INTERNATIONAL FEDERATION OF SURVEYORS
FEDERATION INTERNATIONALE DES GEOMETRES
INTERNATIONALE VEREINIGUNG
DER VERMESSUNGSINGENIEURE

THE BOGOR DECLARATION

United Nations Interregional Meeting of Experts on the Cadastre

Bogor, Indonesia

18-22 March, 1996

1. Background

1.1 An Interregional Meeting of Experts on the Cadastre was held in Bogor, Indonesia from the 18-22 March, 1996. The United Nations Department for Development Support and Management Services (DDSMS) worked closely with the Indonesian State Ministry for Agrarian Affairs, the National Land Agency (BPN), the National Coordination Agency for Surveys and Mapping (BAKOSURTANAL) and the International Federation of Surveyors (FIG) in organising the meeting. The meeting also received an important contribution from AusAID, the Australian agency for international development.

1.2 The meeting was attended by experts from Australia, Bulgaria, Cambodia, People's Republic of China, Indonesia, Republic of Korea, Malaysia, New Zealand, Philippines, South Africa, Sweden, United Kingdom, Thailand and Vietnam, as advised by the FIG.

1.3 The meeting was a response to the problems of land management and environmental protection as stipulated in the Global Plan of Action for HABITAT II, and to the recommendations contained in Agenda 21 arising out of the United Nations Conference on the Environment and Development (UNCED), the "Earth Summit", in Brazil in 1992. Due to the international importance of the subject, the meeting was included in the calendar of events leading up to the HABITAT II conference or "City Summit" in Istanbul in June 1996.

1.4 Since its inception the United Nations has been actively promoting cadastral programs, guidelines, seminars and workshops through its various agencies. This commitment is continued in Agenda 21 and the Habitat II Global Plan of Action which recognise that efficient and effective cadastral systems are essential for economic development, environmental management and social stability in both developed

and developing countries.

1.5 The main objective of this interregional meeting was to consider the desirable requirements and options for cadastral systems with particular emphasis on the Asia and Pacific region and to make recommendations to the United Nations, national governments and appropriate non government organisations (NGOs) on cadastral and land management issues.

1.6 The meeting recognised that all countries have individual needs but that countries at similar stages of development have some similarities in their requirements.

1.7 The meeting also recognised that a key to a successful cadastral system is to ensure that the three main cadastral processes of adjudication of land rights, land transfer and mutation (subdivision or consolidation) are undertaken efficiently, securely and at affordable cost and speed, in support of an efficient and effective land market.

1.8 This Declaration is a summary of the key outcomes from the meeting and is supported by all experts.

2. Historical perspective

2.1 The United Nations has been involved in land administration issues since its inception, and in the early 1950s its Food and Agriculture Organisation published a series of monographs including one on the registration of rights in land. This was published in 1953 and has recently been revised and reissued.

2.2 In 1972 the United Nations called together an ad-hoc group of experts in response to a resolution of the Sixth United Nations Conference for Asia and the Far East that requested the United Nations to 'study in depth the problems of cadastral survey and to consider the setting up of a permanent committee to keep developments in this field under constant review'. The report produced a series of guidelines particularly directed at developing countries.

2.3 A further meeting of a group of experts was convened in 1983 and updated this report. It stressed the need for speed, economy and efficiency and encouraged the use of computer technology in the development of land information systems.

2.4 This current meeting was a response to a resolution from the United Nations Cartographic Conference for Asia and the Pacific held in Beijing in 1994 which recommended that a range of cadastral options be determined to serve the different needs of countries in the Asian and Pacific region.

2.5 In 1996 the United Nations Economic Commission for Europe produced a set of Guidelines on Land Administration for countries in economic transition as its contribution to the HABITAT II Conference.

2.6 At the same time the International Federation of Surveyors has been active in cadastral issues, particularly through its Commission 7 which is responsible for cadastre and land management. One

outcome from this activity has been the publication of a "Statement on the Cadastre" in 1994 which to date has been translated into eight languages.

2.7 This United Nations meeting noted all such previous activity so as not to "re-discover the wheel" and in particular adopted the FIG definition of cadastre as set out in the Statement on the Cadastre as the basis for discussion as set out below:

"A Cadastre is normally 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 the interests, the ownership or control of those interests, and often the value of the parcel and its improvements. It may be established for fiscal purposes (e.g. valuation and equitable taxation), legal purposes (conveyancing), to assist in the management of land and land use (e.g. for planning and other administrative purposes), and enables sustainable development and environmental protection."

3. Agenda 21, the HABITAT II Global Plan of Action and the role for cadastral systems

3.1 Many countries already recognise the need for a cadastral system. Agenda 21 and the HABITAT II Global Plan of Action provide additional justifications for establishing and maintaining appropriate cadastral systems to serve the different needs of nations and their citizens.

3.2 Both documents address environmental protection, sustainable development and better living standards for all and identify a number of key areas of responsibility for land administrators. These include issues regarding access to information, development of appropriate data bases, exchange of information, land use and transportation planning, legal frameworks and in particular land tenure. Land administrators are called on to create efficient and accessible land markets that meet community needs by improving land registry systems and streamlining procedures in land transactions; and to establish appropriate land tenure to provide security for all land users, especially for indigenous peoples, women and the poor.

3.3 A number of key activities or institutions raised by Agenda 21 and the Habitat II Global Plan of Action highlight the importance of cadastral systems to sustainable development and environmental management. These include clear and secure title, facilitating access to land, sustainable human settlement, efficient land information systems and effective land administration systems.

3.4 The formalisation of rights in land, which are an integral component of an effective cadastral system, is very important for sustainable economic development and environmental management in both urban and rural areas.

3.5 In rural areas secure tenure and the formal recording of rights in land are important: in promoting

increased investment in agriculture; for more effective husbandry of the land; for improved sustainable development; to support an increase in GNP through an increase in agricultural productivity; and to provide significant social and political benefits leading to a more stable society, especially where land is scarce or under disputed ownership. In densely populated rural areas or areas of high land value a cadastral system also facilitates the operation of an effective land market at affordable cost and allows an equitable land taxation system to be operated.

3.6 This is also true in urban areas where a cadastral system is essential to support an active land and real estate market by permitting land to be bought, sold, mortgaged and leased efficiently, effectively, quickly and at low cost. In addition a parcel based land information system (not necessarily computerised), based on the cadastre, is essential for the efficient management of cities. Cadastral systems permit land and property taxes to be raised thereby supporting a wide range of urban services, and allowing the efficient management and delivery of local government services.

3.7 The meeting agreed that the issue is not whether cadastral systems are important and essential, but what is the most appropriate form of cadastral system for each country.

4. A Cadastral Vision

4.1 The vision of the future shared by the meeting was to:

* develop modern cadastral infrastructures that facilitate efficient land and property markets, protect the land rights of all, and support long term sustainable development and land management.

* facilitate the planning and development of national cadastral infrastructures so that they may fully service the escalating needs of greatly increased urban populations. These will result from the rapid expansion of cities that is already taking place and which is projected to continue into the 21st century.

4.2 To achieve effective sustainable resource management and development for the future world population explosion, simple and effective cadastral structures must be available. These will need to support land use planning, accommodate the greatly increased demand for facilities and resources while ensuring that there is minimum damage to the environment, and be the foundation for the orderly and efficient provision of property markets and the supply of land-related services. They will need to provide simple mechanisms for identifying and protecting property rights, responsibilities and obligations, for recognising land use opportunities and limitations, environmental requirements and constraints, and for permitting consistent and acceptable valuation assessments.

4.3 The cadastral infrastructures envisaged for the 21st century will need to adapt to the different patterns and rates of population change. They will therefore vary according to the circumstances and population profiles of different countries. Nevertheless, a common cadastral vision is possible and is

indeed essential to the progress of all.

4.4 The resulting cadastral infrastructure will facilitate access to land, support security of tenure and allow land rights to be traded, where appropriate, in an efficient and effective way and at affordable cost.

4.5 The infrastructure can support a vast array of legal, technical, administrative and institutional options in designing and establishing an appropriate cadastral system, providing a continuum of forms of cadastre ranging from the very simple to the very sophisticated. Such flexibility allows cadastres to record a continuum of land tenure arrangements from private and individual land rights through to communal land rights, as well as having the ability to accommodate traditional or customary land rights.

4.6 The cadastre will include all land in a state or jurisdiction, including all state and private lands. It will cover both urban and rural areas within a unified system. Each land parcel will be uniquely identified.

4.7 The spatial cadastral framework (usually a cadastral map) will be a fundamental layer within a nation's spatial data infrastructure thereby allowing the integration of different forms of spatial data.

4.8 While the vision is applicable in general terms to all countries, it is essential that it is implemented to meet the individual needs and different development priorities of United Nations member countries.

5. Diversity of needs

5.1 The meeting recognised that different countries have different needs for a cadastre at different stages of development. While the basic justifications for cadastral systems are economic development, environmental management and social stability, different countries will place greater importance on different areas at different periods of their development.

5.2 Western developed countries that have relatively complete cadastral systems tend to be more concerned with increased efficiency and micro-economic reform. Countries which are moving from a command economy to a market economy are more concerned with the rapid creation of a new system in support of economic development and efficient land markets. Likewise developing countries are concerned with economic growth, the protection of land rights and the reduction of land and boundary disputes. In all countries there is a concern that cadastral systems support social justice.

5.3 Due to their different stages of development, different countries have different capacities for the development of cadastral systems. In particular human, technological and financial resources will determine the most appropriate form of cadastral system to meet the needs of individual countries. Thus a simple low cost manual cadastre recording only private ownership rights may be appropriate for one country, while a sophisticated and relatively expensive fully computerised cadastre recording a wide range of ownership and land use rights may be appropriate for another country.

6. Cadastral issues

6.1 The meeting reviewed a broad range of issues that affect access to land, security of tenure and the management of land resources. While there was great diversity amongst the countries represented, a common concern was the identification of ownership of rights in land, especially rights of occupancy and use.

6.2 There can be little security in the buying, selling, mortgaging, inheriting, leasing and renting, and enjoyment of easements over land without the clear identification and recording of rights. Even where documentation has taken place, there is often a separation between ownership rights, usually administered by a central government authority, and use rights, usually recorded and controlled by local authorities. It was noted that in one jurisdiction there were over 120 statutes which could possibly impact on the use of parcels of land.

6.3 There is a need to identify clearly what restrictions and obligations relate to any individual land parcel and to simplify access to this information for the land owner or user. This applies to both urban and rural land and to land held in formal and informal tenures.

6.4 A variety of forms of informal tenure were identified by the meeting, for instance those that involve the illegal occupation of government or private land; those that result from the infringement of formal land use controls; those where settlement is long established but has not yet been brought within the formal registration system; and those where land is vacant but subject to an unproven claim.

6.5 It was recognised that many cadastral systems are at present unable to keep pace with urban growth and that intermediate or provisional forms of tenures may be needed to cover the transition from informal to formal.

6.6 It is important to keep any land record system simple and up-to-date. Several different organisations may maintain land records about the same piece of land, hence a common definition of a land parcel and a common system of land parcel referencing is essential to ensure the effective exchange of information about the land between these different organisations. Thus whereas the recording of ownership rights and use rights may be the responsibility of different authorities, the data must be compatible between them.

6.7 There is a strong need to integrate and rationalise land title registry and cadastral systems, to link and coordinate them with other land administration and management activities such as valuation and planning. The responsibility for the maintenance of individual land records should remain with those responsible for their original collection. Provided that each organisation works to compatible standards the exchange of information between all those concerned with land management and administration should be facilitated.

6.8 Cadastral systems are not ends in themselves. They support effective land markets, increased

agricultural productivity, sustainable economic development, environmental management, political stability and social justice.

6.9 Cadastral reform or improvement should focus on the functions of the cadastre and in particular the key *processes* that are associated with adjudicating, transferring and sub-dividing land rights.

6.10 The success of a cadastral system is not dependent on its legal or technical sophistication, but whether it protects land rights adequately and permits those rights to be traded (where appropriate) efficiently, simply, quickly, securely and at low cost. However if the resources are not available to keep the cadastral system up-to-date then there is little justification for its establishment.

7. The need for re-engineering systems

7.1 The meeting recognised that the success of a cadastre is not dependent on its legal or technical sophistication, but whether it protects land rights adequately and permits those rights to be traded (where appropriate) efficiently, simply, quickly, securely and at affordable cost. This requires a focus on the user and landowner as well as the needs of government. As such the meeting focused on the efficiency of the key cadastral processes of land adjudication, land transfer and mutation (subdivision and consolidation).

7.2 In order to improve a cadastral system the importance of focusing on the cadastral processes to identify bottlenecks, inefficiencies and duplication was recognised. Once the processes have been fully documented and understood it is possible to re-engineer them to improve efficiency and effectiveness in the delivery of cadastral services to the user. Such re-engineering often requires changes to legislation, modified institutional and administrative arrangements, and the use of different technologies.

8. Administrative and technical options

8.1 The main objective of the meeting was to consider appropriate administrative and technical options for the cadastre to serve the different needs of countries at different stages of development. The meeting considered in general terms administrative options which included land policy, legal, institutional and technical options. In considering all options the meeting took into account economic and human resource issues and the cost of the various options.

8.2 *Land Policy Options*

8.2.1 Land policy is a part of the national policy of countries. Such policies generally relate to economic development, social justice and equity, and political stability. The land policy may for instance include or promote the provision of security of tenure, improve access to credit, land reform, land titling and the resolution of issues relating to traditional or customary tenures, facilitate special attention to provision of land for the poor, ethnic minorities and women, facilitate land use and physical planning, real property taxation, measures to prevent land speculation and land disputes. The meeting emphasised the need to

establish a coherent national land policy to guide policies within different sectors.

8.2.2 The cadastre can support land polices by providing a legal framework for administering land rights. A land rights framework supports structural change, environmental protection and sustainable management and control of natural resources and environment. It supports land markets, information for planning and monitoring of land use and also provides tools for the implementation of land policies, for instance land consolidation, resolving land disputes or compulsory acquisition of land.

8.3 *Legal Options*

Within this policy framework, particular legal issues must be addressed including:

* appropriate land registration legislation to include questions on provisional titles and procedures for registration

* adjudication

* indefeasibility of title and adverse possession

* protection of different levels of rights and interests in land such as ownership, long- and short-term leaseholds, easements, shares in real properties, group rights, rights to apartments, rights to jointly owned facilities etc.

* land acquisition including compulsory purchase

* land allocation and land consolidation or reapportionment

* land parcel mutations (subdivision, consolidation, boundary re-adjustment)

* strata, cluster and community titles

* copyright and data protection when cadastral data becomes a marketable commodity

* quality assurance and licensing of practitioners

8.4 *Institutional Options*

A variety of issues arise when selecting the most appropriate organisational structure for managing a cadastre. These include:

* whether there should be combined land registration and cadastral surveying and mapping functions or whether these should be separate organisations

* whether the system should be centralised or decentralised

* how to establish linkages between different authorities responsible for maintaining records on the ownership, value and use of land.

* whether the activities of the cadastre should be commercialised, corporatised or privatised

* the extent of participation by private surveyors in a state run cadastre

* the role of professional bodies and NGOs and the administration of licensing boards

* regulation of responsibilities, accountability, quality assurance

* funding arrangements for the creation or development of a cadastre

* education training and continuing professional development

* research and development

* international cooperation

8.5 *Technical Options*

8.5.1 Technical options for the development and maintenance of the cadastre were considered by the delegates. Consideration covered the different needs of countries at different stages of development. The major factor addressed was the identification of the need for, the appropriateness of and the phasing in of computerisation into the cadastral environment based upon need, geography or political dictate. Any move towards the adoption of a programme of computerisation should be subject to the availability of trained staff or contractors, the access to maintenance and support staff, adequate communications and a suitable storage capability. The move to computerisation should bring security to the cadastral system, greater accessibility to information and will overcome the deterioration of records in paper form.

8.5.2 It is likely that emphasis will be given first to the computerisation of indexes, then to textual data sets, moving through graphical data conversion, the establishment of the fundamental spatial data bases and ultimately leading to an automated mapping capability.

8.5.3 While the end result will improve system functionality and linkages between the components of the cadastral system it is essential to achieve short term results to demonstrate what the future will bring. This is best done by comprehensive pilot projects where issues of or proposals for data conversion, standards and the updating and upgrading of content can be developed or proved. Experience and education are the best outcomes from a pilot project.

8.5.4 Computerised indexes should be an initial development to provide, at the strategic level, a statement of metadata available throughout the cadastral system. Initially such indexes will provide rapid access to existing manual records. At the tactical level, emphasis should be placed on the careful selection of a unique parcel identification system.

8.5.5 The long term aim should be to move from paper to computer titles to improve efficiency and particularly to improve the ease of dealings in the mortgage market. Any move to reliance on electronic titles however must be accompanied by a change of approach to the certification of documents. This will bring a recognition of the adoption of risk management.

8.5.6 Microfilming and video imaging are technologies which have a role in cadastral reform. Microfilming is an important tool for maintaining a backup record of title and cadastral map records. However it is still a manual system with often slow access time. Video imaging, records images of title and cadastral maps on video laser disks provide very good archiving of records and rapid access and copying. However the records have no 'intelligence' since they are simply images. It is not possible to search textual data within the record for example.

8.5.7 The choice of technologies will depend on resources and the subject land, be it urban, rural or remote. This is usually a function of land value. The adoption of technology should be phased, based on the urgency of the task, the geography, the desired standards and the use of the private sector. It may well require the re-engineering of manual systems before the use of new technologies. Field operations should also be phased and the technologies may range from GPS to the plane table. The steps may well commence with large scale photomaps for planning and adjudication purposes.

8.5.8 In summary, the major observations by the delegates were :

* A National Spatial Data Infrastructure should be established to ensure a uniform approach for maximum integration and security of data, effective resource use and the development of a comprehensive land information system.

* Topographic and cadastral data bases should be homogenous and uniformly based on the national geodetic network to ensure future data set integration.

* Early consideration should be given to the appropriate methodology for the updating and upgrading of all cadastral systems.

9. Resource implications

9.1 Cadastral reform or improvement has major human, technological and financial resource implications.

9.2 The meeting noted that some nations have, for example, one university educated professional land surveyor for every 5,000 population. These numbers support a sophisticated computerised cadastral system. On the other hand some countries have as few as one land surveyor for every 100,000 population, even though the cadastre was not complete and was of a more simple design.

9.3 Even recognising that the more developed nations may have systems which are more dependent on highly trained professionals, the discussion within the meeting did recognise that human resource issues are one of the major, if not the major, limitation in developing cadastral systems in developing countries.

9.4 The meeting identified that inadequate financial resources are a major limitation to improving cadastral systems. It was however noted that cadastral systems do provide governments with an important source of revenue generation but that revenue generation is heavily dependent on maintaining an efficient system.

9.5 Human and financial resources were recognised as major limitations in developing cadastral systems.

10. The role of the private sector and NGOs

10.1 The meeting discussed the trend in many countries towards a more commercial approach to operating cadastral systems and to the increasing use of the private sector where this can be shown to be

more cost effective and more productive. In cadastral surveying the use of the private surveyors requires adequate quality control mechanisms to ensure the integrity of the national spatial data archive.

10.2 Whereas in many countries this has traditionally been achieved through a system of licensing individual surveyors and conveyancers, and careful scrutiny of their work by government officials, there is a growing trend towards quality assurance and less rigorous government monitoring. In an increasing number of countries, government mapping agencies are themselves being made to compete in the market place and to recover much if not all of their costs.

10.3 Semi-privatisation of national mapping agencies has occurred at a time when governments and international agencies such as the United Nations are seeking to make greater use of NGOs. On the global stage organisations such as the International Federation of Surveyors (FIG) have been collaborating with United Nations agencies while at the national level Institutions or Associations of Surveyors have a role as intermediaries between government and the community and in ensuring the professional standards of practitioners.

11. Recommendations

The following recommendations assume the definition of cadastre as adopted in the FIG "Statement on the Cadastre" which is a broader interpretation than that adopted in some jurisdictions.

To the United Nations

1. To assist in the establishment of inter-regional forums for officials and experts in cadastre and associated forms of land administration with annual meetings to promote cooperation in the exchange of technical knowledge, expertise, education and training.

2. To produce a set of guidelines for cadastre and associated forms of land administration along the lines of those recently produced by the United Nations Economic Commission for Europe but based on a taxonomy of regional needs, for instance with special reference to the practices in South East Asia.

3. To support a workshop to develop a clearer definition of the form and range of land rights and the responsibilities and obligations which attach to land rights specifically within the Asian and Pacific region.

4. To produce a set of guidelines to determine the costs, benefits, risks and value for money of cadastral systems to assist national governments in evaluating support for cadastral projects.

5. To investigate the desirability and feasibility of establishing regional support centres to address the education and training needs of cadastral system managers and related professionals within each region.

6. To encourage the participation of private, national and international funding agencies in supporting

investment in improvements to cadastral and land registration systems, especially in developing countries.

7 To use the forthcoming HABITAT II conference to promote the role of cadastres and land registration systems in economic and social development in the debate and deliberation of world leaders.

To national governments

1. To recognise the essential role of land and property in economic development, environmental management and social stability.

2. To recognise that the operation of land markets which rely on a cadastre as basic infrastructure is a significant source of revenue generation. However it should also be recognised that maintaining and increasing such revenue is dependent on improvements to both the surveying and mapping and land registration functions.

3. To recognise the fundamental role that cadastral maps, either in paper or computer form, play in a national spatial data infrastructure. As such it is very important that cadastral surveying and mapping is based on a national geodetic framework common to all spatial data sets thereby permitting the integration of spatial data, particularly topographic data, and supporting the establishment of land and geographic information systems.

4. To recognise the essential and close relationship between cadastral surveying and mapping and land registration in the efficient and effective operation of cadastral systems. While recognising that in some jurisdictions these organisations may be separated, improved efficiency and a reduction in duplication demand an integrated approach to managing and operating the cadastre.

5. To recognise the important linkage between the government, private and educational sectors in establishing and maintaining appropriate cadastral systems.

6. To support the United Nations activities in institutional building and capacity development in the operation of cadastral systems.

7. To strengthen NGOs, and particularly professional organisations and learned societies concerned with cadastral activities in order that they may effectively contribute to the development and maintenance of cadastral systems.

To Non Government Organisations

1. To recognise the important contribution that NGOs can make at both a national and international level in technology transfer and information exchange. NGOs can also play an important mediating role since they usually represent the collective interests of the government, private and/or educational sectors.

2. To increase cooperation with United Nations agencies in collecting and exchanging information on the cadastre, standards in land information, producing guidelines, institutional building and capacity development.

3. To encourage their members to establish educational and research programmes in cadastre and land administration in their national higher educational systems.

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