

# Estimating the Economic Benefits of sub-Saharan Africa Urban Land Use Planning Systems: A Methodological Discussion

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## **Abstract**

A large volume of literature discussion focuses on the weakness of sub-Saharan Africa (SSA) land use planning systems to the exclusion of their benefits. The starting point to any such effort at assessing the extent of benefit of these land use planning systems is to devise a suitable benefit estimation methodology. This study based on a review of the literature interrogates the conventional quantitative methodologies usually employed in the developed world to calibrate benefits of planning policies. It is established that conventional methodologies used in the developed world are associated with complexities and require huge volumes of organised data, which are hardly encountered in SSA. This signifies that a bespoke methodology is required to estimate the extent of benefits of planning regimes in the sub-region. The study therefore, prescribes a methodology based on the nature of the planning regimes and organised data peculiarities in the sub-region.

**Keywords:** Benefit, land use planning, methodology, sub-Saharan Africa, quantitative

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## 1. Introduction

The world is currently gripped with rapid urbanisation, environmental challenges and economic uncertainties (see UN-Habitat, 2009; Mathews, 2012). Stouthuysen and Roy (2010), for example, observe that though the world collectively has recorded much-more wellbeing in the last 40 years or so, people have come to terms with the fact that this prosperity has occurred at a price. This includes: an impoverished global south, social exploitation and uncontrolled exhaustion of the natural environment. It is even suggested that the growth and development being pursued under the current arrangement, if unchecked will evaporate (Mathews, 2011). Consequently, should the current global development continues at the same rate and manner, the world will acknowledge with misplaced pride in the next hundred years that the total destruction of the environment has been achieved (Stouthuysen and Roy, 2010). Already, the world is nursing the late 2008 economic downturn. Indeed, Europe is on the verge of a second recession while it is anticipated that China will experience decline in growth (Mathews, 2011).

Land use planning is widely proposed as the main panacea to the on-going development challenges (Godschalk, 2004; Roy, 2009; Brown, 2012). Yet land use planning systems in the developing world particularly those of SSA are weak to address these imperatives (Dowall and Ellis, 2009). Nonetheless, the relevant literature tends to overly concentrate on this weakness to the neglect of the benefit of these planning systems. As such, studies on the extent of benefit of land use planning systems in the sub-region have remained marginal. Comparatively, such studies which are useful for academic discourse and far reaching policy formulation are commonplace in the developed world, such as the UK and USA (see Cheshire and Sheppard, 2004; Ihlanfeldt, 2009). More so, the need for such quantitative studies has even become more imperative at a time when some constituent countries are undertaking planning reforms. But, the starting point to any quest to provide

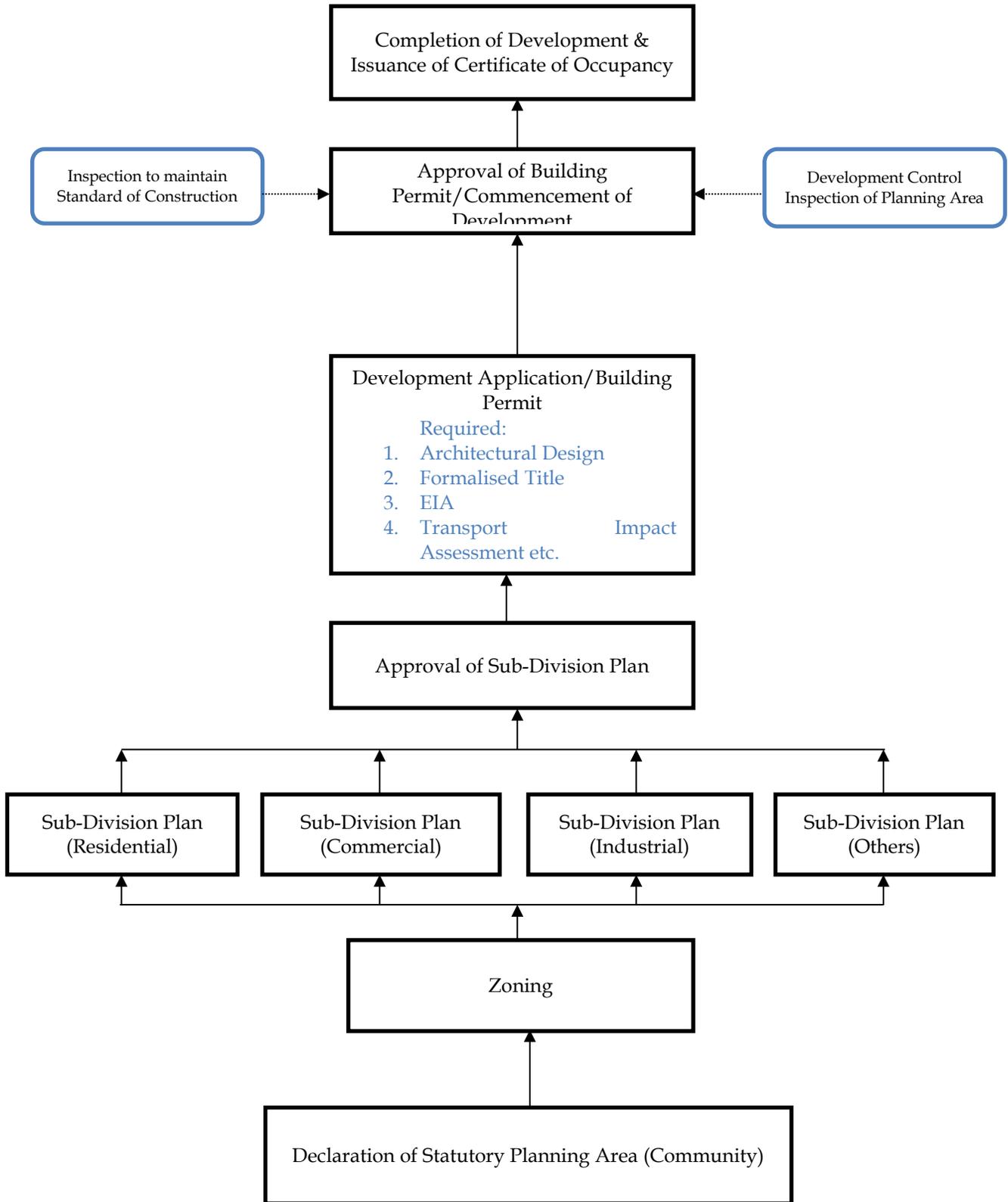
evidence of the magnitude of benefits of these planning systems is to develop an appropriate methodology.

This paper examines the conventional quantitative methodologies often employed in the developed world to calibrate benefits of planning policies. The aim is to propose a suitable methodology(ies) for application in SSA. It is argued that given the complexities associated with these conventional methodologies and their demand for huge volumes of organised data, a bespoke methodology taking cognisance of the nature of planning regimes and paucity of organised data in SSA, is required. The paper is organised as follows. Following this introduction, the paper outlines the nature of SSA land use planning systems with illustration of the operation of Ghana's planning system as a guide to the later development of the methodology. Subsequently, it examines the conventional methodologies usually employed in the developed world after which a simplified methodology is presented. The paper draws a conclusion at the end.

## **2. The Nature of SSA Land Use Planning Regimes**

SSA land use planning systems are predominantly legacies bequeathed by colonialism. Perhaps with the exception of South Africa, which has recently adopted integrated planning system (Musandu-Nyamayaro, 2008), countries in the sub-region mainly operate the modernist welfare technocratic rational comprehensive planning model (Rakodi, 2001; UN-Habitat, 2009). This planning model dwells on the master planning philosophy, and is driven by the land use segregation concept (Njoh, 2009). This means that SSA planning regimes are guided by four main principles namely: unifunctional land use; discrete zoning; regulation; and consensus, which signifies that government decisions are in the best interest of citizens (Afrane, 1993).

The operation of these planning regimes usually begins with a declaration of a community or an area as a statutory planning area by government after which no development is expected to commence until the area is zoned and covered by approved sub-division planning scheme(s). The zoning, and preparation and approval of sub-division plan(s) are also undertaken by government/local government. Subsequently, developers will have to obtain building/development permits from planning authorities – government or local government planning agencies, and commence development. The acquisition of building/development may also require pre-permit items, such as formalised title. A simplified version of the operation Ghana's planning regime is, for example, given by Figure 1.1.



**Figure 1.1 Simplified Version of the Operation of Ghana's Planning System**  
 Source: Adapted from Baffour Awuah *et al.* (2011)

In Ghana, the zoning, and preparation and approval of sub-division plan(s) are supposed to be undertaken by Metropolitan/Municipal/District Assemblies (MMDAs). These bodies are the planning authorities in the country (GoG, 1993). So from Figure 1.1, after approval of sub-division plans, developers are supposed to obtain building permit from relevant planning authorities. This requires pre-permit items like designs, formalised title and in some cases environmental and traffic impact assessment reports. Furthermore, planning authorities are supposed to check and approve every stage of construction of proposed development, and issue certificate of occupancy prior to occupation of newly constructed buildings. The idea of these processes and checks is to make sure that projects are well screened to meet required standards (Baffour Awuah *et al.*, 2011).

SSA planning regimes are also to ensure provision of infrastructure and amenities prior to commencement of actual building developments. The cost of zoning, sub-division plans, and infrastructure and amenities are supposed to be borne by government. Consequently, it can be said that planning regimes in the sub-regime promote plan, service, develop and occupy principle (see Oyugi and K'Akumu, 2007). Additionally, they are usually characterised by hierarchy of statutory plans and sets of development control regulations. These are also linked to local government administrative laws, and are driven by government and its officials to the exclusion of the larger populace (Rakodi, 2006).

Since the latter part of the 1980s, however, there have been arrangements where private land owners and developers engage their own consultants to prepare planning schemes. These planning schemes are then sent to the planning authorities for the requisite approval. The cost for the preparation and approval of the planning schemes are paid by the land owners. The same arrangement pertains to infrastructure and certain social amenities like community parks. That said, it needs to be acknowledged that most of these sub-division planning schemes in cities and

urban areas in the sub-region do not have the prior approval of planning authorities (Rakodi, 2006).

Moreover, SSA planning systems and those across the developing world are said to be dysfunctional (Dowall and Ellis, 2009). Indeed, the relevant literature is replete of criticisms of the planning systems in the sub-region. These criticisms include: planning regimes' restrictive covenants; complex bureaucratic planning procedures; inability to deliver developable lands; and high cost of compliance with planning requirements (Payne and Majale, 2004; Kironde, 2006). As yet, few studies have sought to examine the benefits of these planning systems, and more so, their extent to provide tangible evidence to support far reaching policy solutions at when several planning reforms are taking place in the sub-region. Admittedly, there have been some quantitative studies on urban development processes in the sub-region (see Asabere, 1981; Payne and Majale, 2004; Egbu *et al.*, 2007; Hammond and Antwi, 2010). However, majority of these studies, in the main, do not focus on the planning systems while the others also concentrate on single or few conventional planning policies/attributes. The foregoing notwithstanding, the starting point to the determination of the extent of benefits of the sub-region's planning systems is to develop a suitable methodology. Therefore, in seeking to propose a suitable methodology, the next section of the paper opens a discussion on the conventional methodologies for calibrating the extent of benefits of planning policies.

### **3. Estimating Land Use Planning Benefits - Conventional Methodologies**

Several approaches exist for economic evaluation of policies (Hammond and Antwi, 2010). From the standpoint of knowledge claims, economic evaluation of policies and for that matter, planning policies can be examined either from quantitative and qualitative perspectives (see Corkindale, 2004; Brueckner, 2007). The literature reveals three main methods from the quantitative perspective that may be used to

estimate the extent of benefits of planning policies. These are the multiplier-based, revealed preference and stated preference methodologies.

### **3.1 The Multiplier-Based Methodologies**

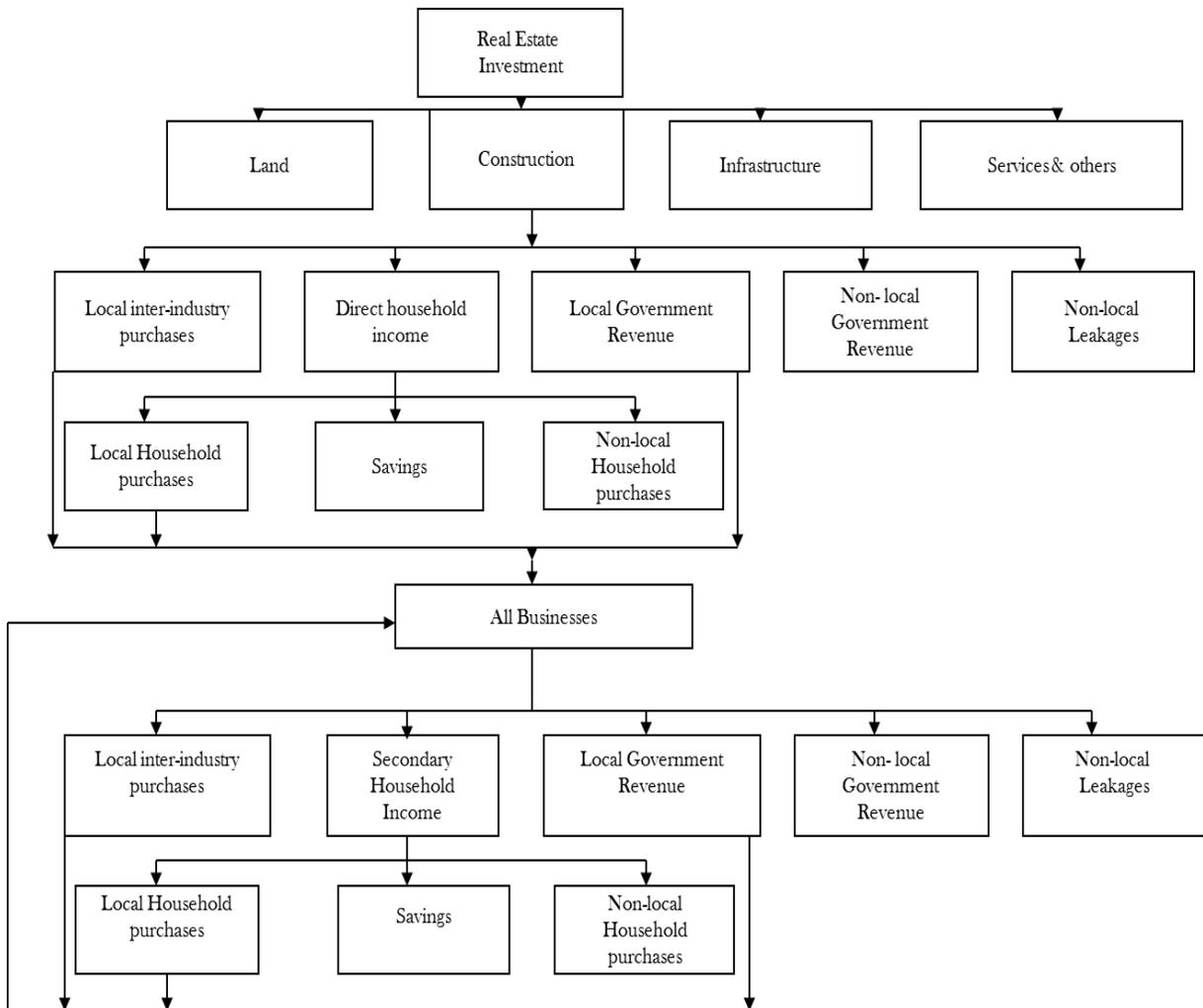
The multiplier-based methodologies come in several forms. These include:

- Economic based and Keynesian income-expenditure models (Armstrong and Taylor, 1985);
- Input-output model (see Miernyk, 1982; Armstrong and Taylor, 1985; Licfield, 1996); and
- Export based model (see Miernyk, 1982; Hughes, 2003).

However, the most popular and fancied model in recent times is the input-output model due to growth of its already made modelling systems that require only basic knowledge in computers (Hughes, 2003). That said, the basis of all these methods is the multiplier. As such, they work on the macro-economic level. In essence, they calibrate economic impact of policies on aggregate basis proxied on variables, such as employment, per capita income and GDP (see Hughes, 2003; Lee and Taylor, 2005).

The multiplier concept estimates economic impact based on the obvious, but fundamental principle that economic impact is expenditure driven (Armstrong and Taylor, 1985; Hughes, 2003). Consequently, any initial spending in an economy generates subsequent rounds of expenditure which ultimately translates into economic impact of the initial spending. Thus, as income increases in an economy, portion of this income is spent in the economy. This initial spending generates further rounds of expenditure until the initial injection has worked its way through the economy. The incomes, employment, sales etc. generated from these rounds of expenditure classified as direct, indirect and induced effects (Armstrong and Taylor, 1985; Crompton, 1995) are then noted as economic impacts. A simplified version of

the operation of the multiplier as applied to land use planning policies is shown by Figure 1.2.



**Figure 1.2: Operation of the Multiplier as applied to Planning Policies**

Source: Adapted from Lin and Var (1982)

In Figure 1.2, planning policies promotion of an initial expenditure in an urban economy in the form of real estate investment is spent on four major activities. These are land acquisition, construction of building units, infrastructure and marketing of the building units, and services related thereto. Dwelling on the construction of building units alone, the initial expenditure spent on this activity in an urban economy has the direct effect of creating employment and increasing household income through

payment of wages and salaries. In the same vein, direct purchases occasioned by the activity will generate indirect local inter-industry purchases. For example, the purchase of wooden doors for the building units will result in demand for timber, which in turn will create further employment and income in the urban economy.

Additionally, taxes such as those imposed by the urban government serve as urban government revenue. That aside, portion of direct household income not saved and same of those of local industries and urban government revenue spent on local goods and services create induced effects of employment and household income through all businesses in the urban economy. This, in turn commences another round of effect in the urban economy. The addition of all these effects of employment and income, and those of the other activities constitute the multiplier effects. These effects amount to the economic impact of the real estate investment and ultimately planning policies in the urban economy. The multiplier, thus, recognises and predicts the subsequent changes in the level of these economic activities in the urban economy (Crompton, 1995; Hughes, 2003). It is therefore, the coefficient of the initial expenditure made in an economy; the real estate investment as in the above example. In terms of income, this coefficient can be expressed mathematically as:

$$M = \frac{I}{X + Y + Z} \quad \text{Equation 3.1}$$

Where  $M$  is the multiplier coefficient,  $I$  is the initial spending in this case the real estate investment,  $X$  is the direct effect,  $Y$  is the indirect effect, and  $Z$  is the induced effect.

The workings of the multiplier concept are, however, associated with conceptual and practical problems which render them difficult, if not impossible, for application. First of all, several multipliers such as income, employment and housing can be assessed following an initial spending in an economic system. Conceptually, it remains unclear which of these multipliers is suitable for economic impact analysis (Crompton, 1995).

Besides, the calculation of the multiplier requires systematic and conscious tracing of direct, indirect and induced effects while making allowance for leakages, such as savings, taxes and imports. This exercise superficially may seem simple, but in actual sense it is very complex (Crompton, 1995; Hughes, 2003; Hammond and Antwi, 2010). Furthermore, it requires huge volumes of organised data, and transaction tables in the case of input-output models (Armstrong and Taylor, 1985; Lee and Taylor, 2005). However, such huge volumes of organised data are hardly encountered in SSA (Hammond and Antwi, 2010).

Additionally, one of the cardinal principles in economic impact analysis is to establish the counterfactual and prove that any observed change is due to introduction of intervention to avoid alternative explanation. This continues to be a challenge in multiplier-based impact analysis (Hammond and Antwi, 2010). Perhaps, a possible means of dealing with this problem is the use of comparative static method involving the employment of control and experiment groups. Even so, this may not be suitable for planning policies, which are usually applied in a uniform way (Monk and Whitehead, 1999; Hammond and Antwi, 2010). The foregoing demonstrates that it is practically difficult if not impossible to apply multiplier-based methodologies to estimate the extent of benefits of planning policies in SSA.

### **3.2 The Revealed Preference Methods - The Hedonic Price Model**

These methods operate on the basis of actual behaviour of people or market participants. For example, how much people actually pay for goods and services. The price paid is, in effect, considered as the value or benefit they derive from the goods and services (Wijnen *et al.*, 2009). As applied to planning, this can be conceived as how much people actually pay for planning attributes, such as approved sub-division planning schemes, tarred roads, electricity, formalised title and building permit. The most known and used revealed preference method is the hedonic price model (Rosen, 1974; Wijnen *et al.*, 2009).

The model works on the premise that goods are valued based on their utility bearing attributes or characteristics. Thus, embedded in a good are several attributes, which are valued on the basis of utility consumers derive from them (Rosen, 1974). It, therefore, operates by decomposing a good into its different attributes, and assigning implicit prices to each of them (Rosen, 1974; Sirmans *et al.*, 2005). These prices are known as hedonic prices and reflect the maximum amount consumers are willing to pay for a unit of an attribute. This is revealed to them from observed price of differentiated goods and specific amount of the attributes associated with them (Rosen, 1974).

The operation of the hedonic model mathematically can be illustrated as follows:

Let  $x = (x_1, \dots, x_k)$  where  $x$  is a set of ordered attributes of any good. This means that preferences of economic agents regarding the good are solely determined by its corresponding attributes vector. This further means that there is a functional relationship  $f$  between the price of the good,  $\rho$  and its attributes;  $x$  written as:

$$\rho = f(x) \quad \text{Equation 3.2}$$

Given the above functional relationship, the implicit prices of the attributes are assessed as partial derivatives of the hedonic function at Equation 3.2. This can be written as:

$$\frac{\partial \rho}{\partial x_k}(x) = \frac{\partial f}{\partial x_k}(x) \quad (k = 1, \dots, K) \quad \text{Equation 3.3}$$

The hedonic price (implicit price)  $\frac{\partial f}{\partial x_k}(x)$  all things being equal indicates how much of the price of the good,  $\rho$  changes, if it is endowed with an additional unit of the attribute  $\partial x_k$ .

A typical hedonic function can be expressed as follows:

$$\rho = \beta_0 + \sum_{k=1}^K \beta_k x_k + \varepsilon \quad \text{Equation}$$

3.4

Where  $\rho$  is the price of the good;  $\beta_0$  is the normal regression intercept;  $\beta_k$  ( $k = 1, \dots, K$ ) the coefficient of the regression is the marginal change in price with respect to a change of the  $k^{\text{th}}$  attribute  $x_k$  of the good; and  $\varepsilon$  is the stochastic term that takes care of anticipated measurement error.

The hedonic price model has received extensive application in the urban development processes and the real estate sectors particularly the housing market in the developed world, especially USA and the UK (Sirmans *et al.*, 2005). Within these sectors, attributes usually employed in the hedonic model include: age of building; land size; number of storeys; number of bedrooms and rooms; number of bathrooms; kitchen; and garage size. The rest are closeness to natural bodies, location in terms of neighbourhood and its environmental characteristics, such as crime rate and distance from the CBD, and location with respect to public facilities like schools and sewers. From the standpoint of land use planning, relevant impact studies use marginal prices of planning attributes of a property as its value hence the benefits (see Cheshire and Sheppard, 2004; McConnell and Walls, 2005; Cheshire and Vermeulen, 2009).

Related approaches have been the use of actual sale values of properties or the hedonic price indices to establish prices of properties and develop an OLS regression equation. This uses sale price of properties as dependent variable and their determinants as independent variables. A typical functional form of such equations is given below:

$$\rho x = \beta_0 + \beta_1 a + \beta_2 b + \beta_3 c \dots + \beta_n p + \varepsilon \quad \text{Equation 3.5}$$

Where  $\rho x$  is the nominal price of property;  $\beta_0$  is the normal regression intercept;  $a$  is all the variables that determine sale price of property except planning attributes;  $b \dots p$  are the planning attributes;  $\beta_1 \dots \beta_n$  are the coefficients of the variables; and  $\varepsilon$  is the stochastic term that takes care of anticipated measurement error.

Given this equation, if all the sale price determinants are the same or controlled for properties under inquiry except one, any difference in price is attributable to that determinant and is seen as the value or impact of that determinant. A similar reasoning is also used to assess the impact of planning policies on supply of land and housing or number and cost of constructions. Studies, such as Bramley and Leishman (2005) in the UK, and Ihlanfeldt (2007, 2009) and Glaeser and Ward (2009) in the USA dwelt on this approach.

The use of hedonic and the related methodologies in the urban development process and real estate sectors in the developed world has been made possible due to availability of huge volumes of organised data and articulate property market. Indeed, the studies outlined in the preceding paragraph, for example, relied heavily on rich archival time series data from building societies and government departments. However, such situations are hardly encountered in SSA (Egbu *et al.*, 2007; Hammond and Antwi, 2010). That is not to say that these methodologies have not been used in the sub-region before. Rather, they have been used in relatively few cases where organised data exists. Even so, in the developed where these methodologies have received extensive application relevant studies have often resulted in disagreement over findings due to complexities associated with their application (see Quigley and Rosenthal, 2005; Adams *et al.*, 2005). For example, the controversy on attributing the value of planning to planning constraints or amenity from the standpoint of these approaches still lingers (see Ihlanfeldt, 2007). This makes interrogation of the stated preference methods imperative.

### **3.3 The Stated Preference Methods - Contingent Valuation Method (CVM)**

The stated preference methods are usually used for the valuation of goods and services, which have no known existing markets, such as public goods (Lusk and Norwood, 2009; Wijnen *et al.*, 2009). These methods include the paired data and conjoint analyses. However, the most popular and used method under this group of methods is the CVM.

This method is based on 'value theory' and works on the presumption that individuals value their own consumption in a rational manner. That is, they will seek to maximise consumption or utility and minimise their expenditure as best as possible subject to constraints like income and other socio-economic factors. It, thus, seeks preference measurements from individuals who are affected by non-marketed goods based on the notion of compensating and equivalent variations or the concept of WTP and WTA (Brookshire *et al.*, 1982; Lusk and Norwood, 2009).

Fundamentally, it is a process of eliciting people's preference in terms of how much they are willing to pay for a satisfaction from a non-marketed good, seen as benefit or how much they are willing to accept for a loss in satisfaction from a non-marketed good. In the context of land use planning, this may mean how much property owners/developers will be willing to pay for planning attributes like sub-division planning scheme, formalised title, building permit and vice-versa when these attributes are not available.

The method uses questionnaire survey to elicit responses for willingness to pay for a benefit or accept payment for a loss (Brookshire *et al.*, 1982; Akwansivie *et al.*, 2010). The rationale is to stimulate a market for the good, which has no market and generate its value based on the hypothetical market created and presented to respondents (Akwansivie *et al.*, 2010). As applied to this paper, this may be describing vividly the planning attributes and the applicable market conditions. Several approaches are used to elicit bids - WTP and WTA under CVM. These include open ended elicitation method, bidding game, and dichotomous choice method, which is sometimes referred to as the referendum method (Akwansivie *et al.*, 2010).

CVM has gained wide application initially in the field of environmental economics (Brookshire *et al.*, 1982; Akwansivie *et al.*, 2010), and subsequently in the social policy arena (Wijnen *et al.*, 2009; Akwansivie *et al.*, 2010). The method's wide application is not

limited to the developed world, but also in the developing world it has begun to see substantial application. For example, Akwansivie *et al.* (2010) used the method to estimate the willingness of residents of Kumasi and Accra, Ghana to pay for the cost of improving water quality in these areas.

This upsurge in the use of the CVM has been due to its rigorousness and versatility to incorporate different components of value of a good and make respondents aware prior to submitting bids (Wijnen *et al.*, 2009), a situation which is not possible under the hedonic model. Besides, the scope of the methodology is broad and does not depend on availability of data on peoples' actual behaviour (Wijnen *et al.*, 2009). That said, the method is said to suffer from hypothetical biases. This situation arises where there is a potential discrepancy between what people say they are willing to pay in a contingent market survey and what they actually pay when confronted with the real situation (Lusk and Norwood, 2009). It is observed that such behaviours are pervasive and, on average, people tend to overstate their willingness to pay by a factor of three in hypothetical settings compared to actual situation where money is involved (see Little and Berrens, 2004; Murphy *et al.*, 2005).

Related to the above problem is social desirability bias where respondents answer questions to please researchers or answer questions to conform to some social norms (Lusk and Norwood, 2009). Another problem with the method also has to do with the considerable resources involved in carrying-out contingent valuation survey. Apart from the financial resources, the time required to brief respondents about the good, and to fill questionnaires may be enormous. This may not allow respondents to complete their decision-making process towards submitting a bid (Coursey *et al.*, 1987).

It has, however, been argued that a well-designed and carefully executed contingent valuation survey can produce accurate and useful information on household preferences (Akwansivie *et al.*, 2010). As such, several solutions have been prescribed to

address the problems with the methodology. For example, it is suggested that hypothetical and social desirability biases are due to strategic behaviour to free ride and derive utility respectively (Lusk and Norwood, 2009). Therefore, methods, such as framing appropriate questions, the adoption of ex post calibration, the use of cheap talks to make respondents aware of these biases, and making people to submit bids for others to avoid subjectiveness and biases are recommended (Lusk and Norwood, 2009).

#### **4. Methodology Prescription**

The discussions in section 3 established that proposed developers in SSA will have to meet several planning requirements prior to development and thereafter. Planning systems in the sub-region are also to ensure provision of infrastructure and amenities. These infrastructure and amenities, and other planning requirements include approved sub-division planning scheme, infrastructure (tarred roads and drains, electricity, pipe-borne water), social amenities (school, community park, convenience shop), architectural design, formalised title, and building permit. These requirements constitute planning systems' attributes. Economics principles suggest that the value of an item is reflected in its price. This means that the price people pay or will be willing to pay for these planning attributes signifies the value or benefit of these attributes. However, this can only be extracted from items, such real estate products that these planning attributes' impinge.

Discussions in the preceding section also brought to the fore that conventional methodologies particularly the multiplier-based and the revealed preference methods, for calibrating benefits of planning policies are complex and require huge volumes of data, which are hardly encountered in SSA. Besides, a number of the planning attributes, such as sub-division plans, building permit and architectural designs are not part of the conventional attributes used in the hedonic models or its related methodologies. Based on the foregoing exigencies, two possible methodologies are proposed.

## Methodology One

Methodology one proposes the following:

- The use of contingent valuation survey in a repeated measure design to obtain professional opinions of value of experienced real estate valuers and agents, for a specified real estate product say: a standard 3-bedroom house in a particular location. Thus, an analysis at the marginal level is envisaged.
- The real estate valuers and agents, unlike the usual contingent valuation survey where respondents are asked to submit a bid on how much they are willing to pay or accept for a good/service or forgo it, should be asked to provide their opinions of value for the specified property under different circumstances based on their experience – that is, where the property is without all the planning attributes, and if it is associated or covered by a particular attribute to the exclusion of all the others. The connection of the adapted contingent valuation survey approach to the usual one is that, it will stimulate market for the planning attributes and generate the extent of their benefits based on the hypothetical market that will be created and presented to them.
- The reported opinions value can then be plugged into Equation 3.5 re-stated here as:

$$\rho x = \beta_0 + \beta_1 a + \beta_2 b + \beta_3 c \dots + \beta_n p + \varepsilon \quad \text{Equation 3.6}$$

Where  $\rho x$  is the price or the reported values of the property if it is associated with only a particular attribute and all other variables are as previously defined.

From the foregoing discussion, a particular planning system's benefit per a specified property in a particular location can, thus, be expressed as:

$$UR_b = \sum (\beta_2 + \beta_3 + \dots + \beta_n) + \varepsilon \quad \text{Equation 3.7}$$

Where  $UR_b$  is the particular planning system's benefit per the specified property, which is a conglomerate of range of benefits, and  $\beta_2, \beta_3, \dots, \beta_n$ , the coefficients of Equation 3.6 are the planning attributes' benefits. All other variables are as previously defined.

## Methodology Two

Methodology two also proposes the following:

- The first two steps under methodology one should be followed. However, under this methodology only professional opinions of value for the specified property without all the planning attributes, and with all the planning attributes should be obtained.
- A paired sample t-test should be undertaken to determine the difference in means of the two groups of reported opinions of value. The difference in means represents the benefit of a particular planning system with respect to the specified property and the location. This can be illustrated as follows:

Let  $A_1$  represent the group of values reported by respondents (real estate valuers and agents) as the value of the specified property if it is without all the planning attributes and  $A_2$  be the group of values reported by respondents as to the value of the specified property if it has all the planning attributes. The difference in means of the two groups ( $A_1$  and  $A_2$ ) can be calculated as:

$$UR_b = \mu_{A_2} - \mu_{A_1} \quad \text{Equation 3.8}$$

Where  $UR_b$  is the difference in means between the two groups of reported values by respondents and represent the benefit of particular planning system with respect to the specified property and location,  $\mu_{A1}$  and  $\mu_{A2}$  are the means of groups  $A_1$  and  $A_2$  respectively.

Experienced real estate valuers and agents are proposed for the contingent valuation survey because by their training and experience, they are better placed to provide informed opinions of value. However, ordinary property owners or land users can be used.

## **5. Conclusion**

This paper interrogated the conventional methodologies often employed in the developed world to calibrate the extent of benefits of planning policies. The aim was to develop a simplified methodology to estimate benefits of SSA planning systems to provide tangible evidence to aid planning policy formulation in the sub-region. It has been established that the conventional methodologies are complex and require a lot of organised data. Given the paucity of organised data in the sub-region, two simplified methodologies have been prescribed. These methodologies circumvent the problem of lack of huge volumes of organised data and complexities associated with the conventional methodologies, such as whether property value appreciation should be attributed to planning constraints or amenity. Besides, the methodologies are portable and could be applied across the developing world.

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