SURVEYOR'S CONTRIBUTION TO LAND MANAGEMENT

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PREFACE

The FIG policy statement on the Surveyor's Contribution to Land Management is a timely and important document as it focuses on the key role played by land management in all settlement development and on the contribution made by surveyors to this process.

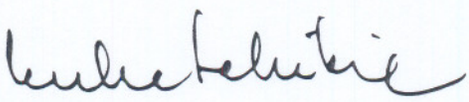
Taking into account the rapid growth in population, especially in developing countries, and the ensuing spread of built-up areas in those countries, FIG concluded that a special policy statement on land management was needed in order to emphasize the importance of land management and the contribution of surveyors to the development of human settlements.

A special Task Force on Land Management was set up in 1989 to prepare the statement. Preliminary proposals were discussed at a session organized by the Task Force during the FIG Helsinki Congress in 1990. The draft proposal was handled by the FIG Bureau in 1991. The statement was finalized and adopted by the FIG Permanent Committee at their meeting held in Beijing, China, on May 23, 1991.

This statement, prepared with the support of the United Nations Centre for Human Settlements (HABITAT), can meet its goals only if the recommendations of the statement are implemented. Therefore the Bureau hopes that all Member Associations will take into account the recommendations of the statement and will act accordingly. The FIG administration will do its share in this work.

We all have to recognize the global responsibility surveyors have in proper land management and keep in mind the statement of Dr Arcot Ramachandran, Executive Director of HABITAT at the opening of the FIG Helsinki Congress in 1990: "Land is the starting point for all settlements development, and at the beginning of this process stand the surveyors." The background paper on land management attached to this booklet provides practical and useful information on the subject.

FIG is grateful to HABITAT for their support in preparing the statement and for their assistance in circulating the relevant information. Professor J.L.G. Henssen, Chairman of the Task Force, and all those who contributed to the work of the Task Force deserve our sincere thanks for their good work.



Juha Talvitie
President, FIG (1988—1991)

POLICY STATEMENT ON THE SURVEYOR'S CONTRIBUTION TO LAND MANAGEMENT

adopted by the Permanent Committee Meeting of FIG on May 23, 1991 in Beijing, China

I PREAMBLE

THE INTERNATIONAL FEDERATION OF SURVEYORS (FIG)

is an international, non-governmental organisation grouping together national associations and organisations of professional surveyors. Its purpose is to support international collaboration for the advancement of the profession of surveying in all fields of application.

The Federation is affiliated with the United Nations as a non-governmental organisation in consultative status with the Economic and Social Council (ECOSOC). FIG also enjoys official observer status with the UNEP Governing Council.

More particularly, the nine Technical and Scientific Commissions of FIG are responsible for preparing, conducting and concluding the technical and scientific activities of the Federation.

Commission 1: Professional Practise, Organization and Legal Systems
Commission 2: Professional Education and Literature
Commission 3: Land Information Systems
Commission 4: Hydrographic Surveying
Commission 5: Survey Instruments and Methods
Commission 6: Engineering Surveys
Commission 7: Cadastre and Rural Land Management
Commission 8: Urban Land Systems: Planning and Development
Commission 9: Valuation and Management

THE SURVEYOR

is seen by the Federation as a professional person with the academic qualifications and technical expertise:

- to practise the science of measurement;
- to assemble and assess land and geographic related information;
- to use that information for the purpose of planning and implementing the efficient administration of the land, the sea and structures thereon; and
- to instigate the advancement and development of such practices.

THIS STATEMENT

is designed to convince Governments and other national and international organizations that the surveying profession plays an important role in contributing to proper land management.

II STATEMENT

THE INTERNATIONAL FEDERATION OF SURVEYORS

recognizes

- that there is a triangle of three principle and interrelated problems which threaten mankind; namely explosive population growth, poverty, and damage to man's living environment and his resources;
- that land management, includes spatial and land use planning, valuation and taxation, land acquisition and delivery, land tenure and land registration or cadastre;
- that the surveyor, as a result of his education and training, together with other disciplines, contributes to the development and implementation of proper land management;
- that the surveyor's role is an indispensable support to the efforts of others to ensure decent human life for all in the future, especially in the field of the resource base of human life. This resource base includes :
  - land use
  - land utilization
  - water management
  - urban challenge including the growth of cities in third world countries
  - the socio-economic crisis in these cities, and
  - the urban decay of the industrialized world,

and accepts

that the surveyor and so the Federation has, on a global scale, an important mission in contributing to land management activities, and therefore

declares

1. that appropriate land management is important for the solution of the problems which our world is facing today and in the future,

2. that the various components of land management are strongly interrelated,

3. that this policy statement should be an incentive for surveyors to participate more actively in, and contribute to, a broad range of land management activities,

4. that in the time to come, the policy of the Federation will be directed towards fulfilling this mission to improve the world´s capability in the field of land management.

This implies that the International Federation of Surveyors shall

1. wherever appropriate, include the surveyor's contribution to land management issues as an important topic at conferences and other occasions and will encourage national member associations to do likewise,

2. bring the policy of the Federation on contribution to land management to the notice of national and international organisations and authorities such as the United Nations and ensure that they are informed of the potential contribution of the surveyor to proper land management,

3. urge national and international aid organisations to use the surveyor's services and expertise in land management activities when planning programs in the developing countries,

4. encourage discussions on land management issues and the contribution of the surveyor within national authorities, universities, schools and research institutes in order to exert an influence on program and syllabuses,

5. urge all technical and scientific commissions within the Federation to give priority to land management issues related to their sphere of activity, and

6. ensure that the administrative Bureau of the Federation takes responsibility for the implementation of the FIG policy on land management. This includes coordination with all Technical and Scientific Commissions within FIG.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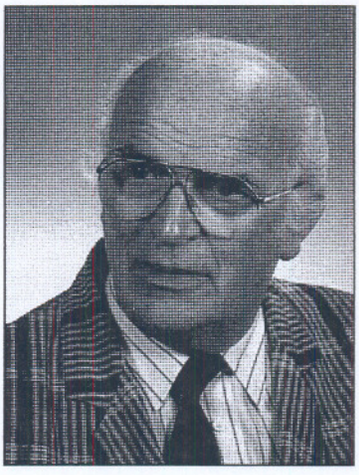


LAND MANAGEMENT
A BACKGROUND PAPER

by
J.L.G. Henssen (Netherlands)
President of International Office of Cadastre and Land Records (OICRF), FIG Permanent Institution

LAND AND LAND POLICY

Many activities related to human settlement, which have been identified in the FIG Policy Statement on Land Management, are related to land. Land is essential for human shelter, for growing food and as the source of resources. In the context of this policy paper, the definition of land encompasses the land mass, as well as aquatic features such as rivers, lakes and the oceans.

In all countries land is a basic resource with unique characteristics. As well as its economic value, it often has significant social and religious aspects. For example land is often considered to belong to ancestors, and those people currently living on the land derive their right to use the land as custodians of deceased tribal members and the unborn. These beliefs are of such significance that they cannot be dismissed as merely ancient, superstitious or romantic ideas. The modern concepts of sustainable development, arising because of fears of over-population, overexploitation of resources and pollution, also reflect the view that land is a resource which must be preserved for future generations.

Within this framework of ideas, a balance between exploitation/utilisation and conservation of resources must be achieved in order to obtain the necessary level of sustainable development for the survival of mankind.

To achieve this, Governments must demonstrate a commitment to ensuring the provision of an adequate supply of land by enacting and implementing a comprehensive land policy.

The *land policy* of FIG advocates governments ensure that an adequate supply of land is available for all uses. Moreover, government policy should include laws for the siting of infrastructure balanced against relevant environmental considerations, and ensure that the cost of land is affordable and occupiers have security of tenure. All this must be done at the rate which ensures that the supply of land keeps pace with competing demands.

LAND MANAGEMENT

A. GENERAL

A workable set of instruments and mechanisms must be developed to ensure that a land management policy achieves its stated aims.

The set of instruments and mechanisms will include:

1. spatial (including land use) planning
2. valuation and taxation
3. land acquisition and disposal
4. land tenure and land registration (or cadastre)
5. geographic and/or land information systems (GIS/LIS)
6. institutional factors.

All these components play an essential part in the processes of land development. They are necessary to ensure:

- a knowledge of the actual use of the land
- planning for the future
- implementation of long term strategies
- the monitoring and management of land use.

These issues and activities are strongly interrelated and reliant upon the coordination and cooperation of many different agencies from a wide range of differing professional disciplines. The six issues mentioned above are reviewed in the following sections.

B. SPATIAL (INCLUDE LAND USE) PLANNING

An integrated and coherent planning system is necessary to obtain the optimal use for a parcel of land. This system will encompass vertical integration between the national, provincial and local tiers of government, e.g. once the particular use for a parcel of land has been determined at the national level, coordination, integration and synchronisation of planning activities through other levels of government is necessary. Within this procedural framework, attention should be paid to such competing uses for land as:

- housing
- industry
- infrastructure
- hospitals and schools
- employment opportunities
- transportation, etc.

Spatial planning laws and regulations should take into account the various interdependencies of the different levels of government. Those laws and regulations should clarify the respective responsibilities in the planning process and be in accord with the differing responsibilities of each level of government.

Besides the legal, administrative and organisational aspects, special attention should be given to the application of modern technology and concepts. The government procedures and policy must be subject to continuing review and judged on the criteria such as efficiency, equity, conservation of environmental resources and community needs.

C. VALUATION AND TAXATION

Valuation of land and real estate is important for:

- determining financial settlement in instances of land sales, acquisition and compensation
- for mortgage credit
- rent and property and other taxes which relate to land.

Land prices are generally based on the prevailing market value or income productivity. In estimating the value of parcels of land, including the improvements, the comparative sales approach, the income approach or the replacement cost approach are generally applied.

In some cases, land prices and real economic value have little relationship with each other. This is common in the urban fringe of developing neighbourhoods where speculation and unjustified increases in value have disturbed the normal land price and functioning of the market. Measures to curb the speculative value must be considered such as:

- determining the price at a fixed date
- freezing value or a particular level
- recapturing unearned increments by the use of taxes.

In this respect the following recommendation of the UN Habitat report "Land for Housing the Poor", Tällberg, Sweden, 1983, is relevant :

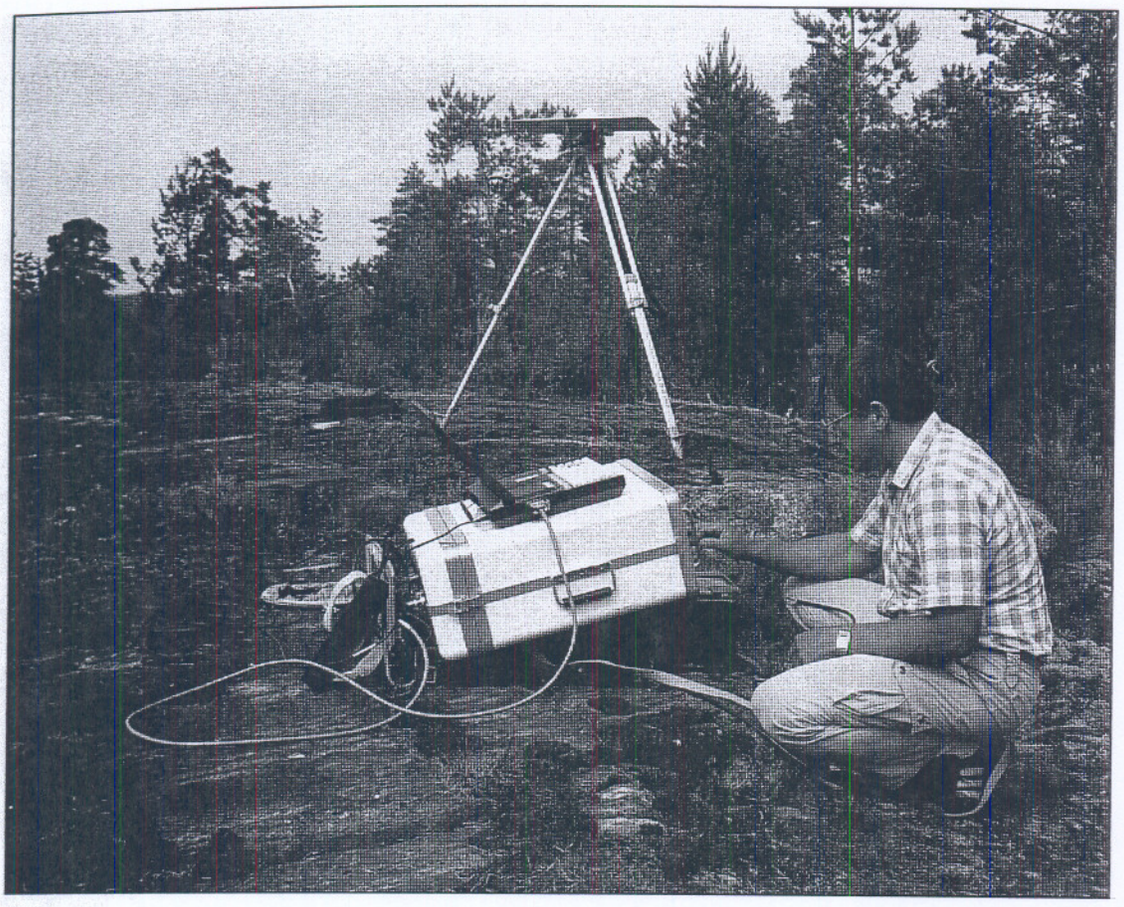
"In acquiring land, public authorities should only pay a price commensurate with the original investment and the value actually created by the owner or other right-holder".

This recommendation must be considered within the framework of the constitutional rights of individual countries.

Within the context of land valuation, land or property tax may be used as a mechanism to mobilise and allocate funds for land development activities. In addition to this source of income, land tax can encourage owners of unused or under utilised land to develop this land and, especially in urban fringe areas, discourage land speculation by increasing the tax burden in proportion to the unimproved value of the land. Furthermore the avoidance of land or property tax is more difficult to evade since the land and buildings cannot be disguised.

Finally, as land or property tax is fixed to a definite location, it can be used as a conducting instrument in the implementation of physical planning.

In land development projects, it is important to match the level of finance to the value of the completed project and to apply proper valuation and cash flow techniques. In this case cost/benefit analysis and proper cost recovery techniques become feasible.



In the financing and valuation of development projects, the use of modern computer analysis and automation techniques is becoming almost essential.

D. LAND ACQUISITION AND DISPOSAL

Making land available, especially in the urban areas of developing countries is a complex process. In the land development process, it is often a significant cause for delay.

The supply of land can be influenced by various economic factors such as rates of taxation and expected changes in future use, but also by historical, religious and social factors. Thus the rate of supply and the factors influencing the rate of supply vary from region to region, even within a country.

There are several forms of land acquisition and disposal, e.g.

(a) Government acquisition and disposal

In this process, it is important to ensure that the government agency does not withhold the land for an extended period in order not to exacerbate the need for the initial acquisition and also to ensure that government capital is freed up for other purposes.

In most countries, governments possess the necessary powers to compulsorily acquire (i.e. expropriate) land. However compulsory acquisition often raises strong opposition from influential vested interests with consequential lengthy delays resulting. It is a process therefore, which should only be invoked when other more simple means have failed. Where possible the level of compensation should be based on the real economic value of the land and not its speculative or optimum value.

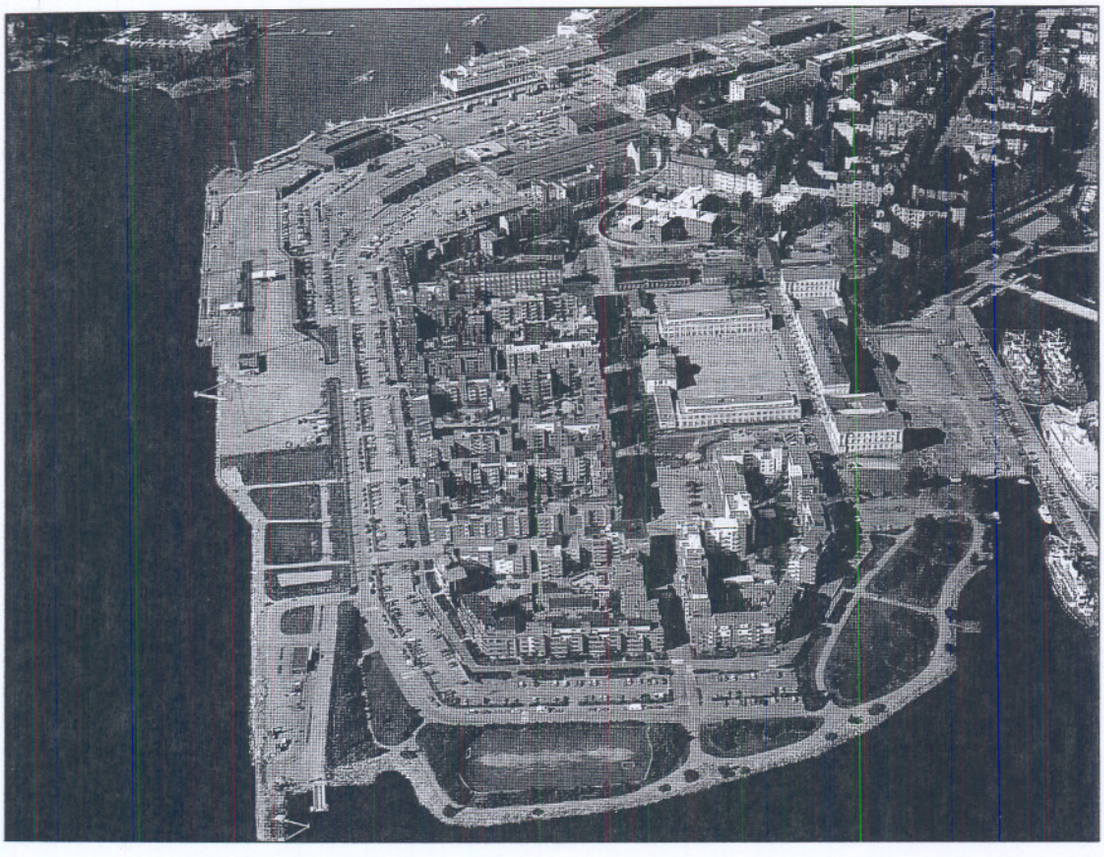
(b) Legalising the existing or status quo development

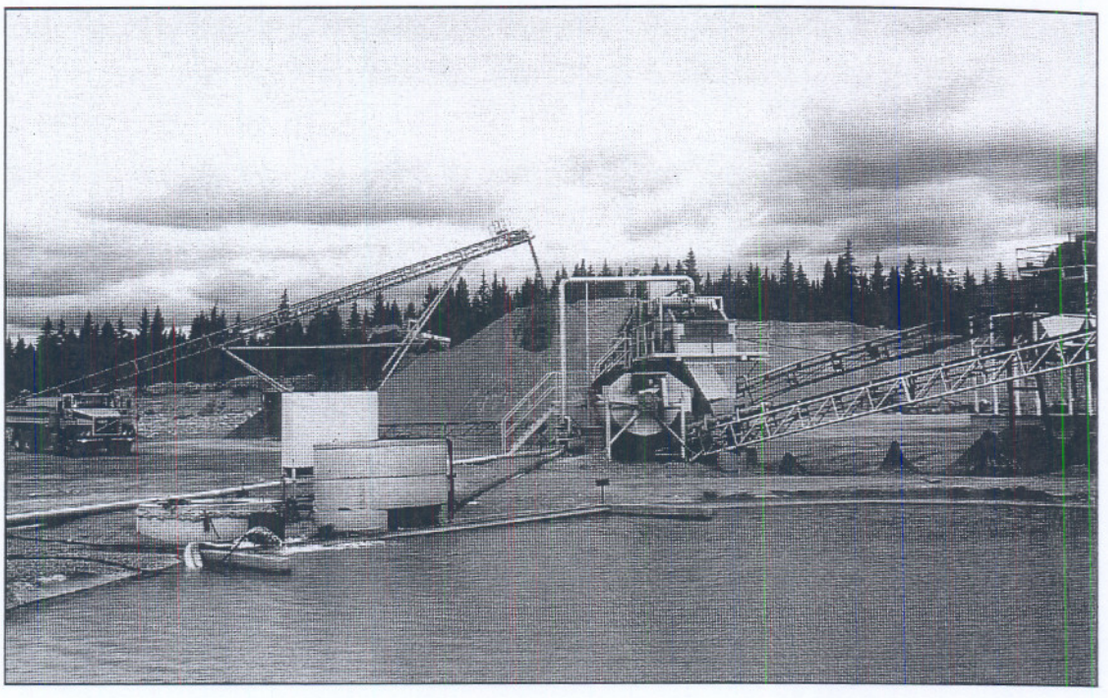
This action may be necessary:

- where squatters have built on Government land
- where land for housing has been created by poor or illegal subdivisions and where legal tenure does not exist.

If legalising the tenure of such developments, government should be aware of possible negative affects (which should, if possible, be avoided), e.g. when

- low socio-economic groups who have secured a higher security of tenure and quality of housing may sell out to economically stronger groups. The original owners then move out to create a squatter settlement in another area.
- original squatters may informally hold several plots of land which they rent to others. Legalising the existing situation may thus create an undesirable form of landlordism.
- squatter settlements are often built on dangerous sites such as swamps, unstable hill-slopes, sites containing hazardous wastes or economically unsuitable sites. Before considering legalising the tenure, the physical suitability of the site should be examined.





(c) Other options to make land available include land banking (acquiring land for subsequent distribution and allocation) and landceiling (fixing the maximum area of land an individual, family or company may own).

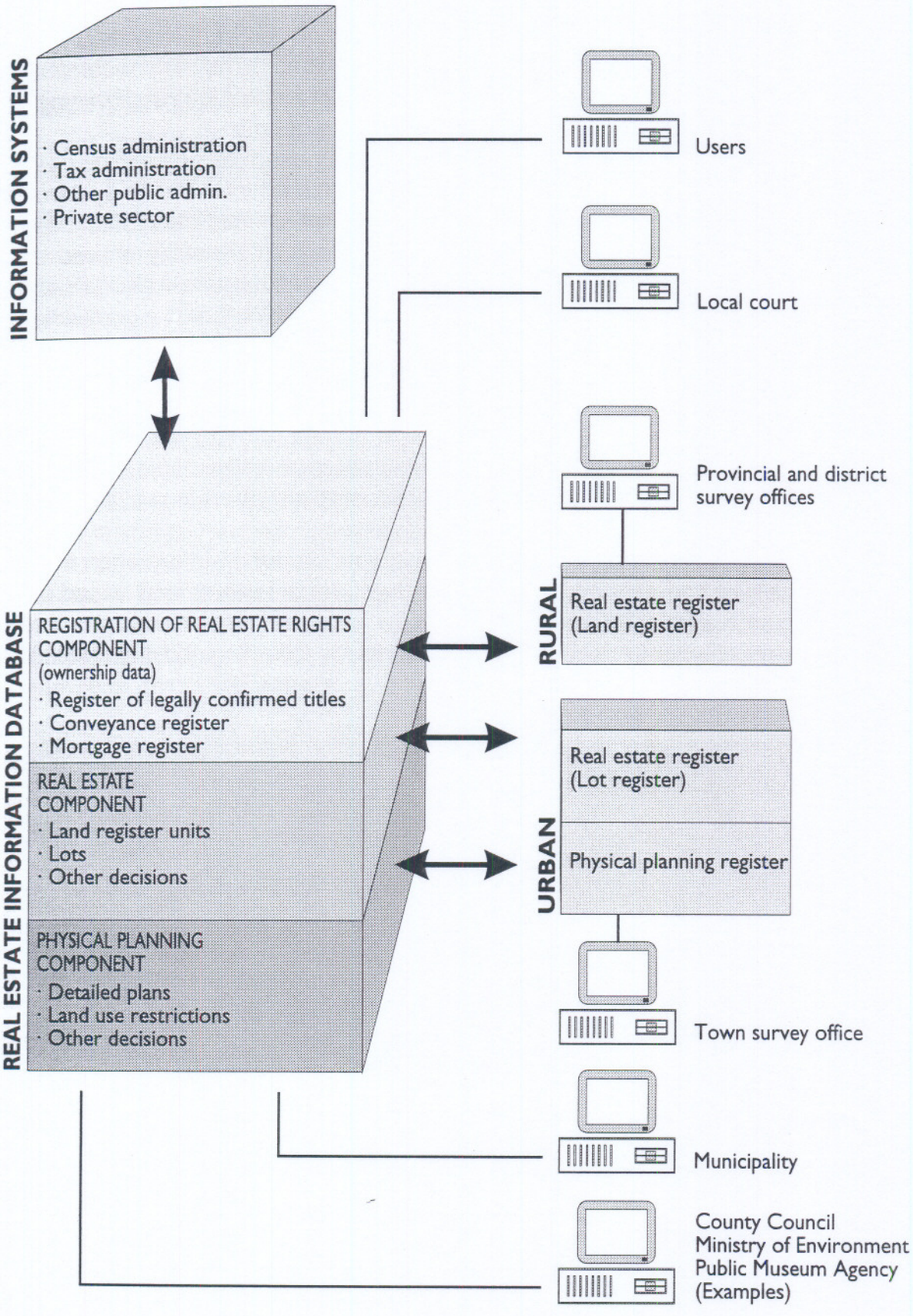
Other reasons for land acquisition may include land consolidation, rezoning for different land use and for infrastructure and public utility development.

E. LAND TENURE AND LAND REGISTRATION (OR CADASTRE)

Land tenure is the formal system of registration which gives the right to occupy a parcel of land.

Many of the problems facing developing countries result from an intricate system of traditional land tenure based on the social, economic, historical and religious significance attached to the land. These traditional tenure systems may sometimes guarantee a high measure of security of ownership, but function also as a bulwark against any changes in customary way of life and economic development. One of the greatest problems will then be to balance these traditional attitudes to the requirements for socio-economic development. In some developing countries, where customary tenure involves communal ownership, there has been a noticeable trend towards individual ownership or stewardship.

In order to endow land with secure rights of tenure and to supply written evidence of ownership, a systematically arranged and comprehensive land registration or cadastre system is necessary. Such a system, which consists of both cartographic and a descriptive information, should be capable of serving many purposes. It has to function as a multipurpose cadastre and also form the basis for other parcel oriented data banks, e.g. to facilitate land use and planning decisions. New technologies, methods and techniques play a vital role in improving such a registration system.


INFORMATION SYSTEMS
· Census administration
· Tax administration
· Other public admin.
· Private sector
Users
Local court
Provincial and district survey offices
REAL ESTATE INFORMATION DATABASE
REGISTRATION OF REAL ESTATE RIGHTS COMPONENT
(ownership data)
· Register of legally confirmed titles
· Conveyance register
· Mortgage register
REAL ESTATE COMPONENT
· Land register units
· Lots
· Other decisions
PHYSICAL PLANNING COMPONENT
· Detailed plans
· Land use restrictions
· Other decisions
RURAL
Real estate register (Land register)
URBAN
Real estate register (Lot register)
Physical planning register
Town survey office
Municipality
County Council
Ministry of Environment
Public Museum Agency
(Examples)

F. GEOGRAPHIC AND/OR LAND INFORMATION SYSTEMS (GIS/LIS)

These two phrases are often used interchangeably. GIS/LIS may be conceptualised as a series of procedures and mechanisms to maintain records and retrieve and analyse information about land. The form of information may be cartographic, textual or more usually, a mixture of both.

The transfer of traditionally maintained paper based records and plans into a computerised system is the key to a modern land information system. A fundamental concept is that land information which has traditionally been maintained by one government organisation may be readily shared and integrated with information held by other organisations. Thus GIS/LIS is an important new concept in land information management.

The development of GIS/LIS needs the cooperation and coordination of all government agencies which maintain and use land information. In the introduction of GIS/LIS, the following new trends and developments are becoming apparent:

- applications of new technology in data collection and processing, and the generation of new and specialised products that were not available using manual systems;
- the development of multi-purpose systems based on information from a variety of sources, available in interchangeable formats and based on a common spatial referencing system;
- the introduction of decentralised networks for collecting and disseminating land information;

- coordination of land information activities in various organisations through the development of exchange standards and common procedures;
- creation of new organisational structures.

G. INSTITUTIONAL FACTORS

Efficient institutions are necessary for modern land management. The key institutional components are:

1) Organisational Procedures

A proper organisational framework is a precursor for coordination and cooperation between land information agencies. To provide a framework for establishing a common approach to land information management, a unified GIS/LIS concept must be adopted. This will ensure the cooperation and commitment between agencies, determines the responsibilities for each agency and provides a focus for funding.

The private sector also has an important part to play, both as a builder and user of land information. In addition the development of new hardware and software to support a GIS/LIS is a key role for the private sector.

Private and government sectors can also cooperate through joint ventures or undertakings to complete projects of social and economic benefits to the community. Such partnerships may involve some element of financial risk and a commitment to use valuable resources. The profit sharing should be appropriate to both the level of resource input from each party and the measure of risk of the project.

2) Information and Communication

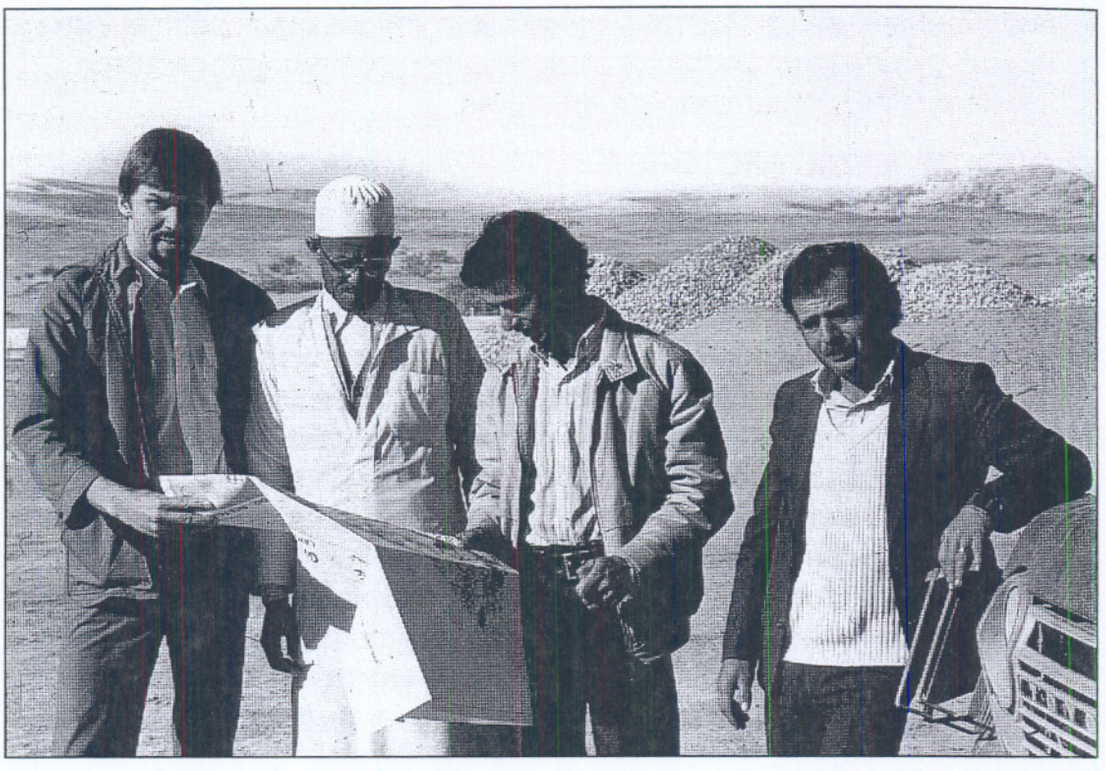
GIS/LIS is a relatively new concept but one which has the potential to provide many benefits across all tiers of the community. It is therefore important that these benefits are widely promoted both to the leaders of government who are responsible for the allocation of resources and, at the other end of the spectrum, to users of land information.

Government must ensure the benefits of the new systems are directed in the areas of most need, commensurate with the appropriate ratios of benefit to cost. Wide publicity must ensure that users of land information are made aware of the new products and systems and that this new technology is readily accessible to all persons who wish to take advantage of it.

It should be noted that communities and families, often from the lower socio-economic groups, represent one of the strongest forces for change. Their participation and cooperation therefore, can be very important. It is important to have a dialogue between users and system developers rather than being overly dominated by vested interests or economically powerful sectors of the community.

3) Training

The success of any land information policy is dependent on the availability of skilled staff at all levels. Governments must provide the facilities for both



formal and in-house training. Training courses must be practical in their orientation, available to all who require training and range from courses at university level for comprehensive professional training to short term courses for the introduction of new techniques. Government policies must ensure that there is an adequate pool of qualified teaching staff who are well skilled in the latest land information management and modern techniques.

Attention should also be given to:

- providing on the job training, particularly at the lower skilled end of the industry
- providing written information and technical manuals for all levels of the GIS/LIS community
- promoting national and international exchanges of experts.

4) Research

More research is required before the need for global land management is fully understood. This need for research is most urgently required in the lesser developed countries. As well as the present level of research being inadequate, current research efforts are often uncoordinated and not focussed on critical issues facing many nations.

Research must encompass all facets of land management, ranging from the purely technical to legal, social and economic issues. It also requires close coordination across the varying professional disciplines and be directed towards affordable and appropriate technology solutions.

5) Consultancies and Technical Aid

In many cases, the development of an appropriate land information management system for a developing country may require international expert assistance. Surveying consultants can provide technical assistance, advise on appropriate technologies and implement training programmes for local staff. Technical assistance may take the form of providing hardware and software as well as advising on strategic planning and the development of a proper land information management framework.

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WHAT IS FIG?

Most countries have a national association of surveyors. FIG – the International Federation of Surveyors – groups together these associations and organisations.

- The Federation, founded on July 18, 1878 in Paris, is an international, non-governmental organisation whose purpose is to support international collaboration for the progress of surveying in all fields and applications.
- The Federation is affiliated with the United Nations as a non-governmental organisation in consultative status with the Social and Economic Council. FIG also enjoys official observer status with the UNEP Governing Council.
- The nine Technical and Scientific Commissions of FIG are responsible for preparing, conducting and concluding the technical and scientific activities of the Federation.
- FIG has 55 member associations in 52 countries and 14 correspondents (1991).

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- No. 1: Exchange of Surveying Personnel (English, French and German editions)
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- No. 3: Sustainable Development – A Challenge and a Responsibility for Surveyors (English, French and German edition)
- No. 4: Surveyor´s Contribution to Land Management (English edition)

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