

## Strategies to Connect and Integrate Urban Planning and Environmental Planning Through Focusing On Sustainability : Case Study of Cheongju City, Korea .

Ban, Yong Un

Assistant Professor, Dept. of Urban Engineering, Chungbuk National University,  
12 Gaesin Dong Heungduk-Ku Cheongju City, Chungbuk-Do, Korea 361-763  
e-mail: [byubyu@cbu.ac.kr](mailto:byubyu@cbu.ac.kr)

### Abstract

This study has intended to find strategies which connect and integrate urban planning and environmental conservation planning through acquiring sustainability applied to Cheongju City, a local government of Korea. To overcome inefficiency happened during the process of urban and environmental planning practice in Korea, it is necessary to find strategies to integrate both planning practices through focusing on 'sustainable urban development.' This study, therefore, has suggested to make 'sustainable city development law' for national level and 'sustainable urban development ordinance' for local level, and provided the process and contents of the 'sustainable urban development planning' based on the suggested law and the ordinance, so that unmatched planning period of both plans could be adjusted (for 20 years), and the overlapped contents could be removed through identifying future goal of sustainable development.

**Keywords:** sustainable development, sustainability, integration of urban and environmental planning, sustainable city development, sustainable urban development law and ordinance.

## 1 Introduction

According to Agenda 21, a product of the UN environmental summit convened at Rio in 1992, it is necessary to acquire environmentally sound and sustainable development (ESSD) to solve fundamental crises we are facing today and will face in future in such areas as economy, society, environment, and government. Sustainable development is defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987). Some people also believe that the concept of sustainable development should include preserving the environment for other species as well as for people. After Rio summit many countries of the world have tried to accept sustainable development as one of the priority projects at national and local level. For example, in 1999, 1812 local governments of 64 countries have accepted Local Agenda 21s, which means sustainable development has been major current in the world. Korea has been trying to join this trend through establishing both PCSD (Presidential Commission on Sustainable Development) and LCSD (Local Commission on Sustainable Development) to acquire sustainable development, which satisfies economic safety, social equity, and environmental soundness even in the urban planning field.

It is hoped that urban planning deal with city development in harmony with development and environment through focusing on sustainability. To accomplish this purpose, Korean governments including central and local level have been making 'National Comprehensive Planning' and 'City Basic Planning' and 'Environmental Conservation and Management Plan' as regulatory plans based on National Land Planning and Use Law and National Environmental Policy Law respectively. By the way, both plans have shown several conflicts in legal and institutional system as follows: 1) in terms of priority, each law points out its own priority when setting and practicing its own plan, 2) in terms of the contents of plans, there exist duplications between city basic plan and environmental conservation plan, that is, urban planning usually contains a little brief environmental conservation plan while environmental conservation plan deals with more specific contents. These conflicts and duplications have resulted in procedural and financial inefficiency. Thus, it is necessary that institutional problems should be revised without conflicts and duplication problems in contents should be integrated into one within the frame of sustainable development.

This study intends to find current status of urban planning and environmental planning of both governmental levels, national level (Korea) and local level (Cheongju City), and to propose policy alternatives to integrate urban planning and environmental planning through focusing on sustainable development for both levels.

## 2 Current Status of Urban and Environmental Planning

### 2.1 Current Status of National Level Urban Planning and Environmental Planning

#### 2.1.1 Urban Planning

Planning and utilization law of national land (Korean law) defines urban planning, "plan to designate and/or change zone or district related to land use, transportation, health, industry, security, national defense, sound development, public safety, public welfare, and culture, plan to locate, maintain, and improve urban planning facilities, and plan related to land readjustment project, residential district and industrial land development project, and redevelopment project."

Urban basic plan as a legal plan on city level deals with city size and development direction, industrial structure, and living environmental standards of citizens, targeting 20years later with creative and future-oriented manner as shown in Figure 1 under the scheme of national comprehensive plan. That is, urban basic plan also should consult provincial comprehensive plan because provincial one has been set within the framework of national comprehensive plan. Urban basic plan deals with such categories as characteristics of the city, plan objectives and setting indices, setting urban spatial structure, population distribution and living zone setting plan, land use plan, transportation and logistics plan, information and communication plan, public facilities plan, industrial development plan, housing environmental plan, environmental conservation plan, scenic and aesthetic plan, leisure and open space plan, social development plan, disaster prevention plan, and financial plan.

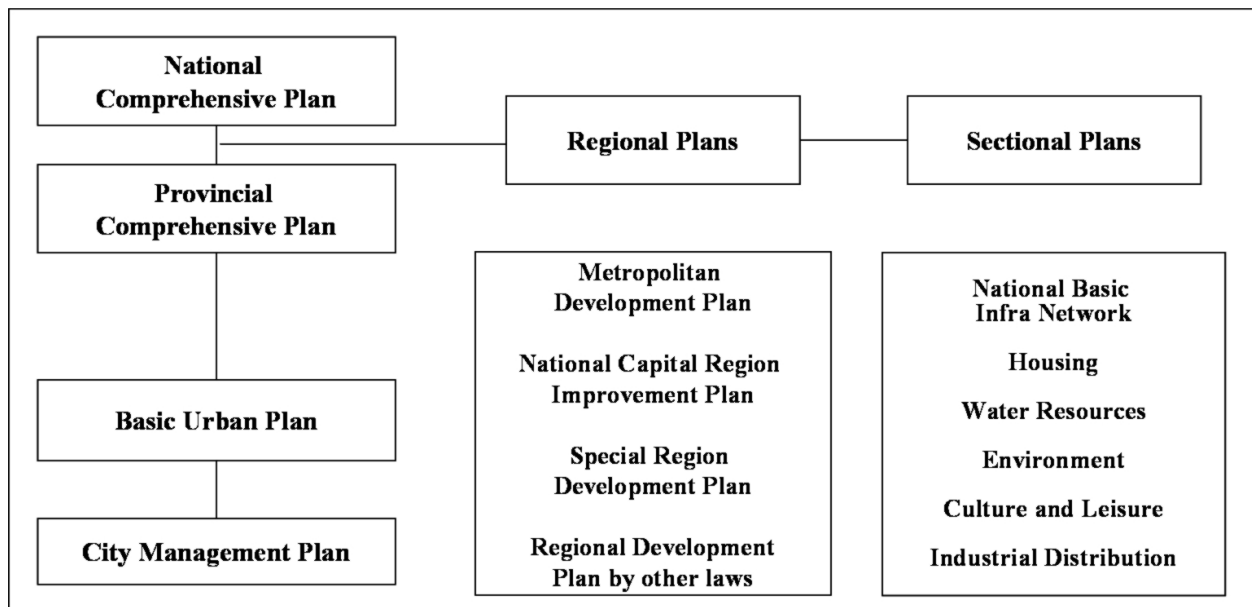


Figure 1: Urban Planning Framework

### 2.1.2 Environmental Planning

As shown in Figure 2, environmental planning of local governmental level has been established such planning system as 'National Environmental Plan - Province and City Environmental Plan - Country and Town Environmental Plan'. National environmental plan is established every 10 year period and provincial environmental plan also follows the national system. However, as described in the introduction, environmental conservation plan does not equip with any management plan, a working plan, which means that the plan contains only declaratory meaning.

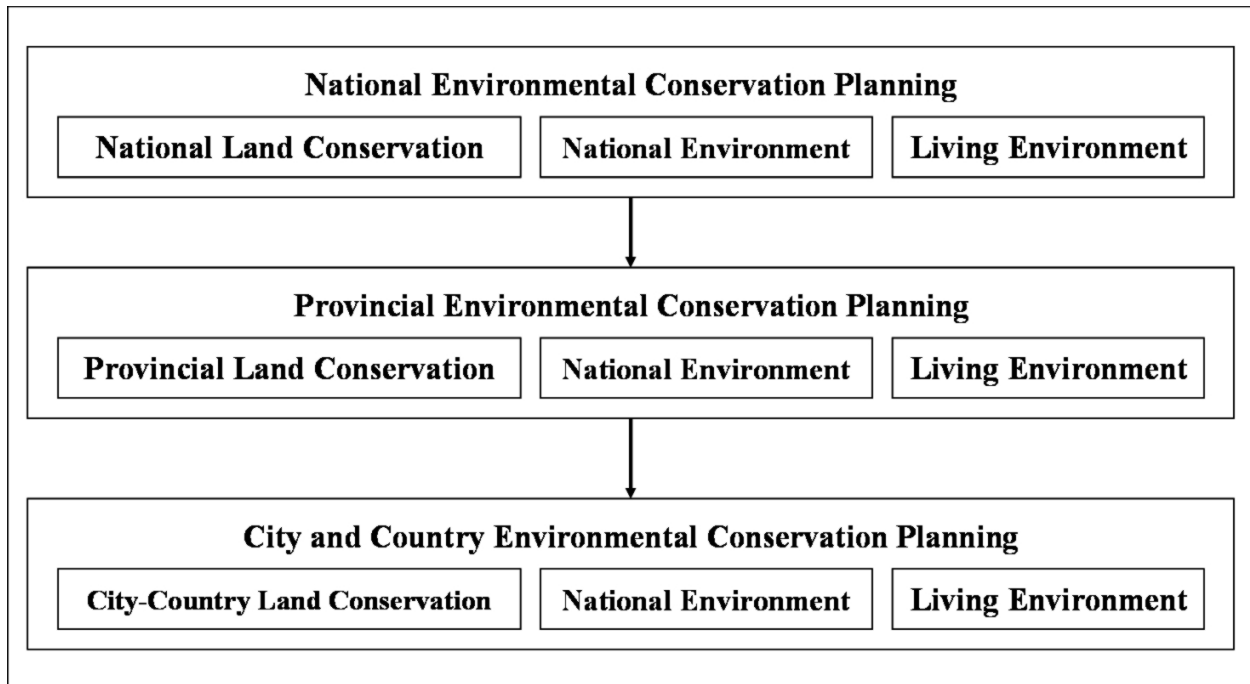


Figure 2: Environmental Planning Framework

### 2.1.3 Urban Basic Plan of Cheongju City

Based on the above framework, as shown on the Table 1, the Urban Basic Plan of Cheongju city was established toward post 20 years in 2001. The plan intends to accomplish environment-friendly development and to keep the principle of public participation during the process of implementing urban planning. The plan included following sectors: 1) Forecasting the future of Cheongju City; and 2) Providing sectoral plans and action programs related to land use, infrastructure, environment and scenery, and socio-economy in accordance with the forecasted future.

2021 Urban Basic Plan	
Sectors	Policies
Cheongju City and its Future	Objectives and indices
	Urban Spatial Structure
	Setting Living Zones and Population Distribution
Land Use and Urban Infrastructure Facilities	Land Use Policies
	Transportation and Logistics Policies
	Public Facilities and Key Projects Policies
	Leisure and Open Space Policies
Environment and Scenary	Housing Environmental Policies
	Environmental Conservation (Air, Water Quality, Waterworks, Sewer, Wastes, and Energy)
	Scenary and Aesthetic Policies
Socio-Economy	Information and Communication Policies
	Industrial Development Policies, Business Distribution, Tourism, Agricultural Industry
	Social Development Policies : Education, Social Welfare, Health, Medicine, Culture and Physical Exercise
	Urban Disaster Prevention Plan
	Financial Plan

Table 1: Urban Basic Plan of 2021 Cheongju

### 2.1.4 Environmental Conservation Comprehensive Plan of Cheongju City

In 2000, Cheongju City established '21C Environmental Conservation Comprehensive Plan for Cheongju City' as one of local agenda 21 projects. The contents of the plan, as shown in Table 2, cover such categories as the conception of environmental conservation, the analysis of current environmental status of the region, environmental conservation comprehensive plan, and action projects. Among the categories, environmental conservation comprehensive plan is divided into natural environment, air, noise and vibration, water quality and water resources, and energy and wastes.

### 2.2 Identification of Problems

The problems identified between urban planning and environmental planning can be described as follows: 1) in view of law and/or institutions, urban basic plan equips with urban management plan following the urban basic plan while environmental planning with none of action plan, an environmental conservation management plan. This is why there exist a weak political will regarding environmental conservation plan, and why environmental planning is generally regarded as a part of urban basic plan; 2) there can be possible limitations due to lack of environment-related information (land ecology), so that during the process of development plan making it is very difficult to consider ecological conditions and green network; 3) conflicts between development and conservation plan can happen because of lack of institutional system

for harmony and discussion; 4) it is difficult to accomplish 'ante-planning, post-development' principle because environmental planning of city level does not have any system to connect urban planning; and 5) it is shown that the environmental conservation plan urban basic plan covers deals with similar contents to those environmental conservation plan does as shown in Table 1 and Table 2, which means the environmental conservation plan covers more specific contents than those urban basic plan covers. Among five problems, the fifth problem has been resulted from the fact that systems of both plans are not fully maintained and arranged, which results in such problems as incomplete legal priority setting and inefficiency.

<b>21C Environmental Conservation Comprehensive Plan for Cheongju City</b>	
<b>Conception of Environmental Conservation</b>	<b>Necessity and Objectives of the Plan</b>
	<b>Background, Research Methods for Each Section</b>
	<b>Specific Categories and Policy Objectives</b>
<b>Current Status Analysis of the Region</b>	<b>Natural Environment: location, geology, climate, soil type</b>
	<b>Social Environment: population distribution, population structure and its change</b>
	<b>Economic Environment: industrial structure, economic size, energy supply and demand structure</b>
	<b>Urban Environment: urban development and change, land use, transportation, education, public health and medicine, and cultural properties</b>
	<b>Environmental Infrastructure: waterworks, sewage and wastewater treatment facilities, and collective energy supply facilities</b>
<b>Comprehensive Plan for Environmental Conservation</b>	<b>Natural Environment: natural ecology conservation and restoration plan, soil contamination reduction plan, and efficient management of ecology</b>
	<b>Air Quality: air pollution reduction plan</b>
	<b>Noise and Vibration: noise reduction plan, vibration reduction plan</b>
	<b>Water Quality and Water Resources: water quality conservation plan, water pollution reduction plan, efficient management plan of waterworks, groundwater management plan</b>
	<b>Energy and Waste: efficient management plan of energy resources, recycle plan, waste management plan, comprehensive waste treatment plan</b>
<b>Project promotion and Financial Plan</b>	<b>Project promotion strategies, Financial plan</b>

Table 2: Environmental Conservation Comprehensive Plan for Cheongju City Toward 21C

### 2.3 Necessity and Possibility to Connect and Integrate Urban Basic Plan and Environmental Conservation Plan

In Korea, based on Urban Planning Law (clause 2 of Section 10), each local government should establish urban basic plan every 20 years. The plan has a serious affect on several urban planning projects and environmental conservation, because the current established plan easily becomes development-oriented and does not have any institutional connections between urban basic plan and environmental conservation plan as discussed above. And also, the urban basic plan usually does not consider agricultural area as a region to be planned even though there exist several

regions which contain simultaneously both urban and agricultural characteristics within a certain city through integrative adjustment of political regions. Thus, it is very necessary to establish a basic plan which covers both urban and agricultural regions and considers environmental capacity of the region without economic inefficiency and environmental destruction. And also, in terms of institutional strengthening of interrelationship between two plans, it is necessary to find the strategies to connect and integrate them while satisfying fundamental objectives of both plans.

It is possible to adopt a paradigm of sustainable development as an alternative to connect and integrate urban planning and environmental planning, because when you plan a city, sustainable development considers a city as a complex of economy, society, and environment without compromising the capacity of the future generations to satisfy their own needs. Thus, based on the paradigm of sustainable development which provides balanced urban development and integrated planning, the raised problems can be solved through institutional complement and/or improvement. To complement institutions, it is necessary to adopt the characteristics of the already established planning. Institutional improvement means the introduction of institutions through enacting laws and ordinances aimed at sustainable development being integrated under both national and local level.

### **3 Understanding Sustainable Urban Development**

#### **3.1 Sustainable Development**

Sustainable development is based on 'Agenda 21' which was adopted by the Rio summit in 1992, meaning the process to make four categories (resource use, investment direction, technology development, and institutional change) be harmonized with each other. As shown in 'Caring for the Earth', the sustainable development could be accomplished within the environmental capacity of ecology on the Earth.

Sustainable development includes three categories: ecology, society, and economy. Sustainable development can be described in passive and active ways. The former tries to harmonize growth with conservation through strengthening environmental regulations and/or increasing consideration regarding recycling. The latter intends to develop a city within marginal environmental capacity so that the sustainable development aims at 'environmental creation' which increases the current capacity of environment.

#### **3.2 Paradigms and Principles of Sustainable Urban Development**

To acquire sustainable urban development, it is important to accept paradigm shift as follows: 1) escape from command and control to voluntary approach in environmental management, 2) change from linear system to cyclical one, which ensures natural resources conservation, decreased use of irresolvable artificial products, preservation of biological diversity in ecosystem,

and the promotion of metabolism which reduces energy uses satisfying human needs, 3) decision making paradigm shift from representative organ to direct participation of diverse stakeholders, 4) distribution paradigm shift from efficiency to social equity or justice, and 5) life style change from solitary existence to coexistence, which induces communications, cooperation between stakeholders.

The conditions sustainable development takes on are six fold (WCED): 1) establishment of political system ensuring citizen's participation in the process of policy decision making, 2) economic system that creates benefits and technologies based on self-sufficient bases, 3) production system that respects to preserve ecological resources of nature, 4) technological system that seek after new solutions, 5) transfer of international trade and financing promoting sustainable development on Earth, and 6) administrative system that equips with flexible and self-modifiable functions. Thus, we can elicit such principles as reflecting regional characteristics, providing reasonable standards for the participants in sustainable urban development, ensuring sustainable development under regional level, and securing practice possibility of specific actions by stakeholders based on principles. For example, Seoul City, Korea holds five principles for sustainable development: 1) principle of future, 2) principle of nature, 3) principle of participation, 4) principle of equity, and 5) principle of self-sufficiency.

### 3.3 Processes of Sustainable Urban Development

The processes of sustainable urban development can be described as shown in Figure 3. The processes are six fold: setting visions, setting principles and guides, setting missions and distributing roles, establishing action plans, performance, and evaluation.

<b>Setting Visions</b>	<b>Vision should describe clear features of regional future condensing wills of regional members with plain language.</b>
↓	
<b>Setting Principles and Guides</b>	<b>Principles deal with guides to accomplish visions set. The guides include specific role distribution of each stakeholder: local government, businesses, NGOs, and citizens.</b>
↓	
<b>Setting Missions and Distributing Roles</b>	<b>Illustrate clear roles of the departments of local governments: housing, transportation, economy, and environment, considering principles set.</b>
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<b>Action Plans</b>	<b>Action plans include development guidelines, budget, comprehensive planning, setting district, land uses, SWOT analysis, and strategies to ensure communication route between community members.</b>
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<b>Performance</b>	<b>Both governmental and local sectors put energy on performance according to action plans.</b>
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<b>Evaluation</b>	<b>Building effective indicators, which help users understand complex system, to evaluate current progress status, directions, and disparities.</b>
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Figure 3: Processes of Sustainable Urban Development



## 4 Alternatives to Connect and Integrate Urban Basic Plan and Environmental Planning Through Sustainable Development

### 4.1 Alternatives to Connect Urban Basic Plan and Environmental Plan

To connect urban basic plan and environmental conservation plan, as shown in Figure 4, it is necessary to perform system improvement under national frame. Thus, it is desirable to connect national planning and environmental planning according to spatial units under national level, to build connections between urban basic plan and environmental plan within the frame of the revised plan under local level.

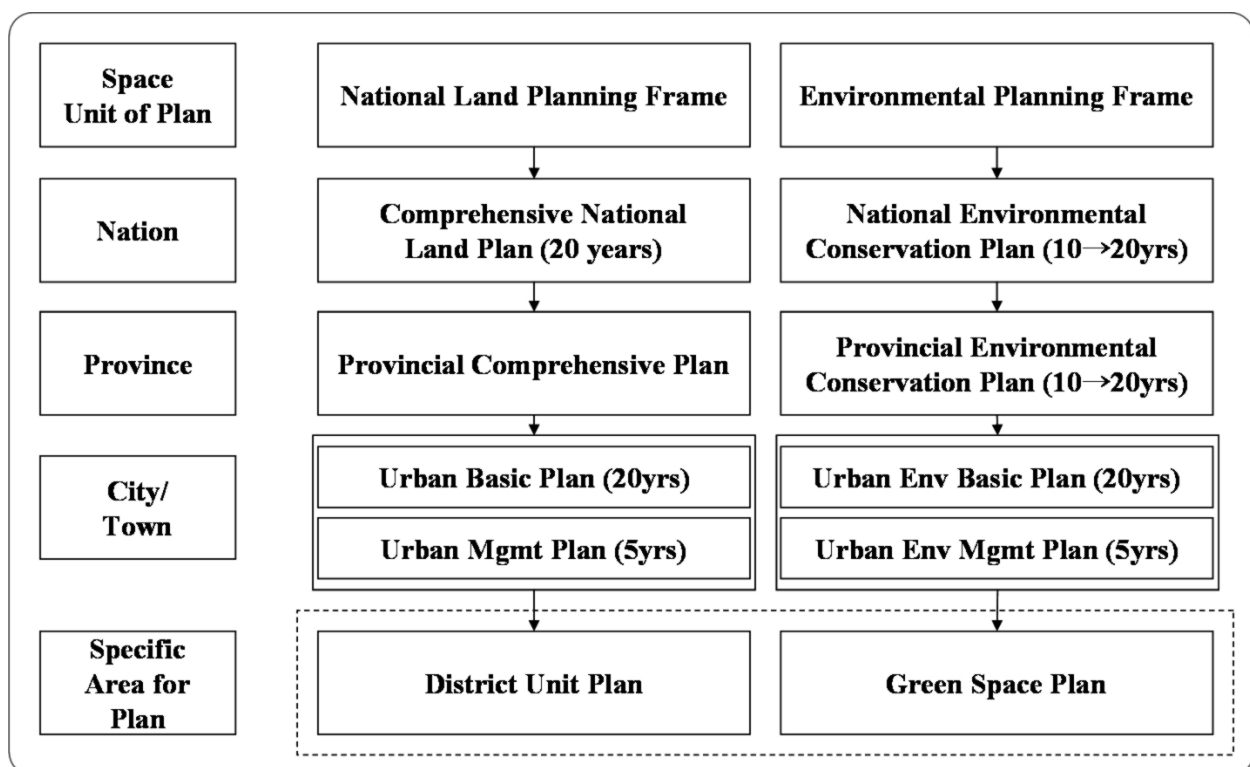


Figure 4: Structure of Connecting Urban Plan and Environmental Plan

To connect the above two plans, this study suggests the following alternatives. First, establishment period of the two plans should be made in 20 years as shown in Figure 4. Plans of provincial level should be established in 20 years' cycle following the one of national level, especially provincial environmental conservation plan. As described in Figure 4, cycle of urban basic plan and urban environmental basic plan making should be same with each other. Even management plans of both plans should follow their basic plans. During the survey stage, it is necessary to integrate survey categories according to the characteristics of survey lists. And during the establishment period, it is desirable for both urban planners and environmental planners to enhance connection and cooperation between them.

#### 4.2 Strategies to Integrate Urban Planning and Environmental Planning

To integrate urban planning and environmental planning, it is necessary to establish a sustainable urban basic plan which deals with both urban planning and environmental planning with institutional enhancement. Thus in terms of institutional enhancement under national level, to integrate comprehensive national land plan and comprehensive national environmental conservation plan it is necessary to establish a law regarding sustainable urban development on which national sustainable development plan can be based. Also under local level, to integrate urban basic plan and environmental conservation plan it is necessary to establish an ordinance regarding sustainable urban development on which sustainable urban development plan can be based. Figure 5 shows the process to integrate urban planning and environmental planning.

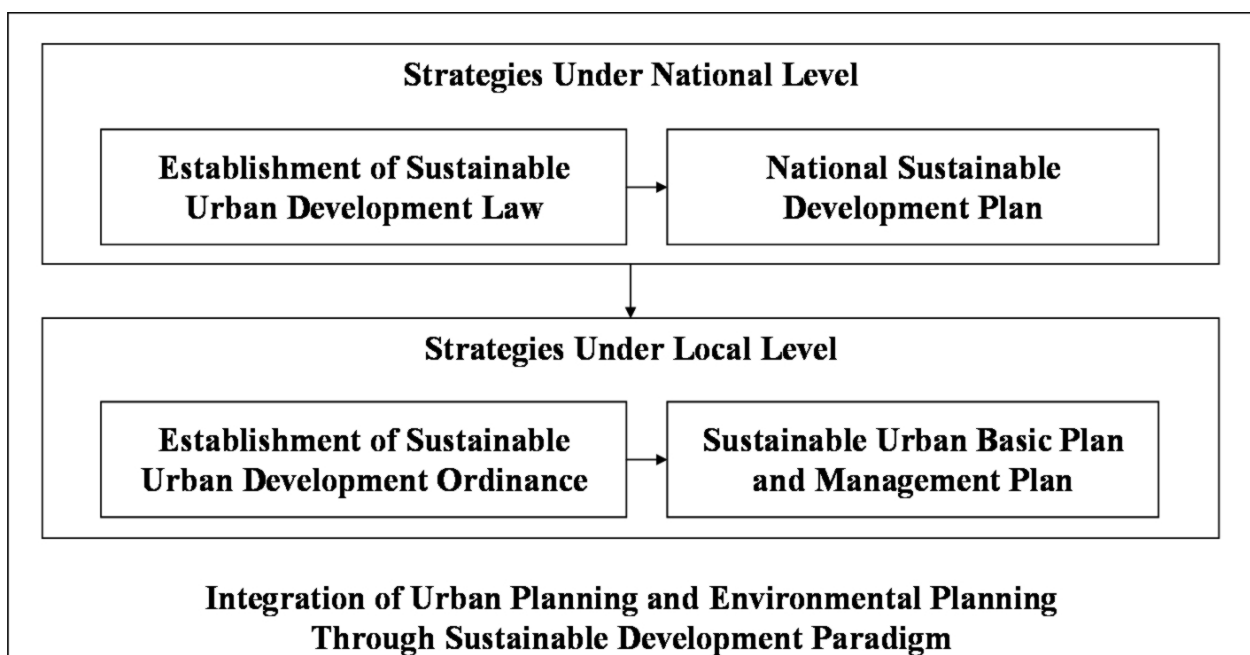


Figure 5: Strategies to Integrate Urban Planning and Environmental Planning Through Sustainable Development Paradigm

#### 4.3 Establishment of Sustainable Urban Basic Plan

Sustainable urban basic plan should be a comprehensive one which sets ideal future of a certain region and provides strategic action plan to accomplish sustainable development. Basic idea of the plan should employ the national vision of sustainable development on which urban basic plan (comprehensive regional plan) should be based. As shown in Figure 6, based on the idea of connection, the system of basic conception-basic policies-strategies under national level plan should be same with the one under local level. Especially, sustainable urban development plan is composed of environmental conservation plan as one of sectoral basic plans.

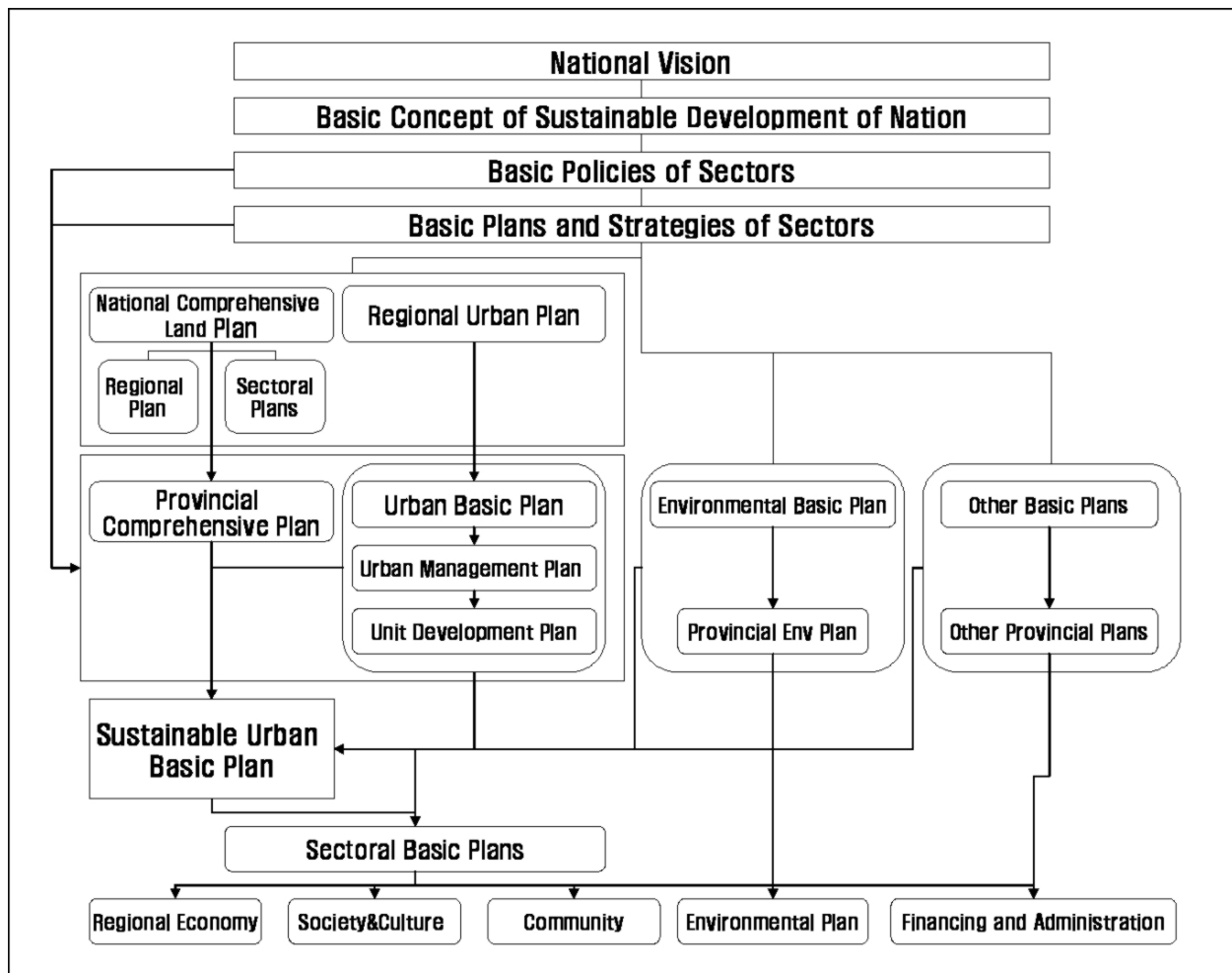


Figure 6: A Connection System of Sustainable Development Plans Under National and Local Level

In the following, this study suggests principles of establishing sustainable urban basic plan: 1) the plan should be creative and flexible based on the reasonable future estimation referring to the results of fundamental investigation according to sectors, 2) the plan by each unit city should be established by accepting the plans in superior position and considering the plans in inferior position, 3) the plan should be comprehensive including economy, society, environmental conservation, culture, and administration and financing, 4) the plan should intend to develop an energy-saving society using land, water, and energy as limited resources with minimum and Efficiency, and 5) the plan should be established correlated with each plan and be accomplishable through employing feed back system between sectoral plans.

The contents of sustainable urban basic plan consist of, as shown in Figure 7, economy, society, health, natural environment, industry, education, etc.

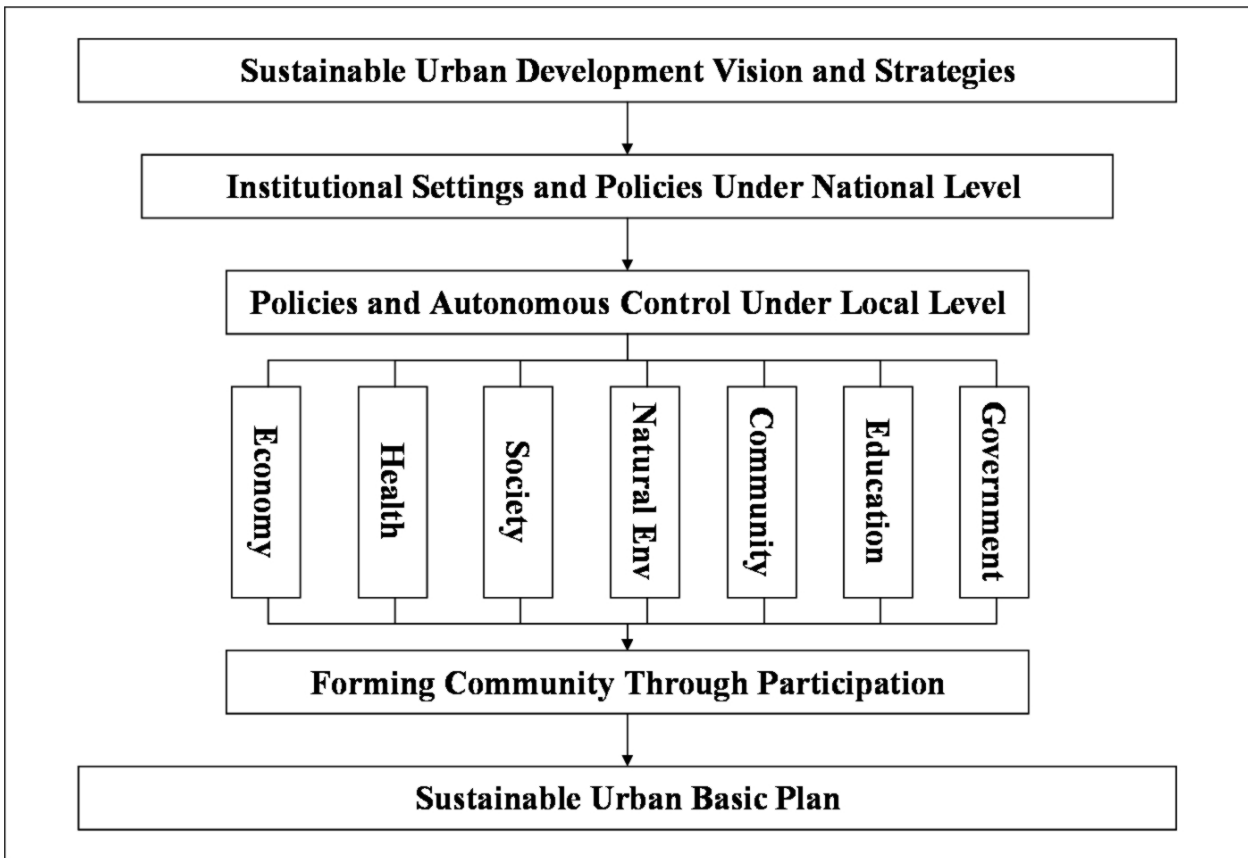


Figure 7: The Contents of Sustainable Urban Basic Plan

Sustainable urban basic plan is usually established based on the discussion and participation of stakeholders including urban planning professionals, environmental planning professionals, NGOs, residents, public officials, etc. Also, once the plan is established, it is desirable to check whether the objectives of the plan be accomplished, whether the process be participatory, and whether the principles set be kept through monitoring and evaluation. The evaluation and monitoring should be performed through life cycle from the early stage to five years after the action plans are made as shown in Figure 8.

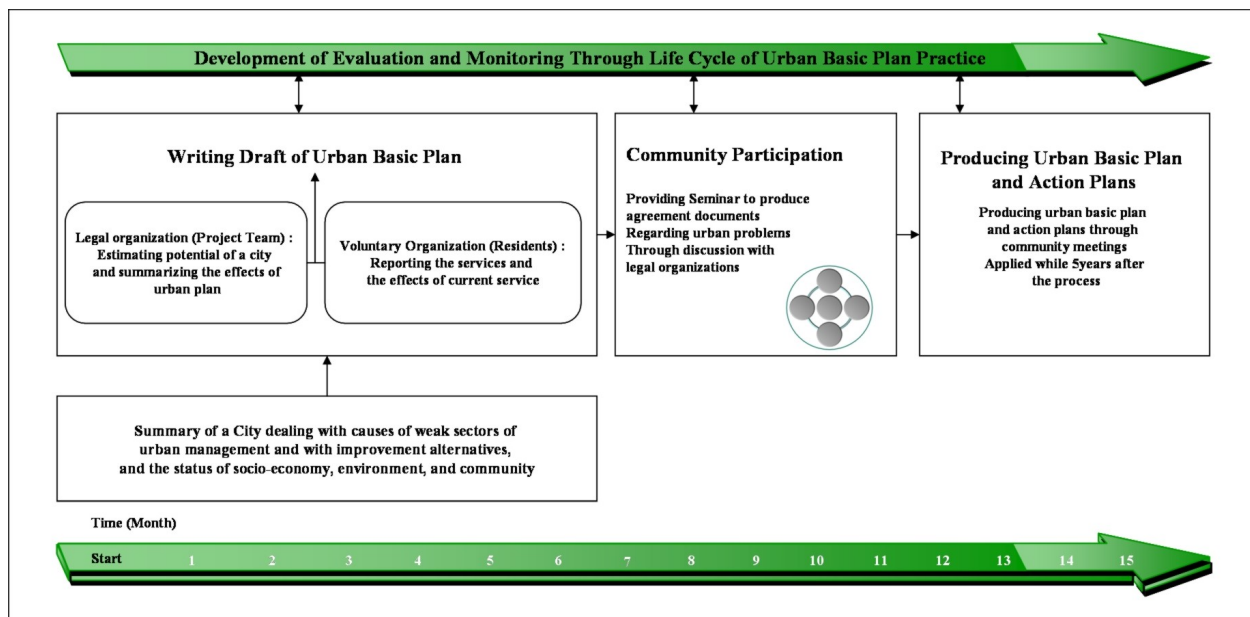


Figure 8: Evaluation and Monitoring System of Sustainable Urban Basic Plan Establishment

## 5 Conclusion

This study has intended to suggest the alternatives to connect and integrate urban planning and environmental planning through sustainable development to solve the problems of duplication and inefficiency when performing urban and environmental planning practice. This study has identified the current statuses and problems of the above plans, formed paradigms of sustainable development, and suggested institutional improvement and the system to connect and integrate urban planning and environmental planning. Sustainable development as a basis of connection and integration can provide enormous backgrounds to contain economy, society, environment, and institutions in both plans. Through establishing sustainable urban development law and ordinance, it is possible to solve the problems of duplication and inefficiency during urban planning and environmental planning practitioner.

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