On the Edge: Shaping the Future of Peri-urban East Asia

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May 2002

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Acknowledgments

The author wishes to acknowledge a Research Preparation Grant from DECG, the research arm of the World Bank, which made this work possible. The strong support of Thomas Zearley of the World Bank's East Asian Urban and Infrastructure Division (EASUR) in conducting this research is very much appreciated. Comments on an earlier draft by Stanford colleagues Thomas Rohlen and James Raphael were most helpful. Research assistance in the conduct of the research by Larissa Muller of the University of California, Berkeley, is gratefully acknowledged. Particular thanks is extended to research colleagues Utis Kaothien and Kamonthien Lookruk of the National Economic and Social Development Board in Thailand, Cai Jianming and Pang Xiaomin of the Beijing Geography Institute in China, and Chris Pablo of the World Bank in the Philippines.

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Introduction

The term peri-urbanization refers to a process in which rural areas located on the outskirts of established cities become more urban in character, in physical, economic, and social terms, often in piecemeal fashion. Peri-urban development usually involves rapid social change as small agricultural communities are forced to adjust to an urban or industrial way of life in a very short time. High levels of migration are an important driver of social change. Rapid environmental deterioration; large-scale, often haphazard, land conversion; and infrastructure backlogs are major policy challenges associated with peri-urbanizing regions. Typically, peri-urbanization is stimulated by an infusion of new investment, generally from outside the local region in question, including foreign direct investment (FDI).

In spatial terms, Rakodi (1998, as quoted in Adell 1999) defines peri-urban areas as:

> …the transition zone between fully urbanised land in cities and areas in predominantly agricultural use. It is characterised by mixed land uses and indeterminate inner and outer boundaries, and typically is split between a number of administrative areas.

The peri-urban zone begins just beyond the contiguous built-up urban area and sometimes extends as far as 150 km from the core city, or as in the Chinese case as far as 300 km. The land that can be characterized as peri-urban shifts over time as cities, and the transition zone itself, expand outward. What frequently results is a constantly changing mosaic of both traditional and modern land use. Peri-urbanization does not necessarily result in an end state that resembles conventional urban or suburban communities. Because so much land is involved, the strength of drivers of peri-urbanization may decline in some areas (e.g., FDI in

manufacturing or rural population pressures), and effective land use guidance systems are virtually nonexistent in many developing East Asian countries, it appears that a new uneasy equilibrium that is neither totally urban nor suburban will result in many cases.

In East Asia the magnitude and impact of the phenomenon is, and will be, more important than in any other world region.[1] It is estimated that the population of peri-urban areas in East Asia will increase by approximately 200 million people over the next twenty-five years, accounting for 40 percent of urban population growth in that region. For example, 53 percent of demographic growth in the Bangkok extended urban region over the next twenty years is forecast to occur outside the city proper (the Bangkok Metropolitan Administration area), while the equivalent indicator for the Jakarta extended urban region is 70 percent.[2] Chinese peri-urban forecasts are less developed. However, it is expected that peri-urbanization will account for at least 40 percent of future urban population growth in service-oriented extended urban regions (EURs) such as Beijing, Shanghai, and Hangzhou, and over 60 percent of future urban population growth in more industrial cities such as Chongqing, Chengdu, and Ningbo.

Although such numbers are attention-catching in themselves, the actual importance of the process in East Asia, in terms of local, national, and global impacts, is even more significant than implied by the demographics. Because most large manufacturing enterprises now locate in peri-urban areas, these regions will continue to attract much, if not most, of the FDI flowing to the East Asian region, along with considerable complementary domestic investment. Peri-urban development almost always involves wrenching social adjustment as small agricultural communities are forced into an industrial way of life in a short time. As well, large-scale in-migration of young people, usually from poor regions, creates enormous demand, and expectations, for community and social services. Environmental stresses in peri-urban areas can be significant, related to the spread nature of peri-urban settlement, pollution from a variety of industrial and residential sources, as well as motorization; and inadequate public-sector financial resources to cope with the rapid development. Many problems are exacerbated by the spatially fragmented nature of local government in these peri-urban areas,[3] along with the low capacity of local public institutions.

In sum, this paper, and the larger project of which it is a part,[4] targets an important but largely ignored phenomenon that is closely tied to the challenges of governance and local capacity building in East Asia. A large portion of the economic and social change under way in East Asia today is occurring in peri-urban areas beyond core cities, and even their suburbs. The stakes involved in this type of urbanization are high. In many places, peri-urbanization will affect the future shape of society, the sustainability of economic development, and the environment of cities. The potential for conflict, however, is also high. These are areas where global-domestic economic interests, national-local political forces, and urban-rural constituencies mingle and often collide. The outcome of peri-urban growth can be very problematic if local circumstances are not well managed. Simply speaking, peri-urban areas are where the forces of globalization and localization intersect.

Surprisingly, very little has been written specifically about East Asian peri-urban regions. There has been more study of peri-urbanization in North America, South Asia, Latin America, and Africa than in East Asia.[5] There is not a single comparative examination of peri-urban growth within or among countries in East Asia. Similarly, there has been no work tracking the evolution of East Asian peri-urban areas over time.[6] And importantly, policy analysis

directed at the problems, and challenges, raised by peri-urbanization is rare. Absent an empirical foundation, policy formulation and analysis with respect to peri-urban issues have been haphazard at best.

Objectives

A prime purpose of this monograph is to summarize current understanding of peri-urbanization processes in developing countries of East Asia. Exploratory thinking is put forward prompted by the three questions that follow:

(i) What are the characteristics of peri-urbanization in developing East Asia? What variations in the peri-urbanization process (policies, responses, outcomes) are observable within developing East Asia? What might account for this variation, e.g., contemporary and historical public policies (agency of national and local institutions), different investment mixes (sectoral, source countries), national and sub-national sociocultural characteristics?

(ii) What is the future of current peri-urban areas in developing East Asia? Given increased globalization, manifest in part by increased competition for FDI (and recent rapid shifts in geographic patterns of FDI in East Asia) and export markets, will these areas become more or less strategic to national economic development? Will the increased importance of the service sector in East Asian urban regions, sometimes coupled with declines in manufacturing investment, "prematurely" disrupt peri-urban development trajectories in some urban regions of East Asia?

(iii) In the context of questions (i) and (ii), what policies, and other forms of intervention, offer promise in addressing the unique issues, challenges, and opportunities that peri-urban areas characteristically face?

Below, peri-urbanization is described in terms of characteristics and drivers. Then, based on three case studies of peri-urbanization in East Asia currently, commonalities and differences in peri-urbanization in East Asia are interpreted and discussed, from a governance perspective. Initial policy implications of the analysis, intended to prompt future work, are then put forward.

Study Areas

The analysis that follows is the product of reconnaissance-level review of peri-urbanization around a number of large East Asian cities,[7] plus initial findings from three pilot study areas, namely the Eastern Seaboard (ESB) area of Thailand, southeast of Bangkok;[8] Cavite and Laguna provinces immediately south of the National Capital Region (NCR) of Manila; and the Ningbo-Hangzhou corridor of Zhejiang Province in China. These are three of the most dynamic manufacturing agglomerations in developing East Asia. Furthermore, a significant advantage from a research point of view, all four regions have experienced at least twenty years of peri-urbanization.

Peri-urbanization: What Is It? What Drives It?

Definition

Peri-urbanization cannot be defined in static terms. However, to avoid being waylaid by lack of a concrete definition, we have operationally defined an area where peri-urbanization is under way, in the East Asian context, as one where (i) employment in manufacturing is more than 20 percent of the region's labor force and rising, and (ii) employment in the primary sector (agriculture, fisheries) is more than 20 percent of the labor force but declining.

Process

Peri-urbanization is better defined as a process under way. Key characteristics of this process include:

(i) Changing local economic structure, encompassing a shift from an agriculturally based to a manufacturing-dominated economy.[9]

(ii) Changing employment structure, shifting from agriculture to manufacturing.

(iii) Rapid population growth and urbanization, a phenomenon often not captured in official data because the populations of peri-urban regions tend to be significantly undercounted.

(iv) Changing spatial development patterns and rising land costs. Peri-urban areas are characterized by patchwork development and mixed land use, with large amounts of land still in agricultural use. The influx of investment and land speculation sends land costs skyrocketing.

Drivers

What are the drivers of peri-urbanization in East Asia?

Foreign direct investment in manufacturing is often the trigger that sets off peri-urbanization in the vicinity of large East Asian cities. (In the Chinese case, domestic investment often plays a significant, but largely similar, propulsive role, especially in cases not involving high-level [nationally designated] Special Economic Zones.) Large-scale investment in property development (both domestic and FDI) also plays a role, often following investment in manufacturing, as well as international portfolio investment that provides domestic companies with equity. On-lending by domestic banks of funds from international financial institutions (in decline since the East Asian financial crisis of 1997), plus lending based on domestic savings, frequently funds a mutually reinforcing process of property development and motorization.[10]

FDI in manufacturing is chasing lower production costs, often sensitive to currency exchange rates, in particular value-priced labor.[11] It is not the absolute cost of the labor that is key, but its productivity, giving China competitive advantage in many manufacturing activities. Access to markets also plays a role, particularly in the Chinese case (but also, to a lesser degree, in Indonesia), where large sub-national markets exist. But why does this investment flow to peri-urbanizing areas, rather than existing suburbs, regional (secondary) cities, etc.? Primarily because modern manufacturing, utilizing just-in-time production processes, re-

quires large perimeter single-story structures that occupy large land areas, but at the same time relatively easy access to a major city offering higher order private (producer) and public (government) services.

The need for large land plots is reinforced and strengthened by the fact that both locators (investors) and governments usually prefer manufacturing firms to be grouped in industrial estates. From the point of view of investors, the perceived advantage is that industrial estate management can act as an intermediary (or perhaps more accurately a *disintermediary* because of the buffer created between foreign firms and local governments) in dealing with local government officials and service providers. Second, industrial estates enable suppliers to locate nearby, within the same complex, or in nearby industrial estates. Governments encourage, and sometimes require, firms to locate in industrial estates because negative environmental impacts are lessened, primarily related to the higher quality environmental infrastructure and easier environmental enforcement usually associated with industrial estate-based industry.[12] Furthermore, the high degree of self-sufficiency of these complexes reduces demands on governments, particularly local governments, for certain services, e.g., transportation, health care. Domestic small and medium sized enterprises (SMEs) that act as suppliers to multinational corporations (MNCs) and lead domestic enterprises, plus international parts suppliers that have followed home country MNCs, reinforce dynamics set off by lead multinational firms, often locating nearby either in industrial estates or as freestanding entities.

But why does peri-urban development tend to be found in the vicinity of large cities—but as noted, beyond suburbia, in many cases a significant distance beyond the edge of the built-up area of a city? (The vast majority of FDI flowing to East Asian countries "lands" within 200 kilometers of the largest cities; for example, in the case of the Thailand, over 90 percent of FDI flows to the Extended Bangkok Region.) In part, this situation is explained by the fact that large cities in East Asia tend to be located in coastal areas, usually estuaries, and contemporary manufacturing needs access to large state-of-the-art deep-sea container ports. (The development of significant manufacturing capacity in interior Chinese urban areas, such as in the Chengdu and Chongqing extended urban regions, represent an exception—the large market in interior China, as well as historical factors, explain the difference.)[13] However, the main explanation is that investors require relatively easy access (about 2.5 hours or less one-way by vehicle) to a core city that offers high-level business (producer) and personal services, and access to major government decision-makers.[14] EURs that include peri-urban areas should not be confused with commutersheds. The vast majority of labor in East Asian peri-urban areas, including highly skilled technical and management employees, do not commute to the core city on a daily basis. (Many East Asian extended urban regions are simply too large for daily commuting to the core, especially given the status of transportation systems in most developing country extended urban regions.)[15] Unfortunately, there is little reliable information indicating the extent to which peri-urban firms are economically linked to firms in the urban core (directly or indirectly).[16] However, it is clear that peri-urban development, when it is FDI driven, is characterized by significant outward linkages (to other countries, particularly global and regional headquarters) in terms of decision-making, purchasing of producer services, etc.

A second driver of East Asian peri-urbanization is public policy. Public policies in support of peri-urbanization vary among East Asian countries and over time. For example, the Philippines lacks a strong public-policy commitment to peri-urban development, while Thailand strongly promoted and coordinated the development of the Eastern Seaboard in the 1980s

and early 1990s. China is now moving rapidly in the direction of explicit recognition and support to peri-urban development, as reflected in China's tenth national development plan, which supports accelerated urbanization, which came into effect in 2001.[17] Malaysia has put forward, and is implementing, a comprehensive plan for development of a peri-urban multimedia corridor south of Kuala Lumpur, interesting both for its comprehensiveness which includes residential, public institutional, and aviation development as well as its support to, and promotion of, information-technology-oriented industrial and research complexes.[18]

Public policies in support of peri-urbanization, which necessarily involve large-scale capital spending and thus are potentially politically sensitive, are sometimes justified as a means to decentralize development away from large cities. In some cases, e.g., the Bangkok extended urban region and many Chinese cities, particularly Shanghai, the policy justification may go even further, being touted as a means to deindustrialize core cities. Whether justified in terms of physical and demographic decentralization or more strongly in terms of deindustrialization of the core city, the underlying rationale is that peri-urbanization will improve the livability of core cities through reduction of truck traffic, pollution, reduced risk of large-scale industrial accidents, etc. However, the core rationale is the expected economic growth and employment creation from increased economic output and competitiveness associated with peri-urbanization.

Public policy support for peri-urbanization usually includes the provision of large-scale public infrastructure, particularly ports, highways, rail links, telecommunication facilities, water reservoirs, container handling facilities, and sometimes airports. These infrastructure investments, usually delivered by national governments, either through line agencies or state enterprises, are often funded through international borrowing, e.g., from the Japan Bank for International Cooperation (JBIC).[19,20,21] In addition to large-scale capital expenditure on infrastructure, industrial location incentive packages are a usual component of the public policy package. These are usually in the form of tariff and corporate tax incentives to investors for a specified period of time, subject to certain conditions, usually including a requirement that a minimum percentage of output be exported. (Sometimes such incentives are tied to specific industries; sometimes incentives are tied to use of clean technologies, location in industrial estates, etc.) However, World Trade Organization guidelines are beginning to limit the scope of such incentives, unless a sub-national region's economy is significantly poorer than the national norm—a condition that peri-urban regions can not meet. The peri-urban public policy package almost always includes an immigration component to enable expatriates to work as high-level managerial and technical staff in the industries attracted to peri-urbanizing areas. What is striking about peri-urbanization public policy investment packages is often the lack of investment in social facilities, community building, and environmental infrastructure. For example, about 88 percent of cumulative public investment in the ESB (to 1999) has been utilized for "production support infrastructure."[22] Frequently, high-quality regional plans will be developed for peri-urban areas by national governments (often involving international development agencies and consulting firms) that include proposals for quality communities, including new towns. However, strategies to implement these plans either depend on private-sector investment that often does not materialize as planned and/or public-sector investment that is not available, because priority in the use of scarce public funds is given to "production support infrastructure."

Another driver of peri-urbanization is the availability of relatively inexpensive labor, both in situ in rural areas that are being enveloped by peri-urbanization processes and through in-migration, particularly from poor regions in the countries in question. There is wide varia-

tion in the mix (migrants versus in situ) of labor employed in peri-urban areas in different East Asian countries with significant implications for public policy and potential local conflict. (In the Chinese case, labor in peri-urbanizing areas is much more likely to be local although the ratio is falling as the in situ pool of qualified labor is diminished in many dynamic areas.) This labor is employed in manufacturing processes (as operators—factory production workers). Peri-urban residents pursue a wide spectrum of economic opportunities, including informal activities that result from employment linkage and multiplier (induced) effects.

Job entry requirements for production workers vary widely by industry and firm. The policy implications are important. Relatively high entry requirements may favor in-migrants over local people. Large MNCs such as auto manufacturers now generally require high-school completion, thus limiting the labor pool to a minority of young adults. On the other hand, factories involved in lower-value manufacturing such as footwear manufacturers (usually sub-contractors to MNCs such as Nike) hire production workers with lower educational attainment. Such firms normally require middle-school (grade 9) completion—still an educational level not attained by most young adults, particularly from poorer regions. Availability of domestic skilled labor, e.g., engineers, accountants, particularly from within the extended urban region in question, usually from core city and established suburban areas, is very important. Peri-urban areas, or areas within commuting distance, have to offer amenities (housing, health facilities, international school facilities, golf courses, etc.) attractive enough to draw expatriate labor with specialized skills that can not be obtained locally to the region, as well as highly skilled domestic workers.

There is some debate about the importance of local labor availability, but increasingly the position, espoused by institutions such as JBIC (Ochi 1997), is that labor will come to peri-urban areas if they are accessible (particularly by road) and wages are attractive enough. In other words, the availability of in situ labor may not be a particularly important driver of peri-urbanization, but the availability of qualified labor, at virtually all skill levels, within the country in question is.

To a lesser extent, residential development, as opposed to industrial, can act as a driver of peri-urbanization. Middle- and upper-middle-class groups may purchase and live in residences in peri-urban areas even though they do not work in the area. This driver is most important in the Manila and Jakarta cases as described by Connell (1999) and Firman (1996). It is much less of a factor where peri-urbanization is occurring at a considerable distance from the core city, and/or where core city personal security concerns are less, as in the case of Bangkok, and most Chinese urban regions.[23] Peri-urban residents, if they need to access the core city on a regular basis, are effectively trading off easier access to the core city for more land/space, less local congestion, and in some urban regions, such as Manila and Jakarta, more security. However, as core cities in East Asia become more poly-nucleated, characterized by a number of business centers, higher-level employment (particularly in the service sector) may be available relatively close to the edge of built-up metropolitan areas, e.g., Alabang in the case of the extended Manila region. Also, as telecommuting becomes more popular in East Asia, reflecting current practice in developed economies, residential development may become a more important driver of peri-urbanization, particularly if peri-urban residential areas, or more likely enclaves within them, are noted for amenity landscapes or high-quality built environments.

Although peri-urbanization is often triggered by FDI, supported by investment in strategic infrastructure, stemming from national regional development policy, local governance factors become more important as these regions take on a life of their own. This has important policy implications. It is relatively easy for a national government to induce peri-urbanization, but the eventual success—that is, sustainability—of these regions is dependent on the ability of local governance systems to guide the ensuing rapid development, provide adequate and relevant public services, etc.

Two factors are reinforcing the increased importance of local governments in peri-urbanization dynamics: (i) decentralization and (ii) increased clustering of economic activities. Virtually all East Asian countries are in the process of decentralizing (fiscal, administrative, political) governance functions.[24] This means local governments (covering a wide spectrum from provinces to sub-districts or townships), depending on the extent to which decentralization policies are actually implemented, will increasingly have the responsibility to influence developmental dynamics and outcomes in existing peri-urban areas. Given that local stakeholders, e.g., the private sector, voluntary organizations, interest groups, are increasingly being incorporated into locally based networked governance systems, decentralization may lead to more collaboratively based governance in peri-urban areas. Second, as has been well documented,[25] clusters, e.g., auto and disk drive manufacturing, tourism, are emerging in virtually all East Asian countries. Cluster dynamics can lead to considerable dynamism in peri-areas, once initial advantage has been developed. The most successful peri-urban areas are likely to be those where strong clusters have developed, perhaps facilitated by locally based collaborative governance processes.

In successful cases of peri-urbanization, such as the Penang-Butterworth extended urban region in Malaysia, the peri-urban region takes on an economic dynamic of its own that is not significantly dependent on national government support. To a significant extent, the most successful peri-urban development trajectories, as in the case of Penang-Butterworth, are associated with close cooperation among the private sector, local government institutions, and other key stakeholders, particularly in terms of training (human resource development) and infrastructure.

A Comparative Perspective

The foregoing sections focus on common characteristics of peri-urbanization in East Asia. The following, building on the above, takes a comparative perspective, noting commonalities but focusing on significant as well as more subtle differences. The drivers of peri-urbanization tend to be relatively similar, but play out differently depending on institutional, political-administrative, demographic, and sociocultural contexts. Accordingly, the following focuses more on *outcomes* than *drivers*.

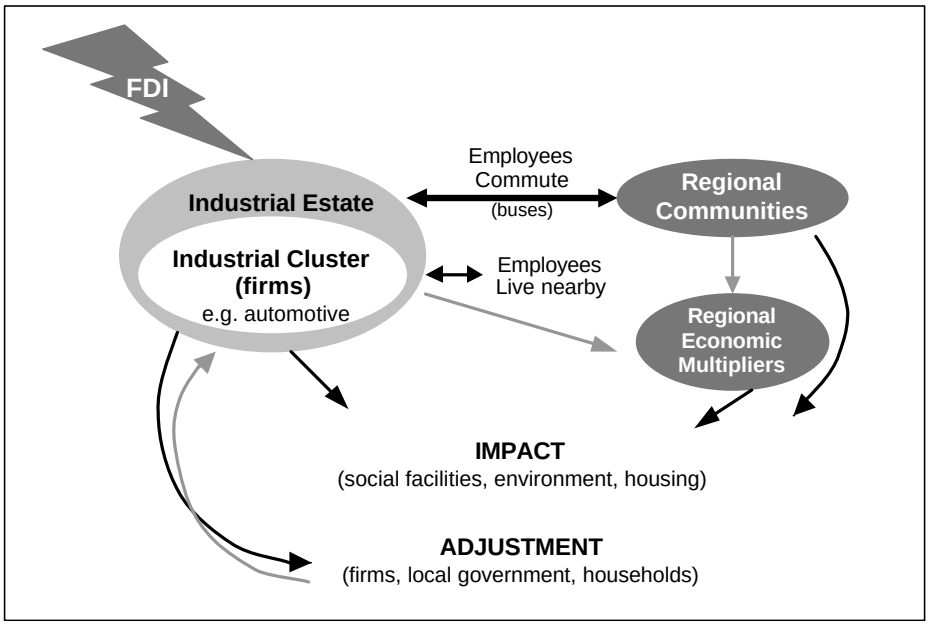


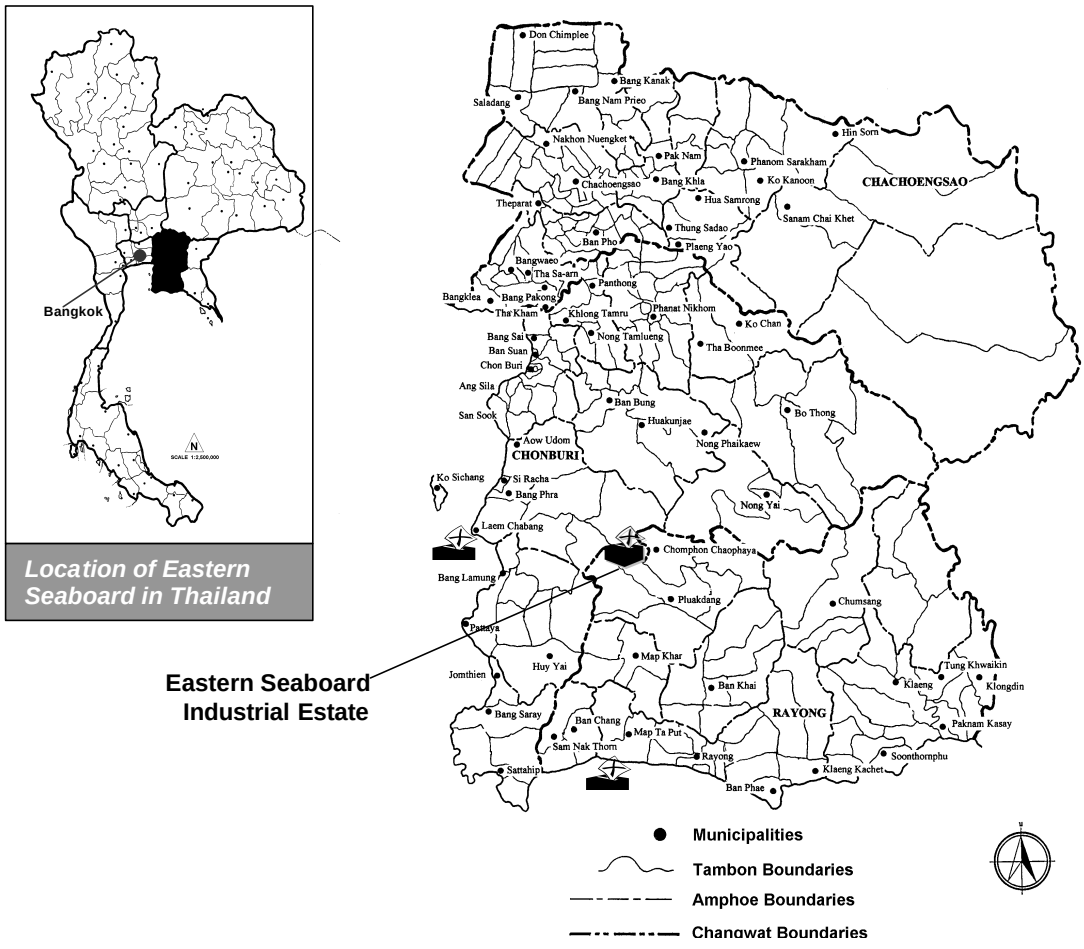
Figure 1. Peri-urbanization Process

As indicated by Figure 1, common initial drivers, depending on local behavior involving both domestic and expatriate actors, and on the interaction between these two groups, can lead to very different forms of local adaptation and hence outcomes. Possible local outcomes can vary over a wide spectrum, from sustainability to dependency traps, from "established suburbia" to "rust belts." Obviously certain factors constrain possible outcomes. For example, if peri-urbanization is occurring at a considerable distance from the core city, e.g., 100–200 kilometers, as in the Bangkok case, back-filling will never occur to create a contiguous city. Thus a constellation of livable cities, including satellite industrial towns, integrated through cross-flows of people, goods, and information would represent a desirable outcome. On the other hand, in the Manila case, where dynamic peri-urbanization is under way closer to the built-up city (NCR) in Laguna and Cavite provinces, a desirable outcome is likely to be one whereby these areas are efficiently and sustainably integrated into the metropolitan urban system.

Thailand: The Eastern Seaboard

Background

Thailand's Eastern Seaboard is a well-known case of peri-urbanization. The core area of the ESB, consisting of Chachoengsao, Chonburi, and Rayong provinces (see Map 1), contains close to 3 million people (if the non-registered population is included), although the government has designated a much larger ESB II area that covers the entire peri-urban area (eleven



Map 1. Eastern Seaboard, Thailand

Source: Muller (2000) based on base map from UDCD, NESDB, Bangkok, Thailand, 1999

provinces) and contains about 6 million people.[26] (The other significant peri-urban area in the extended Bangkok region is the Ayutthaya area to the north of core Bangkok, noted for Japanese FDI in automobile and electronics industries.) The ESB is the industrial heart of Southeast Asia; as such it has a relatively high profile internationally (Leman Group Inc. et al. 1995; Norconsult and NESDB 1997; Sema Group et al. 1996; Wilbur Smith Associates, et al. 1998). The overall peri-urban area's population has been growing at approximately 2 percent per annum during the 1990s (1992–1998),[27] but official data significantly understates demographic growth.[28] Of the three peri-urban areas discussed in this paper, this is the lowest rate of growth, but by Thai standards it represents a high rate of urbanization—core Bangkok's population grew at about .56 percent annually over the same period. Post-1997 (financial crisis) urban population growth rates (both in core Bangkok and the ESB) have been even lower than those prevailing prior to 1997. Other contributing factors to the low rate of urban population growth, even in the peri-urban area, include a very low natural rate of population increase and continued national under-urbanization that reflects underlying

cultural factors. The fact that the ESB has a capital intensive, as opposed to labor intensive, industrial structure, characterized by industries such as petro-chemicals, automobile manufacturing, and electronic consumer goods, also contributes to the explanation.

Drivers

The ESB represents a middle case in terms of the extent of public-sector involvement in its initiation and ongoing coordination. The national government in the 1980s initiated a program to create the Eastern Seaboard development area. This involved investment in infrastructure, e.g., construction of two world-class ports at Laem Chabang (containers) and Map Ta Phut (bulk commodities), proffering generous industrial location incentives, and establishing a planning-management coordination center, the Center for Integrated Planning Operations in the National Economic and Social Development Board (NESDB). The ESB was promoted extensively in key investor countries, such as Japan, the European Union, and the USA. Establishing the ESB was not a minor undertaking: by 1997, 179 billion yen had been borrowed from JBIC by the Thai government to develop the ESB. This accounted for more than half of total borrowing from JBIC for the extended Bangkok region which cumulatively totaled 328 billion yen by 1997—the highest of any extended urban region in the world. The Thai government invested heavily in industrial support infrastructure (ports, highways, industrial estates, inland container depots, rail lines, etc.); however, only 12 percent of national origin public investment was for community and environmental services (Webster 2002).

The Thai property development industry is not as concentrated as its Philippines equivalent (the latter dominated by giants such as the Ayala Land Corporation). As a result, the property industry is not able to develop integrated communities that include industrial estates, residential communities providing housing for a wide spectrum of income levels, commercial centers, etc., as is occurring in peri-urban areas in the Philippines, particularly in Laguna Province. This is despite the fact that sophisticated regional plans for the Eastern Seaboard area outlined areas for new towns, planned settlement adjacent to existing settlements, regional amenities, etc., to be delivered primarily by the private sector.

The financial crisis that started in July 1997 delivered a crushing blow to the Thai property development industry, virtually extinguishing the hope of integrated private-sector developments in the peri-urban area for the next ten years, if ever. However, at the same time, the ESB's economy performed well during the Asian economic crisis. The efficiency of firms operating in the ESB, coupled with the devaluation of the Thai baht (from 25 to 56 baht per U.S. dollar at the height of the crisis), resulted in strong performance by its export-oriented economy. During the economic crisis, peri-urban Bangkok gained 57,000 manufacturing jobs (third quarter 1997 to third quarter 1999), while 120,000 manufacturing jobs were lost in core Bangkok, reinforcing ongoing deindustrialization in the core city. At no time did unemployment exceed 2.6 percent in the peri-urban area during the crisis, the lowest regional unemployment rate in the country. Thus although it is common to paint peri-urban areas as economically volatile and vulnerable because foreign investors can come and go, under certain conditions they can be a stabilizing force. In the case of the ESB many of the firms anchored by large-scale investment, e.g., auto manufacturers, are export oriented, resulting in large-scale facilities, and are significantly embedded because of close local supplier relationships and because they have worked out, over time, valued operating relationships with local institutions, including local government. Under conditions of declining production costs, coupled with sunk investment and firm embeddedness, the competitiveness of

an area such as ESB is actually enhanced. Unfortunately, the property development industry was vulnerable to the property bubble collapse in core and particularly suburban Bangkok and to the collapse of the Stock Exchange of Thailand, where property development stocks constituted a high percentage of total equity value. The result was a property development industry that could, at best, continue piecemeal development in the Eastern Seaboard, despite the fact the region was spared much of the worst of the East Asian economic crisis. Paralleling the ESB, Batam, part of Singapore's peri-urban area, also performed well during the Asian economic crisis, significantly adding employment.

Geographic Characteristics

Observers of the peri-urbanization process in Thailand note that it is occurring further from the urban core than peri-urbanization in most other East Asian extended urban regions, such as Manila, Kuala Lumpur, Singapore (where peri-urbanization is manifest internationally in Batam and Johor), Hong Kong (where peri-urbanization is manifest in Guangdong Province), and several other major Chinese cities. (The Jakarta region is closer to the Bangkok case.) Figure 2 describes the rapid spread of peri-urbanization to the east, particularly into Rayong Province. One of the reasons for this outcome is that the industrial incentive structure, until changed in 2000, offered the highest industrial location incentives (Zone III) in Rayong Province, whose provincial capital is approximately 190 kilometers from core Bangkok. Interestingly, major industrial estates, such as the Eastern Seaboard Industrial Estate ("Detroit of the East"), developed by the Hemeraj corporation, literally located on the provincial boundary (between Chonburi and Rayong provinces), enabling investors to gain maximum incentives. By locating adjacent to the border of Zones II and III, these firms were as close to core Bangkok as possible while still benefiting from the highest level of incentives. Another factor accounting for the considerable distance of major investment clusters from core Bangkok was that the two new major ports, designed to enable an eventual phasing-out of congested Klong Tooey port in central Bangkok, were remote from core Bangkok. Other factors, less well understood, may be in play. For example, land speculation, involving tens of thousands of small plots in areas nearer to core Bangkok, may have made the kinds of land assembly needed for peri-urban development difficult closer to the urban core. Additionally, the emergence of a "rust belt" in suburban Samut Prakarn Province may be a factor. This province, located between core Bangkok and the ESB, is characterized by heavy, often uncompetitive, industry, ground contamination, and local social and political instability. These conditions may have encouraged developers to "leap frog," investing in greenfield sites remote from the problems of areas industrialized, often haphazardly, in the 1960s and 1970s. Physical geography may have also played a role. Property development companies in peri-urban areas, as noted, prefer large land plots. These are often associated with former plantations (e.g., pineapple), rather than rice-growing (paddy) lands (Muller 2000). Such large land plots, associated with certain geomorphology characteristics, are found well beyond established suburbs in the Bangkok case.

Adaptation

The community adaptation process in peri-urban Thailand has largely been instigated by the private sector rather than by local government. To a significant extent this reflects the structure, and overall weakness, of local government in Thailand (Webster 1999). (Compared with China and the Philippines, Thailand is implementing administrative and fiscal decentralization late.)[29] Local governments, with the exception of municipalities, which almost

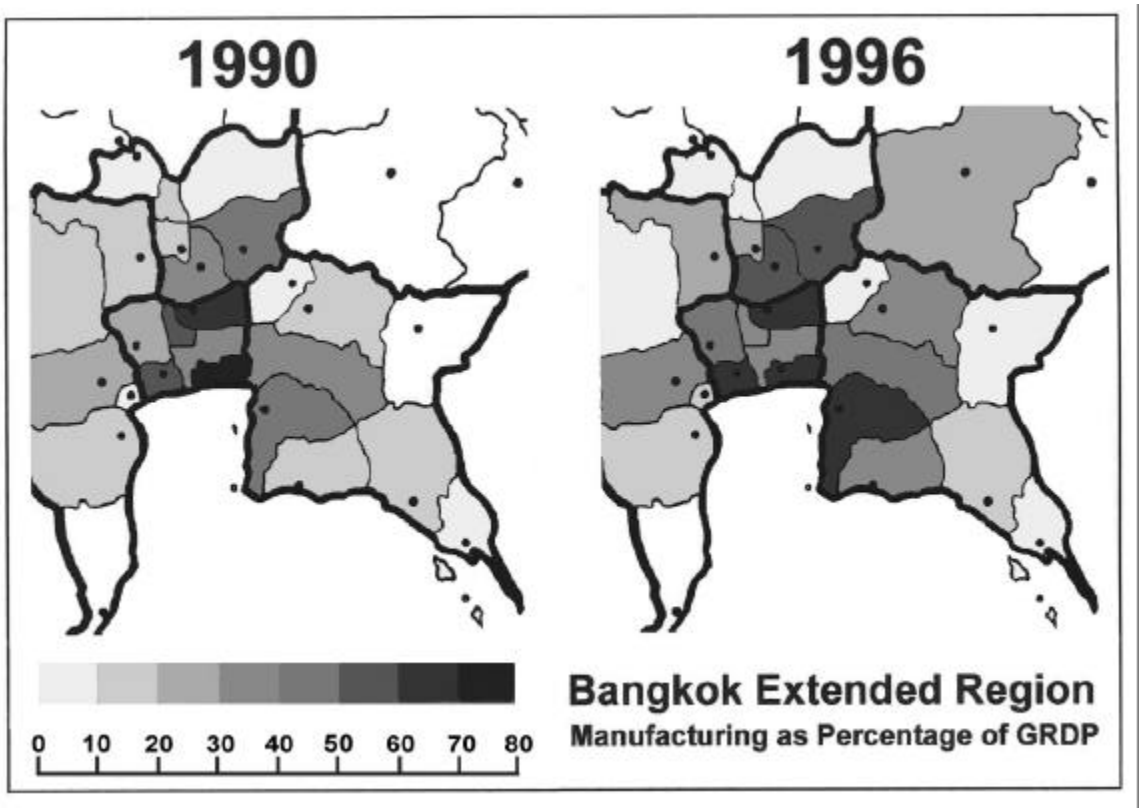


Figure 2. The Peri-urbanization Process in the Bangkok Extended Region

Source: M. Warwick, Stanford University, 2000

invariably underbound built-up urban areas, have very little capacity to deal with large-scale developments associated with peri-urbanization processes. The building block of Thailand's decentralization initiative is the *tambon*, a very small unit of local government—there are over 7,000 *tambons* in Thailand. *Tambons* are often underfunded, almost always staffed by inexperienced staff, and are small in population and area (averaging about ten villages per *tambon*). In the Eastern Seaboard area there are 474 local governments, most of them *tambons*. It follows that local government is highly spatially fragmented and of low capacity (see Map 1). At present, Thailand has approved and is implementing an ambitious decentralization plan that calls for 35 percent of the country's public expenditure to be by local governments by fiscal year 2006. This could weaken peri-urban areas, such as the Eastern Seaboard, especially given the important proactive investment and coordination role that has been played by the national government over the last two decades.

Given the structure and low capacity of local governments, along with the prospect of possibly less national government involvement in peri-urban areas, it is not surprising that the private sector has played a key role in the adaptation process at the local level. However, such adaptation tends to be localized, i.e., be within zones of direct interest to the private-sector actors involved, and occurs in the context of a first-rate regional infrastructure skeleton that has been delivered by the national government. Proactive private-sector adaptation has been tempered in the Thai case by the fact that, as has been noted, the financial capabili-

ties of Thai property development companies are more limited than in the Philippines case. Thus their influence in shaping local development is exercised more through industrial-estate-based activities than by developing integrated communities, as in the Philippines case.

Muller (2000, Table 2) describes in some detail how management of industrial estates have been proactive in facilitating community adjustment in the ESB. Examples include organizing health insurance for workers in collaboration with local private health care facilities and topping up police benefits to improve traffic management on roads in investment cluster areas. Industrial estate management has worked with local governments to undertake environmental functions such solid-waste management, as well as delivering public functions onsite at industrial estates, e.g., water supply, wastewater management, and worker social counseling.

Few NGOs or community-based organizations are active in the area. There tends to be a lag in the involvement of voluntary organizations as new forms of settlement, such as peri-urban areas, evolve, both in the ESB and elsewhere in East Asia.

However, local entrepreneurs are active in developing small-scale commercial facilities, e.g., strips of shop houses and rental housing for workers. Participants in the informal sector play an important role, operating food stalls and transportation services, e.g., driving converted pickup trucks ("song taew") that serve industrial estates and residential areas.

One of the most interesting aspects of peri-urban development in Thailand is the fact that workers, including factory operators, highly skilled personnel, and expatriate management, tend not to live near the industrial estates. This settlement pattern is effectively subsidized by the fact that free busing to and from the factories is provided at the beginning and end of each shift—on a large number of routes that can extend as far as 70 kilometers from the firm itself. High-level technical and managerial staff may commute to nearby municipalities or gated residential areas, often containing golf courses, generally using private vehicles. Relatively long distance busing of workers tends to enjoy the support of both the companies and the workers themselves. The companies generally like the system, despite the expense, because workers are on time for work, do not leave early, and return punctually after lunch break. The workers like the system, despite the time costs of commuting, because it enables them to live in more established, larger communities where there are better schools for their children, more recreational and entertainment possibilities, and where overall amenity is usually higher. As a result, comfortable apartments near industrial estates, e.g., adjacent to the Eastern Seaboard Industrial Estate, built by the estate developer, in response to regulations of the Industrial Estate Authority of Thailand are often left vacant. As noted by Muller, expatriate personnel may exhibit different preferences in residential location according to their national origin. For example, Japanese personnel in the Eastern Seaboard tend to live in established communities, particularly Sri Ratcha, where amenities such as Japanese restaurants exist. North American personnel are more likely to live in gated golf-course communities in more rural settings, but still relatively remote from their place of employment.

The outcome of the above situation is that a significant spatial disconnect exists between work and residence in the ESB. This means that local government units lacking an industrial base may experience large population increases attributable to workers living there but commuting out daily. On the other hand, a *tambon* may contain hundreds of factories, but nearby rural service centers, within the same *tambon*, often do not change significantly, not experiencing sizeable employment or local economic benefits, despite industrial development within their jurisdiction.

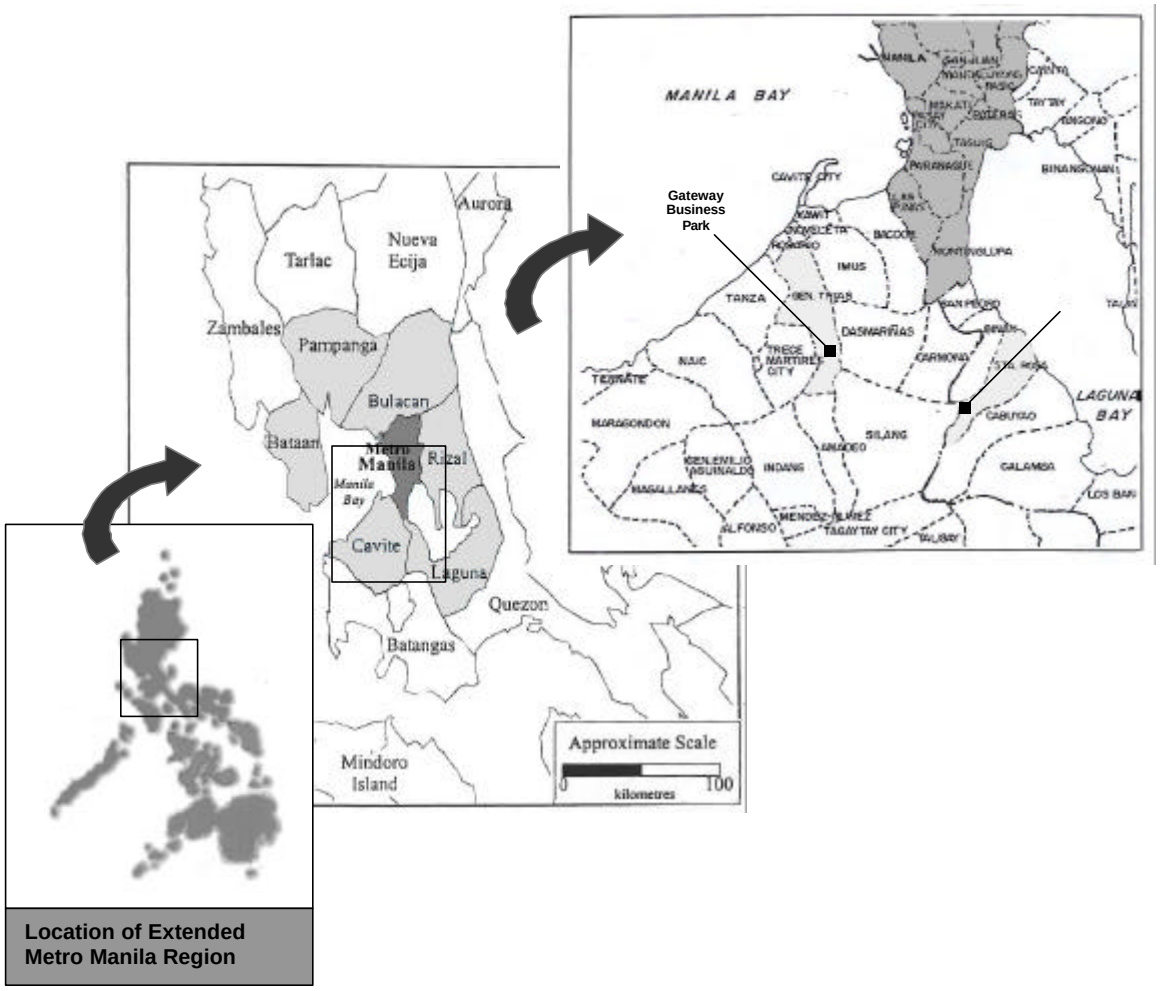
The Philippines: Cavite-Laguna

Background

Cavite and Laguna provinces, to the south of Metropolitan Manila, are where peri-urbanization, especially manufacturing-driven, is most intense in the Philippines. The heart of this activity is Cavite Province, which contains 2.1 million people (2000 census), is growing demographically at 6.92 percent annually, and contains twenty-one industrial estates housing 604 major investors, mainly foreign, employing 127,000 people (Philippine Graphic 2000). Increasingly, intensive peri-urbanization is also occurring in neighboring Laguna Province, with a population of 1.7 million people; it now contains seventeen industrial estates. In total, the two study provinces (known as CALA), noted on Map 2, contain approximately 3.8 million people, more than the three core provinces that constitute the ESB of Thailand.

As in the case of the ESB, CALA does not encompass all peri-urbanization in the Manila area. Peri-urbanization is also occurring to the east of Metropolitan Manila in Rizal Province. Geographically counterbalancing peri-urbanization in CALA is extensive corridor-based peri-urbanization to the north. Northern peri-urbanization is occurring in a leapfrogging fashion (to a much greater extent than in CALA) in Bulacan (where considerable "early" domestic industrialization [primarily SMEs][30] occurred in the post–World War II period), Pampanga (which contains the Clark Special Economic Zone), and Bataan (home of the Subic Bay Free Port) provinces.[31]

High rates of population growth in the study area (CALA), over 7 percent annually near investment clusters, can be attributed to several factors including high natural population increase, large-scale migration from rural to peri-urban areas, and the resettlement of squatters from metropolitan Manila to the case-study area. As is the case in most East Asian urban areas, market forces that result in rapid increases in land values and deindustrialization in the core city make it difficult for many new migrants and lower-skilled people to obtain housing and secure employment in core city environments. Thus, Cavite-Laguna is an increasingly attractive destination both for migrants from rural areas and metropolitan Manila itself. CALA differs from the Thai case in that, in the latter case, migration from the core city to the peri-urban area is primarily limited to a relatively small number of highly skilled workers.



Map 2. CALA Region, Philippines

Source: L. Muller, Stanford University, 2002

Drivers

The role of the national government in planning, promoting, and coordinating peri-urban development in the Philippines has been significantly less than in Thailand. In fact, an explicit program to create a major peri-urban industrial area south of Manila does not exist, although the National Economic Development Administration (NEDA) and the Japanese International Development Agency produced extensive plans for the area in the late 1980s. Despite this fact, large-scale peri-urban development has occurred in the study area driven by availability of skilled labor (the extended Manila urban region has an extensive, largely private, technical education system), widespread English-language fluency, and the Manila region's strategic location as a western gateway to Asia. Given the reality of the large-scale development on the ground, post facto, NEDA, through its Region IV office (and associated Regional Development Council), is increasingly recognizing the distinct peri-urban settlement form and economic system that is emerging in CALA, and the challenges that it pre-

sents. This includes ongoing activity to produce a regional development plan for the much larger Region IV of which Cavite and Laguna provinces are an important part. However, no plan is being prepared for the peri-urban area itself. NEDA uses the acronym CALBARZON to officially define peri-urban Manila—it consists of Cavite, Laguna, Batangas, Aurora, Rizal, and Quezon provinces. Nor is a plan being prepared for Cavite-Laguna, the heart of the peri-urban economy, although the World Bank and the government of the Philippines have produced an innovative transportation plan for the area, described below.[32] The Regional Development Council for Region IV, composed of governments and key stakeholders in the region, supported by NEDA, is increasingly paying attention to the threats and opportunities posed by large-scale peri-urbanization occurring in CALA. Problems have become too serious, too well publicized (in magazines such as the *Far Eastern Economic Review*), and the strategic importance of the region too great to be left unaddressed and uncoordinated. To date, some of the most significant actions to address problems of the region's development have been by local governments, but many of the problems require a regional perspective; this is reinforced by the fact that local public financial resources are limited.

The national government has not invested substantially in CALA, nor has it significantly coordinated the efforts of lower levels of government, although such initiatives might be expected given the area's strategic importance. In part, the limited public investment by the national government reflects the nation's overall fiscal situation; in part political realities, e.g., the need to funnel investment to politically less stable areas, such as Mindanao. Nevertheless, the result is substantially inadequate regional infrastructure within Cavite-Laguna, particularly in terms of arterial road infrastructure. A few proposals are being put forward to address problems. For example, the World Bank–Government of the Philippines study (noted above) proposes a busway that would operate on a north-south right-of-way connecting Cavite to the National Capital Region, joining up with the terminus of Manila's LRT line 1. In addition, it advocates substantially increasing the capacity of east-west arterial roads in the region. Nevertheless, national support to regional infrastructure, in terms of planning and investment, is manifestly inadequate. Meanwhile, there is growing evidence that the Philippines is losing investment, both new and existing, because of severe regional-scale infrastructure inadequacies, reflected, for example, in traffic jams in the CALA area that can absorb hours of time. Traffic, along with other difficulties in doing business in the peri-urban area, have resulted in a severe slowing of FDI applications—down 60 percent in 2000. The slow development of a large-scale container port at Batangas (the province immediately to the south), to reduce reliance on the existing port located in the heart of Manila, is another example of infrastructure shortcomings attributable to the national government. Another emerging and increasingly serious problem is security. Japanese executives of MNCs have been robbed and kidnapped, and container trucks have been hijacked.[34]

In part, the significant underinvolvement of senior government, including at the provincial level (which has less fiscal power than cities, and administrative powers equal to or less than cities), in strategic development of Cavite-Laguna (and the peri-urban area as a whole), is compensated for by two factors. One is the growing strength and capacities of cities and municipalities (*municipios*); the other, the existence of large property development firms, three in particular,[35] with substantial financial, planning, and management competencies capable of developing integrated communities in peri-urban areas. In this regard, Manila is similar to the Jakarta region where private developers play a very significant role in developing the peri-urban region (Winarso 1999).[36]

Cities and municipalities in the Philippines possess a wide array of powers and functions, resulting from the Local Government Code of 1991. Furthermore, some municipalities are large enough that they encompass both place of work and residence of most workers in peri-urban areas. As a result, a jurisdictional disconnect, in terms of place of work and residence, as described in the ESB case, frequently does not exist. Municipalities have succeeded in implementing new initiatives within their jurisdictions that proactively deal with the challenges of peri-urbanization. These include technical training relevant to entry-level positions in nearby MNCs, low-income housing provision (particularly for local government employees such as police and teachers), and clean river programming (in Santa Rosa Municipality). In addition, improvements in the physical environment are being pursued through better land-use planning and enforcement (using techniques such as geographic information systems), site approvals/services for low-income housing, and local traffic improvements, particularly in General Trias Municipality. However, there are limits to what municipalities can do in terms of creating efficient and livable peri-urban environments attractive to both locators (investors) and residents. For example, with twenty municipalities in Cavite Province, regional cooperation in areas such as solid waste, regional transportation systems, and wastewater/watershed management is almost impossible. Each municipality is governed by a charismatic leader, who is naturally focused on his/her own jurisdiction. Furthermore, leaders of municipalities are aligned with different political parties.

As noted, the second factor partially compensating for the lack of senior government involvement in peri-urban development in the Philippines is the strength of a few development companies, particularly the Ayala Land Corporation. The Ayala Land Corporation has been able to create urban business centers ("new towns in town") within metropolitan Manila, such as Makati, and has started to replicate this successful model in the peri-urban area. For example the Laguna Technopark area in Laguna Province is planned by the private sector to become a future integrated business-residential-commercial center. Meanwhile, the Ayala Land Corporation holds land about 30 kilometers south of Laguna Technopark where it intends to create another such integrated center in Batangas Province, held in anticipation of construction of a state-of-the-art container port complex there (similar to the one in Laem Chabang, Thailand). The style of the Ayala Land Corporation, and similar companies in the Philippines, is to sell land in the industrial estates, after having established viable tenants' associations, then move on and create new estates, and related integrated residential-commercial complexes. The tenant associations, led by the property developer until most land has been sold in the industrial estates, work with local governments and other regional stakeholders to improve the quality of local life, particularly for member firms and their employees.

However, given the vacuum created by a lack of national government, and even provincial government,[37] coordination and investment in the study area, property developers are increasingly playing an even wider role in the area's development. For example, Ayala Land Corporation (sometimes in conjunction with other property developers) is increasingly playing a role in delivering trunk infrastructure. An example of this role is the initiative proposed by Ayala Land[38] to operate the rail line from Manila southwards, along Laguna Lake, to provide commuter rail transportation and freight service to a planned "necklace" of Ayala urban and peri-urban communities (including existing communities). Already, the Ayala Land Corporation has taken responsibility for building and maintaining roads to link its property developments with the freeway system. A prime example is construction (and later, mainte-

nance) about to commence of a key access road from the Laguna Technopark to the Laguna-Manila expressway to eliminate current gridlock on the local road from the Laguna Technopark to Santa Rosa.

Geographic Characteristics

In the case of the Manila region, peri-urban development has occurred much closer to the built-up metropolitan area than in the Bangkok case. In fact, the built-up area of the National Capital Region (Metropolitan Manila) continues, without a physical break, into many areas of northern Cavite and Laguna provinces. What are the reasons for this pattern of development? One is that the only major port for the extended Manila urban region remains in core Manila. Thus the centrifugal forces generated by a port located distant from the urban core do not exist, as in the case of the ESB or Ningbo in Zhejiang Province, China (described below). Second, because the road network is so congested in CALA, 45 kilometers (approximately the distance from Laguna Technopark in Santa Rosa to the leading business center in Manila, Makati)[39] is equivalent in travel time to 100–120 kilometers in Thailand or Zhejiang Province. In the latter cases, uncongested freeway systems are in place connecting peri-urban investment clusters to the core city. For example, in the case of ESB, two new expressway systems have recently opened connecting core Bangkok to Chonburi Province, the heart of the ESB, and significant overcapacity exists. Third, residential development plays a stronger role in driving peri-urbanization in CALA than it does in the case of the ESB (or coastal China), where housing starts are primarily a response to local employment creation. Gated, and walled, residential communities in peri-urban Manila attract populations who are willing to commute for long distances, at considerable time expense, into core Manila (Connell 1999). This can be explained by security considerations, as well as local tastes for relatively low-density residential living. In addition, the fact that Laguna Province contains areas of very high amenity, particularly the volcanic-lake landscapes of the Tagaytay area, acts as an attractant to higher-income households.

Adaptation

Given very different development contexts, it would be expected that adaptation mechanisms would vary widely between Thailand and the Philippines. In fact, there are probably more similarities than differences.[40] As has been noted, in the Philippines both local governments and property developers are more proactive, given the greater power of both institutions. In the Philippines, the property industry is highly concentrated, with a very few companies playing a dominant role. Accordingly, Philippines property developers are able to virtually singlehandedly shape relatively large areas. They play a much greater role in determining local urban form and economic development than the private sector in Thailand. As in the case of Thailand, industrial estates are highly self-sufficient, reducing pressures on local government. However, the developer role in the Philippines case extends to development of residential areas and shopping/commercial facilities, e.g., shopping malls.

In other respects adaptation processes are more similar. As in the ESB situation, the tenants' associations in industrial parks develop and manage (often through companies owned by, or associated with, the property developer) health-care insurance and health delivery systems for local industrial employees. And, in CALA, the tenants' associations also pay the police "top ups," although the police seem to respond more effectively to this incentive than in the ESB case. Because local governments are stronger in the Philippines case, they (including provincial governments) are able to top up budgets for social services such as education

to cope with rapid demographic growth, even when funding the function in question is nominally the responsibility of the national government. In Thailand, local governments tend not to be proactive, and if anything do not take advantage of the powers allocated to them, rather than "pushing the envelope" of their allocated functions as is often the case in the Philippines.

The Philippines is known for its large number of NGOs, perhaps more per capita than anywhere in the world. Surprisingly, although NGOs seem slightly more active in Manila's peri-urban areas than in the Thai case, they do not play a significant role in local development. Again, the explanation appears to be the slowness of NGOs in responding to new forms of settlement and socioeconomic organization. The one area where NGOs in Cavite and Laguna, particularly the latter, are somewhat active is the environment, e.g., clean-river initiatives, solid-waste collection, and composting.

As in the ESB case, local entrepreneurs and workers in the informal sector have responded to opportunities resulting from peri-urban development processes. However, this effect is much more pronounced in the case of peri-urban Manila largely because of much faster population growth, migration from the metropolitan area to Cavite-Laguna, and a poorer performing national economy than is the case in Thailand or, especially, China. For example, although Cavite Province is the leading exporting province in the Philippines, and has one of its best performing regional economies, the unemployment rate is 10.2 percent (December 1999). The result is that local people take in boarders (preferring women) and in-migrants offer a wide range of inexpensive goods and services including transportation (pedicabs, modified motorcycles, railway scooters), food (informal food stalls), etc.

One area of significant difference, and potentially a significant asset in the case of the Philippines and a threat to peri-urban development in Thailand, is the large-scale involvement of the private sector in the Philippines in delivering technical education. Although highly variable in quality, the net effect of the proliferation of private educational institutions offering courses in fast-growing technical areas such as computer programming is very positive. The availability of labor with technical skills encourages investment and supports upward movement of peri-urban firms in terms of technology and value added. The latter process is the key to sustainable peri-urbanization because it reduces the possibility of firms leaving and contributes to creation of higher-quality jobs and employment (career) ladders for local people. A virtuous cycle can thus be created, reflected in higher revenues to local governments, higher quality services supported by increased consumer buying power, and a more informed peri-urban citizenry.

Coastal China[41]

Background

Coastal Chinese peri-urban areas were the epicenters of the economic boom that occurred in China during the late 1980s and 1990s, primarily because of greater flexibility accorded economic actors in these areas in terms of access to land and labor, obtaining development permission from local authorities, etc. The economic growth rate in most coastal peri-urban areas, where special "open cities" status was given to designated areas starting in 1978, exceeded 20 percent annually from 1988 to 1996, peaking between 1992 and 1994 (Yan 2000, 14).

Chinese peri-urbanization has many commonalities with Southeast Asia, e.g., the existence of large industrial estates with similar sets of multinational tenants. However, there are also considerable differences between the Chinese and Southeast Asian peri-urban development trajectories, in part because of the unique political-administrative circumstances under which Chinese peri-urbanization has evolved since the reforms of the late 1970s came into effect. Within China, as would be expected of such a large and fiscally and administratively decentralized nation, there is considerable variation in the degree of peri-urbanization, even after controlling for population size of urban areas. The coastal areas were the first to experience large-scale foreign investment, the result of national policies initiated by the Special Economic Zones Office. This dynamic, combined with the more entrepreneurial culture of the coast, has resulted in private enterprise being much more important (relative to the state-owned enterprise [SOE] sector) in coastal areas than in other parts of China. The significantly greater role of the private sector in the economies of the coastal regions is associated with much higher levels of peri-urbanization. For example, Chengdu, the capital of interior Sichuan Province, with a city proper population of 3,220,000 (1998) has much more limited peri-urbanization than equivalent-sized (or even smaller) coastal cities, e.g., Hangzhou. Accordingly, the following discussion focuses on coastal Chinese peri-urban areas, and in particular the case of the Hangzhou-Ningbo peri-urban corridor in Zhejiang Province. Since the coastal areas have been first-movers in developing peri-urban areas, learning from these areas will be important in improving peri-urban outcomes as the process becomes more important in the central and western areas, and in less populated urban regions. (China currently has fifty-six urban regions with populations in excess of one million people.)

Drivers

Chinese peri-urbanization differs from the Southeast Asian in a variety of fundamental ways. First, the developer of the major industrial estates is usually an agent of local government, normally the municipality. For example, the Hangzhou Economic and Technological Development Zone outside Hangzhou is a state corporation established by the municipality of Hangzhou. Similarly, the early, pacesetting coastal industrial estate, Ningbo Economic and Technical Development Zone, outside Ningbo at Beilun Port was developed by the municipality of Ningbo.

A second difference, at least relative to the Thai, Malaysian, and Indonesian cases, is that regional development planning, and to a lesser but considerable extent a conceptualization of urban constellations as regional systems, does not exist in China. Peri-urban development is driven both by large industrial projects, such as coastal economic and technological development zones (ETDZs), and bottom-up economic processes that result in the start-up of SMEs. Existing SMEs in peri-urban areas include former township and village enterprises (TVEs) that have survived the rigors of an emerging market economy. (A high proportion of former TVEs in peri-urban areas, and an even higher percentage in rural areas, have not been able to survive the transition from a scarcity economy [which guaranteed markets for virtually all products] to a surplus economy.) Included in the mix are household firms (under eight employees), smaller than SMEs, in terms of official classification. The top-down large "flagship" projects (ETDZs) are usually found near the cities (almost always within 50 kilometers). On the other hand, large numbers of SMEs spread for hundreds of kilometers in the case of the largest extended coastal urban regions such as the Shanghai-centered Lower Yangtze extended urban region. Local collectives (villages) respond to such industrial development (both "flagship" and SME), providing labor and housing, plus small-scale commer-

cial facilities. In-migrants (inter province rural–peri-urban migrants) supplement in situ labor, working in factories as well as in low-level service activities (particularly construction, but also informal transportation, some street vending, etc.), the demand for the latter induced by the new industrial economic activity. Locally owned firms are increasingly being encouraged or even required (as in Shanghai) to locate in industrial estates. However, given the hierarchy of industrial estates in China, for smaller locally owned firms, these would normally be township or county level industrial estates.

The overall peri-urban development pattern is not planned, or promoted, as is the case in Thailand's Eastern Seaboard, Malaysia's Multimedia Super Corridor, or Indonesia's Jabotabek region. Within peri-urban areas, including strategically important ones such as the Pearl River delta[42] or the lower Yangtze region,[43] the official reality, reflected in governance, is one that recognizes local governments as freestanding jurisdictions with functional roles commensurate with their size. Types of problems, and their magnitude, are expected to be commensurate with the size class of that urban settlement. Thus in the official view a peri-urban area is essentially a constellation of settlements (*urban districts* constituting *cities proper*), larger towns (*county-level cities*) and their hinterlands (*counties*), and small settlements and their surroundings (*townships*) co-existing in a given geographical area. However, in reality, most cities, towns, and smaller settlements in peri-urban areas are likely to be playing much more important roles than their size or official designation would indicate because they are integral components of larger, and strategically important, regional urban systems. Furthermore, it is likely that the problems, challenges, and opportunities that such local governments face in Chinese peri-urban areas bear little resemblance to those facing similar-sized "freestanding" communities that are not part of fast-growing and changing extended urban region. In many ways, in terms of regional scale governance (or more accurately, the lack thereof) in peri-urban areas of China, there is close resemblance to the laissez-faire Philippines situation. In both the Chinese and Philippines cases, localization forces, official mandates, and budgetary resources of local governments, e.g., *municipalities* in the Philippines and *counties* in China, in peri-urban areas are often much stronger than are those of more senior governments. The result is a lack of region-based strategies and governance, including planning, in peri-urban areas. However, it appears that the powers of peri-urban municipalities in China are increasing, which may result in better inter-jurisdictional coordination.

The Chinese fiscal system, particularly in terms of taxation, reinforces this dynamic, with lower levels of government, particularly counties, collecting a high percentage of taxes and sending some of this money upwards, thereby increasing their powers. On the other hand, the fact that local governments in China are nested, unlike in Thailand, creates potential for significant peri-urban coordination. For example, in China, a rural area in a township is under the township seat (town), which, in turn, is under a county based in the county seat (town), which is under a municipality that, at least nominally, includes all the foregoing within its jurisdiction. As has been noted, in the case of Thailand, a municipality would have no jurisdiction over its rural hinterland or smaller settlements within its sphere of influence—it is a discrete urban entity.

In sum, peri-urbanization in coastal China is not driven only by large, high-profile industrial estates. SMEs (including surviving former TVEs) are another important driver. Since SMEs (including a high percentage of former TVEs) are the backbone of the economies of outer peri-urban areas, there is a danger of economic stagnation and social distress in many

outer peri-urban areas compared with inner peri-urban areas. The latter are flourishing because of flagship development and market forces that are supporting the development of the most viable SMEs, more likely to be located closer in to core cities.

Of particular interest is the extent to which private enterprises and SMEs increasingly constitute economic clusters in Chinese peri-urban areas.[44] It is not uncommon for a village or a set of villages in a peri-urban area to contain a large number of firms producing the same type of product, e.g., electronic gadgets, apparel, buttons, neckties, or toys. For example, Guizhen in Guangdong Province is typical of these spontaneous clusters: it contains 1,600 firms making electric lighting fixtures (600 "illegal"). Although the Guizhen area has only 60,000 people, it accounts for 46 percent of China's domestic lighting market (*Economist*, 5–9). In the Hangzhou-Ningbo study area, there are large clusters manufacturing eiderdown apparel (85 percent of global production), shirts, fiber-optic cables, ballpoint pens, etc. If dynamic clusters continue to arise in Chinese peri-urban areas producing increasingly higher value products, they could become important in terms of national and extended urban region economic performance and competitiveness.[45]

Another important factor encouraging peri-urbanization in China is that land was (since 1978), and continues to be, much more available in peri-urban areas. Land in urban districts of cities proper is significantly controlled by SOEs and government agencies including, importantly, local government. Although land in city cores is increasingly available for lease, small plot sizes and official policies that encourage service industries rather than manufacturing limit the attractiveness of core cities to new manufacturing investment. Although land is much more available in peri-urban areas than core cities, somewhat surprisingly peri-urban development is relatively compact, often occurring around or enveloping existing rural settlements. Thus in Zhejiang Province, for each 1 percent of growth in the urban population, built-up urban land increases by about 1.45 percent, a low ratio (1:1.45)[46] compared with most East Asian urban regions where the typical ratio is two to three times as high, i.e. 1:3 or higher.

Another driver of peri-urbanization, related to the foregoing, is official impetus (through both regulation and incentive mechanisms) to relocation of industry from core cities to peripheral areas. Until recently, Chinese urban areas did not possess functioning land markets and service-sector activity was discouraged because it was not regarded as a productive activity. The result was that manufacturing, including heavy industry, usually in the form of SOEs, utilized large amounts of land in the cores of Chinese cities. Given the current policy objective to make cities (cities proper) more economically efficient and strengthen their service sectors,[47] particularly in terms of producer and other higher value urban service activities such as tourism, manufacturing is being moved to peri-urban areas through complex land trades ("land readjustment"), etc. This large-scale restructuring of land use in extended urban regions is usually orchestrated by local governments (particularly municipalities which cover relatively large areas), SOEs, and private-sector actors. This dynamic is particularly strong in coastal areas, such as Shanghai, where economic and demographic growth and structural changes in regional economies are occurring fastest.[48]

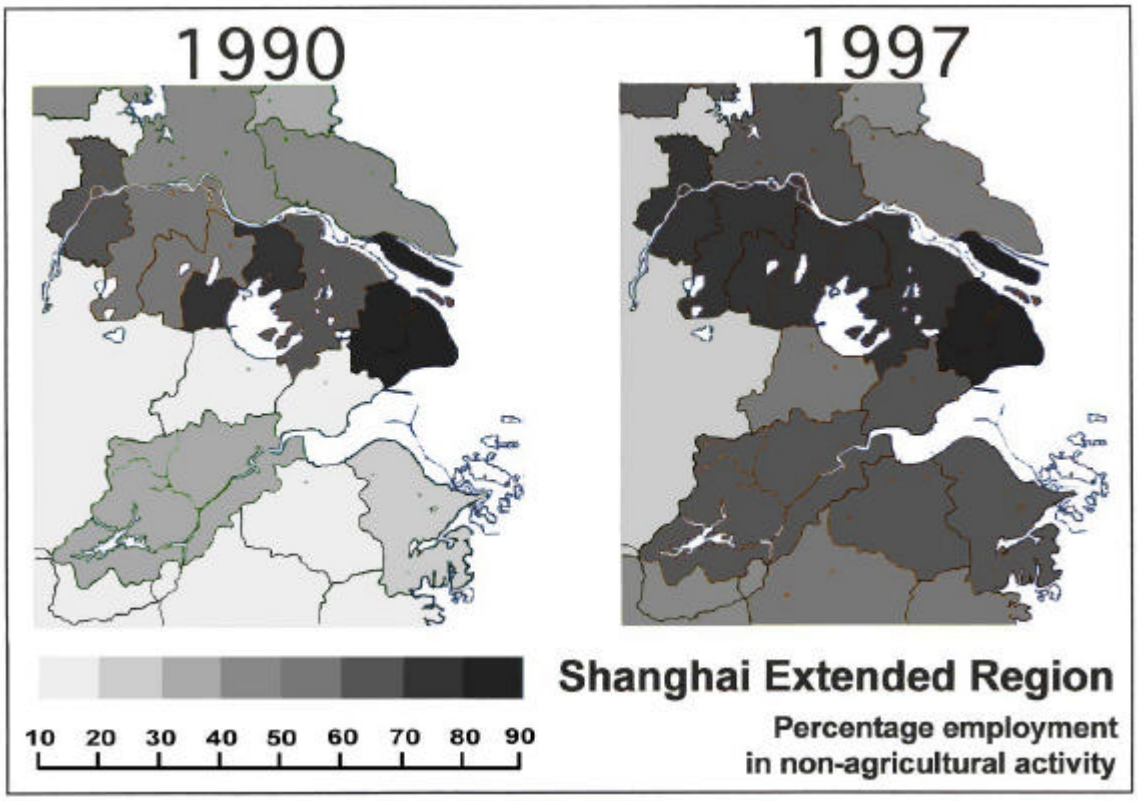


Figure 3. The Peri-urbanization Process in the Extended Shanghai Region

Source: M. Warwick, Stanford University, 2000

Peri-urbanization in coastal China varies from that in Southeast Asian in another fundamental way. In coastal China, the majority of labor employed by peri-urban firms is provided by in situ residents of nearby areas. Because the coastal estuaries, where most peri-urbanization is occurring, are characterized by high population densities, many people, often the majority of the population, have readily switched from agricultural to industrial activities. Figure 3 illustrates the rapid spread of this phenomenon in the Lower Yangtze delta region between 1990 and 1997. In some cases local populations working in the manufacturing sector remain in their existing housing; in other cases they have moved into upgraded housing because of financial windfalls associated with their collective's right to income from land leased in their community. Some employees commute daily, using local transportation systems (formal or informal), to firms in nearby villages (Cai 2000). However, inter-provincial migrants, including long-distance migrants from the central and western regions, increasingly constitute a larger percentage of new workers in coastal China's peri-urban enterprises. (Based on 1998 data, approximately 69 percent of migration in China is short distance, i.e., intra-regional [primarily intra-provincial], but this is down substantially from 82 percent in 1993.)[49] Increased long-distance migration to Chinese peri-urban areas is likely the product of better information about opportunities in source regions and the fact that coastal areas are beginning to run short of workers of acceptable quality, plus "push" factors in western and central regions of China. In this sense, labor migration to

peri-urban areas is starting to move closer to the Southeast Asian model, where a much higher percentage of peri-urban manufacturing employees are long-distance migrants from the poorer regions. As noted earlier, this has important policy implications.

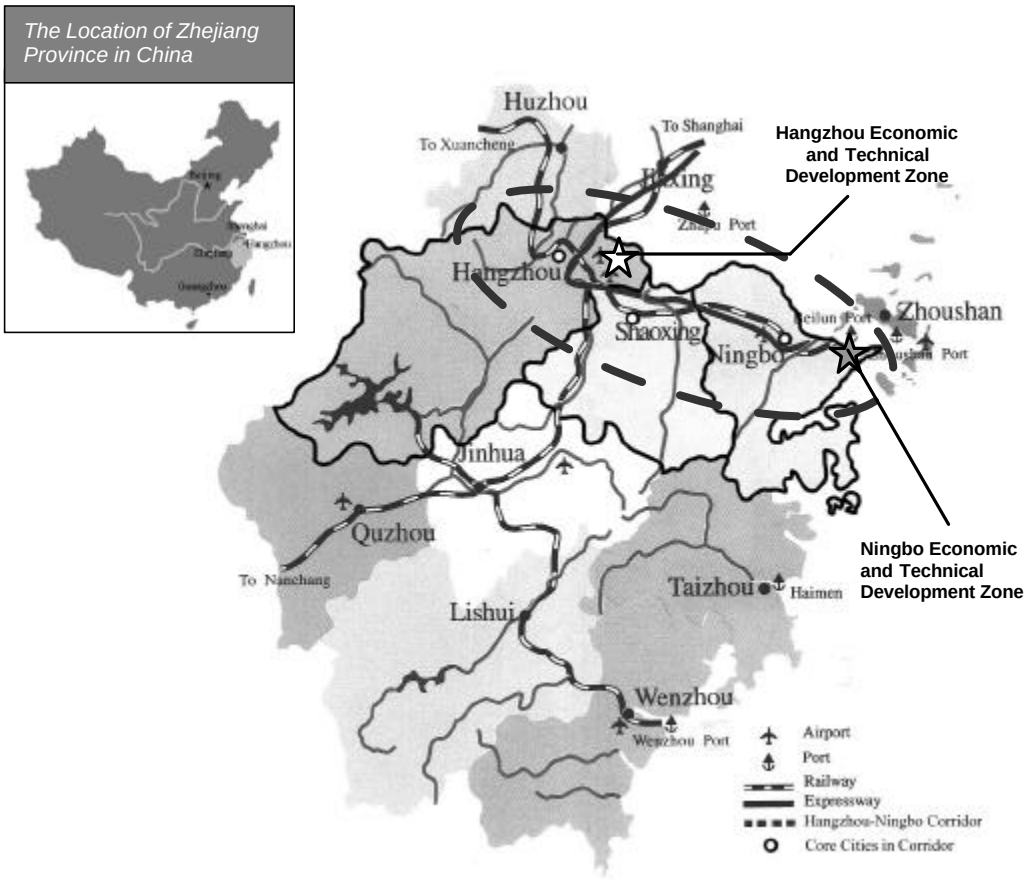
The *hukou* system limits residence in cities proper by significantly restricting access of those who are not legally resident to social services such as education and health. Thus there has been a built-in incentive over the last two decades for many migrants to settle in peri-urban areas outside cities proper. This has created a confluence of interest between migrants wishing (or needing) to limit their migration to locations outside the city proper and investors and developers (including municipal corporations) wanting to locate economic activities in peri-urban areas for market-related reasons, in particular access to suitable land, as noted above. In addition, and very important, the leadership and legal (long-term) residents of "rural" collectives in peri-urban areas stand to gain substantially from land development in their communities (for industry, worker housing, and/or commercial facilities) through substantial land lease or property rental revenues. To a considerable extent, many residents of collectives in peri-urban areas are becoming a rentier class. Thus, most "rural" collectives in areas where peri-urbanization is under way, or approaching, are supportive of the transitional dynamics that are unleashed. On the other hand, there are cases in the study area where there is less support to peri-urbanization dynamics by local rural residents. These are townships where local residents are being asked to cluster in villages (obtaining new housing through compensation moneys from their loss of farmland), essentially not being given the option of building villas on farm plots.

Another difference, and a positive one, that China shares with other countries in transition from a centrally planned economy, such as Vietnam,[50] is that urban areas tend to be administratively over-bounded rather than under-bounded as in the Southeast Asian case. This is somewhat of a simplification in that municipalities, which contain approximately 75 percent of China's population, are composed of urban districts, counties, and townships, as discussed above. Nevertheless, the existence of municipalities that contain both urban and peri-urban areas within a nested system of local governance represents an opportunity. Of course, some extended urban regions spill out beyond the boundaries of one municipality into another, but even so the number of key local governments (municipalities) is often limited to two or three in an extended urban region, except in the case of the very largest EURs. At present, the balance of power among the national government, provinces, municipalities, and lower levels of government, such as counties and townships, is still evolving. On one hand, the national government is trying to regain greater control over land use in extended urban regions, particularly in municipal areas outside the city proper—a movement that, if successful, could limit the power of the municipal governments. On the other hand, there seems to be widespread support (driven by the national government) among the national, provincial, and municipal governments that the power of lower levels of government, particularly townships, should be diminished. If realized, this diminishment of the power of lower-level local governments could provide municipalities with more power to coordinate development in peri-urban areas. Another alternative would be for provincial governments to play a greater role in coordinating peri-urban development. This would require establishment of regional planning processes in which provincial governments would play a leading role.

Yet another difference between peri-urbanization in coastal China and Southeast Asia is that China is relatively less dependent on export-driven development than any other major developing country in East Asia because of its very large domestic market. This means that

domestic investors play an important role in driving peri-urban development in China, along with MNCs. And, MNCs are more domestic-market-oriented than in most other countries where they operate. With China's admission into the World Trade Organization, the nature of multinational investment in Chinese peri-urban areas is changing with large MNCs from North America, Japan, and Europe likely to play a more important role, although investment from Greater China, i.e. Hong Kong, and particularly Taiwan, is likely to remain high. In parallel, there is a shift to more technologically sophisticated, larger scale, more capital-intensive foreign investment. Firms located in peri-urban areas in China, both domestic and foreign, tend to have limited economic, particularly supplier, links to urban cores. This is mainly the result of underdevelopment of the urban service sector; the phenomenon is reinforced by the existence of the *hukou* system, which dampens potential human/institutional network development within extended urban regions in China. Domestic firms internalize a wide variety of functions, e.g., accounting, advertising, computer services, while MNCs have strong exogenous connections in terms of producer services linkages (although declining in relative terms as China's service sector strengthens rapidly).[51] It is the policy of the Chinese government to encourage development of service industry through a variety of policies;[52] stronger economic linkages between peri-urban areas and urban cores could result.

Map 3 describes the Hangzhou-Ningbo peri-urban area of Zhejiang Province. In industrially oriented Ningbo municipality, 63 percent of urban population growth occurred outside the city proper from 1985 to 1998 while in more service-oriented Hangzhou municipality the comparable figure is 31 percent (although the true figure is somewhat higher for Hangzhou because of boundary changes that enlarged the area of the city proper). These figures, and those for other Chinese coastal areas, indicate that the share of overall urban population growth accounted for by peri-urbanization is relatively similar to Southeast Asia, e.g., Manila, Jakarta, and Bangkok. Within the study area, consisting of the municipalities of Hangzhou, Shaoxing, and Ningbo (total population 15.9 million), 7.2 million people, or 45 percent of the population, can be classified as peri-urban dwellers. By contrast, 3.3 million or 21 percent can be described as core urban dwellers (city proper) and 5.4 million or 34 percent as rural. While it is relatively easy to distinguish between the core and peri-urban areas (officially, physically, and economically), it is much more difficult to distinguish between peri-urban and rural areas. This is because the former TVE movement has left a legacy of SMEs in rural areas. For example, in Hangzhou municipality 55.2 percent of rural GRDP is accounted for by secondary (manufacturing) activity compared with 57.3 percent in peri-urban areas.[53] The situation is similar in Shaoxing and Ningbo municipalities. About the only factor distinguishing rural and peri-urban areas is the higher level of primary (agricultural) activity in rural areas. For example, in Hangzhou municipality, 16.8 percent of GRDP in the rural economy can be accounted for by primary activity compared with 11.6 percent in the peri-urban economy. The same pattern holds for the other two municipalities in the study area.



Map 3. Hangzhou-Ningbo Corridor, Zhejiang Province, PRC

Source of base map: The Information Office of Zhejiang Provincial People's Government (2000)

The Ningbo Economic and Technical Development Zone closely resembles industrial estates in the Eastern Seaboard of Thailand established at approximately the same time, e.g., the Laem Chabang Industrial Estate. The more recently developed Hangzhou Economic and Technological Development Zone, an initiative of Hangzhou municipality, resembles the Laguna Technopark in terms of industrial mix. The newer Chinese ETDZs are very integrated; they contain schools, colleges, major health facilities, and a variety of worker and management housing. However, this does not mean that local adjustment processes attributable to local actors, as noted in the case of the Philippines and Thailand peri-urban areas, are not significant. In particular, households in local collectives, who have user rights to the land near these estates (and lower-level industrial estates as well), have built much worker housing, generally in the form of three- or four-story structures which are often sublet to industrial workers. Senior governments, particularly the Zhejiang provincial government, argue that such buildings are illegal, because they have not been approved by the municipal and provincial levels of government. Nevertheless, such structures have proliferated by the tens of thousands. In addition, numerous small-scale facilities and businesses have sprung up in peri-urban areas to serve worker needs; as well as formal and informal transportation systems.

Emerging Outcomes

Impacts

The leading environmental issue in Ningbo municipality's peri-urban area, and true of the study area as a whole, is untreated wastewater, generated by enterprises within the peri-urban area itself.[54,55] As indicated by Table 1, although peri-urban areas account for 46 percent of industrial wastewater discharge in the Ningbo extended urban area (city proper plus peri-urban), only 36 percent of this wastewater is treated up to standard in the peri-urban area compared with 57 percent in the city proper. The solid-waste issue is different in that 83 percent of solid waste generated in the Ningbo extended urban region is from the city proper. However, solid waste becomes a peri-urban problem in that much of the solid waste being generated in cities proper is being improperly disposed in the peri-urban areas. The third-priority environmental problem, and the one of highest concern to officials, is the loss of agricultural land to urban-industrial land uses. Although estimates of land loss vary widely, it is clearly of major proportions.[56,57] The land-loss issue focuses not just on the quantity of land being lost but the spatial pattern of land loss—the ribbon pattern, discussed earlier, breaks up farm fields. Furthermore, much of the land loss occurs in the most fertile areas; farmers, who logically live on the most fertile land, build on this land for reasons explained earlier. As noted earlier, in quantitative terms land loss is relatively low when related to urban demographic growth, and by international standards. However, China's situation, especially in the coastal areas (large population, high human: fertile land ratio), makes land loss to peri-urbanization a serious issue.[58]

(10,000 tons)

Industrial Wastewater	City Proper	Peri-Urban
Discharge	5,868	4,943
as share of total municipal discharge (%)	54%	46%
Up to Standard	3,341	1,757
as share of discharge (%)	57%	36%

Table 1. Industrial Wastewater Discharge and Treatment in Ningbo Extended Urban Region (1998)

Source of data: *Ningbo Statistical Yearbook 1999*

Transportation congestion is not yet a problem in most peri-urban areas in China, and is not a problem in the study area. However, it is difficult for most individuals to easily move within peri-urban areas and to core cities from peri-urban areas, generating inefficiencies and human costs. This situation is the result of underdeveloped public bus systems (only 10–15 percent of person trips in cities proper in China are made by public bus, and the percentage is much lower in peri-urban areas), scarcity of private vehicles, and relatively underdeveloped informal transportation systems. These factors, when combined with land-use patterns that make bicycling and walking difficult and the underdevelopment of retail and personal-service facilities in peri-urban areas, mean that peri-urban residents are relatively isolated on a day-to-day basis. Of note is the fact that excellent freeway systems emanating

from most large cities in China have very much affected peri-urban accessibility contours over the last ten years, making some areas much more accessible in absolute terms and others much less accessible in relative terms. (Prior to 1990, most peri-urban areas were connected to urban cores by poor two-lane roads, but accessibility was roughly equal in most directions, and more or less related to distance from the urban core. Now, the principal factor affecting accessibility to the urban core [and many other points] is distance to the nearest freeway entrance.) This factor will considerably affect peri-urban settlement patterns, concentrating growth along corridors and contributing to sub-area stagnation effects discussed earlier. Thus stagnation is likely to be associated with both an outer peri-urban location and remoteness from a freeway—when these two factors converge, stagnation is particularly likely.

The impact of the doubling in the number of private vehicles in China over the next five years on peri-urban areas is unclear. One outcome may be that most vehicles will be owned in the cities proper and inner peri-urban areas, essentially stranding more remote peri-urban areas. A more optimistic interpretation is that motorization will increase connectivity between outer peri-urban areas and city cores, reducing the threat of stagnation in these areas. What is clear is that current land-use patterns in peri-urban areas are not conducive to efficient movement of people and goods, and are likely to impose increasing costs in terms of congestion, environmental quality, human time, and economic efficiency in the future. To the extent that settlement (both residential and employment-led) can be clustered along transportation corridors (so-called necklace urban form; see Figure 4) that offer highway, rail, and telecommunications options, the efficiency of peri-urban areas can be significantly increased.

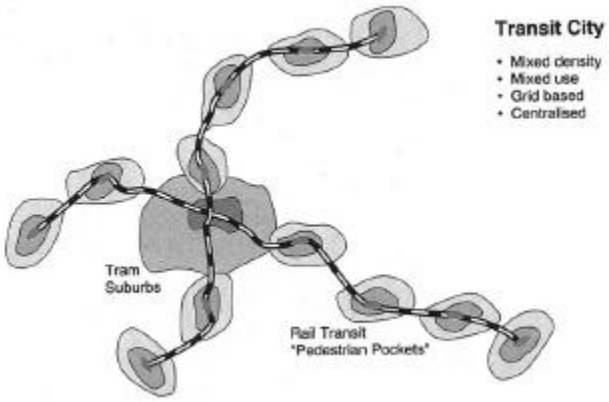


Figure 4. Necklace Development
Transit and Environment Friendly

Source: Newman, Peter, Jeff Kenworthy, and Peter Vintila, in "Housing, Transport and Urban Form," Institute for Science and Technology Policy, Murdoch University, Australia, 1992

Adaptation

In most peri-urban areas in developing East Asia, e.g., Thailand, Indonesia, and the Philippines, the capability of local governments to cope with the peri-urbanization process is limited, making adaptation by households, the private sector, and voluntary organizations very important in maintaining the viability of these areas. In China, the situation is different. First, the main initiators of major peri-urban projects are local governments. Thus there is no private-sector adaptation at the level of industrial estate management as one would see in Thailand or Philippines. Second, voluntary organizations are not well developed in China, and have a limited presence in peri-urban areas, mainly manifest in delivery of social services, particularly education, to non-*hukou* holders at affordable rates.

As has been seen in the Thai and Philippines cases,[59] major businesses, particularly multinational corporations, adapt to deliver certain public services, especially in cases where there is perceived to be a gap caused by shortcomings of local government. This is less so in China because of the greater role of government, but still occurs. For example, major firms in industrial estates near Hangzhou and Ningbo run shuttle buses to and from the city core. And, companies may donate certain services, for example, recreational facilities by multinational computer manufacturers in the case of the Hangzhou Economic and Technological Development Zone.

Perhaps the most interesting private-sector adaptation has been the rise of private employment agencies that match workers to firms for a small fee—to both the job seeker and the firm.[60] (If the individual does not successfully obtain a job through the service, she/he pays nothing.) As migrants from outside the province constitute a larger percentage of the labor force in peri-urban areas of Zhejiang (and elsewhere in dynamic areas of China), such services are likely to become even more widespread.

The greatest adaptation is by local residents (long-time residents of local villages or collectives) who have land rights in dynamic peri-urban areas. They frequently build houses (villas), then lease them out or rent rooms to boarders. In some cases, they start up commercial activities, e.g., small grocery stores or beauty parlors, in their residences to serve nearby industrial workers.

Less adaptation is shown in terms of hawkers and informal transportation, e.g., motorized tricycles, than in Southeast Asia. However, some locals and in-migrants are engaged in these pursuits. Such activity is constrained by the fact that within official development zones, such as industrial estates, the informal economy is controlled; market spaces, etc., are limited.

The Future of Peri-urbanization in East Asia

Understanding the spectrum of possible peri-urban futures in East Asia, and the relationships between national and local policy frameworks and differing outcomes, is central to effective policymaking for and in peri-urban areas. Are existing peri-urban areas sustainable communities in the making, or are they "disposable" landscapes/regional economies that will decline rapidly as investment moves on, either through "flying geese" dynamics or through structural changes away from manufacturing? The future is not predictable, but based on initial analysis, particularly of East Asian peri-urban processes that have been under way for some time, certain observations can be made.

Conflict Resolution

In most East Asian peri-urban regions conflict is increasing, especially between long-term residents and newcomers and between external economic actors, e.g., MNCs and local institutions such as local government. Conflict is manifest in worker demonstrations in China and labor actions in the Philippines (where factories often employ workers for only six months to avoid paying benefits—creating "musical chairs" labor dynamics among factories). Another frequent cause of conflict in all three countries is over land—local people may resent loss of land rights or indirect impacts, e.g., loss of green space. The result of increased conflict, in some cases, is decreasing official support to peri-urbanization, e.g., provincial governments in the Eastern Seaboard of Thailand, particularly Rayong Province, are becoming increasingly less supportive of peri-urban industrialization.[61] Much of the conflict seems to be based on a perception by local people and sometimes local governments that the benefits from peri-urban development are not sufficient to justify the wrenching change that it involves.

Part of the problem can be explained by the lack of effective conflict resolution mechanisms in East Asian peri-urban regions. For example, in Thailand there is an overreliance on binary (yes-no) types of public consultation processes to approve major projects. This would include environmental impact assessment processes (as practiced in East Asia), public hearings, poorly structured civic forums, etc. Because these mechanisms are structured to yield yes-no outcomes, big winners and losers emerge. Furthermore, proponents try to "fix" outcomes ahead of formal meetings, while opponents often find that disruption is their most effective tactic. Conflict resolution processes are needed that would leave much more space for negotiation, based on mediation. This would enable win-win deals to be struck.

Planning at the local (municipal, district, *tambon*, province) level is often similarly rigid with decisions being made in an opaque manner between powerful local interests and key economic actors. Or, in less decentralized contexts, such as Thailand, deals are struck between key national government agencies and large economic actors, both foreign and domestic, bypassing local officials and people. (Generally speaking, MNCs interact mainly with national governments, while property developers have more interaction with local governments.) What appears to offer promise are planning approaches that are more collaborative in nature involving representatives of key interest groups such as labor, environmentalists, local government, national government, investors, etc. Planning based on such an approach would cast local governments as important actors but not as dominant shapers of regional policy.

Without major changes in conflict resolution processes, it is difficult to see a promising future for peri-urbanization in East Asia, especially in countries such as Thailand, where increased democratization makes it relatively easy to stop projects. Yet there may be significant benefits attributable to peri-urbanization, particularly employment, which can be realized consistent with development of livable environments and sustainable economic development, if better planning and conflict resolution processes are put in place.

Corruption

Although not widely discussed, peri-urban areas are particularly vulnerable to corruption, takeover by organized crime, etc. Numerous examples have been documented including coastal areas of China, e.g., Haikou in Hainan Province; Chonburi Province in Thailand; and Cavite Province in the Philippines.[62] There are three main reasons for the presence of

substantial illicit activity in many peri-urbanizing areas. One is that these areas are economically vibrant; with large sums of money at stake, it is not surprising that they are attractive to those involved in illegal activities. Second, wealth is relatively less based on land; new institutions such as manufacturing firms and regionally based state enterprises are much easier to penetrate than traditional land-holding families. The third reason is that, as has been argued, local governments tend to be very weak in peri-urban areas. For example, in peri-urban Thailand, some *tambons* have been significantly influenced or taken over by a variety of groups including "mafias" or "bosses."

Singapore, given its successful suburban industrialization in Jurong New Town and effective support to peri-urban development in the Batam-Johore-Singapore growth triangle, made direct support to peri-urbanization in East Asia a key element of its foreign policy. Singapore's Economic Development Board, which has offices in Singapore's embassies worldwide, and the international arm of the Jurong New Town corporation, a state enterprise known as JTC International, were designated to effect this policy. The results have been mixed. JTC International has announced that it is withdrawing from both the Suzhou New District (SND) project in China and the Thailand-Singapore 21 project in Rayong Province of Thailand. Although many factors are involved, the prime explanation for Singapore's limited success in export of peri-urban development systems, which worked very well in Singapore, appears to be a lack of understanding of the murky nature of politics and business in booming peri-urban areas. The corruption-free, rational Singapore system is probably a poor training ground for the realpolitik of most East Asian peri-urban areas. According to Singapore's senior minister, Lee Kuan Yew (2000), referring to the SND project, "The five years in Suzhou educated us on the intricacies of their multi-layered administration and flexible business culture" (p. 653). On the other hand, Singapore's involvement in Batam's development, implemented by the Singapore-government-linked Singapore Technologies Industrial Corporation, was successful, involving the initial creation of 74,000 jobs in Indonesia (Lee Kuan Yew 2000, 272). Lee Kuan Yew notes in his analyses of peri-urbanization in Asia that most countries focus on the hardware (infrastructure) whereas it is the software (creating a pro-business climate) that is most important. However, it appears that Singapore may have fallen into the same trap in attempting to export peri-urbanization know-how. Singapore understood the hardware, but not the "software" of host country systems, e.g., governance cultures.

Much is currently being written about corruption in East Asia, and some progress is being made in combating it. At the peri-urban scale, measures could include the following:

(i) Creation of larger local governments that would be less susceptible to easy takeover by illicit groups.

(ii) Strengthening of local governments to reduce governance vacuums.

(iii) Development of local collaborative governance processes, discussed above, involving a large number of interest groups, who would hopefully play a watchdog function and encourage public decision-making.

(iv) Agreement on the part of locally based MNCs not pay bribes, kickbacks, etc.

(v) Increased transparency in local government, backed up by local public awareness programming that would encourage residents to monitor the performance and spending of local governments. This should involve timely, widely disseminated release of indicators on local government performance, budgets, etc.

Technology Assessment/Choice

As has been noted, local governments in peri-urban areas need to invest in many forms of infrastructure, involving large expenditures. At the same time, these governments are usually encumbered by weak technical capacity. Outcomes are often poor because local governments are unable to make good decisions regarding choice of technologies. Because very large amounts of money are involved, inappropriate decisions can result in the creation of "capital traps" that devour large amounts of money in debt service, unexpectedly high operational costs (making cost recovery through user fees impossible), etc. For example, wastewater systems (sewerage) can cost hundreds of millions to service relatively small populations. Cistern or septic-tank based systems, appropriate to low-density urbanization and widely used in developed countries such as Japan might prove much more effective in low-density peri-urban areas. (Of course, the alternative would be to encourage nucleation of population in peri-urban areas to make traditional technologies, such as sewer systems, more financially feasible.) Other examples of infrastructure technology choice decision-making of enormous import, both for present and future residents, would be solid waste and public transportation. The least-cost solution is not always the best, but decisions regarding technology/capital expenditures have enormous implications that need to be carefully considered.

What are the policy implications for peri-urban governments? First, objective information is needed to make good decisions. Learning from other regions further along the peri-urban development trajectory can be especially useful. Local governments in peri-urbanizing areas can currently readily access considerable information on subject matter such as discussed in this section. For example, several Internet sites on "best urban practices" exist hosted by urban-oriented agencies such as UNCHS (Habitat), the World Bank, and the International Union of Local Authorities; and CD-ROMs covering the gamut of the "urban toolkit" are available from agencies such as the World Bank. In addition to obtaining better information, governments responsible for peri-urbanizing areas need to develop basic skills in financial analysis and project and program assessment (at least at the pre-feasibility level) so that they can critically use information obtained from outside sources.

A problem facing peri-urban governments is that much of the information that they receive in regard to urban technologies is through parties with strong financial or professional interests in promoting a particular technology. This is especially true when it is known that finance is readily available to fund urban infrastructure. For example, Thailand's Environment Fund,[63] capitalized by Japan's Overseas Economic Cooperation Fund, attracted numerous sellers of incinerator systems to peri-urban Thailand, extolling the technical virtues of such systems. International development agencies, such as the Asian Development Bank or World Bank, may have professional (staff) biases toward particular mixes of technology to address problems and in the past have often paid more attention to hardware than software in addressing the challenges which peri-urbanizing areas face.

Competitiveness/Regional Development Strategies

As has been argued, decentralization under way in virtually all East Asian nations means that local governance systems will need to take responsibility for formulating and implementing their own economic/competitiveness development strategies. This is a role that was normally played by national governments in the past, for example in China by the Special Economic Zones Office based in Beijing and in Thailand utilizing the NESDB (with its strong

regional development function) and the Board of Investment.[64] Implementation of decentralization policies means that visions and missions to guide future development will need to be developed locally. However, even major core cities such as Bangkok (BMA) and Manila (NCR) lack economic development and marketing functions at present. Nevertheless, appropriate techniques and approaches to develop competitiveness strategies are well known (Webster and Muller, 2000).

Local developmental/competitiveness strategies in peri-urbanizing areas should clearly define: (i) a vision for the area, (ii) the spectrum of possible external conditions which the region will face so that opportunities can be identified and contingent actions to deal with negative situations (should they emerge) be identified, (iii) a limited number of high leverage strategies, and (iv) marketing and promotion mechanisms.

A promising area for consideration in guiding peri-urban economic development is facilitation of development of clusters, as outlined by Porter (2000). Cluster development is more than just encouraging inter-firm linkages in a peri-urban region. It involves creation of, and support to, public institutions supportive of the cluster, development of local education systems that align with the emerging economy, and promotion (locally and internationally) of the underlying cluster theme and rationale. Local governments, or better, a Council of Local Governments in the peri-urban area, often need to take the lead in championing a cluster-oriented development strategy.

An Integrated Approach

Peri-urbanizing regions display distinctive characteristics. First, peri-urbanization occurs in the context of a governance structure that is fundamentally non-urban—the degree of fragmentation and low capacity is striking considering the stakes involved. Second, in most peri-urban regions of East Asia, and in the case of the three discussed in this paper, the economic imbalance is striking. European and North American cities that were the center of the industrial revolution in the nineteenth and early twentieth century rarely exhibited economic structures where manufacturing accounted for 60–70 percent of gross regional domestic product. Third, the landscape of peri-urban areas is unique—it is difficult, if not impossible, to identify urban landscapes of the past that resembled East Asia's contemporary patchwork peri-urban landscapes. Fourth, peri-urbanization occurs quickly; thus city building occurs in a much less incremental way, essentially laid on top of traditional agricultural landscapes. This contrasts with the more organic city-building process seen in traditional cities and suburbs. The peri-urbanization process represents both an opportunity—to do it right the first time and thereby quickly set a region's structure in place—and a significant threat—much damage can be done without time for corrective processes to take hold.[65]

This situation calls for a coordinated response to city building, urban management, and developmental guidance in peri-urban areas—even more so than in core cities (Webster 2000a). This means that national government guidance (or at a minimum, monitoring) is usually needed in peri-urban areas because locally based coordination mechanisms are typically weak. Often only the national government has the power and authority to create incentive frameworks for local governments and key stakeholders to work together. But the responsibility for peri-urban development will increasingly lie, as it should, with local actors. This means that development of effective institutional systems in peri-urban areas is priority number one.

The nature of the peri-urbanization process makes disjointed policy responses very ineffective given potential returns from coordinated interventions. To give a simple example, nucleation of residential settlement would lower unit costs of environmental and service infrastructure while making public rapid transportation more feasible and protecting high capability farmland. Regional-scale delivery of facilities and services, such as hazardous waste management, transportation systems, and solid waste/recycling, would generate well-documented enormous benefits both in terms of public welfare and cost-effectiveness. But such coordinated responses to challenges are only possible in conjunction with regional-scale governance cooperation and local capacity-building processes that work.

Coordinated peri-urban development requires real financial incentives that encourage local governments and agencies to work together in peri-urban areas. Different functions, ranging from health and education delivery to construction and maintenance of feeder roads, require institutions operating at appropriate spatial scales and undertaking effective decision-making, particularly in terms of technological choice and allocation of capital. Performance monitoring, directly related to policies, is critical to the successful development of peri-urban areas because of the rapid rate of change.

Conclusion

It has been argued that peri-urbanization in East Asia is a unique process and that peri-urban areas, depending on how they are managed by national and local stakeholders in conjunction with investors (both foreign and local), can experience very different outcomes, even when drivers are similar. The nature of the peri-urbanization process is such that coordinated approaches to development are likely to yield significant benefits. But the overwhelming first priority in development of peri-urban areas is to encourage and facilitate institutional development that makes such coordinated development possible.

Notes

[1] The term *East Asia* in this monograph refers to Southeast Asia, Northeast Asia, and China.

[2] Incremental population growth outside Jakarta DKI.

[3] Fragmentation refers to the fact that most East Asian peri-urban areas are governed by a large number of small, low-capacity local governments. It also refers to the fact that a wide variety of agencies from national, *meso* (provincial), and local levels, including line agencies, state enterprises, and privatized entities, are responsible for public service delivery, yet there is often limited cooperation among these agencies. Thus there is lack of horizontal coordination (agencies operating at the same level such as local governments) and vertical coordination (agencies operating at different levels, e.g., national and local).

[4] The Urban Dynamics of East Asia program at the Asia/Pacific Research Center of Stanford University, USA.

[5] The Development Planning Unit at the University of London has a major study on peri-urbanization under way, funded by the British Government, but its study does not include an East Asian case study. See, for example, Adell (1999), Atkinson (1999), Budds & Minaya

(1999), and Mattingly (1999).

[6] One exception would be Lee, Kyu Sik, Gilbert, Roy, and Kwagnju-Chunman Development Institute (1997)

[7] The reconnaissance-level analysis involved an extensive literature review of peri-urbanization in East Asia and field visits to several peri-urban areas, e.g., Jakarta, Kuala Lumpur, Singapore, Beijing, Penang, Chengdu, Hanoi, Ho Chi Minh City, and Tokyo, in addition to the selected case-study areas.

[8] The core Eastern Seaboard development area is composed of Chachoengsao, Chonburi, and Rayong provinces. The study area for this research is composed of the latter two provinces.

[9] Although peri-urbanization is usually associated with a shift to a manufacturing-dominated local economy, in the future service activity may be the driver of peri-urban development. This is already occurring in the Beijing peri-urban region (where services account for a larger percentage of GRDP) and may occur in the future in the extended Manila region as technology-enabled services such as data processing and call centers become more important than manufacturing in terms of employment creation.

[10] For more detail on this process see Kaothien and Webster (2000).

[11] The prime event that set off this process in East Asia was the Plaza Accord of 1984 which resulted in rapid appreciation of the Japanese yen, forcing Japanese manufacturers to move production offshore, primarily to Southeast Asia.

[12] In many East Asian countries, such as Thailand, national environmental laws do not apply to industrial estates; they fall under separate laws regulating industrial estates. In the case of Thailand this means that the Industrial Estate Authority of Thailand (IEAT), a state enterprise, establishes offices at many industrial estates (even privately owned ones, or joint private-IEAT ventures) to monitor environmental conditions.

[13] In the Mao era, a policy of locating industry, often defense related, in the interior for security reasons was implemented. This provided interior cities with an initial industrial base that is evolving into manufacture of a wide range of consumer and intermediate goods.

[14] For more detail, see Webster (2002)

[15] Extended urban regions such as Tokyo with superb passenger rail systems indicate that daily commutersheds can be very large with high investment in rail systems and coordinated transportation, land-use planning and property development that results in medium to high density housing near suburban and peri-urban rail stations. Part of Japan's success in this regard is attributable to highly effective use of land readjustment techniques.

[16] Professor Anthony Yeh's ongoing work on "Hong Kong–Pearl River Delta Producer Service Linkages" represents a notable exception in this regard.

[17] State Development Planning Commission, China's 10th National Development Plan, Beijing, 2001. English summary published by Star Publishing, Beijing, 2001.

[18] At the same time, through "bottom up" processes, a successful peri-urban area, based on electronics manufacturing, has developed in the Penang-Butterworth area of Malaysia, spreading north into Kedah State. In this case, networked local institutions, particularly those involved in training, have played an important role in supporting this example of successful peri-urbanization in north-west peninsular Malaysia.

[19] JBIC is the result of an amalgamation of OECF and the Japanese Export-Import Bank on October 1, 1999. It was OECF that made loans for peri-urban infrastructure in many countries.

[20] Sometimes innovative financing instruments such as build-operate-transfer schemes are used to deliver projects. For more detail on the use of these instruments in the East Asian context, see Brockman (1996).

[21] Interestingly, the World Bank and Asian Development Bank were not significantly involved in early peri-urbanization efforts in East Asia. This is changing.

[22] Data Source: Centre for Integrated Planning Operations, National Economic and Social Development Board, Government of Thailand.

[23] Most Chinese urban residents perceive themselves to be (and in fact are) more secure in core cities than in peripheral urban areas.

[24] 63 of 75 transition and developing economies with populations of more than 5 million people are undergoing decentralization, defined in this case as transfer of political and administrative power to local governments. For an overview of the decentralization debate, see Hommes (1995)

[25] For a description of the economic cluster concept, see Porter (2000).

[26] The core city (BMA) contains about 8 million people, the suburbs (the Bangkok Metropolitan Region [BMR] minus BMA) 3.5 million people, and the peri-urban area 6 million people, resulting in an extended urban region (Extended Bangkok Region or EBR) population of about 17.5 million people.

[27] Based on registration data, the population of the three core ESB provinces grew at a rate of 2.02 percent annually between 1994 and 1998.

[28] Thai demographic data severely undercounts population in fast-growing areas and overcounts population in stagnant, e.g., most rural, areas. The reason is that many migrants do not bother to re-register their residence when they move to urban or peri-urban areas. Re-registering is time-consuming and failure to do so does not restrict access to public services.

[29] In China, decentralization was driven to a considerable extent by sub-national governments, particularly in the coastal region, rather than by a national policy.

[30] The mix and age of industrialization, as well as land-use patterns, in this area closely parallels that in Samut Sakhon and Samut Prakarn provinces in the extended Bangkok region.

[31] For more detail regarding the overall Manila peri-urban region, see Kelly (1998).

[32] As noted above, the Manila peri-urban area extends beyond Region IV.

[33] Applications by foreign firms to invest in the Philippines fell 60 percent in 2000. (Most such investment is in the Manila peri-urban area; the other two significant destinations of FDI for manufacturing-services in the Philippines are Central Luzon and the Cebu metropolitan area.) Mr. Alberto Romulo, the new finance secretary of the Philippines, in a videoconference with leading American investors on February 6, 2001, referring to the business climate under the predecessor government noted, “Projects were being halted every day. People were complaining about how hard it is to do business in the Philippines.” For more detail, see Landler (2001).

[34] Container hijacking is being countered by equipping containers with geopositioning sensors.

[35] In addition to the Ayala Corporation, the other two highly influential property developers are the Araneta family (Progressive Development Corporation) and the Ortigas family (Ortigas & Company).

[36] Winarso notes, referring to the extended Jakarta urban region (Jabotabek), that "private developers are now the leading institutions who can create markets and provide a significant amount of formal housing…Private developers are now expanding their activities…to the provision of "public goods" including roads and piped water…Private developers, with their ability to mobilize funds and their control over considerable amounts of land, are influencing the making and implementation of statutory spatial plans for the region."

[37] Provincial governments in the Philippines have limited powers, although they play a strong role in areas such as law enforcement and the judiciary.

[38] Unsolicited privatization proposals are allowed under Government of the Philippines law.

[39] It is not possible to identify one dominant downtown or central business district in Manila or Bangkok. Rather, the poly-nucleated urban form, similar to Los Angeles, of these cities, contains several key business centers. This is particularly the case in Manila where the historical downtown area has declined significantly in the face of competition from new business centers, e.g., Makai, Edsa, and Alabang, developed by leading property developers.

[40] For more detail on adaptation mechanisms in Cavite-Laguna, see Muller (2000).

[41] Much of the material in this section is based on Webster (2000b). For further detail on peri-urbanization in the Lower Yangtze delta, see Marton (2000).

[42] Anchored by four key urban centers: Hong Kong, Shenzen, Guangzhou, and Macau.

[43] Anchored by four key urban centers: Shanghai, Nanjing, Hangzhou, and Ningbo.

[44] I am using the term *cluster* here as defined by Porter (2000). That is, industrial districts where firms are closely linked and networks of supportive individuals and institutions (e.g., educational, research, standards) are embedded, closely interacting with the set of firms.

[45] It is interesting that these clusters which have arisen spontaneously in peri-urban China are frequently the objective of public policy elsewhere. For example, the Kedah State Economic Development Corporation in the highly successful peri-urban area of northwest Malaysia has a policy of "one village, one product."

[46] Source: Meeting, Zhejiang Provincial Planning Commission, August, 2000.

[47] This is a key policy in the Chinese Tenth Five-Year Plan of China (State Development Planning Commission 2001), which has, as one of its two major themes, accelerating urbanization in China and making urban areas more economically productive. For details, see Webster (2000b).

[48] For a description of this phenomenon in the Shanghai area, see Miankang et al. (1998).

[49] For more details on Chinese migration patterns and their implications for urbanization, see Chan (2000).

[50] For example, Hanoi and Ho Chi Minh City are so overbounded that it is regarded as a problem by city authorities. Servicing rural areas is costly and is perceived to drain financial and human resources away from urban priorities.

[51] Recent work by Professor Anthony Yeh at the University of Hong Kong is indicating rapid development and use (by both domestic and foreign firms) of producer services in China based on the "Hong Kong–Pearl River Delta Producer Services Linkages" project.

[52] For an analysis of the service sector in Chinese cities, see Henderson (2000).

[53] For data, see Webster and Muller (2002).

[54] The author is grateful for research on this topic by PhD. student Mr. Cheng Chang. See Chang (2001).

[55] Contributions to global environmental problems, e.g., global warming, associated with activity in Coastal China, including the study area, are not discussed, but are a major issue. For example, acid rain is a major issue in the area (Chang 2001).

[56] International analysis based on remote sensing shows more land being lost to urbanization than official Chinese data. On the other hand, such international data shows that China has more land suitable for agriculture than official data indicates, thus the fraction being lost is lower (Seto et al. 2000).

[57] The State Land Administration Bureau has calculated that China is losing 0.5 percent of its cultivated land each year and that if China's per capita arable land currently stands at 0.25 of an acre, there will be only 0.17 of an acre per capita left when China's population levels off at 1.6 billion (Tang 1997).

[58] The worst case globally is probably the I-85 corridor (the Atlanta peri-urban region) in the United States, where the ratio is about 8:1, as compared with 1.45:1 in the Zhejiang peri-urban corridor.

[59] For more information on non-governmental adaptation in Southeast Asian peri-urbanization, see Muller (2000).

[60] Our research indicates that these services are very important, effectively sorting out the labor supply for local firms. As such, they play an important role in determining where individuals fit in the employment pecking order. Interestingly, these agencies may engage in related "fitting" activities, e.g., matchmaking for marriage.

[61] Interview with chief secretary, Rayong Provincial Government, Thailand, July, 2000.

[62] See, for example, "The Provincial Warlords of Cavite: 1896-1995," chapter in Sidel (1999).

[63] The Environment Fund provides grants or loans to local governments for high-priority environmental facilities. Certain geographic areas suffering from high pollution or high sensitivity to environmental damage are accorded priority in accessing the funds resources.

[64] Given decentralization, the NESDB's policy is to no longer formulate regional development plans; this is now the responsibility of local authorities. But local authorities may not have the capacity to undertake the function, let alone market local areas.

[65] There are non peri-urban analogies to this very rapid city-building process where whole new urban landscapes are created in very short periods of time. For example, Las Vegas, which now contains 1.4 million people in the metropolitan area, was a rail stop with about 8,000 people in 1950. Haikou in Hainan Province is a similar case although the urban structure is different. In both cases a modern city (with a high-rise core) appeared almost instantly—as if unwrapped from a box.

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