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**Periurbanization and Planning: Identifying, Mapping,
and Managing Periurban Communities in Viet Nam¹**

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Introduction

With the growth of megacities across the Asia region has come the expansion of periurban areas, transition zones where urban and rural activities are juxtaposed and landscape features are subject to rapid modifications induced by human activities. Periurban areas occupy large portions of national landscapes and are home to hundreds of millions of people. They face unique problems including intense pressures on resources, slum formation, lack of adequate services such as water and sanitation, and degradation of farmland. These areas face demands from users with contrasting lifestyles and conflicting interests that range from agriculture to residential, industrial and commercial, and the development of green belts and nature reserves. The governance and management of periurban areas are often neglected by both rural and urban administrators because they sometimes lie beyond urban administrative boundaries and the resources accompanying this designation, or at other times fall under city administration, but lack the financial resources to upgrade their planning and infrastructure.

In Asia it is estimated that the population of periurban areas will increase by approximately 200 million people over the next twenty-five years, accounting for 40 percent of urban population growth. In Bangkok for example, 53 percent of demographic growth in the 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. Webster (2002) argues that although such numbers are attention-catching in themselves, the actual importance of the process 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 periurban areas, these regions will continue to attract much, if not most, of the foreign direct investment (FDI) flowing to the region, along with considerable complementary domestic investment. These changes almost always involve 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 periurban areas can be significant, related to the spread nature of periurban 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 periurban areas, along with the low capacity of local public institutions.

This paper: 1) identifies the analytic challenges posed by the rapid growth of periurban settlements, 2) uses the case of Viet Nam to define the extent of periurbanization, 3) describes innovative efforts to develop and manage urban services in them, and 4) proposes some policy applications to meet the growing challenge of periurbanization.

Periurbanization: What is it? Can we characterize and define it?

There is no consensus on the definition of the periurban interface; but it is recognized that rural and urban features tend increasingly to co-exist within cities and beyond their limits. Allen (2003) defines the periurban interface “as a heterogeneous

mosaic of ‘natural’ ecosystems, ‘productive’ or ‘agro-’ ecosystems, and ‘urban’ ecosystems affected by the material and energy flows demanded by urban and rural systems.” One well known concept of periurbanization is T.G. McGee’s concept of *desakota* - Indonesian for rural/urban (McGee 1991). McGee identifies six characteristics of a *desakota* region: 1) a large population of smallholder cultivators; 2) an increase in non-agricultural activities; 3) extreme fluidity and mobility of population; 4) a mixture of land uses, agriculture, cottage industries, suburban development; 5) increased participation of the female labor force; and 6) ‘grey-zones’, where informal and illegal activities group (McGee 1991, pp. 16–17).

Twenty years later, McGee’s basic characterization remains compelling, even as some elements have changed. More recently, rural sociologists such as Jonathan Rigg (2006) have argued that deagrarianization is characterized by 1) diversification of rural occupations and livelihoods; 2) occupational multiplicity becoming more common and more pronounced; 3) balance of household incomes shifting from farm to non-farm; 3) livelihoods and poverty becoming delinked from land (and from farming); 5) lives becoming more mobile and livelihoods correspondingly delocalized; 6) remittances playing a growing role in rural household incomes; 7) average age of farmers rising; and 8) cultural and social changes being implicated in livelihood modifications, and in new ways.

From a methodological standpoint, McGregor, Simon and Thompson (2006) claim that attempting to measure the precise area or size of periurban interfaces is a futile exercise because of both the rapidity with which these areas are changing and their fragmented nature. The studies by McGee (1991) and Rigg (2006) as well as Webster’s (2002) operational definition of per-urbanization, however, provide variables on which the relative ‘rural’ or ‘urban’ nature of the environments can be characterized, a broad concept that is often referred to as urbanicity, a measure of the ‘urbaness’ of the environment. A few studies have used data from national censuses and household surveys to score communities along a continuum of urbanicity based on characteristics such as these. Dahly and Adair (2007), for example, developed a multicomponent scale of urbanicity in order to investigate the effects of urbanicity on child health in a comparative study in China, Russia, and the Philippines.

In this paper we acknowledge that the rural to urban transition is a continuum and where one places a line and says this is ‘rural’ and this is ‘urban’ will always be a subjective decision. But we argue that methods for collecting and analyzing data that enable planners to assess variables along this continuum and to map out and analyze different definitions of what is rural, urban, and periurban are badly needed. Without such methods we do not know how much of the landscape is affected by periurbanization; we do not know how many peoples’ lives are affected; we do not know the extent of the environmental and human-health problems; and we can not address issues of governance and responsibility.

Little has been written about the periurban transition in Southeast Asia, although it is increasingly recognized as an important issue in planning and policy. A special issue of *Pacific Affairs*, for example, directly addresses the challenge of periurbanization in China and Viet Nam, using qualitative studies taken from four cities to examine the range of planning problems arising from this transitional settlement pattern. While a useful

compilation, such case studies have tended to shy away from quantifying the extent of the phenomenon, and Webster's (2002) statement that 'there is not a single comparative examination of periurban growth within or among countries in the region' remains largely true. As importantly, there has been no work tracking the evolution of Southeast Asian periurban areas over time. Because of this lack of extensive empirical analysis, policy development directed at the problems, and challenges, raised by periurbanization is rare. Absent an empirical foundation, policy formulation and analysis with respect to periurban issues have been haphazard at best.

Periurbanization in Viet Nam : Modeling transitional development

The case of Viet Nam is an interesting one for helping to fill this gap – in part, because the country is currently undergoing rapid periurbanization, and in part because the national government has an excellent infrastructure for collecting data relevant to the research question of the spatial extent of periurbanization.

In Viet Nam , Nguyen and Kammeier (2002) suggests that liberalization of the economy in 1986 (known as *Doi Moi*) had an almost immediate impact on urban development patterns. The diversification of capital investments (especially the influx of FDI), the creation of a property market (dealing with land-use rights), and the commercialization of the housing sector transformed the urban development patterns of Ha Noi and other cities throughout the country. The distribution of land use certificates known as red books in 1993 gave individuals usufruct rights to land which they could sell, rent, mortgage, and bequeath. This led to a vibrant land lease and sales market, allowing transfers of land to more productive users (Markussen, Tarp, and Van den Broeck 2009). Do and Iyer (2008) find that this reform had a positive and significant impact on long-term agricultural investments and on the time devoted to nonfarm activities. Meanwhile, Ravallion and van de Walle (2008) observe that these land reforms increased the incidence of landlessness. Combined with industrialization, however, rising rural landlessness has been a benign, even positive, factor in the process of aggregate poverty reduction. After leaving farms, individuals took up new opportunities in the labor market, and the landless have experienced a higher rate of poverty reduction relative to the rest of the population.

Hence, Viet Nam maybe a particularly useful country to examine development transitions and their associated environmental transformations because these processes are occurring both exceptionally rapidly and simultaneously as traditional agricultural lands are converted to intensified commercial farming or reshaped into urban settlements to meet the needs of the growing population attracted to cities for emerging job opportunities (Spencer 2007; Douglass *et al.* 2002). If development transitions do pose new challenges to governance, and in particular environmental health challenges, then one would expect to see more of these types of problems in transitional agricultural or periurban areas as distinct from both predominately urban and rural areas.

To what extent have these economic, demographic and policy changes led to new social, health, and other risks that become apparent only during transitions between stages of development. As Viet Nam transitions from a traditional to a modern society, new challenges arise because of the "in-between" nature of periurban settlements. These neighborhoods are neither traditional nor modern, but a combination of agricultural and

industrial activities, and fully-serviced and “off the grid” homes and buildings. These areas present great planning challenges because their state of rapid reorganization and flux often places incompatible land uses and activities in close proximity.

To define the extent of periurbanization in Viet Nam, we use demographic, social, economic, and environmental data collected in national censuses and aggregated at the commune level to identify areas that are traditional, modern, and transitional, or periurban. Using variables that capture both the changing nature of the built environment (types of building materials, and water and sanitation systems) and the loss of and diversification of agriculture systems (percent of households whose major source of income is from agriculture, agricultural population density, and poultry density) can provide a good measure of the extent of periurbanization. In our work we characterized the built environment based on how building materials, and water and sanitation systems varied across space (see Table 1). Using data from the 2006 Agricultural Census of Viet Nam, communes were rated on a scale of -10 to +10, where rural communes (all households in the commune had rural characteristics) received a score of -10, urban communes (all households had modern characteristics) a score of +10, and transitional or periurban communes showed a mix of rural and modern characteristics (values clustering around 0).

Table 1. Assessing characteristics of the built environment on a continuum of rural to modern

	Water source	Toilet type	Building materials
Most Modern	Tap	Flush	Permanent
More Modern	Rain	Sulabh	Semi-permanent
More Rural	Filtered	Simple	Wooden
Most Rural	Other	None	Temporary

Using the same Agricultural Census (2006), we characterized the agricultural environment by examining main household sources of income, extent of irrigation, and agricultural population and poultry density (Table 2).

Table 2. Classification of places in Vietnam based on agricultural income, toilets and land under agriculture, forests and aqua (using 2006 agricultural census) and NDVI

Variables/Places	Traditional	Transitional	Modern
Number of communes and wards	7,686	1,909	398
Households with agricultural income (%)	82	43	n/a
Houses with modern sanitation (&)	11	57	89
Land under agriculture, forests, aquaculture (%)	43	42	10
Vegetation density (NDVI) high (higher values mean denser vegetation)	0.63	0.55	0.41
Places with avian influenza outbreaks (5)	24	33	29

Using data from the 2006 agricultural census we developed a map of urbanicity that we recently field checked. Map 1 shows communes mapped according to the number of households whose main income is from agriculture (2006 agricultural census) and the number of house with modern toilets (2006 agricultural census). Field work in the summer of 2011 showed this map to be an accurate (approximately 85%) approximation of traditional (rural), transitional (periurban), and modern (urban) communes.

Preliminary Results

Table 4 summarizes statistics about the area mapped as transitional or periurban in the urbanization map of Viet Nam. The table suggests that almost 9% of Viet Nam 's land area can be classified as periurban and approximately 13% of its population (more than 11 million people) live in periurban areas. The 59 provinces in Viet Nam are divided into rural districts, provincial towns, and provincial cities. Rural districts are further divided into communes (rural areas) and towns, and provincial towns and cities are divided into wards (urban areas) and communes. Table 4 shows that according to our urbanization map, management of periurban area falls under three different types of administrative units. Ninety-eight percent of towns under rural districts are mapped as being periurban, as well as 964 communes under rural districts (11% of the national total), and 138 communes under provincial towns (36% of the national total).

Map 1: Map of the rural to urban transition in Viet Nam.



Stages of development: 1.Traditional; 2.Transitional (periurban); 3. Modern; 4. Urban core

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Table 4. Area mapped as periurban based on 2006 Agricultural Census data.

Item	National Total	Mapped as periurban	Percent of National Total
Land Area (Sq. Km.)	331,535	28,553	8.6
Population (people)	85,344,100	11,175,467	13
Number of communes	10,891	1,682	15.44
Wards under Provincial Towns	711	0	0
Communes under Provincial Towns	383	138	36
Towns under Rural Districts	591	580	98
Communes under Rural Districts	8709	964	11

Periurban Water Supply Management: Innovations in Local Governance

With the growth of periurban regions in Viet Nam we describe above, the challenge to local planners and policy makers grows exponentially. As rural land is incorporated into cities, the need for urban services grows, and in Viet Nam – like elsewhere - such newly redesignated land is often sold to the private sector without urban services. However, because few local governments have sufficient financial resources to provide basic infrastructure such as water, sanitation, and local road construction and maintenance, this responsibility is usually placed on the private developers, which in turn require large tracts of land to make infrastructure provision financially viable. Thus, local governments often find themselves selling newly redesignated land to large scale private

developers, under the assumption that the purchaser will provide the necessary services. This practice adequately addresses basic services for large-scale formal developments, but not for smaller-scale communities and households. Research, however, does suggest that local communities and district-level governments have addressed this service gap in innovative ways that show potential for achieving greater scale through evidence-based policy development.

Can Tho: The entrepreneurial state

Since 2000, the City of Can Tho in Viet Nam has experimented with an innovative system for financing and managing water supply for new areas of the city that have recently become incorporated. In that year, the central government of Viet Nam designated Can Tho as an independent municipality and planned for a doubling of the population size by 2010. This administrative change included the incorporation of rural communes into the city limits and placed tremendous pressure on the city's low-capacity water supply system. The sharp increase in unserved periurban parts of the city necessitated an innovative partnership between local landowners, a reforming state owned water company, and ward-level Peoples Committee governments.

As described in detail in Spencer (2008a), because this new land was already owned and in use by local communities, the challenge of securing the land needed for clean water supply provision came to the fore. Rather than exercise eminent domain, which would likely have resulted in urban protests, and then subsequently facing the challenge of financing and managing a new water supply system, the City government chose to engage local leaders through a competitive bidding process. Each year, the City government solicited proposals from local ward leaders who had identified households with the land and management capacities to partner with the City water supply company. The winners of the competitive bidding process then became subcontractors that formed related, but distinct local networks of water providers institutionally embedded in the wards.

Each node at the center of these local networks worked on the same basic model. Local landowners contracted with the City Water Company to dig deep community wells. The landowner provided access to difficult-to-access land for the well, the Water Company provided the materials and technical expertise, and the local People's Committee managed the competitive bidding process within the ward to determine who received the contract with the Water Company. The landowner manages billing and collections in exchange for a management fee from the Water Company, and a commission for every m³ of water used by households on the system. Thus, the landowner/subcontractor has an incentive for connecting community members without access to clean piped water.

In developing this kind of community-based public private partnership/venture, the Water Company gained access to land for wells without having to take land from community residents, and is better able to collect fees because the manager is a member of the community, with daily contact with end-users. This mechanism of cost-recovery has turned out to be an important management tool, considering most urban water systems are characterized by very high rates of non-revenue water, and the results of a

similar partnership in Ha Noi described below. An in-depth analysis of this system can be found in Spencer (2007, 2008a, 2008b).

Ha Noi: Bulk Water Retailing in Periurban areas

Like Can Tho, the city of Ha Noi has grown rapidly since the beginning of the Doi Moi period in late 1980s and has begun to incorporate new neighborhoods from formerly rural areas without basic urban services. In these new neighborhoods, Co Nhue commune of Tu Liem district, the Ha Noi Water Business Company (HWBC) has supplied water to the ward since 1997, although it never directly managed the water piped network in the commune. Rather, the HWBC held a lease contract with the Co Nhue People's Committee (CPC), with the agreement that the CPC would provide water in bulk to the commune's piped network through a master water meter. By setting up a local water supply management unit (WMU), the CPC directly retailed household water to domestic users.

In general, the WMU was formed to be responsible for operating, maintaining the local water supply network and selling water to customers (households), installing new connections and water meters within the communal area. The WMU was also in charge of repairing leaks and protecting the water system to avoid water loss, billing and collection of revenue, then paying to the HWBC, the value of water pumped in bulk to the area. The water tariff charged by HWBC to WMU is at the lowest level in the block water tariff list, regulated by Ha Noi People's Committee. The WMU pays HWBC 85 percent of the total pumped water to the area because HWBC subtracts 10 percent of a non-revenue water rate and 5 percent of the management fee. The collaboration amongst the HWBC, Co Nhue People's Committee (CPC) and WMU went along well for around eight years (from 1997 to May 2005) until the WMU informed the CPC of a high non-revenue water rate and loss in revenue practically.

While initially effective at connecting the larger HWBC to local households and other consumers, the WMU responsibilities eventually exceeded its capacities over the eight years of its existence, such that by 2006 non-revenue water was at roughly 60%, and less than half of all connected households actually had running water. Because of this high rate of loss, the WMU had to charge other users exorbitant prices, leading to tensions among the WMU, the HWBC, and the CPC. In the end, the local People's Committee had incurred about US\$4,000 in debt to the HWBC.

As with the case in Can Tho, the city water company faced an initial challenge of providing clean water to a rural commune that had recently been incorporated into the city. To provide one of the primary services necessary for dense urban living, clean water supplies, it had to contract with the local commune authorities, who initially provided a good service. However, as the commune grew – along with the per capita water supply demands of its residents – the local authorities exceeded their capacities.

Beyond Privatization: Community-Based Frames for Local Governance.

The two cases described above illustrate the agency of community-level actors consistent with findings from other areas of the planning literature (e.g. Corburn 2005; Roy and Sayyaad 2004; Mukhija 2003), and bolster the field's understanding of how community relations are mobilized in the provision of daily public goods and services.

An overview of these and other case studies from Cambodia and Indonesia is briefly outlined in Spencer, Meng, Nguyen and Guzinsky (2008), and provides four models suggesting how ward-level communities might play a central role in meeting the urban service challenges of periurban development. In general, the case from Can Tho is a system in which local landowners contract with the City Water Company to dig deep community wells, thereby shifting the incentive for connecting community members without access to piped water to the community actors, who take the risks and receive the rewards. The Ha Noi case documents a local government board leasing local water infrastructure from the regional authority and supplying community members as a retailer. The City of Phnom Penh has begun to establish relatively autonomous commune-level payment centers that educate residents on water production and work with local Buddhist temples to cross-subsidize costs. The Surabaya case shows how local leadership has taken the lead to mobilize community financing for the construction of deep wells; the earlier residents buy into the construction and management of these wells, the better their terms of service.

In each case study lies a seed for how national and regional policies, as well as larger institutional structures such as intermediary organizations, revolving loan funds, or development bank guidelines might maximize the potential of local institutional innovations – by providing capital and technical assistance. Only when they are assessed in a comparative framework may they provide useful guidelines for the development of public policy rather than simply remain as interesting but highly context-dependent stories.

Concluding Thoughts

The challenge of periurbanization in Viet Nam is one of the major issues facing planners today. With over 8% of the country's land area and roughly 13% of its population residing in periurban neighborhoods, we can make the argument that a significant portion of urban Viet Nam is affected by transitional dynamics that incorporate components of both urban and rural ways of living and infrastructures. Transitional neighborhoods such as these force planners to ask two questions. First, they must ask to what extent does the dichotomy of urban/rural make sense in the context of Viet Nam, when large areas and parts of the population are caught between the two. Second, how can planners and policy makers effectively provide for basic public goods and services in these contexts.

Extending the Role of Communities in Expertise, Science and Regulation: Bankable community-based institutions

Since the time of Jane Jacobs, there has been a progressive focus on community-level participation, action, and organizing that has opened up one of the most dynamic areas of the Urban and Regional Planning discipline. This focus has varied from, for example, the “Ladder of Participation” (Arnstein 1969) to “culture-based epistemologies” (Umemoto 2001), however, it has usually emphasized the negotiated aspects of local and national state agencies/planners working with the informal and semi-formal local entities that influence the implementation of policies and plans.

Urbanization, decentralization, and the booming economies of developing world cities have empirically invigorated local, place-based communities as globalization has

integrated greater and greater numbers. Roy and Al Sayyad (2004), for example, explore a wide range of cases from the Middle East, Latin America and South Asia, arguing that new forms of political power and social empowerment have become possible with global urbanization. Beard et.al. (2008) take a global perspective, using the issue of decentralization, intergovernmental relations, and the growing role public private partnerships in the “global south” to explore the ways in which civil society, local, and informal institutions challenge planners and development practitioners, reshaping and revising plans “on the ground” in cases ranging from Buenos Aires to South Africa to Thailand, for example.

The efforts of these informal and semi-formal groups can take constructive forms, as in the case of Mumbai (Mukhija 2003), where self-help groups take on the responsibility of developing housing in the absence of state support, or in the form of re-interpreting “science” to fit local and activist environmental justice needs (Corburn 2005). Others document and interpret community environmental activism as an emerging form of community-based regulation where national and provincial agencies are unable or unwilling to perform this role. The documentation and analysis of such detailed cases and a global review of how local, place-based communities are consciously and unconsciously re-evaluating their passive role as consumers and subjects of technical “expertise” in favor of a more active engagement with scientific expertise, whether it be in engineering and housing construction, scientific research, or environmental pollution.

Informal and semi-formal institutions such as those described above for Viet Nam have emerged to co-exist alongside large-scale projects in the supply of Viet Nam’s clean water supplies (Spencer 2008a). These empirical cases point towards “innovative” approaches to financing urban services that involve communities as active participants and drivers rather than passive subjects of development (Spencer, Meng, Nguyen and Guzinsky 2008).

While natural monopolies and the need to invest large-scale infrastructure capital argue for top-down planning approaches to urban services, the reality is that cost-recovery can sometimes be difficult given the existence of multiple demand curves for water in periurban areas (Spencer 2008b). In other words, periurban residents are often unwilling or unable to pay for the 24-hour-per-day drinking quality water that centralized systems provide. Their needs for clean water are complex, ranging from drinking-, to cooking-, and washing-quality supplies, each of which has a different quality and reliability requirement. Such complexities of the demand for “clean” water may be the norm for many if not most of the urbanizing regions of Southeast Asia.

The challenge facing urban planners and managers of periurban areas is how to convert such analyses of the complexity of water demands and the capacities at the ward level community into improved urban policy.

Policy Applications: Periurban Infrastructure Capital Funds

To date, there has been relatively little work on microfinancing alternatives for public services. During the 1980s and 90s, Muhammad Yunus articulated a policy and planning agenda for credit to “unbankable” individuals in developing countries, and planning practitioners are poised to apply the concept to basic urban services, as suggested by the scholarly work on communities as *de facto* – and at times – effective

implementers in housing, credit, and scientific review (Mukhija 2003; Tsai 2002; Corburn 2005). The theoretical and empirical review of periurbanization in Viet Nam and how communities have adapted to increased demands for urban services opens the door for practicing planners and policy makers to develop programs for providing credit to – currently - “unbankable” local associations, communities and governments unable to access credit.

To date, however, such attention is limited to documenting successful stories and usefully recognizing them as unique experiments. However, an examination of the similarities and differences across multiple cases may suggest where policy guidelines might have larger scale effects. Such guidelines might argue for the creation of “intermediary institutions” to channel development funds into complex local arrangements, such as those described above, incentivizing appropriate lending criteria for such projects, and providing technical assistance. The effectiveness of such institutions, however, depends on nuanced, theoretical understandings of how informal and semi-formal arrangements in the provision of water function. Knowledge of which kinds of arrangements are successful under what conditions requires systematic knowledge and analysis beyond simple description of distinct case studies. Until comparative, critical, and detailed examinations of these arrangements are developed, public policy for maximizing the potential of these innovative arrangements will be left simply to efforts at replicating local strategies rather than developing a useful bridge between innovative local mechanisms and policy reform at the development bank and international financial institution level.

One particular policy and management outcome of the research presented here might be a financing system for the provision of credit to support community-based urban infrastructure in areas where poor migrants have settled on some of the most rapidly urbanizing urban fringes in the world. The concept is roughly based on the successful Grameen Bank for creating a private credit market for the extremely poor in Bangladesh, and the United States’ Local Initiatives Support Corporation (LISC) used to support affordable housing. The major innovation of such a policy/management outcome would be the capitalization of community-based organizations in the water and sanitation sector to provide needed basic infrastructure to the poor. Policies to facilitate such financing and technical assistance would potentially: 1) open the door for more democratic participation of the poor in their own development; 2) define a new opportunity for local and other capital sources to support this participation through innovative finance; and 3) help meet the predicted shortage of clean water and sanitation becoming apparent in rapidly developing countries and elsewhere for the 21st Century.

As has been the case for both the Grameen Bank and LISC, the effectiveness of such organizations at providing better outcomes for the poor depends on two things. First, it requires a supportive macro policy environment that creates incentives for lenders – both local and non-local - to invest in non-traditional borrowers. Second, it requires effective intermediary institutions and individuals able to assess project viability on technical and financial grounds.

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