

2. *Inclusive Development*

What is “inclusive development”?

Inclusive Development equals Economic Growth plus Sharing the Benefits of Growth to reduce Poverty.

As we shall see, infrastructure helps connect the growth to the sharing of benefits, thereby making the development more inclusive.

Development, inclusiveness, and infrastructure

As we saw in Chapter 1, economic development in East Asia has typically been inclusive. Within countries it has benefited the poor, as well as the non-poor. Integration between and within countries has fostered high economic growth overall, and the fruits have generally been shared. Inclusive development has brought political cohesion and social stability through mutual interdependence. Infrastructure has underpinned that interdependence, and has played an essential role in making development inclusive.

But there is no assurance that this will continue into the future. Significant income disparities have developed in East Asia: between low- and high-income countries in the region, and within countries. The structure of growth in many Asian countries has been changing. The divide between rural and urban areas is growing. Within rural areas there are some pockets of deep poverty, often with an ethnic minority dimension. Coastal areas are prospering and are well-connected to global markets; remote and landlocked regions are lagging behind. Peri-urban areas are becoming a volatile halfway house for migrants, urban environments are under population pressure, and congestion is choking broad-based growth.

This chapter is about how infrastructure can reinforce inclusive development in East Asia. It is about what we can expect infrastructure to do for growth and poverty reduction in the region. About what makes “good” infrastructure. As we shall see these are complex issues, and so we will have to address them in a number of ways.

This chapter has four parts. We start by looking at what’s so different about infrastructure – at what infrastructure *is* – and how this relates to the principal themes of this study. This has important implications for how we get infrastructure to serve the goals of inclusive development, and – as we pick up in Chapter 4 – for accountability.

We then shift our emphasis. From looking at what infrastructure is, we consider what it *does*. Infrastructure connects. We look first at how infrastructure connects conceptually – linking growth, and poverty reduction into a mutually reinforcing relationship. We then look at the role of infrastructure in connecting East Asia into the global economy, and fostering regional integration. Finally we take our analysis to the country level, to look at how inclusive development has played out in the case of Vietnam.

Box 2.1: Inclusive development with Chinese characteristics

When China's economic reforms began in the late 1970s, Deng Xiaoping coined the phrase a *xiaokang* - or well-off – society. Initially, *xiaokang* was defined solely by GDP per capita targets.

But in recent years, *xiaokang* has taken on a broader meaning. In 2002, the Sixteenth National Congress of the Communist Party of China established the objective of building an “all-inclusive” *xiaokang* society over the next two decades, in which prosperity is both created and shared. This concept also underpins Premier

Wen Jinbao's statement that China's development strategy should be in accordance with the “five-balanced”: balancing urban and rural development, balancing development among regions, balancing economic and social development, balancing man and nature, and balancing domestic development and opening to the world (Wen 2004). Infrastructure has a central role to play in the balancing act to create the *xiaokang* society.

What is so different about infrastructure anyway?

Infrastructure is not like shoe factories, schools, or supermarkets – all of which can potentially contribute to inclusive development in different ways. Infrastructure, and the services it provides, have some rather peculiar features which shape its contribution. What are those peculiarities?

“infrastructure services tend to be capital intensive and exhibit economies of scale”: economies of scale are inherently inclusive

The provision of large-scale electricity or transport services, for example, generally requires much higher capital intensity than the provision of large-scale education or health. Such infrastructure services can therefore suffer high risk, long gestation, and long payback periods - but enjoy substantial economies of scale. Including more users can greatly enhance the viability and affordability of the service (although this raises coordination and accountability challenges). In some cases, the inclusion of more users can even enhance the value of the service to each individual user (e.g. I want as many other people as possible to be on my phone network, or as many places as possible to be on my rail network). Indeed, it is often the network nature of infrastructure that brings the economies of scale.

Conversely, providing infrastructure services on a small scale can be expensive. But small can also be beautiful, because it may involve low risk, limited need for coordination, or a positive environmental impact – these factors can be worth the extra unit costs.

“infrastructure is usually lumpy rather than incremental”

Infrastructure tends to come in lumps, and those lumps tend to form networks. Roads connecting population centers do actually need to go all the way, and to join other roads, in order to be useful. A power plant with only ten percent of a turbine is not a power plant, and a power plant without a transmission and distribution grid doesn't give many people power. An urban water supply system can't function with only half a treatment plant, and a whole treatment plant needs an extensive water distribution system to justify itself.

Of course some infrastructure can be incremental: a wind turbine, a borehole, a household boiler, a septic tank, a feeder road. Such infrastructure can be crucial in particular circumstances, such as in rural or peri-urban areas, to realize environmental benefits, or to overcome financing and risk constraints. Or incremental approaches may facilitate community participation in governance (lumpy infrastructure has a strong association with top-down institutions). Incremental infrastructure can certainly be the best available option for a particular community of end-users. But with current technology, lumpy infrastructure will usually be the cheapest way of providing for large-scale general use.

“infrastructure is long-lasting”

Once you've built it, it's probably going to be there a long time, even if inattention to maintenance reduces its useful life. A port, a street system, a sewerage network, mass transit, a hydropower dam, can last for decades. Once built, it can define for many years how and where people live and work. It can define which areas prosper and which stagnate, who accumulates wealth and who does not, who exercises power and who has little voice. In short, who is included in development and who is not.

Periods of rapid urbanization present massive opportunities and challenges, and can shape economies and societies profoundly. For some sectors, periods of rapid technological change can radically change what used to make sense³⁸.

So risks are high, and infrastructure mistakes can haunt you for a very long time. Missing windows of opportunity can cost dearly, and so can locking in the wrong solutions. Long-term vision matters enormously.

³⁸ Technological change can have a profound impact on infrastructure provision: it can change the longevity of assets, affect the potential for competition and the challenge of regulation, and alter the balance between incrementalist approaches and lumpy ones. Telecommunications and some parts of transport for example have seen some radical technological development in recent decades (for instance, cellular telephony, or containerization). Energy has seen some important changes (such as the introduction of combined-cycle gas turbines, advances in gas liquefaction), and may be on the verge of breakthroughs in decentralized and renewable solutions. In water and sanitation, technological change has been more modest.

“infrastructure is space-specific and use-specific”

Shoe factories, schools and supermarkets can move location, or can easily be used for something different. Some harbors have become leisure centers, and power plants museums, but most infrastructure can't go anywhere else or do something new (and its scrap value can be very low).

Infrastructure therefore makes a good hostage. With high sunk costs, revenues can be driven way down and operation will continue (as long as variable costs are covered, it's worse to stop than to carry on). At the same time, those sunk costs and space-specificity mean monopoly power is quite likely. A hostage with monopoly power can attract predators, particularly when the services it provides are politically sensitive. Consequently, infrastructure faces considerable political risk (and this is not just a private sector problem; public infrastructure can also be kidnapped by rent-seekers).

And space-specificity can bring local social and environmental impacts: dams can displace people nearby, vehicles kill people where the roads are, airports bring noise to host communities, power plants emit noxious chemicals locally, and untreated sewage is a health hazard for its neighbors.

“infrastructure is complicated: it provides inputs for multiple purposes simultaneously - and does so along with multiple non-infrastructure inputs”

Infrastructure is intertwined with the fabric of our economic and social lives, and connects us together. For example, water reticulation can simultaneously be the energy source for electricity, the provider of drinking water and sanitation to households, the source of fertility for food production, the source of steam for chemicals production, the carrier of heat for homes, and a medium of transport for people and goods. But that water helps produce chemicals, for example, only if there are skilled and healthy workers available, capital to fund the business, and a host of other services to help it operate and sell its products. Infrastructure is useless in isolation.

The fact that so much of our lives depends so intricately on infrastructure services makes their provision very important both economically and politically - but also intrinsically hard to value. A disruption to water or energy supply, a breakdown in transport or telecommunications, can have incalculable economic, environmental and social reverberations, but can be very expensive to prevent. Correspondingly, reliable provision of those services can have benefits well beyond the revenues accruing to the provider of those services, but do we know what those benefits are worth?

Knowing that infrastructure *per se* is important is very easy; measuring the precise importance of a particular piece of infrastructure is very difficult. Our world would be unimaginable without electricity, but that doesn't mean it's the highest priority for every village. Choices are all the more complex when *programs* of infrastructure are involved. Infrastructure priorities are hard to measure and choices hard to make. But choices do need to be made about infrastructure, so we need to know what the impacts are, how they are channeled, and what they depend on.

Connecting growth, poverty reduction and investment through infrastructure

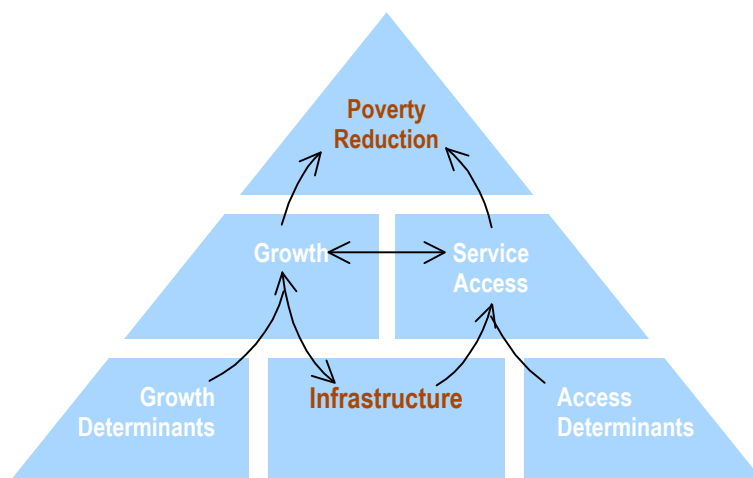
This study is about the connecting role of infrastructure. We can think of this in a number of ways. Here we start with the connecting role that infrastructure plays in a series of mutually-reinforcing relationships that links growth and poverty reduction – a subject on which the development world has come to broad consensus³⁹.

In the first, place, infrastructure provides people with services they need and want. Water and sanitation, power for heat, cooking and light, telephones, computers and transport all make immeasurable differences in the lives of people. The absence of some of the most basic infrastructure services is an important dimension of what we often mean when we talk about poverty.

Infrastructure also impacts on the activities through which people earn their livings. It contributes to the health and education that people need to fill jobs, or create them. But infrastructure is also an intermediate input into production. Without power and water, all but the most basic production processes would grind to a halt. Infrastructure raises the productivity of factors of production – by generating the power that allows factories to mechanise, by allowing workers to get to work quicker, or by providing the networks through which information can pass electronically. Infrastructure connect goods to markets, workers to industry, people to services, the poor in rural areas to urban growth poles. Infrastructure lowers costs, it enlarges markets and facilitates trade.

In sum, infrastructure both impacts directly on poverty through services, and supports the processes of growth on which much poverty reduction depends. And at its best, infrastructure draws poverty reduction, service provision and growth into a reinforcing cycle (Figure 2.1).

Figure 2.1. Linkages between Infrastructure, Poverty Reduction and Growth



³⁹ See, for example, Prud'homme, 2004, Kessides, 1996 or DfID, 2002

Box 2.2: Infrastructure and the MDGs

The Millennium Development goals (MDGs) – the international community’s agreement on the goals for reducing

poverty – comprise eight objectives to be achieved by 2015. They are:

1. To eradicate extreme poverty and hunger

Halve the proportion of people living on less than one dollar 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

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, where we set out what inclusive development might mean, we look at poverty from three angles, and consider how infrastructure in each of the sectors makes an impact.

And some of the channels 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, looks at the impact of transport and electricity on education. And

the impact of health services may be similarly affected by the ability of the poor to access facilities. A road, a telephone call, can make an enormous difference.

Poor access to water and sanitation is an important part of what we mean when we talk about poverty, and is addressed in the Environment MDG. 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 this chapter, and our discussion of urban management in Chapter 3.

What of the empirical literature on the impacts of infrastructure on both growth and poverty reduction? A number of studies have confirmed the significant impact of infrastructure (particularly telecommunications and roads) on output, using cross-country data (e.g. Canning 1999; Fernald 1999; Demetriades and Mamuneas 2000; and Roeller and Waverman 2001). Using a related approach, one analysis (Canning and Bennathan 2000) found that in developing countries rates of return to infrastructure are higher than for overall capital investment, while in developed countries returns equalized. This implies that developing countries have underinvested in infrastructure (particularly in roads in middle-income countries, and electricity in poor countries).⁴⁰

Other studies found that public expenditure on transport and communications significantly raises economic growth (e.g. Easterly and Rebelo 1993; and Miller and Tsoukis 2001), although one found a negative relationship between the share of infrastructure spending in total public expenditure and economic growth (Devarajan, Swaroop, and Zhou 1996).

The specific impact of infrastructure on welfare, especially of the poor, has been studied in a number of ways, and departs from how one defines poverty. The narrowest poverty definitions focus on incomes and livelihoods, measured, for instance, by the “dollar a day” poverty line. In terms of this approach, the impact of infrastructure on poverty is measured through the degree to which infrastructure increases the real incomes of the poor (for instance, by reducing the costs faced by the poor for services they use); the degree to which infrastructure opens up employment opportunities; and the degree to which infrastructure enhances the productive assets on which the poor depend (for instance, when access roads increase the value of land owned by the poor).

But poverty can be defined more broadly, reflecting some of the key dimensions identified in the Millennium Development Goals (See Box 2.2). Here, research into the impact of infrastructure on poverty has also looked at the extent to which infrastructure improves access to education and health services (transport, communications, and power infrastructure are likely to play roles here) as well as the impact of improved water and sanitation services on health.

And perhaps the widest definition focuses on enhancing social inclusion, human capabilities and freedoms. Such approaches might focus on the impact that transport and communications infrastructure can have in improving people’s ability to engage in collective activities, access wider sources of information and opportunity, or free up time for both economic and non-economic purposes (particularly for women in cases where they bear principal responsibility for water and energy provision for the household).

Some studies show that water and sanitation access explains a substantial portion of the difference in infant and child mortality rates experienced by rich and poor, that better transportation increases school attendance, and that electricity access allows more study time (see Leipziger, Fay, Wodon, and Yepes, 2003). Another study (Calderon and Serven, 2004) found that infrastructure quantity and quality – particularly water and sanitation - have a strong positive impact on income equality, as well as on economic growth. And a further study showed that enhanced access to roads and sanitation has been an important determinant of reducing disparities between the poorer and richer regions of Argentina and Brazil (Estache and Fay

⁴⁰ See Briceno, Estache, and Shafik (2004) for a recent literature survey.

1995). Studies of rural roads have shown they raise the productivity and value of land for poor farmers (e.g. Jacoby 2000).

Rural roads have been found to have a substantial positive impact on overall poverty reduction in a number of other studies, but there are some interesting nuances. One found that rural roads were the form of public expenditure that reduced poverty most effectively in India (Fan 2003). For China, the same study found that they were the most effective form of public expenditure on *infrastructure*, but that expenditure on education and agricultural research and development was more effective means of reducing poverty. A study of rural roads in the Philippines (Balisacan and Pernia 2002) found access to them is important for poverty reduction, and that the impact is increased if the roads are coupled with education expenditure. By contrast, this study found that the very poorest households lacked the minimal income and complementary facilities necessary to benefit from access to electricity.

Within that broad category “infrastructure”, the literature suggests that transport, telecommunications, and electricity are very important overall for growth and poverty reduction, and that rural roads, water and sanitation are critical for reducing the poverty of the very poorest. Table 2.1 spells out some of these impacts in more detail. Although precisely how any set of infrastructure undertakings would impact on poverty depends very much on country context (Box 2.3). Most importantly, the literature emphasizes that infrastructure is effective only when combined with other interventions.

Box 2.3. The importance of infrastructure in particular poverty reduction programs may vary

While infrastructure has an important part to play in addressing poverty, the nature of its role may vary depending on the nature of poverty in a particular setting.

Where there is mass poverty, affecting large proportions of the population throughout a country, infrastructure investment may be an important part of a broader strategy for poverty reduction and economic growth, though precise priorities will vary depending on the context.

Where poverty is highly location-specific (for instance in

remote highland areas) and clearly linked to geographical remoteness or poor access to key services (for instance water supply and sanitation in urban slums), a targeted strategy of improving infrastructure provision to areas of high poverty concentration may be the single most important element of a poverty reduction strategy.

In some cases, however, countries may choose to place significantly less emphasis on infrastructure investment in pursuing poverty reduction. This

may be the case, for instance, where poverty affects a relatively limited proportion of the population and depends on factors other than those directly related to geographical remoteness – for instance factors like caste, histories of discrimination against particular ethnic groups, cultural or other factors that have limited education attainment or employment opportunities for certain groups

None of this implies, however, that everyone benefits from investments in infrastructure, nor even that they benefit equally. While broad-based impacts on poverty may often be positive, the local socioeconomic impacts from infrastructure development can sometimes be negative, unless deliberately mitigated. For example, hydropower might provide inexpensive electricity to large

numbers of consumers, yet displace people living and working in the vicinity of the hydropower dam, or negatively affect their agricultural land or fishing grounds⁴¹.

Table 2.1: Potential positive impacts of infrastructure services on the poor

| Sector | Direct Impact on Poor | Indirect Impacts on Poor |
|--------------------|--|---|
| Electricity | Mainly for lighting, TV, radio at low levels of income. Heating, cooking, appliances for self-employment at higher levels of income | Reduced energy costs for enterprises encouraging employment creation across wide range of activities Improved health and other services (refrigeration, lighting etc) Improves ICT access |
| Piped gas | Limited impact at low income levels Heating, cooking at higher levels of income | Reduced energy costs for enterprises encouraging employment creation (limited range of activities) |
| Roads | Access to employment and markets Access to services (health, education) | Reduced transport costs and improved market access for enterprises and service providers, lowering costs of serving remote communities |
| Railways | Limited | Reduced costs and improved market access for enterprises |
| Urban Mass Transit | Access to employment opportunities | Employment creation from more efficient labor markets |
| Ports | Limited | Reduced transport costs for enterprises encouraging employment creation (e.g. bulk commodities like agriculture) |
| Airports | Limited | Reduced transport costs for enterprises encouraging employment creation (high value low bulk commodities, and services) |
| ICT | Better communication access, aiding migration, information on opportunities, access to knowledge and potential engagement in wider communities | Employment creation through improved knowledge of markets, reduced management supervision costs, access to wider knowledge base |
| Water supply | Improved health outcomes; time savings; lower costs | Limited |
| Sanitation | Improved health outcomes | Improved health outcomes (e.g. reduced pollution by non-poor households and others) |

Source: Jones (2004a).

⁴¹ At one end of the spectrum of wealth and power, this tension between general and local interests demands safeguarding highly vulnerable groups against dispossession and exploitation. At the other end, it can involve highly-advantaged and powerful groups engaging in the phenomenon of NIMBYism (Not-in-my-Backyard). Infrastructure development runs along a fault line of general versus local interests probably more often than any other sector, and hence can become highly politicized.

At the same time there may be genuine choices to be made between infrastructure investments that impact on aggregate growth and poverty reduction unequally: Between some investment with strong poverty related impacts, but limited implications for short-run aggregate growth – for instance, rural water supply; and those with strong growth focus, but with limited poverty reduction impacts.

Institutions often face difficult trade-offs that have to be made between the interests of different groups of poor and non-poor, and to share the benefits of infrastructure equitably. Participation of affected groups in decision making can help assure that equity *is* achieved - a theme we pick up in Chapter 4 on accountability and risk management.

Making the links: infrastructure, trade and logistics⁴²

But how do these inclusive development issues play out in East Asia as a region? As we saw in chapter 1, trade and regional integration have helped share the benefits of growth. The role of infrastructure in sustaining this process, in particular that of logistics, is the subject of this section. In our next section we'll trace out some of the links between infrastructure, growth and poverty reduction through a country case-study – that of Vietnam. In both examples we show how infrastructure can help make the process of economic growth poverty-reducing. This is at the core of inclusive development.

Getting the goods to market has been the key to East Asia's prosperity. Trade has been a crucial ingredient in the rapid growth of much of the region, and is likely to remain so. Sharing in the region's growth, particularly for the poorest in the region, will depend heavily on countries' ability to carry out infrastructure investments, and improve the efficiency of delivery of infrastructure services, in support of regional trade opportunities.

For some countries of East Asia – in particular landlocked Lao PDR and Mongolia – effective regional infrastructure *cooperation* will be crucial⁴³. Box 2.4 sets out how the participation of Lao PDR in the Greater Mekong Subregion (GMS) has enabled it to take advantage of its geographical location to pursue its development objectives through greater regional integration.

Superior logistics and low transport costs have been an important part of East Asia's outward orientated growth. This is particularly so in the region's most impressive long-term performers – Singapore, Taiwan (China), Hong Kong (China), Japan, Korea; but also in a number of developing countries – Malaysia, Thailand, China and the Philippines. (Figure 2.2).

And continuous logistics improvements will be required to increase the prosperity that many East Asian countries have enjoyed from trade, and bring prosperity to more of East Asia's citizens. As countries move progressively into more complex and higher-value manufacturing,

⁴² This discussion draws on Carruthers, Bajpai, and Hummels (2003), and Fujita and Hisa (2004).

⁴³ The case for regional infrastructure coordination, of course, is broader than just trade alone. Regional infrastructure coordination can play an important role in lowering infrastructure costs. It has been estimated, for instance, that a full-trade energy scenario within the Greater Mekong Subregion would save the member states more than ten billion dollars over a 20 year period when compared with the other extreme of individual national self-sufficiency (Crousillat, 1998). Interconnection would also significantly reduce future project related environmental impacts throughout the subregion.

and greater integration into global production chains, logistics requirements become more sophisticated. There is a premium on short transit times, certainty of delivery schedules, careful handling of goods, certification and standardization of product quality, and security from theft. The quality of freightforwarding, warehousing, storage, packaging, and trucking services becomes more important, as does e-business use and the associated telecommunications infrastructure. Logistics “software” issues are often as important as transport infrastructure “hardware”.

Box 2.4: Inclusive development on a regional scale: Opportunities for land locked Lao PDR

Lao PDR is a landlocked country bordered by Thailand, Cambodia, Vietnam, China and Myanmar. It is one of the poorest and least developed countries in the region, with per capita income estimated at US\$320 in 1998. Despite growth achieved in the last decade, the social indicators of Lao PDR are among the worst in the region. There are few economic opportunities in Lao PDR with its sparse population to address development challenges.

The membership of Lao PDR in the Greater Mekong Subregion (GMS) – which brings together five other neighboring partners, Cambodia, Myanmar, Thailand, Vietnam, and Yunnan Province, China – has enabled it to take advantage of its geographical location to pursue its development objectives through greater regional integration.

Over the 12 year course of its existence, the GMS has steadily evolved from a disparate collection of wary neighbors into a highly effective but informal collaboration that can now point to numerous successful cross border infrastructure investments.

GMS members have identified nine priority sectors: transport, telecommunications, energy, tourism, human resources development, environment, agriculture, trade, and investment.

To focus on regional integration through infrastructure,

individual sub regional forums have been established for electric power, telecommunications, and transport.

One of the concepts favored by the GMS is that of the development of economic corridors, focusing on road investments to improve access, institutional and policy changes for trade facilitation and transit policies to reduce logistic costs.

Traversing the sub region and reflecting primary transport routings, five economic corridors (two North-South; one East-West and two Southern) have been identified; several road investments are underway within these corridors while feasibility studies are addressing prospective railway improvements. Plans for regional power interconnections and telecommunications backbone have also been drawn.

These investments promote inclusive development for large remote areas of landlocked countries, such as Lao PDR and parts of China.

Among these undertakings is the Northern Economic Corridor project, which links Thailand and China through a short road link via northern and remote parts of Lao PDR.

In addition to hard infrastructure investments required to create a trade and transit corridor, the project included components that will benefit local

communities along the road. A social action plan comprising community roads, small water and sanitation schemes, education and HIV/AIDs awareness programs, and local capacity building programs were integral parts of the project design. These components were planned in a participatory process involving large numbers of ethnic minority groups.

The project was funded through resources from two primary beneficiaries, Thailand and China, with catalytic support from multilaterals.

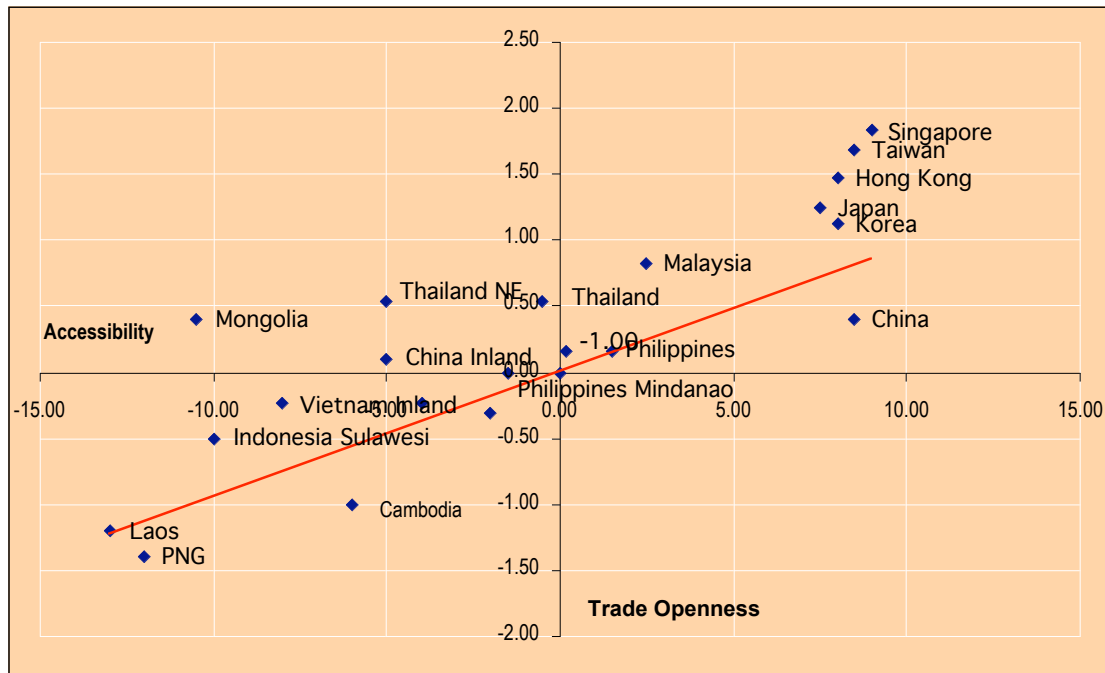
The multilateral role was three-fold: First, to help mobilize resources; second, to assist in project design to ensure not only greater regional connectivity, but that isolated regions like Lao PDR would be included; and third, to promote pricing policies that would maintain newly created assets without undue fiscal burden on participating countries.

A number of similar projects that seek to coordinate regional infrastructure are underway in the region. The development challenge is to ensure that they’re able to replicate, and scale up some of the features that are proving so important to Lao PDR. A challenge, in short, to design infrastructure that truly promotes inclusive development on a regional scale.

Source: ADB (2002).

Figure 2.2: In the most open economies of the region, logistics costs are typically much lower

Trade openness and accessibility, East Asia



Note: The measures of trade openness are based on those indicated in the Global Competitiveness Report, 2001-2002 (World Economic Forum, 2002). Values for countries not included in the Global Competitiveness Report have been added using World Bank assessment, in keeping with those of the World Economic Forum. All values have been normalized for the countries of East Asia. The measure of accessibility are based on the cost of transporting a standard TEU from the metropolitan region of the largest port to Hamburg. For inland regions, the land transport cost to the metropolitan region has been added.

Source: Carruthers, Bajpai, and Hummels (2003).

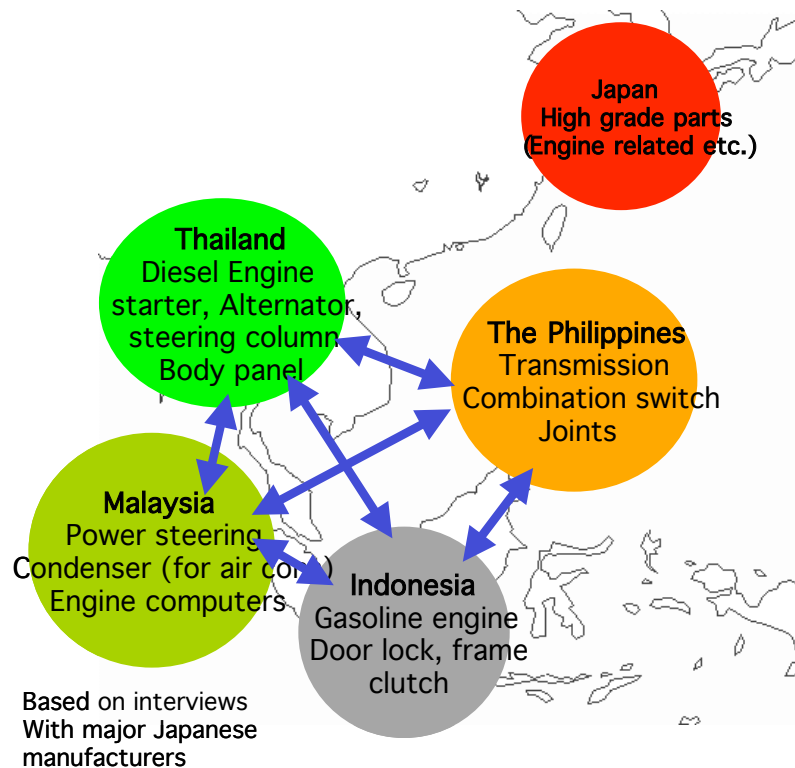
Improved logistics would reduce the wedge between prices paid by consumers and received by producers. Imported goods would become cheaper to inland consumers, raising real disposable income. A greater variety of goods would become competitive in those markets, raising living standards through increasing choice. Expanded input variety in manufacturing can increase productivity. For exports, ex-factory or ex-farm prices will increase, as will the associated land values and wages. Exports of a wider range of products to a wider range of markets would become possible.⁴⁴ Larger and larger areas of inland East Asia would be connected to international markets (and coastal domestic markets also).

Improved logistics is also a form of risk-management, and therefore opens up new economic possibilities. The product diversification just mentioned protects incomes against volatile prices for specific commodities. Similar arguments apply to market diversification. For agricultural commodities, efficient logistics allows surplus regions to sell to deficit regions, dampening price

⁴⁴ Evenett and Venables (2001) show that 40 percent of trade growth in East Asia comes from offering new products and finding new trade partners.

and income fluctuations. This is particularly important in countries such as Lao PDR, Cambodia and Vietnam where agriculture constitutes a large share of GDP and rural poverty is high. For a broader range of products, efficient logistics can help overcome seasonal obstacles to transport, and hence reduce price and income volatility.

Figure 2.3: Interdependence of auto manufacturing within ASEAN



Source: Nomura Research Institute, Ltd. (2004).

In a similar vein, uncertainty about delivery schedules induces high inventory levels as a form of risk management. Producers hold stocks of parts and components, and retailers hold stocks of finished products as an insurance against late delivery. Gausch and Kogan (2001) find that inventory holdings in developing countries are two to five times the US level, and estimate that merely halving them would lower production costs by an average of 20 percent, which would obviously bring more producers to market. Uncertainty in delivery schedules is caused by underdeveloped or poorly-maintained road and rail networks, congestion in urban areas where economic activity and population growth have outpaced infrastructure, onerous border procedures, poor security, and unreliable information flows (particularly where information and communications infrastructure does not allow sophisticated electronic data interchange).

And countries which have good logistics are more able to participate in global production chains. In East Asia this is particularly important for the electronics and automotive industries (see Figure 2.3 on Japanese auto manufacturing), in which the production process can include a

number of countries. Participation in global production chains can help enhance the value of exports – an especially important development for those countries in which manufactures are low skilled, and low wage.

East Asia has been largely competitive until recently – although performance varies across countries (see Figure 2.4 for some variation in logistics costs between and within countries, and Box 2.5 for an outline of how logistics capacity varies across countries in the region).

Box 2.5. East Asia’s logistics challenge – country differences

East Asian countries differ in their logistics capabilities, and their logistics challenges. One logistics study attempts to classify them into four groups.

In *Group 1* are those which are outward orientated, and are highly accessible, i.e. have low transportation costs and superior logistics (These include Singapore, Hong Kong (China), South Korea, and Taiwan (China)).

And then we have the developing countries which approach the Group 1 model to varying degrees.

Group 2 includes those countries which have open trade but face serious logistics challenges to inclusive development (Thailand, Philippines, Malaysia, China, Indonesia). In these countries,

policies and institutions to encourage multi-modal transport are at an early stage of development. Transport inefficiencies persist in some parts of these countries, particularly in rural areas. Penetration of 3PL logistics providers is generally low.

Group 3 includes the less open but accessible countries (Cambodia and Vietnam), while *Group 4* includes the landlocked and island countries (e.g. Mongolia, Lao PDR, Pacific island states).

The countries in Group 3 and Group 4 are either former socialist economies or are small island states dependent on a small number of commodities and tourism. History or geography largely explain the small role of international trade in their economies, although for some

the situation is changing rapidly (e.g. Vietnam).

In Group 3 and 4, countries lack adequate transport infrastructure. Roads are frequently closed or impose high vehicle operating costs, customs clearance is slow, border delays can be long, ports are often expensive and inefficient, and intermodal transport is generally poorly integrated. Government transport policies lack consistency and predictability, and policy coordination between different agencies and tiers of government is generally poor. Logistics services are rudimentary.

Source: Carruthers, Bajpai and Hummels (2003).

But right now the efficiency of East Asia’s logistics is falling behind. Costs of transportation represent a high proportion of the final price of goods. High logistics costs in East Asia stem from inadequate transport infrastructure, underdeveloped logistics and transport services, and bureaucratic (and sometimes corrupt) import and export procedures. Much of the problem is behind the border, and indeed beyond the port. The cost of internal access to ports is greater than the costs associated with the ports themselves or with maritime transport.⁴⁵ This has limited the spread of the benefits of trade-induced growth to areas beyond those adjacent to ports, and has created congestion near the ports⁴⁶. Reducing logistics costs is therefore crucial to inclusive development.

⁴⁵ To cite just one example, 63 percent of the cost of transporting goods from Chongqing to the West coast of the US is incurred before arriving at the Chinese port of export.

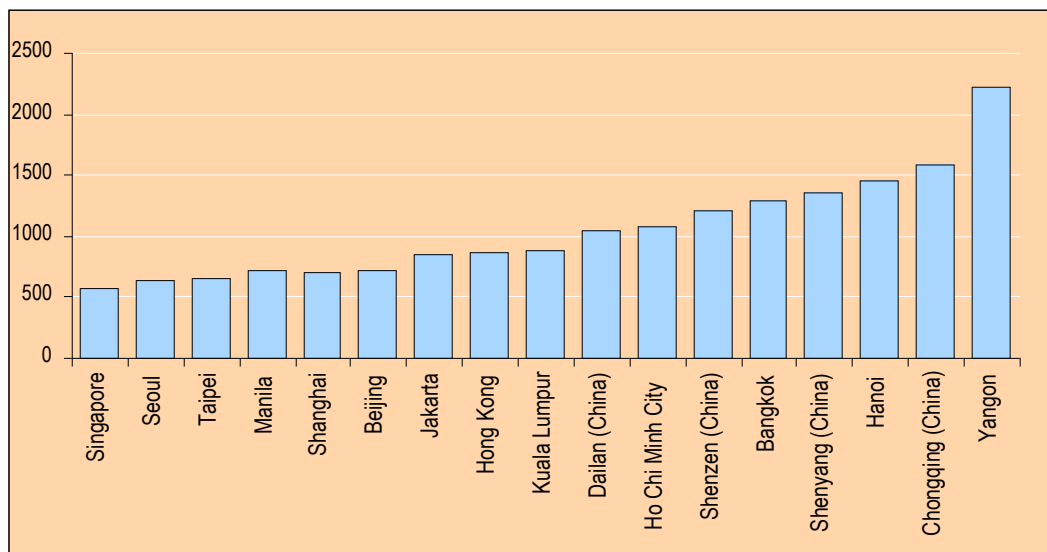
⁴⁶ For example, more than 90 percent of the FDI in export-oriented industries in China has gone to the four main coastal provinces. Similarly, the multiplier effect of the textile export boom in Cambodia has been limited mainly to areas easily accessible to the Sihanoukville port. On congestion, a study of Bangkok estimated that moving port-

Rapid growth in containerized shipping represents a revolutionary technological change, but presents perhaps the major logistics challenge in East Asia. Regional ports are increasing their efficiency in container handling, but are running out of berth space. Between 1980 and 2000, the capacity of the container fleet on East Asian routes increased by 20 percent a year, but the capacity of container berths by only 8 percent a year. However, expanding capacity requires greater land use, and municipalities are finding it increasingly difficult to accommodate the additional space requirements and the associated congestion in adjacent areas.

The solutions are multiple. In some cases, new ports are built, or feeder ports currently serving hub ports expand their direct services instead. In other cases, non-maritime port activities (mostly value-add production and packaging services) can be moved closer to the industries they serve, and rail links can be built from those industries to the port to avoid road congestion.

In East Asia, containers are often used only for maritime transport, and are stuffed and unstuffed in the ports. This eliminates most of the potential cost savings from containerization. Countries that encourage door-to-door movement of containers using multi-modal transport will be more competitive, and will spread trade benefits across larger areas. This is inclusive development *par excellence*.

Figure 2.4: Exports to Los Angeles - logistics costs of transport containers (US\$ / container)



Note: Export rate is for 40-foot container.
 Source: JETRO (2003)

related activities away from the downtown area would result in a 10 percent reduction in peak-hour trips (see UN ESCAP 2000).

Box 2.6: Integration of ports and land transport networks in South Korea

South Korea has one of East Asia's most developed land access networks to its ports, making use of road and rail links to the ports of Pusan and Kwangyang, the latter alongside a major steel mill and industrial complex and now in its second stage of development with a potential capacity of 2.4 million TEU (twenty foot equivalent unit, size of a standard container). Both Pusan and Kwangyang, have been planned in conjunction with major road and rail links to Korea's major manufacturing regions. Pusan in particular has adopted a strategy of encouraging people to live and work in the city, and has for this reason developed a new port area away

from the downtown area to allow the original port area to be redeveloped for residential and commercial use. This has reduced traffic congestion and air pollution, and improved logistics efficiency has made the new port easier to reach from the city's industrial areas and the rest of Korea.

The Yangsan inland container terminal has been constructed to relieve port generated traffic congestion and environmental problems resulting from the massive transport movements the port generates. Another inland container terminal (ICD) is under development in the center of the

Korean peninsula, to serve the growing industrial zones on the west coast and in the central region of the country. Together with the ports, the ICDs are part of a logistics system based on an advanced EDI and information service. In this way, Korea will be able to maintain the competitiveness of its industrial base, while moving its manufacturing away from the existing congested urban areas and spreading its benefits more widely throughout the country.

Source: Carruthers, Bajpai and Hummels (2003).

Five elements are essential to achieving this inclusion through multi-modal transport. First, adapting the rail and road vehicle fleet to carry loaded containers. Second, industry contracting out logistics to third-party suppliers of logistics services (3PL).⁴⁷ Third, regulatory reform to allow single trade documentation for all transport modes and clearance of containers away from port locations. Fourth, effective communications systems for freight forwarders. And last but not least, effective coordination between agencies responsible for different modes of transport.

Issues of coordination – the subject of our next chapter – feature prominently in the broader measures required to address East Asia's logistics challenge, in particular coordination across national boundaries, and in urban management.

Cross border facilitation would yield major efficiency gains in East Asia (although less so for countries that are already both highly accessible and highly open – see Box 2.6). This requires coordination between countries and could be achieved through harmonization and simplification of customs procedures, information sharing, customs modernization, establishment of transparent transit rules, and post-entry compliance audit.⁴⁸ For all countries, streamlining and coordinating security procedures in the post 9/11 environment would enhance trade facilitation.

Urban governments need to implement land use policies for the location of logistics infrastructure and ports which internalize externalities.⁴⁹ This is not easy. Firms cluster together because it is to their mutual advantage. The positive productivity externalities they experience

⁴⁷ In many industrialized East Asian countries barely 10 percent of trade-related transport services are contracted to 3PL providers, in contrast to almost a third of such services in OECD industrial countries.

⁴⁸ There are various ongoing regional and subregional initiatives in this area including those under the auspices of ASEAN, APEC, the Mekong River Commission, the Greater Mekong Subregion, and UNESCAP.

⁴⁹ This could include protecting rights-of-way for future road or rail development, land banking, and ensuring land is available for services that require easy access to ports, airports etc.

include the stimulus to innovation, information exchange, access to inputs, and specialized skills – the agglomeration economies. These become more important as production moves up the value-added chain, and are a significant part of the high-growth story in East Asia. But of course firms do not take into account the effect their own move has on overall congestion and pollution – the negative externalities – that can ultimately choke growth and the urban environment. The urban management policy challenge is to trade-off the positive and negative externalities for urban areas, and to do so in coordination with national or regional strategies for inclusiveness.

Focus on Vietnam: infrastructure and inclusive development

In our last section we looked at the connecting role that infrastructure plays across the region, enlarging markets and facilitating trade. In this section we drill down a little further into the role of infrastructure in fostering inclusive development in one of the region's best performers: Vietnam.

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 also been remarkably pro-poor, lifting around 20 million people out of poverty in less than a decade⁵⁰. In fact Vietnam is one of the best performers in East Asia in terms of elasticity of poverty to growth (4th out of an analysis of 23 middle and low income countries), with one extra point of GDP growth leading to a decline in the poverty rate by slightly more than one percent.⁵¹

Infrastructure and investment have been an important part of this story, complementing the country's many targeted poverty reduction initiatives. Approximately one third of GDP has been directed into capital investment. 44 percent of government investment has been in infrastructure, both national and local. Infrastructure investment has risen as a percentage of GDP, to 10 percent in 2003, as GDP itself continued to rise significantly (Figure 2.5)

Since 1993, continuous economic growth, fueled in part by infrastructure investment, has been the main engine for poverty reduction, complemented by targeted poverty reduction programs. The mutually-reinforcing relationships set out in Figure 2.1 are deeply embedded in the processes of inclusive development that characterize Vietnam recent development experience. Let's look at some of the evidence.

Infrastructure has impacted on poverty in Vietnam both through large-scale investments, and through smaller scale rural infrastructure. On the large scale, trunk infrastructure has played a critical role in creating linkages between growth centers and their surrounding rural areas. It has connected remote areas with power grids, trunk roads with feeder roads, and in the process,

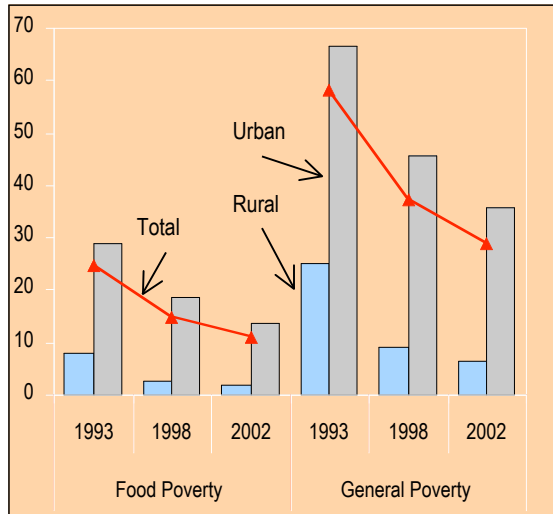
⁵⁰ The strong linkages between economic growth and poverty reduction in Vietnam can be attributed in part to the peculiar nature of poverty in the country. The poor are not a static group: a high share of the population is clustered around the poverty line and the poverty status of households fluctuates over time (with the exception of ethnic minorities). While this suggests a high vulnerability to shocks, it also implies that small increases in per capita income may be sufficient to lift the poor out of poverty.

⁵¹ The elasticity of poverty reduction to economic growth indicates the proportionate reduction in poverty (in percentage points) for every percentage point of GDP growth. See Larsen, Pham, Lan and Rama (2004).

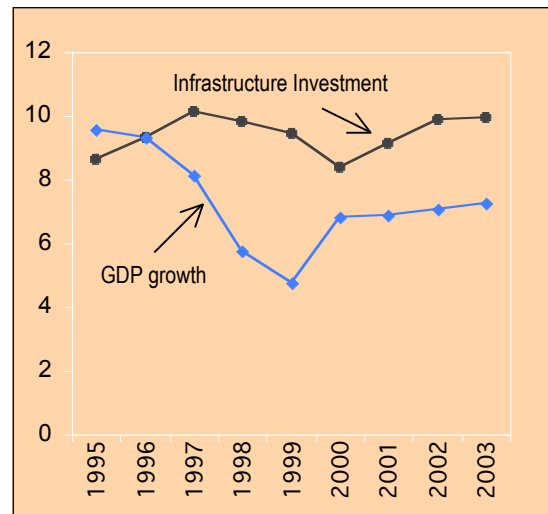
generated opportunities for business, promoted income diversification and off-farm employment⁵².

Figure 2.5: Vietnam, poverty, growth and infrastructure

Poverty incidence, 1993-1998, percent population



GDP Growth, percent, and infrastructure investment, Percent GDP, 1996-2003



Source: Source: Vietnam General Statistical Office (GSO). Infrastructure investment includes the following infrastructure categories: transportation, telecom, water, gas and electricity.

One systematic exercise to assess the impact of large-scale infrastructure investment on poverty reduction in Vietnam finds that investments in water and sanitation, and transport in particular have a large positive impact on poverty reduction at the provincial level. It suggests that Public investments in transport and in water and sanitation are highly progressive, lifting more people out of poverty in Vietnam’s poorest provinces (Larsen, Pham, Lan and Rama, 2004).

Among the country’s most important large-scale infrastructure undertakings is the improvement of National Highway No.5, which links Ha Noi, the national capital, and Hai Phong in the Red River Delta Region. Together, these two cities comprise northern Vietnam’s major growth centres. With the improvement of National Highway N5 and the expansion of Hai Phong Port, the transport corridor has enhanced the access of Hanoi to global markets by improving land and sea transport. FDI to major industrial zones has increased significantly, particularly since 2000, driving industrial and export growth in the north.

⁵² These impacts have been the subject of a joint government / donor review of infrastructure in Vietnam, as part of Vietnam’s Comprehensive Poverty Reduction and Growth Strategy. Projects examined as part of the review included improvements to the National Highway No. 1, the My Thuan bridge, the North-South 500 kV transmission line, in addition to the Hanoi-Hai Phong northern transport corridor, (see Grips Development Forum, 2003, for details)

Table 2.2: Comparison of the growth rate and poverty reduction rate of each province in the Red River Delta region

| | Location | Annual growth rate / capita (%) 1995-2000 | Reduction Rate of poor household (%) 1998-2000 |
|------------------|----------|---|--|
| Ha Noi | A | 6.9 | 61 |
| Hai Phong | A | 4.2 | 40 |
| Hai Duong | A | 6.0 | 42 |
| Hung Yen | A | 7.6 | 23 |
| Bac Ninh | B | 8.8 | 44 |
| Vinh Phuc | B | 11.9 | 46 |
| Quang Ninh | B | 5.1 | 32 |
| Ha Tay | | 5.4 | 42 |
| Ha Nam | | 5.7 | 18 |
| Nam Dinh | | 4.1 | 27 |
| Tay Binh | | 4.2 | 4 |
| Ninh Binh | | 5.0 | 44 |
| Thai Nguyen | | 2.3 | 34 |
| Phu Tho | | 5.3 | 39 |
| Bac Thuan | | 4.7 | 37 |
| Regional Average | | 6.1 | 35 |
| National Average | | 5.7 | 27 |

Top five provinces in each category in bold

A: Provinces located along National Highway No 5

B: Provinces connected with Ha Noi, Hai Phong Port by other National Highways

Source: General Statistics Office of Vietnam

An interview survey with over 70 FDI firm managers suggests that nearly 90 percent of new investments would not have been realized without the improvement of NH5 and the Hai Phong port. The survey indicates that managers were attracted by cost reduction in transporting imported inputs; time-saving in delivering raw-materials and final products; and improved coordination of production and sales schedule.

Most of the provinces in the Hanoi-Hai Phong corridor achieved faster growth in per capita income and reduction in the number of poor households, compared to the average for the Red River Delta or the whole country (Table 2.2).

And growth has now spread to neighboring areas, particularly Hung Yen and Hai Duong provinces (located between the two economic hubs), with similar transformation of the rural economy. Rural households have diversified their agricultural production (from rice to fishery and poultry) and have been increasingly engaged in new business opportunities. More convenient transportation has also spurred demand for tourism in Ha Long Bay, in effect, extending the corridor into a Hanoi-Hai Phong-Ha Long development triangle.

But Vietnam has also concentrated on the small scale. Enormous investments have been made in rural roads – reducing the number of communes lacking all-season road access to district centres by over 50 percent – with significant effects on poverty.

One study into these rural road investments suggests that the establishment of a new road in a village raised the per capita income of households by 30 percent between 1993 and 1998, after controlling for other factors, such as household size and education (Deolalikar, 2001). Moreover, the spatial location of roads increased the household probability of moving out of poverty by 68 percent over the same period of time. It showed that rural roads expanded school enrolment of children at all levels, and improved the utilization of public health services. And the spatial and economic benefits of rural roads were significantly larger in poorer provinces than in the richer ones.

Another study into the marginal returns in agricultural growth and poverty reduction to various kinds of government spending suggests that the payoff of investment in roads is second only to that of investment in agricultural research. Returns to road investment proved higher than those in even education⁵³ (Fan, Huong and Long, 2004).

But as important as these achievements have been, Vietnam is in no position to rest on its laurels. Access to basic infrastructure services has not been equal, and the degree of this inequality is increasing. The percentage of the population in the lowest income quintile with access to clean water is 22.7 percent, less than half than the national average. It is also striking that only 2 percent of the population in the lowest income quintile has access to hygienic latrines, compared with 70 percent for the top quintile of the population

Increasing inequality, particularly between urban and rural areas, raises new infrastructure challenge⁵⁴. On the one hand, infrastructure can be used to continue to reach into those isolated regions who's inhabitants are cut off from services, and from economic participation. But rapid urbanization is also placing significant strain on urban infrastructure, and the capacity of urban managers to keep up with demand. New pockets of poverty are emerging in peri-urban settlements.

And as the complexities of the infrastructure challenges multiply, and the scale of the risks increases, Vietnam will be increasingly unable to sustain the inefficiencies that characterize both its coordination, and delivery of infrastructure and infrastructure services.

⁵³ The authors found that for every billion dong spent on agricultural research, 339 poor people would be lifted above the poverty line. Road investment yields the second largest return, with every billion dong spent on roads lifting 132 poor people above the poverty. For every billion dong spent on education, 76 poor people were lifted above the poverty line.

⁵⁴ Between 1998 and 2002, the rate of poverty reduction in rural areas was only 5.4 percentage points against the urban figure of 7.1 percentage points. Poverty among ethnic minorities has decreased by only 2 percent (World Bank, 2003b). More than 50 percent of the poor live in three regions (Northern Uplands, North Central Coast and Central Highlands), which account for only 34 percent of the total population.

Box 2.7: Inclusive development: transport access for the disabled

Including individuals with disabilities is an important factor to consider during the planning and design phase of infrastructure projects. Equally important is rectifying existing infrastructure deficiencies, which may hamper the quality of life of disabled persons by denying them the ability to effectively utilize their surrounding environment.

One important means of inclusiveness is to address public transport design to enhance access and safety. Four major disability groups should be considered:

- orthopedic: ambulant and non-ambulant (wheelchair users)
- sensory: visually impaired and hearing impaired
- cognitive: mental, developmental, and learning disabilities
- multiple: combination of any or all of the above

Individuals with orthopedic disabilities are generally those with locomotive disabilities that affect mobility. Those who are wheelchair users face a particular challenge in developing countries—the spatial need of wheelchair users often exceeds that of persons with other types of disabilities, and the need for provision of ramps, curb-cuts and elevators is critical. Individuals with sensory impairments need visual signs and tactile clues such as route finders, and adequate signage must be provided to increase directional clarity for the hearing

impaired. Disabled individuals who are cognitively challenged and those with multiple disabilities need a combination of the above provisions.

Some mass transit systems developed recently in the East Asia region do include full accessibility features – sometimes as the result of campaigns by disability advocacy groups during the project planning stage. The new Bangkok underground system, Malaysia's PURTA mass transit system, and Beijing's new subway and light rail system under development include barrier-free components in their design. Manila is betting on the bus rapid transport (BRT) system to dramatically improve the accessibility of persons with disabilities. The BRT utilizes buses linked by threes or fours with dedicated corridors running along a 22 mile highway that surrounds the city. These buses have low floors for ease of entry and exit, tend to move at a uniform speed and stop only at designated stations. BRT systems are currently operating in various Asian cities, including Jakarta and Shijiazhuang, with a system under construction in Beijing, and in the planning stage in Shanghai, Bangkok, Chengdu, and Chongqing.

Whenever new infrastructure is constructed or new vehicles are bought, access features that serve most passengers who are considered disabled can be incorporated at

relatively low-cost. For example, elevator installation at 18 stations of the Bangkok underground system cost approximately 46 million Baht (about USD \$1.1 million) —out of a total of 105 billion Baht (about USD \$2.6 billion) in construction costs for the whole system—or roughly .0004 percent of total costs. However, retrofitting an existing system is much more expensive. The cost of installing just one elevator in an existing New York city subway station is approximately USD \$2 million.

Consequently, city planners need to incorporate access provisions in their planning at the earliest stages. Development banks can be helpful by adopting policies for universal and inclusive design for built environments and public transport in infrastructure projects they finance. These institutions can also provide specialist expertise.

Finally, one critical consideration concerning disability issues and infrastructure in East Asia is the emergence of an ageing society. Disabilities—or degrees of impairment—increase with age, even in seemingly healthy individuals. Infrastructure planners have time now to plan for this demographic shift, and to adequately provide enabling environments for all members of society.

Source: Takamine (2004).