

# MODERN TECHNOLOGIES AND FISCAL CADASTRAL SYSTEM REFORM FOR EASTERN REGION INFRASTRURAL DEVELOPMENT PLAN

Nzekwe, P. O., Ono, M. N. Ukebho, F. O.

Department of Surveying and Geoinformatics, Nnamdi Azikiwe University, Awka

## ABSTRACT

The Cadastral system has developed significantly over the past decades. Land, together with its associated buildings and developments is one of the most important financial assets in any country. The fiscal cadastral system is a system of generating and accounting for revenue in the state or country. The study was aimed at evaluating existing fiscal cadastral system and modern technologies and the reform necessary for increase yield in revenue. An investigative research design was employed and questionnaires were administered to some selected registered Surveyors and some staff at the ministry of land and surveys and Town Planning . The study has shown that fiscal cadastral system operation is still on analogue format, and no proper database on land exists in the ministry. There is also lack of trained personnel to handle the system. It is recommended that the State should embark on automation, densification of controls, database creation, training and retraining of personnel in the use of modern equipment for increase in revenue yeld. It is necessary for increased funding for all these to be realized.

## 1.0 INTRODUCTION

In the early stages of human settlement, land was undisputedly the primary source of wealth and power. In that context, Cadastre's primary function was as a record of ownership and as a fiscal tool. It is important to note that the point of the record was to provide some security of ownership and to do so, required a record which was publicly acknowledged and respected. The earliest of such records dated back to 3000 BC where Romans recorded information about their controlled land for a basis of fiscal records (Larson 1996). It was not until the 1870s, when Napoleon Bonaparte established the first Modern Cadastral. He ordered the creation of maps and Cadastral records that eventually established the foundation of European Cadastre. Since then, Cadastral system has been used as important tool for urban planning and service delivery.

Henssen (1975) stated that the fiscal Cadastres throughout continental Europe in the early eighteenth Century was the basis of all wealth and therefore land (property) tax would be the

basis for raising funds to maintain society. Nevertheless, recent evidence shows that in the developing world property tax is actually a weak revenue source, equivalent to less than 0.7% of GDP (Bahl et al, 2008). One of the main explanations analyst put forth is that “governments in developing countries simply are unable to administer a well-functioning property tax” (Bahl et.al, 2010). Hence, it makes it necessary to reform the fiscal cadastral system as a framework from infrastructural development plan in eastern region in order to have good more revenue base.

A Cadastre is a register of parcels of land while fiscal Cadastre provides a basis for property taxation. “Throughout history the main purpose of cadastre have been taxation of land” (Muller, Hopfer, 1989). The International Federation of Surveyors defines the cadastral as a system put in place to enable Social and Economic Development in a region, supporting legal or fiscal purpose and land administration (FIG, 1995). Land, together with its associated buildings and construction, is one of the most important financial assets in any country. Every investment is in one way or another dependent on land and property. Without land, no market shop or factory can be built, no road or railway is constructed, there can be no schools or hospitals, and there can be no government or private sector buildings. Without the security of title to land or buildings, it is difficult to obtain investment funds and venture capital. Poor land administration is an impediment to the growth of an economy thus the need for a reform in the Cadastral system this region.

### **1.1 NEED FOR THE STUDY**

Land administration systems and their central Cadastral component are increasingly evolving. Not only were traditional Cadastral systems slow in responding to the changing needs of society (Dale and Mc Laughlin 1986), but also the relationship of humankind to land is more dynamic. Fiscal Cadastre is an official inventory of land parcels that provides the necessary information to be able to determine the value of property (Land and/or improvements) for the purposes of taxation; Fiscal Cadastral System includes all elements of the input, process and output for property valuation and taxation while Fiscal Cadastral Reform refers to the reform of the system which occurs when one or more aspects of the fiscal cadastral or its immediate contact (e.g. enabling legislation) is subjected to substantial change in any one cycle (Whittal and Barry, 2004). The fiscal cadastral provides a basis for property taxation and generation of capital for the

implementation of developmental goals. In Nigeria most of the States are not generating much in their internal revenue because they depend on the monthly allocation from the federal government. This could be corrected if there will be an effective reform in the Fiscal Cadastral System in the eastern region.

This study is aimed at investigating the fiscal cadastral system in the state of eastern region and we are starting with Anambra State. The aim was pursued through the following objectives:

(i) to evaluate the existing systems and ascertain what is available (ii) to collect data and information through oral interview and questionnaires (iii) to carry out analysis of data for definite findings on fiscal cadastral system reforms and to further identify ways the reform can be made better.

#### THE STUDY AREA

Anambra State is one of the five states in the Eastern part of Nigeria as shown in Fig.1. The state covers an Area of 4416 square kilometers lying within latitude  $5^{\circ} 40'N$  to  $6^{\circ}48'N$  and longitude  $6^{\circ}37'E$  to  $7^{\circ} 27'E$  (Fig.2) with a population of 4, 182, 022 people according to the 2006 census. It is bounded by Delta state to the west, Imo state to the south, Enugu state to the east and Kogi state to the north. The state is made up of 21 local government areas and 177 towns/communities. Awka is the capital of the state; Onitsha, Nnewi, and Ekwulobia are other major cities of the state. Historically, the state stretched back to 9<sup>th</sup> century AD, as revealed by the Archeological excavation of Igbo-Ukwu, the findings revealed a great number of details on the ancient Kingdom of Nri which held sway in the area of Anambra from 948 AD to 1911. The old Anambra state was created in 1976 from part of the Eastern-Central state, with its capital at Enugu, further state creation in 1991 precisely 27<sup>th</sup> August, carved out two states, namely: Anambra and Enugu states, which Awka became the capital of Anambra state.

The state is in tropical rainforest zone, and this is why most people in the state are mostly engaged in agriculture. The state has a humid climate with a temperature of about 29°C. The state is defined by its semi-tropical rainforest climate, where annual rainfall is 60 to 80 inches

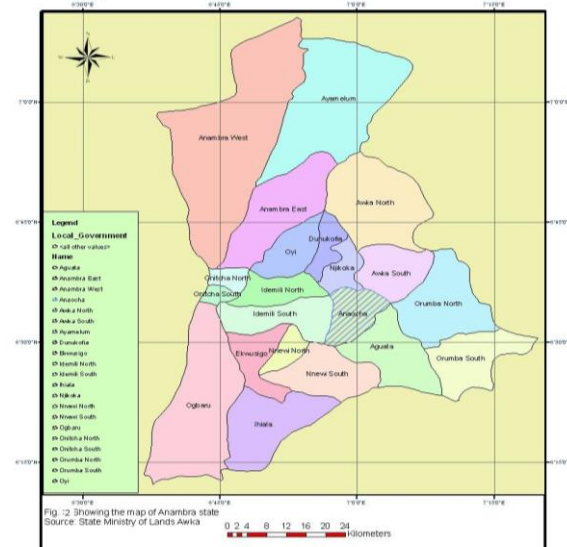
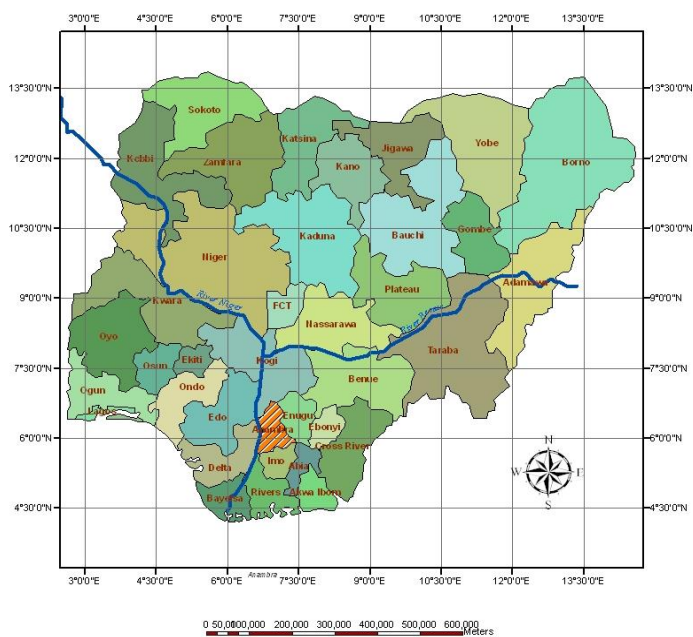


Fig. 1 Map of Nigeria showing the location of the Study Area

## 2.0 FISCAL CADASTRAL SYSTEM REFORM

The International Federation of Surveyors (FIG, 1995) defines cadastral as a parcel based and up-to-date land information system containing a record of interests in land (e.g. rights, restrictions and responsibilities). It usually includes a geometric description of land parcels linked to other records describing the nature of interests, ownership or control of those interest, and often value of parcel and its improvements. It may be established for fiscal purposes (valuation and taxation), legal purpose (Conveyancing), to assist in the management of land and land-use control (planning and administration), and enable sustainable development and environmental improvement.

However, the concept of cadastre is difficult to identify. It may be designed in many different ways, depending on the origin, history and cultural development of the region or country. Basically, a cadastre as such is just a record that identifies the individual land parcels/properties. The purpose of this identification may be for security of land rights (as was the case when establishing the Torrens System in the new world such as Australia). Today, most cadastral registers around the world are linked to both the land value/taxation area and the area of securing legal rights in land. Therefore, it makes sense to talk about Cadastral System rather than just

cadastre. These systems include the interaction between the identification of land parcels, the registration of land rights, the valuation and taxation of land and property, and the control of present and possible future use of land.

## **2.1 FISCAL CADASTRAL SYSTEM REFORM IN DEVELOPED DEVELOPING COUNTRIES.**

Cadastral System is organized in different ways throughout the world; the situation in one country cannot be necessarily improved in another country where conditions are significantly different. In almost all circumstances, social, political and environmental pressures have combined with history to produce a situation wherein there are marked variations not only between countries but often between states or provinces within individual countries. The earliest cadastral system was land taxation levied on the basis of the land parcel. Since each proprietary unit had to deal directly with taxing authority. It was essential for the later to have accurate and detailed information related to individual parcels and their owners. Indeed, the management of acquisition, presentation and manipulation of such land information remains the keystone of the cadastral administration in France and other European Countries whose land administration is built on the Napoleonic model of cadastre. Contemporary administrations in these countries tend to administer the cadastral components, namely: survey, land registration and valuation within one organization or at least within one ministry.

Traditionally the Surveyors in developing countries have given a priority to implement accurate cadastral field surveys without giving much attention to the cost but since the turn of the new millennium, more cost-effective and flexible methodologies are utilized. However, modern cost-effective methodologies do not neglect the quality but focus more on required accuracy on the user point of view, not on the surveyor's technical capacity and available equipment. There is transition from registration of deeds to registration of titles. In Botswana, Cadastral surveys may only be submitted for registration if they are carried out by a Licensed (Registered) Surveyor. The same is applicable to other developing countries, but arduous and rigorous training and work of the licensed Surveyors make survey profession unattractive. As a result, there are limited numbers of qualified Surveyors. A private citizen requiring the survey of freehold land employs

a Registered Surveyor at relatively high cost the survey regulators and professional bodies are putting some control measures.

The Cadastral Survey system operating in these developing countries were generally introduced during colonial era. It met the needs of the respective' countries for many years. Their suitability in the light of today's technology and the present social and economic requirements of each country is being increasingly questioned. The inflexibility and cost of many of these systems can seriously restrict the availability of land for development and hence limit economic advancement. The resulting problem is because "Town planning scheme are designed without knowledge of the existing rights and resources of general land administration, they must be comprehensive and take cognizance of all factors relevant to good administration of the land" (Dale, 1976)

### **3.0 Data Acquisition-Primary and Secondary.**

The Primary data is the first hand information collected by a Researcher in the field, through oral interview and questionnaire. The oral interview helped the authors to get an insight into the current developments vis-à-vis technologies in Fiscal cadastral system of the study Area. We also engaged in oral interview. This is a technique that is primarily used to gain an understanding of the underlying reasons and motivations for people's attitude, preference or behaviour on a one-on-one basis or in a group. It can be conducted at any setting be it at work, at home, in a street, in a shopping centre or at any agreed location. Specifically, for the purpose of this research, Surveyors working with Ministry of Lands, Surveys and Town Planning, Private Surveyors, Civil servants within the lands and town planning departments in Anambra State were interviewed. Further, we used questionnaire in collecting data on the reform for the fiscal cadastral system in Anambra State was the use of questionnaire. The questionnaire looked at five basics subheadings namely, research design, population of study, sampling technique, instrument for data collection and method of data collection.

### **Research Design and population**

The research design used for this study is the investigative research design. The method is all about investigating the past and current practice of cadastral system in Anambra state so as to

proffer recommendation for a better reform for increase revenue and the development of the State. The population of study comprises of the practicing Surveyors in Anambra State both public and private practitioners and data from the Surveyor General’s office show that there are 104 practicing registered Surveyors in Anambra State. There are new registered surveyors in the past four years which are not part of this number. Also some graduate staff at Land and Town planning department were administered with the questionnaires. Using Taro Yamani sample population estimation formula i.e  $n = \frac{N}{1 + Ne^2}$  base on 5% significance level. Approximately, 83 registered Surveyors were selected which is approximately 80% of the registered Surveyors in the State.

On the whole, the questionnaires were administered to 111 respondents across the different organizations that have something to do with the Fiscal Cadastral System in Anambra State. Table 1 shows the summary of how the questionnaires were administered to.

**Table 1. Summary of the Respondent Administered with Questionnaire.**

S/No	Respondent Organization	Administered	Responded	Missing
1	Surveyors under Survey Department.	2	2	0
2	Private Surveyors	83	81	2
3	Land Department	16	5	11
4	Town Planners Department	10	3	7
	Total	111	91	20

**Instrument for Data Collection**

Thirty-six (36) item structured questionnaires titled questionnaire for “Reformation of fiscal Cadastral System in Anambra State” were administered. It has two sections A and B, section “A” is all about profile of the respondent while section “B” consists of the main body of the questionnaire which deals with questions on the aims and objectives of the study and divided into five parts. Part I gives the general knowledge of cadastral practice in Anambra State, Part II explores the roles of land and town planning department while part III gives the roles of Surveyors, then part IV gives the fees and charges involved in the cadastral system in Anambra State, finally part V gives the necessary reforms required in the cadastral system of Anambra State for effective and efficient operation. The instrument was administered on the respondents



by person to person. The responses by the respondents were recorded and used in the study. The Secondary data are data that already exist and were sourced and collected. They include:

- (i) Maps/Map products-administrative map of Anambra state and map of Nigeria showing the study Area
  - (ii) Journals/seminar papers
  - (iii) News Papers
  - (iv) Text books, that are related to the subject matter of this research.
- Other sources of Secondary data include; records kept by the statutory bodies and organizations, census data, statistical abstracts, databases.

#### 4.0 DISCUSSIONS OF RESULT

4.1 The result of the questionnaire administered to the respondents is summarized in the Table 2

**Table 2. Approved Fees Charged and Land Premium**

S/NO	Approved Fee	Amount payable (₦)	Land Premium	Amount Payable (₦) Awka/Nnewi Onitsha	
(i)	Assignment	2% of the value of the facility	Residential	200/m <sup>2</sup>	350/ m <sup>2</sup>
(ii)	Facility Mortgage	1% of the mortgage sum	Commercial	400/ m <sup>2</sup>	500/ m <sup>2</sup>
(iii)	Industrial Mortgage	1/2 % of the mortgage sum.	Industrial	100/ m <sup>2</sup>	100/ m <sup>2</sup>

**MORTGAGE:** - Before a holder of Right of Occupancy enters into a registrable agreement over the piece of land (or the improvement thereof) with any bank or finance organization. The consent of the Governor has to be sought and obtained stating the bank concerned. The application is processed by the Land Department for the Governor’s consideration. The letter of consent is a final document and therefore can only be signed by Governor unless delegated.

**ASSIGNMENT:-**This is a legal term referring to the giving away of land or improvement thereof by sale etc. Assignment is feasible only where the land have received some form of developments. The holder of Right of Occupancy on Certificate of Occupancy applies through lands department for consent to assign after all ground rents have been paid. Where the Governor approves the transaction, he signs the notice of assignment of to whomever it may be delegated to do so. The assignment cannot last longer than the period of initial grant.

**Table 3 Certification Fee and Registration Fee**

S/NO	Certification Fee	Amount Payable	Registration Fee	Amount Payable (₦)
(i)	Preparation	2000	Deeds of Mortgage	5000/10,000
(ii)	Registration	5000	Deeds of Assignment	5000/10,0000
(iii)	Publication	5000	Power of Attorney	5% of value
(iv)	Recertification	10,000	Registration C of O	5000



(v)	Accumulation of ground rents	15% of ground rate	Approval	5000
(vi)	Inspection			
(vii)	Survey Fee (Minimum)	40,000 government		
(viii)	Charting	2000		

Table 4 Ground Rent Payable

S/NO	Ground Rent	Amount Payable
(i)	Residential	₦3/m <sup>2</sup>
(ii)	Commercial	₦3/m <sup>2</sup>
(iii)	Small/Medium Scale Industries Land use	₦3/m <sup>2</sup>
(iv)	Large Scale Industries Land use.	₦3/m <sup>2</sup>
(v)	Agricultural Land use	20k/ m <sup>2</sup>
(vi)	Educational Land use	₦3/m <sup>2</sup>
(vii)	Religious Land use	25% of applicable rent.

#### 4.2 RESEARCH FINDINGS

It was observed that:

1. There is an existing Cadastral system at state level in Anambra State for over many years.
2. Geodetic controls were found to be generally sparse and disparate in the state. The instu and strength are not well assured.
3. There are three Departments responsible for land transactions in Anambra State namely:

##### (a) Lands Department

The Department of lands is one of the three major technical departments of ministry of land, survey and urban planning. It is headed by the substantive Director. The Department is charged with the following responsibilities namely: (i) advising the Government on all problems relating to the use, management and development of lands in the state. (ii) Valuation of properties for compulsory acquisition, sales and rental purposes. (iii) Processing of requests for land by Federal and State Governments and their agencies. (iv) Processing of application for Statutory Rights of Occupancy over plots granted for different uses. (v) Preparation and issuance of Certificate of Occupancy, registration of title deeds. (vi) Processing of applications for subsequent transactions such as Mortgage and Assignment.

### **(b)Town Planning Department**

The Town Planning Department is responsible for preparation of planning schemes throughout the State with respect to any land in the State whether there are buildings on them or not, with the general objective of:-

(i) Controlling the development and use of land comprised in the area to which the scheme applies. (ii) Preserving buildings or other objects of architectural, historic or artistic interest. (iii) Protecting existing amenities whether in urban or rural areas of the State. Specifically, Town Planning Department advises the government on Town and Regional Planning matters through the administration of Urban and Regional Planning Decree No. 88 of 1992. It is headed by the Director of Urban and Regional Planning.

### **© Survey Department**

The Survey Department is headed by the Surveyor General. The Department is responsible for demarcation and survey of plots, which. It is also responsible for survey of single plots for conversion of Local Government Certificates of Occupancy as well as presentation of site plans for farm land, filling station and re-establishment of lost beacons etc.

4. Registration of land is based on title deed.
5. All these departments still make use of analogue equipment and store their data in paper, but gradually moving to computerization under the auspices of ALIMS (Anambra Land Information Management System). ALIMS is a unit in the ministry charged with the responsibility of computerising all the information on land allocation, thereby getting ready for reforming the cadastral system in terms of computer aided form for future application in digital format.
6. The lands department is responsible for technical/administrative work on all land transactions. Their functions ranges from advertising for land, valuation of property, preparation and issuance of certificate of occupancy, registration of deeds, Secretariat of the States land use and allocation committee and many other functions.
7. The Town Planning department is responsible for preparation of layout and they make sure that the titled deeds conform to the purpose sought for within the layout.

8. The survey department is responsible for demarcation and survey of plots: - this includes beaconing for various uses and re-establishment of lost beacons. It is also responsible for checking all types of surveys done by survey department and private Surveyors.
9. Surveyors are the only professional empowered to produce survey plans in accordance with established rules and regulations guiding survey practice. There is no coordinated database for the three departments and access to information is difficult and delayed.
10. The acquisition of survey data is mainly by analogue means. Digital method of data collection and processing are not in full usage due to lack of technical personnel to handle it and old conservative attitude.
11. Survey plans or maps are not submitted to survey department in digital formats.
12. Software programs developed with the aid of computer are not used to handle large volumes of data and this delay the land transactions in the state. It takes weeks or months if not years to complete a land transaction.
13. Most of the members of staff of the ministry are not computer literate and this is a cog in the wheel of reform.
14. The revenue being generated from Fiscal Cadastral System in the state was estimated to be N3, 047, 200 per month on average as shown in Table 5.

**Table 5. Estimate of the Revenue Generated from April to June 2011.**

<b>Description</b>	<b>April</b>	<b>May</b>	<b>June</b>
Deeds Registration, Approval, Publication, Inspection	2,515,200	2,081,390	1,666,600
Survey Fees	80,000	362,500	783,920
Ground Rent	50,000	70,000	90,000
Recertification	415,000	535,000	490,000
Total	₦ 3,060,200	3,048,890	3,032,520

(Source: Ministry of Lands, Surveys and Town Planning, Awka)

From the foregoing, the revenue generated is comparatively very low. This is attributable to the existing manual (analogue) methods of dealing on land which lacked strategies for proper taxation. Also, members of staff lacked the requisite know-how to tackle problem for efficient fiscal cadastral transformation. Even, there is no proper cadastral system at local government level and it is difficult to embark on any reform whether fiscal or any other.

## **5.0 Summary, Conclusions and Recommendations**

### **5.1 Summary**

The fiscal cadastral reform is necessary (i) to increase the income generated through property taxation both at state and local government levels. This is achievable by equally increasing the effectiveness of the fiscal cadastral system. (ii) to boost the provision of more infrastructures for developmental purposes. But, the findings showed that pertinent structures for having this reform are still non-existent and where they exist, they only exist in analogue form. The personnel are ill-motivated and ill-trained to carry on with the exercises that involve modern technologies.

### **5.2 Conclusion**

The aim of this study is to build a general understanding of the concept, purpose and benefits of having a fiscal reformed cadastral system that will generate more revenue for the State Government, Private Practitioners in Anambra State. Hence, there is need for effective and efficient operation of the state's fiscal cadastral system, which cannot be attained through the analogue form of practice that exists presently. So, the implementation of computer aided system which incorporates digital equipments will go a long way in helping the relevant departments dealing with land to offer their services more effectively and equally generate more revenue for the government of Anambra State to meet up with people's needs.

### **5.3 RECOMMENDATION**

The findings have shown that reforming the fiscal cadastral system will be of a great benefit to the government and individuals as well, so it is recommended that:

1. There have to be access to information on parcels of land at any given time. Therefore the ministry of land should create a database showing the owners of land and their location to avoid double registration. They should also transform all their information into a computer aided instrument for easy access.
2. The use of digital instruments like GPS, Total station, Digital levels and computer software should be deployed in all the departments that deal on land, for easy storage, retrieval, provision of more geodetic controls and updates. As a matter of urgency the mapping of the whole State should start now and there should be increase in fund allocations. The Ministry of Land, Surveys and Town Planning should put themselves on new available technologies.
3. Above all there should be training and retraining of Staff members of the departments dealing on land, so as to make them conversant with the latest developments especially the

modern technologies now invoke. These will yield more fund for the State Government and private sectors because it will be faster to obtain a Certificate of Occupancy unlike in analogue form. Also it will check diversion of money (leakage of revenue) from the land transactions because every land transaction can be easily accessed in a computer database to know the authentic transactions.

4. Taking cognizance of the social and technological changes that are facing us, it will be of greater value if the states of eastern region embark on densification of geodetic controls which will be the basis for any reform that will be achieved. After that, there should be automation and digitalization of the cadastral system in the states because analogue format being practiced presently cannot help in achieving more revenue.

## REFERENCES

- Bahl, R., Martinez-Vazquez, J. and Youngman J. (2008). Making the property tax work: The Property Tax in Practice, in Bahl et al. ed. Experiences in developing and transitional countries, Cambridge-MA, Lincoln Institute of Land Policy, pp3-18.
- Bahl, R., Martinez-Vazquez, J. and Youngman, J. (2010). Whither the Property Tax: New Perspectives on a Fiscal Mainstay, in Bahl, et al. ed. Challenging the Conventional Wisdom on the Property Tax, Cambridge-MA, Lincoln Institute of Land Policy, 2010, pp3-14.
- Dale, P.F. (1976). Cadastral Surveys within the Commonwealth, Her Majesty's Stationary Office, London.
- Dale, P.F. and McLaughlin, J.D., 1986. Land Information Management.
- FIG, 1995. Statement of Cadastre. Report prepared for International Federation of Surveyors by Commission 7 (Cadastre and Land Management)
- Henssen, J.L.G. (1975). "Cadastral, Including some Aspects of Assessment of Real Property". The Canadian Surveyor
- Larrson .G.(1996). Land Registration and Cadastral Systems. Essex, UK, Addison Wesley Longman
- Muller A, Hopter A. (2000) Urban Data Management Coming of Age, in: UDMS 89, Lisbon 1989 Needham B: Land Taxation Development Charges and the Effects on Land Use. 31-40 in AESOP News Spanned Education.
- WHITTAL J., BARRY M. (2004). Fiscal Cadastral Reform and Implementation of CAMA in Cape Town. Policies and Innovations, Expert Group Meeting on Secure Land Tenure: New Legal Frameworks and Tools. Nairobi, Kenya.