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# **Preventing Informal Development - through means of sustainable land use control**

**Stig ENEMARK, Denmark and Robin MCLAREN, United Kingdom**

**Key words:** Informal Development; Implementation of plans; land management, Spatial planning.

## **SUMMARY**

The issue of informal development was discussed in details at the joint FIG Com 3 and UNECE/WPLA workshop in Sounio, Greece, March 2007. Emphasis was given to the scale of the problem in Southern and Eastern Europe and to means of legalising such informal urban development.

This paper, instead, addresses the main issue of how to prevent informal urban development, especially through the use of adequate and sustainable means of land use control and good governance. Three key means are addressed:

*Decentralisation:* There is a need to separate central policy/regulation making and local decision making. This is directly linked to citizen participation in the process of land use control. Decentralisation should aim to combine responsibility for decision making with accountability for financial, social, and environmental consequences. Decentralisation requires access to appropriate quality of land information.

*Comprehensive planning:* This should combine the overall land use policies and the more detailed land-use regulations into one planning document covering the total jurisdiction. Presentation of political aims and objectives as well as problems and preconditions, should then justify the detailed land-use planning and the more detailed land-use regulations. This understanding is important - also as a basis for citizen participation - since planning regulations creates different land use options for the various land owners and citizens.

*Participation:* This should serve as a means to create broader awareness and understanding of the need for planning regulations and enable a locally based dialogue between government and citizens around development opportunities and the need for development control. Eventually, such dialogue should legitimise the local political decision making. But how to involve the citizens in the decision making process? Legislation in itself is not enough. A cultural change within society may need to be encouraged. Again, access to participation requires access to land information.

Comprehensive planning at local level supported by citizen participation should also enable establishment proper monitoring systems and enforcement procedures to control and legalise actual informal development.

# **Preventing Informal Development - through means of sustainable land use control**

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## **1. INTRODUCTION**

In the Western cultures it would be hard to imagine a society without having property rights as a basic driver for development and economic growth. Property is not only an economic asset; secure property rights provide a sense of identity and belonging that goes far beyond and underpins the values of democracy and human freedom. Therefore, property rights are normally managed well in modern economies. The formalized western land registration systems are basically concerned with the identification of property rights in support of an efficient land market. However, the systems do not adequately address the more informal and indigenous rights to land that are found especially in developing countries.

Rights to land and property also include the right of use. However, the right to use may be limited through public land-use regulations and restrictions, sectoral land use provisions, and various kinds of private land-use regulations such as easements, covenants, etc. Many land-use rights are therefore in fact restrictions that control the possible future use of the land.

Land-use planning and restrictions are becoming increasingly important as a means to ensure the effective management of land-use, to provide infrastructure and services, to protect and improve the urban and rural environment, to prevent pollution, and to pursue sustainable development. Planning and regulation of land activities cut across tenures and the land rights they support. These issues become still more important as the world become still more urbanised.

The year 2007 was the year when the globe became urban. More people are now living in the cities than in rural areas. In 1950 it was less than 30%, today it is more than 50%; that is more than 3.3 billion people and one third of them are living in slums (UN-HABITAT, 2006). In this perspective, it is urgent to focus on informal settlements and informal developments and find ways and means to influence associated government policies and actions. This also relates to the Millennium Development Goal 7, target 11 stating that ‘by 2020 to have improved the lives of least 100 million slum dwellers’. Conventional cadastral and land registration systems focusing on land parcels and registered titles cannot supply the security of the various types of tenure arrangements found within informal settlements. Also, many traditional planning systems do not adequately address the real issue of controlling the use of land in a balance between the overall land policies and the needs of the local communities and citizens in urban, suburban and rural areas.

The paper addresses the issue of informal urban development with a special focus on planning control and integrated land-use management as a means to prevent and legalise such development.

## 2. INFORMAL DEVELOPMENT

Informal development may occur in various forms, such as squatting, where vacant state-owned or private land is occupied illegally and used for illegal slum housing; or it may appear through informal subdivisions and illegal construction work that do not comply with planning regulations such as zoning provisions; or through illegal construction works or extensions on existing legal properties (Potsiou, 2006).

It is important to distinguish informal settlements and informal development. According to the OECD definition Informal settlements are:

1. Areas where groups of housing units have been constructed on land that the occupants have no legal claim to, or occupy illegally; and
2. Unplanned settlements and areas where housing is not in compliance with current planning and building regulations (unauthorized housing).

We would argue that the term informal settlement should be used only for the first group that normally refers to larger areas of slum dwellings. Informal development should then be used for the second group that most often include very scattered development that is just illegal in terms of not being consistent with current planning and building regulations. The reason for this distinction is that the political and legal means for dealing with these informal constructions are very different in the two situations. Using this distinction this paper deals with the situation of informal development. It is recognised that the problem exists in both urban and rural areas, but most serious problems exist in urban areas. The scale of this problem is huge as documented through the FIG Com 3 and UNECE/WPLA workshop in Sounio, Greece, March 2007. In Albania, for example, the illegal developments are significant in size, containing up to one-quarter of the population and 40 percent of the built-up area of major cities in which they are located (Stanley et al, 2007).

There is no simple solution to the problem of preventing and legalising informal development. The problem relates mainly to the national level of economic wealth in combination with the level of social and economic capital in society, while the solutions relate to the level of consistent land policies, good governance, and well established institutions.

Land policies may be seen as the set of aims and objectives set by governments for dealing with land issues. Policy implementation depends on how access to land and land related opportunities are allocated. Governments therefore regulate land related activities, including holding rights to land, controlling the economic aspects of land, and controlling the use of land and its development. Administration systems surrounding these regulatory patterns facilitate the implementation of land policy in the broadest sense, and in well organized systems, they deliver sensible and sustainable land management and good governance.

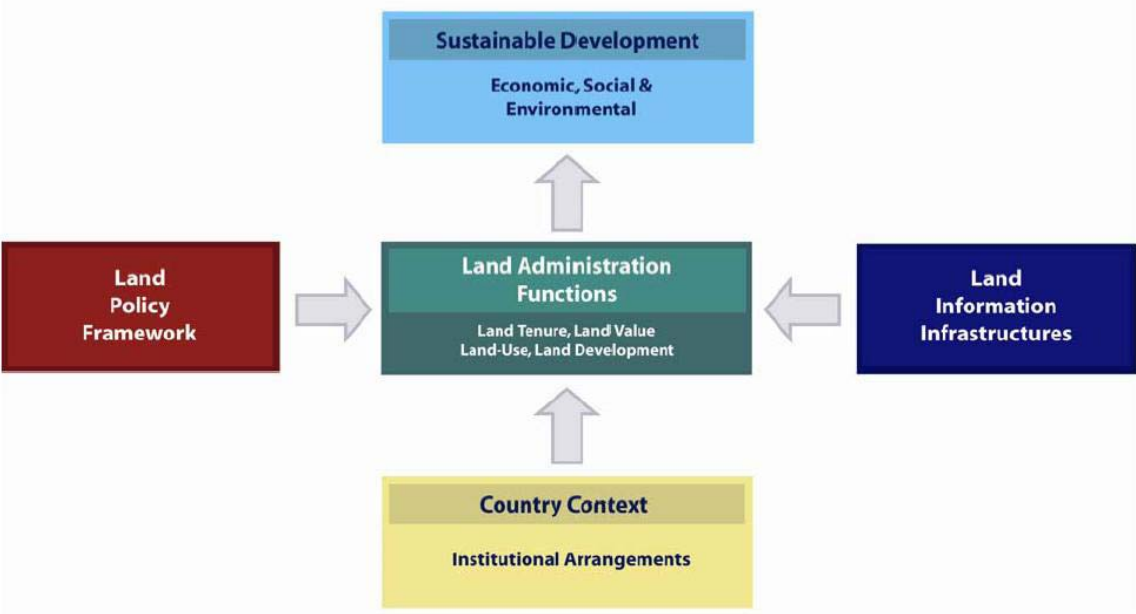
It is important to note, however, that where the problem of unauthorised developments occurs, the particular characteristics of the planning system may only play a minor part in explaining it. Factors outside the formal planning system will often play a determining role in its

operation and effectiveness. Factors such as the historical relationship between citizens and government, attitudes towards land and property ownership, corruption and implications of social and economics institutions in society will all play a part amongst other historical and cultural conditions (European Commission, 1997).

### 3. INTEGRATED LAND-USE MANAGEMENT

Land management underpins distribution and management of a key asset of any society namely its land. For western democracies, with their highly geared economies, land management is a key activity of both government and the private sector. Land management, and especially the central land administration component, aim to deliver efficient land markets and effective management of the use of land in support of economic, social, and environmental sustainability.

The land management paradigm, as illustrated in Figure 1, allows everyone to understand the role of the land administration functions (land tenure, land value, land use, and land development) and how land administration institutions relate to the historical circumstances of a country and its policy decisions. Importantly, the paradigm provides a framework to facilitate the processes of integrating new needs into traditionally organised systems without disturbing the fundamental security these systems provide.



**Figure 1.** The land management paradigm (Enemark et al., 2005)

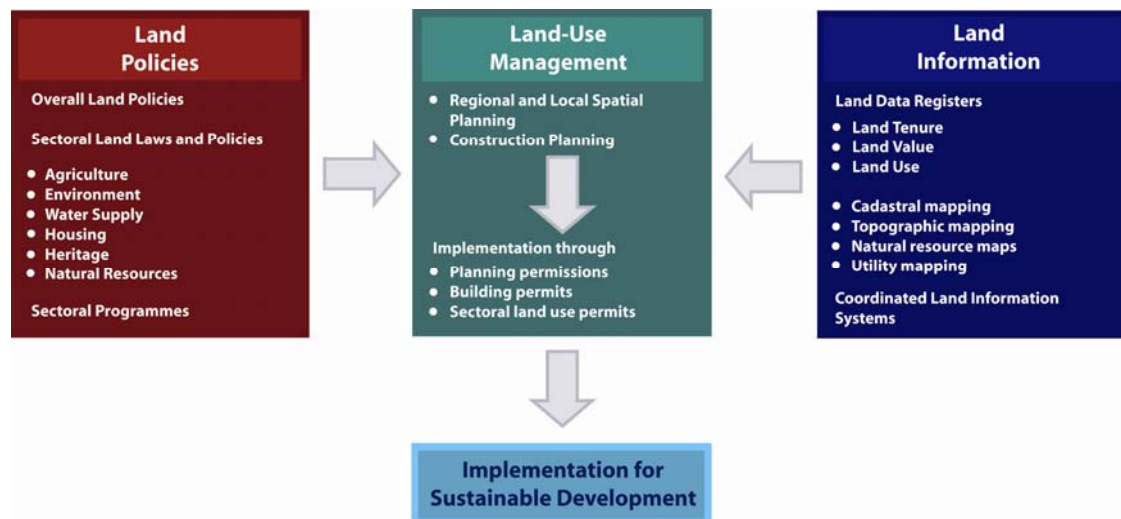
The land management paradigm drives systems dealing with land rights, restrictions and responsibilities to support sustainable development, and it facilitates a holistic approach to management of land as the key asset of any jurisdiction. This represents a huge political challenge. It also represents a major challenge to the global surveying community that is seen as the key player in building and running these systems. Understanding the land management paradigm is the key to building integrated and mature systems that link policy making, good governance, land administration systems, and land information infrastructures to form a coherent approach for dealing with land issues to improve living conditions for all.

All countries have to deal with the management of land. They have to deal with the four functions of land tenure, land value, land use, and land development in some way or another. National capacity may be advanced and combine the activities in one conceptual framework supported by sophisticated ICT models. More likely, capacity will involve very fragmented and basically analogue approaches. Different countries will also put varying emphasis on each of the four functions, depending on their cultural basis and level of economic development.

Planning systems also vary considerably throughout the world. Such systems are based on both geographical conditions and administrative and cultural development. However, an effective planning system should be able to implement current land-use policies through efficient means of land use control. This also involves public participation that should serve as a means to create a broader awareness and understanding of the need for planning regulations and enable a dialogue between government and citizens around the management of natural resources and the total urban and rural environment. Eventually, this dialogue should legitimise the local political decision making.

Such an integrated system of Land-Use Management for Sustainable Development is shown in Figure 2. The land policies laid down in the overall land policy laws such as the Cadastral/Land Registration Act; and The Planning/Building Act. These laws identify the institutional principles and procedures for the areas of land and property registration, land-use planning, and land development. More specific land policies are laid down in the sectoral land laws within areas such as Agriculture, Forestry, Housing, Natural Resources, Environmental Protection, Water supply, Heritage, etc. These laws identify the objectives within the various areas and the institutional arrangements to achieve these objectives through permit procedures etc. The various areas produce sectoral programmes that include the collection of relevant information for decision making within each area. These programmes feed into the comprehensive spatial planning carried out at national, state/regional and local level.

Furthermore, the system of comprehensive planning control is based on appropriate and updated Land Use Data Systems, such as the Cadastral Register, the Land Book, the Property Valuation Register, the Building and Dwelling Register, etc. These registers are organized to form a network of integrated subsystems connected to the cadastral and topographic maps to form a national spatial data infrastructure for the natural and built environment.



**Figure 2.** Integrated land-use management for sustainable development (Enemark, 2004).

In the Land-Use Management System (the Planning Control System) the various sectoral interests are balanced against the overall development objectives for a given location and thereby form the basis for regulation of future land-use through planning permissions, building permits and sectoral land use permits according to the various land-use laws. These decisions are based on the relevant land use data and thereby reflect the spatial consequences for the land as well as the people. In principle it can then be ensured that implementation will happen in support of sustainable development.

A global approach to land-use management, as presented above is based on three fundamental principles:

- **Decentralisation**, where the purpose is to solve the tasks at the lowest possible level so as to combine responsibility for decision making with accountability for financial, social, and environmental consequences.
- **Comprehensive planning**, that should combine the overall land use policies and the more detailed land-use regulations into one planning document covering the total jurisdiction. This should emphasise that “planning is politics” and not just bureaucratic regulations.
- **Participation**, that should serve as a means to create broader understanding of the need for planning regulations and enable a locally based dialogue between government and citizens around development opportunities and the need for development control.

These three principles are addressed below with a special emphasis on their contribution to preventing informal development.

## **4. DECENTRALISATION**

### **4.1 What is Decentralisation?**

Decentralisation, defined broadly, is the transfer of public authority, responsibility, resources, and personnel from the national level to sub-national jurisdictions; intermediate and local governments. Decentralisation can be distinguished from ‘deconcentration’, which is defined as the mere relocation of executing agencies to the local level with responsibility and power remaining at the centre.

Decentralisation has been a trend since the early 1980s and has been adopted by 78 developed and developing countries (DFID, 2002). In this paper, we are concerned only with decentralisation to the local level, which normally results in local governments and corresponding local service delivery, including land use control. This process transfers certain planning, financing and management tasks to local government and intrinsically alters the structure and systems of governance; the inter-governmental relations and the relationship between the state and society.

There is no standard model of decentralisation and its implementation varies considerably from country to country. However, there are three distinct aspects to decentralisation; the transfer of political, administrative and fiscal responsibilities (Ndegwa, 2002). Typically, the first aspect to be implemented is political decentralisation that is the local manifestation of democratic reforms, but it is not always deeply ensconced. The next stage is administrative decentralisation that is followed by fiscal decentralisation. That fiscal decentralisation lags behind these other aspects is not surprising since real control from the centre is exerted through financial management.

### **4.2 What Drives Decentralisation?**

Although decentralisation is widely adopted world-wide, the drivers for governments to implement decentralisation vary significantly and include (DFID, 2002 and Ndegwa, 2002):

- Sub-national claims for greater autonomy as an extension of democratisation;
- Governments pressurised to shed functions and commitments due to external and internal demands for a leaner, more efficient and enabling state;
- In developing countries it aims to address failures to foster development and reduce poverty, and to consolidate democracy;
- Economists justify decentralisation on the grounds of ‘allocative efficiency’;
- Central governments may be eager to decentralise their authority, resources and personnel due to legitimacy concerns given their persistent poor performance; and
- Major development donors have also pushed decentralisation as a pathway to improving governance and service delivery in developing countries.
- Combining responsibility for decision making with accountability for financial, social, and environmental consequences.



However, from a citizen perspective, the main benefits of implementing decentralisation are:

- Decisions taken closest to a local constituency normally reflect the preferences of citizens, especially the poor. As a result, local governments are more likely to implement a poverty policy through community participation and social inclusion;
- Greater political participation and government accountability;
- A better match of government expenditures against local priorities and preferences;
- More responsiveness of public policies and service delivery to local needs; and
- Through participatory democracy there should be a greater social involvement in decision making that is linked to accountability for financial, social and environmental consequences, leading to more effective sustainable development.

### **4.3 Prerequisites to Make Decentralisation Work Effectively**

To make decentralisation work effectively, a coherent set of rules must regulate the responsibilities, functions, resources and relationships of the different levels of government, including political (constitutional, legal and regulatory frameworks), fiscal (spending, revenue management, inter-governmental transfers, sub-national borrowing), and administrative factors (civil-service reform, bureaucratic capacity, managerial ability).

Decentralisation is not a panacea and there are significant limits to what can be achieved. Not all government functions can or should be decentralised and an appropriate balance of centralisation and decentralisation is essential; there needs to be complementary changes made to central government. Decentralisation requires a strong central entity to regulate, to provide an overall framework, to manage the re-allocation of responsibilities and resources in a predictable and transparent way, and to assist local governments build capacity, especially in the early stages. Therefore, national governments and central line ministries must retain important policy, regulatory and supervisory roles.

A key element of effective decentralisation is accountability, both in terms of downward accountability that allows the citizens to hold local government to account and upward accountability to central government who supervise (as opposed to controlled) the performance of local government.

Decentralisation can be significantly limited by poverty and lack of capacity at the local level. While these conditions indeed make development in decentralised settings challenging, they become entrenched further as they can be invoked by central governments as reasons why decentralisation should not or cannot take place or should proceed slowly. Therefore, decentralisation should be incrementally implemented and adequately resourced and financed.

### **4.4 Role of Decentralisation in Reducing Informal Urban Development**

The decentralisation of planning and development control services to local government provides a series of benefits that can lead to a potential reduction in informal urban development, including:

**Understanding the Local Environment** – Local planning officials can interpret the national planning policies and through their knowledge of the local environment and the community, create more appropriate and sensitive land-use plans and regulations that will be adhered to more effectively.

**Communication with Community** – Ease of local access to the planning officials and access to relevant planning and land information provides a platform for efficient communication with the community. This normally leads to the community taking an interest in their environment and ensures that the majority of proposed developments adhere to the planning regulations.

**Appraisal of Development Applications** – Local knowledge of the environment and their ability to interact with the community provides a more objective appraisal of development applications by planning officials.

**Empowerment of Planning Officials** – a robust legal and regulatory framework for planning and development control will empower the local officials to enforce development control and punish offenders, where appropriate. These strong powers will act as a significant deterrent to the creation of informal urban developments.

**Participation of Community** – The involvement of citizens in a dialogue with the planning officials and the developers around development opportunities and the need for development control should legitimise the political decision making and ensure that it is combined with responsibility for the financial, social and environmental consequences.

**Involvement of Non-Government Organisations (NGOs)** – The openness of involvement in decision making creates an opportunity for the collaboration between government and NGOs that encourages popular participation for sustainable development.

**Monitoring of Change** – A collective responsibility, built by trust between local government and the community, to monitor all developments will ensure that the majority of developments are formal. This may require the need for anonymity when members of the public challenge developments.

The introduction of decentralised planning and land use control services also come with inherent risks. There is a danger that local governments can be captured by local elites and interest-groups, leading to a distortion of the land use control process. Furthermore, without adequate controls, there are issues of irresponsible spending, corruption as well as interference from central government. It is therefore essential that effective primary supervisory instruments and examples of good practice are introduced by central government to supervise the performance of local government. This would include the auditing of public accounts, and the establishment of service delivery standards, including monitoring and evaluation systems.

## 5. COMPREHENSIVE PLANNING

The term comprehensive planning relates to some key characteristics:

- The planning document (including policies, land-use plans, and planning regulations) should cover the total jurisdiction such as the county or municipality. This will ensure a holistic approach to policies and decision making.
- The planning document should include the preconditions and the land-use policies, as well as the land-use plans (zoning maps etc) and the land use regulations. This will ensure that the actual land-use regulations can be linked to policies and discussed as political decisions.

Such comprehensive planning may be carried out at several levels – national, regional and local level where the policies, as well as the land-use regulations, become increasingly detailed.

Land-use management includes control of land-use in both urban and rural areas as well as management of natural resources. Control of land use may be executed through the planning regulations at various administrative levels and is often supported by land-use regulations within the various sectors such as agriculture, environmental protection, water catchments, transport, etc.

Effective land-use management should ensure sustainable use of land also in terms of land development that includes for example design of new urban areas, allocation of hazard and polluting facilities, and design and implementation of infrastructure such as roads, railways, and electricity lines. In the planning context, land policies may be seen as the set of aims and objectives set by governments for dealing with land issues relating to how access to land and land related opportunities are allocated. Proper land-use management should therefore also prevent unauthorised or informal development that may complicate appropriate development at a later stage and impose huge costs on society.

Arguably, establishment of mature systems that are trusted by the citizens is also the key to preventing and legalising informal urban development. This goes for, at least, the developed part of the world. In developing countries this approach must be supplemented by a range of measures that address the issues of poverty, health, education, economic growth, and tenure security.

### 5.1 Urban planning control

Urban development in many countries accelerated between 1945 and the mid 1980s. This occurred at a time of increasing affluence and increasing mobility through the use of private cars. Light, fresh air and green surroundings were given high priority when creating new urban areas of detached houses, blocks of flats and low rise housing. The result was a huge urban sprawl around the cities and towns. Today the urban areas in many European countries have virtually stopped growing, and the demographic trends show that the need for new

dwellings is more or less nonexistent. Other countries have different demands but the need for planning control is similar.

Urban environments in developed countries are typically controlled by the local government through means of comprehensive planning services and provision of binding local/neighbourhood plans. Management of local affairs should be seen in a total context. Planning services gives the local government a procedural instrument well suited to link sectors and co-ordinate the total political and economical activities of the municipality.

Urban planning normally includes zoning of the urban areas into various areas of use, such as residential housing, retail, light or heavy industry, offices, public space such as parks etc. detailed regulations are then imposed within the various zones to determine the development opportunities in terms of minimum size of parcels, building density, heights of buildings, etc. Such regulations may be further detailed in development plans including schemes for new subdivisions with a detailed lay-out for e.g. a new residential neighbourhood.

Urban planning has a significant impact on the value of land due to determination of development opportunities. Allocation of land rights in terms of possible future land use is a major factor in relation to the land market; especially when the permitted use is changed from say agricultural land to urban use such residential housing. Such changes, or betterments, impose a major increase of the land value that may be subject to taxation.

In areas where no planning regulations are in place some general land use regulations may apply. These may be founded on legislation such as the Building Act and may include regulations for minimum size of parcels, maximum building density in residential areas, maximum building heights etc. Such general regulations for subdivision and housing development are very effective to control development in areas where detailed planning regulations do not apply.

## **5.2 Building permit control**

Most planning regulations are mainly reactive in the sense that they determine the possible future use of land. The control of actual development such as construction works, is normally exercised through the issuing of a building permit (or planning permission) prior to commencement of any construction work. The administrative process of issuing a building permit normally includes a check of the development proposal against adopted planning regulations, land-use restrictions, sectoral land-use provisions, and various regulations such as building by-laws including detailed regulations for safety and quality of the constructions.

The system of building permit control should then act a kind final check in the planning control system and ensure that any new developments are consistent with adopted planning policies and land-use regulations and restrictions.

### **5.3 Rural zone planning control**

The crisis of urban management is well known, but planning and development issues in rural areas are just as significant. Rural planning systems are complicated by separate systems of sectoral planning which manage resources such as soil quality, landscape qualities, raw materials and water accessibility. In some systems these interests are given priority in particular areas, with zoning of areas reserved for agriculture, for raw materials extraction, or for special natural areas. Ideally, these sectoral controls should be integrated into the comprehensive spatial plans to form the basis for rural land use administration. However, many countries experience difficulties with sectoral land-use management. The basic mapping of natural resources (including ground water) is frequently not available as a source of information to assist the balancing of regional level plans with the overall framework for administration of all the sectoral land use acts. Despite these overall difficulties, sectoral land-use management remains one of the world's principal means of planning national rural environments. These sectors all involve unique policies and applications.

A basic element of many mature planning systems is the division of the country or jurisdiction into zones such as: urban, recreational and rural zones. In Denmark, for example, development is allowed in the urban and recreational zones in accordance with the current planning regulations, while in rural zones, covering the majority of the country, developments or any changes of land use are prohibited, or subject to a special permission according to planning and zoning regulations. A typical exception is that construction necessary for commercial agriculture, forestry and fishery operations requires no permit. The rural zone development provisions are intended to prevent uncontrolled land development and installations in the countryside and to preserve valuable landscapes. Urban development can then only occur where land is transferred from a rural zone to an urban zone that may be subject to a land use tax, to be paid by the landowner.

## **6. PARTICIPATION**

### **6.1 What does Participation Achieve?**

If citizens are not directly engaged in their local land use control activities then the political decision making will not be truly legitimate. Citizens who cannot influence changes to their local environment will tend to reject the official land use control procedures and turn their backs on ensuring a sustainable local environment. This lack of participation and transparency can also potentially lead to an increase in corruption and illegal development.

Therefore, it is essential that citizens / communities have a genuine opportunity to have a say (a dynamic process of dialogue) on a development plan or proposal which affects them and that officials and politicians listen to what they say and reach a decision in an open and transparent way, taking account of all views expressed. If the process ensures transparency and inclusivity then even difficult decisions may be easier to be accepted by all parties involved (McLaren, 2007).

## 6.2 What is Currently Inhibiting Participation?

Although the benefits of citizen participation are widely recognised, many administrations are hesitant to fully embrace the principles of citizen participation in the land use control procedures. This reluctance stems from a number of issues including:

- ‘Planning is Politics’ (Enemark, 2007) and for this reason many politicians have an aversion to transparent, evidence based decision making;
- The lack of transparency generated through non-participatory approaches generates the opportunities for corruption;
- Participation of citizens has inherent overheads and inevitably slows down the land use control process, potentially leading to a corresponding slow down in the economic development process of the region;
- The electronic communication channels available to support efficient participation may be limited, creating a digital divide;
- The early stages of citizen participation tend to attract angry citizens or those who have extreme views. Therefore, the views obtained are not necessarily the consensus view from the community;
- Citizens tend to become engaged in the land use control process over a single issue and then their interest subsequently dissipates - it is difficult to sustain citizens’ interest; and
- The community’s view is inevitably going to be parochial and will not usually represent a view for the national good. Therefore, communities may oppose developments that are judged to be strategic from a national perspective.

The introduction of citizen participation involves considerable cultural and behavioural change of politicians, government officials and citizens and cannot be achieved in the short term.

## 6.3 How can Participation be Achieved?

There are five key stages of engagement with citizens and communities during the land use control process (McLaren, 2007) all of which require access to good land information:

- Stage 1: People are made aware of development proposals that affect them as early in the process as possible;
- Stage 2: People have the facts to allow them to make a contribution;
- Stage 3: People have the opportunity to engage;
- Stage 4: Having made their views known, people obtain clear explanations of how and why decisions were made; and
- Stage 5: People have the on-going opportunity to safely report and check occurrences of potential illegal development as part of a participatory, self-regulating system.

The traditional approaches to encouraging citizen participation use communication channels such as newspapers, leaflet drops and posters in government buildings, involve workshops or

door to door discussions, only provide traditional paper based information on the development proposal, support written submissions and seldom provide citizens with the rationale behind decisions. These approaches are very labour intensive and have not been successful in raising the number of citizens involved to consensus levels within communities.

### 6.3.1 e-government Solutions

In countries that are fortunate to have mature infrastructures of wired Internet technology and a moderate to high uptake of Internet users, e-government has allowed public sector organisations to better deliver their services and improve their efficiencies. Many governments have established e-planning portals that allow citizens to access on-line the land use control information, including:

- Access to zoning development plans; planning regulations; and general land-use information
- Submission of development applications;
- Access to proposed developments, associated drawings and their current status;
- Submission of comments associated with proposed developments to be used as material evidence in the decision making process; and
- Access to the results of development control decisions.

These e-planning portals normally support a one way dialogue, with the responsibility on the citizens to access the information and to participate.

A new generation of Geographic Information System (GIS) based tools are now available, supported by maturing Spatial Data Infrastructures, which are being used to enhance the interaction experience and effectiveness with the citizen. Examples of these new tools are

- GIS is being applied to participatory community planning [Coleman et al, 2005]. GIS professionals concerned about community development have developed a framework, generally called Public Participation GIS (PPGIS), to help neighbourhood community groups and individuals use mapping and spatial analyses in community development and public participation. A new generation of Web-based PPGIS initiatives is beginning to provide users with tools to analyse existing proposals, suggest and evaluate alternatives and frame an on-line discussion of alternatives within a geospatial context. See (Tang, 2005) and (Zhao, 2006) for examples.
- The ease and increasing use of mashups - a website or application that seamlessly combines content from more than one source into an integrated experience. Content used in mashups is typically sourced from a third party via a public interface.
- Using Google Earth, for example, allows communities, citizens or pressure groups to increasingly create an easy to access simulation of the proposed development. This environment can then form the basis for a dialogue amongst the stakeholders.
- For many citizens the use of PPGIS environments is either too advanced for their use or they are on the wrong side of the Digital Divide. However, there are emerging virtual reality techniques that allow citizens to access sophisticated GIS and visualisation

technology through mediators. One such example is the ‘Virtual Landscape Theatre,’ [The Macaulay Institute, 2006] developed by The Macaulay Institute in Scotland, that uses cutting edge virtual reality technology to recreate landscapes and provide a forum for people to visualise and assess impacts of proposed change.

### 6.3.2 m-government (mobile) Solutions

M-government is an extension or supplement to e-government and provides information and services through mobile devices, e.g. cellular phone, laptops, and is mobile and wireless (Silvana and Sheng, 2008). For developing countries with no infrastructures of wired Internet technology, this is the only low cost infrastructure option available and opens up new channels for communication with citizens. M-government has the following advantages:

- It avoids the digital divide since the use of cellular phones is becoming ubiquitous and is evenly distributed across society;
- Use of cellular phone is fastest growing in developing countries (in 2007, 90% of phone subscriptions in Africa were cellular phones);
- Services are available anywhere, anytime;
- Cellular phones are increasingly being integrated with GPS technology to spatially enable the phones;
- Supports 2-way communication, including real-time alerts to citizens, e.g. terror and severe weather alerts;
- Can be used for e-payments for services. This can reduce the potential of corruption; and
- Cellular phones are single user devices, allowing services to be personalised, e.g. license renewal reminders.

Despite cellular phones having disadvantages in the delivery of information and services, e.g. size of screens and some security aspects, M-government opens up additional channels for citizen participation and has a significant potential to increase the constituent participation. Within the context of land use control services, m-government through cellular phones has the potential to reduce and prevent informal urban development. The following examples describe how this could be achieved:

- Citizens register for mobile phone alerts on specific types and / or locations of new development proposals submitted to the planning authorities;
- Mobile phone alerts provide citizens with details and location maps of new development proposals within the citizen’s specified area of interest. This will let citizens understand what developments are part of the formal development process;
- Citizens can text objections to development proposals to the planning authorities with associated authentication;
- Citizens text the location (postal address or GPS derived co-ordinates) of a development to the planning authorities to query its legitimacy. The planning authorities check the current development proposals and alert the citizen. This process can be anonymous and will support a much more citizen based monitoring process.



This example of monitoring urban development is part of what is termed ‘urban sensing’ (Cuff et al, 2008) using cellular phones, sensor technologies, GIS related technologies and Web 2.0. It will support the creation of a public infrastructure, a ‘data commons,’ that will allow the citizen to increasingly participate in politics, civics (including land administration and management), aesthetics and science

## 7. FINAL REMARKS

Although some occurrences of illegal development, such as in post conflict situations, may be difficult to stop, many other forms of illegal development could be significantly reduced through government interventions supported by the citizens. Underpinning this intervention is the concept of integrated land management as a fundamental means to support sustainable development, and at the same time, prevent and legalise informal development. The integration of land policies, land information, and planning control/land-use management should ensure that land-use decision making is based on relevant policies and supported by complete and up to date information on land-use and rights in land. This should also provide for establishing the relevant social and economic institutions in society in support of legalising the informal sector.

Control of land use will only be effective if it is administered locally through trusted local government services within a comprehensive planning system. These decentralised services will ensure that the national land policies are implemented through sensitivity to and knowledge of the local environment and community and that local planning officials are empowered to effectively apply these policies and laws. However, a key element of effective decentralisation is accountability, both in terms of downward accountability that allows the citizens to hold local government to account and upward accountability to central government who supervise the performance of local government.

Planning is politics and the political decision making process will only be legitimised if the citizens are truly engaged in this process. It is therefore imperative that the planning process is transparent and inclusive and that citizens are encouraged to fully participate. This building of social capital will pay dividends as the citizens, through emerging m-government approaches, will support the monitoring of urban developments. However, this building of trust will take time as it involves considerable cultural and behavioural change by all stakeholders.

Arguably, establishment of such mature systems that are trusted by the citizens is also the key to preventing and legalising informal urban development. This goes for, at least, the developed part of the world. In developing countries, however, this approach must be supplemented by a range of measures that address the issues of poverty, health, education, economic growth, and tenure security. This is all included in the perspectives of the Millennium Development Goals. FIG and the global surveying community will respond very committed to the MDG’s over the coming years.

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