

# DECENTRALIZING BASIC INFRASTRUCTURE SERVICES

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Basic infrastructure services are those that households and businesses tend to use every day. The primary components are roads and transportation services, water supply and distribution, and sanitation—wastewater collection and removal, and solid waste collection and removal. These services are often bundled together under the heading of “urban services.” However, parallel infrastructure systems are found in rural areas, where roads, irrigation networks, and latrines are critical to life. Irrigation systems, in particular, are sometimes underestimated as infrastructure networks. In the Philippines, irrigation systems account for 80 percent of national water consumption.

Efforts to decentralize infrastructure services raise distinctive issues regarding policy design and implementation. Because of their capital intensive-ness, these systems require decision making at several different stages:

- Preparing capital investment plans and setting priorities for individual capital projects.
- Operating a network system to provide services and maintaining facilities to sustain the physical capital.
- Financing the system by both mobilizing capital to pay for the initial investment and generating revenues to cover operations and maintenance—that is, ensuring financial sustainability.

Each of these decision-making points presents an opportunity for decentralization, and different countries have responded by decentralizing different stages of the decision-making process. The issue is further complicated because infrastructure projects are subject to spillover effects and economies of scale. When this is the case, there are often substantial benefits to be achieved by coordinating projects across subnational governments. Accounting for economies of scale and externalities is especially important when decentralizing decision making and responsibility to low levels, and when infrastructure projects cover multiple jurisdictions, such as in managing water resources across large watersheds or trunk roads that connect regions. Promoting equity, harmonizing standards, and ensuring efficient revenue collection may also argue for limiting decentralization.

Infrastructure services are distinctive in another important respect. Because they are used so widely and often, citizens are familiar with their benefits and typically have strong opinions as to which types of projects and service improvements should have highest priority in their area. Choices among priorities for infrastructure investment often provide local citizens with their first opportunity to participate in public decision making. Participatory choice at the local level comes more naturally with small investment projects—which often quickly

yield local benefits—than with school curricula and health services, which often require professional expertise and longer waiting times to produce benefits. Thus, decentralization strategies often include participatory choice in (small-scale) infrastructure investments, not simply to better respond to local service needs but as a deliberate seedbed for democratic participation in governance, with the intention of strengthening civic commitment to the entire decentralization program. The payoff is judged only partly by whether infrastructure services improve; equally important is whether mechanisms for public participation in decision making strengthen citizen involvement in governance.

This chapter views decentralization in the infrastructure sector as a work in progress. The transfer of service and investment responsibilities to the local level evokes an immediate response based on the capacities and institutional practices of local governments relative to those of the central government. More important, however, this first round of adjustment will reveal shortcomings in the new arrangements and stimulate responses by national agencies, local officials, local citizens, and international organizations supporting the decentralization process. The fact that East Asian countries have experience with both different strategies and implementation periods for decentralizing infrastructure enhances the opportunity to learn from comparative results.

A final introductory observation is appropriate. Decentralization tends to be seen as a transfer of responsibilities and revenues from higher-level to lower-level governments. Many decisions about infrastructure services, however, occur in a broader context that consists of unbundling the vast powers of previously centralized agencies responsible for investment and service provision. Some of this unbundling entails transferring authority to lower levels of government. Other elements may include transferring investment or responsibility for service delivery to the private sector or to public-private partnerships, including partnerships with non-governmental organizations (NGOs); and restructuring the public enterprises traditionally responsible for larger-scale infrastructure services, such as urban water supply and wastewater removal. Decentralization typically entails restructuring public enterprises by making them accountable to local governments rather than central line ministries.

This chapter has two purposes. The first is to review the status of efforts to decentralize infrastructure services in East Asia, with a focus on countries that are more advanced in the process, namely, China, Indonesia, and the Philippines. The second purpose is to highlight the efficiency gains in providing infrastructure services achieved in decentralized settings, and to underline the main challenges to realizing the full benefits of decentralization.

The next section examines the key features of strategies for decentralizing infrastructure adopted by China, Indonesia, and the Philippines, and outlines the impact of decentralization on the level of infrastructure investment. The third section analyzes the available evidence from East Asia on the efficiency gains from more decentralized forms of providing infrastructure services. The fourth section reviews East Asian experience in enhancing community-level participation in managing infrastructure projects, and investigates the scope for scaling up the benefits of community participation within a decentralized government structure. The fifth section compares the approach to financing infrastructure adopted by China, Indonesia, and the Philippines, given their different strategies for decentralizing infrastructure. The sixth section discusses the critical role of higher tiers of government in decentralized infrastructure, drawing on the experiences of China and of Indonesia and the Philippines, with the drawbacks of a “missing middle” in the architecture of decentralization being particularly manifest in the latter two countries. The last section highlights key policy issues that have emerged from the analysis of decentralization in the region.

### **Decentralization Strategies in the Infrastructure Sector**

East Asian countries have followed two broad strategies in decentralizing the infrastructure sector. China exemplifies a principal-agent approach. The central government as principal has retained and even strengthened its role in setting investment priorities across and within sectors, and has reinforced this role by setting highly specific targets and timetables for infrastructure coverage in different classes of cities. These targets and timetables have extended beyond physical investments to include, for certain services, mandatory adoption

by all urban governments of specific guidelines for service charges, and, for all services, mandatory separation of asset ownership from service delivery. In this respect, the infrastructure sector remains highly centralized. At the same time, as agents for implementing centrally established policies, local governments have full responsibility for actually executing investments and providing services. They also have significant latitude in deciding how to mobilize funds to pay for capital investment, which they now must finance entirely without central grant support. Local governments further have significant latitude in framing development plans, including where they will site major capital projects and how they will sequence investments to meet nationally imposed standards most cost effectively.

Indonesia and the Philippines represent an alternative approach. As part of the Big Bang initiatives launched in those countries, the central governments assigned virtually complete responsibility for urban and rural infrastructure services to local governments almost overnight. At the heart of this transfer was local choice in investment priorities. Decentralization laws emphasize the importance of civic participation in making investment choices, and specify elaborate procedures designed to ensure that citizens, as well as collective groups like NGOs and civil society organizations, are represented in the priority-setting process for capital projects. In fact, decentralization is clearly intended to serve a dual purpose: to make investment choices in the infrastructure sector more responsive to locally perceived needs and thus more efficient; and to become a vehicle for introducing ordinary citizens to participation in governance.

Cambodia and Vietnam are in incipient stages of decentralization, with broader policy driven largely by the design of infrastructure programs. Cambodia's Seila Program, introduced in 1996, has created commune development committees in more than 1,000 villages and 100 communes, with the program expected to reach three-fourths of all communes by the end of 2004 and the rest shortly thereafter (Royal Government of Cambodia 2003b). The program provides government and donor funds for small infrastructure projects selected by citizens at the most grassroots level, with mechanisms for transmitting their priorities for slightly larger projects up to the commune level. Seila is expressly

seen as a way of engaging the citizenry in participatory governance. In a country as poor and rural as Cambodia, Seila now accounts for the bulk of local infrastructure investment. Vietnam has passed legislation on grassroots participation as part of its public administration reform. However, the national level continues to set investment priorities for most infrastructure services and certainly for urban services, with provincial and local authorities viewed primarily as agents implementing national choices.

### *Investment Levels and National Standards*

How has infrastructure investment fared during decentralization, and what is the role of national standards and investment targets in sustaining investments? Both China and Vietnam, which have employed the principal-agent model, have experienced extremely high—almost unprecedented—infrastructure expansion within the areas given top priority. During the latter half of the 1990s, China assigned top infrastructure priority to road building, implemented primarily by provincial governments for national and provincial highway networks, and by local governments for urban networks (see tables 10.1 and 10.2). Both levels attracted some private investment under the direction of provincial and local authorities. Almost 85 percent of China's road and highway investment over the two decades ending in 2000 occurred during 1996–2000. Although national and provincial highway networks—that is, expressways and class 1 highways—expanded most rapidly, all classes grew at high rates, including major urban roads and class 2 and other local roads.

Vietnam has assigned priority to piped water distribution in urban areas, with implementation in the hands of provincial water authorities and, in the

**TABLE 10.1 Road and Highway Investment in China**

Period	Billions of yuan	Share of total (%)
1981–1989	19	2
1990–1995	153	14
1996–2000	881	84

Source: Mitchell Stanfield & Associates, as reported in Bellier and Zhou 2003.

**TABLE 10.2 Road and Highway Investment in China, by Type**

Road type	1990		2000	
	Billions of yuan	Share	Billions of yuan	Share
Express-ways	0.01	0.1%	56	28%
Class 1	0.02	0.3%	30	15%
Class 2	0.20	4.0%	60	30%
Class 3	0.84	16.5%	12	6%
Class 4	2.60	51%	27	13.5%
Unclassified roads	1.43	28.1%	15	7.5%

Source: Mitchell Stanfield & Associates, as reported in Bellier and Zhou 2003.

**TABLE 10.3 Piped Water Coverage within the Urban Population, Vietnam**

Year	Region		
	North	Central	South
1997	42.0%	30.4%	40.4%
2000	52.1%	38.9%	42.7%

Source: World Bank 2002b.

largest cities, water enterprises attached to local governments. Despite high rates of urban population growth, coverage rates have expanded remarkably in a short time (see table 10.3). In 2000, 41.5 percent of the average urban water system was five years old or younger.

China's government has recently given especially high priority to urban wastewater collection and treatment, reflecting heightened concern over the condition of urban water bodies. Higher standards imposed on local governments show how the center transmits signals to local authorities in a principal-agent relationship.

In May 2000, China's Development Planning Commission—under the Environment Protection Agency in the Ministry of Construction—circulated "City Dirty Water Treatment," which specified that the wastewater treatment rate in all towns and cities would be at least 50 percent by 2010. The treatment rate for cities would be at least 60 percent, and that for provincial capitals and other major cities at least 70 percent. The circular also defined treatment quality standards for different types of cities (Government of China 2000). Given that the vast majority of China's cities then had no wastewater

treatment of any kind, the targets imply a massive infrastructure investment program.<sup>1</sup> Recognizing the need to mobilize capital for such an effort, the Development Planning Commission in October 2002 stated that "cities with existing wastewater and garbage treatment facilities shall start to immediately charge a treatment tariff," and that all other cities should do so by the end of 2003. The tariff "shall cover operations cost and a reasonable investment return" for wastewater treatment plants, to generate revenue for raising commercial investment funds. Cities in better economic conditions were urged to set tariffs high enough to cover the cost of constructing wastewater collection networks.

In a system with strong upward accountability such as China's (and Vietnam's), local authorities take national investment targets seriously.<sup>2</sup> Each municipality incorporates specific targets for infrastructure coverage into its five-year development plan, approved by the provincial government and ultimately by the Development Planning Commission. The political careers of local officials in the Communist Party hinge on meeting or surpassing the goals. As a result of either conscientious planning or competitive zeal, local officials often set targets that exceed national standards. This is true in the wastewater area. Analysis conducted for City Development Strategies has found that the majority of covered cities—although located in the poorer western provinces—are on their way to meeting investment targets that surpass state-mandated levels (Chreod Ltd. 2003). Local development plans emphasize these ambitions throughout urban infrastructure: municipalities have set targets even for square meters of green space per capita, triggering local investment in parks and other green areas.

Although driving higher infrastructure investment levels, standards that emphasize the capacity of capital facilities—whether or not they actually are operating or doing so economically—have often led to significant inefficiencies in operations and maintenance. The next section discusses these impacts.

China's intergovernmental system is gradually moving toward more sophisticated and meaningful measures of infrastructure performance, such as outcome measures. In the wastewater area, for example, the national government now requires localities to test the quality of receiving bodies of water, which are subject to quality standards measured along seven dimensions. Some cities voluntarily sample discharge quality from wastewater treatment plants and have included locally defined targets in their five-year development plans. Thus, the principal-agent relationship has proved to be more than a one-way street. The implementing agent not only incorporates mandated standards into its planning but may also set higher standards that become the basis for upward accountability.

**Lessons Learned.** The strong investment performance of subnational governments in China reflects many factors. The same national investment priorities communicated to local governments have been transmitted to the state-controlled banking system, clearing the way for lending that has financed much of the expansion in infrastructure coverage. Commercial banks have lent these funds for three- to five-year periods, creating the need for municipalities to roll over short-term debt. Local governments are therefore beginning to face high debt service burdens, which may exacerbate the uncertain creditworthiness of loan portfolios in the banking system. China also has a tradition of strong policy direction from the center, coupled with a high degree of de facto freedom in local budget management not found elsewhere.

One lesson that can be generalized, however, is the power of performance measurement and accountability in China. Measurable performance targets tied to upward accountability have driven China's infrastructure investment. The quantified standards have sometimes proved unduly rigid, upward accountability has substituted for accountability to clients, and national standards have curtailed local investment choice. But the effectiveness

of infrastructure performance standards in steering budget choices at the local level is clear.

### *“Autonomous” Decentralization*

Countries such as the Philippines and Indonesia have opted for political decentralization, with local authorities formally recognized as autonomous bodies. Inherent in their powers is setting priorities for local budgets, including capital budgets. Concern has arisen in both countries as to whether this type of decentralization can sustain capital investment and maintenance. In particular, the transfer of large numbers of central government employees—subject to wage protection—to local rolls, and the legal and political difficulties of raising local revenues, subject subnational governments to budget pressures. In the face of such pressures, local governments are thought more likely to maintain employment levels rather than adjust their budgets to sustain investment. Within capital programs, spending on maintenance and repair is believed to be particularly vulnerable. Displacement of local investment has potentially serious consequences. The World Bank has estimated that, in Indonesia for example, some 60 percent of total development expenditures are now a local responsibility (World Bank and Asian Development Bank 2003; World Bank 2003b, 2003c).

The Philippines has the longest experience with local budget allocations following decentralization. The share of capital spending in city and municipal budgets surged in 1993, shortly after new revenue and expenditure assignments took effect (see table 10.4). That occurred because initial revenue allocations exceeded the cost of transferred functions, leading to sizable local surpluses, which were then drawn down by capital investment. Since 1993, however, the share of local budgets devoted to capital spending has fallen steadily, with declines totaling more than 50 percent. These declines accelerated in 1998 with the Asian financial crisis and the consequent loss of public revenues before reviving briefly the following year. Such spending does not tell the entire story, as central line ministries continue to pay for some capital projects at the local level, as do some congressional allocations that are treated off-budget. However, the overall trend in local investment is clear.

**TABLE 10.4 Capital Spending as a Share of Local Government Expenditure, Philippines**

	1992	1993	1994	1995	1996	1997	1998	1999	2000
Cities	10.7%	17.3%	17.6%	16.4%	11.1%	8.8%	8.7%	8.9%	8.2%
Municipalities	8.7%	9.8%	8.9%	7.5%	6.5%	6.8%	4.2%	5.1%	4.7%

Source: Oriol 2002.

Indonesia's decentralization process is too young to draw comparable conclusions about its impact on investment spending. Development spending on roads and mainland transportation fell sharply during the Asian financial crisis—from 15 percent of total development spending in 1994–97 to a little more than 5 percent in 1999–2001—before recovering somewhat. Another potential factor affecting this slowdown is significant deconcentrated spending by line ministries, and the difficulty of adapting the DAK (*dana alokasi khusus*, a conditional equalization grant) and providing funds within a decentralized environment. The World Bank has expressed concern that road maintenance at the *Kabupaten* level has suffered from underfunding, and that decentralization may exacerbate neglect of road maintenance, with consequences that are not immediately visible (World Bank 2003d). Whether local maintenance and repair budgets have actually suffered disproportionately from local budget adjustments under decentralization is unknown. However, protecting maintenance funds may require a greater role for professional planners and engineers, as opposed to local political officials and civic groups, in allocating expenditures.

The apparent decline in local infrastructure spending in the Philippines, and concern over local investment levels in Indonesia, have generated debate about the role of national standards and performance measures. This debate is occurring most vigorously in Indonesia, where decentralization legislation calls for national agencies to develop guidelines rather than mandatory standards promulgated via the provinces, whose capacity for oversight has greatly weakened.

Upward accountability for complying with mandatory infrastructure standards seems fundamentally at odds with strategies that place primary importance on local choice in investment projects and priorities. The challenge is to capture the power of performance measurement and accountability within a framework for political decentralization.

The first step is agreement on performance measures in the infrastructure sector. National guidelines can establish a handful of basic measures reported by all local authorities and monitored by central institutions. Such measures would include fundamentals such as:

- Hours per day or week of water provision.
- Coverage of road networks (kilometers per 1,000 persons, kilometers of road per square kilometer of territory); quality of roads (percent in good condition, percent of all-weather roads).
- Wastewater removal rates.
- Expenditure on road maintenance as share of gross domestic product (GDP) or kilometers of roads.
- Affordability of transport services (freight rate per ton per kilometer, average bus fare per passenger per kilometer).

The absence of such measures handicaps both national decisions about infrastructure priorities and local attempts to measure and improve investment efficiency.

Decentralization frameworks now provide ample opportunities for incorporating these measures into an accountability system. At the national level, categorical grants such as Indonesia's DAK already recognize performance measures, although so far they do not actually take them into account. Where national authorities have clear investment priorities not adequately captured by local decision making, they can introduce standards—either absolute levels or improvement from a baseline—as a condition of capital grants. The ratio of matching grants can reflect both national priorities and local performance. Simple benchmarking of infrastructure performance and transparent reporting of performance measures can enhance efficiency. Individual local authorities, for example, can cite the range of actual costs per kilometer of standardized road construction elsewhere in conducting competitive bidding

for local construction.<sup>3</sup> Civic groups can compare basic output levels with those of other local authorities in setting up their own reporting systems.

For other types of infrastructure projects and service delivery, formal accountability to the citizenry through contractual agreements and performance monitoring appears to be the most effective way to use standards under autonomous decentralization. Experience with 24 water utilities in Indonesia, known as PDAMs, shows that NGOs can monitor business plans that specify improvements in water coverage, quality, and reliability—established after public debate as part of a social contract. Fulfilling these goals then becomes the basis for raising service tariffs and supporting financial sustainability (Urban Institute 2003). Several local governments in the Philippines have similarly published performance goals and invited monitoring by the nongovernmental sector after public participation in setting priorities for infrastructure services (World Bank and Asian Development Bank 2003).

**Lessons Learned.** In the politically decentralized systems of East Asia, a lack of standardized performance monitoring severely hampers understanding of local infrastructure. No country now has a routine monitoring and reporting system for the sector. Such systems can be built gradually and improved over time. However, national guidelines should quickly establish a rudimentary system of reporting that can be built into budgeting at all levels. Upward accountability is more difficult to establish in politically decentralized systems than in systems that remain centralized. Decentralized systems need to incorporate performance goals into local budgets, local corporate plans for water utilities, and local development planning—in a form that can be monitored by civil society organizations. Quantitative accountability to informed civic monitors can substitute for traditional upward accountability, but only if public agencies provide specific and verifiable information.

### **Efficiency Gains from Decentralizing Infrastructure**

A fundamental argument in favor of decentralizing infrastructure is that moving decision making on investment and implementation closer to clients

will yield efficiency gains. These gains can come from two sources. First, production efficiency implies that local entities can build and operate a given infrastructure package less expensively. Cost savings may derive from cheaper local building materials, less expensive local labor, more efficient project design, fewer layers of bureaucratic oversight, and less corruption, among other sources. Sustainability is an important aspect of production efficiency. Second, allocative efficiency implies that local investment priorities will reflect the preferences of citizens more than those of the central government, and that households will therefore value each unit of infrastructure spending more highly. As this chapter later shows, governments need to balance such efficiencies with possible economies of scale (which for some infrastructure sectors can be significant) and externalities (both negative and positive) across local jurisdictions.

Analysts have made several attempts to test, in East Asia, the hypothesis that decentralization enhances the efficiency of infrastructure services. Rigorously evaluating the gains from production and allocative efficiency is a demanding exercise. Evidence so far suggests efficiency gains, but it is far from conclusive, as it is drawn largely from case studies (this differs from the health and education sectors, where systematic monitoring and household surveys are far more common). As a result, we know a good deal more about how to extract efficiency gains from decentralized infrastructure through well-designed implementation strategies than we do about broad generalizations as to whether decentralized approaches, on average, are more efficient.

#### ***Production Efficiency***

The World Bank has reported that village infrastructure constructed under Indonesia's *Kecamatan* Development Program, which involves community-level planning and implementation, “cost significantly less—on average about one-third but in many cases more than half less—than equivalent works built through Ministry of Public Works contracts.” Maintenance costs were also reportedly lower because communities provided the labor. Unfortunately, the analysis supporting this conclusion has not been published, leaving open the question of how the study compared costs. In particular, such comparisons often do not take into account

the social infrastructure costs of supporting local project development (World Bank 2003e).<sup>4</sup>

In collaborating with 24 PDAMs in Indonesia, the Urban Institute reported that the PDAMs believed they could substantially reduce investment costs when they handled construction, land acquisition, project design, and scheduling, as opposed to complying with central specifications. Savings on projects that produced a given increment in the capacity of the daily water supply reportedly run as high as 50 percent. Some PDAMs have expressed reluctance to accept low-cost loans from central sources, should these become available, if they must adopt centrally imposed project standards, believing that the costs of complying with those rules would more than offset the savings from low-cost credit (Urban Institute 2003).

Loehr and Manasan (1999) conducted one of the more ambitious attempts to compare production costs for standardized projects in the Philippines. Drawing on World Bank and other data, the authors found costs in the range of ₱ 180,000–235,000 when local governments built their own schools, compared with ₱ 305,000 per classroom for the central Department of Public Works and Highways. Alonzo (1998) has reported comparable differentials in the costs of locally versus centrally built classrooms in the Philippines, as well as local savings per kilometer of road construction.

Corruption is a major source of cost escalation in infrastructure projects throughout East Asia. Azfar et al. (2000) have estimated that it adds 20–40 percent to the cost of infrastructure projects in the Philippines. Respondents to a 1999 survey conducted by Social Weather Stations ranked the

central Department of Public Works and Highways as the most corrupt organization in the Philippines (Azfar et al. 2000).

Because a reduction in corruption costs is an express rationale for decentralizing infrastructure services, the findings of household and other surveys asking respondents to compare the severity of corruption at local and central levels therefore hold special interest. In a survey of 468 respondents in 13 randomly selected *Kabupaten/Kotamadya* in West Java, Indonesia, Azfar (2002) found that 29 percent paid fewer bribes following decentralization, while only 5 percent reported that they paid more. Respondents attested to similar changes in the cost of bribes, or “unofficial payments” (see table 10.5). At least in the eyes of citizens, corruption becomes more widespread and costly the further removed government agencies are from the local level.

Although this evidence supports the hypothesis that decentralization reduces corruption, much depends on how reform is implemented. In the Philippines, infrastructure projects selected by Local Development Councils but built by the Department of Public Works and Highways or other central agencies tended to trigger a cascading effect of unofficial payments at each layer of government (Hofman and Kaiser 2002). Analysts have also reported examples of corruption and rent seeking among local councils, including cases where legislators have voted themselves large salary increases and automobiles, and where a local council has voted to simultaneously approve an investment project and name the party to be awarded the contract. Thus, blanket generalizations about comparative corruption are suspect.

**TABLE 10.5 Citizen Perceptions of Corruption in Different Layers of Government in Indonesia**

Corruption	Never	Rare/ infrequent	Common	Quite/very common
Local government	17.7%	25.4%	23.3%	11.3%
<i>Kabupaten/Kotamadya</i>	1.7%	35.7%	28.2%	18.0%
Provincial government	0%	19.5%	29.9%	33.3%
Central government	0.2%	4.5%	37.0%	48.1%

Source: Azfar 2002, p. 7.

Note: Percentages do not sum to 100 because the figures exclude “don’t know” responses.

Probably the strongest evidence for gains in production efficiency from decentralizing infrastructure comes from studies designed to determine whether latrines and small-scale water distribution projects were still functioning and actually used by villagers several years after installation. Studies in Cambodia, Indonesia, Lao People's Democratic Republic, and Vietnam all concluded that projects that relied on community consultation on design, and community organizations for maintenance and oversight, were significantly more likely to be sustained than projects built from a central design without such consultation, or that relied on outside expertise for maintenance and management (Gross 2003; Chanthaphone and Lahiri 2003; World Bank 2002a). Production efficiency overlaps with efficiency in allocative choice and community participation (discussed later in the chapter). Rural Indonesians, for example, were found to have a strong preference for pour-flush latrines, which were far more likely to remain in operation than alternative designs. Women assigned a high priority to small-scale water and sanitation projects, and community-scale water management organizations with strong participation by women proved more sustainable than organizations operated solely or dominated by men.

Such evidence tends to confirm that decentralizing projects to the village or commune level allows community involvement in support of sustainability to emerge. However, simply decentralizing investment and management decisions does little to promote sustainability unless primary users participate in maintenance and management decisions.

On a larger scale, the efficient use of capital in municipal utilities relates directly to performance measures targeted and rewarded under national accountability systems. One of the apparent paradoxes of China's investment in municipal wastewater treatment plants is that local governments are investing heavily in new plants while existing facilities operate at 50 percent or less of designed capacity because of lack of funds for operation and maintenance. This phenomenon has been reported in Hunan province, among other locations (Chreod Ltd. 2002). It reflects the fact that infrastructure targets initially included in local development plans and monitored by higher-level authorities were based on the treatment capacity of

completed wastewater treatment plants. Under this yardstick, localities met coverage targets whether or not treatment plants were actually operating, as no one measured the volume of treated discharge or the quality of receiving water bodies. Yet in Changsha, the capital of Hunan province, wastewater treatment plants operated at 50 percent capacity for two years because the city simply shut off intake valves and diverted incoming flows directly into the river. Meanwhile, the municipality was planning large-scale construction of new plants. This experience reveals the power of performance measures tied to accountability procedures: poorly selected performance measures can fail to capture the intended effects. Similarly, centrally imposed cost targets may jeopardize productive efficiency gains if they fail to account for local variations in exogenous costs that are not under the control of municipalities.

When wastewater treatment facilities feed into the same body of water, coordinating projects across local jurisdictions can yield better water quality at lower cost. The top-down system in China, combined with strong decentralized authorities, however, does not provide enough incentives for local governments to consider economies of scale and coordination. In the Guangdong River delta, for instance, each of 51 administrative districts has a wastewater treatment facility, although cooperative agreements based on economies of scale could have yielded significant savings. In Vietnam, in contrast, flexibility in local management and timing of water delivery has resulted in significant drops in water use per hectare, revealing the gains from production efficiency that can result from decentralizing rural irrigation systems (see box 10.1).

### *Allocative Efficiency*

A full argument for gains in allocative efficiency from decentralization would marshal several lines of evidence. First, central and provincial officials fail to correctly identify the spending priorities of local citizens. Second, choices on spending priorities made by local officials, as well as choices made by citizens themselves through participatory procedures, better reflect true local preferences. For example, reliance on central quality standards, as in the Chinese model, may significantly reduce the

### BOX 10.1 Vietnam's Red River Delta: Efficiency Gains from Decentralizing Irrigation

The Red River Delta (RRD) in Vietnam has one of the highest-density rural populations in the world. The delta depends on irrigation for crop production. Experience shows the efficiency gains that can be obtained from decentralizing management of an infrastructure network, as well as links between gains from production and allocative efficiency.

Since Vietnam decollectivized its agricultural sector in the 1980s, two types of institutions have provided irrigation in the RRD to farmers. One is state-owned Irrigation and Drainage Management Subsidiary Companies (IDMSCs), which centrally manage pumping stations and irrigation networks. The other is cooperatives, which operate on a smaller scale through joint management and localized pumping stations. Cooperatives entered the irrigation business in response to inflexibilities in water provision from the centrally managed state companies, which scheduled uniform water flows in advance regardless of local conditions or planting patterns. Cooperatives obtain raw water supplies through contracts with regional irrigation management companies. The cooperatives are, in effect, decentralized alternative suppliers of irrigation services to farmers. In the RRD, IDMSCs and cooperatives each serviced about half of the land, facilitating comparisons between the institutions.

Cooperatives have improved allocative efficiency by making water delivery more flexible in response to farmers' demands. Empirical observations over an irrigation season found that, on average, cooperative pumping stations provided water flows within 2 days of a request, compared with 11.5 days for centrally managed systems, which work off a predetermined rotational schedule. The shorter delivery time and greater flexibility of cooperative supply give farmers more choice in cropping patterns, rice varieties, and growing conditions. Production efficiency can be measured in terms of water use per hectare—table 10.1B below shows observed differences in water use for comparable paddy fields.

Part of the observed differential in water use reflects the shorter canal networks of local cooperatives, which reduce water losses and present fewer opportunities for diversion to illegal users. Part of the savings comes from management efficiency motivated by the desire to save on contracted costs for water supply. An important part of the savings, however, comes from reduced corruption. Staff of the state-owned company reportedly made illicit agreements to sell water on the side, adding to the amounts pumped per eligible hectare.

Sources: Fontenelle and Molle 2002; Fontenelle 2000.

**TABLE 10.1B Average Volumes of Water Pumped per Hectare, Spring Season 1996, Vietnam**  
(cubic meters)

Supplier	Water used to prepare land	Water used during growing season	Total
Local station	1,600	2,400	4,000
Centrally managed	3,900	5,900	9,800

Sources: Fontenelle and Molle 2002; Fontenelle 2000.

gains in allocative efficiency from decentralization if it prevents municipalities from adjusting the quality of service to the preferences of their constituencies.

Analysts have collected evidence on parts of this argument. For example, Azfar et al. (2000) found that Filipino households strongly favor spending incremental funds on roads, but that household

preferences vary substantially across locations, presumably reflecting differences in both local values and conditions. Municipal officials had a statistically significant ability to identify local preferences, while provincial officials had no ability whatsoever to identify local preferences—with a negative correlation between their predictions and actual household preferences. In particular, provincial officials vastly

underestimated local demand for spending on roads and other local infrastructure.

Household surveys in Indonesia and Cambodia have also found strong preferences for road construction as the top investment priority. Internationally funded programs that involve community choice report a significantly higher level of investment in roads than among projects whose outputs are negotiated at the central level. Local development projects that incorporate citizen participation in project selection appear to more accurately reflect both the general preference for roads and variations across communities. For example, during the first two years of the *Kecamatan* Development Program in Indonesia, road projects were by far the most popular local investment choice (62 percent), compared with bridges (10 percent), irrigation (8 percent), and clean water (7 percent). Follow-up surveys found that even given these percentages, households felt that too much had been expended on clean water. Evidence from these and other studies, in short, is that citizens have clear-cut priorities for spending, and that distant representatives and bureaucrats do not grasp these priorities or assign great importance to local priorities. Moreover, local demand for simple infrastructure projects—primarily roads—is high compared with alternatives. Of course, how much deference central governments should pay to household preferences in allocating spending across sectors is an open question, especially when sectors like education and health generate positive externalities not fully captured by local residents. Nonetheless, for spending assigned to local investment choice, evidence supports the conclusion that decentralization is closing the gap between local preferences and project selection.

### **Lessons Learned**

More important than the first-round impacts of decentralization on the efficiency of infrastructure services are the lessons that can be learned to better extract potential gains.

Because the costs of corruption are high in providing infrastructure, countries should take practical steps to reduce corruption and other inefficiencies under decentralized management. In most East Asian countries, central authorities have traditionally handled infrastructure procurement, even for locally selected projects supported by significant local funding. Meanwhile, however, decentralization

has given local authorities responsibility for defining their own procurement rules. This situation has not only created confusion and inconsistency across the local government landscape, but has also led to procurement abuses, such as lack of competitive bidding and technical evaluation of proposals, steering of contracts to particular firms by elected officials, and extensive price renegotiation after contracts are awarded. Adoption of a uniform local procurement code should be a top priority for decentralization, to build in competition and transparency. The Government Procurement Reform Act of 2003 in the Philippines offers a model of such support. An oversight and regulatory board empowered to investigate and punish procurement abuses needs to supplement formal procedures.

Best-practice local examples suggest other steps for improving procurement. Naga City in the Philippines, for example, now publishes in the newspaper and on the Internet winning per unit prices for all procurement contracts. This simple action both supports transparency and encourages price competition among suppliers (World Bank and Asian Development Bank 2003). In administering the *Kecamatan* Development Program in Indonesia, the World Bank has found that the simple expedient of requiring that an independent (local) third party as well as contracting principals sign off on all contracts and procurements, however small, saves funds and fosters a culture of transparency.

*Excess capacity in infrastructure design is a major source of cost inefficiency.* Paradoxically, at a time of large infrastructure backlogs, a number of projects suffer from substantial overcapacity, raising costs unnecessarily. In some cases, excess capacity has resulted from centralized application of standard project designs or per capita use estimates that do not take local conditions into account. Some Indonesian PDAMs are operating at only one-third of designed capacity because abundant groundwater sources are available and households prefer to continue pumping their own water rather than pay for connecting to the piped water system.

Many Chinese cities suffer from overestimated water demand because authorities failed to anticipate the drops in demand that would occur with full-cost water tariffs and the rapid decline in state-owned firms—often the most inefficient water users. This situation has left some local governments with “take or pay” contracts with private companies,

which require governments to either purchase more water than consumers will use or displace lower-cost municipal water with higher-cost supplies. As in all countries, grant and low-cost loan financing also promotes excessive scaling of infrastructure facilities. When investment appears to be free to local authorities, they tend to base estimates of future demand on the most optimistic assumptions. Comparable projects financed from own-source funds reflect more realistic growth projections and the time and cost entailed in tying up funds. Again, the practical lessons are straightforward. Wherever possible, major infrastructure projects should occur at the local level *after* reforms in user prices, so officials can estimate the impact on demand more accurately. Uniform per capita projections of use should be scuttled in favor of demand studies based on local conditions. All infrastructure projects of significant scale should require substantial own-source financing, to create incentives for realistic cost projections and savings.

Predicting a country's optimal infrastructure capacity compared with its long-term investment needs is admittedly complex, given the "lumpiness" of investments and the uncertainties associated with long-term planning. Hence, whereas today's use of infrastructure facilities points to overcapacity, the extent to which that overcapacity is likely to persist is difficult to gauge.

### Gains from Citizen Participation

For countries pursuing autonomous decentralization, the hallmark of reform has been the promise of greater citizen participation in local budget decisions, investment choices, and development planning. Such participation is supposed to yield greater citizen satisfaction with basic services and more coverage for previously excluded groups—particularly the poor, ethnic minorities, and women—while laying the groundwork for broader democratic participation in national government.

Cambodia's 2003 Poverty Reduction Strategy illustrates the weight of expectations placed on decentralization as a tool for achieving participation:

*"Decentralization has three objectives in Cambodia:*

- Promote pluralist participatory democracy at local level . . . by creation of popularly mandated

and autonomous local governments that are responsible to the citizens . . . and make decisions over delivery of public goods and services.

- Promote the culture and practice of participatory development (planning, management, resource mobilization) at local level.
- Contribute to reduction of poverty in the country through improvement of service conditions . . . and [service] improvement to poor and deprived ones" (Royal Government of Cambodia 2003a, p. 108).

Countries have introduced autonomous decentralization primarily through grants to local communities that allow citizens to directly choose small investment projects and provide for community management of the projects once installed. The Seila Program has brought citizen choice over small infrastructure projects to Cambodia; the *Kecamatan* Development Program has done the same for sub-districts in Indonesia; as have *barangay* investment programs in the Philippines for urban subdistricts. Several other programs follow the model of providing communities with investment resources that they can allocate among eligible projects. Such programs have typically won strong support from the World Bank, the Asian Development Bank, the United Nations Development Programme, and other international organizations seeking to imprint local citizen choice as the bedrock support for decentralization.

Experience with citizen participation in East Asia raises two critical questions. First, does participation in fact improve sustainability and coverage of basic infrastructure services at the village, urban subdistrict, and neighborhood scale? Second, can experience in direct participation be successfully scaled up to larger political units and infrastructure networks? As the following evidence reveals, the answer to the first question is yes, while the jury is still out on the second question. Despite some promising local experience, scaling up has proved more difficult than optimistic advocates of participation foresaw.

### Community-Scale Participation

A large body of evidence supports the importance of community-scale participation in infrastructure choices and management. This evidence also

provides guidelines on specific responsibilities that communities can handle to extract the maximum value from participation. For example, in a study of 88 community-managed water supply projects worldwide, Gross et al. found that:

- Community-based water supply projects which were more demand-responsive—that is, those that involved greater community choice in the type of water supply, households to be covered, and the method for paying for operations and maintenance—were more likely to be sustained and better maintained.
- The more broadly participatory and gender representative the decision-making procedures, the higher the rate of cost recovery.
- Communities that set up water management organizations (WMOs) had better project sustainability records than communities that participated only in initial project selection; the more equitably WMOs represented women and the poor, the greater their sustainability.
- Household contributions to construction were significantly associated with better-sustained water supply services only if the community actively participated in project selection and subsequent management (Gross et al. 2001).

Hopkins' study of 33 sites in Flores in the Philippines found higher rates of sustainability where planning included both women and men, as well as poor households. The World Bank has reported higher rates of sustainability of locally selected infrastructure projects when project choice reflected direct community participation (Hopkins 2003; World Bank 2003d).

Some of the benefits to be reaped from local participation and choice require careful listening by outside experts, whether national officials or international advisors. In 2001 Lao PDR adopted a new policy of allowing communities to choose their hygiene solutions and influence their design. Follow-up work found that villagers primarily valued the “comfort and convenience” of latrines rather than the health benefits, which were foremost in the minds of external experts (Meadley 2003). This finding influenced both the design of the latrines and the strategy for disseminating the program, which relied on “champion families” respected by other families. After the champion

families receive latrine facilities, photos showing their convenience and the families' pride in owning them are used to engage the widely dispersed rural community in discussing the benefits of latrines and gain support for their adoption.

The literature on decentralized fiscal choice has emphasized the gains from allowing clients to choose among a wide array of project options, constrained by either a fixed budget or the requirement that users pay for the service they choose. Many East Asian experiments in decentralized project selection have followed this model, offering local residents a broad initial choice of investment priorities. The Seila Program in Cambodia and the *Kecamatan* Development Program in Indonesia are two examples that offer relatively open-ended choice.

However, some national programs have defined community choice and participation differently, particularly those that retain strong roles for governmental planners and service providers. In the poor rural province of Guizhou, China, for example, prospective township clients can choose to receive private water connections at a tariff level that covers operating costs plus some 75 percent of capital costs, including all debt service. Less expensive alternatives, such as public stand posts, are not offered, nor does the community have a voice in tariff policy or technology. Community consultation consists of carefully explaining to residents the kind of water service they will receive, the tariff costs, and the procedures for collecting the tariffs, which entail house-by-house collection (Zhixiong 2003). The community may then embrace the program and its rules or, in principle, express reluctance to pay for it. Village committees identify delivery problems and exert collective pressure on citizens to pay water bills. However, the plant manager remains in control of all aspects of management. A portion of his salary is deducted if tariff collection rates fall below 90 percent.

### *Scaling Up Participation*

The difficulties of scaling up successes in community participation are widely recognized (World Bank 2003b). Ironically, scaling up community and rural village projects has proved easier in some respects in a centralized rather than a decentralized environment, where many levels of government exert authority. Scaling up means multiplying the number

of villages and urban subdistrict communities reached using the same implementation principles. Such scaling up is constrained primarily by the resources of a program and the central government's willingness to support it through its own resources or agreement with international donors. If the financial and human resources are replicable, projects can be reproduced throughout the country. Seila in Cambodia is an example of a community participation program that is rapidly scaling up to reach the entire country with direct central support, without much interaction with other levels of government. The *Kecamatan* Development Program in Indonesia is another program that has spread quickly by replicating the same neighborhood approach, with central government and donor support. Only now, in its third generation, is the program attempting the more difficult task of integrating priority setting at the community level with the formal planning procedures of the decentralized system.

Scaling up community-identified priorities within a decentralized government structure requires finding ways to transmit community preferences on infrastructure investments to successively higher levels of government. Community "demand" may include both community-scale projects that need higher-level financial support and community views on the priority of village, district, and municipal investment projects that affect the community. The transmission of community preferences about capital projects to higher levels of government has proved problematic. Part of the difficulty stems from distrust of representative government and suspicion of the willingness of municipal officials to respect community investment priorities. This distrust has been compounded by the difficult interface between top-down national investment planning and bottom-up community and local planning. Both the Philippines and Indonesia have attempted to address this challenge by directly involving community groups in progressively higher levels of decision making.

Indonesia illustrates the complexity of transmitting community preferences.<sup>5</sup> The urban planning process begins with village development meetings attended by the village representative council, NGOs, and a representative of the subdistrict (*Kecamatan*). A major objective is to submit project proposals to the *Kecamatan* subdistrict level. There officials review and weed out community proposals and add

new proposals, and then submit a priority list to the next level of government (*Kabupaten/Kota*), which adds proposals from technical officials. The project preferences of the *Kabupaten* parliament also become part of the mix and may override other recommendations. Finally, an umbrella system is supposed to coordinate local investment priorities with provincial and national priorities. As part of this structure, the Indonesian government has promulgated general guidelines for participatory planning at the *Kabupaten* and *Kota* level, including open meetings that bring together representatives of communities, NGOs, and technical bureaus as well as municipal elected officials. The entire process—facilitated by a government-provided scoring sheet—should yield a consensus list of local priorities.

Case studies reveal that this process plays out differently in different locations. Municipal parliaments, technical agencies, and NGOs typically have different priorities (Pratikno 2002; Indonesian Partnership on Local Governance Initiatives 2002). Negotiations leading to final project prioritization at the municipal level depend on the relative clout of these parties and the role the mayor chooses to play. Most case studies have concluded that the preferences of local elites, the municipal parliament, and technical agencies tend to drown out the preferences of community groups. The mandated participation of NGOs has not resolved this issue, because—instead of representing a consensus of lower-level priorities—NGOs have more often proved to be splintered advocacy groups for particular priorities. A similar system of planning and priority setting operates in the Philippines, including the mandated participation of community NGOs in local development councils. Similar difficulties in sustaining grassroots participation in municipal priority setting have been reported.

A realistic reassessment of what community participation in infrastructure decision making means at the municipal scale is in order. Intermediation is plainly required in scaling up from the community level to the municipal level. Elected representatives in the municipal parliament provide one form of intermediation; NGOs provide another. In the most successful examples of public inclusiveness in setting infrastructure priorities, NGOs have played the role of intermediary between community and government. This has required continuous involvement by NGOs, starting with community-level

meetings and extending to collaboration with the technical agencies of municipal government. Against this preparatory background, structured meetings on investment priorities and budget allocations, such as citizen forums, can succeed. The conditions for success, however, are demanding: NGOs must be willing to see themselves as partners with local government rather than antagonists, and local officials must be open to input from institutions outside the political and governmental technical sphere. Clear examples of successful implementation of this vision do exist. These include the involvement of the Indonesian Partnership on Local Governance Initiatives with both municipal government and communities in urban forums in Indonesia, and the culture of partnership in all decision making in Naga, the Philippines. Efforts to include community expression under the *Kecamatan* Development Program and ordinary decentralized priority-setting procedures in Indonesia are other examples. Whether scaling up direct community participation in setting investment priorities is widely workable remains to be seen, however. Many communities have reported a public stalemate that gives rise to the older pattern of nontransparent decision making by elites.

### **Lessons Learned**

*Community participation is essential to the success of infrastructure projects at the village and subdistrict level.* Participation is required at the point of project selection as well as in continued project management. Meaningful participation requires the involvement of a cross-section of project users, especially women and minority groups, who are often excluded from project management.

*Scaling up participation in infrastructure choice has proved difficult.* Other mechanisms, such as genuinely representative municipal governments, and NGOs willing to serve as intermediaries to both municipal government and local communities, are needed to make the process work.

*The most promising approach involves NGO participation from the start of the priority-setting process through the municipal meetings that establish local investment priorities.* Only NGO involvement at the last stage—such as through the Local Development Councils prescribed by Filipino law—has proved unsuccessful.

*The idea that community participation in setting infrastructure priorities will breed a national culture of democratic decision making has seen a modest amount of empirical support thus far.* Just as scaling up infrastructure priorities can be difficult, so can scaling up expectations about democratic participation in governance. The experience of allocating budgets to communities undoubtedly empowers households and raises their expectations about responsive government. Whether such participation helps consolidate national democracy remains to be seen.

### **Paying for Infrastructure Services**

Infrastructure services must be financed at two levels. Capital resources must be mobilized to pay for the initial investment in facilities. Then recurring revenues must cover the annual cost of operations and maintenance, plus contributions to servicing the debt incurred to finance the initial investment. In an economically efficient world, the full cost of infrastructure facilities, including depreciation, would be recognized and recovered through user fees and—given positive externalities—explicit subsidies from government, in the form of capital grants or targeted subsidies.

Much of the institutional unbundling of large infrastructure utilities in East Asia has been motivated by a desire to generate more reliable financing streams, and to make infrastructure services more attractive candidates for commercial investment or lending. The latter goal has sometimes conflicted with the goal of making monopoly utilities more directly accountable to local governments.

Asia faced a formidable infrastructure pricing challenge at the beginning of this decade, as it had the lowest water and sanitation tariffs—both in absolute terms and as a percentage of the costs of production—of any other region (see annex 10.1). The median urban tariff for water supply reportedly covered less than 85 percent of operating and maintenance costs, with no contribution to the cost of capital. The median tariff for sanitation covered an even lower portion of operating and maintenance costs. If anything, the tariff ratios reported by governments are likely to underestimate the true cost gap.

In examining financing approaches, we can extend the distinction introduced at the beginning

of this chapter between China and (in incipient terms) Vietnam, on the one hand, and the Philippines, Indonesia, and (in incipient and less clear-cut terms) Cambodia, on the other. Aided by strong economic growth, China has devised a broad model for self-financed infrastructure investment and market-based capital financing. Both the Philippines and Indonesia have been handicapped by a stronger impact from the Asian financial crisis and less robust economic growth. However, they have compounded the difficulty by retaining central control of lending to local authorities for infrastructure investment—an anomaly in their otherwise sweeping embrace of decentralization.

### *China's Infrastructure Financing Strategy*

China has pursued a clearly defined sequential strategy for financing local infrastructure. Although the model has important weaknesses, it contains lessons for the rest of the region. To finance the first wave of investment in local infrastructure networks, the government relied primarily on local taxes and fees, supplemented by borrowing from international donor agencies and capital grants and budget assignments from central government. Starting in 1998, the government began to borrow heavily from the domestic market to finance infrastructure. Between 1998 and 2002 it issued ¥ 660 billion (US\$79.5 billion) in infrastructure bonds—some 30 percent of which was then transferred to local governments, half as subloans and half as grants. Along with this use of the domestic bond market, the government communicated the priority of local infrastructure lending to China's banks, all of which are publicly owned. Short- to intermediate-term loans from banks have been a principal source of capital financing for local governments investing in infrastructure.

One undesirable effect of the surge in local borrowing to finance infrastructure investment has been a high and rising level of municipal indebtedness. Under existing arrangements, municipalities had to repay outstanding debt from their general budgets, placing a high degree of strain on their finances. This was especially true in light of the inadequate structure for service fees, which did not recover operating and maintenance costs, much less the costs of debt service. Further squeezing municipal budgets was the short maturity of

infrastructure bank loans—typically three years, sometimes five years.

In response, the central government took three important steps designed to ready local governments to further finance local infrastructure within a fiscally responsible framework. First, it announced that most local governments would be responsible for obtaining capital financing for infrastructure investment from the market. State onlending and grants from the proceeds of state infrastructure bonds would be limited to the economically laggard western provinces—other local governments had to be self-financing. Second, to support this self-sufficiency, the government decreed that municipalities should adopt full-cost tariffs for water supply, solid waste, and wastewater treatment, on a highly accelerated timetable. Full-cost pricing was defined to include all operating and maintenance costs plus debt service and a competitive return on newly invested capital. Better-off municipalities were supposed to set tariffs to allow for full recovery of systemwide capital costs. This regime was designed to provide adequate revenue streams to cover debt service and attract private-sector capital into the local infrastructure sector, via either direct investment or lending.

In a third—and in some respects most interesting—initiative, the government decreed that local government should be restructured to separate the ownership of infrastructure and other assets from operating responsibilities. This last initiative had two goals. First, it was intended to yield more efficient management of municipal assets, following so-called New Government trends established in Australia, New Zealand, and other countries, in which the asset-owning institution levies a capital charge on users to allocate costs more efficiently. In China's case, however, a more important motivation was to place under a single institutional umbrella assets used as collateral for municipal loans. As part of governmental restructuring, only the asset-holding institutions, known as Urban Development Investment Corporations (UDICs), may now borrow on behalf of municipal government. The restructuring was supposed to ensure that municipal borrowing did not exceed the collateral capacity of the municipality's asset base. Moreover, as only UDICs are legally authorized to borrow, the restructuring was supposed to insulate the general municipal budget from debt service claims while providing a powerful incentive to

UDICs to implement fees that would cover the cost of capital.

In some respects, China's infrastructure finance reforms are less sweeping than they may at first appear. Although municipalities are prohibited from direct borrowing, they continue to provide comfort letters to local UDICs. These in effect commit a municipal government to use general budget revenues or income from municipally owned property to help meet the UDIC's debt service obligations, should such support become necessary. Although UDICs tap the general corporate debt market, their debt instruments are a form of municipal borrowing. The change in the institutional name of the borrower does not relieve local public institutions of the debt service burden created by short-term borrowing to finance long-term infrastructure projects. From the banking sector's perspective, the large amount of local assets held in the form of loans to local governments represents a credit risk of unknown magnitude. No defaults on municipal borrowing from banks have been reported. However, banks routinely roll over short-term loans as they come due. Questions remain as to whether banks will continue this policy as foreign competition enters the banking sector under WTO rules, how much of their outstanding debt municipalities could actually pay under existing schedules, and how politically feasible and economically rewarding it would be for banks to foreclose on assets offered as collateral.

One finding of potential significance to other East Asian countries has emerged from UDIC restructuring, however, especially for periods of strong economic performance. Municipal governments in China possess undeveloped or redevelopable land with great market value, which could finance a substantial proportion of the local infrastructure investment burden. Changsha, the capital of Hunan province in China's interior, illustrates this situation. The municipality holds title to some 1.33 million hectares of land, valued at the municipality's minimum long-term leasing price in 2001 at some ¥ 105 billion. Of this total, about ¥ 85 billion (more than US\$10 billion) corresponds to land not occupied by the municipality itself that could be leased. Changsha officials estimate that some 60 percent of the gross price of leased land represents costs for land that must be set aside as matching open space under planning regulations, resettlement

costs, and revenues that must be shared with higher levels of government. Still, with 40 percent of the gross value representing net profit, the net value of Changsha's land inventory is some ¥ 34 billion, which could finance a large part of the municipality's 10-year capital investment plan.

The potential for converting Chinese land values into infrastructure assets is even greater if one considers that a large share of local infrastructure investment is capitalized into the value of municipally owned land, and that municipalities' landholdings are far from static. As population growth pushes the urban boundary outward, more and more land reverts from collective rural ownership to municipal ownership, providing a continuing basis for capturing land value. Rural land at the edge of urban centers is indeed seriously underpriced, as the replacement cost of rural land is based on its agricultural use without the premium reflecting proximity to urban centers. This gives municipalities strong incentives to convert land from rural to municipal ownership. And municipalities are in fact converting land values into infrastructure investment throughout China. In some municipalities studied under the City Development Strategies (Cities Alliance), land has financed as much as 70 percent of local infrastructure investment, either directly through proceeds from leases or indirectly by serving as collateral for infrastructure loans.<sup>6</sup> However, concerns are growing that reliance on revenues from periurban land may lead to unsustainable urban planning and degrade the quality of urban life, calling for the development of an integrated approach to land use and urban planning at the municipality level.

The combination of full-cost tariffs for water supply, sanitation, and solid waste, coupled with increments in land value created by road construction and expansion of urban boundaries, provides a potentially sound basis for financing municipal infrastructure.

### *Infrastructure Financing in the Philippines and Indonesia*

The structure of lending to local governments for financing infrastructure has become an important bottleneck to decentralization in both the Philippines and Indonesia. Despite plans to graduate creditworthy municipalities and local utilities to the

competitive credit market, the central government remains in control of credit channels in both countries, acting as a monopoly intermediary between loans provided by international financial institutions and local governments. This position has frustrated development of sustainable sources of domestic financing while allowing central government institutions to restore—through loan conditions and discretionary loan approvals—some control over the local infrastructure sector formally relinquished in the decentralization process.

The local credit market in the Philippines illustrates the unequal playing field established by the government. The Development Bank of the Philippines and the Land Bank of the Philippines obtain financing from international organizations and from the National Bank at below-market rates. Their onlending to local governments is secured by the authority to intercept intergovernmental revenue-sharing allotments—authority that is not available to private lenders. Reliable local loan repayment to government financial institutions was intended to introduce commercial banks to municipal lending as a creditworthy activity. However, commercial banks cannot match the cost of funds of the government financial institutions, as they are prohibited from serving as depository institutions for municipalities, which would strengthen their ties to municipal budgets and provide a lower-cost source of financing. As a result, commercial bank lending to municipalities for infrastructure has yet to get off the ground, despite the formal policy of promoting creditworthy municipalities to the private credit market.

Indonesia illustrates the legacy power of bad loans in thwarting development of a local credit market. As of March 31, 2000, 63 percent of the borrowing accounts of water utilities through subsidiary loan agreements and the Regional Development Account were reportedly in arrears (World Bank 2003b). Although the country has launched a program of debt restructuring, it has made little headway in straightening out legacy borrowing. Resolution of the inherited debt runs straight to the fundamental issues raised by political decentralization. If central authorities made past investment decisions and mandated loan agreements, should a decentralized water utility be required to honor that debt, and, if so, how will it recover the debt if municipal governments are unwilling to impose

the required tariff increases? On the other hand, writing off these loans implies a substantial fiscal loss to the central government as well as an undesirable precedent for future onlending. These conditions seem to lay the groundwork for loan restructuring, but reaching comprehensive agreement has proved difficult.

### *Lessons Learned*

A self-sustaining local credit market is essential for successfully decentralizing the infrastructure sector. National government, as the original onlender to municipal governments and utilities, needs to have a strategy for developing a domestic local credit market from the outset. This strategy requires three components:

- *Establishing a track record of timely debt repayment by local authorities.* The injection of political considerations into debt repayment to government financial institutions creates a credit risk in local lending that can set back market development for decades. The institutional weight of bad loans deters entry by private financial institutions into the subnational credit market.
- *A policy that promotes replacement of government lending by private lending as quickly as feasible.* This, in turn, requires a level playing field regarding revenue intercepts, depository functions, and other regulations. In other regions, internationally sponsored municipal development funds have proved successful by onlending to municipalities through commercial banks, which fully accept the credit risk. This strategy introduces commercial banks to municipal lending while giving them access to longer-term, lower-cost funds than are available on the domestic market. This approach requires a willingness on the part of government financial institutions to introduce decentralization to the financial sector by eliminating their monopolistic role as sole municipal lenders.
- *A policy of substantial capital cost recovery through service tariffs.* For services such as water supply and wastewater removal, which cannot directly generate gains in land value, the only reliable recurring source of revenue is service fees. One of the most useful standards that

national government can set in the infrastructure sector is model tariff agreements between municipal authorities and water utilities. Under these, the municipality agrees to sanction cost-recovery tariffs if the water utility meets performance targets for service delivery and coverage.

### How Far to Decentralize?

Decentralization requires unbundling the functions associated with providing infrastructure services and allocating them among different tiers of government. The optimal level of decentralization will vary with government's policy goals and the types of infrastructure. This section discusses the mandate of higher tiers of government in the context of decentralized services.

#### *The Role of Higher Tiers of Government*

Even with aspects of infrastructure that are essentially local, an argument can be made for allocating specific functions to tiers of government higher than the municipal level given one of the following conditions:

*Spillover effects.* Interjurisdictional spillovers—or externalities—arise when the activities of one jurisdiction affect the welfare of people in surrounding jurisdictions. If municipal services produce spillover benefits or costs, service provision will be inefficient

without intervention by higher-level government, as local governments would ignore these impacts. For example, local decisions on regulating effluent discharges into rivers have implications for users in other jurisdictions that are part of the same catchment area. Similarly, spillover effects occur when municipalities are responsible for managing feeder roads whose benefits accrue to more than one jurisdiction.

To correct for such spillover effects, the tier of government whose jurisdiction encompasses all the users benefiting from such services should decide on investment priorities and allocate resources. For example, managing environmental resources according to water basins is becoming more common to correct for externalities in shared water resources. The functions entrusted to water basin authorities include managing and conserving watersheds, controlling floods, reducing pollution, and licensing water extraction. On the other hand, overuse and degradation of natural resources may occur when an intermediate tier of government does not take responsibility for integrated water resource management (see box 10.2). Spillover effects similarly call for devolving management of secondary road networks to intermediate tiers of government.

*Economies of scale.* A municipality responsible for providing basic infrastructure services may be smaller than the minimum scale required to ensure

### BOX 10.2 Vietnam: Watershed Management

In Dak Lak, Vietnam, groundwater is in high demand to feed the expanding cultivation of coffee plantations. Groundwater resources in the Ea Tul and Quang Phu catchments have so far been freely accessible, leading to overuse and degradation of the natural resource base. Growing competition in water use has led to conflicts between upstream and downstream users.

Local agencies have failed to mediate these conflicts. For example, attempts by irrigation officers to introduce irrigation calendars failed because communes could not consolidate their cropping calendars to fit the desired schedule. Under the new Water Law, Water Users Associations have emerged to make decisions and coordinate water resources. At the provincial level, the Province People's Committee established a

Participatory Irrigation Management Steering Committee to provide guidance to the Water Users Associations, along with supporting committees at the district level. The water associations, which cooperate with local line agencies, have encouraged farmers to view watershed problems more holistically and mobilized new forms of collective action to address overuse and erosion.

The focus on participatory irrigation management is seen as a starting point for a more environmentally integrated approach to managing water resources. However, even in the new institutional landscape, no effective regional institutions regulate access to and use of groundwater.

Source: Dupar and Badenoch 2002.

technical efficiency, especially for services that are local in nature but require large capital investments, such as water supply, electricity distribution, and public transport.<sup>7</sup> When excessive fragmentation of service provision is a concern, clustering municipalities to provide regional services can boost efficiency.<sup>8</sup> However, regional utilities require an institutional interface at a higher level of government in charge of setting investment priorities and regulating services. Spontaneous coordination across municipalities is indeed difficult to achieve and may be unsustainable when no higher tiers play a coordinating role. As an example, in Caracas, 23 municipalities agreed to cooperate to award a single water concession. However, the resulting agreement lacked credibility to investors, and the group received no responsive bids from private operators (Triche et al. 1993).

*Scarcity of human resources.* A scarcity of specific skills may also make multiplying the number of service providers undesirable. In such a context, fewer larger entities may be in a better position to attract the minimum required skills than more numerous, smaller service providers. A similar argument can be made for limiting the number of regulatory entities to enhance their capacity when human resources are scarce (see, for example, Smith 2000).

*Equity considerations.* Fiscal decentralization may conflict with equity goals if the poorest regions have limited leeway to mobilize financing and raise own-source revenues to meet their infrastructure needs, such as through local taxation, user fees, and access to capital markets. This may argue for limiting fiscal decentralization to allow higher tiers of government to redistribute resources to areas

lagging behind in economic development. In this context, intergovernmental transfers are instrumental in ensuring that all localities can afford to invest in infrastructure. As an example, the government (or regulatory authority) may impose a levy on all firms operating in a market, and redistribute the revenues to companies connecting new users in poor regions that cannot afford steep user charges. Higher tiers of government may also need to retain some discretion in setting investment priorities to ensure that local projects contribute to national and regional strategies for reducing poverty.

*Distortion of interjurisdictional trade.* Local regulation of basic infrastructure services may affect interjurisdictional trade, adding transaction costs for operators. For instance, local regulations governing transportation safety may conflict and thus limit or distort opportunities for trade. When local regulations impede trade across jurisdictions, there is an economic argument for setting homogeneous quality standards throughout the area. As an example, in catchment areas cutting across several municipalities, water basin authorities may play a role in harmonizing environmental standards and regulating inland waterways. Higher tiers of government could similarly be entrusted with responsibility for setting quality standards for secondary road networks (see box 10.3).

*Destructive competition.* Decentralization may increase efficiency by promoting competition among local governments. However, devolution of decision-making powers to the lowest tiers of government may turn the potential for competition into a “race to the bottom,” where competition among local governments to attract foreign investment in

### BOX 10.3 Indonesia: When Transport Regulations Distort Trade

One area where transport regulations may discriminate against outsiders is the introduction of licenses for use of roads within a certain region. The *Izin Trayek* rule in South Sulawesi, Indonesia, for example, requires that all transport trucks carry one of three specific licenses: for interprovincial transport, for intraprovincial transport, and for entering the regencies (*Kecamatan*). The first two licenses are issued at the provincial level in accordance with gubernatorial

decree (*Keputusan*) No. 10 1996, while local governments issue the third type of license. Trucks not carrying licenses are typically fined Rp 35,000. This regulation clearly discriminates against trucks from other areas, particularly because licenses are not available outside South Sulawesi.

Source: Goodpaster and Ray 2000.

infrastructure can prompt municipalities to bid down taxes or other regulatory obligations (or bid up subsidies or regulated rates of return).<sup>9</sup> Excessive competition may induce inefficient allocation of resources and overinvestment, with municipalities building or upgrading ports or other infrastructure facilities in their own areas to enhance their prestige, rather than relying on facilities in adjacent regions.

*Efficiency of revenue collection.* The scope for decentralizing financial powers may be limited when the central level can collect budgetary revenues more efficiently, and when there is little opportunity for collecting cost-covering charges at the point of service. This is often the case in the road sector, for example, where financing comes largely from fuel taxes and vehicle operating fees, which are more efficiently collected by higher tiers of government. Higher levels need to redistribute those revenues to lower tiers where services are provided. An example is dedicated road maintenance funds financed by user charges collected at the national level (mainly through fuel taxes). Sophisticated cost-sharing formulas can allocate these funds among different road networks (and corresponding levels of government), and robust accountability mechanisms can oversee use of the funds.

### *Interjurisdictional Coordination in China*

In China, sustained economic growth is spurring a few major cities to develop into metropolitan areas that cut across more than one jurisdiction. These areas include the Pearl River Delta region (centered around Guangzhou, Shenzhen, and Hong Kong), the Lower Yangzi Delta region (centered around Shanghai), and the Beijing-Tianjin region. Coordinated development has started to emerge, as municipalities have begun to see the benefits of regional integration. For example, a pilot exercise in the Pearl River Delta region, led by the Ministry of Construction, aims to establish a metropolitan planning model to be replicated in other regions. An even more ambitious project is the plan to develop a Pan-Pearl River Delta Regional Cooperation and Development Area, which would encompass almost one-fourth of China's territory, including nine provinces, Hong Kong, and Macau. The main goal of this regional initiative is to facilitate the management of highway and railway projects, which are expected to generate significant

externalities. The trend toward regional integration is therefore an important step toward more efficient infrastructure service provision.

On the other hand, examples of interjurisdictional management of shared water resources, where spillover effects also call for the involvement of higher tiers of government, are still rare in China. The main exception is the recent attempt to promote shared environmental infrastructure in the Pearl River Delta (PRD), one of the most complex urban systems in Asia. Many sections of the PRD have extremely poor water quality. The municipalities of the Guangdong province are the highest contributors to PRD pollution, and the provincial government—through its Environmental Protection Bureau—has recently announced an eight-year, US\$5 billion program to invest in wastewater treatment facilities. The plan is based on the recognition that investment in environmental infrastructure should be guided by a regional development strategy that reflects sound environmental management and fiscal sustainability. A pilot project will promote development of environmental infrastructure for three groups of two or more municipalities, districts, and towns. A key parallel activity is the PRD Cleanup Campaign, which has set phased targets for meeting water quality standards. One of the goals of the campaign is to enhance intermunicipal collaboration.

In China, more effective regional coordination in setting investment priorities and allocating resources is also needed to help avoid excessive competition among municipalities in the provision of infrastructure services. Amid economic transition and decentralization, local investment policies are indeed driven primarily by a growth and competitiveness agenda. As a result, municipalities tend to compete excessively to attract outside investment in businesses and infrastructure projects. Their competitive tools are mainly preferential policies such as tax holidays, free land, and discounted land concessions. In this context, lacking coordination at higher tiers of government, such ad hoc policies may unduly distort resource allocation between municipalities, as well as between stakeholders within a municipality.

### *The Missing Middle: The Case of Indonesia*

In Indonesia, Law 22 of 1999 accords provinces two roles: as deconcentrated representatives of the

center, and as autonomous regions. While provinces can officially coordinate regional policies and perform joint tasks on behalf of local governments, the legislative framework provides no hierarchical relationship between provinces and local governments. This has jeopardized the ability of provinces to facilitate cooperation among local governments and establish their authority in regional functions. As a result, sectors with large externalities and significant economies of scale, such as watershed management, have consistently underperformed. Moreover, decentralization has resulted in a multiplicity of standards at the municipal level, which may distort trade across jurisdictions (see box 10.3).

The resulting efficiency losses from the “missing middle” are compounded by the small size of some local entities, which suggests diseconomies of scale and points to consolidation of regions.<sup>10</sup> The narrow administrative boundaries of local governments, combined with the limited role of provinces, have led to suboptimal investment decisions from a regional and national perspective. The argument for strengthening the role of provinces in managing road networks, whose benefits accrue to more than one local jurisdiction, is especially compelling. Secondary road networks have been largely underfunded compared with the need (the country confronted an estimated 15–20 percent funding shortfall in 2000) (World Bank 2004). In this context, giving provinces greater financial authority can broaden their influence on local governments and thus increase investment efficiency. One approach is to link provincial and national road funds, and assign the provincial government strategic oversight of all roads (provincial and *kapupaten*) in the province, as well as responsibility for assessing investment needs and allocating resources. The provincial road funds would finance maintenance and rehabilitation of local networks, provided that the *kapupaten* adopt sound road management practices.

In Indonesia, the central government retains significant control in allocating resources between jurisdictions. Limited decentralization of revenue-raising powers can help reduce regional inequality, given redistributive mechanisms. The intergovernmental transfer system includes two equalization grants (the DAK and the DAU, or *dana alokasi umum*) to fund investment in infrastructure, especially services that generate externalities. However,

in practice, these grants have tended to exacerbate rather than reduce regional inequality.<sup>11</sup>

### *The Philippines: Another Example of the Missing Middle*

In the Philippines, the national government is responsible for providing primary infrastructure, including backbone transmission grids in the power sector and primary road networks, while cities and municipalities are responsible for tertiary infrastructure such as roads and water. However, it is unclear which tier of government is responsible for planning investment and coordinating development of secondary networks that serve more than one local government and involve common resources such as river basins. While in principle provinces play a coordinating role among cities and municipalities, they lack the technical and financial resources to do so.

As a result, no intermediate tier is capable of managing water resources shared by several local governments. Without a regional body to coordinate investment, local governments often argue over river basin planning and management, allocation of water rights, and pollution control, and water-stressed municipalities have had trouble negotiating water rights outside administrative boundaries. For example, Cebu City reportedly had great difficulty convincing Bohol province to supply the water-starved city even though the marginal value of water consumption in the city was high.

A similar situation arises in managing secondary road networks. While road density in the Philippines is among the highest in the region, only 20 percent of the road network is paved. Provincial roads account for only 13 percent of total roads, with more than 70 percent consisting of city, municipal, or *barangay* roads. Moreover, in 2000, only 21 percent of provincial roads were paved—a rate much lower than that for national roads (62 percent), city roads (77 percent) and even municipal roads (34 percent) (Department of Public Work and Highways 2003). Under the institutional framework, volunteer cooperation among local governments is the only mechanism for coordinating management of the secondary road network (see box 10.4).

Provinces also suffer from an acute lack of financial resources. This is due largely to the fact that decentralization has significantly shifted own-source revenue from provinces to cities and municipalities.

### BOX 10.4 The Philippines: Toll Road Management

The construction of a circumferential road across Cabanatuan City and adjacent municipalities is a good example of cooperation in planning investment and implementing a project. Cabanatuan City signed a memorandum of agreement with the municipalities of San Leonardo and Sta. Rosa that defined their contributions and obligations to this project. The toll road, financed by contributions from the local governments, is expected

to raise revenues once it is operating. The cooperation reflected strong leadership from the chief executives of the three local governments and their understanding of the benefits of a joint approach to combating rising urban congestion.

*Source:* Gilbert Llanto, mayor of Cabanatuan City, field interview.

Not only are the taxing powers of provincial governments inferior to those of city and municipal governments, but cities do not have to share their tax revenues with provinces. As a result, provinces depend mostly on the Internal Revenue Allotment (IRA)—a mechanism for transferring funds from the center.

Regional Development Councils (RDCs) could play a role in integrating regional and local infrastructure plans with the country's overall infrastructure plans.<sup>12</sup> However, the majority of RDCs are weak and ineffective in planning and coordinating infrastructure projects. The perception is that RDCs merely act as endorsers of projects initiated by regional offices of line ministries or local governments, which require international funding or a guarantee from the national government. Thus, rather than playing a coordinating role, RDCs are seen as more concerned with monitoring national projects implemented at the local level (Llanto and Lasam 2003).

In the Philippines, as in Indonesia, the IRA is supposed to correct the mismatch between revenue and expenditure assignments across different levels of government. Although local governments have become more and more dependent on the IRA, the transfer system has not contributed to increase equity. On the contrary, the IRA formula favors bigger and richer local governments at the expense of poorer and smaller ones, as it is based on land area and population. Hence, cities and municipalities that are more populous and have larger land areas enjoy a strong advantage, and richer local governments with larger tax bases receive a bigger share of the IRA.

#### *Lessons Learned*

This section has discussed the role of higher tiers of government in decentralized infrastructure by

drawing on the experiences of China, Indonesia, and the Philippines. The need to strengthen the role of higher levels of government in providing infrastructure services appears particularly compelling in Indonesia and the Philippines, where there is clear evidence of a missing middle in the architecture of decentralization. The experiences of all three countries suggest the following lessons on how far to decentralize infrastructure services:

*Partnership between national, provincial, and municipal governments is crucial to maximizing the efficiency gains from decentralization.* Infrastructure services entail a broad set of functions. The extent to which higher levels of government perform some of these functions often depends on the characteristics of a particular industry. For example, when the main economic argument for involving provincial authorities is the presence of spillover effects, higher levels of government need to retain a planning and coordinating role, while municipalities may be better positioned to build and operate facilities. When the main concern is excessive fragmentation, decentralization of service provision only to the regional level can retain economies of scale. Clearly defining responsibilities and providing mechanisms for coordinating all tiers of government are essential to maximizing the benefits of decentralization.

*A progressive approach to decentralization has merit.* Developing countries may need to build or strengthen institutions at intermediate and lower levels of government to coordinate responsibilities—institutions that are often the norm in mature infrastructure industries. This implies that countries may need to phase in decentralization while building capacity. Another argument in favor of a progressive approach is that once functions are decentralized to

the lowest tiers, creating a role for higher tiers of government can be very difficult, as municipalities may be reluctant to relinquish decision-making and revenue-raising powers. However, political considerations often play a critical role in designing a decentralization strategy. For example, while a more gradual phasing-in may have been warranted in the Philippines and Indonesia, political imperatives called for a Big Bang approach, under which local governments assumed responsibility for providing basic infrastructure services almost overnight.

*Given economies of scale, decentralizing infrastructure to the lowest tiers of government may lead to excessive fragmentation.* The risk of excessive fragmentation is particularly high when decentralization is not conceived as a response to specific problems but rather as a byproduct of wider reform. The result could be an industry structure that is far from optimal from an economic point of view.

*Careful design of intergovernmental transfer mechanisms is needed to meet equity objectives.* While central intervention may be warranted to redress regional inequalities, experiences in Indonesia and the Philippines show that limiting fiscal decentralization has not produced the expected results in terms of income redistribution. On the contrary, intergovernmental transfers have exacerbated regional difference in income, jeopardizing the ability of the poorest regions to finance their infrastructure needs. Countries need to improve the efficiency of their equalization mechanisms to address fiscal imbalances across regions.

### Key Issues for Policy Makers

Several key issues stand out from this review of East Asia's experience in decentralizing infrastructure. Perhaps the most important is the coherence and alignment of administrative, financing, performance measurement, and incentive policies and programs. Where alignment exists, anticipated results will be forthcoming, as in the case of the principal-agent arrangements of China and Vietnam. Of course, this can be a doubled-edged benefit. If the goals make sense, performance will yield desirable outcomes. On the other hand, doing the wrong thing well is also a possibility. Thus, it is as important to ensure that coherence and alignment favor appropriate local decision making,

control of results, and accountability for results. This lesson is elaborated in detail below.

*Performance measurement opens the door to efficiency gains from decentralized infrastructure because it permits meaningful accountability.* At the local level, standardized cost comparisons, such as cost per kilometer of road construction, can immediately translate into savings when used as a guide for competitive procurement. Performance contracting—in which a municipality commits to authorizing tariff increases if a utility meets well-defined performance goals—can upgrade performance while breaking the deadlock over setting tariffs high enough to recover service costs, which has handicapped local investment. NGOs and citizens gain the power of accountable oversight only if they can measure performance against quantified targets.

The power of upward accountability is evident in the case of China, where measurable performance against state-determined investment targets has driven the infrastructure sector. On the other hand, in politically decentralized systems, performance measures are almost totally lacking in the infrastructure sector. This is in striking contrast to the health and education sectors, where client surveys and output measures are far more common. Simple, transparently reported measures of infrastructure performance tracked locally and used for local management would enable countries to go far in realizing the potential of decentralization.

*Community participation at the project level is critical.* A large body of evidence supports the importance of community-scale participation in infrastructure choices and management. Community water supply and latrine projects have proven more sustainable—longer lasting, more fully used, and more financially self-sufficient—when designed in partnership with the community and managed by community organizations. The participation of a cross-section of users in management has been found to be particularly important. Women and the poor are most likely to be excluded from management, undermining project sustainability.

The economic literature on decentralized fiscal choice has emphasized the gains from allowing clients to choose among an array of project options. On the other hand, some East Asian countries offer communities a much smaller range of choices. Rural water projects in China, for example,

give communities the opportunity to sign on to standardized arrangements. Community consultation consists of explaining to residents the services they will receive and the tariff costs they will be responsible for, if they participate. Such projects have high sustainability in China despite the closed nature of the initial choice.

*Scaling up community participation in municipal-level capital planning is difficult.* Decentralization in the infrastructure sector has been premised on the value of community choice. Both Indonesia and the Philippines have attempted to incorporate community participation in higher-level choices by including NGOs in efforts to set municipal investment priorities. The results of this experiment have been mixed, at best. The presumption that NGOs represent community consensus rather than advocate particular points of view has often broken down in practice. Urban forums open to all have proved valuable in stimulating public debate over investment priorities, but a difficult vehicle for actually establishing capital budgets. Whether direct community participation in investment decision making overcomes skepticism about local representative democracy remains to be seen. Substantial differences in the information available to stakeholders remain a significant problem, as such asymmetry contributes to the greater influence of elites in decision making.

*Efficiency in capital investment is important.* Paradoxically, at a time of great pressure on infrastructure investment budgets, large portions of existing capital remain unused. In China, wastewater treatment plants in some provinces are not functioning for lack of operating and maintenance funds while expensive new treatment plants are being built. In Indonesia, some water utilities have much excess capacity because they failed to take into account ample free water from household wells. In politically decentralized systems, community participation in initial project design and required local cost sharing can reduce excess capacity. In upwardly accountable systems, performance targets need to measure relevant outputs rather than merely the capacity of capital facilities.

*A well-functioning local credit market is an essential ingredient of a decentralized infrastructure sector.* The supply of credit for local investment has become a bottleneck to decentralizing infrastructure. In both Indonesia and the Philippines, central authorities retain control over the channels

for local credit, frustrating development of a self-sustaining domestic credit market that meets municipal needs for financing infrastructure. Government financial institutions can encourage the emergence of a municipal credit market by removing regulations that give them preference over commercial banks and other lenders. Onlending of international funds to municipalities via commercial banks, rather than government financial monopolies, would likely speed development of such a market.

*Higher tiers of government play a critical role in the architecture of decentralization.* A partnership between national, provincial, and municipal governments is crucial to maximizing the benefits of decentralization, even in infrastructure industries that are essentially local. For example, empowering provincial governments to perform a planning role is essential to correct for interjurisdictional spillovers, while limiting fiscal decentralization may be warranted on equity grounds to allow for cross-subsidies between geographic groups. The need to strengthen the role of intermediate tiers of government is compelling in Indonesia and the Philippines, where the missing middle has resulted in poor coordination between jurisdictions. The consequences are particularly evident in the transport sector, where secondary road networks have suffered from severe maintenance backlogs as a result of poor interjurisdictional coordination.

### **Annex: Comparing Water Coverage in Different Countries and Regions**

Truly comparable data across countries on infrastructure coverage, investment levels, and tariffs are difficult to produce and generally not available. *Global Water Supply and Sanitation Assessment 2000*, prepared by the World Health Organization and the United Nations Children's Fund, provides probably the most standardized reporting, but even the data in that volume are imperfect. Coverage rates reflect access to "improved" water and wastewater systems. Tariff and investment ratios are reported as averages for the decade 1990–2000 and therefore do not take into account recent changes. Nonetheless, the data do provide a general comparative baseline for East Asian countries:

**TABLE 10A.1 Water Supply Coverage Rates**  
(percent of population covered)

Country	Year	Urban coverage	Rural coverage	Total
Cambodia	1990	—	—	—
	2000	53%	25%	30%
China	1990	99%	60%	71%
	2000	94%	66%	75%
Indonesia	1990	90%	60%	76%
	2000	91%	65%	87%
Philippines	1990	94%	81%	87%
	2000	92%	80%	87%
Vietnam	1990	81%	40%	48%
	2000	81%	50%	56%

Source: WHO and UNICEF 2000.

Note: Rapid rates of urban population growth mean that even where urban coverage rates declined, large numbers of households gained access to a municipal water supply. (—) = not available.

**TABLE 10A.2 Sanitation Coverage Rates**  
(percentage of population covered)

Country	Year	Urban coverage	Rural coverage	Total
Cambodia	1990	—	—	—
	2000	58%	10%	18%
China	1990	57%	18%	29%
	2000	68%	24%	38%
Indonesia	1990	76%	44%	54%
	2000	87%	52%	66%
Philippines	1990	85%	64%	74%
	2000	92%	71%	83%
Vietnam	1990	—	—	—
	2000	86%	70%	73%

Source: WHO and UNICEF 2000.

Note: Given the high differentials in coverage between urban and rural areas, one of the most statistically significant ways of expanding national coverage is through rural to urban migration and other sources of urban population growth. (—) = not available.

Through the Millennium Development Goals, all the East Asian countries have set far more ambitious targets for coverage during the period 2000–5. Because of decentralization, local governments will be the primary instruments for implementing and financing this accelerated coverage.

#### ***Investing in the Water Supply and Sanitation Sector***

During the decade 1990–2000, Asia lagged behind other developing regions in the share of govern-

mental investment devoted to water supply and sanitation. This probably implies, as *Global Water Supply and Sanitation Assessment 2000* concludes, that Asian countries gave the water and sanitation sector lower priority, but the situation also reflects the higher shares of public sector budgets devoted to investment in Asia.

Investment shares in East Asia in this sector have climbed recently as countries have focused on meeting their coverage targets. China has also set ambitious targets for treating wastewater before discharge.

**TABLE 10A.3 Median Investment in Water Supply and Sanitation, 1990–2000**  
(percentage of overall government investment)

Region	Percentage
Africa	5.3%
Asia	3.5%
Latin America and Caribbean	8.3%

Source: WHO and UNICEF 2000.

**TABLE 10A.4 Median Urban Tariff Rate**  
(US\$ per cubic meter)

Region	Water	Sewerage
Africa	0.35	0.12
Asia	0.22	0.14
Europe	0.67	0.59
Latin America	0.44	0.21
North America	0.48	0.41

Source: WHO and UNICEF 2000.

### Tariff Rates

Median urban tariffs for water and sewerage from 1990–2000 were lower in Asia than in other regions, although Asia's lower rates partly reflect lower production costs. Asia faces a particularly challenging task in raising tariffs to commercial levels.

### Endnotes

1. As of 2001, only 200 of China's 667 cities treated any wastewater before discharge (Murray 2003).
2. Local officials are evaluated based on their contribution to economic growth, which is often interpreted as reaching investment targets.
3. The city of Naga in the Philippines makes similar use of comparative disclosure at the local level. The city publishes all per unit costs from different bidders for local construction contracts on its website.
4. In the case of the *Kecamatan* Development Program, 30,000 villagers were hired and trained in project development and 2,000 community facilitators were also hired and trained.
5. This discussion follows Usui and Alisjahbana 2003.
6. A city development strategy is an action plan for equitable growth in cities and their surrounding regions, developed and sustained through participation, to improve the quality of life for all citizens. See Chreod Ltd. 2002.
7. For example, Tynan and Kingdom 2004 proved econometrically that smaller water utilities, particularly those serving

a population of 125,000 or less, could reduce per customer operating costs by increasing their scale of operation.

8. However, there is often a trade-off between efficiency gains and loss of local accountability, which efforts to identify the optimal area of service provision would need to take into account.
9. This argument is made, for example, in Smith 2000.
10. Local governments range in population from 24,000 to 4.1 million. The per capita wage bill of local governments seems to suggest that efficiency falls sharply at the level of about 500,000 people.
11. In Indonesia, revenue disparities are significant at all levels of government. These inequalities are most extreme at the local level, where the richest region accounts for 46 times the revenues of the poorest region. The richest province also has 32 times the per capita revenues of the poorest province.
12. There are nine RDCs, including those in the Cordillera Administrative Region and the Autonomous Region of Muslim Mindanao.

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