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Article

Land Use Control Strategies Around Urban Growth Boundaries in Korea

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This paper proposes a comprehensive land-use management program aimed at enhancing the effectiveness of land management within urban growth areas and at the same time managing areas around the outside of urban growth boundaries through controlled development, thereby facilitating both development and conservation in areas around urban centers. This paper also suggests approaching urban development projects from a broad regional planning perspective, taking into account the availability of public facilities and services; managing land through phased development programs; and obliging developers to contribute partial or full costs of meeting additional need for public facilities and services. Emphasis is also placed upon the necessity of reaching a social consensus regarding limiting land ownership in order to ensure the success of such urban growth management programs.

Keywords: Land use system, urban growth management, boundaries, phasing programs

1. Background of the study

Urban sprawl may be characterized as relatively low-density, non-contiguous development that consumes large amounts of farmland and natural areas (Burchell et al. 1998). It is increasingly viewed as a significant and growing problem that entails a wide range of environmental and social costs (Bengston et al. 2004).

Previous studies related to urban sprawl and growth management tend to fall into two categories. In the first category are studies that focus on using geographic information systems (GIS) to manage urban development. Oh (2001) has developed the Landscape Information System for the purpose of managing urban landscape information and analyzing the visual impacts of proposed development projects. Cheng and Masser (2003) present a spatial data analysis method to seek and model major determinants of urban growth, using Wuhan City of the People's Republic of China as a case study. Studies in the second category focus on the use of indicators. Nelson (1999) defines and computes several statewide indicators designed to evaluate the effectiveness of growth management efforts in Oregon and Florida in the United States using US Census of Population and US Census of Agriculture data to evaluate urban

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sprawl and farmland preservation. Kline (2000) recomputes Nelson's indicators using land-use data and briefly discusses the use of statewide indicators to evaluate the effectiveness of growth management efforts.

The process of urbanization in Korea dates from the 1970s, but serious problems did not emerge until the early years of the 1990s; environmental and social costs of uncontrolled development grew in the middle of the 1990s—and with them, public interest in environment-friendly development; and in the 2000s they have increased dramatically.

Many apartment blocks, factories, restaurants, and other structures have been developed around the megacities in Korea without proper infrastructure to support them. This has caused residents many inconveniences and devastated our exceptional natural environment. Against this backdrop, in January 2003 the Korean Government enacted the National Territorial Basic Act and the National Territorial Planning and Use Act, combining the past National Territorial Management Act and the Urban Planning Act.[1] The main feature of the National Territorial Basic Act is the establishment of basic principles for systematic land management. Among the main features of the National Territorial Planning and Use Act are: the modification of land-use zoning; the introduction of second-class subdivision planning; a development permission system; an infrastructure linkage system; and enforcement of the land-aptitude evaluation system. These features are described in more detail below.

First of all, *land-use zoning* has been modified as follows: national territory is classified into urban areas, management areas, agricultural areas, and natural environment conservation areas. The management areas are further divided into planning management regions, production management regions, and conservation management regions.

The main objective of the *second-class subdivision planning* is planned development of planning management regions and development promotion districts. The main issues covered include: layout and size of basic facilities; restrictions on use of individual new buildings; maximum and minimum limits on building height; and landscape planning.

The *development permission system* mandates the mayor or county magistrate to refuse or grant full or conditional permission for small-scale development projects, taking into account such factors as pertinence of the development for local planning priorities, establishment of basic facilities, and harmony with the area surrounding the development sites, according to development permission standards. For mid-scale projects, the mayor, county magistrate, provincial governor, or minister of construction and transportation may make the final decision, based on committee discussions and reviews.

The *infrastructure linkage system* levies an installment charge on the developer for the cost of installing required basic facilities. Lastly, the *land-use aptitude evaluation system* aims to identify land that should be protected and land that can be developed, based on the results of a general evaluation of the human and natural environments and the relationship between them.

1 See www.krihs.re.kr.

The objective of this study is to propose reasonable growth management strategies in the light of the aforementioned changes in the land-use system in Korea.

The expanding role and increasing power of local governments in Korea has created conflicts of interest between central government, metropolitan region governments, and local governments, especially in regard to urban growth management. Of particular concern is that local governments are pursuing growth-oriented urban development policies without carefully considering the overall social costs that may result.

When an urban development project only satisfies local interests and is launched without proper growth management and comprehensive development management, it ultimately increases overall social costs through negative impacts on surrounding areas and depletion of natural resources and other negative environmental effects. Moreover, it prevents the realization of the common social good. Therefore, a different concept of urban development management is needed that can show local governments how to pursue development projects without harming society as a whole, not only the communities concerned. Urban growth management (UGM) has emerged as a new land-use management concept that can meet this need.

Although an exact definition is not yet firmly established, the concept of UGM embraces three key aspects of development: location, timing, and cost. Traditional land-use management programs, including zoning systems and subdivision regulation, have proved effective in deciding whether or not to approve a development proposal at a particular site, but they do not effectively address the issues of timing and cost. For this reason, UGM may serve as an important corrective to traditional land-use management practices. While traditional urban development policies have pursued development in an unmanaged, growth-oriented way that overlooks the appropriate scale of development in urban areas, UGM programs aim at gradual and sustainable managed growth, giving careful consideration to the development capacity of the areas concerned (Lee et al. 1996).

These ideas regarding UGM have their origins mainly in environmental concerns. But recent deterioration in the quality of urban infrastructure is also a reminder of the importance of proper management of urban development. Currently, UGM programs are extending their scope from the usual environmental issues to addressing broader questions regarding quality of life. Thus, issues related to quality and adequacy of public services and facilities (such as roads, clean water supply, sewage systems, parks, and schools) currently form the nucleus of recent UGM programs.

All UGM programs aim to induce desirable urban growth, but they differ in the means to achieve it. One type of program seeks to revitalize deteriorating urban areas by providing legal and financial support. Others attempt to solve various problems caused by -growth-oriented urban development. A UGM program can be defined as a program that aims to promote development where it is needed by controlling development projects based on the overall needs of the urban area. The ultimate goal of UGM is preventing environmental deterioration and infrastructure overload and increasing the effectiveness of urban management through short or long-term growth management programs. UGM does not aim to stop growth; rather it strives to enhance the quality of life and preserve more usable land for the future. The recent agenda of UGM programs in Western urban areas include the prevention of

ecosystem collapse and environmental degradation caused by chaotic development; decreasing publicly owned land and transformation of farmland into urban land; and dealing with overburdening of the road network. In addition, the agenda support reduction of public-sector expenses and social capital overheads, while increasing the quality of citizens' lives.

To achieve the above-mentioned goals, UGM adopts such strategies as down-zoning; preservation of usable land for future needs; conservation of historically and environmentally important areas;; coordination of city, county, and state policies into unitary regional land management plans; and administrative reorganization for effective growth management (Lee and Jung 1999).

2. Limitations of the zoning system and adoption of urban growth management systems

2.1. Limitations of the existing zoning system

Korea has adopted a zoning system as its main land-use management policy. A zoning system is a land management system that encourages or discourages development in specific areas in order to maximize economic benefits, encourage effective land use, and promote public welfare.

Zoning systems are passive and static ways of managing development, and lack the flexibility to meet the needs of ever-changing development environments. In other words, zoning systems can only decide for what purpose certain land will be used in the future, but cannot manage phased development or control the timing of development.

The zoning system in Korea has been significantly modified from the original concept of zoning that was developed in the West early in the twentieth century, but this modification has undermined the original purposes of a zoning system. For example, Korea's current zoning system allows individual development projects as long as they meet zone-designation requirements. When necessary, it is even possible to alter zone designations under National Territorial Management Act in order to facilitate urban development projects. The zoning system in Korea also allows construction even where the necessary infrastructure is not fully established. This kind of unregulated land management has been the cause of chaotic development in both urban and non-urban areas. To date, Korea's zoning system has only resulted in a state of general confusion, unnecessary environmental destruction, and an uneven supply of land.

Any land that is developed must have access to urban infrastructure. Therefore, in an important sense, the question of whether to permit a development proposal in a certain area must consider whether adequate public facilities and services are available or can be provided. The existing zoning system in Korea does not do this. Even when development environments change, the current zoning system allows development proposals to be approved as long as they satisfy the existing zoning specifications. As a result, local governments, though they are seeking effective means of land management, still face many problems in terms of disparities between actual needs and their capacity to provide public facilities and services. In particular, local governments often lack the financial resources to meet such demands.

2.2. The rise of urban growth management programs

The existing static zoning system does not take into account local land conditions, effectively cope with future land demand, nor respond flexibly to social change. Thus there is a need for a new land management system in Korea.

The land management programs of the Town of Ramapo, near New York City, and the City of Petaluma in northern California (Cullingworth 1997) can serve as examples that might prove useful for creating a new land management strategy for Korea. In 1969, Ramapo adopted a kind of phased growth program, which is seen as a forerunner of UGM (Garvin 1996). In examining various development practices, the Ramapo program took as its starting point consideration of whether adequate public facilities and services were available to sustain urban development. The facilities and services considered in this evaluation process included water resources, rain drainage, parks and recreation facilities, schools, roads, and police and fire departments.

While Ramapo adopted a points-based land management system that focused primarily on the availability of public facilities and services, in 1972 the City of Petaluma introduced an annual gross development quota. Petaluma's new program only allowed construction within the city's designated urban growth boundary. The city's annual gross building construction quota was 500 "development units" (that is, single housing units that must be within projects of five units or more) allowance was subdivided into housing and construction areas. This program was ruled illegal in a district court for being exclusionary, since it could limit the inflow of low-income people into the city; however, the ruling was later overturned in a higher court. Since then, many other cities, including Boulder, Colorado, have adopted similar programs.

Following Ramapo and Petaluma in the 1970s, many more land management schemes have appeared in the United States that address such questions as growth scale, timing, environmental impacts, and finance. These have arisen due to increased interest in issues relating to urban expansion, air pollution, greenbelt preservation and the decline of farmland, and increasing energy consumption. Among a wide variety of such schemes are annexation, urban growth boundaries, and farmland preservation. Effective evaluation programs have been widely adopted as a way of enforcing developer exaction and impact fees. Many programs have also applied the Petaluma concept of annual gross development allowances for built development. A limitation of the Petaluma model is that it is feasible only when there is a balance between housing supply and the rate of population increase. If housing supply does not match population growth, it leads to higher housing costs and an increase in unauthorized housing; however, there would be no justification for such programs in the opposite case. Therefore, an adapted form of the Ramapo model is currently widely used. Some local governments are forcing developers to supply basic public utilities, such as roads, parks, and clean water supply and sewerage systems. Furthermore, they are linking the timing of development with the current availability or development of such public facilities and services.

DeGrove (1992) proposes a three-stage model for the development of UGM policies to date. The first stage, which developed in the 1970s, emerged from environmental concerns. UGM at this stage was largely based on public interest in the environment and natural resources. These environmental concerns

began in the 1950s and culminated in the 1970s. The second stage of UGM focused on the broader issue of enhancing quality of life. Unlike in the 1970s, UGM in this second stage focused on such issues as infrastructure availability, balanced development, environmental impacts, selective economic development, and affordable housing. Efforts were made to pursue a compact growth pattern in order to prevent unplanned expansion of urban areas. The last stage of UGM, which began in the 1990s, aims to balance the needs of economic growth, job creation, and protection of ecosystems (Lee et al. 1996).

Recently many US states, including California, Florida, Oregon, Washington, and Georgia, have adopted UGM to effectively manage land near rapidly expanding urban areas and protect the natural environment (Cho 1999b).

3. Strategies for national land management

3.1. Basic principles

The purpose of a UGM policy is to ensure a dynamic balance between development and preservation; that is, between the need for development and the availability of public facilities and services; between additional need for public facilities and services and financial resources; and between growth and equity (Chinitz 1990). This dynamic balance can only be maintained when there is unified coordination between local governments and metropolitan region governments in deciding the location and timing of development and evaluating the adequacy of public facilities and services. In addition, to make a UGM program comprehensive, it is necessary to appropriately incorporate various forms of growth management programs and subsequent exaction fees.

Until now, Korea has only focused on establishing development-restricted zones or enforcing exaction fees rather than on creating a comprehensive growth management program. Furthermore, these development-restricted zones have been controlled and managed separately from exaction fee programs.

In seeking a comprehensive land-use management plan that will limit unnecessary development that causes environmental harm and over-burdening of public facilities and services, this paper proposes the following four underlying principles: first, maximize the use of land resources only on the condition that destruction of natural resources is kept to a minimum, there is flexible response to land-use demand, and future demand for land resources is considered. Second, develop a broad metropolitan region control plan to coordinate the land management programs of both local and metropolitan region governments. Third, only permit development proposals that are within the provision capability of public facilities and services, while also bearing in mind associated taxes on developers that can be used for such public goods. Fourth, manage urban growth through a growth management program that respects local characteristics and accords with the central government's urban development policies.

Based on these principles, the authors propose the following four land management strategies: (1) establishment of a national land-use structure and urban growth boundaries based on a zoning system; (2) metropolitan region control systems for urban growth boundaries; (3) development permission systems based on the availability of public facilities and services; and (4) land development management under growth phasing programs. These strategies are described in more detail below.

3.2. Land management plans

Strategy 1: Establishment of national land-use structure and urban growth boundaries based on a zoning system

There is a need to reclassify various zoning schemes under current land-use regulations. The main focus of this reclassification should be revision of the bifurcated urban vs. non-urban zoning system into urbanization areas, urbanization-restricted areas, and conservation areas. For conservation areas, the framework, objectives, and management plans should be made clear. Likewise, for urbanization areas, there is a need to specify the scope, procedures, and methods of development in order to make things clear to those who manage national land use and to prospective land developers.

Under this comprehensive land management program, development proposals in urbanization areas should be permitted only when they satisfy the detailed land-use plans of both local and central governments. No development in urbanization-restricted areas should be allowed, except when strict guidelines drawn up by the central or local governments are satisfied. Conversely, zoning procedures and management of conservation areas should be solely handled by the central government, but when necessary, local governments may work out detailed management plans. Both central and local governments should clarify the framework for establishing preservation areas and provide management guidelines for them.

Decisions on the zoning of different sites and when development may be permissible on them should be based, first of all, on a land evaluation program that includes a large-scale land-use survey, and on social, economic, and material considerations. The results should be used as the basis for classifying land into the three types of area.

Urbanization areas may be composed of existing urban areas and semi-urban areas. The boundaries of urbanization areas should correspond to urban growth boundaries. This will help to separate urbanization-restricted areas and conservation areas from urban growth boundaries. Urbanization areas can be further zoned for different urban uses (residential, commercial, or industrial) and should be managed through detailed land-use plans. In the case of greenbelt areas designated under the current Urban Development Acts, their new zoning will depend on their location. If a greenbelt area is inside urban growth boundaries, it should be zoned for urban uses, while if it is outside urban growth boundaries it should be zoned as an urbanization-restricted area or conservation area. To enhance the quality of the environment in areas near roads and human traffic throughways, and to preserve important public facilities and services, a scheme should be launched that helps parks and greenbelts to maintain their original functions.

Urbanization-restricted areas should include some parts of greenbelt areas in existing urban areas, semi-urban areas in non-urban areas, and semi-agricultural and forest areas. If development is necessary in these areas—in other words, when these areas need to be zoned into urbanization areas—urban growth boundaries should first be changed, then these urbanization-restricted areas can be incorporated into urbanization areas and rezoned for urban use through a detailed land-use plan.

Conservation areas, some parts of semi-agricultural and forest areas in non-urban areas, agricultural and forest areas, and non-urban greenbelt areas, should never be zoned into urbanization areas.

Strategy 2: Adoption of metropolitan region control systems for urban growth boundaries

Most metropolitan local governments are concerned only with development within their own administrative boundaries. They do not pay much attention to the impacts that their policies might have on surrounding areas. In other words, they do not consider the question of externalities. Therefore, it is important to coordinate local governments' policies with larger metropolitan region development goals and standards.

Many urban development projects are characterized by conflicts in impact, which result when a local government initiates a development project with impacts that spread beyond its administrative boundaries. In some cases, the benefits of the development may be confined to a city or county, but its negative impacts may reach beyond those boundaries; in others, the negative effects of a development may be confined within the city or county, while its benefits may be shared with other regions (Bollens 1992). In particular, issues relating to large-scale developments—NIMBY facilities,[2] pollution regulation, and public transportation, for example—often result in conflicts of interest among neighboring local governments. In such cases, it is extremely difficult for any one local government to solve such problems on their own, and would benefit from management of the development projects from a broad regional perspective.

For this reason, a metropolitan region government or the central government needs to intervene in local governments' land management policies in order to protect development areas and surrounding environments from any poorly planned development. Central government or metropolitan region governments should serve as the main instrument of nationwide land management rather than solely acting as arbiters in disagreements between local governments. Central government should come up with a basic plan that helps systematic growth management. Each metropolitan region government should provide a broad unified management program that accords with the central government's management plan and coordinating local governments' interests and policies.

Central government or the relevant metropolitan region government needs to re-evaluate local governments' policies and local plans to resolve any conflicts with the central government's plan. Also, the metropolitan or central government needs to coordinate local governments' capital improvement programs and urban development plans. More specifically, a higher-level local government or the central government should discourage local governments from launching development projects in general when there are not enough public facilities and services available (Cho 1999a).

For this kind of broad management to succeed, a metropolitan region government or central government must set up a special task force mandated to review and offer advice on any development plans from local governments. Local governments must be given an opportunity to revise their plans. If they do not heed the advice of the metropolitan or central government, financial support to plans of local governments may be cancelled.

2 That is, facilities that local residents greet with the response "Not in my back yard!"

The land management program suggested above presupposes that areas both inside and outside of urban growth boundaries are considered as a single space, and land management plans for those areas must be structured from a broad metropolitan region perspective.

Strategy 3: Development permission system based on the availability of public facilities and services

The current land-use regulations in Korea do not specify requirements for development of public facilities. Although there are various exactions and profit-return policies for development, they target only certain developers. Also the existing profit-return methods are not sufficiently effective.[3] Therefore, Korea should establish more concrete and specific standards governing the location and scale of public facilities and services, and a more comprehensive and long-term public facility development plan that reflects both Korea's past and its future.

In this context there is a growing demand for the adoption of adequate public facility requirements (APFR). It should be made clear to developers that when there are not enough public facilities and services available, or a development project creates additional demand for them that cannot be met, the project will not be permitted. Since no city or area in Korea currently has adequate public facilities or services, this policy may serve as an indirect means of regulating the location and timing of development.

In the United States, one representative state-level planning code with an APFR is Florida's Growth Management Act,[4] which has a "concurrency provision" that requires facilities and services to be available concurrent with the impacts of development. Local governments draft local comprehensive plans that include clear guidance on concurrency requirements for each type of public facility and service.

The public facilities whose adequacy is considered in this scheme include main roads between areas, access roads to major roads, rainfall drainage, clean water supply, sewerage, solid waste disposal, parks, schools, and police and fire departments. Local authorities may add additional facilities in their comprehensive plans, or waive certain requirements to promote urban infill or redevelopment.

When a development proposal is denied for lack of available public facilities, the developer may take one of the following actions: postpone the development project; provide the necessary public facilities and services; reduce the scale of the development so that its impact on public facilities and services falls below specified levels; or change the site of the development. In his way, APFR influences the timing, location, and density of development (Lee 1996).

The new Urban Development Acts in Korea take another approach, obliging developers to share the costs of meeting the additional demand for public facilities and services that their developments will

3 For example, if an apartment complex developer is forced to provide land for one elementary school per 2,500 housing units or above and land for a city-block office per 3,000 housing units or above, the developer can submit a development plan of less than 2,500 housing units and avoid the fee exaction for infrastructure or public facilities.

4 Chapter 163, Part II, Florida Statutes, The Local Government Comprehensive Planning and Land Development Regulation Act. Follow hyperlink from http://www.dca.state.fl.us/fdcp/DCP/compplanning/comprehensiveplanning.htm.

5 Regional Planning Guidance was introduced when a comprehensive planning guidance was needed after 1985's revision of the Local Autonomy Law nullified countyship in London and six other cities and the former scheme of structure plan and local plan in those areas was simplified into unitary development plans (for more information, see Korea Research Institute 1999).

create. This may even apply to additional demand for facilities and services outside the development area. For example, the developer of an urban development project must share the costs of building new roads if the development overloads the existing main roads, as well as contributing to the costs of such facilities as rainfall drainage and sewerage from the development areas, additional water-treatment plants, traffic lights at nearby intersections, and additional schools and police and fire-prevention facilities as needed.

The law in Korea does not specify what portion of the costs the developer should share. It is therefore important for any new UGM program to make clear what portion of such costs developers must cover, both inside and outside the development area, including detailed guidelines on cost sharing. This policy can be enforced through impact fees or connection fees. Local governments should establish standards for the cost-sharing plan, and consider development applications according to these standards.

However, the validity of any policy that forces developers to cover or share the costs of additional public facilities and services may be disputed. These policies may raise housing prices and put extra financial burdens on low-income people. They may also slow down industrial production by raising costs at industrial complexes. Therefore, this policy is welcomed only when additional support is given to construction of housing for low-income people and industrial complexes.

Strategy 4: Land development management under growth phasing programs

There are certain limitations in managing development only through policies that require adequate public facilities. For this type of policy to work, a thorough and accurate examination and estimation is needed of the additional demand for public facilities and services created by the new development. Furthermore, this process must be conducted every time a new development application is submitted. While this type of program is quite effective in maintaining the quality of public facilities and services, it is hardly effective in controlling growth speed, because additional development is always allowed as long as the existing public facilities and services can tolerate it.

Therefore, means are needed to control the scale, location, and timing of development. Standards need to be established for gross growth allowances that are in accordance with central government's urban development policies and the demand for new development; the size of land available for development, urban environmental conditions; and availability of public facilities and services. Additionally, priorities are also needed for different areas and types of development. Decisions should be made based upon these priorities when a new development proposal is submitted. Below are two examples from the United States of schemes that combine development timing management with APFR.

Montgomery County planning system: A yearly established annual growth policy serves as the main growth management framework for all public service-related development projects. This planning system divides the county into 17 "policy areas" and identifies adequate development levels for each area, taking into consideration development allowance capacity and a variety of other policies. A "staging ceiling," the maximum annual growth allowance, is set for each policy area. Along with this, a strict scheme for preservation of agricultural land is enforced, giving careful consideration to how the scheme interacts with such factors as land use, economy, traffic, housing, public service-related facilities, natural environment, and financial policies.

Westminster planning system: This system calculates a certain community's capacity to provide public services for a certain period of time based on “service commitment” (SC) units—one SC unit is the level of public service provision required by a single housing unit—and assigns the calculated SC units to the following six types of development: (a) active housing zone development; (b) other housing zone development; (c) non-housing zone development; (d) service contracts with those who reside outside the concerned service area; (e) government-sponsored housing construction, small-scale development projects, or other development projects; and (f) contingent development projects or any development project for public use. This program gives priority to type (a) and (b) housing development projects, considering the possible financial losses to developers or financial impacts on the city that denying the proposals might have. In the case of type (c) developments, the program gives priority to proposals that are designed to induce base economic industries, since these increase job opportunities for the local community.

This paper proposes a growth-phasing land management program as a fourth strategy, to ensure gradual, planned urban growth by properly managing the scale, timing, method, and location of development. This program would seek to manage urban growth systematically by estimating the appropriate scale of development within the economic, social, and environmental capacity of any given urban area, and by supplying adequate public facilities and services based on such an evaluation.

Growth-phasing programs are generally used for areas inside urban growth boundaries (urbanization areas). They give priority to development proposals that are sited in accordance with urban redevelopment strategies, and develop first those areas where it will have the largest development impact. The timing of development must be decided by the availability of public facilities and services. Public facility development projects financed by local governments and government-funded corporations must be launched within urban growth boundaries and be provided under a growth-phasing program.

4. Individual management tools for areas close to urban growth boundaries

4.1. Inside urban growth boundaries

The purpose of development management inside urban growth boundaries is maintaining the quality of the built environment. To achieve this, a comprehensive unitary management program has to be established that will replace the existing land management programs. This paper proposes a comprehensive management program for the areas inside urban growth boundaries, modeled on Germany’s Federal Building Code (*Baugesetzbuch*), which is an example of a no-development-without-prior-planning policy.

The Baugesetzbuch, introduced in 1987, covers 13,000 municipalities. Each municipality prepares its *Bauleitplan* (urban land-use plan), as and when necessary. This plan comprises a preparatory land-use plan (*Flächennutzungsplan*, or F Plan)—which gives basic guidance on general land-use designations within the urban growth boundary and contains other pertinent information, such as on public facilities

and services—and the legally binding land-use plan (*Bebauungsplan*, or B Plan), which is developed out of the F Plan and contains legally binding land-use designations for land within the municipality. For the purpose of considering applications for development projects, the territory is divided into development-permissible areas (that is, inside urban growth boundaries) and undesignated outlying areas (that is, outside urban grown boundaries), where development is restricted. Development-permissible areas are divided into specific land-use areas (*Baugebiete*). In already built-up areas, any development must be in harmony with the immediate environment; development of other development-permissible areas must exactly satisfy the criteria established for them in the B Plan. The B Plan regulates land use for land plots the size of one house (5–10 ha), providing detailed guidelines for each plot, such as permissible types and density of building, land use, type of development, and standard criteria for making decisions on planning applications both in areas where construction is allowed and in areas where it is not (where some construction of buildings may be allowed for agriculture, forestry or aquaculture; these areas are similar to the agricultural and forest areas in Korea designated by the National Land Use Act). Thus the B Plan can both restrict and promote development. Since all construction projects are developed according to the B Plan, this plan is of crucial importance.

The strict regulation of development severely limits landowners' rights. Thus, German citizens generally do not wish to own land unless they really need it. Unlike in Korea, they cannot change the zone allocations of their land and cannot develop it unless it is earmarked for development in the B Plan. Since there is no development without planning, Germany has not suffered from haphazard development and the privatization of development profits (Choi 1999).

In managing development inside urbanization areas, the Korean Government must establish a comprehensive land-use plan similar to Germany's Federal Building Code and manage areas according to the plan. Firstly, the Government needs to establish a comprehensive land management plan, perhaps called the Urban Development Act. This act needs to establish strategic municipal land-use plans similar to Germany's B Plans and allow only development prescribed by the plans.

The idea of zoning regulated under a municipal land-use plan with imposed building restrictions may well replace or supplement the existing zoning system in Korea. To make land use more flexible in the country, it is necessary to include the concept of land-use density. Overall urban development plans must be brought under the municipal land-use plan, where detailed guidelines for individual development projects can be set out. Under this plan, local governments would have to consider the availability of public facilities and services when making decisions on development project applications, as well as having to manage development sites, timing, and scale through a phased development program. The Urban Development Act and all local government municipal land-use plans must therefore include public facility requirements and growth phasing programs

4.2. Outside urban growth boundaries

In principle, no urban development projects should be allowed in the areas outside urban growth boundaries. It is important to have all development projects come under a unitary public land-use plan. This section examines the United Kingdom's development control system and the United States'

subdivision regulation system, and proposes a revised land-management system for areas outside urban growth boundaries that is suitable for the Korean case.

The current land-use planning system in the United Kingdom was established under the Town and Country Planning Act of 1947 (revised in 1990). Local urban and rural development plans drawn up by local governments under this act are guided by National Planning Guidance, which is published in the form of Planning Policy Guidance notes (PPGs) and Regional Planning Guidance notes (RPGs); national policies and guidance can also be found in a number of other sources.

Under Planning Policy Guidance note 12 (PPG12), published in 1992, county councils (province-level authorities in most non-metropolitan areas) draft 15-year "structure plans," providing a strategic framework for development in the county, while district councils are responsible for local plans, which must conform with the relevant structure plan, and contain detailed guidance for land-use, including the type, location, and boundaries of development allowed in each area.

The basic concepts of all county land-use management plans are based on guidance from National Planning Guidance in PPGs and RPGs,[6] which reflect current priorities in central government policy. Some of the major issues they cover are: (1) housing and the number of new buildings that are permitted by local governments; (2) greenbelts, natural environment, and street preservation; (3) rural economy; (4) town economy and business development projects for job creation; (5) traffic, roads, and other public facilities and services of high strategic importance; (6) preservation and excavation of mineral resources; (7) waste disposal and improvement of soil quality; (8) sightseeing, leisure, and recreation; and (9) power and its distribution (Kim and Suh 1992).

The US land-use planning system consists of an unbinding master plan and a binding zoning system. The land use zoning system, the main framework of US land-use management, is strictly enforced through detailed zoning divisions. Programs such as land subdivision control, official mapping, and building codes have been adopted as land-use regulations, building on this zoning system.

The US land subdivision control system, which aims to regulate land around urban areas, is similar to Germany's *Baugesetzbuc*h. The subdivision control system was adopted at around the same time as the zoning system. It is used when a landowner applies to divide his or her land holding into more than two units for the purposes of transfer or development. While Korea's zoning system does not go much further than spatial division of land, that of the United States is capable of three-dimensional control of land, including its use and the density of development that is permissible on it. A subdivision review process examines the size and location of the land and evaluates the availability of public facilities and services in the proposed development areas. The US subdivision control system has been used effectively in regulating the development or conservation of undeveloped land located around urban areas.

In Korea, the main goals of a land management system for areas around urban growth boundaries should be guided by the principles of sustainable development and environmental conservation. In addition, there should be a balance between land use and availability of public facilities and services. For this purpose, the development management plans of different local governments must be unified through a comprehensive unitary land management program, and any permission for development must

be granted only following strict guidelines that consider infrastructure availability and development allowance capacity.

To effectively manage areas around urban growth boundaries, the Korean Government must provide guidance similar to Britain's PPGs and RPGs. Following such guidance, metropolitan region governments should establish regional plans similar to the United Kingdom's structure plans. Likewise, under the regional plan, local governments should come up with land-use plans similar to the United Kingdom's local plans. The regional plan also needs to provide guidelines on decentralized development in areas around urban growth boundaries.

A developer who launches a land development project in Korea should submit a proposal that is in line with the local government's land management policies and plan for scrutiny by the local government. In examining the proposal, the local governments should consider the location, timing, and arrangement of development, as well as the availability of public facilities and services, using a system similar to the United States' subdivision regulation. At the same time, the local government must assess the use and density of development and its impacts on the surrounding environments from a three-dimensional perspective.

The whole land-use management system for areas around urban growth boundaries should be based on the principle that any development in these areas should be limited, and that development applications should be approved only when they do not harm the natural environment.

5. Conclusion

Development and conservation are not necessarily opposing forces. Thorough development of areas that need to be developed helps to thoroughly preserve areas that should be preserved, while thorough preservation of areas that need to be preserved helps to thoroughly develop areas that should be developed.

This paper proposes a comprehensive land management program for Korea that aims to enhance the effectiveness of land management within urban growth areas, and at the same time to manage areas outside urban growth boundaries through controlled development, thereby facilitating both development and conservation in areas within and outside urban growth boundaries.

This paper also suggests approaching urban development projects from a broad regional planning perspective, considering the availability of public facilities and services, managing land through phased development programs, and forcing developers to contribute part or all of the costs of meeting additional demand for public facilities and services. In addition, adoption of development impact fees should also be considered.

Seen from a landowner's point of view, any effort to maximize the value and effectiveness of the land in publicly approved development areas raises the question of equity; some land will necessarily become more valuable than other land according to the kind of development that is permitted on it. The social and economic issues that this raises could effectively eliminate public support for the concept of planned land management. To make such an urban growth management system a success, a social consensus

about limiting landownership has to be reached. Also, a socially acceptable program has to be established that separates the right to use land from the right to develop it, so that landowners retain their right to keep land under its current use, while the public sector holds a certain portion of the decision-making power on its development.

References

Bengston, D. N., J. O. Fletcher, and K. C. Nelson. 2004. Public policies for managing urban growth and protecting open space: Policy instruments and lessons learned in the United States. *Landscape and Urban Planning* 69:271–286.

Bollens, S. A. 1992. State growth management: Intergovernmental frameworks and policy objectives. *Journal of American Planning Association* 58:454–465.

Burchell, R.W., N. A. Shad, D. Listokin, H. Phillips, H. Downs, S. Seskin, J. S. Davis, T. Moore, D. Helton, and M. Gall. 1998. The costs of sprawl—revisited. Report 39, Transit Cooperative Research Program, Transportation Research Board, National Research Council. Washington, DC: National Academy Press.

Cheng J. and I. Masser. 2003. Urban growth pattern modeling: A case study of Wuhan city, PR China. *Landscape and Urban Planning* 62: 199–217.

Chinitz, B. 1990. Growth management: Good for the town, bad for the nation? *Journal of American -Planning Association* 46:3–8.

Cho, C. J. 1999a. Intergovernmental relations and province growth management: Critical issues and policy measures. *Chungbuk Development Review*10 (2):273–290.

Cho, C. J. 1999b. Concepts, issues, and policy measures in growth management. *Journal of Korea Geography Development Association* 11 (2): 95–108..

Choi, B. S. 1999. New paradigm for the 21st century land policy. Anyang: Korea Research Institute for Human Settlements.

Cullingworth, B. 1997. *Planning in the USA: Policies, issues and processes.* New York: Routledge.

DeGrove, J. M. 1992. *The new frontier for land policy planning and growth management in the States.* Massachusetts: Lincoln Institute of Land Policy.

Garvin, A. 1996. *The American city: What works, what doesn't.* New York: McGraw-Hill.

Kim, S. B and M. T Suh. 1992. *International comparative study of land use policies.* Anyang: Korea Research Institute for Human Settlements.

Kline, J. D. 2000. Comparing states with and without growth management analysis based on indicators with policy implications comment. *Land Use Policy* 17:349–355.

Korea Research Institute for Human Settlements. 1999. A study on metropolitan urban planning policy measure. Anyang: KRIHS

Lee, H. J. and E. A. Jung. 1999. *Urban growth management policy in Kyunggi-do*. Suwon: Kyunggi Development Institute.

Lee, J. H. 1996. Review of growth management policy in USA *Land use study* 4. http://www.kpa1959.or.kr/journal/urban _list_kpa.asp.

Lee, Y. J., S. W. Cho, and D. M. Maeng. 1996. *A study on the development of growth management techniques for Seoul*. Seoul: Seoul Development Institute.

Nelson, A. C. 1999. Comparing states with and without growth management: Analysis based on indicators with policy implications. *Land Use Policy* 16:121–127.

Oh, K. 2001. LandScape Information System: A GIS approach to managing urban development. *Landscape and Urban Planning* 54:79–89.