

Prospects of Applying Computer Aided Mass Valuation in Tanzania

Medard Lucas GEHO, Tanzania

Key words: Rating, valuation coverage, valuation roll, regression models.

SUMMARY

Property rating is conducted in all urban areas of Tanzania under the Urban Authorities (Rating) Act of 1983. Property rates are a major source of urban revenue in Tanzania and form a critical component that is required for the provision, rehabilitation and sustenance of urban services in the country. While the law requires all properties to be valued by professional Valuers and quinquennial re-valuations conducted before rates can be levied legally, a number of problems stand in the way of the successful implementation of property rating in the urban areas of Tanzania. The most outstanding problems include the high and atypical cost of US \$22.95 for rating an individual property in Tanzania, the limited valuation coverage achieved to-date, the lengthy time it takes to prepare and maintain valuation rolls, lack of an enabling environment for carrying out rating valuations, political interference and the limited involvement of municipalities as the primary beneficiaries of rating valuations. A World Bank Report prepared by Franzsen et al. (2002) indicates, for instance, if the country deploys all its 109 Valuers to value properties in all rateable properties in urban areas in Tanzania on a full-time basis, it would take 1.7 years to accomplish the task.

This paper examines the situation based on data collected on Dar es Salaam City and 8 Urban Sector Rehabilitation Programme (USRP) "Project Towns" with a total of 474,670 properties, which at the current valuation cost per property would be likely to cost US \$10,285,075.80 to accomplish the rating exercise. The government of Tanzania is not in a position to raise this amount of funds required for rating valuation, and, so far it has relied on donor support to provide the necessary funding. Computer Aided Mass Valuation is evaluated with a view to determining the extent to which it is likely to ameliorate the cited rating valuation problems, particularly in reducing both, the cost and time it takes to prepare rating valuations. Problems associated with the application of Computer Aided Mass Valuation are also explored and plausible solutions proffered in order to solve, or at least ameliorate, the anticipated rating valuation problems.

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1. INTRODUCTION

Tanzania is a country that is located in East Africa, and having a population of around 30 million people (Population census, 2002). The capital of Tanzania is Dar es Salaam, a coastal city with an estimated population of 3.6 million inhabitants. Like other countries in sub-Saharan Africa, Tanzania is facing the problem of rapid urbanisation. Between 1978 and 1988, the urban population grew at 10.7% at a time when the national average population growth rate was 2.8% (Kironde, 2001). Rapid urbanization has brought along a number of urban problems, the most notable being an increase in city size and increasing strain on urban authorities' capacity to provide urban infrastructure and services. Parallel harrowing developments have been observed in Nairobi (Olima, 2000).

In order for local governments to meet the challenge of providing urban services, they must be footed on a sound and sustainable financial pedestal. A notable trend in many countries world-over is to embrace local government reform that is aimed at improving service delivery, economic efficiency and government accountability. In order to improve on local governments' financial base, most governments aim at making property taxation function optimally. Governments now generally recognize that property tax is a major source of urban revenue. Nonetheless, much as property tax is viewed as being potentially the most lucrative source of tax revenue to finance urban government in Africa, in reality property tax remains an untapped source of revenue. Several problems stand in the way of the successful implementation of property tax in developing countries, most of these tend to revolve around issues pertaining to low valuation coverage, poor tax ratios, adverse valuation ratios and unacceptably low collection ratios.

The government of the United Republic of Tanzania recognises the need to maintain and improve infrastructure in the urban areas throughout the country as part of a variety of macroeconomic and structural reforms that are currently being implemented with a view to laying the foundation for higher and sustainable economic and social development. To-date, these reforms have focused on fiscal consolidation, streamlining the civil service, privatising about half the parastatal enterprises and restructuring the financial system (International Monetary Fund, 1999). In 1996, the government established a special local government reform team within the office of the Prime Minister and initiated a "Local Government Reform Agenda (1996-2000)" which involves the restructuring of regional administration, developing an enabling institutional framework and capacity and restructuring and strengthening local authorities.

As a result of local government reform, the pace of property rating has changed drastically in the country. More money in property rates is now collected than has ever been the case before. Despite these improvements in revenue collection, a number of problems dot this otherwise seemingly good development. Three notable problems are those of the unacceptably high unit cost of rating valuations in Tanzania, inadequate valuation manpower and the length of time it takes to obtain an acceptable valuation coverage in the country based on the current or conventional approaches to rating valuation.

This paper examines possibilities of employing computer aided mass valuation in Tanzania and the added value that can result from the application of such valuation techniques. The paper is partly based on the author's personal experience as the Rating Officer in-charge of the rating of two USRP project towns of Tanga and Morogoro in 2001. The paper also draws heavily from a recent evaluative mission on the rating valuation consultancy services in Dar es Salaam and eight project towns prepared by Franzsen et al (2002) for the Ministry of Regional Administration and Local Government (Tanzania), The World Bank, Public Works and Government of Canada and the Royal Institution of Chartered Surveyors Foundation.

2. THE LEGISLATIVE FRAMEWORK

The history of property tax in Tanzania is traceable to 1946 when the colonial government enacted the Municipalities Ordinance (Cap 105) that authorised municipalities to levy a ten percent tax on the capital value of all buildings. In 1952, the Local Government (Rating) Ordinance Cap 317 was passed. The Ordinance expanded the tax base to include the unimproved site value for all properties held under long-term leases.

In 1972, local governments were abolished following a "decentralisation" move. The abolition of local governments meant all taxes on property were also eliminated. By 1974, however, due to financial constraints, the government was forced to enact the Land Rent and Service Charge Act which introduced a system of centrally controlled "Land Rent and Service Charge" levied on land held under either a short or long-term Right of Occupancy.

By 1978, the government recognised the scale of problems associated with the abolition of local governments that manifested itself in a crisis of rapidly deteriorating urban services and infrastructure. Hence, local governments were re-established in 1978 and became fully operational with the passage of a number of pieces of legislation, the most important being the Urban Authorities (Rating) Act No. 2 of 1983.

Today, property tax is levied in Tanzania under the provisions of the Government Finances Act of 1982 which spells out sources of revenue for local governments, property tax being one of them. Matters of detail on the property rating exercise are captured in a separate piece of legislation, the Urban Authorities (Rating) Act that was enacted a year later, i.e. in 1983.

A rating exercise commences with the declaration of a rateable area by the Minister responsible for Local Government. The declaration of a rateable area is made following consultations with the relevant rating authority and the publishing of a notice in the government gazette. The declaration is followed by the appointment of a “Valuation Surveyor” who is responsible for overseeing the physical inspection/survey of properties, computation of property values and the preparation of a valuation roll.

Two types of rates have been specified in the Act: a “general rate” is levied and paid by every owner of a rateable property in an urban area and a “special rate” is levied where the Minister assents to the undertaking of a special scheme that would benefit a particular area of an urban area.

The rateable value of a property is based on the market value of the property or where the market value of the property cannot be ascertained, the Depreciated Replacement Cost (DRC) of the property forms the rateable value. The Act is strict on depreciation allowances. The maximum permissible depreciation allowance is 25% of the Replacement Cost. All rating valuations undertaken in Tanzania to-date have been based on the DRC approach on account of the dearth of a large and credible volume of data on market transactions.

“Rateable property” includes all properties within the jurisdiction of an authority which are in actual occupation and of sufficiently permanent nature and all improvements that are annexed to such hereditaments. Machinery forming an integral part of any building or structure is also rateable. Any plant or machinery, other than rateable plant and machinery, is not the subject of a rating exercise in Tanzania.

The “owner” of a property is any person holding the premises under a Right of Occupancy and where the owner of such premises cannot be found, the person in actual occupation of the premises is deemed to be the owner of the property.

The rate to be paid by taxpayers is a proportion of a property’s rateable value and this is computed by reference to the amount of revenue that a local authority wants to raise relative to the total rateable value appearing in the valuation roll.

Certain properties have been specifically exempted from the payment of rates by the Act. Exempted properties include property in the personal occupation of the President, property used wholly for the operational purposes of public utility bodies, property used primarily for public worship, public libraries and museums, cemeteries and crematoria, railway infrastructure and any other property that may be prescribed by an urban authority. Amendments to the list of exempted properties were made in 1997, and amongst additional exempted properties include property used by a local authority and property used exclusively by an educational institution.

After the valuation roll has been prepared, the rating authority publishes the roll for the general public to inspect. In case there are objections to the contents of the valuation roll, these are referred to a Rating Valuation Tribunal that determines all objections before the collection of rates can legally commence. The Tribunal's decisions are final but disagreements on points of law can be referred to the High Court. Once the objections have been determined, the property owners are notified of the amount of rates that they should pay. The Rating Act provides for a centralised Appeals Tribunal that can only be appointed by the Minister responsible for Local Government.

Supplementary rolls are prepared to capture new properties and changes in properties that were not recorded in the main valuation roll. The preparation of supplementary valuation rolls is, therefore, a continuous process.

3. URBAN REFORM AND RATING IN DAR ES SALAAM AND USRP ROJECT TOWNS

Property valuations in Tanzania were, until recently, conducted on an ad-hoc basis depending on the availability of central government funding. The valuations were conducted by local authorities without employing a systematic property ID system nor were there proper fiscal cadastres to aid the valuation process. Property cards were prepared but updated infrequently hence leading to a considerable time-lag in reported property values particularly in the fast growing unplanned areas. The net result was valuation rolls that were generally incomplete and out-of-date. There was no computerisation and this tended to further compound problems of maintaining property tax rolls.

In order to address some of these problems, the government, with funding assistance from the Norwegian Agency for Development (NORAD), undertook an aerial photographic survey of the major urban centres in 1992. Base maps were generated following the survey and this provided the basis for systematically identifying buildings. These maps are currently being used as part of the ongoing Tanzania property tax reform to expand valuation coverage (Kelly and Massunu, 2000).

The government of Tanzania, with the aid of financial assistance from the World Bank, embarked on an ambitious property tax reform in 1993. The property tax reform was developed as part of the Urban Sector Engineering Project (USEP), which received financial support from the World Bank and Norwegian Assistance for Development (NORAD). The USEP objective was to prepare nine urban centres for a comprehensive infrastructure investment project by initiating municipal restructuring, improving urban financial management and revenue mobilisation, and preparing engineering designs for priority infrastructure rehabilitation. A key project component of USEP was enhancing revenue mobilisation to generate sufficient funds for the operation and maintenance of the new investments. An evaluation of the revenue structure in

Dar es Salaam suggested that property tax was being under-utilised as a revenue source. Further analysis by USEP identified the lack of valuation rolls as the primary obstacle to improved property revenue generation.

Prior to USEP, property tax in Dar es Salaam was levied based on a flat amount per building as specified in the Local Government Finance Act of 1982. These unit rates were established in 1987 when property rates were first re-introduced to Dar es Salaam after the re-establishment of local authorities.

Following the establishment of USEP, the property tax system shifted from the flat rate tax to an *ad-valorem* tax based on assessed property values. An important priority for USEP was the development of a systematic procedure for conducting both, property tax base identification as well as providing assistance with property valuations. The government, using maps produced in 1992, developed a system of identifying buildings, enumerating them, assigning them with a unique property identification number and collecting relevant physical information on each building. Essentially, this means USEP adopted a system of single property appraisal rather than a mass appraisal system (see Kelly, 2000).

In order to effect property tax reform, the work of preparing valuation rolls was divided into three phases. Dar es Salaam was broken into 18 zones. Phase I covered the Central Business District (CBD) of Dar es Salaam with approximately 30,000 buildings spread over 6 zones. Phase II covered approximately 17,000 buildings located in 4 other zones, while Phase III was to cover the remaining properties.

Further to preparing a valuation roll for Dar es Salaam, USEP Phase I also entailed undertaking preparatory work in eight municipalities/towns, identifying and enumerating buildings using aerial photographs developed in 1992 and providing technical assistance and valuation training.

The government also prepared a consistent set of rating assessment guidelines to establish a uniform valuation basis. The basis of valuation that was adopted was the Depreciated Replacement Cost due to a paucity of market transactions in the country. These guidelines categorised buildings into four basic groups: residential, commercial, industrial and hotels. Within each of these categories, three sub-groups were established each having a specified cost per square metre.

In terms of manpower, the government's reform strategy was to outsource manpower from private valuation firms due to the lack of in-house valuation capacity within the city. Six valuation firms were contracted under Phase I to value approximately 30,000 buildings at a contract sum of around US \$1million (i.e. at approximately US\$ 33 per property).

The exercise produced a valuation roll in 1995 of 30,000 buildings with a total value of TShs. 800,686,920,000 (US\$ 100 million). In 1996 a rate of 0.1% tax rate was adopted. This generated

a tax potential of T.Shs. 800 million. This revenue potential, combined with the revenue potential for buildings under the flat rate system (i.e. T.Shs. 400 million) produced a revenue potential of T.Shs. 1.2 billion (US \$1.5 million).

In 1996, the new tax roll was used for tax purposes. In addition a new City Commission appointed by the central government replaced the Dar es Salaam City Council in 1996. These actions taken together contributed to a major increase in local revenue. As Table 3.1 below indicates there was a marked increase in property tax revenue from 1993. There was, however, a decline in 1995 just prior to the replacement of the city council with the City Commission. A portion of the dramatic increase in tax collection in 1996 resulted from enforcement for the payment of arrears by the City Commission. It is estimated 40% of the property tax collection in 1996 was from arrears from previous years. Property tax collection in Dar es Salaam and the 8 Project Towns is shown in Table 3.1.

**TABLE 3.1: PROPERTY TAX COLLECTION IN DAR ES SALAAM (1997-2000)
(T.SHS. MILLION)**

Jurisdiction	'97	'98	'99	2000
8 Project Towns	473.75	568.3	644.5	660.6
Dar es Salaam	1,006	1,134	1,077	1,025
Total	1479.75	1702.3	1721.5	1685.6

Source: Masunu (2001).

The USEP project came to an end in 1997 and was succeeded by a new World-Bank assisted Urban Sector Rehabilitation Project (USRP) which also focussed on rehabilitating urban infrastructure and services such as roads, drains, water supply and sewerage. USRP continued to place priority on property taxation as the main revenue source for local authorities. Priority was once again given to creating valuation rolls using private sector contractors.

The second project under USRP was initiated in 1998 to value 17,000 properties in Dar es Salaam. These were completed in 1999 and placed on supplementary valuation rolls of newly established Dar es Salaam city municipalities of Ilala, Kinondoni and Temeke. In addition, approximately 26,000 properties in eight secondary project towns/municipalities were valued. The project towns include: Arusha, Iringa, Mbeya, Moshi, Morogoro, Mwanza, Tabora and Tanga. (Franzsen et al 2002).

Appendix 1 summarises the main results of the USRP initiative in the 3 Dar es Salaam municipalities and the 8 project towns according to data collected by Franzsen et al (2002). The main highlights include: the number of valuers per municipality is low, typically 2 to 3 in each municipality. If municipal valuers only are used to complete the valuation of the remaining properties, it will take them 6.8 years to accomplish the valuation exercise. This is based on the

assumption that each valuer values 10 properties per day over 250 days a year, or 2,500 properties a year.

According to Franzsen et al (2002) the time it takes to prepare and maintain valuation rolls in Tanzania is a matter of concern. “To complete the whole country, the cost would rise to somewhere between US\$ 105 to 135 million and take 18.3 years – if all registered valuers in Tanzania work at it full-time. These estimates are based on the cost incurred to-date to do approximately 33% of properties in the eleven jurisdictions and the realisation that there are not more than 109 certified valuers in the country at present”.

The total number of rateable properties is 474,670, out of which 158,405 have been valued and 246,264 are yet to be assessed. This means the average valuation coverage achieved to-date is a mere 33% of the total rateable properties. Only 4 jurisdictions, however, have attained a valuation coverage of above 50%, with Iringa and Moshi having a valuation coverage of above 80%. This raises doubts on the sustainability of the current methodology and processes used to prepare municipal valuation rolls.

Furthermore, the cost of carrying out the rating valuation exercise is very high at US\$ 26.74 in the project towns and 17.46 in the three Dar es Salaam municipalities. The overall average cost per property is US\$ 22.95. To complete the valuation of properties that still require to be valued requires US\$ 5.4 million, while in order to do a complete revaluation of all properties in Dar es Salaam and the eight project towns is likely to require US \$ 10.3 million. Franzsen et al (2002) note that “the cost per property is extremely high – especially in comparison to similar valuation work done in other countries. For example the Government of Jamaica recently had more than 800,000 properties assessed in less than 12 months at a cost of approximately US \$ 3.00 per parcel. (However it should be noted that the valuations in Jamaica were done with reference to land values only.)”

The eleven areas of tax jurisdiction reflect reversed priorities. While almost each municipality has bought a 4-wheel drive vehicle (often only partly or not used for valuation work), most of the municipalities lack even a single computer that has been assigned to in valuation work.

4. CAMA & GIS APPLICATIONS TO RATING VALUATION

Mass appraisal can have different connotations, but has been defined by legislation in Alberta as being “the process of preparing assessments for a group of properties, as of a given date, using standard methods, common data and allowing for statistical testing” (McClung, 2000).

Properties can be valued using the single parcel appraisal approach or the mass appraisal approach. Many countries world-over have switched from single parcel appraisals, whereby each property is inspected and valued individually, to Computer Aided Mass Appraisal (CAMA). While single parcel appraisals are credited for producing accurate valuations, they are

manpower, cost and time intensive appraisals that often result in out-of-date and incomplete valuation rolls.

CAMA requires the development of robust regression models that can be employed to estimate value given inputs for the various property-specific and neighbourhood characteristics. The application of CAMA requires a good understanding of Econometric modelling and the ability to cope with misspecifications of the regression model. It is also worth noting that CAMA is reputed for having “an enormous appetite for data”, hence the assembly of sufficient data to be employed in the regression models should be recognised as a pre-requisite for the development of credible causal models.

A number of countries have adopted mass valuation techniques today and, these include: United States, Canada, Denmark, Sweden, Chile, Indonesia, Estonia, and United Kingdom (Kelly, 2000). In Alberta, for instance, it is a legal requirement that property tax valuations must be prepared using mass appraisal. CAMA is reputed for producing up-to-date and equitable (consistent) values in a manner that is more transparent, cost-effective, timely and sustainable. CAMA enables the separation of field data collection activities associated with the coverage ratio from the valuation activities associated with the valuation ratio and, as a result, freeing the scarce and expensive valuation resources (experts) to concentrate on analysing market data and developing reliable valuation models for use in the appraisal process rather than in collecting property field data which can be done by less competent personnel. This feature gives CAMA particular appeal in countries like Tanzania that have a small total number of qualified professional valuers (currently around 109).

In Sub-Saharan Africa, the situation in relation to CAMA applications makes grim reading. According to Kelly (2000), to-date, all Sub-Saharan African countries use the individual or single property appraisal approach in valuing properties for tax purposes. Some research on the applicability of CAMA techniques have been undertaken in Kenya and South Africa. CAMA work was conducted in Kenya under the World Bank-funded Kenya Local Government Reform Programme (KLGRP) in the towns of Mavoko and Nyeri in 1998. In South Africa, CAMA work was conducted in Cape Town, Bloemfontein, and Rustenburg in 1999 with funding from the USAID-funded Equity and Growth through Economic Research. However, in Cape-Town, the preparation of the General Valuation roll does not permit the realization of a full CAMA, as it requires on-site inspections by ‘qualified’ valuers (Parker, 2000). Kampala City Council is planning to introduce CAMA as part of their revenue mobilisation strategy. Kelly (2000).

Leaving alone the issue of CAMA applications in computing values, the use of computers in property rating is also important even if local authorities do not decide to adopt CAMA. Increasingly, countries everywhere are using computers to improve the fiscal cadastre maintenance, valuation, assessment, billing, collection and enforcement, dispute resolution and taxpayer service. In most developing countries, Tanzania inclusive, tax administration is almost exclusively manual. The newly established Dar es Salaam Valuation Office, however, maintains

a computerised database of its valuation roll. Appendix 1 shows most municipal councils in Tanzania do not have computers that are used in property tax assessment and administration purposes.

According to Kelly (2000), simple, narrowly-focussed systems that address themselves to basic operations tend to do better than complex systems. He goes further to caution against a tendency to use property taxation to justify tremendous investment in sophisticated computerised Geographic Information Systems, emphasising digitised parcel mapping often based on a Global Positioning System (GPS) as these tend to be supply driven by technology rather than demand driven by the real needs of property tax administration. Often, expectations are not realised because these expensive high-technology solutions fail to consider the broader issues of property taxation, especially the administration interface between tax officials and taxpayers.

While CAMA applications seem a remote prospect in most developing countries, CAMA and GIS are developing at a formidable pace elsewhere in the world. German (2000) has documented recent developments in the spheres of CAMA and GIS. According to him, in addition to developments in the individual systems, more important today is the degree of integration that is attainable between CAMA and GIS. One reason for integrating GIS into CAMA is for the automated mapping component of a GIS. In relation to what is happening in Lucas County, Ohio, German (2000) reports the first GIS/CAMA application “pulled together integrated typical GIS components of line work, digital orthophotos, street network and land annotation with CAMA characteristic data; land and improvement size, quality, condition, age and amenities. Linked also were administrative and accounting systems to display owner names, legal descriptions and various screens of tax and assessment valuation data” More applications included an entry to the World Wide Web, a “virtual assessor’s office” that basically was a duplicate of the system that is being used in the office, put before the public in read only configuration. A more complex product involved a 3-D presentation of geographic data.

The situation currently obtaining in Tanzania poses specific challenges to the application of CAMA in rating valuation. These problems that are often cited as standing in the way of CAMA application in the country include: scarce property transaction data, lack of computers in municipal offices and lack of trained valuers/manpower that can handle CAMA.

According to Franzsen et al (2002), “The application of such models (CAMA) within Tanzania at present would be premature. The reason for this are simply, insufficient quantity and quality of open market transactions and limited experience of municipal valuers in applying the statistical techniques. As the real estate markets mature and confidence builds within the various property markets there will come a time when such automated computer assisted techniques can be applied.”

Franzsen et al (2002) go further to prescribe recommendations on CAMA as follows:

- “Valuers involved in municipal valuations need to develop skills and experience in ‘manual’-based property tax valuations.
- Systems need to be developed to capture and analyse market transactions before contemplating CAMA technologies.
- The current valuation methodology would not lend itself easily to the application of CAMA given the non-market nature of the basis valuation.

Despite these “grim” observations by World Bank experts on the prospects of applying CAMA in Tanzania, it is perhaps useful to examine alternative arguments on the matter.

- CAMA is currently being experimented with in both neighbouring Kenya and Uganda. The situation in these two countries is not radically different from that obtaining in Tanzania. Uganda does not even have a valuation profession as such, much as there are a few valuers working in Uganda. By comparison, Tanzania has a relatively mature valuation profession that is regulated by the National Council of Professional Surveyors (NCPS, since 1977) and the Tanzania Institution of Valuers and Estate Agents (TIVEA, since 1997).
- The number of property transactions in major urban areas in Tanzania has increased tremendously, particularly so after trade liberalisation in 1985 and the passing of the Zanzibar Declaration of 1990; the latter embodies the government’s resolve not to nationalise property again in Tanzania.
- Admittedly, even if the number of property transactions has increased, capturing this data can prove difficult on account of the pervasiveness of tax evasion by property sellers and buyers, who typically tender to under-declare prices submitted to the Land Registry when effecting property transfers. Nonetheless, it is possible to model CAMA to use cost information to value properties. Information on key information for a DRC valuation i.e. cost variables, land value and depreciation can now be readily captured in Tanzania.
- Even if the property market in Tanzania is not mature enough to support the full application of CAMA, it is recommended that experimentation begins now with cities have a reasonable number of transactions so as to lay a foundation for future CAMA applications.
- The necessary manpower to carry out CAMA valuations can be trained. Experts can be sourced from overseas with government funding set aside from rating revenue or donor support. The University of Dar es Salaam has a good number of Econometricians who could be deployed in the training exercise. The government’s Central Statistical Office could also be contracted to provide training in CAMA. Certainly, the Statisticians/Econometricians will need to work hand-in hand with valuation experts in order to ensure CAMA produces valid/credible results.
- Computer hardware and software required to carry out CAMA can be procured. If local authorities can purchase 4-wheel vehicles, it is unclear why they would not be able to buy the necessary computer hardware and software. With the recent improvements in tax revenue collection, local authorities could set aside a certain amount for the purchase of computer hardware and software.

5. CONCLUSION

Computer Aided Mass Appraisal (CAMA) does hold promise for Tanzania, particularly in relation to reducing both, the time and cost it takes to produce valuation rolls. CAMA also brings along with it the added advantage of introducing greater consistency in valuations so long as the valuations have been developed from robust causal models. Consistency is the essence of taxation; it is the cornerstone of most progressive property tax systems, it is one of the canons of taxation. Unfortunately, CAMA subscribes to the Garbage-In-Garbage-Out (GIGO) principle. CAMA cannot increase valuation precision/accuracy, but potentially can inject more consistency into the valuation process. CAMA is also likely to make complete property revaluations, that are often required on a quinquennial basis, attainable more quickly and cheaply, hence addressing a concern of World Bank experts (i.e. Franzsen et al, 2002).

While CAMA has obvious advantages relative to the manual-based, labour intensive systems that have been in use in the past in rating assignments in Tanzania, it should also be recognised that expecting CAMA to work as a wonder-drug is a major fallacy. In order to realise the full potential of CAMA and GIS applications, a number of conjunctive measures require to be instituted *pari-passu* with the manipulation of digital data. These measures include developing a one-to-one relationship between the amount of property tax collected and the level of services offered to the community. “Justice must not only be done, it must be seen to have been done”. Nowhere, is this more true than in relation to property tax rating where transparency in how taxpayers’ money is used is of utmost importance. Other critical areas that also require attention include property tax collection and enforcement, i.e. the property tax strategy should be more of a “collection-led” strategy rather than a “valuation pushed” strategy. Exemptions that currently seem to be given on an ad-hoc and fairly arbitrary basis need to be more limited, or at least, provided along the lines of systematic legal framework. Finally, the political “engineering” of property rates that are chargeable should be eradicated. It defeats the whole purpose when local authorities expend a lot of time, expense and effort to improve on the valuation ratio and then the bureaucrats/politicians simply decide to lower the tax rate in order to gain political leverage for forthcoming local government elections.

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BIOGRAPHICAL NOTES

Dr. **Medard Lucas Geho** is Associate Dean, Faculty of Lands and Environmental Engineering and Head, Department of Land Management and Valuation at The University College of Lands and Architectural Studies (UCLAS) in Dar es Salaam, Tanzania.

Medard Lucas Geho

Date of Birth 10th November, 1956

Place of Birth Songea, Tanzania, East Africa

Nationality Tanzanian

Marital Status Single

Academic Qualifications

Advanced Diploma in Land Management and Valuation
(First Class pass) Ardhi Institute, 1984

MSc. Land Management. University of Reading, United Kingdom, 1992.

Doctor of Philosophy, University of Reading, United Kingdom, 1997

Current Post/Position: Associate Dean, Faculty of Lands and Environmental
Engineering

Head of Department, Department of Land Management and Valuation

Faculty Board Member

Managing Director: Whiteknights Real Estate Investment Analysts (Co.)
Ltd.

Publications/Papers:

1. *An Analysis of Individual Property Performance and Data Constraints in the UK Commercial Property Market*, Unpublished Ph.D. Thesis, University of Reading, 1997.
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Professional Affiliation: Fully Registered Surveyor (FRS): National Council of
Professional Surveyors (NCPS).
Fellow (FTIVEA): Tanzania Institution of Surveyors and
Estate Agents (TIVEA)

Honorary Secretary, Tanzania Institution of Surveyors and
Estate Agents (TIVEA)
Member, African Real Estate Society (AFRES)

CONTACTS

Dr. Medard Geho, Associate Dean
University College of Lands and Architectural Studies (UCLAS)
P.O. Box 35176
Dar es Salaam
TANZANIA
Tel. + 255 22 2775238
Cellphone: + 255 0744 367665
Fax + 255 22 2775214.
E-mail: mlgeho@hotmail.com

APPENDIX 1: BASIC DATA ON THE THREE DAR ES SALAAM MUNICIPALITIES AND EIGHT PROJECT TOWNS

Municipality	Population	No. of Valuers	Total Rateable Properties	Properties Valued	Contract Sum (US \$)	Cost Per Property (US \$)	Properties Still to be Assessed	Valuation Roll Coverage (%)	Estimated Cost to value remaining Properties†	Estimated Cost for a Complete Revaluation†	No. of Years for Municipal Valuers to complete a Revaluation††	Computers (C) and Vehicles (V) Available
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
PROJECT TOWNS												
Arusha	300,000	1	45,000	14,605	112,000	25.95	30,395	32	812,726	1,203,000	18	C=0; V=1
Moshi	200,000	2	20,000	17,766		25.95	2,223	89	59,710	534,800	2.6	C=0.5; V=2
Mwanza	600,000	4	45,000	13,674	244,992	30.27	31,326	30	837,657	1,203,300	4	C=0; V=0
Tabora	208,000	1	11,870	5,920		30.27	5,950	50	159,103	317,404	3	C=0; V=1
Morogoro	230,000	4	30,000	13,814	231,605	23.89	16,186	46	432,814	802,200	4	C=0; V=1
Tanga	210,000	2	20,000	11,181		23.89	8,819	56	235,820	534,800	4.5	C=0; V=1
Iringa	151,000	2	12,800	10,412	110,981	27.33	2,388	81	63,855	342,272	4.8	C=0; V=1
Mbeya	330,000	3	30,000	13,533		27.33	16,467	45	440,328	802,200	6	C=0; V=1
Sub-Total	2,229,000	19	214,670	100,905	699,578	26.74	113,764	47	3,042,013	5,740,276	4.5	
DAR ES SALAAM MUNICIPALITIES												
Ilala	900,000	4	70,000	17,000	86,272	17.14	33,000	34	576,840	1,223,600	7	C=1; V=1
Kinondoni	1,400,000	2	90,000	32,000	144,476	18.06	58,000	35	1,013,840	1,573,200	18	C=1; V=1
Temeke	1,300,000	3	100,000	8,500	86,272	16.91	41,500	17	725,420	1,748,000	13.3	C=2; V=1
Sub-Total	3,600,000	9	260,000	57,500	317,020	17.46	132,500	30	2,316,100	4,544,800	11.6	
Grand-Total	5,829,000	28	474,670	158,405	1,016,598	22.95	246,264	33	5,358,113	10,285,076	6.8	

† Assuming valuations are carried out at US\$ 26.74 in the 8 Project Towns and US\$ 17.48 in Dar es Salaam municipalities.

†† It is assumed each valuer can value 10 properties per day over 250 days a year, or 2,500 properties a year.

Source: Compiled from Franzsen, R. et al (2002)