Land Administration and Spatial Data Infrastructure

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Land administration and spatial data infrastructure: Special Forum on the Development of Land Information Policies in the Americas**

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"Land Administration and Spatial Data Infrastructure: the Special Forum on Development of Land Information Policies in the Americas, Aguascalientes, Mexico."

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Key words: Land administration, Land policies, Land information.

SUMMARY

As a result of a resolution at the Seventh United Nations Regional Cartographic Conference for the Americas (UNRCCA) held in January 2001 in New York, a Special Forum was hosted by the Government of Mexico through INEGI at their headquarters in Aguascalientes on 26 and 27 October 2004 with a theme of "The Development of Land Information Policies in the Americas". FIG was tasked with taking the lead role in planning and arranging the Special Forum.

The objective of this inter-regional forum was to establish an awareness of the economic and social value for decision makers, of the importance of developing land policies that effectively and efficiently incorporate appropriate spatial data infrastructures, including an understanding of the value of integrating the land administration/cadastre/land registration function with the topographic mapping function.

This paper presents an overview of the profile and the outcome of the special forum in terms of the "Aguascalientes Statement" which is tabled at the Eighth UNRCC-A, June 2005 in New York.

Papers and presentations can be viewed at http://www.fig.net/pub/mexico/index.htm

1. Introduction

It is with great pleasure to report on the implementation of Resolution No. 5 (see Appendix 1) recommended at the Seventh United Nations Regional Cartographic Conference for the Americas held in New York in January 2001 and adopted by the Economic and Social Council in July 2001. The formal report of the Special Forum, known as the "Aguascalientes Statement" is tabled for the information of the conference.

2. Background

There are difficulties being faced by many United Nations member States in designing appropriate spatial data infrastructures to support effective land administration, and in integrating cadastral and topographic spatial data, especially in digital form. There is a need to improve capacity to design, build and manage land administration systems, which incorporate appropriate spatial data infrastructures.

Member States need assistance to develop appropriate institutional, legal and technical processes to integrate land administration and topographic mapping programs within the context of a wider national strategy for spatial data infrastructure.

It is important that governments develop land policies that effectively and efficiently incorporate appropriate spatial data infrastructures due to the economic and social value that results from integrating the land administration/cadastre/land registration function with the topographic mapping function.

In many cases there is a lack of understanding of the important role spatial information plays in land administration projects, particularly in developing countries.

The objective of the Special Forum was:

- To establish an awareness of the economic and social value for decision makers, of the importance of developing land policies that effectively and efficiently incorporate appropriate spatial data infrastructures; and
- To ensure there is an understanding of the value of integrating the land administration/cadastre/land registration function with the topographic mapping function.

To achieve these objectives the following strategies were adopted:

- Recognizing Spatial Data Infrastructures as a key tool to provide that integration; the Special Forum was structured to attract participants from these functions in each country, ideally one Government Minister and one senior bureaucrat decision maker from each functional area.

- To enable this understanding, the Special Forum presented keynote papers and case studies of different functional models to illustrate/prove the value of such an integrated approach, and case studies presenting the current situation in some of the American countries;
- The Special Forum also addressed the need for capacity building through appropriate educational programs in this area; and
- Based on these presentations the Special Forum was able to provide the base elements for developing a national policy in this area.

The International Federation of Surveyors (FIG) was tasked with taking the lead role in organizing the Special Forum with support from the United Nations Statistics Division, Department of Economic and Social Affairs, and the Permanent Committee on Spatial Data Infrastructures for the Americas (PC IDEA) and was hosted by the National Institute of Statistics, Geography and Informatics (INEGI). The Special Forum was held on the 26 and 27 October, 2004 in Aguascalientes, Mexico, the home of INEGI.

Invitations to attend were issued by the United Nations to Ministers of Government who have responsibility for the above functions, or their senior managers who have a policy responsibility. About 60 delegates from 18 countries together with representatives from the United Nations, FIG, PC IDEA, World Bank, and the Pan American Institute of Geography and History (PAIGH) attended the forum.

A key issue which took some time to resolve was funding and was the reason the forum was not held prior to October 2004. It is therefore gratefully acknowledged the support and funding provided by the Canadian Government through Natural Resources Canada, the United States of America Government through USGS/FGDC and USAID, the World Bank through the Danish Trust Fund, and PAIGH. It should be noted that the issue of funding should be resolved at the time any future recommended resolution is being developed.

A representative of Mexico's President Fox formally opened the Special Forum. The program (See Appendix 2) consisted of four key-note presentations followed by three case studies from various regions of the world, and four case studies from Latin American countries. The case studies followed a common format in order to ensure consistency and contextual focus. All papers were prepared following personal invitation in order to ensure consistency with the special forum profile. Sessions were allocated to discussions of the case studies and for short presentations and discussions on the challenges facing the Americas with respect to the theme of the forum. These provided the opportunity for those attending to either comment on a presentation or provide some insight into the situation within their own country. The full papers and the PowerPoint presentations are available in English and Spanish on the FIG website at http://www.FIG.net/pub/mexico.

3. The Aguascalientes Statement

Following the Special Forum the **"Aguascalientes Statement"** was developed as follows:

> ***"The Special Forum strongly endorses the need for Latin American and Caribbean countries to:***
>
> - ***Foster modern land policies and associated spatial data infrastructures so as to better support social, economic and environmental sustainability.***
> - ***Determine policies and programs for educational, professional, and institutional capacity building that will ensure the development of appropriate land administration systems and associated spatial data infrastructure.***
> - ***Develop appropriate institutional, legal and technical processes to integrate land administration, cadastre and land registration functions with topographic mapping programs within the context of a wider national strategy for spatial data infrastructure (SDI).***

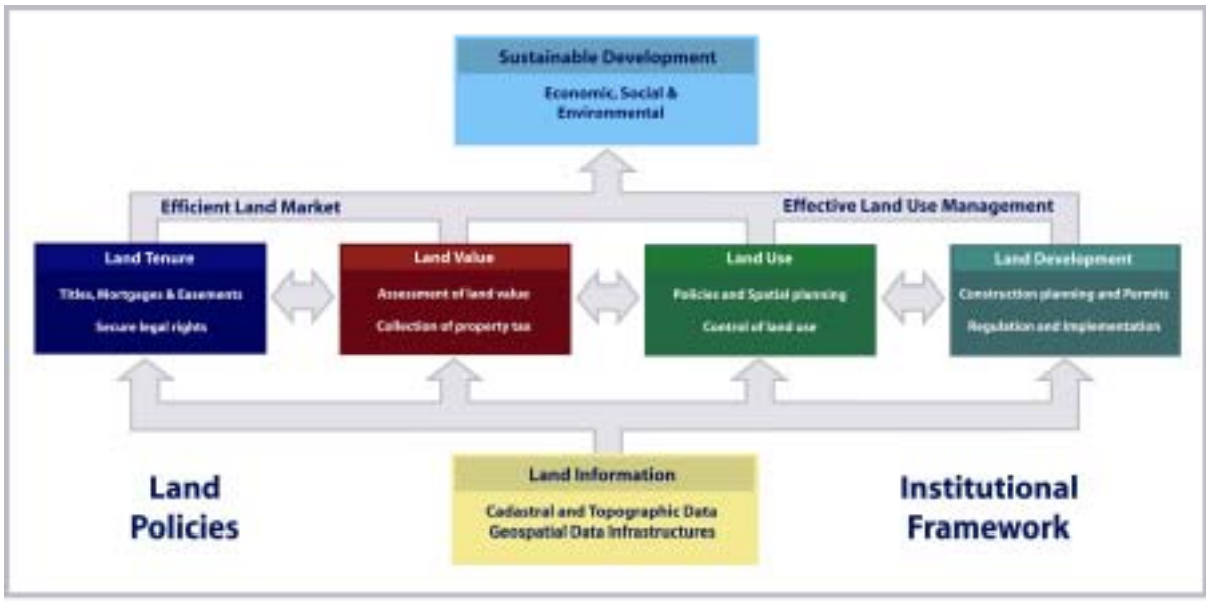
Set out below is a summary of the key elements discussed at the Special Forum which are further expanded in the published report.

4. Focus on Land Management

Land Management is a very complex and interdisciplinary concept that includes a mix of technical, natural, and social sciences. Land management can be described as the processes by which the resources of land are put into good effect. It is about land policies, land rights, property economics, land-use control, regulation, implementation, and development. Land management encompasses all those activities associated with the management of land as an asset and a resource to achieve sustainable development.

Within the country context, the land management activities may be described by the three components: Land Policies, Land Information Infrastructures, and Land Administration Functions in support of Sustainable Development.

A modern land administration system acts within the environment of adopted land policies that fulfill political objectives with regard to land issues. It also acts within an institutional framework that imposes mandates and responsibilities on the various agencies and organizations. Basically such systems are embedded in the historical, cultural and judicial setting of the individual country. However, in spite of the different origins the systems seem to merge into a global model serving some basic societal needs. Such a global model is shown in the diagram below.



A Global Land Management Perspective. Stig Enemark, April 2004.

The operational component of the land management paradigm is the range of land administration functions that ensure proper management of rights, restrictions and responsibilities in relation to property, land and natural resources.

These functions include the areas of land tenure (securing and transferring rights in land); land value (valuation and taxation of land and properties); land-use (planning and control of the use of land and natural resources); and land development (utilities, infrastructure, construction planning, permits, and implementation).

The land administration functions are based on and are facilitated by appropriate land information infrastructures that include cadastral and topographic datasets and provide access to complete and up-to-date information of the built and natural environment. The information on land and properties permeates through the overall system and provides the basic infrastructure for running the administrative systems within the four interrelated areas.

The land information area should be organized to combine the cadastral and topographic data and thereby linking the built environment (including the legal land rights) with the natural environment (including environmental and natural resource issues). Land information should be organized as a spatial data infrastructure at national, regional and local level based on relevant policies for data sharing, cost recovery, access to data, standards, etc. It is generally recognized that about 70 per cent of all government information is geospatially based.

Sound land management is the operational processes of implementing land policies in a comprehensive and sustainable way. In many countries, however, there is a tendency to separate land tenure rights from land-use rights. There is no effective institutional mechanism for linking planning and land-use controls with land values and the operation of the land market. The problems are often compounded by poor administrative and management procedures that fail to deliver the services that are needed. Investment in new technology will only go a small way towards solving a much deeper problem, which is the failure to treat land and its resources as a coherent whole.

5. Facing the Challenges

Good land management will help promote economic and social development in both urban and rural areas. For developing and transition countries, land reform policies are key components in achieving these goals. The challenges in this regard relate to educational, professional, and institutional issues.

With few University programs in Land Management, the Latin American and Caribbean region is lacking experts to support systems of sustainable land administration infrastructures. There is a need to develop comprehensive University programs with a broader profile than a technical focus. And there is need to share efforts and information between educational institutions in order to serve the basic land administration needs in the region. Donors such as the World Bank and other aid agencies where they are building land administration systems should include the educational component to ensure long term sustainability.

In many Latin American and Caribbean countries there is a need to establish professional associations that can set standards, enforce professional development, and interact with sister associations within the region and world wide through international NGO´s such as FIG. This will increase awareness about regional and global opportunities for technological development and transfer, institutional strengthening, and the exchange of managerial and SDI experiences.

With regard to institutional arrangements it is understood that one model will not fit all countries. In spite of sharing much the same geography and history, the Latin American and Caribbean region shows diverse approaches to land information and land registration systems, as well as to the building of spatial data infrastructures. Such systems are embedded in the institutional development of the country or jurisdiction and the institutional arrangements may change over time to better support the implementation of land policies and good governance.

In terms of capacity building attention should be given to sustaining existing educational facilities in terms of institutional development, quality management, and financial support. Attention should also be given to the development of one or more Regional Centers in the Latin American and Caribbean region for Education and Research in Land Administration. Such centers should act as ongoing bodies of knowledge and experience

in land administration and using actual projects as long-term case studies and operational laboratories. The centers should provide educational programs and supervise establishment of educational programs at other institutions. The centers should develop guidelines for capacity assessment in land administration and interact with national institutions, international academics and professional bodies to assist regional and local development serving regional and local needs.

6. Findings and Recommendations

The Special Forum discussed and took note of the major challenges faced by the Latin American and Caribbean region for the creation and maintenance of land administration infrastructures for poverty reduction, economic growth, and sustainable development. The presentations from various Latin American countries were very different, as experiences depend on social and cultural factors. However, most countries in the region seem to share the same needs in terms of capacity building for educational and institutional development in land administration. Key findings and conclusions are highlighted below:

- It is important that the countries in the region develop a wider vision for the creation of knowledge, reduction of poverty, and sustainability. In this regard, it is time to handle change and to convince politicians and decision-makers.
- The need to formulate national policies, legal frameworks, and standards for land administration, land information and spatial data infrastructure is widely acknowledged.
- It is important to demonstrate the economic value of land administration systems and SDI´s to high-level decision-makers, considering the large number of priorities they are facing. This should be based on further case studies from the Latin American and Caribbean region
- Visionary leadership and also short term initiatives such as shared data collection projects are recognized as important to establish inter-organizational and inter-regional cooperation. It is necessary to ensure coordination between the key players, and to break down human, technical and political barriers.
- It is important to have a focus on the users needs in order to build trust amongst the beneficiaries of the systems. Credibility and transparency must be built into the processes, including institutional continuity and continuous modernization.
- The need for capacity development of human resources through the building of programs for education and training in land administration must be reinforced. This also applies to the establishment of national professional bodies to interact at regional and global level.
- There is a need to integrate land administration, cadastre and land registration functions with topographic mapping programs within the context of a wider national strategy for spatial data infrastructures.

The conclusions are summarized in the “Aguascalientes Statement” as presented earlier in this paper.

It is recommended that politicians and decision makers at various levels take note of this statement and make efforts to ensure its implementation and that the Eighth United Nations Regional Cartographic Conference for the Americas promotes this statement to and within the Governments of the Americas.

7. Final Remarks

The organizers wish to thank all who participated, contributed, supported and encouraged the special forum which has resulted in the ‘Aguascalientes Statement’

Sincere thanks to INEGI for making available their excellent facilities and to the many people in INEGI who supported and assisted with the Special Forum. Finally, we wish to convey our sincere gratitude and thanks to all the delegates who traveled from all parts of the Americas to attend the Special Forum and who participated so actively and enthusiastically.

It is believed the “Aguascalientes Statement” should assist member States to develop appropriate institutional, legal and technical processes to integrate land administration and topographic mapping programs within the context of a wider national strategy for spatial data infrastructure.

References

Information and references on the Special Forum can be accessed through the FIG web site at http://www.fig.net/pub/mexico/index.htm. The Aguascalientes Statement is also available through the FIG website in Spanish and English, being publication No. 34 at the address http://www.fig.net/pub/figpub/pubindex.htm.

Biographical Notes

Stig Enemark is Head of the School of Surveying and Planning at Aalborg University, Denmark, where he is Professor in Problem Based Learning and Land Management. He is Master of Science in Surveying, Planning and Land Management (1966) and he worked for ten years as a consultant surveyor in private practice. He is currently the President of the Danish Association of Chartered Surveyors. He was Chairman of Commission 2 (Professional Education) of the International Federation of Surveyors (FIG) 1994-98. He is an Honorary Member of FIG and he is Vice-President of FIG 2005-2008. His teaching and research are concerned with land administration systems, land management and spatial planning, and related educational and capacity building activities. He has undertaken consultancies for the World Bank and the European Union

especially in Eastern Europe and Sub Saharan Africa. He has more than 200 publications to his credit, and he has presented invited papers to more than 50 international conferences.

John Parker is an international land administration consultant specializing in quality management, professional practice and management and geographical names. He was Surveyor General of Victoria, Australia for nine years and had spent nineteen years in private practice in a multi disciplinary firm. Currently he is actively involved in the International Federation of Surveyors and was chair of FIG Commission 1 (Professional Institution of Surveyors Australia and Spatial Sciences Institute. Papers have been presented and published at a range of events, including international forums, on a wide range of subjects.

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APPENDIX 1

Resolution 5 of the Seventh United Nations Regional Cartographic Conference for the Americas.

"The conference,

Recognizing *the importance of efficient and effective land administration systems in supporting the development of land markets, in providing security of tenure and access to land, in facilitating the provision of credit to farmers, in ensuring equitable land taxation, promoting better land use planning and more generally in promoting economic development, social cohesion and sustainable development,*

Recalling *the deliberations of the Sixth United Nations Regional Cartographic Conference for the Americas on the need to better understand and appreciate the relationship between land administration and spatial data infrastructures,*

Noting *the difficulties being faced by many member States in designing appropriate spatial data infrastructures to support effective land administration, and in integrating cadastral and topographic spatial data, especially in digital form,*

Further Noting *the generous offer of the Government of Mexico to host a special workshop on the integration of Spatial Data Infrastructure (SDI) initiatives and Cadastral activities, along with the 4th Permanent Committee on SDI for the Americas (PC-IDEA) Meeting,*

Also Noting *the need to improve capacity to design, build and manage land administration systems which incorporate appropriate spatial data infrastructures*

Supports *the resolutions of the Fifteenth UNRCC for Asia and the Pacific, Kuala Lumpur, 11-14 April, 2000 and in addition endorse the United Nations-International Federation of Surveyors Bathurst Declaration on Land Administration for Sustainable Development,*

And requests *United Nations Secretariat, within available resources and with the support of the Permanent Committee on SDI for the Americas (PC-IDEA) and the International Federation of Surveyors, to provide support on the program of the inter-regional workshop to be hosted by Mexico to determine policies and programs for educational, training and professional capacity building that will ensure the development of appropriate land administration systems and associated spatial data infrastructures,*

And Recommends *that member States develop appropriate institutional, legal and technical processes to integrate land administration and topographic mapping programs within the context of a wider national strategy for spatial data infrastructure."*

APPENDIX 2

SPECIAL FORUM PROGRAM

Tuesday 26 October 2004

Opening Session

Chair – FIG, John Parker
Rapporteur: Gabriela Juarez, El Salvador

- INEGI (Gilberto Calvillo Vives, President)
- UN (Paul Cheung, United Nations Statistics Division, Director)
- PC IDEA (Mario Reyes Ibarra, INEGI's General Bureau of Geography, Director)
- FIG (Stig Enemark, Vice President)
- Government of Mexico (President Fox represented by Luis Manuel Gutierrez Levy, Senior Officer, Ministry of Finance)
- Keynote speaker – Canada: Minister of Natural Resources Canada represented by Dr. Irwin Itzkovitch "Building Land Information Policy and Land Information Governance"

Session 2

Chair – Paul Cheung, United Nations
Rapporteur: Jean Cooper, Canada

Keynote presentations:
- FIG: Stig Enemark, Denmark "Building Land Information Policies"
- World Bank: Klaus Deininger (presented by Frederic de Dinechin) "Land Policy for Growth and Poverty Reduction: Key Issues and Challenges Ahead"
- PC IDEA: Mario Reyes, Mexico "Administration of Spatial Information in the Americas"

Discussion

Session 3

Chair – Eduardo Pereira Nunes, Brazil
Rapporteur – Gabriela Juarez, El Salvador

Case studies:
- Europe: Paul van der Molen, "Good Administration of Land in Europe"
- Australia: John Parker, "Land Management in Australia - Case Study with emphasis on the State of Victoria"
- Canada: David Coleman, "Examining the Role of Partnerships in Building a Canadian Geospatial Data Infrastructure"

Session 4

Chair – Barbara Ryan, USA Rapporteur: Francisco Hansen, PC IDEA
Discussion on case studies and points raised by delegates

Wednesday 27 October 2004

Session 5

Chair – Ivan Gomez, Colombia
Rapporteur: Fraser Taylor, Canada

Case Studies: Key challenges for
- El Salvador: Garrid Safie, “Building Land Information Policies in El Salvador
- Mexico: Mario Reyes, “Building on an Experience, the Participation of INEGI in PROCEDE – A Case Study in Mexico”
- Chile: Rodrigo Barriga, “Territorial Information Management in Chile”
- Brazil: Dr. Eduardo Pereira Nunes, “A Case Study in Brazil: The Main Challenges Faced by Land Administration”

Session 6

Chair – Frederic de Dinechin, World Bank
Rapporteur: Dora Rey, Colombia
Discussion on case studies, challenges and other issues.

Session 7

Panel discussion
Chair - Santiago Borrero, PAIGH
Rapporteur: Jean Parcher,USA

Themes and Panel Members:
- Political & Implementation challenges; Michael O’Sullivan, Canada
- Educational challenges; Gabriela Juarez, El Salvador
- Professional challenges; Israel Otero, Puerto Rico
- Capacity building challenges; Rodrigo Barriga, PAIGH/Chile
- Funding challenges; Luiz Paulo Souto Fortes, IBGE Brazil

Session 8

Chair: Fraser Taylor, Canada
Rapporteur: Eng. Rodrigo Barriga, PAIGH/Chile

Discussions on all challenges and issues,
Aguascalienties Statement.
Closing – FIG (Enemark), UN (Laaribi) INEGI/PC IDEA (Reyes)