

Life Cycle Estimation of Emissions from Urban Districts and its Application for Urban Environmental Management

Tsuyoshi FUJITA, Taku TOKUNAGA,
& Tohru MORIOKA

The relationship between urban form and sustainability is one of the most hotly debated issued. The Compact City theory is drawing attention in the city planning in recent years. One of the purposes of its concept is to reduce various types of environmental impacts from cities, such as carbon dioxide (CO₂) and solid waste generation. These environmental impacts are caused either through urban activities or construction of urban structure. This paper focuses to identify the effects of long-term land use management strategies with environmental consciousness such as density control, weighted floor area ratio distribution, co-ordination of different land use categories, such as office and residence, hotel and so on. The long-term effects of land use management are compared with various ranges of other urban environmental policies such as building material management which includes the enhancement of ecological materials. The effects to reduce Life-Cycle environmental emissions by different urban policies are estimated in Nakanoshima West District, a downtown area of Osaka, by utilizing LCA methods for 100 years from the year of 2000.

Distribution and structure of urban green spaces in Metro Manila

Noriko MORIWAKE, Armando M. PALIJON, Kazuhiko TAKEUCHI,
Akinobu MURAKAMI & Atsushi TSUNEKAWA

We studied the distribution and structure of urban green spaces in Metro Manila, the Philippines, one of the most rapidly growing prime cities in Southeast Asia. Our field vegetation survey focused on the virtual structure and composition of species in urban green spaces.

We selected 35 sample sites from 6 different land use type: high-density residential, low-density residential, business and commercial, industrial, park and urban-rural mixture areas. We identified plant species and their heights at each sample site. In addition, we calculated the green cover ratio at each sample site from aerial photographs.

The results showed that the green cover ratios were high in low-density residential areas and parks, but low in high-density residential, business and commercial, industrial and urban-rural mixture areas. Species richness was marked in low-density residential areas, but poor in business and commercial and industrial areas. While on average, trees were relatively tall in low-density residential areas, business and commercial areas and parks, the trees in high-density residential areas and urban-rural mixture areas were relatively short. We observed distinct differences in species predominated in both types of residential areas: shade and ornamental species predominated in business and commercial areas and parks; and fruit species predominated in urban-rural mixture areas.

We consider that our results will be useful in future green space planning to improve the urban environment of Metro Manila.

Floor Area Control and Availability of public Facilities for Local Sustainable Development in the Information Age:A Comparative Study of Taipei City and Ilan Country

Te-fu Lin, Chao-yin Liu & Hung-kai Wang

This article concerns methodology of urban planning for local sustainable development in the information age in Taiwan. Progress of information technology makes local development possible to be closer to sustainable development, mainly because the rising high-tech enterprises rely much less on traditional locational conditions than on environmental amenities. Also, the information technology makes urban planning possible to handle the relations between activities, land use and amount of development by means of G. I. S techniques.

Taipei City and Ilan County are pioneers in Taiwan in trying to engage in sustainable development through planning, although they are in totally different developmental situations. Taipei is the economic center of Taiwan and has to maintain its advantages, especially in terms of human capital, in the information economy. Han has been an edge of Taipei metropolis and has to turn its lesser level of development into merits in attracting high-tech enterprises and high quality labor. Reacting to the blemishes of traditional planning practice that have failed in the control of land use activity distribution and providing enough public facilities, a new way of planning, building relations between floor area control and availability of public facilities, for both Taipei and Han is being explored. But they do it in different ways. Taipei builds such relations as criteria for development permissions and adjustments between individual permissions and the city-wide maximum amount of development, in addition to existing zoning regulations. Adding the idea of "living region" coupled with sets of public facilities, Han tries to integrate planning in urban and non-urban areas. In either case, with the help of G. I. S. technique, three-dimensional control of land use and public facility oriented development are more workable and flexible than the traditional zoning system.

Sustainable Development and DPSEI Model-The Case Study of Ulsan Metropolitan City-

Cho, Deok-Ho, Jeong, Hoi-seong & Ahn, Hee-nam

No Abstract

Study about the influence of globalization of economy on policies and strategies for the correction of regional disparity -by the comparison of national plans and industrial strategies between Japan and Thailand In the era of rapid economic growth-

Fumihiko SETA, Takashi ONISHI & Testuo KIDOKORO

From the 1980s to 1997, ASEAN countries have succeeded in achieving rapid high economic growth through the promotion of manufacturing and export-intensive industries, but at the same time many kinds of urban problems like environmental degradation or infrastructure deficiency have occurred and regional, income and racial disparities have been generated and spurred. These problems also seemed to be experienced in Japan for about 20 years of high economic growth too. Concentration of factories, infrastructure and facilities to the Pacific Belt from Tokyo to Fukuoka has resulted in industrial pollution, traffic congestion and regional disparities.

Regarding to regional disparities, the pace of urbanization and deepening of regional disparities in newly developed Asian countries is quicker than the Japanese case. Besides, globalization trend of last two decades enabled flexibility and accessibility of money, people, commodities and information that in turn affected plans and strategies. Plans and strategies, namely national land plans that defined regional disparities as one of the main problems for national structure, and specific industrial policies and strategies including promotional policies in rural areas and restrictive laws of locations in metropolitan areas, are among main factors influencing the regional disparities in these countries.

Based on the circumstance, this paper analyzes the relationship between the level of the globalization and location plans and strategies by various resources, and find out following two facts, as the affect of globalization on the progress of regional disparities.

1. National plans and industrial location strategies of Thailand during the 1980s and the 1990s tend to put less importance on the problem of regional disparities than those of Japan in the 1960s and early the 1970s when globalization was not yet proceeding.

2. The tendency to put less importance on regional disparities can be thought to follow the globalization of economies all over the world (in this paper at least in Thailand and Japan) recent years.

Applying Landscape Ecological Knowledge in Land-use Planning: Analysis System to Evaluate Habitat Connectivity in Land-use Scenarios for the Raccoon Dog in Urban Ecological Networks, Japan

Shinobu GOTO, Tohru MORIOKA & Tsuyoshi FUJITA

In order to create the sustainable city, it is necessary to develop the method of ecologically sound spatial planning and infrastructure designing which are able to reduce the impacts on the regional ecosystem. The land-use planning system based on the ecological knowledge that increases the habitat connectivity and decreases the habitat fragmentation for wildlife species is crucial. The purpose of this paper is to present the analysis system of GIS that evaluates the habitat connectivity indicated by distance and interaction among habitats in the urban ecological networks. A model to describe the movement of a selected species is developed and ecological network characteristics are measured by setting several scenarios and conservation strategies. A raccoon dog, *Nyctereutes procyonoides viverrinus*, is selected as an ecological network indicator species, distribution data in Kawachinagano City, Osaka prefecture are analyzed. The case study showed the following results: 1) a significant number of recorded raccoon dogs mainly died from traffic accidents at the intersection of the main motorways that run across the network between the woodland patches, 2) the city parks in Urbanization Promotion Area are isolated under the Promoted Urbanization scenario, 3) the ecological networks from city parks to other medium/large patches could be created by woodland creation from the diversion of farmlands in Urbanization Promotion Area.

Study on actual conditions and changes of open space in urban promotion area -A case study of Fukuoka City

HyeWon KIM , Takeshi CHISHAKI, TaiHyun LEE,
& Nobuchika HARA

The crowded land uses in urban promotion area results from the growth of residential use and expansion in the urban facilities. This trend causes the diminishment of open space. Open space must be preserved as a vital component of sustainability. To secure open space in urban promotion area, all land use plans must be designed to keep the appropriate volume of open space and should protect against irreversible loss.

In this paper, 1) the definition and the classification of open space in urban promotion districts are studied by a case study of Fukuoka City, JAPAN. 2) The present conditions of spatial distribution and the spatial changes of open space are revealed in terms of land use divisions and patterns in urban promotion area.

Regeneration of City by Community Action of Creating Agricultural Spaces-City Farms and Community Gardens in UK-

Koji ITONAGA

We must think how to reconstruct the existing city into more ecological and sustainable city. The city needs to have

the edible landscape. The city people have to be touch the nature, fresh water and fresh foods. It is important to create agricultural environments or spaces with local people in cities to change exiting cities into more sustainable and more ecological cities. This paper describes the recent movements of agricultural actions, City Farms, Community Gardens and Community Composts by local communities after researching in U.K. in 1999.

The results are as follows; (1) In U.K. the local people started some city farms to create educational, recreational and farming spaces for children in the first of the 1970's. The city farms have been managed by the local charity group. (2) The city farm groups and the community garden groups joined to make the foundation which has promoted the agricultural and environmental community activities in the city. (3) Recently we can see alternative and ecological community activities in the city called the community composting. The community composting means that a local community group makes composts for their gardening and producing vegetables from organic waste which are corrected in their community by themselves. Some city farms and some allotments have plots for making composts. (4) These community spaces are valuable in the city as the field of environmental education for children. We can learn that it is important to create these spaces through local community activities which are managed by the non-profit-organizations. In Japan we must develop the social system and city planning system which support these ecological and cooperative community farming, gardening and composting.

The Usefulness of the GILS-Fuzzy Set Approach in Evaluating the Urban Residential Environment

Jeong, Yeun-Woo & Oh, Kyu-Shik

The focus of this study was to determine the usefulness of the fuzzy set approach in evaluating the urban residential environment, in comparison to the crisp (or Boolean) approach. Particular emphasis was placed upon comparing evaluation results produced by the two methods within a geographic information system (GIS). A comparison of the evaluation results highlighted the advantages of the GIS-fuzzy set approach, which are as follows. First, it was revealed that the fuzzy set approach could reduce excessive abstraction or exaggeration in environmental phenomena. Second, in utilizing the fuzzy set approach, membership functions caused less error propagation which could have been increased through a series of environmental evaluations when the crisp approach was employed. And finally, by integrating membership functions into GIS, greater efficiency of the entire evaluation process was achieved in general.

An Alternative Approach for Detached Housing Development Sites to Meet the Changing Needs in Korean Housing Market

Kim, Hyuu-Soo, Hur, Jae-Won & Ryu, Joong-Seok

Housing policies of the Korean government during the last three decades have focused on providing small apartment housing in a large scale, which is relatively cheap and convenient, to ease chronicle housing shortage as soon as possible caused by rapid urbanization within the Seoul Metropolitan Area(SMA).

Recently, however, consumer's housing preferences are changing due to continued economic growth and further the high housing supply ratio reaching over 90%. They pay more attentions to amenity and the quality of life rather than price or convenience when they purchase new housing. As a result, more people are getting interested in detached housing. In spite of such potential demand, however, it has been criticized that the current detached housing sites failed to meet consumer's changing needs due to their inherent defects such as improper provision of infrastructures, lack of safety, high management costs and so on. It has been widely recognized that such problems were mainly caused by the uncontrolled and unplanned development of detached housing sites.

With this in mind, the paper attempts to suggest an alternative approach for more systematically planned development of detached housing sites which could meet the changing needs in the housing market.

For this purpose we will first critically review the past housing policies in Korea and explain in detail about the background of the new trend in urban housing market. And then we will identify the prime factor causing the uncontrolled development as land subdivision method. Since current system of land subdivision relies on "lot-by-lot development" which requires single lot for a single housing, there is no room for public facilities and open space.

Finally, compared with current "lot-by-lot development", an alternative approach called "block development" will be suggested. This approach is further elaborated by suggesting policy recommendations in three stages; planning and design stage, construction and sales stage, and management stage.

Sustainable Industrial Development Planning in Urban Areas From Industrial Ecology Aspect

Shiann-Far Kung, Kuo-Hui Chung & Chi-Wai Chen

Post-war industrial development in Taiwan has been greatly enhanced by its industrial land supply policies. To meet the demand of its fast expanding and frequently restructuring industry, three major types of industrial land system have evolved, and vast of industrial land has been provided. However, none of the three land supply systems has a built-in planning and management mechanism which is capable of creating ecologically sound industrial estates, in terms of the current international environmental standards. In addition, existing industrial estates have often had minimal, if not negative, relationships with their local community, the UMC and Hsinchu City Government conflict in May 2000 is just one fresh example. Facing the increasing environmental awareness of the people and the foreseeable international non-tariff trade barriers, Taiwan's industrial development is in shadow, and there is an urgent need to improve existing industrial parks and industrial estates all over the island.

It is argued in this article that existing environmental protection approaches, primarily the pipe-end checks, individual firm based examinations or environmental impact assessment, altogether are not enough to solve the problems. A new integrated industrial planning and management mechanism has to be introduced. In this aspect, the authors suggest that the concept of industrial ecology may provide urban planners a new foundation in industrial development planning. More specifically, literature pertaining to the emerging eco-industrial park idea, and experiences of its classical Kalundborg model and some of the North American cases will be examined. Based on these, two types of eco-industrial park ideas will be discussed, with respect to their applicability to Taiwan's existing industrial estate system and industrial structure.

A Comparative Study on Trends in Planning Research in Korea and Japan

Lee, Woo-Jong

The purpose of this study is to categorize the subject areas of urban and regional planning research, and based on the categorized areas, to comparatively analyze the research trends found in the articles of the Journal of Korea Planners Association and the Journal of City Planning Institute of Japan. The results are compared with those from the Journal of the American Planning Association. By so doing, this study attempts to envision the appropriate direction of research in urban and regional planning for the 21st century that marks the new millennium.

The study shows that during the ten year period, 1989-1998, among the eight major areas of research, site planning outnumbered all other subject areas in both Korea and Japan. Regional economics had the lowest proportion of articles in the Japanese journal, while in the Korean journal public administration and policy marked the lowest. Researches on planning in general, urban planning and land use had similar proportions in Korea and in Japan. Japan had a higher proportion of research on transportation and site planning, while Korea had higher proportion in regional economics. In a similar study done on the American journal, research on planning pedagogy and politics had the highest proportion. These comparative features reflect the social, economic and political conditions and the characteristics of the planning discipline in each country. From these features we can draw implications for planning research in the future.

Protection of Youth through Red-Zone Policy : Issues and Urban Planning Implications

Ryu, Joong-Seok & Yim, Chang-Ho

Flourishing adult business in major Korean cities deteriorates living environment to which the youth are very vulnerable. However, current planning legislation is not specific enough to deal with the problem of protecting youth from adult business. This paper is concerned with how to regulate adult business through land use policy. The possibility of introducing "Red-Zone", the containment of adult business within a specified zone, has been investigated. Five case studies of adult business district in Seoul were carried out and major findings in the locational characteristics are explained. Several issues regarding the protection of youth through planning legislation are discussed and finally policy implications are drawn from these case studies.

Towards Establishing the Balance of Development and Conservation for the Sustainability of Urban Expansion

Chi-Sheng Lin

In this century, there is an urgent issue of solving the pressure of urban expansion on greenfield sites or agricultural areas to provide housing land. Due to the awareness of considering sustainability and environmental conservation, urban expansion has become a debate between developments versus environmental conservation.

Taiwan has encountered this problem as well. Linkao New Town, since 1989 have received pressure strongly from the public of releasing land within agricultural or conservation areas for development. The planning authority has proposed a planning proposal of expansion. During the planning review process, there has been a request from the Urban Planning Committee of Ministry of the Interior in asking the planners to take the environmental aspects more into consideration and to resubmit the planning proposal after further review.

This paper aims to explore, examine, analyze and evaluate the expansion debate and an empirical case of Taiwan. On the basis of considering the balance between development and environmental conservation, there are suggestions proposed to assist the planners in solving current problem and also expected to extend the experiences to Japanese and Korean empirical cases. To achieve this balance, it appears in three aspects-the evaluation for the necessity of expansion, the criteria for the selection of expansion locations and the balancing approach between conservation and new development.

Urban Sustainability at Local Level ; The Case of Taejon Metropolitan City, Korea

Im, Yang-Bin & Park, Cheon-Bo

For the last decades, the city of Taejon has been in tremendous progress. As urban growth has extended the boundaries of metropolitan areas outward, the detailed district planning system has been adopted as a major tool for controlling individuals, as well as businesses, local government, and other organizations, about the progress that they are making towards achieving urban sustainability.

Planners can make sustainability a reality in their communities by incorporating sustainable development objective into their practice. The primary concern of this paper is how local government copes with reconciling the interest of development and conservation under the continuing pressure of regional development. The paper starts with describing the concepts and theories behind sustainable development. Subsequent steps comprise evaluating efforts and progress at the local levels and proposing strategies to help planners create local sustainable development programs. Includes

informative case studies of sustainable development initiatives in Taejon metropolitan city: comprehensive plan for building eco-city, a series of residential complex projects at the outskirts of Taejon city.

Urban Policy, Planning and Development in Tokyo Metropolitan area after World War II

Toshihiko NARUTO, Kazuo HARADA & Hirofumi TERANISHI

Tokyo has continued to be a big city according to postwar policies, plans and developments. This thesis is a study of the historical analysis of these. Primarily, we will categorize three trends of the postwar urban policy of Tokyo and settle some concrete policies in each trend. The analytical viewpoint in each period is based on the contexts of social background, policy, institution, planning and urban development. After analyzing these policies, we will verify the transition of the policies through the restraining of the expansion of Tokyo, the changing of the policy of the development, and the promotion of more development. We will argue the policies from the point of view of the Tokyo Metropolitan Government.

A Practical Land Use-Transport Interaction Model Considering Changes in Population and Industrial Activities

Jong Jin YOON, Yoshitaka AOYAMA, Dai NAKAGAWA,
& Ryoji MATSUNAKA

The purpose of this study is to analyze the impact of transportation improvement on a location that has undergone changes in population and industrial activity. For this purpose, we developed a land use-transport interaction model that takes into consideration new industrial establishment and bankruptcy of an industry, immigration, emigration, and residential relocation. We investigated location change of population and industrial activities after transportation improvement. As a result, we showed that transportation improvement brings about a concentration of the population to the central city. In addition, we proved that the interaction between the transportation and land use must be considered in the planning process.

A City Planning Topic: Advanced Urban Traffic Control System for Sustainable City

Wann-Ming Wey

Based on one of the topics of the main theme -"Prospect for City Planning in the 21st Century"-Creation of the New Attractiveness of the City, an advanced urban traffic control system for sustainable city is proposed in this paper. A dynamic road traffic model is applied to traffic control at an isolated intersection to determine control sequences. Developments in linear systems control theory are applied to address two continuing problems that are keys to effective road traffic system operations: road traffic models and traffic signal control. The control of an oversaturated intersection is formulated as a linear systems control problem on the basis of mathematical models. These models are utilized to develop local traffic signal control strategies under various traffic conditions. The key focus in the proposed paper is in applying efficient optimal control techniques based on linear systems control theory to solve the linear traffic models problem. Since control in over-saturated conditions need to be based on queue lengths, conventional stop-line detectors are inadequate. Currently proposed video detection schemes will help, but existing traffic control schemes are not flexible enough to use queue length and traffic arrival rate information from such sources. The real-time control scheme developed here will also focus on this issue. The control policy will produce measures of effectiveness (vehicle delay

and travel time, queue length, etc.) which can be compared with those of existing timing strategies. The short-term contribution of this research is the development of a methodology for alleviating the recurrent isolated intersection congestion caused by high transportation demand using existing technology.

Public attitudes toward sustainable transport policy in a pollution-damaged area, Nishiyodogawa in Osaka

Yasutsugu NITTA & Nobuhiko MATSUMURA

This paper aims to clarify that which transport measures would be needed in short term from the point of improving traffic and transportation environment through public awareness and attitudes in Nishiyodogawa. In conclusions, the following points have been obtained as the priority measures;

- The target of traffic volume reduction should be put on lorries running on the primary road in the center of the area.
- On the improvement of alternative transportation mode, the enlargement of cycle road network should improve cycling conditions, more than the improvement of public transport services.

Effectiveness of the Urban Growth Management Policy in Korea

Hur, Jae-Wan

The urban policy to control spatial concentration of economic activities and population into the Capital Region has been one of the most controversial issues in Korea. The central government has argued that such policy will contribute in decreasing regional inequalities between the Capital Region and the other regions, and further in curbing the population increase within the Capital Region. In the other hand, some experts have criticized that such urban policy has been the typical example of government regulations which should be abolished due to their inherent ineffectiveness and inefficiency.

With this argument in mind, the main purpose of the paper is to empirically investigate the effectiveness of the urban policy to control the spatial concentration of economic activities and population into the Capital Region in Korea.

For this purpose, a brief description will be given about the current situation of the spatial concentration into the Capital Region and the background of the urban growth management policy in Korea. And then a critical literature survey on the subject will be attempted mainly focusing on the suitability of the methodology used in the existing studies. Finally, a new approach, which can empirically investigate the effectiveness of the urban growth management policy for the Capital Region, will be proposed based on the inverted -U curve hypothesis and the logistic urban concentration curve. Furthermore an empirical test will be attempted using the regional data for the period of 1969-1995.

Diagnoses Toward Sustainable Urban Structure of Fast Growing Metropolis in Developing Country: Lessons from Multi-Centric Policy in Bangkok Metropolitan Planning

Sadatsugu NISHIURA, Tetsuo KIDOKORO, Takashi ONISHI,
& Yasuhide OKUYAMA

In the last decade, Asia has experienced unprecedented economic growth and deep depression. Particularly, Thailand has been the nucleus of this event. Bangkok still has more than 300 uncompleted buildings left. However,

there are many serious urban problems remained. We tried to see how the metropolitan urban structure has been evolving for the last decade, focusing on commercial and business agglomerations in the areas planned as subcenters in the last comprehensive plans. We also conducted hearing survey for citizens on their convenience of subcenters. We came up with three diagnoses to future Bangkok plan and urged on fast growing metropolis in developing countries the need for urban growth management.

Today's Challenges to Create Sustainable Communities and Cities in France-A Series of Attempts of Urban Renewal Operations-

Ryoko OYA

It is no exaggeration to say that there has been an extensive process of trial and error over the last 20 years from every aspect in the effort to search an urban policy in France that facilitates to provide urban vitality. The distinguishing characteristic of French urban revitalization projects has been from the earlier stage getting rid of being a physical plan and establishing a position as a comprehensive plan that includes social, cultural, economic, and physical aspects at the same time. It would be apt to say that the choice of such an urban policy has as its terminus today's urban policy that was a response to the harsh social environments in France of the time.

Sustainable cities require a vitality to enable their continued existence while dealing successfully with all kind of conditions. In France, it took 20 years to establish a system for cities capable to respond to all social conditions in all regions and areas at all levels. The current direction of French urban policy is one that guarantees the flexibility to choose integration or individuality. It is likely that in the future, local governments will have more capability and competence to seek at their own discretion their own urban form and to formulate and implement their policy.

There are two objectives of this paper. One is to seize the developing processes of French urban improvement projects from the time of le Développement Social des Quartiers (DSQ) which is considered to be an origin of those projects. Another is to observe the way those projects have been effected by French decentralization policy.