

# Executive Summary

**T**HIS STUDY IS ABOUT EAST ASIA, AND IT'S ABOUT INFRASTRUCTURE. It's about poverty and growth, and it's about transport, water, sanitation, power, gas, and telecommunications—both the infrastructure, and the infrastructure services.<sup>1</sup>

Infrastructure is but one part of the development challenge, but its impacts are among the most important. In this study we show how. We look at the role that infrastructure has played in supporting East Asia's growth and poverty outcomes. We look ahead at what the challenges are for the future, and how to think of approaching them.

We will discuss these many challenges—in this summary and in the body of the study—but, in sum, they amount to this: responding to and shaping change.

Much of East Asia continues to grow rapidly, driven to a considerable extent by China. Urbanization is proceeding at a rapid pace. Demand for infrastructure services is increasing massively, particularly in cities. Much of the demand comes from the newly urbanized poor. Infrastructure has to meet the needs of this population, but also has to continue to provide the underpinnings for the region's growth.

The complexity of responding to these demands is greater than ever, and the cost of getting things wrong is high. Poorly conceived infrastructure investments today will have huge environmental, economic, and social impacts—and be costly to fix later. Neglecting the infrastructure needs of people remaining in poor parts of East Asia—particularly in rural areas and in isolated countries of the region—and failing to include them in growth will also be costly in human and political terms.

## The “new framework”

In this study, we set out an approach around which to structure a response to these challenges. The approach is organized in four chapters, each of which discusses a different part of the infrastructure story.

Chapter 1 sets the scene. It's about infrastructure in East Asia today, and explains how the region got to this point. It tells five infrastructure

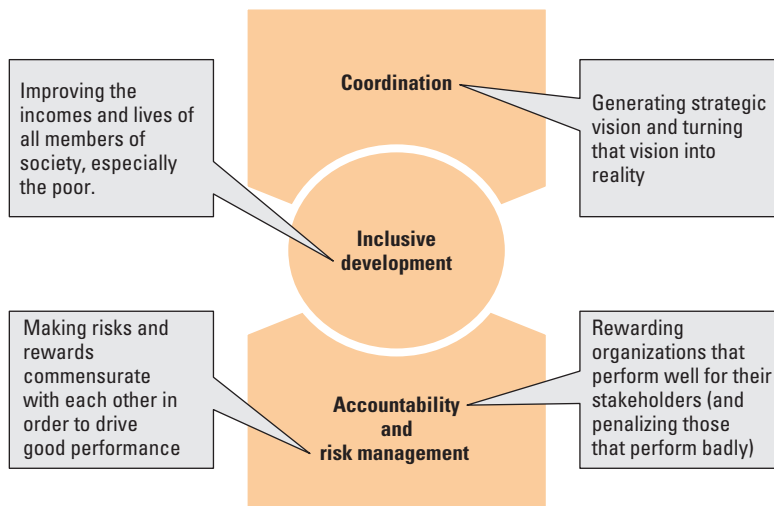
“stories,” each of which provides a different aspect of the context for the region’s current infrastructure challenge: the economic story, the spatial and demographic story, the environmental story, the political story, and the funding story.

Chapters 2, 3, and 4 then set out what we have called the “new framework,” picking up the key elements of the stories in Chapter 1 (see Figure 1).

Chapter 2 is about goals. It’s about how infrastructure can reinforce East Asia’s typically inclusive development. By *inclusive development* we mean improving the lives of all members of society, particularly the poor, by generating economic growth, sharing its benefits, and enhancing access to services. We organize the chapter around the idea of the connecting role of infrastructure. We see how this works at the regional and the country levels.

Chapters 3 and 4 are about what needs to be done to achieve infrastructure goals. We divide the issue into two parts. Chapter 3 looks at the big picture: the state’s ability to generate strategic vision and translate that vision into infrastructure outcomes. This requires making trade-offs between multiple objectives, particularly when multiple actors are involved. Who makes those trade-offs is important, and how

**Figure 1 The “new framework”: Inclusive development, coordination, and accountability and risk management**



leadership and participation are balanced in that process. This we describe as *coordination*.

Chapter 4 is about what happens lower down in the service delivery process. It's about the various players involved in service delivery—consumers, communities, service providers, regulators, investors, governments, and nongovernmental organizations (NGOs)—and how to ensure that their interactions result in the right infrastructure outcomes. We structure our analysis around two ideas: mechanisms that can be used to bring about *accountability*, by rewarding good performance and punishing bad; and the *risk management* required to ensure that potential costs and benefits are equitably and sustainably allocated.

Chapter 5 charts the way forward. It sets out 12 policy messages, answering to some of the key preoccupations of the region's policy makers, policy implementers, infrastructure service providers, civil society organizations, and other stakeholders consulted in the process of putting together this report. It also outlines the role that the official lenders, donors and development agencies can play in supporting countries to meet their infrastructure challenges.

## Chapter 1. The infrastructure challenge

In Chapter 1 we take stock of East Asia's infrastructure challenges in the context of five broader stories that have defined, and will continue to define, the region's development:

The “economic story” is about the role that infrastructure has played in underpinning poverty reduction, investment, and growth in the region—it's about levels of expenditure, stocks of infrastructure assets, access to infrastructure services, and infrastructure competitiveness, and what this implies for the future.

The “spatial and demographic story” is about the demands of rapid urban growth on infrastructure, and the contribution of infrastructure to that growth and to meeting the needs of urban areas. But it's also about the challenge of linking the poor in rural areas, both to services and to growth centers. And it's about the challenges of infrastructure on a regional level, supporting trade and spreading the benefits of growth across borders.

The “environmental story” is about dealing with the impacts of infrastructure on a range of environmental concerns—air quality,

emissions, the availability of clean water and sanitation, and the function of ecosystems that provide livelihoods and other benefits. The environmental challenge is how to mainstream environmental issues, addressing environment not only at the project level but also more broadly in policy.

The “political story” is about who captures the benefits of infrastructure—who provides it, to whom, at what price, and at whose cost.

The “funding story” is about the scale of East Asia’s infrastructure needs, and how to resource these needs. Ultimately, there are only two groups who pay for infrastructure—consumers and taxpayers. And there is another set that can finance it—the private sector, and official lenders and donors. What needs to be taken into account in structuring the roles of each? What can be expected of them?

### **The economic story**

Regionally, East Asia has seen strong growth and strong poverty reduction outcomes. Output has increased by an annual average of more than 7 percent over the past 15 years, lifting 250 million people out of poverty in the past five years. Investment levels are generally high, averaging more than 30 percent of gross domestic product (GDP) since the 1990s.

Much of this investment has been to provide infrastructure services. A number of countries invest more than 7 percent of GDP in infrastructure (Table 1.2). Infrastructure stocks are increasing at a significant pace in a number of sectors. Energy generation capacity grew by more than 80 percent (and as high as 180 percent) in six countries throughout the 1990s, and road networks expanded at similarly impressive rates—by over 25 percent (and as high as 104 percent) in four countries over the same period (Table 1.3).

But there is great divergence behind these aggregate outcomes, and East Asia still has a long way to go. Half the countries in the region grew by less than 2.8 percent a year between 1994 and 2003. And there are still significant levels of poverty in many of the large, fast growers—close to 400 million in China; 40 million in Vietnam; and 100 million in Indonesia (Table 1.1).

Access to infrastructure services is similarly uneven. In approximately 40 percent of East Asian countries for which we have data, access to water supply is lower than the average for all low- and middle-income countries. The equivalent figures for sanitation, electricity, telephone, and Internet access range between 52 and 79 percent.

There are similar disparities between countries in East Asia: more than 90 percent of the population has water supply access in four countries; in three countries, it's less than 50 percent. Access to sanitation is 93 percent in Thailand, and 30 percent in Mongolia; access to electricity is 97 percent in Malaysia, and 15 percent in the Solomon Islands (Table 1.4).

What is the story behind these numbers? East Asian growth is largely driven by fast-growing urban agglomerations in coastal China, Indonesia, Thailand, Malaysia, and Vietnam. Connections between countries within the region have been important, with significant regional trade, much of it geared toward China's expanding markets (a theme we pick up in Chapter 2).

A number of the countries in the region have seen simultaneously high levels of growth and investment, a focus on infrastructure, and improved infrastructure performance outcomes. Malaysia and Thailand have achieved internationally competitive infrastructure networks (Figure 1.3). Other countries in the region are further behind, but in general, East Asia has provided the infrastructure underpinnings for economic growth better than in other regions.

High levels of investment have not necessarily meant efficient investment. China and Vietnam in particular (with investments rates of more than 30 percent of GDP, and investment in infrastructure at more than 7 percent of GDP) face the challenge of addressing efficiency, avoiding overheating, and managing a soft landing. A number of countries emerging from the Asian crisis of 1997—Thailand, Malaysia, Indonesia, and the Philippines—have restrained investment, in general, and infrastructure investment, in particular. Thailand and Indonesia are both placing renewed emphasis on infrastructure, and face the challenge of enhancing the investment climate, and increasing investment to underpin sustained growth.

In other East Asian countries—for example, Lao People's Democratic Republic (Lao PDR) and Cambodia—the mutually supportive relationship among growth, poverty reduction, infrastructure, and investment is less evident. Yet other countries and regions are landlocked, or isolated, and relatively unconnected to the major growth centers of East Asia—most rural areas, the outlying islands of Indonesia and the Philippines, Mongolia, and most Pacific island states. Infrastructure has an important role to play in all of these regions, forging connections to growth centers, and providing services to the poor.

## The spatial and demographic story

East Asia's spatial and demographic story is dominated by urbanization. Levels of urbanization in East Asia are not high by international standards (36 percent of the population was urbanized in 2000), but these levels are expected to reach more than 57 percent by 2025 (Figure 1.5). By then, 500 million more people will live in urban areas.

Again, there are variations—Indonesia and the Philippines have high urbanization levels and high growth in urban populations; the opposite pertains to Thailand, where there are low levels of urbanization and low growth rates. Other countries span the range between these extremes (Table 1.5).

Cities drive East Asia's growth. Cities account for up to 70 percent of East Asian GDP growth. In general, urbanization has been associated with increasing incomes (Figure 1.6). The growth of cities has been associated with unprecedented prosperity (and growing inequality)—for example, the per capita GDP of Shanghai alone is about 11 times that of China's overall per capita GDP.

Densely populated urban areas have provided markets for outputs, inputs, labor, and other services and have allowed firms to profit from economies of scale and scope, specialization, and the rapid diffusion of knowledge and innovation. Agglomeration economies have been strong.

But urban growth brings with it a host of infrastructure challenges: increasing population drives increasing demand for infrastructure services. Gaps are emerging across urban infrastructure sectors, and these gaps tend to affect the poor (who are frequently found in peri-urban, informal settlements) more than the rest of the population (Table 1.6).

At the same time, infrastructure has an enormous role to play in maintaining the competitiveness of East Asian cities. Among the most challenging aspects of this role is to make infrastructure choices before land use patterns are established, thus avoiding the prohibitive costs of infrastructure retrofiting. Long-term planning and strategic vision are essential, as are mechanisms to deal with the cross-jurisdiction and cross-agency coordination challenges raised by decentralization. These issues are discussed in detail in Chapter 3, on coordination.

As important as the demands of urban growth are, 60 percent of the region's population (roughly 1.1 billion people) continues to live outside of cities. Poverty tends to be concentrated in rural areas, with a number

of generally fast-growing countries, including significant pockets of rural poverty.

Rural economies depend on urban economies, but urban economies also depend on rural economies for human capital and agriculture products. While improving the livelihoods of rural people, the contribution of infrastructure to rural incomes, to health, and to education outcomes also has implications for urban areas—for example, in the supply of perishable foods or the productivity of future migrants.

But the unit costs of delivering rural infrastructure in sparsely populated areas are often higher than urban infrastructure, and striking the balance between urban and rural is difficult, particularly when budgets are constrained. Providing rural infrastructure as cost-effectively as possible is one of the key challenges. As in urban areas, delivery of rural infrastructure raises a number of coordination problems. Decentralization, if not carefully managed, may sometimes enhance rural isolation, rather than global connectivity.

Finally, the regional challenge for East Asia is to strengthen the connections between countries to spread the benefits of growth. In part, the challenge is to create the infrastructure required to connect isolated countries and areas of the region—the Pacific islands, land-locked Mongolia, and China’s western provinces. And in part it’s about the logistics required to facilitate trade (and lower costs through economies of scale where possible). These issues are discussed in Chapter 2, on inclusive development.

### **The environmental story**

Infrastructure choices have important environmental impacts. Sometimes they are positive,<sup>2</sup> but frequently they are not. The environmental challenge is to take these impacts on board, and mainstream efforts to mitigate and limit negative environmental outcomes.

Project-level interventions have an important role to play. They can include environmental safeguards, measures to mitigate (or compensate for) environmental risk and cost, alternative projects design, or even alternative projects. But the underlying causes of environmental problems cannot be addressed at this level. Environmental considerations need to be embedded within national policy-making agendas.

There are a number of ways of doing this—for example, through environmental legislation, capacity building in environmental agencies,

improved information and transparency, training at the community level and within infrastructure agencies, and the systematic use of strategic environmental assessments (SEAs) at the national and sectoral levels.

But mainstreaming environmental issues in this way is primarily a governance challenge, and a difficult one at that. Asymmetry in access to information, capture of the processes of information dissemination, and ease in manipulating environmental assessments all benefit powerful political groups. The ability to mainstream depends on the development of broader accountability, participation, and the existence of transparency mechanisms.

Environmental mainstreaming also poses significant policy and agency coordination challenges. Shifting from individual to mass transit may improve urban air quality, but this involves a host of interventions, from investment in urban rail to taxation on fuel and private vehicles to traffic management. And this is all the more difficult with the fragmentation of policies with environmental impacts across state agencies, and where the private sector and civil society are intimately involved. Coordinating across all these dimensions challenges government capabilities in any country.

### **The political story**

The political economy of infrastructure is essentially a struggle over who captures the considerable benefits of infrastructure services and who bears the costs. Governments, consumers, and service providers (whether public or private) all have an interest. Tariff levels are the issue around which much of this struggle takes place.

The high economic benefits of infrastructure make a strong case for government intervention. So does the monopoly power that frequently accompanies the economies of scale required to deliver many infrastructure services. This intervention usually takes the form of tariff controls.

There are a number of reasons why this happens. Governments may want to protect a certain level of service, but they may be unwilling to allow tariffs to rise to levels required for cost recovery. Fiscal constraints may prevent them from providing subsidies to make up the difference. And the interests of those groups who benefit from lower prices—infrequently the poor, who are often excluded from formal services and thus remain voiceless—may provide a similarly binding constraint.

While public sector provision was the only service provision model in East Asia, the costs of low tariffs were absorbed by government budgets, quasi-fiscal loans from state-controlled financial institutions, capital consumption (that is, lack of maintenance and capital replacement), or by reducing operations. This began to change in the late 1980s when the private sector became an increasingly important force in East Asian infrastructure; however, in the process, they took on considerable political risk—much of which was realized after the Asian crisis of the late 1990s.

Addressing the political challenge has little to do with whether the public or private sectors deliver infrastructure. An environment that's lousy for the private sector is equally lousy for the public sector. Addressing the challenge depends on whether governments have long-term economic vision, can plan for the future, acknowledge the importance of efficiency incentives for infrastructure, and are intent on ensuring sustainable infrastructure financing mechanisms.

### The funding story

East Asia's funding challenge is to resource estimated infrastructure needs of approximately \$200 billion annually over the next five years. It is estimated that 65 percent of expenditure would need to take the form of new investment, with the remaining 35 percent channeled toward maintenance of existing assets—an equally and sometimes more cost-effective way of meeting service goals (Figure 1.10, and Chapter 1, Annex 1).

Ultimately, there are only two sources from which these needs can be funded: consumers (via user charges) and taxpayers (via subsidies). Financiers—whether in the private sector or in the development community—can change the requisite time profile of taxes or user charges, but eventually their contributions have to be repaid or remunerated (and if they aren't, the consequences will generally rebound on consumers or taxpayers at some later point) (Figure 1.11).

**When consumers pay for infrastructure:** Charging consumers for use of infrastructure services is common. The challenge is deciding the degree to which their contributions cover costs. The ability of infrastructure providers to cover costs varies by sector. In the water sector, for instance, it is unclear whether any East Asian water utilities have fully recovered operational and capital costs (Figure 1.12). Non-cost-reflective tariffs may arise for a number of reasons: they may reflect

excessively high costs of inefficiently run services, or they may reflect costs that are high for good reason. Sometimes tariffs are low for political reasons (as we saw above), and sometimes they are kept low to protect the poor. There is general consensus now that consumption of services by the poor can be subsidized, although there are considerable challenges in targeting the benefits of below-cost consumption.

**When taxpayers pay for infrastructure:** Subsidizing infrastructure from taxes raises micro issues, including ensuring that subsidies are channeled to expenditure with the highest returns, ensuring transparency, designing exit strategies, and balancing the emphasis on investment and maintenance. These issues are discussed in Chapter 4. Subsidizing infrastructure from taxes also raises macro issues, including whether too much subsidization of infrastructure threatens fiscal stability, or whether too little endangers economic growth and poverty reduction. These issues are discussed in Chapter 3.

**When the private sector finances infrastructure:** The private sector has invested approximately \$190 billion in East Asian infrastructure since 1990 (Figure 1.8). This is a minor share of the region's needs, and a minor share of total infrastructure investment in the past. Since the Asian crisis, private sector investment has diminished significantly (although signs of upturn are now evident). A survey undertaken for this study, however, shows that private sector sentiment toward East Asia is optimistic, but varies by country, and is contingent on policy improvements and reduced risk (Figure 1.14). The key issue is not whether financing should be public or private, but how the public and private sectors share the risks and rewards in a way that works for both sides. Financing and ownership are secondary.

**When official lenders and donors finance infrastructure:** In purely monetary terms, the role of official lenders and donors has never amounted to more than a small percentage of total infrastructure needs overall (although this varies considerably by country). Official financing fell temporarily after 1997, but it is again on the rise, as the contribution of infrastructure to poverty reduction—indeed, of growth to poverty reduction—has been reappraised. In most infrastructure sectors there are activities in which private sector interest is likely to be limited, and others in which private interest needs external support. Official lenders, donors, and development agencies have an important role to play in both cases. The challenge is to maximize the role of those relatively small amounts of official financing—for example, by stimulating experimentation and

innovation; supporting efficiency gains; mainstreaming environmental and social considerations; attracting private investors to share risks with the public sector; and building effective institutions to plan, coordinate, and regulate infrastructure services. We will revisit this topic in Chapter 5.

## Chapter 2. Inclusive development

At the core of this study is the idea of the role of infrastructure in fostering inclusive development. Inclusive development is about improving the incomes and lives of all members of society, particularly the poor. It depends on generating economic growth, sharing its benefits with the poor, and enhancing their access to basic services.

Infrastructure is highly intertwined in our lives. Knowing that infrastructure is important per se is easy. Measuring the precise importance of a particular piece of infrastructure is difficult. But choices need to be made about infrastructure, and so we need to identify the impacts, understand how they are channeled, and recognize what they depend on.

We can look at this in a number of ways. This study primarily examines the ways that infrastructure connects. Conceptually, we can think about the role that infrastructure plays in a series of mutually reinforcing relationships that connect growth and poverty reduction—a subject on which the development world is coming to broad consensus.

Infrastructure provides people with the services they need and want. The absence of some of the most basic infrastructure services is an important aspect of what we mean when we talk about poverty. But infrastructure also has an important impact on poverty through growth. Infrastructure is an input into production and raises the productivity of factors of production. Through its impact on welfare, it provides people with the capabilities to fill (and create) jobs. Infrastructure connects goods to markets, workers to industry, people to services, and the poor in rural areas to urban growth centers. Infrastructure lowers costs, and it enlarges markets and facilitates trade.

In sum, infrastructure impacts on poverty in two ways: First, it supports the processes of growth on which much poverty reduction depends; and second it helps the poor access basic services, which can improve their lives and income opportunities. And at its best,

infrastructure can draw poverty reduction, service provision, and growth into a reinforcing cycle (Figure 2.1).

A large body of empirical literature documents the impacts of infrastructure on poverty reduction and on growth. The specific impact of infrastructure on poverty, in particular, has been studied in a number of ways, and depends on how one defines poverty. The narrowest poverty definition focuses on the incomes and livelihoods of people living below the poverty line and is concerned with how infrastructure increases real incomes of the poor. But another body of literature looks at poverty more broadly, reflecting some of the key dimensions mentioned in the Millennium Development Goals (See Box 1). And broader still, a third strand focuses on enhancing social inclusion, human capabilities, and freedoms, focusing, for example, on the affect that transport and telecommunication services might have on people's ability to engage and participate in collective activities and access wider sources of information.

Impacts vary by each kind of infrastructure (Table 2.1). Overall, the literature suggests that transport, telecommunications, and electricity are important overall for growth and poverty reduction, and that rural roads, water, and sanitation are critical to the reduction of poverty among the poorest. Most important, however, it emphasizes that most infrastructure is effective only when combined with other interventions.

This does not imply, however, that everyone benefits from investment in infrastructure, nor even that the benefit are shared equally. Infrastructure undertakings—like all projects and sectoral reforms—have winners and losers. At the same time, there may be genuine choices to be made

### **Box 1 Infrastructure and the Millennium Development Goals**

The Millennium Development Goals (MDGs)—the international community's agreement on the goals for reducing poverty—include eight objectives to be achieved by 2015. The goals are as follows:

#### **1. To eradicate extreme poverty and hunger—**

Halve the proportion of people living on less than \$1 a day.

Halve the proportion of people who suffer from hunger.

#### **2. To achieve universal primary education—**

Ensure that boys and girls alike complete primary schooling.

(Continued on the next page)

**Box I (Continued)****3. To promote gender equality and empower women—**

Eliminate gender disparity at all levels of education.

**4. To reduce child mortality—**

Reduce by two-thirds the under-five mortality rate.

**5. To improve maternal health—**

Reduce by three-quarters the maternal mortality ratio.

**6. To combat HIV/AIDS, malaria, and other diseases—**

Reverse the spread of HIV/AIDS.

**7. To ensure environmental sustainability—**

Integrate sustainable development into country policies and reverse loss of environmental resources.

Halve the proportion of people without access to portable water.

Significantly improve the lives of at least 100 million slum dwellers.

**8. To develop a global partnership for development—**

Raise official development assistance.

Expand market access.

How does infrastructure relate to the MDGs, and how is this relationship addressed in this study?

Poverty and infrastructure are at the core of the concept of inclusive development around which this report is written. In Chapter 2 we look at poverty from three angles, and consider how infrastructure in each of the sectors makes an impact. We look not only at income poverty (MDG 1), but also the impacts of infrastructure on education, health, and the environment (with impacts on MDGs 2, 4, 5, 6, and 7).

Some of the channels through which impacts are felt are not as obvious as might be expected. It may seem intuitive that the ability of people to earn a living is increased when transport, information, power, and water are readily available. But infrastructure has some less obvious impacts—one study we refer to, for instance, examines the impact of transport and electricity on education. The impact of health services may be similarly affected by the ability of the poor to access facilities. A road or a telephone call can make an enormous difference.

Poor access to water and sanitation is an important part of the discussion about poverty, and this is addressed in the seventh MDG (environmental sustainability). But the role of infrastructure in the environment is much wider than this. In Chapter 1, we focus on the challenges of mainstreaming environmental issues, although the environmental theme cuts across this study.

Finally, the role of infrastructure in creating livable cities and providing service to slum dwellers is a theme of Chapter 1 and is included in our discussion of urban management in Chapter 3.

between infrastructure investments that have an impact on growth, and those that have an impact on poverty reduction. Finally, institutions often face difficult trade-offs between the interests of different groups of poor and non-poor. Participation of affected groups in decision making is one measure that can help—a theme we pick up in Chapter 4, on accountability and risk management.

We can see how infrastructure fosters inclusive development at various levels. In this study, we examine this from the regional level and from a detailed country perspective.

Getting the goods to market has been the key to East Asia's prosperity. Trade has been crucial to rapid growth, and trade expansion (particularly exports to China) will continue to be important. The ability of poorer countries to share in this process will depend, in part, on their ability to develop an infrastructure that supports regional trade opportunities. For the most isolated and land-locked countries and regions, regional infrastructure cooperation will be crucial.

Superior logistics has played an important role in supporting this regional story. This is particularly so in the region's most advanced developed economies, but it is also true in a number of developing countries, including Malaysia, Thailand, China, and the Philippines (Figure 2.2).

East Asia's performance varies across countries (Box 2.5). On the whole, however, East Asia's logistics efficiency appears to be falling behind. Increased logistics costs stem from inadequate transport infrastructure, underdeveloped logistics and transport services, and bureaucratic (and sometimes corrupt) import and export procedures.

Issues of coordination—the subject of Chapter 3—feature prominently in the broad measures required to address East Asia's logistics challenges. This requires, in particular, coordination across national boundaries (in harmonization and simplification of customs procedures, for instance, or information sharing), and in urban management (most important, in the implementation of land use policies for the location of roads, ports, and other infrastructure related to logistics).

We then move from the regional to the country specific: Vietnam serves as a useful example of how infrastructure can support inclusive development. Over the last decade Vietnam has grown at an annual average rate of 7.6 percent, placing it among the fastest growing countries in the world. Economic development has been remarkably pro-poor, lifting around 20 million people out of poverty in less than a decade.

Infrastructure and investment have been important parts of that process, complementing the country's many targeted poverty reduction initiatives. Forty-four percent of government investment has been targeted to infrastructure. The impacts on poverty have been well documented for large- and small-scale infrastructure undertakings. Improvements to National Highway No. 5, linking Ha Noi and Hai Phong Port, for instance, are associated with significantly higher per capita incomes and poverty reduction in the Ha Noi-Hai Phong corridor. Studies of small infrastructure undertakings have revealed similarly impressive impacts, again most prominently in roads. One study found, for example, that the establishment of a new road in a village raised the per capita income of households by 30 percent between 1993 and 1998 (see Chapter 2 for details).

### Chapter 3. Coordination

The East Asian experience demonstrates that the “big picture” is at least as important as the quality of a specific infrastructure ministry or service provider. The big picture is about generating strategic vision, and the state's ability to turn that vision into reality. This is what we mean by “coordination”—the focus of Chapter 3.

#### The advanced economy coordination model

Strong coordination is a prominent feature of the infrastructure stories in the region's now-developed economies—Hong Kong (China), Japan, the Republic of Korea, Singapore, and Taiwan (China)—as well as in the most advanced developing economy (Malaysia).

In these six advanced economies, political leaders and senior policy makers played a major role in creating long-term development visions, and the sectoral strategies that flowed from that vision. Each country had strong planning agencies to drive infrastructure development, and these agencies enjoyed considerable political influence—Korea's Economic Planning Bureau, Singapore's Economic Development Board, Malaysia's central planning agency and policy-making body in the Prime Minister's Office, or Japan's strong sector ministries and advisory boards. Sustained periods of high growth helped create the policy consensus behind the infrastructure investment needed to support that growth, while the discipline of needing to remain competitive injected efficiency into project choice and service delivery.

Sometimes infrastructure investment anticipated demand. But when investment was reacting to constraints—as was still largely the case—reactions were rapid and strategic. A number of bold infrastructure projects were undertaken—the Kobe Nagoya Highway in Japan, and the Seoul Pusan Highway in Korea—although inevitably there were some white elephants.

Sector strategies tended to adapt as production structures changed, as opposed to making piecemeal adaptations. Much of the workings of this approach was hidden from view, with individual accountability being largely internal to an elite, as long as the broader public was enjoying the benefits of growth.

By the 1980s, however, the strains and contradictions of the model were beginning to show. The model did not deal well with financial crisis or slowdown, revealing risks that had been hidden until then. Government-directed lending from the financial sector, lack of transparency, and corporate governance failures all began to prove problematic. In some cases, strategic investment proved to be supply driven, and cases of cronyism and corruption were not unknown.

As the state's role became more complex, and its objectives more diverse, its ability to squeeze efficiency gains from the existing system of public sector monopolies diminished. Greater complexity meant that the state, at the center, needed to focus more on the big picture and delegate more of the details to companies, regulators, local governments, civil society, and markets.

### **Key aspects of the developing country coordination challenge**

A number of East Asia's developing countries appear to be pursuing similar models in their infrastructure development strategies. In doing so, they face a number of challenges—some of them new, some of them similar to those faced by the more advanced economies. They include the coordination challenges involved in getting levels of infrastructure expenditure right, of coordinating through decentralized government structures, and, in particular, of coordinating urban infrastructure.

Establishing the right infrastructure levels requires various kinds of coordination. One of the reasons that governments sometimes spend too much, or with unacceptably high levels of inefficiency, is poor coordination between planning and financing agencies. The separation of planning

and financing functions is a common feature of planning frameworks in the region, and in a number of cases it gives rise to poorly and inefficiently resourced infrastructure undertakings (Vietnam and China provide good examples that we draw on in this chapter). These undertakings often have implications for fiscal and financial stability, as well as for related sectors—for example, the construction sector in Vietnam.

Other kinds of coordination failures may be responsible for expenditure levels that are too low, particularly in times of fiscal retrenchment. When budget deficits need to be cut, infrastructure projects are frequently a target—because they are large and lumpy, and their benefits take years to materialize. But infrastructure investments typically have high rates of return, and cutting such projects may jeopardize long-term fiscal solvency. Agencies responsible for fiscal adjustment therefore need to coordinate long-term fiscal policy with those responsible for infrastructure development spending. But liquidity crises can also force infrastructure reform. Central agencies need to coordinate with agencies in the infrastructure sectors to ensure that reform is promoted as much as possible, as well as ensure that liquidity pressures don't just shift state liabilities off-budget.

While the challenges of coordination to establish the right infrastructure levels are not new, the challenges of coordinating through decentralized government are. Twenty years ago East Asia was highly centralized. But today, subnational expenditure as a percentage of total expenditure ranges from 10 percent in Thailand to 70 percent in China.

Decentralization can bring significant benefits, by tailoring service provision to the needs of local constituencies. But it raises a number of problems for coordination. The first of these is managing spillovers in service provision—that is, cases in which projects bring benefits and incur costs outside of any single jurisdiction. Voluntary cooperation between local governments is unfortunately rare. Local governments largely lack the necessary short-run political incentives to cooperate, and governments therefore have to develop adequate coordination tools: Thailand's and Vietnam's matching grants are one example; the creation of special districts and regions in the United States and Canada present another model that might be adopted in the region.

Other inefficiencies that arise from poor coordination include excessive fragmentation (when municipalities are too small to provide services at efficient scale) and destructive competition (when local governments compete to build or upgrade prestige investments like ports or airports, rather than rely on facilities in adjacent jurisdictions). Central

governments have an important role to play in filling in the “missing middle” of coordination.

These coordination problems are essentially challenges of horizontal coordination—coordination between jurisdictions. Similar problems present themselves in vertical coordination—coordination between central and local levels of government. Central governments have a key role to play in ensuring that local government infrastructure is in line with policy and regulatory frameworks. When fiscal and regulatory policies are poorly coordinated, and central governments provide financing, while local governments provide delivery, local governments have little incentive to achieve efficiency gains—and sometimes even to respect private sector contracts. This situation is exacerbated in the absence of effective reporting and expenditure tracking mechanisms.

A further important coordination challenge is the challenge of coordinating urban infrastructure—arguably the most complex coordination issue, given the pace of urbanization, and the number of functions that need to be aligned.

Effective land use management is the key to urban planning, but insufficient legal frameworks, deficient application of existing restrictions, and political intervention frequently hamper urban managers. Weak outcomes can be exacerbated by poor timing. When urbanization precedes the investment necessary for livable cities, the costs of improving infrastructure tend to escalate significantly, and retrofitted infrastructure solutions tend to be suboptimal. Coordination among multiple agencies, and across urban boundaries present additional challenges.

### **The state of play in the Philippines, Indonesia, China, and Thailand**

How are the larger developing economies of the region addressing the challenge of coordinating infrastructure? The main theme of the Philippines’ experience is that long-term vision and development plans are often undermined by short-term pressures within a fluid and fragmented political system, which in turn diminishes accountability and nurtures corruption.

The role of the Filipino planning agency, the National Economic and Development Authority (NEDA), is subordinated, in times of bust, to the goal of fiscal retrenchment and, in periods of boom, to pressures to

support highly politicized infrastructure projects. Long-term development plans and budgets frequently bear little relation to each other.

While the formulation of the national development plan is highly consultative, with significant mainstreaming of social and environmental issues, there is a large gap between what plans say and how resources are allocated and policies are implemented. Civil society influences decisions not primarily through participation in planning, but through campaigns and protest at the permitting or implementation stage of infrastructure undertaking.

The effects of weak coordination present themselves across the Philippines' infrastructure sectors, with significant impacts on investment and competitiveness. The power sector, in particular, imposes significant financial pressure on the government and cannot fund needed expansion. Poor policy coordination has led to generally inadequate space for infrastructure expenditure and low levels of private investment: In 2002, total infrastructure investment was only 2.8 percent of GDP.

Indonesia's coordination story is that of an incomplete progression from autocratic technocracy to greater participation and decentralization. In the process, the country's planning apparatus has been largely dismantled. Under the Suharto regime, policy planning and coordination was centralized in two institutions that operated more or less in tandem, and had substantial ability to plan strategically and oversee the implementation of planning: Badan Perencanaan Pembangunan Nasional (BAPPENAS), which prepared national five-year development plans, and the Coordinating Ministry for the Economy and Industry (EKUIN).

Under the post-Suharto *reformasi* regime, the power of the planning agencies has been significantly diffused. Power has been redistributed downward to local government, and fiscal crisis shifted influence to the Ministry of Finance and the central bank. BAPPENAS is now left with a planning advisory role, and EKUIN's successor focuses mainly on short-term implementation issues.

Fiscal space for infrastructure has been limited in the last few years, and significant infrastructure backlogs have emerged. The state's ability to pursue growth and poverty reduction objectives through infrastructure provision has become highly constrained since the crisis.

Over the last 10 to 15 years, infrastructure service provision has been increasingly delegated to corporatized state enterprises or the private sector, with modest efficiency gains. However, this has been

accompanied by little restructuring to allow for competition. Nor has the rule of law yet replaced the rule of a strong leader. The ability of the judicial system or of capital markets to bring better corporate governance, or encourage further private investment, remains limited.

The country's radical decentralization program has laid the foundation for greater government responsiveness to communities, but it also has created considerable uncertainty about interjurisdictional responsibilities and has limited fiscal space for central initiatives.

Since the onset of *reformasi*, civil society has flourished, and with it a new awareness of local and environmental issues in infrastructure planning and implementation. It has also given rise to experimentation with community-driven development in situations in which the state has failed to deliver—most notably in the Kecamatan Development Project (KDP). But the state's ability to mainstream these efforts into policies and programs is weak.

China's experience differs significantly from that of Indonesia and the Philippines. In China, authority has been extensively decentralized to the provincial and municipal levels, but the center remains substantially in charge and generates the strategic vision that binds the system. Accountability is essentially upward, and civil society's role is limited. Planning has become more strategic and flexible, and market forces play an increasingly important role.

China's principal planning agency, the National Development and Reform Commission (NDRC), remains powerful and—unlike BAPPENAS or NEDA—has not seen its strategic planning role undermined.

But infrastructure decentralization in China brings with it a number of coordination challenges. Central government is decreasingly able to control the infrastructure investment choices of the decentralized government. And the ability of provinces and cities to borrow from the state-owned financial sector for infrastructure investment, with limited credit assessment, has challenged the government's ability to exercise macroeconomic control.

At the same time, China is advancing with measures to strengthen the coordination of interjurisdictional infrastructure, with local municipalities beginning to group together in cross-jurisdictional infrastructure initiatives. China is also drawing on the experience of more advanced neighboring economies (as well as that of Thailand) in its development of special economic zones.

Like China, Thailand's record of infrastructure coordination is similar to that of the advanced economies of the region. Strategic long-term vision has played a major role, and coordination among technocrats has been effective. At the same time, participation has played a fairly limited role, although civil society is active.

However, the relationship between politicians and technocrats has been a changing one, with each taking responsibility for generating the country's development vision at different times. With coalition governments weakening the ability of the Cabinet to plan and coordinate for most of the 1990s, the country's principal planning agency—the National Economic and Social Development Board (NESDB)—played a preeminent role. With the Thai Rak Thai party's dominant control over government since 2000, the responsibility for setting the strategic vision shifted toward the Prime Minister's Office, with the role of the Ministry of Finance also increasing in importance. The role of the NESDB was uncertain for a while, although it appears to have regained some of its role in infrastructure planning, and involvement in the country's new infrastructure megaprojects.

Decentralization in Thailand has been limited. After perceived failures with decentralization to lower levels of government, decentralization has been focused on the 76 provinces. However, the provincial governors are appointed, rather than elected, and their role is more a deconcentration of central authority than a real decentralization. Stakeholder participation in infrastructure has made significant progress at the local government level. Nationally initiated large-scale projects, however, have shown less progress. Although environmental impact assessments are prepared, they frequently take the form of formal attachments to projects treated by their proponents as *faits accomplis*.

On the whole, Thailand's planning and coordination system has been flexible and adaptive. It has dealt well with crisis and long-term strategy. The system has evolved effectively as the political context has changed, and strategic vision has managed to play a central role.

## **Chapter 4. Accountability and risk management**

Coordination is about the big picture. But we also have to think about what happens at the level at which services are delivered and outcomes

achieved. In this study, we approach this in terms of two connected concepts: accountability and risk management (the focus of Chapter 4).

We think of accountability as a set of institutional tools that rewards organizations according to performance. Governments, communities, investors, service providers, and NGOs are all engaged with each other in dynamic tension, with their own goals and expectations, trying to hold each other accountable for delivery against those expectations. In doing so, they try to maximize their rewards and minimize their risks, subject to the constraint that everyone else is doing the same thing. This is what we mean by risk management.

Effective accountability and risk management are often most recognizable when they are absent. Most often this takes the form of poor service delivery. In its most dramatic form, we see it in financial collapse, as one stakeholder or another is shouldered with obligations they cannot bear. It also frequently takes the form of corruption.

While corruption arises for a variety of reasons, infrastructure has a number of peculiarities that make it a frequent target: The monopoly structure of supply can provide significant opportunity for rent-seeking. The political protection and intervention given to infrastructure often blurs financial accountability, and provides cover for a range of corrupt activities, including corruption in allocating scarce services, overstaffing, and excessively high wages. With difficulties in establishing the relationship between level of capital investment and service outputs, infrastructure providers can inflate levels of capital spending or hide underinvestment. The large scale of infrastructure often creates opportunities for large kickbacks associated with procurement. East Asian infrastructure is replete with examples of these kinds of practices.

### **Mechanisms to strengthen accountability**

Active community participation, competition, and regulation each have important roles to play in avoiding these kinds of outcomes.

For some types of infrastructure services the best way to ensure accountability is to empower communities to plan and manage their own infrastructure, and ensure that once built, service delivery remains relevant to their needs. Indonesia's KDP is among the largest and best-known East Asian examples, but community participation in infrastructure is increasingly common across the region.

Community empowerment works best when infrastructure is small-scale. For large-scale infrastructure, however, sheer scale can make direct community management difficult. But this does not preclude community participation in aspects of infrastructure that affect them—Japan has useful lessons for the region about how community participation turned around the country’s approach to environmental externalities.

Competition can also be used to hold service providers accountable. When competition exists, and customers are dissatisfied with a service, they can simply go elsewhere. Although most infrastructure networks cannot be provided competitively, services over those networks can.

On the whole, however, East Asia has not been in the forefront of introducing infrastructure service competition. In telecommunications, competition is still limited by international standards. In the electricity sector, East Asia has typically brought the private sector into generation through the least competitive means possible—that is, through a market structure in which a state-owned single buyer intervenes between private generators and customers.

Across the region, the choice of this model reflects some of the broader reasons behind the limited introduction of competition in infrastructure: the state’s desire to maintain cross-subsidies for sociopolitical reasons, monopoly rent-seeking, the protection of incumbent state enterprises, risk mitigation for the private sector, and the political control of strategic assets.

Regulation is a further tool that can be used to hold service providers accountable. Independence and accountability are traditionally cited as key prerequisites to regulatory effectiveness. There are various ways of holding regulators accountable. Some relate to process and participation: clear statutes, judicial reviews, or subjecting the performance of regulators to independent audit. Others relate to transparency: requiring regulators to publish decisions, licenses, and benchmarked performance.

East Asian countries pursue these measures to various degrees. But infrastructure—in East Asia as elsewhere—is intensely political, and the accountability of the regulator cannot be divorced from broader institutions of political accountability. Nor can the ability of the regulator to hold service providers accountable be separated from the political context.

Moving toward regulatory independence is proving slow in East Asia, which is not surprising given the region’s tradition of strong central control. Independence is difficult to measure, but in one survey of East Asian infrastructure regulators, less than 40 percent of the regulators

described themselves as even nominally independent (see Chapter 4, Spotlight 3).

The key issue for East Asian infrastructure regulation is how to accommodate the evolutionary nature of independence. Ensuring that regulators are not given more discretion than the political culture can absorb is critical. One option is to delegate to a regulator the day-to-day application of a concession contract negotiated between investors and the government. Contracting out key aspects of regulation to third parties, until greater discretion can be allowed, is another. Granting regulators more discretion over time, and liberating them gradually from political pressures, could enhance predictability and reduce policy-based risk that currently is so high in East Asia.

### **Risk sharing, accountability, and managing government support**

Issues of risk management and accountability arise with equal prominence in the relationship between government and service provider, in particular through the support that governments frequently give to service providers in the form of subsidies or guarantees.

Subsidizing the provision of services can be important for many reasons. Environmental protection and poverty reduction are the least controversial. It may also be politically important, however, to retain subsidies captured by influential, nonpoor groups, gradually phasing them out over time (particularly if reform eventually brings benefits that can be sustained without subsidies).

But subsidies have implications for risk and accountability. By weakening the incentive to provide services in the most efficient manner possible, they weaken the accountability relationship that binds providers and governments. And they can be highly risky: the more you get, the more you ask for.

There are various ways East Asian countries manage subsidies: reducing the need for them by addressing excessively high costs through competition, regulation, technology choice, or public enterprise reform; or reducing them directly by making them transparent (and thus subject to scrutiny), making them as one-time payments, channeling them through performance-based arrangements, or adjusting taxes or subsidies on competing products. Cross-subsidies are one option of maintaining accountability of the bottom line, although they come with

other costs—primarily, lack of transparency and difficulties to introducing competition.

There are a range of less direct mechanisms besides subsidies that provide fiscal support and share risk—power-purchase obligations in the Philippines, for example, or Thai government backing for state railway borrowing. The accountability issues that these raise are all the more difficult given the contingent nature of the claims to which many of them give rise.

Addressing these contingent liabilities requires high-quality fiscal information and utilization of this information during the budget process. Ideally, governments should decide on an overall ceiling for fiscal risk, issue guidelines on risk assumption to sector agencies and local government, monitor risk, and require approval for the assumption of risk.

Many governments in the region have resorted to risk-sharing transactions with the private sector, rather than undertaking investment through the budget, to get an expenditure “off the books.” But whether this improves solvency, as well as liquidity, depends on whether the transfer of risk to the private sector brings efficiency gains.

This depends on the accountability framework for service providers. In East Asia’s electricity sectors, for instance, governments frequently have to provide guarantees, because they prevent private sector participants from competing for lucrative parts of the market. In this case, efficiency gains are likely to be limited, and governments are left carrying most of the risks.

Who in fact carries risk, however, is not always clear. Risk is hidden in certain arrangements and is more open in others. Additionally, risks are often reassigned in the lifetime of a concession contract, in response to shocks, but equally as part of a learning process involving both government and private sector providers.

And so to the eternal ownership issue: Are privately owned infrastructure service providers more or less accountable for performance than publicly owned providers? Accountability cannot be measured directly, but performance can be. Empirical evidence shows that private providers perform better, on average, when the incentive environment gives them a good reason to do so, but private ownership on its own doesn’t seem to make much difference. When ownership is public, and markets are not competitive, accountability is a considerable challenge indeed.

In other words, ownership does not generally matter by itself. There have been plenty of disappointments in private provision in East Asia.

What does matter, however, is that private provision tends, on average, to respond better to competition and well-crafted regulation than does public provision. In short, it is easier to use incentives to hold the private sector accountable for performance than to do so for the public sector.

Outgrowing the top-down model means greater delegation and the use of decentralized incentive mechanisms. The more this happens, the more necessary it will become to attract the private sector, if infrastructure provision and efficiency are to keep pace with East Asia's needs. But this time around, private participation should come with competition and good regulation.

## Chapter 5. The way forward

The framework set out in this study is analytical. It suggests a way of approaching problems, but is not a “tool kit” for implementing particular policies. Nonetheless, the framework has important policy implications. Here we trace 12 of them. These reflect key concerns articulated in the consultations undertaken in preparing this report, with the region's policy makers, policy implementers, infrastructure service providers, civil society organizations, and other stakeholders.

The 12 policy messages constitute an approach to strengthening infrastructure's contribution to inclusive development, as set out in Chapter 2. They promote the role of infrastructure in underpinning growth and poverty reduction. Infrastructure does not lead to inclusive development on its own—it requires actions that support the delivery of services to the poor who need them, and that underpin the growth dynamics on which improvements in welfare depend (Box 5.1). What do we need to think about to achieve this?

The discussion of coordination in Chapter 3 provides the basis for three of the policy messages arising from the framework. In Chapter 3, we saw how strategic vision has proved crucial for ensuring the effectiveness of infrastructure interventions. We also looked at a number of the challenges that arise in formulating and implementing this vision—coordination across financing and planning institutions, coordination across infrastructure and fiscal institutions, and coordination across decentralized government. The analysis set out in Chapter 3 gives us the following three policy messages:

## **1. The center matters—infrastructure demands strong planning and coordination functions**

Infrastructure provides basic services on which survival and livelihoods depend; infrastructure is the backbone of economies and societies; infrastructure has major environmental impacts; infrastructure can bring powerful monopolies and foreign participation into areas of great sensitivity. As such, infrastructure is intensely political.

But infrastructure is also economically and technically complex, and has long-term implications. So the technocrats, too, have a critical role to play as they complement the role of politicians. This extraordinary blend of technocracy and politics places a premium on high-level, central institutions, which can articulate strategies that are politically sustainable and economically effective.

Institutions that can formulate those long-term strategies, and can coordinate the policies of different agencies to implement them, are essential to effective infrastructure service provision. Objectives that move beyond the purely economic, to mainstream environmental and social considerations, demand higher levels of coordinating capacity than hitherto. Sector ministries and local governments cannot work in policy-making isolation.

Old top-down models of detailed economic planning should be eschewed, but new models of strategic planning and central coordination need to evolve. This should underpin tendencies toward democratization, decentralization, independent regulation, private participation, and the commercialization of service providers.

## **2. Decentralization is important, but raises a host of coordination challenges**

There has been substantial decentralization of government in East Asia, and this has often increased the responsiveness of infrastructure service provision to local needs. Decentralization has undoubtedly played an essential political role.

However, decentralization poses a number of coordination challenges, both vertically (between central and local governments) and horizontally (between various subnational institutions).

Decentralized governments have sometimes been isolated within their own jurisdiction. This is problematic because most network infrastructure has interjurisdictional backbones. Isolation can mean secondary or

tertiary infrastructure lacks connections to primary infrastructure—in a sense, it goes nowhere. Some municipalities may be too small to achieve the scale necessary to deliver infrastructure efficiently. In competing with each other, municipalities may duplicate expensive infrastructure facilities, when such facilities, in fact, could have been shared. Avoiding these pitfalls depends critically on interjurisdictional cooperation—on filling in the missing middle.

Higher tiers of government need to encourage lower tiers to collaborate where primary infrastructure requires such collaboration. Matching grants to induce decentralized governments to participate in such investments, and institutional mechanisms to encourage cooperation in infrastructure planning will play a major role.

Central governments also have to ensure that they maintain sufficient capacity to monitor, manage, and coordinate in a manner that is in line with policy and regulatory frameworks. The inadequacy of such systems is a frequent cause of suboptimal service delivery and confused authority.

### **3. Fiscal space for infrastructure is critical**

Ultimately, all infrastructure is paid for by users through tariffs or taxpayers through subsidies. Covering costs through user charges is a critical long-term objective. In the short term, user charges might be legitimately constrained by a variety of factors (see below under “subsidies”) or large investment needs might require upfront financing to be recovered gradually from user charges.

Sometimes those financial shortfalls can be filled by the private sector, but sometimes private financing will be insufficient, unavailable, or unacceptably expensive. Even where the private sector comes in, it often requires risk-sharing with the public sector. In cases in which the private sector cannot or will not provide all the financing or bear all the risk, investments with adequate economic rates of return should be allocated fiscal space.<sup>3</sup>

Adequacy will depend in part on competing claims from noninfrastructure expenditures and from the need to keep fiscal deficits low. It will also depend on the veracity of the claim that user charges or private financing cannot fill the gap; sometimes it requires fiscal tightening to induce sector agencies to make reforms and seek other sources of funds.

In some East Asian countries, expenditure on infrastructure appears to have been less than optimal in recent years. Cambodia, Indonesia,

Lao PDR, the Philippines, and Thailand could be candidates for this list of countries. This may have undermined economic growth and poverty reduction, and even long-run fiscal solvency.

This does not mean that more fiscal space for infrastructure should be the first step in those countries. In several cases, fiscal tightening for macroeconomic stability and debt sustainability would take higher priority. In most cases, the possibility exists for stronger promotion of private financing in infrastructure and for higher user charges. And there can be opportunities for cost reductions, or better management and maintenance of existing assets. In some cases, strengthening public expenditure management should come before more public expenditure. If adequate institutions and controls are not in place, countries can easily veer from underspending to overspending.

But if and when those difficult preconditions are met, governments should allocate fiscal space based on long-run growth objectives and in pursuit of fiscal solvency. Infrastructure spending on worthwhile projects can create a virtuous circle: more growth, more fiscal revenue, more fiscal space. The challenge is to select the right projects—and put in place the policy and institutional frameworks that actually make them worthwhile.

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Our discussion of accountability and risk management in Chapter 4 provides the basis for five additional policy messages. In this chapter, we looked at the a number of mechanisms through which accountability in infrastructure service provision can be strengthened—through the community, through regulation, and through competition—and how accountability and risk management arrangements can play out when governments provide support to infrastructure providers. The analysis set out in this chapter supports the following five policy messages:

**4. “Subsidy” is not a dirty word—subsidies can be important, but are always risky, and should be handled with care**

Infrastructure subsidies can be justified on a number of grounds, including environmental protection and poverty reduction. Although they would enjoy the environmental benefits, people often won’t pay the full cost of sanitation, mass rapid transit, or renewable energy. In cases in which those benefits are external to consumers, subsidies may be needed to realize the benefits. Clean water or rural roads may have an important impact on

poverty, but they may not be affordable by the poor. Such projects may require subsidies. And reform programs that help the poor or the environment may not be politically sustainable without subsidies for those with the power to derail the reforms. Similarly, transitional subsidies sometimes may be worth considering during short periods of economic crisis.

But subsidies can become open-ended and addictive, their fiscal impact can explode, they can undermine financial discipline and blur accountability, and they can postpone much-needed reform. Subsidies need to be employed with great care.

Subsidies should be a last resort after costs have been minimized through competition, regulation, appropriate technology and service standards, or public enterprise reform. Subsidies can be minimized through transparency, making them contingent on performance, or through subsidy bidding processes.

### **5. Competition is hard to achieve in infrastructure, but it's the best way to bring accountability**

Infrastructure is quite often a natural monopoly, but institutional and technological innovation are expanding the potential for competition. It is now feasible to provide most infrastructure services (if not always the infrastructure itself) competitively. The most direct, and hence most effective, way of holding service providers accountable is through competition.

East Asia has been cautious about the introduction of infrastructure service competition; it has often preferred to “throw” more infrastructure at a problem rather than provide incentives for more efficient infrastructure services or address the political economy obstacles to competition.

This approach may have been effective when the basic infrastructure was being built, when economic objectives were relatively simple, and when top-down command solutions prevailed. But, as complexity increases, those approaches can be expected to work less well, and the role of competition will need to increase.

### **6. Regulatory independence matters more in the long run than in the short run**

When competition is not yet firmly in place, regulation of monopolies will be needed. Regulatory independence from politics is an important

long-term goal to ensure that service providers can cover costs and earn an adequate return on investments. However, regulators can establish their credibility with consumers, politicians, and investors only gradually. If regulators exercise more discretion than the political culture can absorb, a backlash can occur, creating unpredictability and instability.

Regulatory independence is a relative concept, and independence should grow step-by-step. New regulators should rely more on transparent rules than on discretionary power, and some responsibilities should be delegated to outside experts until in-house capacity can be built. Credibility, and hence independence, can be enhanced by transparency: Hearings should be public, as should contracts and licenses whenever possible. Accountability for regulators is key to their independence.

### **7. Civil society has a key role to play in ensuring accountability in service provision**

Local communities within civil society can often manage local projects. They can participate in decision making about the large infrastructure networks that touch their community, or those aspects of large projects that affect them directly. They may need special protection, as long as the larger needs of society don't get lost.

Civil society can play an important role in accountability of infrastructure institutions through parliaments or through consumer participation in regulation. Civil society organizations and NGOs can provide small-scale infrastructure services, act as watchdogs against corruption and vested interest, and play an advocacy role for more sustainable infrastructure policies and services.

Advocacy NGOs face difficult choices between representing the interests of specific groups or issues, and representing the interests of society at large. How effectively and accountably they make those choices can have a significant impact on development outcomes.

### **8. Infrastructure has to clean up its act—addressing corruption is a priority**

Infrastructure is often provided by monopolies, and can generate large rents. It often provides vital services, which are highly prized and highly political. As a result, financial discipline can be weak, political intervention intense, and rent-seeking prevalent. And the benefits of infrastructure can be easy to claim and hard to verify.

This combination of circumstances can create fertile ground for corruption. But that corruption discredits the very infrastructure on which it preys. This can undermine the political sustainability of infrastructure development, and deter those investors and financiers concerned about reputational risk and other costs of corruption.

Combating corruption is a long, hard struggle requiring strong top-down political commitment. Major reforms of the judiciary and civil service lie at the heart of any anticorruption effort. While these longer-term reforms are being put in place, significant progress can be made by removing rent-seeking opportunities and exposing transactions to public scrutiny.

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Four additional policy messages derive from analysis developed across this study, although they all take their departure from what we described as the “funding story” in Chapter 1. Here we saw that infrastructure can only be *funded* from two sources: the resources of consumers, and the resources of taxpayers. But infrastructure can be *financed* by two other actors: the private sector (which may also include service providers), and official lenders and donors. The policy messages are as follows:

### **9. The private sector will come back—if the right policies evolve**

Private investment in East Asian infrastructure peaked in 1997 and declined dramatically thereafter. It is now showing modest signs of recovery, but it still has not come close to matching the levels initially expected in the mid-1990s.

A perceptions survey was carried out for this study among 50 private companies active or interested in East Asian infrastructure investment. One survey response stood out above all others: A majority of investors said they were keen to invest, and would do so if policies were more predictable.

The private sector certainly has not disappeared from East Asian infrastructure; however, it is not actually making large investments. More predictable policies would bring it back. Moreover, if it came back, better regulation or more competitive market structures would help ensure efficiency gains from its return.

### **10. Public sector reform matters, but be realistic**

In some places, the private sector won’t come in sufficient scale, or will only do so on terms that are politically unacceptable (at least to specific

groups with strong voice). This is likely to be particularly relevant in countries with small markets (population or purchasing power), those which are emerging from conflict, those where ideological opposition to private or foreign investment is particularly strong, or those where adjustment of large state-owned infrastructure is politically difficult because of employment effects. In some sectors, natural monopoly remains strong, so competition to induce the efficiency gains from private participation is not yet possible.

In sectoral terms, water and sanitation, large-scale hydropower and electricity transmission, some types of transport, and rural or cross-border infrastructure seem to have the hardest time attracting private investment, or using it to promote efficiency (although there are notable exceptions). In those situations, reform of the public sector may sometimes be the most feasible option for efficiency gains, at least in the near term.

But public sector reform is difficult to achieve, and even harder to sustain, so expectations should be modest. If the private sector can't be attracted because the state is unpredictable and lacks vision, or because tariffs and subsidies are below costs, then public sector performance is likely to be disappointing as well. Even if costs are covered, public resources may be better used in sectors other than infrastructure. The alternative of more thorough reform in the medium term to attract private investment should always be considered.

## **11. Local capital markets matter, but are not a panacea**

East Asia's success is built, in part, on channeling high savings into domestic investment in infrastructure. The 1997 crisis underlined that domestic savings tend to be less footloose than foreign savings, and that domestic currency financing is less exposed to foreign currency risk. As domestic savings become more scarce, their efficient allocation becomes more necessary. As government functions become more complex, the delegation of resource allocation and risk assessment becomes more important. For these reasons, the contribution of the domestic financial sector to infrastructure development needs to grow.

Government will play an important role in regulating the domestic financial sector and encouraging financial innovation, as well as in promoting regional capital market initiatives. In countries where the policy—or quasi-fiscal role—of the financial sector has led to high levels of nonperforming loans to infrastructure, commercialization of the sector

will be a priority in the near term. This will restore health to the financial sector and financial discipline to the infrastructure sector.

But to promote the financial sector's contribution most effectively over the long term, policies to improve the investment climate for infrastructure should take the highest priority. Trying to make a poorly designed infrastructure project work through financial engineering can have only limited effect; making it into a viable project through reform beyond the financial sector will usually have a greater impact.

## **12. Infrastructure needs reliable and responsive development partners**

The development community is now reasserting its role in infrastructure in East Asia. But infrastructure is a long-term asset, and development partners need to stay for the long haul. Reliable partnerships—with quick response and harmonized procedures—are critical. Moreover, the nature of this partnership (financing, guarantees, policy advice, capacity building, and so on) will have to be tailored to country conditions. The needs of East Asia's large, middle-income countries are different from the smaller and poorer countries in the region.

Official development assistance (ODA) accounts for approximately 1 percent of gross investment in low- and middle-income countries of East Asia. However, aid financing plays a more significant role in the poorer countries of the region, accounting for more than half of gross investment in Mongolia and Cambodia. Aid flows also play a significant role in most Pacific island countries, Timor-Leste, Papua New Guinea, and Lao PDR. The level of aid, and how it is allocated (including the share for infrastructure), plays a big role in the public spending and investment priorities of these countries.

The case for official financing depends on how well it can be used, the availability of other sources of financing, and the overall debt position of the government. The level of aid usually declines, and the blend of loans and grants usually becomes harder, as income levels rise in recipient countries. However, even higher-income countries may see benefits in tapping official financing to ease the debt burden on their budget and to catalyze private sources of funds. The technical assistance embedded in aid-financed projects—for project preparation, environmental and social assessments, and procurement practices—can be beneficial for shaping the government's overall policies and procedures.

During the 1990s, some key development partners in East Asia focused their efforts away from infrastructure, at least from infrastructure on a large scale. These partners felt that poverty reduction should be more targeted or that the private sector should step in to finance infrastructure projects. This tendency was intensified by the 1997 financial crisis, as the creditworthiness of affected countries and many infrastructure service providers declined. Aid financing in crisis-affected countries shifted to program support, as budgets were cut and new investments in infrastructure were sharply curtailed.

The role of official financing for infrastructure is now being reappraised. It is acknowledged that growth is crucial to poverty reduction, that targeting complements growth, and that infrastructure is essential for both. The private sector did step in, then partly stepped out, and may now step in again. But even at its peak, the private sector was a relatively minor player in financing terms, especially in the poorer countries of the region, and official financing could be helpful to catalyze private investment. Some countries are now emerging from fiscal compression and need official financing to catalyze the private sector and provide more fiscal space for infrastructure spending. Support for more complex projects and new approaches can be particularly valuable.

As official financing for infrastructure increases again, it's important that it is used in a way that maximizes development impact. In the past, infrastructure projects have not always been well linked to a country's overall development and poverty reduction strategy. Aid must be used to support (rather than undermine) good policies. In some cases, this may mean funding sectoral programs, including recurrent spending for operations and maintenance and even subsidies. The broader impact of large-scale projects on government revenues must also be taken into account (as seen in the case of the Nam Theun 2 dam project, Chapter 4, Box 4.6).

Some official lenders and donors can provide instruments to back up government commitments to the private sector at a time when credibility with the private sector is still being established (for example, guarantees, insurance, official lending to the private sector). The overall case for the use of those instruments depends on a number of factors: first, the economic justification for the project; second, the proper allocation of risks between stakeholders and the ability to structure the guarantee to strengthen rather than dilute operators' incentives to deliver; and third, a

robust budget framework for managing any contingent liabilities arising from government commitments.

However, in no case should such instruments be substitutes for good policies. Sound policies can reduce risks and demonstrate the government's commitment to reform. They are therefore more valuable to investors than official agency support per se.

Finally, official lenders and donors can provide important knowledge about what works and what doesn't in different countries and sectors. Some of this knowledge comes from higher-income countries that have been there before and learned from their mistakes and successes. It's therefore important that countries like Singapore and Korea stay engaged with the broader development community.

The type of knowledge needed will also vary by country—from basic institution and capacity building in poorer countries to more sophisticated market instruments in middle-income countries. For the latter, innovative ways are needed to combine private and public financing to extend maturities for long gestation projects. New approaches to developing financing mechanisms at subsovereign levels also need special attention.