

SEARCHING FOR AN AFFORDABLE CADASTRAL SURVEY METHOD

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Contents

This presentation is tied to the paper with the same title. The contents are:

- Objectives.
- Place of cadastral surveying and mapping in the cadastral system.
- The purpose and the problem
- Meaning of low cost surveys.
- Supply Vs Demand of Surveyed parcels .
- Access to land in urban areas.
- Formal Vs Informal Settlements

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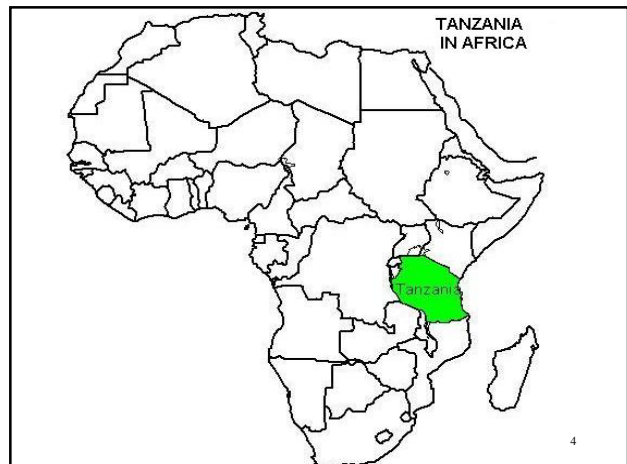
Contents contd.

- Options for land parcel descriptions.
- Cost of cadastral surveys – Experiences
 - In sub-Saharan Africa, and
 - In Europe.
- The experience in Tanzania.
- Discussion
- Recommendations.
- Conclusion

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Objectives of this presentation

- To identify a suitable, low cost method for the description of land holdings in urban informal settlements with the view to documenting and formalizing real property ownership in support of poverty alleviation strategies.
- To find out an appropriate, cost effective method for demarcating land parcels in planned urban areas to meet existing demands & so minimize growth/expansion of Informal Settlements .

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Place of Cadastral Surveying system

- Cadastral Surveying & mapping system is the cornerstone of the cadastral system.
- In Tanzania, it is housed under the same roof together with the related systems, namely;
 - Land Use and Environmental Planning.
 - Land Development Services, including land registration.
- The institutional set up improves efficiency and reduces administrative costs.
- The system is guided by statutes.

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The Purpose

- Cadastral surveys in planned urban areas:
 - Facilitate realization of physical planning goals,
 - Provide information necessary for efficient land registration, policy, reform and management of development.

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The Problem

- However, the Cadastral Survey System has been blamed for being:
 - Too slow, thus not meeting demands, and so be a cause for the birth/growth of Informal Settlements,
 - Too costly, thus not being generally affordable,
 - A cause for delays in land delivery, thus making access to land and development unduly costly.
- Can quick survey approach provide solutions?

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A Simple, Quick, Affordable Survey Method

- Speeds up timely, official access to secure land tenure.
- Propels motivation for equitable land allocation.
- Supplies sufficient parcels thus minimizing proliferation of urban informal settlements.
- Achieves purposeful urban land development
- Reduces poverty.
- Improves urban living environment and sanitation.

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The meaning of low-cost surveys

- Low cost survey approach means:
 - Cost reduction of survey services to match affordable budgets.
 - Improved efficiency of production.
 - Delivery of high quality, acceptable services and products to meet current needs.
- Doing otherwise would be counter productive.

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Supply of Surveyed Parcels Vs Demand

- Between 1978/79 and 1991/92 the City of Dar es Salaam received 261,668 applications for parcels. Only 17,751 parcels were available.
- This means only 6.8% applicants got an allocation. 93.2% were unsuccessful.
- The 93.2%, had to look for land elsewhere.

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Access to Land in Urban Areas

- In Tanzania urban land can be acquired either formally or informally. The latter supplies more land to land seekers.
- The Formal system supplies planned land through allocation while the Informal system supplies unplanned land mainly through purchase.
- Failure or underperformance of the Formal system promotes development of the Informal system.
- Over 70% of urban population lives in informal settlements.

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Formal Vs Informal Settlements

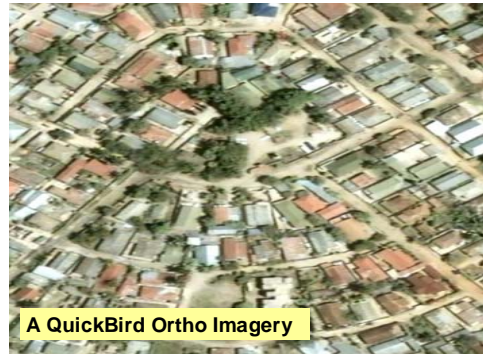
- Formal settlements are planned, surveyed, have controlled development.
- Informal settlements:
 - Are unplanned, haphazardly/irregularly built, and usually not surveyed.
 - Lack infrastructure and space for public amenities.
 - Some are located on marginal land such as in valleys or steep slopes.
 - Quality of living environment is often very poor.

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A PLANNED URBAN AREA, Sinza 'A'- Dsm

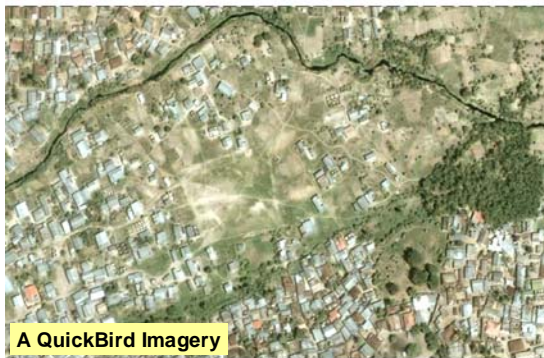


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AN INFORMAL SETTLEMENT, Kigogo Kati- Dsm



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Specific focus of this presentation

- Based on the foregoing, this presentation focuses on what surveyors can do to:
 - Address the problem of supply Vs demand of surveying services in planned urban areas, and
 - Contribute in the process of property formalization in unplanned settlements.
- Affordable survey methods are therefore explored.

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Options for describing land parcels

- **Technically**, ground or photogrammetric methods have been used to yield indisputable parcel descriptions.
- **Traditionally**, parcels have been described and identified by using local community knowledge attributed to a parcel, without surveys or maps, i.e using what is known as SOCIAL CADASTRE.

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What supporters of Social Cadastre say

- Supporters argue that a social cadastre should be used for African countries because cadastre and land registration is not appropriate for these countries. However, they recommend use of parallel, elaborate technical cadastre that provides security of tenure for foreign investors in Africa.[Double stds?]

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What non-supporters of Social Cadastre say

- Non-supporters of social cadastre have cautioned that:
 - As society develops, land becomes more valuable, and
 - Local community knowledge may change.
- Either of these can frustrate the workability of a social cadastre, and thus cause serious problems and litigations.

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Cost of technical cadastral surveys

- Concern about high cost of surveys has been raised by individuals, authorities and institutions.
- Many have argued that aiming at high accuracy causes delays and high survey costs which are a deterrent to access to land and land development.
- This issue is explored in some sub Saharan African and European countries.

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Survey Costs in Sub Saharan Africa

- Fixed Boundary surveys are necessary for title registration but the field survey methods and procedures are not cost effective because the accuracies imposed are overly burdensome (Ghana, Kenya, Namibia, Tanzania and Zambia)
- General Boundary surveys have been successfully used in Kenya to produce information for land registration at affordable, low costs.

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Survey Costs in Sub Saharan Africa contd.

- Frustrated by the slow pace of planning, surveying and registering land rights, the govt. of Namibia adopted a proposal on Flexible Land Tenure System that allowed a simple survey method and title registration in informal settlements.
- Experience in Zambia reveals that photogrammetric methods were more expensive than ground survey methods.

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Survey Costs in Europe

- All the sampled countries, (England, Greece and Georgia), use General Boundary concept to describe parcels.
- The cadastre is based on large scale topographical maps (1:1000 – 1:2500 scale in urban areas).
 - Parcel boundaries are identified, adjudicated and annotated on the maps.
 - This approach is simple and cost efficient as the maps used for other purposes are also used for land registration without requiring much additional survey costs.

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The Experience in Tanzania

- Two scenarios are considered:
 - Cadastral survey methods needed for formalization or upgrading real property in urban informal settlements, and
 - Cadastral survey methods for planned urban areas.

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The Experience in Tanzania contd

- Surveying in informal settlements involves boundary adjudication and graphical delineation of parcels.
- The full procedure has been documented by Silayo (2004).
- The procedure involves use of large scale aerial photographs or high resolution satellite imagery, such as QuickBird or Ikonos ortho-imagery.

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The Experience in Tanzania contd

- Parcels in informal settlements are created by process of delineation. No demarcation or measurements.
 - **In the field:** Parcel boundaries are identified, adjudicated and marked on hardcopy of geo-referenced satellite imagery/photograph.
 - Parcel is given an alphanumeric number and owner particulars recorded through completion of a questionnaire.

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The Experience in Tanzania contd

- **In office:** Parcel boundaries are digitized, a parcels map produced and a database prepared.
- This approach was first proposed by the author in 2003/04 and it is now being implemented in the city of Dar es Salaam to document and formalize real property ownership in informal settlements under the ongoing 'de soto program'.
(Detailed procedure on implementation is forthcoming in a separate paper and conference)

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The Experience in Tanzania contd

- Surveying in planned, new urban areas involve parcel setting out from Town Planning (TP) drawings in accordance with Survey Regulations.
- Setting out parcels from TP drawings:
 - The process is rigorous and lengthy demanding implementation of 20 administrative cum technical steps.

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The Experience in Tanzania contd

- Administrative steps such as issuance of survey instructions or pending compensation may cause delays in starting or completing a survey task thus raising survey costs.
- Technical steps such as establishment of control, independent re-checking of surveys and the survey approval process are quite lengthy and costly.

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The Experience in Tanzania contd

- The fixed (accurate) boundary survey methods are used.
 - Parcel boundaries are marked by numbered, pre-cast concrete beacons or Iron Pins in concrete, which are tied to survey control framework.
 - All parcel boundaries are measured and a plan produced for each individual survey.
- The surveys are sporadic, involving surveys of one or a handful parcels per task.

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Discussions

- The social cadastre has proved to be unworkable.
- Social cadastre cannot provide a sound basis for registration of land intended to be mortgaged without causing problems.
 - Investors and financial institutions, therefore, don't have trust in it.

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Discussions contd

- The European concept of using large scale topographic maps for parcel description is simple and cost effective.
 - The method however requires stable, air visible boundaries and up-to-date maps. Both these are not available in most African countries.

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Discussions contd

- The African climate and wild fires are a scourge to hedges used as boundaries, thus potentially causing a serious financial cum technical problems on boundary maintenance and restoration.
- In Kenya, general boundaries have been described as inaccurate; as such, they can cause misleading information to property owners and financial institutions accepting the properties as collateral in loan arrangements.
- Can Africa rely on such (general) boundaries?

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RECOMMENDATIONS

- Cadastral Surveys in Informal Urban Settlements should adopt the flexible, low cost, modified social cadastre description as a dependable and affordable interim measure for land registration, tenure security, access to credit and long term urban development control and renewal/planning (see *Silayo, 2004 for more*).

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RECOMMENDATIONS contd

- New urban areas being opened up should use quick boundary setting out methods to achieve planned dev'ment.
- Such surveying approach:
 - Gives permanent parcel descriptions.
 - Has potential to supply many parcels at low unit cost.
- Best cost-benefit results will be got only by making both surveying and registration, systematic and compulsory.

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RECOMMENDATIONS contd

- Use of modern technology (e.g. GPS, Total Station and computers) will give accurate survey measurements without much extra inputs and make data processing efficient and cost effective.
- To eliminate some of the repetitive quality checks, surveyors must be accountable for quality and completeness of their work through imposition of conditions such as mandatory Professional Indemnity Insurance.

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CONCLUSION

This way the cadastral survey and mapping system can facilitate:

- 1) Realization of planned urban land development.
- 2) Timely, official access to land and shelter to all at affordable cost,
- 3) Access to credit, and
- 4) Implementation of Poverty Alleviation strategies.

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