

Land Information Management for Sustainable Development of Cities - Best Practice Guidelines

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ABSTRACT

A working group within FIG Commission 3, with support from UN-Habitat, has been investigating how spatial information and knowledge management can more effectively facilitate decision support in Urban Management in Africa. The working group is producing a set of Best Practice Guidelines based upon a set of case studies that are to be published by FIG. In addition, the Best Practice Guidelines are planned to be included in the UN-Habitat's 'Best Practices in Improving the Living Environment' database.

This paper will present the approach to producing the Best Practice Guidelines and preliminary results of this investigation, identifying the key lessons learned in key aspects of the case studies, including:

- Drivers Initiating City Wide Land Information Management (LIM)
- Institutional Framework
- Legal Framework
- LIM Governance & Organisation
- Financial Management
- Human Resource Management
- Technology Management

The published Best Practice Guidelines will provide a set of pragmatic procedures for more effectively implementing Land Information Management projects within the urban environment, delivering significantly more benefits and generating more sustainable projects.

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1. INTRODUCTION

Commission 3 of FIG and UN-Habitat are co-operating on the subject of how Land Information Management can contribute to sustainable development of cities. Sustainable development meets the needs of the present without compromising the ability of future generations to meet their own needs. To be able to determine how these two organisations can best meet each others objectives it is good to go into the objectives of each organisation.

1.1 Objectives of UNCHS Best Practice Database

In the Declaration on cities and other human settlements in the new millennium, adopted at a special session of the general Assembly of the United Nations in the spring of 2001, the represented governments renew their commitments to the UN-Habitat agenda, welcome progress but also recognise gaps and obstacles.

The participants agreed on a great number of further actions, basically meant to eradicate poverty and improve the quality of human settlements. The declaration deals further with the improvement of the functioning of land markets and administration, the access to land of all, especially women and the transparent governance of cities.

One of the future actions formulated in the declaration is the goal to translate best practices into policies and to permit their replication. It urges the international community to ensure the effective formatting and dissemination of proven best practices and policies.

UN-Habitat maintains a best practices database with the objective to improve public policy with the help of proven solutions and to raise the awareness of decision-makers and the public of potential solutions to common social, economic and environmental problems.

The best practices demonstrate the practical ways in which communities, governments and the private sector are working together to improve governance, eradicate poverty, provide access to shelter, land and basic services, protect the environment and support economic development.

The selection criteria for best practices are:

- a positive and tangible impact on improving the living environment of people particularly the poor and disadvantaged
- partnership

- sustainability
- leadership & community empowerment
- gender equality and social inclusion
- innovation within local context and transferability

1.2 Objectives of Commission 3 of FIG

It is the conviction of FIG that good decision making for sustainable development is heavily depending on reliable and relevant information, and to a very large extent on information that is geographically referenced. The need for geographic information arises on all levels of government, from senior decision makers to the grass-roots and individual levels.

Considerable data exist, but access to data is often hampered by lack of standardisation, coherence and of adequate services for data retrieval, including information about what data exist and where data are kept.

FIG plans in FIG Agenda 21, among others, the following activities:

- to facilitate the optimum use of geographic information in decision making for sustainable development
- to assist in keeping relevant UN Agencies and other international bodies informed about developments in the use of all aspects of Geographic Information (GI) for sustainable development
- to promote the understanding that access to relevant geographic information is a democratic right
- to promote the sharing of geographic data and to help realise integrated approaches to planning and management of land

One of the objectives of commission 3, Spatial Information Management, is to promote the importance of spatial information management for sustainable development. Working group 3 of commission 3, consisting of the co-writers of this paper, is entrusted with this task.

1.3 Objectives of FIG / UN-Habitat Co-operation

The objectives of UNCHS and FIG have a considerable mutual field of interest. The objective of this co-operation is to extend the best practices database of UN-Habitat with best practices in the field of Land Information Management. The co-operation focuses its work in a number of ways:

a. city wide approach, not projects

A considerable amount of geographical information is produced in the framework of sector projects. Projects for road construction, city planning, land titling and environmental issues will all produce the necessary information and there will be undoubtedly good examples of efficient production of geographic information.

The best practices we are looking for have a city wide approach to geographic information because we believe that this approach will in the long run be more sustainable and efficient.

b. urban, not rural

The primary objective of UN-Habitat is human settlements and particularly cities. The subject of the UN-Habitat database is therefore cities and not the rural areas, recognising the fact that also in these areas the need for geographic information is eminent.

c. local, not national

Developing countries have major questions to be answered with respect to their national spatial data infrastructure. The existing NSDI in a country is of course very relevant for the local governments, and they ought to be an integral part of it. However the best practices this paper is focussing on are on the city level because the big issues in the UN-Habitat agenda have to be solved mainly on this level.

1.4 Work Plan of FIG / UN-Habitat Co-operation

The above mentioned objectives and restrictions have led to the following working plan:

1. To develop reference framework for the assessment of best practices of city wide land information management. In a number of sessions between the working group members, kindly assisted by some external advisors this reference frame work was produced;
2. To discuss the reference framework with stakeholders and interested parties during the 2000 annual meeting of FIG Commission 3 in Nairobi (Land Information for Sustainable Development, Nairobi, Kenya 2-5 October 2001);
3. To apply this reference frame work on projects or case studies that are submitted by UN-Habitat or other organisations;
4. To readjust the reference framework and the publication of it by FIG; and
5. The enlargement of UN-Habitat best practices database with best practices in LIM.

2. CITY WIDE LIM –GOOD PRACTICE

This section details the preliminary results of the research into good practice in City Wide LIM.

2.1 Drivers Initiating City Wide LIM

The drivers of a programme articulate the reasons why a LIM programme is required. Drivers are non technical and represent the pressures and opportunities for change. In the case of LIM, this is the need to bring potentially disparate projects together, creating an integrated LIM programme to support the delivery of improved City wide services and to monitor the

effectiveness and sustainability of City policies.

2.1.1 Good Practice

Champion or Visionary

Many of the drivers discussed here will not be effective drivers for change unless there is a champion or visionary with sufficient professional credibility, drive, enthusiasm and tenacity to sell the benefits of providing a City wide LIM programme. This person must be able to sell the vision to the appropriate budget holders and deliver practical LIM supported solutions to business / political challenges of the City. Without a Champion and their vision, the chances of initiating a successful LIM programme are substantially diminished.

Business Feasibility

The best driver for justifying the creation of a City wide LIM is a business feasibility case.

Appropriate Use of Drivers

Whilst many drivers are generic, there is a need to tailor them and make them appropriate to local conditions and circumstances. The proposal for initiating and expanding a City wide LIM must be attractive to the politicians. Therefore, the timing and choice of drivers must be aligned with issues the politicians are currently facing to have any chance in attracting the necessary support and funding.

Combined Top Down / Bottom Up Approach

The top down drivers for change may not be successful by themselves. The arguments may have to be augmented by practical experiences and successes by partial implementation of a City wide LIM at the operational level

Don't Wait Too Long to Implement LIM Programme Co-ordination

The arguments for implementing a City wide LIM will be only too apparent once there are a significant number of active LIM projects. At this late stage in LIM activities it is normally more difficult to retrofit standards, guidelines and discipline into the operations of existing projects. It is far more effective to implement, even, basic co-ordination at an early stage.

2.2 Institutional Framework

The LIM of a City should fit into the corresponding spatial data infrastructure of the country. Certain information needs can best be served from the national level, e.g. data standardisation, small scale mapping. In the ideal situation there is an Institutional Framework that provides an accepted and well communicated set of arrangements between all stake holders in LI (Land Information) on how the data is collected, stored and maintained and exchanged, according to which standards, financial arrangements etc.

2.2.1 Good Practice

Integration with National and Regional Institutional Frameworks

City should take into account the national and regional environment when developing its City wide LIM strategy. Questions like: what are the standards ?; is the necessary data produced elsewhere ?; can we share data maintenance costs ?; what meta-data do customers expect we have to associate with LI ?

Communication Strategy

Good practice is when a City wide LIM programme has support from the top level of the City Administration and when it contains a well designed communication strategy to the political and societal environment, convincing them of the mutual interest they have in a well executed land information strategy.

Dialogue with National & Regional Institutional Framework

The communication strategy should also accommodate channels to the higher level institutional frameworks at the regional and national levels.

2.3 Legal Framework

The implementation of City wide LIM will only be successful if there is a legal framework established to secure the Intellectual Property Rights of data owners, Data Protection legislation to protect the abuse of information about individuals; an understanding of the national security issues and their impact on access to information and legislation to allow access to Land Information within Government and by the citizen.

2.3.1 Good Practice

Access to Land Information by the Citizen

Although there will be significant benefits for the data producers and service providers, it is recognised that one of the main beneficiaries should be the citizen.

Cities are recommended to formulate appropriate legislation to facilitate access to Land Information and services by the citizen.

2.4 LIM Governance & Organisation

To facilitate City wide integrated LIM it is essential that appropriate governance and an associated organisation is established to co-ordinate, regulate, monitor and optimise LIM activities within the City and amongst the City's partners.

2.4.1 Good Practice

Single Responsible Owner for LIM

Overall responsibility for delivering the business objectives and benefits of any programme or project must be vested in a single, responsible and visible individual, the Senior Responsible Owner (SRO). There is clear evidence that some government organisations and

private sector firms are much better than others at recognising and addressing the need for projects and programmes to have intelligent, active ownership from a single individual. There is also evidence that projects and programmes run into serious problems if there is no owner of the business process to perform this role. While having such an owner is not a guarantee of success, not having one dramatically increases the prospects of failure.

Support of Key Performance Indicators for Sustainability Evaluation

As well as providing appropriate LI to support the City's activities, the LIM governance should ensure that the LI required to support monitoring of City sustainability through performance indicators are adequately provided.

Project Monitoring & Evaluation

The expected benefits and deliverables from projects are defined during the early project feasibility stage. LIM Governance should provide guidelines for the ongoing monitoring and evaluation of projects throughout their lifecycles. This should ensure accountability, early identification of failure and dissemination of lessons learned.

City Wide LIM Governance from Chief Executive's Office

The responsibility of LIM governance within the Chief Executives office has provided the necessary empowerment for City wide LIM to be achieved.

Involvement of End Users of LI

The participation of end users of LI as an advisory body in the governance of City wide LIM has help to define clearer priorities for LIM and establish more practical data quality standards, reducing the overall costs of LIM.

Design Authority

The effective use of Design Authorities has limited the variation of IT solutions implemented, increased interoperability and significantly reduced the cost of IT maintenance.

2.5 Financial Management

The acquisition of funding for City wide 'joined-up' LIM programmes is more difficult and complex to achieve than for individual projects. The programmes can be seen as altruistic, where as in reality they can provide decision makers with the evidence required to make sounder decisions based upon the wider understanding of material evidence to support urban sustainability. Understanding the arguments to support the investments in this area is essential if an appropriate level of funding is to be secured from donors.

2.5.1 Good Practice

Business and political focus investment

Arguments for investment in LIM programmes will only succeed in attracting investment if they address real issues. The most successful arguments are those that directly address current political concerns and where it can be shown that a 'joined up' approach offers a greater chance of achieving the objective(s). All investment in LIM programmes need to be vetted

against this criteria.

Financial and Economic Appraisal

The financial and economic arguments used to justify the investment LIM programmes needs to be expressed with the constants of recognised accounting practice. The creation of successful business cases is best achieved in conjunction with financial and economic experts who can express the arguments in appropriate and accepted terms.

Better quantification of benefits

Where benefits for investment in LIM programmes are expressed in accounting terms and where the arguments for investment focus upon current political concerns the possibility of attracting appropriate funding is greatly enhanced.

Identify the cost of doing nothing

Experience has shown that the downstream cost of not investing in LIM can be very high. Business cases for investment that clearly expose the costs of not investing in City wide 'joined-up' LIM can be shown to be more likely to attract appropriate funding.

Provision on long term funding

Provision for long term programme funding (maintenance) can be addressed when the programme includes a strategy for cost recovery either through the provision of services or benefits in kind.

Incremental approach

The difficulties in attracting and securing long term funding can be by-passed where small / limited initial programmes 'proof of concept initiatives' are focused on a single 'joined-up' objective. These programmes clarify the realisable benefits and clear the way to attract further incremental investment by ensuring that arguments can be more readily substantiated and shown to address real issues.

2.6 Human Resource Management

City wide programmes engender specific Human Resource Management issues. The need to manage human resources across a wide range of stakeholders, whilst ensuring staff retention and motivation places significant demands upon departments and agencies when demand for these skills are escalating and global shortages are predicted.

2.6.1 Good Practice

Human Resource Capacity Planning

The development of a policy to ensure the continued availability of appropriately skilled human resources should be created as early as possible in planning a City wide LIM programme. This is also an opportunity to address gender gap issues.

Non Blame Culture

A management approach should be implemented to encourage innovation and creativity. This will involve significant cultural change and can only be achieved if supported, and actively encouraged, by all level of accountable management.

Long term Capacity planning

The provision of a capacity planning framework does not prevent the loss of staff. However, it does provide an environment in which the movement of staff is accepted as inevitable and delays due to shortages and temporary unavailability are minimised. Capacity planning should not just include short term skill training, but address the issues of persistent, long term management skills.

Continuing Professional Development (CPD)

Where the provision of and access to appropriate Continuing Professional Development (CPD) for staff is fostered and encouraged, cultural change is made easier to implement. Recognition of the need for ongoing training and its provision can reduce staff turnover.

2.7 Technology Management

The choice of an appropriate technological solution to support City wide LIM is a key success factor in these programmes. The technology must be easy to use, facilitate interoperability amongst the stakeholders and be sustainable over its lifecycle.

2.7.1 Good Practice

Business Participation through Business Requirements

City wide LIM programmes should not be technology led. It is essential that the business / end users are involved throughout the lifecycle of the Information System. One of the most important activities is developing the business requirements that describes the expectations of the business.

Incremental Delivery of Solutions

The incremental delivery of Information Systems is advantageous to: deliver early solutions; gain early feedback from the business; recover from mistakes quickly; and support greater flexibility in rolling out the long term solution.

Prototyping of Solutions

The use of design and implementation methodologies for Information Systems that include Rapid Application Development / Fast Prototyping provide the business with an opportunity to clarify their business requirements prior to large development costs. An example is the Dynamic System Design Methodology (DSDM).

Sound budgeting

The use of recognised accounting procedures to secure the revenue budgets is essential to ensure that the technology can be sustained in the longer term.

3. CONCLUSIONS & RECOMMENDATIONS

Effective City Wide LIM is underpinned by effective partnerships and co-operation amongst a wide variety of multi-disciplinary stakeholders in the public and private sectors and the end user communities. African cities are encouraged to form Steering Groups to formulate appropriate policy and institutional frameworks and facilitate co-operation amongst the stakeholders. These Steering Groups should involve end user representation.

It is recognised that a mature effective City Wide LIM is a complex solution involving a large number of stakeholders and user groups. From experience, the most effective examples of City Wide LIM are those that have started with clear, short term objectives with corresponding simple solutions. African cities are encouraged to design solutions that start with realistic objectives and grow incrementally through political and market needs.

The success of National Spatial Data Infrastructure (NSDI) is dependent upon delivering products and services that are accepted and desired by the end users, both within Government, the private sector and citizens. This key objective will only be achieved if the requirements are clearly understood. African countries are encouraged to provide for end user needs and ensure that appropriate products and services are provided.

National organisations, with the support of FIG and sister organisations, are encouraged to organise regular Regional workshops to raise awareness and knowledge sharing of City wide LIM issues and solutions. This will be a significant contribution to capacity building. African countries are encouraged to provide continuous capacity building. If this is applied at the management level then this will be a significant contribution to institutional building.

The City Wide Best Practice Guidelines to be published by FIG should be incorporated into the UN-Habitat Best Practice Database.

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