked third with an MS value of 3.36. This indicates the need for collaboration between Tanzanian professional bodies and international bodies. This partnership has been achieved in some African countries i.e., South Africa and Ghana, and goes beyond affiliation to operational international real estate bodies such as RICS and has extended their operation to those markets (RICS, 2009).

***Table 7*** Measures to Enhance Consideration of Environmental Factors

| Factors | Level of agreement (%) | | | | | Mean score | Standard deviation | Rank |
|---|---|---|---|---|---|---|---|---|
| | SD | D | N | A | SA | | | |
| Introducing ESG-related features (i.e., environmental factors) in property valuation studies and their implication in practice | 14.0 | 6.0 | 8.0 | 34.0 | 38.0 | 3.76 | 1.393 | 1st |
| Professional valuers' compulsory attendance of training, seminar, workshop, and conferences organized by VRB or AREPTA | 8.0 | 10.0 | 18.0 | 26.0 | 38.0 | 3.76 | 1.287 | 1st |
| VRB and AREPTA partnership with international real estate valuation professional bodies | 14.0 | 14.0 | 18.0 | 30.0 | 24.0 | 3.36 | 1.367 | 3rd |
| The amendment of the membership code of conduct and formation of local standards by VRB and stakeholders | 14.0 | 8.0 | 34.0 | 26.0 | 18.0 | 3.26 | 1.259 | 4th |
| Professional valuers' mandatory acquisition of higher academic education | 22.0 | 24.0 | 12.0 | 18.0 | 24.0 | 2.98 | 1.518 | 5th |

**Note:** SD – Strongly disagree, D – Disagree, N – Neutral, A – Agree, SA – Strongly agree

## 5. CONCLUSION

Property valuation in Tanzania is certainly a significant sector, especially in aligning economic return with various other features i.e., Environmental, Social, and Governance Factors. The sector is inarguably the pillar of the financial industry in the country where both central and local government depends on analyzing the economic return of projects which aims at wealth creation. Therefore, it is deemed significant for professional valuers to take into consideration contemporary and up-to-date features that might have an impact on the values of properties to make an informed conclusion. The problem facing the industry as a whole is to make sure that property valuations and financial instruments are updated to represent the genuine market value of properties, given the possible mainstreaming of sustainable development into real estate investment decisions.

The study by Lorenz (2006) wails the disclaimer in valuation reports where valuers indicate not knowing specific environmental contributions to property value, and this lament was supported by the findings of this study on understanding environmental features in contrary to day-to-day methodologies used to ascertain market value. Further, it elaborated what are the challenges of this lagging which was highly associated with stakeholders' responsibilities. To attain sustainable property valuation practices which are at the center of sustainable human settlement development, core stakeholders i.e., educational institutions, professional bodies, and private firms have to aim at being at the forefront of this endeavor.

The study recommends that future researches take a role in trying to influence property market condition through tested contemporary methodologies and models which meets the needs of concurrent issues and other stakeholders (owners, occupants, buyers, sellers, investors, governments, financiers, developers, and property managers) needs. The influence of valuers in deciding on property investment is undeniable, although this should be done carefully to ensure that values are not led by valuers or

clients. Therefore, consideration of environmental factors in property valuation practices could rise to contemporary challenges, and being so will determine the importance of the profession in the country and world at large.

## 6. AREA FOR FUTURE RESEARCH

Future research should consider developing property valuation models and simulating a larger sample size on attributes that determine property values. The consideration of environmental attributes using advanced valuation techniques in property valuation in Tanzania and other East African countries should be explored and compared to ensure sustainable property valuation practices.

## 7. ACKNOWLEDGMENT

We would like to extend our appreciation to Ardhi University (ARU) for granting us the opportunity to research this study under the Department of Land Management and Valuation through the provision of material support and guidance towards this study. We were glad to learn from everyone at different a, with special mention of Dr. Samwel Alananga for the time, effort, and constructive comments on this study. We would also like to extend our appreciation to our colleagues for inspiring us towards the whole process.

## 8. FUNDING

No Funding

## 9. AUTHORS' CONTRIBUTIONS

**Yusuph Iddi:** Field Researcher and Writer

**Upendo Matotola:** Commentator and Reviewer

## 10. REFERENCES

Cappucci, M. (2018). The ESG intergration paradox. *Journal of applied corporate finance, 30*(2), 22-28.

Din, A., Hoesli, M., & Bender, A. (2001). Environmental variables and real estate prices. *Urban Studies, 38*(11), 1989-2000.

Gwamma, E., Yusoff, W., & Ismail, M. (2015). Determinants of land use and property value. *Advanced science letters, 4*(2), 400-407.

Hair, S. (2010). *Multivariate data analysis* (7th ed.). New Jersey: Prentice-Hall.

Han, S., Yu, M., Malone-Lee, S., & Basuki, A. (2002). Dynamics of property value distribution in an Asian metropolis: The case of landed housing in Singapore, 1991-2000. *Journal of Property Investment & Finance, 20*(3), 254-276.

Horvathova, E. (2010). Does environmental performance affect financial performance? A Meta-Analysis. *Ecological Economics, 70*(1), 52-59.

Hoxley, M. (2008). Questionnaire design and factor analysis. In A. Knight, & L. Ruddock, *Advanced research methods in the built environment* (pp. 122-134). Chichester, UK: Wiley-Blackwell.

Jovanović-Popović, M., & Kosanović, S. (2009). Selection of building materials based Upon Ecological characteristics: priorities in the function of environmental protection. *SPATIUM International Review, 20*(2), 23-27.

Kryvobokov, B., & Wilhelmsson, M. (2007). Analyzing location attributes with a hedonic model for apartment prices in Donetsk, Ukraine. *International Journal of Strategic Property Management, 11*(3), 157-178.

Lin, C., & Mohan, S. (2011). Effectiveness comparison of the residential property mass appraisal methodologies in the USA. *International Journal of Housing Markets and Analysis, 4*(3), 224-243.

Lorenz, D., & Lützkendorf, T. (2008). Sustainability in property valuation: Theory and Practice. *Journal of Property Investment and Finance, 26*(6), 482-521.

Lützkendorf, T., & Lorenz, D. (2005). Sustainable property investment: valuing sustainable buildings through property performance assessment. *Building research and information, 33*(2), 212-234.

RICS. (2009). *Sustainability and commercial property valuation.* Coventry CV4 8JE, UK: Royal Institute of Chartered Surveyors (RICS).

Robinson, J. (2005). *Property valuation and analysis applied to environmentally sustainable development* (1st ed.). Melbourne: Wiley.

Shapiro, E., Mackmin, D., & Sams, G. (2012). *Modern methods of valuation* (11th ed.). London: Estate Gazette.

Thomas, N., & Costa, D. (2017). Adoption of environmental practice on construction sites. *Journal of ambient construction, 17*(4), 9-24.

Waddock, S., Graves, S., & Worzala, E. (2011). A new paradigm for real estate valuation? *Journal of property investment and finance, 29*(4/5), 341-358.

## 9. ADDITIONAL READING

Royal Institution of Chartered Surveyors (RICS) (2022). Sustainability and ESG in Commercial Property Valuation and Strategic Advice: RICS Guidance Note (3rd Edition), London, Global.

Lorenz, David & Lützkendorf, Thomas. (2008). Sustainability in property valuation: Theory and practice. Journal of Property Investment & Finance. 26. 482-521. 10.1108/14635780810908361.

Kucharska- Stasiak, Ewa & Olbińska, Katarzyna. (2018). Reflecting Sustainability in Property Valuation -Defining the Problem. Real Estate Management and Valuation. 26. 60-70. 10.2478/remav-2018-0016.

## 10. KEY TERMS AND DEFINITIONS

**Sustainable Property Valuation:** This is the method of determining a property's worth based on its effects on the environment and society. It is a relatively new idea that has grown in acceptance as more

people realize the significance of sustainability. Incorporating sustainability concerns into property valuation theory and practice aims to give valuers preliminary recommendations on how to include sustainability concerns in valuation reports.

**Environmental, Social, and Governance (ESG):** The standards that collectively constitute the framework for evaluating how a company's ethical and sustainable policies affect its operations and financial performance. The three pillars of ESG—environmental, social, and governance—combine to provide effective performance, which benefits the larger markets, society, and the entire planet. Consultation on the IVS 2020 Agenda, page 14.

**Basis of Value:** A statement of the fundamental measurement assumptions of a valuation.' (*Source: RICS Valuation – Global Standards Glossary*).