

**LINKING ECONOMIC GROWTH AND POVERTY REDUCTION
—Large-Scale Infrastructure in the Context of Vietnam’s CPRGS—**

CONCEPT PAPER

This paper outlines the main concept and approach envisaged under the study on the role of large-scale infrastructure in economic growth and poverty reduction in the context of CPRGS. The study is being conducted by the GRIPS Development Forum¹ under the initiative of the Government of Japan, and with close coordination with the Government of Vietnam (through the Ministry of Planning and Investment) and donors and institutions involved in infrastructure development.

1. Introduction

This study responds to the initiative by the Government of Vietnam to expand the Comprehensive Poverty Reduction and Growth Strategy (CPRGS) to include the role of large-scale infrastructure in economic growth and poverty reduction. This initiative is based on the agreement at the December 2002 Consultative Group (CG) Meeting for Vietnam (held in Hanoi), and the government is planning to present the updated version of CPRGS at the next CG Meeting, after consulting with various stakeholders concerned.

The study aims at providing an intellectual input to the current effort by the government on the expansion of CPRGS, and is built on the ongoing government-donor partnership. While the expansion of CPRGS itself will be conducted under the ownership of the Vietnamese government, several donors including the World Bank, the ADB, Japan, and UK (which are actively involved in the country’s infrastructure development) have expressed their willingness to assist the government in parallel—particularly in the area of establishing an analytical framework regarding how large-scale infrastructure can contribute to sustainable growth and poverty reduction in Vietnam².

2. Basic Premise and Main Issues to be Addressed

2-1. Economic Growth and Poverty Reduction

There is broad consensus that growth is essential to sustained poverty reduction, although it may not be a sufficient condition. At the same time, recognizing that recent discussions on pro-poor growth tend to be narrowly focused on direct poverty-targeting measures, there has been increased awareness of the need to analyze how to generate a dynamic growth process, while ensuring social equity (“inclusive growth”) in the country-specific context³.

¹ The GRIPS Development Forum is an independent policy research unit within the National Graduate Institute for Policy Studies (Japan). The study team collaborates with national consultants, CONCETTI (contracted by JBIC). Specific questions on this study can be addressed to Izumi Ohno (i-ohno@grips.ac.jp) and Yumiko Niiya (y-niiya@grips.ac.jp).

² Also, please see appendix, for the TOR elaborated by the Japanese Government (i.e., the Embassy of Japan).

³ For example, the progress report presented at the 2002 World Bank Annual Meeting (*PRSP Progress in Implementation*, dated September 13, 2002) notes the importance of in-depth, country-specific understanding of source of growth, elements which make growth pro-poor, and concrete policies which make pro-poor growth possible. The PRSP Unit of the World Bank (PRMPR) is currently organizing a series of studies around these topics.

To achieve sustainable growth and poverty reduction, interaction among the following three channels is critically important:

- (i) *Direct channel*, which impacts the poor directly (such as programs for basic health, sanitation, education, and rural roads);
- (ii) *Market channel (or trickle down)*, where growth helps the poor via economic linkages (such as inter-sectoral and inter-regional labor migration, increasing demand, reinvestment through formal, informal and internal finance); and
- (iii) *Policy channel*, which supplements market channel (such as subsidies, fiscal transfer, public investment, and proper design of trade, investment and financial policies).

Infrastructure can play a vital role through each of these channels. For example, basic rural infrastructure can address poverty problems through channel (i). Large-scale infrastructure can contribute to growth and poverty reduction through channel (iii), but also serve as a pre-condition for realizing channel (ii) and affect the patterns and quality of growth. In fact, the 2003 Spring Meeting of the World Bank/IMF Development Committee (held in Washington D.C., April 2003) emphasized the critical role of investment in infrastructure for economic growth and its linkages with the provision of social services and the attainment of the Millennium Development Goals (MDGs). Furthermore, greater attention is being paid to the importance of addressing infrastructure needs, particularly in the context of improving the investment climate in respective developing countries and the living conditions of their peoples. [Box 2-1-2]

The Vietnamese government is keenly aware of the importance of growth promotion in poverty reduction and recognizes the interaction of these channels in this regard. The CPRGS sets an economic target of 7.5 percent of annual growth during 2001-2005 and proposes priority policies and resource requirements to achieve this goal (channel (iii)). At the same time, the CPRGS and the Public Investment Program (PIP) include the national targeted program for poverty reduction, and the government plans to double its funding, compared to the 1996-2000 period (channel (i)). (SRV2002a, SRV2002b)

Box 2-1-2: Infrastructure and MDGs

Statement by Mr. Shengman Zhang, Managing Director of the World Bank

I know of no country that has achieved continuous development without a corresponding development of infrastructure. It would be like trying to drive a car without gas. It is hard to imagine poor people being able to link up with technology and markets if they do not have access to modern energy sources such as electricity. Another link is more indirect, but just as important, particularly from the perspective of the Millennium Development Goals: access to clean water and sanitation services contributes to reduction in child mortality. In addition, reliable transport services tend to facilitate access to schools and increase enrollment.

Thus, infrastructure development, economic growth, and poverty reduction are all connected, although causes and effects may vary. Looked at another way, to the extent that the Millennium Development Goals are ultimately about improving human welfare, we must pay attention to both social development issues and infrastructure investment needs. The two mutually reinforce each other.

(Quoted from “The Bank should Invigorate Infrastructure Lending: Interview with World Bank Managing Director Shengman Zhang” in the World Bank Newsletter, *Transition*)

Source: World Bank [2003a], *Transition* (The Newsletter About Reforming Economies), Volume 14, No. 1-3, pp.1-3, <http://www.worldbank.org/transitionnewsletter>.

2-2. The Approach

The study will focus on large-scale infrastructure (which benefits across provinces) in the transport and power sectors, in view of their core functions as economic and industrial infrastructure to promote economic growth. This type of infrastructure primarily corresponds to the group “A” projects classified in the PIP. Moreover, the transport and power sectors account for the largest share of public investment and donor assistance in Vietnam. [see Figures 3-2-1, 3-2-2]

Economically, large-scale infrastructure is a part of investment. As such, investment has two different impacts on the economy, the one through the supply-side effect of increasing the capital stock and the other through the demand-side effect of providing additional effective demand. However, as distinct from machine and equipment, investment in large-scale infrastructure exhibits the following properties arising from its nature as "public goods."

- Low excludability or congestion in use (up to some limits)
- A high degree of indivisibility
- Large initial investment
- Complex and indirect effects on production (less direct than private capital)
- Often built by public investment and ODA, especially in low-income countries

Let the production function be:

$$(1) Y = A \cdot F(L, K) + u$$

where Y, L, K are output, labor and capital, A is efficiency and u is a random shock. Due to the special properties noted above, large-scale infrastructure investment should be construed as contributing to the upward shift in A rather than a regular accumulation of K.

On the demand side, let the national income-expenditure equality be:

$$(2) Y = C_p + C_g + I_p + I_g + (X - M)$$

where C_p , C_g are private and government consumption, I_p and I_g are private and government investment, and X and M are exports and imports. Construction of large-scale infrastructure belongs to I_p or I_g depending on the source of funding. As I_p or I_g is increased as an autonomous spending, it will trigger the usual Keynesian multiplier effect.

Furthermore, large-scale infrastructure has a more direct effect on the provision of health and education services. If equation (1) above is re-interpreted as the production function of such services, better infrastructure will improve the productivity of available medical staff or equipment by expanding the production possibility frontier (i.e., raising A).

Transport and energy, like other infrastructure services, are intermediate inputs. This is so particularly for the investments in large-scale infrastructure. They make possible other activities that increase the productivity and enhance the welfare of poor people, and they contribute to economic growth that may provide resources to reduce poverty. Other political, socioeconomic, and cultural factors are likely to be important determinants of the poverty impact of transport and energy investments (ADB2001).

The study primarily relies on qualitative analysis. Largely due to the multiplicity of linkage effects, the methodology for quantitative analysis in this area is yet to be established. The existing literature on poverty impacts of infrastructure⁴ is confined to: (i) the evaluation of rural infrastructure (where direct

⁴ The following literature contains comprehensive review of the survey of the existing studies: C. Willoughby, "Infrastructure and Pro-Poor Growth: Implications of Recent Research" revised draft, (December 1, 2002); D. Booth, L. Hanmer, and E. Lovell, *Poverty and Transport*, ODI (June 2000); ADB "Assessing the Impact of Transport and Energy Infrastructure on Poverty Reduction," Interim (Stage 1) Report (2001).

linkages can be traced through econometric analysis of household survey data); and (ii) aggregate, macroeconomic models, typically using the Computable General Equilibrium (CGE) model. It is expected that the fuller, quantitative analysis would be conducted in the subsequent stages, if judged necessary.

Therefore, the study will: (i) develop an analytical framework for assessing the role of large-scale infrastructure in the above-mentioned channels (see the above section 2-1), (ii) clarify various linkages among infrastructure, growth, and poverty reduction in the Vietnamese context, based on case analyses, and (iii) suggest their implications for the country's future development challenges. Lastly, it will (iv) highlight selected issues, which are considered essential for Vietnam's future infrastructure development and donor partnership, drawing on the lessons learned from the experiences so far. Thus, the study views infrastructure as an integral part of overall development strategy and pays special attention to its complementarity with other policies, such as social investment and growth strategy.⁵

The study does not intend to propose the prioritization among individual projects or develop an infrastructure investment strategy. It is understood that these tasks would be handled separately by the Vietnamese Government under its future cycle(s) of strategic planning.

Box 2-2-1 shows the tentative outline and schedule of the study. These are designed to provide timely support to the government-led process of CPRGS expansion.

⁵ The 1994 World Development Report, which takes *Infrastructure Development* as its theme, states that physical infrastructure (transport, power and communication) investment is not sufficient on its own to generate sustained increase in economic growth. By stressing the importance of service delivery, WDR94 urges to address both the hard and soft aspects of infrastructure.

Box 2-2-1: Tentative Outline and Schedule of the Study

Outline

- 1. Introduction**
- 2. Basic Premise and Main Issues to be Addressed**
 - Economic growth and poverty reduction
 - Approach and methodology
- 3. Specific Features in the Vietnamese Context**
 - Patterns and sources of growth and poverty reduction
 - Past progress in infrastructure development
- 4. Linkages among Growth, Poverty Reduction, and Infrastructure**
 - Analytical framework for linkages: hypothetical illustration
(Linkage 1) investment-inducement effect
(Linkage 2) regional economy activation effect
(Linkage 3) effective demand effect of infrastructure construction
 - Case studies
- 5. Vietnam's Development Challenges and the Role of Infrastructure**
 - Enhancing competitiveness in the globalized economy
 - Reactivating regional economies, particularly the promotion of rural development
 - Strengthening the effectiveness of pro-poor targeted measures.
- 6. Key Issues for Future Strategic Planning of Infrastructure Development and Aid Partnership**
 - Promoting synergy and complementary effects between infrastructure and social investments
 - Fostering an integral vision toward "inclusive growth"
 - Building capacity to ensure "sustainability" of infrastructure
 - Government-donor partnership

Schedule (2003)

- Mid-April: Commencement of the work by GRIPS Development Forum
- April 23-30: 1st mission to discuss the initial concept of the study and possible areas of collaboration with the partners concerned.
- May: Commencement of the work by national consultants/CONCETTI (case studies, data collection)
- June 11-28: 2nd mission (main mission)
- End-August: Draft report
- Mid-September: 3rd mission (including a workshop to discuss the draft report)
- End-September: Final draft report

Note: The above may change, subject to data availability and future discussions with the partners concerned.

In what follows, selected issues relevant to the core part of the analysis (corresponding to the items 3-5 in the above outline) will be explained.

3. Specific Features in the Vietnamese Context

In the analysis of linkages among large-scale infrastructure, growth and poverty reduction, it is critically important to understand the features specific to Vietnam. These include: (i) the patterns and sources of growth and poverty reduction; and (ii) progress of infrastructure development over the last decade.

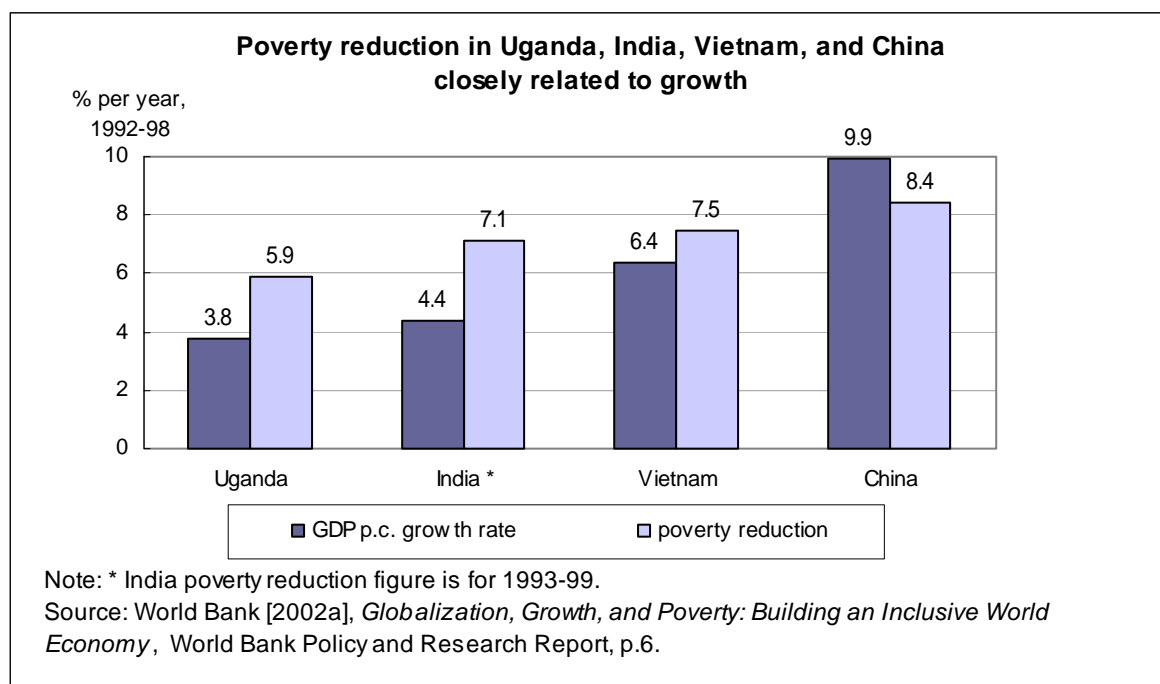
3-1. Patterns and Sources of Growth and Poverty Reduction

Vietnam is frequently cited as one of the successful globalizers which have achieved rapid and fairly

equitable growth during the past decade⁶. As the result of high and sustained economic growth, the country has already halved income poverty during the past decade and did achieve one of the important goals in MDGs. [Figure 3-1-1]

Figure 3-1-1: Vietnam's Achievement in Poverty Reduction

As Vietnam has integrated, it has had a large increase in per capita income and no significant change in inequality. Thus, the income of the poor has risen dramatically and the level of absolute poverty has been cut in half in 10 years. Among the very poorest households, survey evidence shows that 98 percent became better off during the 1990s. This improved well-being is not just a matter of income. Child labor has declined and school enrollment has increased. Vietnam's export directly provided income-earning opportunities for poor people: exports included labor-intensive products such as footwear and rice, which is produced by most low-income farmers.



The findings of two VLSS (conducted in 1993 and 1998) provide valuable insights into the nexus between growth and poverty reduction in Vietnam. Three aspects are particularly noteworthy⁷.

The patterns and sources of growth in the past:

- During 1993-98, the main source of poverty reduction was rapid growth, particularly from agricultural liberalization, improved agricultural productivity and diversification of on-farm activities. The favorable terms of trade for primary, agricultural commodities also provided the supportive environment. The average household incomes in the agricultural sector grew by 61 percent.(p.viii-ix, p.41)

Likely sources of growth in the future:

- The rural sector will continue to dominate employment in Vietnam over the short- to medium-term. However, Vietnam might not be able to replicate the success of agricultural diversification of the 1990s, which is now reaching its limits. (p. 41, p.148)
- In the future, the sources of growth are likely to be different from those in the 1990s. Greater

⁶ For example, see World Bank (2002a), *Globalization, Growth, and Poverty: Building an Inclusive World Economy*.

⁷ The below are primarily drawn from *VDR2000: Attacking Poverty* (Poverty Working Group 1999). The corresponding pages are indicated in the parentheses.

reliance will need to be placed on two other areas of growth, i.e., (i) off-farm employment and services in rural areas; and (ii) urban employment. These must play relatively more important role in poverty reduction in Vietnam. (p.41, p.148)

- Vietnam's human capital (and also its availability of labor relative to land) is very high compared to other countries in East Asia. Vietnam has untapped export potential in labor-intensive manufacturing⁸. In terms of resource endowments, it satisfies the preconditions to replicate the manufacturing export and employment success of other East Asian nations. (p.147, p.166)

The nature of poverty:

- In Vietnam, the poor and the rich are not static groups, and their living standards vary over time (with such exceptions as ethnic minority)⁹. A high proportion of the population is clustered just around the poverty line. While this suggests their vulnerability to shocks, it also means that even small increases in mean per capita expenditure will be quite effective in moving a large number of households over the poverty line. (p.101, p.173)
- Although the incidence and depth of poverty have declined in both rural and urban areas, urban areas have grown faster than rural ones (except the Red River Delta). The inequality in Vietnam is almost entirely due to the widening gap between rural and urban areas, rather than due to inequality rising within either rural or urban areas.(pp.69-73)

As stated in the CPRGS, Vietnam has long accorded high priority to social equity. The data suggest that public social expenditures are more equally distributed than household expenditures, playing an important re-distributive role¹⁰. When compared with other countries at similar level of income, Vietnam's social indicators are much better, as seen by the adult literacy rate of 93 percent and the infant and child (under five) mortality rate of 34 per 1,000 live births (2000 data, World Bank 2003b). Moreover, the Vietnamese government has the tradition of implementing eight national poverty programs targeted at ethnic minority groups in the mountainous areas and poor families in remote areas (or those under the "static" poverty). (SRV2002a) All these may suggest the effectiveness of creating income "opportunity" in reducing poverty, and thus the importance of "trickle-down" effects through backward and forward linkages.

In sum, in order to sustain the past gains in poverty reduction, Vietnam needs to make greater efforts in stimulating off-farm employment and urban employment growth, creating "opportunity" for the majority of population. Moreover, to fully exploit its potential for labor-intensive export manufacturing, efforts must be geared to raising productivity and international competitiveness. This is so particularly, as Vietnam's international integration has been proceeding very rapidly (such as AFTA entry and WTO accession). At the same time, the government must be conscious of the need to respond to emerging social problems in the growth process.

3-2. Past Progress in Large-Scale Infrastructure Development

Over the last decade, the Vietnamese government has consistently placed high priority on the rehabilitation and development of national infrastructure, such as trunk roads, ports, airports and power supply, as well as local infrastructure, allocating substantial amount of public investment to this end.

⁸ It is estimated in *VDR2000* that if Vietnam were to exploit fully its comparative advantages, manufacturing exports would represent around 25 percent of its current GDP and up to 1.6 million more jobs could be created in labor-intensive export manufacturing in the next three to five years.

⁹ Only about 40 percent of households were in the same expenditure quintile in the two periods of VLSS (1993, 98).

¹⁰ Based on the VLSS 1998 data, the poorest quintile receives 26 percent of primary education expenditures (Poverty Working Group 1999).

During 1996-2000, about 40 percent of the total public investment (state budget, state credit, and SOE investment) was directed to transport and power infrastructure¹¹. Moreover, since 1996/97, major infrastructure has received the largest proportion of ODA, particularly in the transport and energy sectors. [Figures 3-2-1, 3-2-2]

Figure 3-2-1: Broad ODA Trends 1993-2001

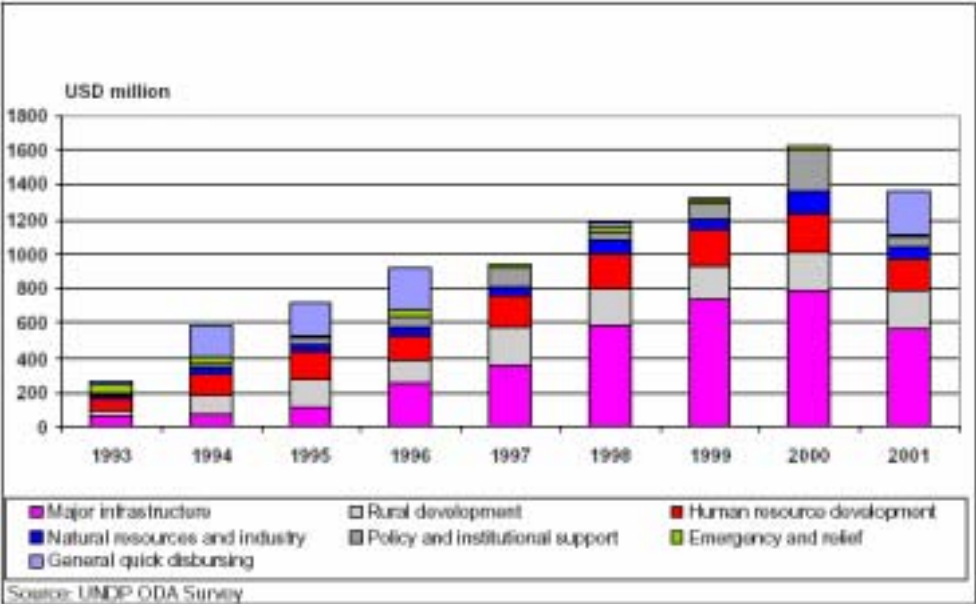
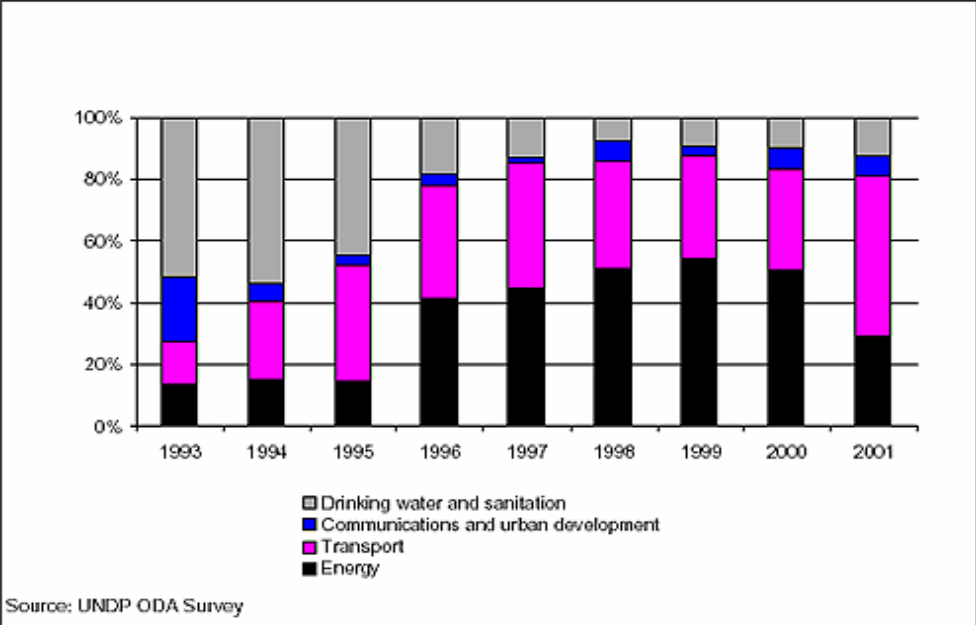


Figure 3-2-2: ODA Disbursements for Major Infrastructure



Source: UNDP [2002], *ODA Flows to Viet Nam*, <http://www.undp.org.vn/undp/fact/ODAflow.pdf>.

¹¹ During 1996-2000, the public sector was responsible for approximately half of all investment in the country (SRV 2002b). Here, ODA (which is directed to both state budget and state credit) is counted as public investment. For example, roads constructed by the Ministry of Transport (including ODA) are part of the capital spending of the state budget, while power-generation projects constructed by Electricity of Vietnam (including ODA on-lending) are classified as the state credit.

Infrastructure development in the 1990s and the resultant improvements in power supply and transportation are shown in Figures 3-2-3, 3-2-4 and map.

Figure 3-2-3: Improvement in Power Infrastructure

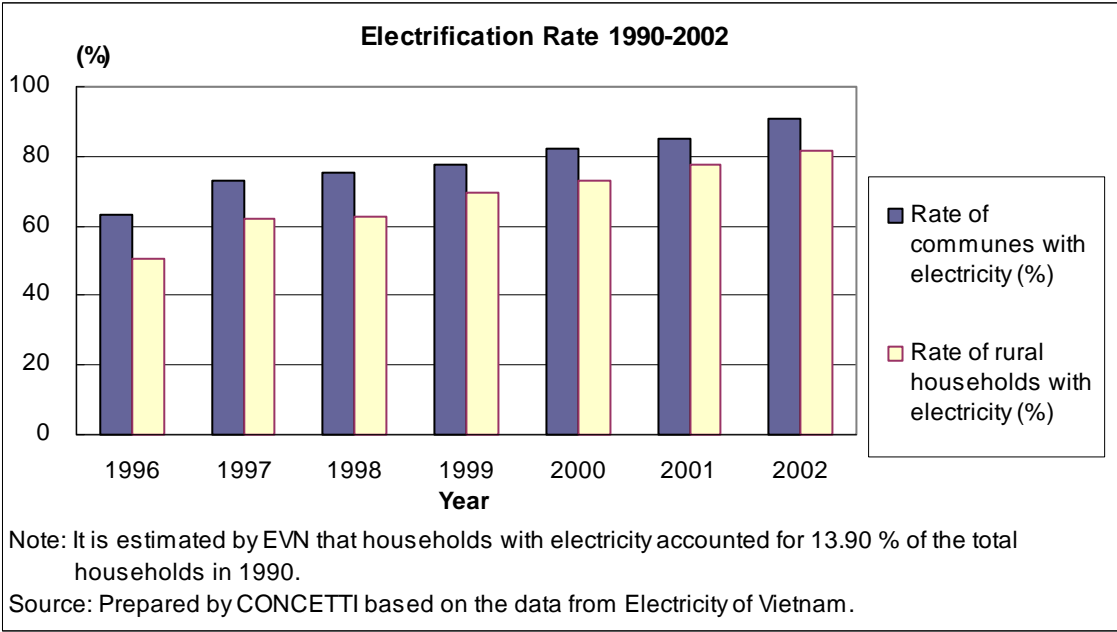
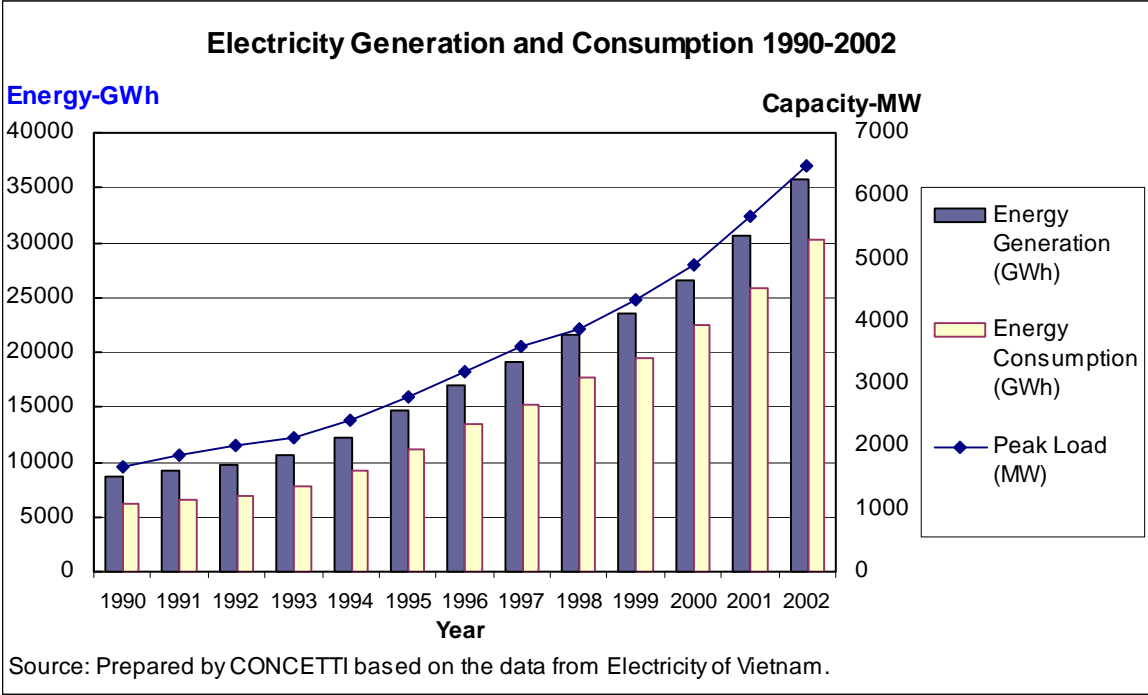
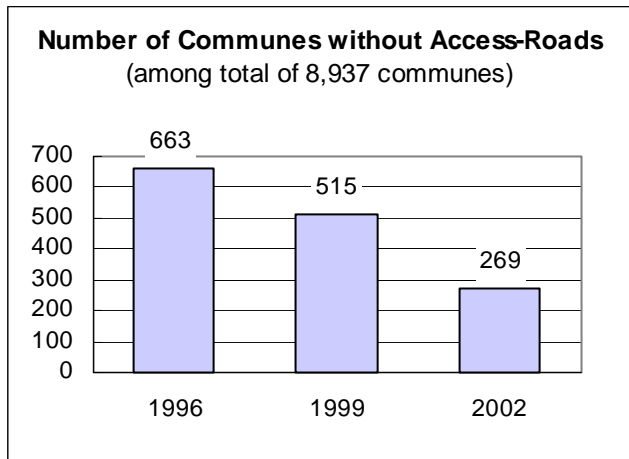
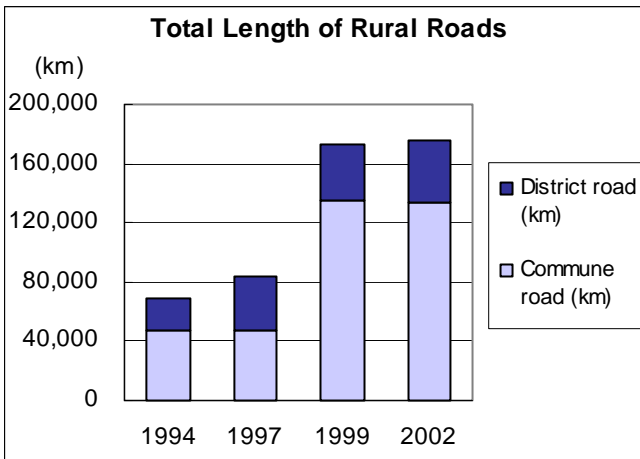
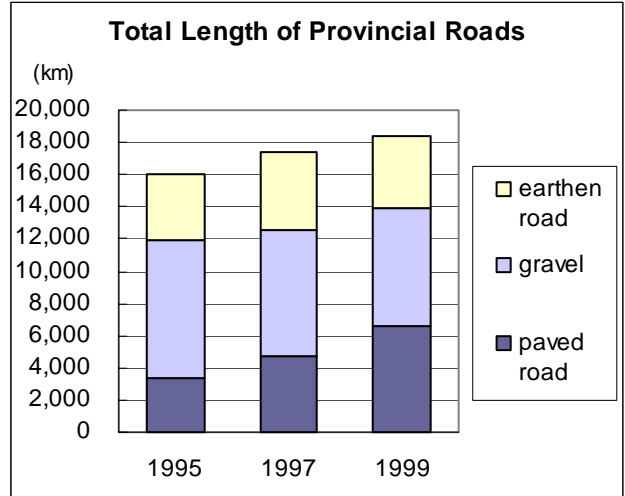
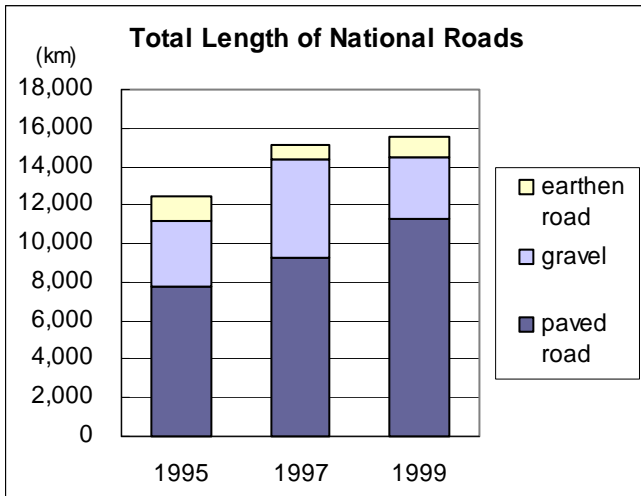


Figure 3-2-4: Improvement in Road Infrastructure



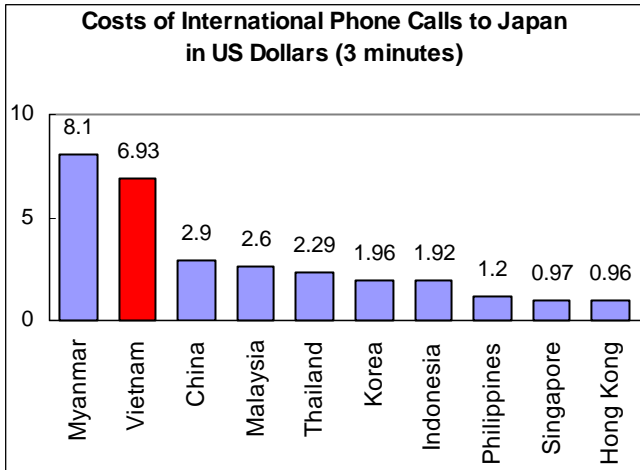
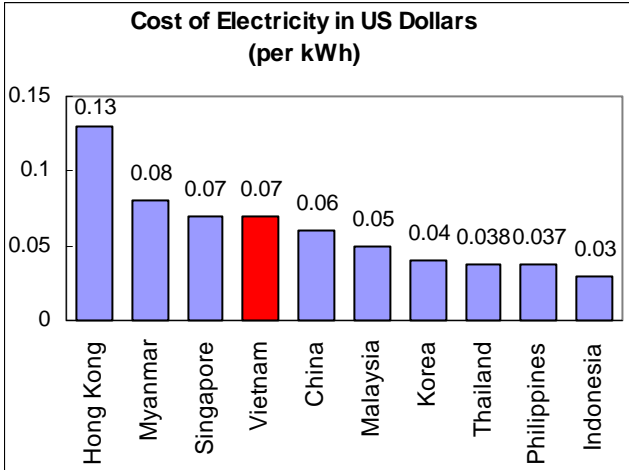
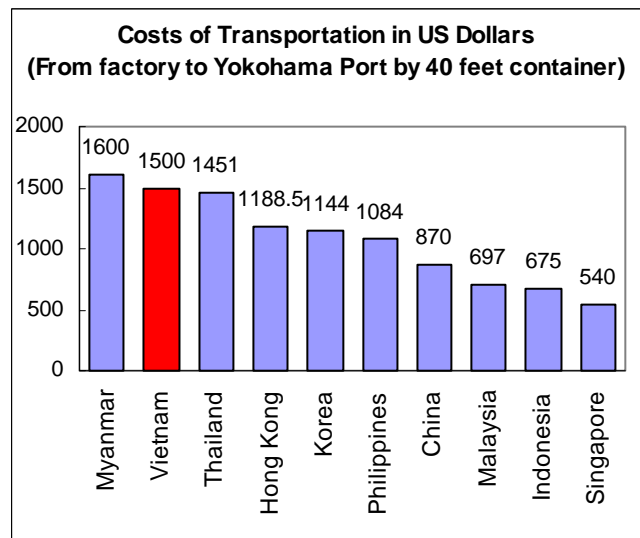
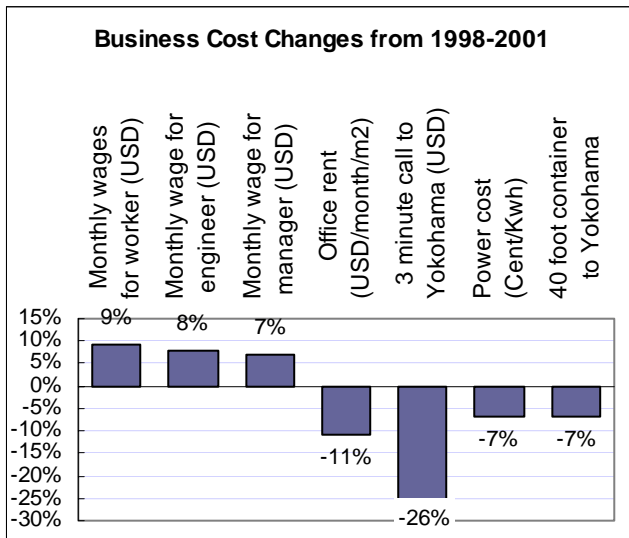
Source: Prepared by the study team based on the data from the Ministry of Transport, Transport Development and Strateg Institute and Japan International Cooperation Agency.

Map

Despite such improvements, Vietnam's infrastructure conditions remain insufficient—in both physical and quality terms. Figures 3-2-5 indicate the costs of key infrastructure services compared to its East Asian neighbors.

Figure 3-2-5: Costs of Key Infrastructure Services in Vietnam

Recently, there has been significant reduction in the costs of key infrastructure services in Vietnam. But, they are still high by the standards of its East Asian neighbors.



Source: JETRO [2002], *The Twelfth Survey of Investment -Related Cost Comparison in Major Cities and Region in Asia*.

4. Linkages among Infrastructure, Growth and Poverty Reduction

4-1. Analytical Framework: Hypothetical Illustration

It is widely acknowledged that investment in infrastructure services can contribute to sustainable growth by¹²:

- Reducing transaction costs and facilitating trade flows within and across borders¹³.
- Enabling economic actors—individuals, firms, governments—to respond to new types of demand in different places.
- Lowering the costs of inputs used in the production of almost all goods and services.
- Opening up new opportunities for entrepreneurs, or making existing business more profitable.
- Creating employment, including works (both as social protection and as a counter-cyclical policy in times of recession).
- Enhancing human capital, for example, by improving access to schools and health centers.
- Improving environmental conditions, which link to improved livelihoods, better health and reduced vulnerability of the poor.

There is very little empirical work concerning the impacts of large-scale transport and energy investments in poverty. In this sense, while focusing on rural infrastructure, the recent works by IFPRI (S. Fan, L. Zhang, and X. Zhang 2002) and ADB (I. Ali and E. Pernia 2003, A. Balisacan, E. Pernia, and A. Asra 2002) shed important light on methodologies and analytical frameworks for capturing the multiplicity and endogenous nature of linkage effects. Building on such preceding works, this study uses the following analytical framework to clarify various linkages through which large-scale infrastructure can/did contribute to sustainable growth and poverty reduction in Vietnam.[see Figure 4-1-1]

As explained in the section 2-2, there are two initial impacts of the development of large-scale infrastructure, which could lead to poverty reduction through economic growth (i.e., through the supply-side and the demand-side effects on the economy):

- (i) *Improved infrastructure services* (and the resultant cost reduction, increased availability and reliability of services) which, by promoting market creation and expansion, could attract FDI and domestic investment and expand output and productivity of rural/urban economies. These could result in job and income generation—both directly and indirectly¹⁴.
- (ii) *Effective demand of infrastructure construction* which, by increasing procurement of materials and labor force, could promote output expansion of rural/urban economies, thus generating jobs and income¹⁵.

Moreover, on the social dimension, better infrastructure services (particularly, with the availability of transport and power supply) could increase access to basic social/public services and thus improve the living conditions of the poor.

¹² Quoted from DFID [2002], *Making Connections: Infrastructure for Poverty Reduction*, p.6 (adapted from Booth et al 2000).

¹³ The recent World Bank study on the trade and logistics (Carruthers and Bajpai 2002) also highlights the importance of logistics costs in influencing the location of enterprises—both between countries and between regions within countries.

¹⁴ Indirect benefits of national infrastructure to poverty reduction are well recognized in *Making Connections* (DFID 2002). The report also proposes a 'joined-up' approach to infrastructure services by linking the national level to the local level.

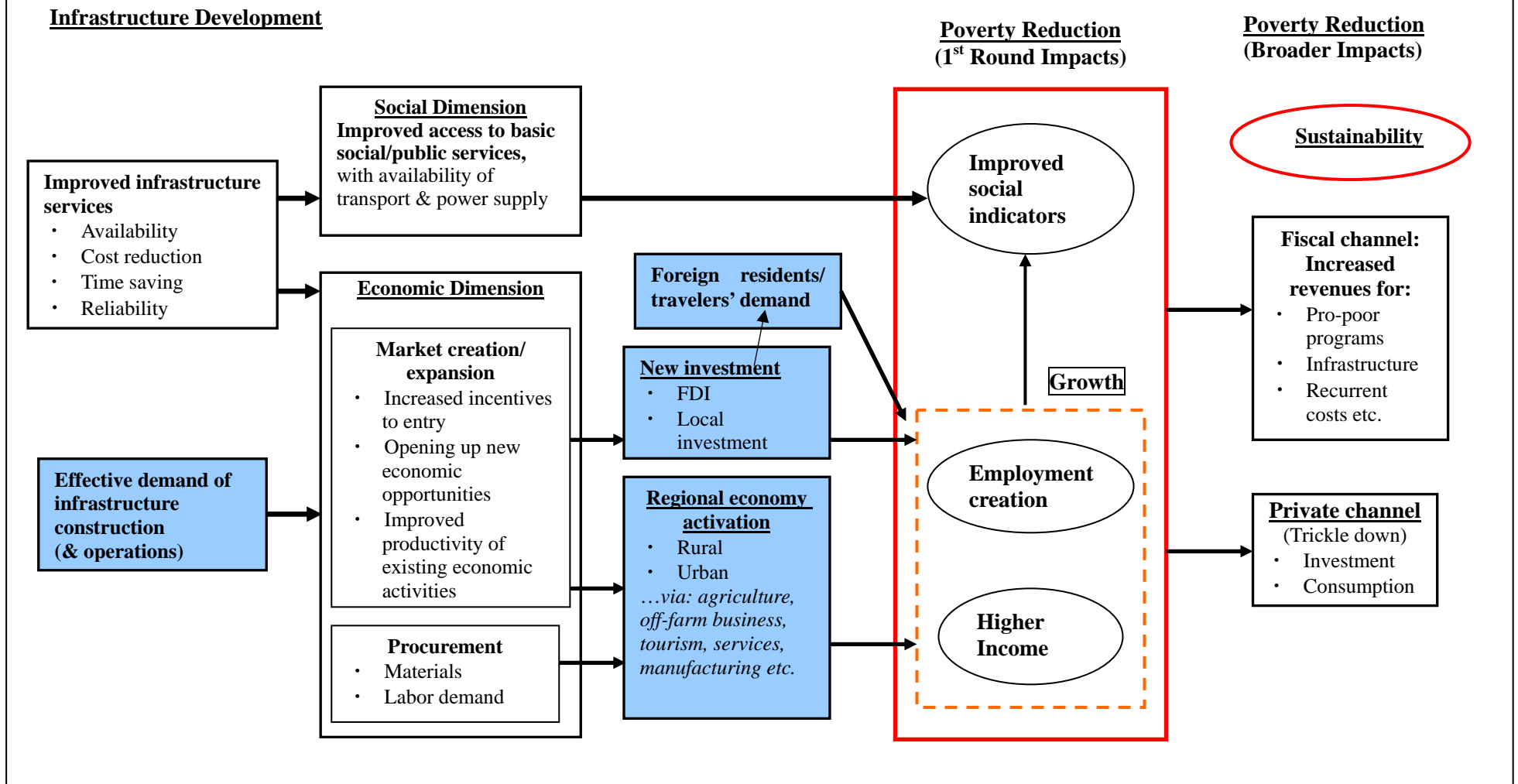
¹⁵ In general, public works on transport infrastructure has been used to reduce poverty through providing employment in recessions or in area of extreme need. Booth et. al (2002) contains examples of direct and indirect impacts of labor-based works (pp.44-45).

In addition, it is possible to expect broader and more general impacts through fiscal and private spending channels¹⁶. For example, increased fiscal revenues (through economic growth as explained in the above (i)-(ii)) could generate additional budget for pro-poor targeted programs, and thus improve the living conditions of the poor. Also, private spending could generate multiple-round impacts. This is the virtuous circle to make poverty reduction sustainable. The extent and feasibility of creating such a virtuous circle depend on the government's commitment and capacity to effectively implement pro-poor programs, as well as country-specific initial conditions (e.g., asset distribution, educational level, social structure).

Figure 4-1-1 indicates hypothetical illustration of such linkages. More specifically, the following examples indicate some of the possible linkages [Figures 4-1-2, 4-1-3, 4-1-4]. Case studies will be presented to examine the relevance and the extent of respective linkage effects. Also, efforts will be made to clarify factors associated with positive impacts of infrastructure development, together with identified constraints.

¹⁶ Ishikawa (2002) argues the need to balance the two sets of expenditures for poverty reduction, i.e., (i) "pro-poor targeted"; and (ii) "broad-based growth." In the latter, the expenditures contribute to GDP growth first and then poverty reduction, by way of increased savings, which are channeled through the fiscal and financial systems to address specific needs including poverty reduction. Klein et. al (2001) also states that these two are complements and that growth (with FDI as a key ingredient) is needed to fund the government's pro-poor programs.

**Figure4-1-1: Linkages among Large-Scale Infrastructure, Growth, and Poverty Reduction:
Hypothetical Illustration (Tentative)**

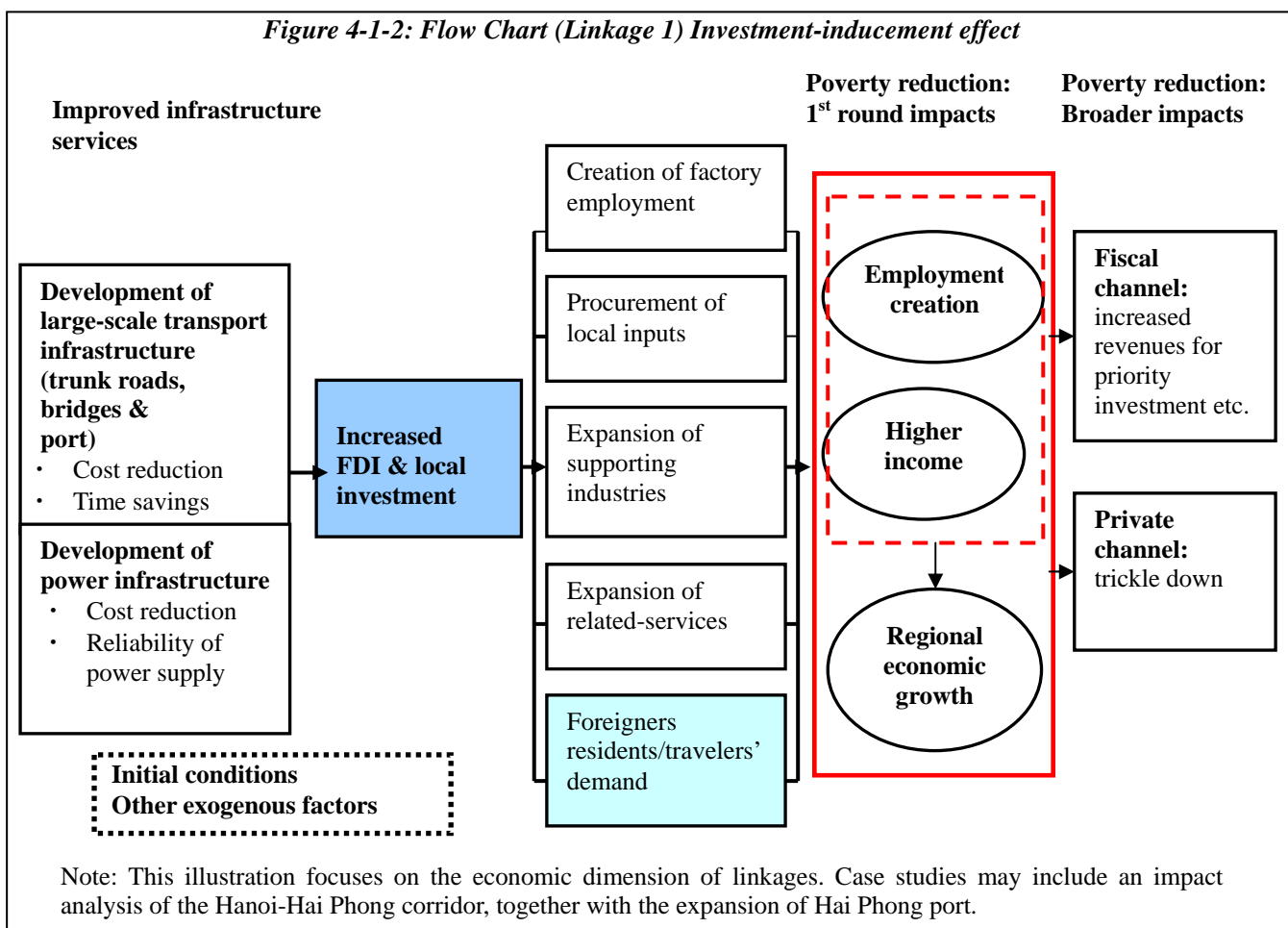


Linkage 1: Investment-inducement effect (FDI and domestic investment)

This is a channel through which new investment is generated by enhanced business climate, as the result of improved infrastructure services. For example, attraction of FDI and domestic investment could generate: (i) jobs and income at the newly invested firms; and (ii) jobs and income in the related industries/services, through increased procurement of local inputs, materials and parts¹⁷.

Moreover, FDI could induce *foreigners' demand effect*. For example, increased demand derived from foreign residents and travelers could promote such business activities as hotels, tourism, commercial activities, real estate, and generate jobs and income.

Figure 4-1-2: Flow Chart (Linkage 1) Investment-inducement effect



¹⁷ In assessing the effects of FDI on poverty reduction, Aaron (1999) notes the need to draw a distinction between its direct and indirect impacts. While direct impacts can be measured by job and income generation, indirect impacts may not be quantifiable because they cover the benefits transmitted through linkages (backward and forward), spillovers, and demonstration effects and may even include improved human capital formation, technology transfer, community development, fiscal contribution, and so on.

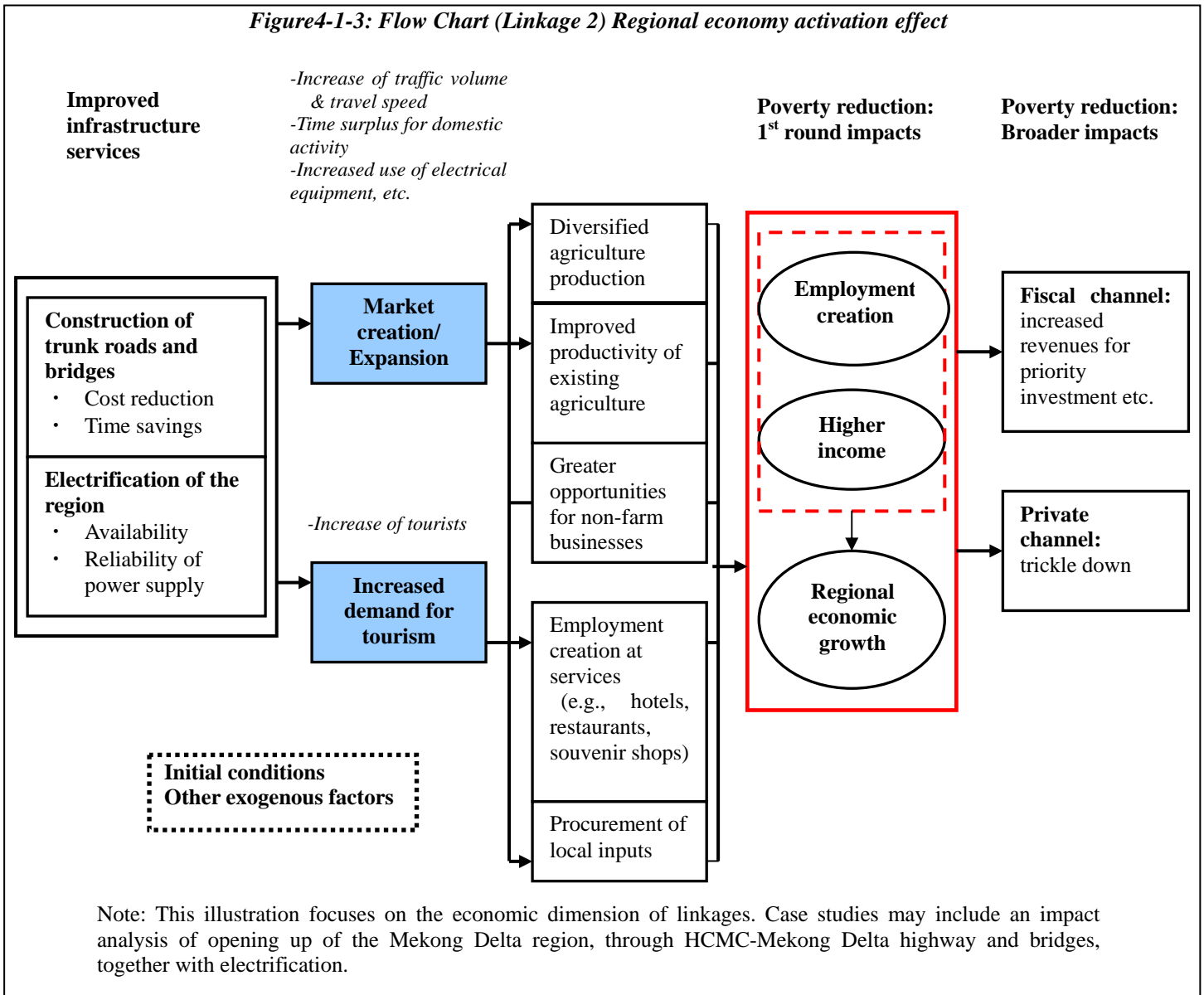
Linkage 2: Regional economy activation effect

This is a channel through which new economic opportunities are opened up and productivity of the existing economic activities is enhanced, as the result of improved infrastructure services. For example, better access to market and information could generate jobs and income in rural households, through improved agricultural productivity, diversification of agricultural products, and promotion of off-farm industry in rural areas etc. Moreover, time and cost saving of transport, the reliable supply of electricity could benefit (price- and time-sensitive) tourism-related services, which are labor-intensive and likely to have spillover effects.

Furthermore, stimulation of urban-rural economic activities (e.g., increased urban demand, labor migration to urban areas, and increased investment from urban to rural areas) could promote job and income generation.

All these suggest potential importance of infrastructure (and the resultant, industrial) location, to promote the diversification of growth poles and balanced regional development.

Figure4-1-3: Flow Chart (Linkage 2) Regional economy activation effect

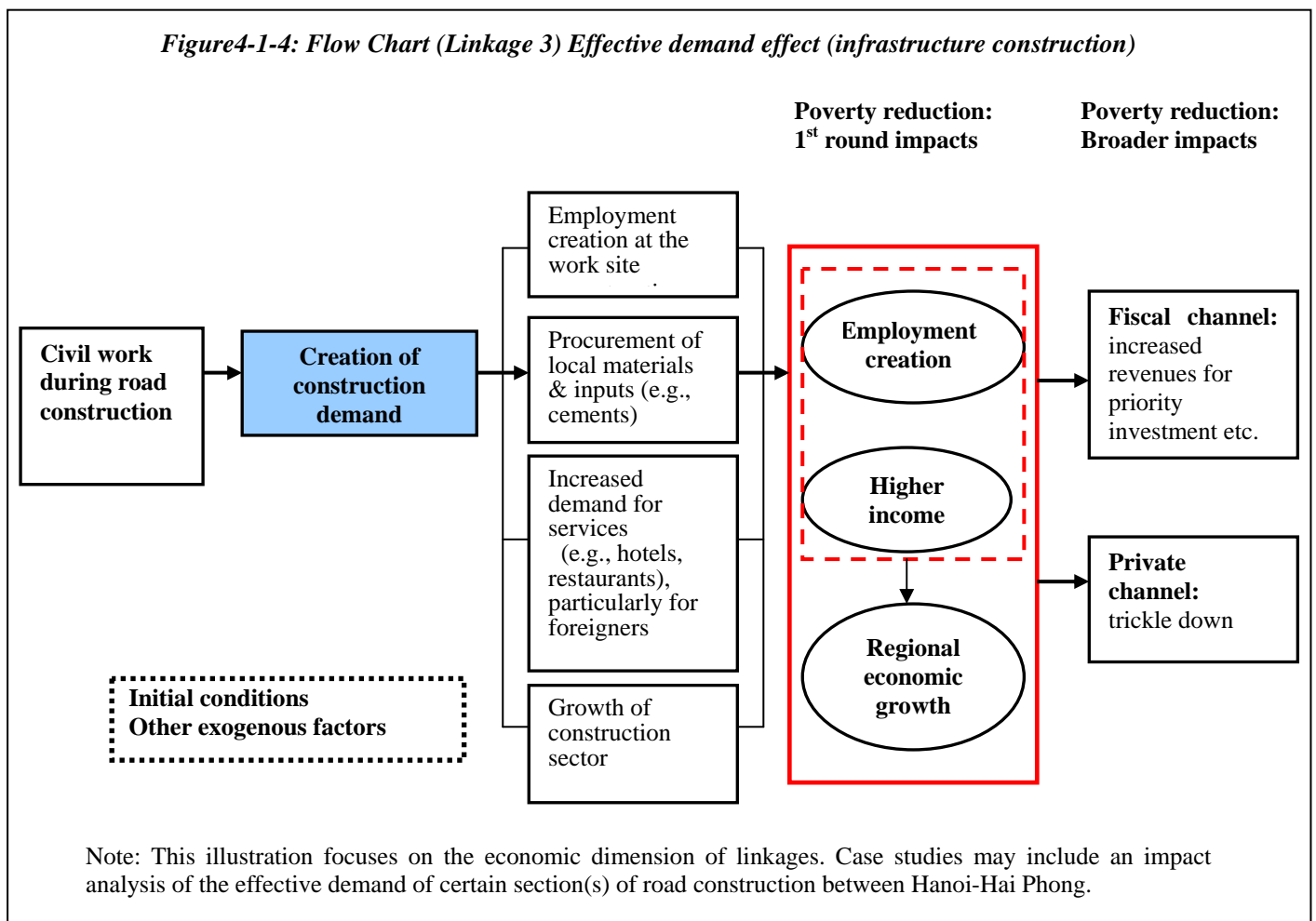


Note: This illustration focuses on the economic dimension of linkages. Case studies may include an impact analysis of opening up of the Mekong Delta region, through HCMC-Mekong Delta highway and bridges, together with electrification.

Linkage 3: Effective demand effect of infrastructure construction

This is a channel through which jobs and income are generated by implementing the project itself. For example, effective demand from construction works could generate jobs and income during the construction period—directly and indirectly (through the procurement of local inputs, materials and parts). Similarly, it is possible to expect effective demand during the operations and maintenance period.

While the majority of jobs and income generated through this channel is for the duration of construction only, income gained in such projects can become the initial capital required to “break out of the poverty trap.”



Fiscal revenue and multiplier effects

It is important to note that the above linkages are only the first-round impacts. Once injected into the economy, these stimuli will have broader spillover effects through fiscal and private spending channels. These effects do not stay in the initial localities but are likely to spread to wider areas, even the entire nation.

Expenditure propagation can occur through increased fiscal revenue generated by greater income and economic activity. The use of additional revenue by the authorities will set off the next round of impacts, including enhanced social programs, more public investment, salary increases of public

servants, and so on.

Another crucial channel for expenditure propagation is the multiplier effect as described in basic macroeconomics. All new income generated directly or indirectly by infrastructure construction, as discussed above, will induce a second, third, ... etc. round of spending whose cumulative magnitude depends on the marginal propensities of "leakages" (saving and imports). This will typically be several times the initial impact. If the population spends a large part of new income on domestically produced goods and services, the multiplier effect will be all the greater. Additional fiscal spending noted above also enters this multiplier process.

In the context of poverty reduction, the crucial coefficient here is how much of new income is spent on the items produced by the poor (the marginal propensity to consume can be divided into that on poor-produced goods and services and the rest). If this coefficient is high, the poor will enjoy a larger share of benefits from overall growth. In developing countries where the markets for the rich and the poor are severely segmented, new income only buys luxuries imported from abroad. But in Vietnam, additional income seems to be directed to locally made food, clothing and housing as well as modern manufactured products.

4-2. Case Studies

Case studies will be conducted for selected large-scale infrastructure projects in the transport and power sectors, which were completed and are under operation. Candidates of case studies include (but not limited to):

- Improvement of the National Highways No.5 and the expansion of the Hai Phong Port (funded by Japan/JBIC and Taiwan, completed in 2000)¹⁸—particularly in terms of their investment-inducement effect, regional economy activation effect (such as tourism) and effective demand of infrastructure construction;
- Construction of the My Thuan Bridge (funded by Australia, completed in 2000) and the improvement of the National Highway No.1 (co-financed by the World Bank, the ADB, and Japan/JBIC, with the southern Ho Chi Minh City-Can Tho section having been completed in 1999)—particularly in terms of their regional economy activation effect (such as agriculture production, tourism); and
- Development of overall power supply capacity and regional electrification, including the construction of the North-South 500kv transmission line (financed by the Vietnamese government, completed in 1994)—particularly in terms of its investment-inducement effect and regional economy activation effect.

Furthermore, in view of a wealth of literature on rural roads in Vietnam¹⁹, due attention will be paid to the experiences of rural road projects (e.g., the World Bank/UK-financed, Rural Transport Projects, the Rural Infrastructure and Living Standard Improvement Projects financed by Japan/JBIC), particularly regarding the links among the local road network, national and provincial roads. In this connection, a possibility of collaboration with UK/DFID is being sought, e.g., in the area of case studies of local transport (and/or power) networks to show how large-scale and basic infrastructures complement each other, linking the underdeveloped and the more developed areas.

¹⁸ JBIC is currently conducting a post-evaluation of the two projects (*Impact Assessment of Transport Infrastructure Projects in Northern*). The draft report will be presented at the forthcoming workshop in Hanoi (planned for June 12, 2003), and the final report is expected to be ready by July 2003.

¹⁹ For example, please refer to: (i) *the Implementation Completion Report (IDA-29290) for the Rural Transport Project* (financed by the World Bank/DFID); (ii) three studies by Dominique van de Walle (Development Research Group, the World Bank) on the impacts of rural road investments on Vietnam's poverty reduction; and (iii) "the Spatial Distribution of Public Spending on Roads in Vietnam and its Implications" (by Anil B. Deolalikar).

The below illustrates candidates of case studies, to be analyzed in the study. To the extent possible, other examples will be included, too.

Case Study 1: Opening up the Mekong Delta

Mekong Delta, which accounts for 40% of agricultural production in Vietnam and contributes 27% of GDP, is the most important agricultural product base. It is connected with Ho Chi Minh City by the National Highway No.1 (NHW No. 1, hereinafter). However, the transportation was not smooth due to the degraded road condition and interruption by branches of Mekong River, which was crossed by ferry. The upgrading the NHW No.1 has been the top priority project in the infrastructure development strategy of Vietnam and the access to the Making Delta was the one of the first corridors which benefited by such strategy. Thanks to the completion of the following projects, the travel time from Ho Chi Minh City to Can Tho has shortened dramatically. The smooth access will be extended to the Southern part of Mekong Delta near future, once the on-going projects such as the construction of the Can Tho Bridge and the continued upgrading of NHW No.1 have been completed.

Related donor funding projects Contents of projects	Highway Rehabilitation Project	My Thuan Bridge Project
Project Description	Improvement of NHW1 from HCMC to Can Tho	Construct a major cable stayed bridge across the Mekong River (Tien Giang) at My Thuan
Funding Agency	World Bank	AusAID
Project Cost	US\$176 million (US\$158.5 million financed by IDA)*1	A\$90 million (A\$60 million funded by Australian Government)
Completion Year	1999*2	2000

Notes:

- 1) This amount includes the improvement of the Hanoi to Vinh (Nghe An Province) section of NHW No.1 under the same project.
- 2) During the same period, the other sections of NHW No. 1 were upgraded under the JBIC-and the ADB-financed projects.

Sources:

- * My Thuan Bridge Project: <http://globaled.ausaid.gov.au/secondary/casestud/vietnam/2/my-thuan.html>
- * Highway Rehabilitation Project: <http://www4.worldbank.org/sprojects/Project.asp?pid=P004832>
- * Completion date: the Ministry of Transport

**Case Study 2: Hanoi-Hai Phong Corridor
Strengthening Competitiveness of the Northern Vietnam**

The National Highway No.5 (NHW No. 5, hereinafter) was a 2 lane trunk road of approximately 100 km connecting the national capital Ha Noi and the Hai Phong Port, the largest international port in northern Vietnam. It is one of the most important arteries for traffic flow of export and import goods, as well as of domestically commercialized products. The Corridor was considered a crucial element for the competitiveness of Northern Vietnam.

Therefore, the Vietnamese government has placed high priority in investing in the corridor to strengthen its transportation capacity. Thanks to the completion of several projects listed below, this purpose has been achieved. The corridor is expected to strengthen and expand the transportation network—e.g., by improving connections with the other trunk roads (e.g. NHW No.1, No.18 and No.10) which are also being upgraded—and respond to further expansion of container cargo handling capacity at Hai Phong Port.

Related donor funding projects Contents of projects	Upgrading NHW No.5				Hai Phong Port Rehabilitation Project
	Km 0-47	Km 47-62	Km 62-93	Km 93-106	
Funding Agency	JBIC	Taiwan	JBIC	JBIC	JBIC
Project Cost	¥8,782 million	US\$34.5 million	¥5,470 million	¥6,709 million	¥3,975 million
Completion Year	1999	1997	1999	2000	2000

Sources:

JBIC-financed projects: International Development Center for Japan [2003], *Impact Assessment of Transport Infrastructure Projects in Northern Vietnam-Final Report*, draft, pp. 17-18.

Taiwan-financed project: the Ministry of Transport

**Case Study 3: North-South 500 kv Transmission Line
Achieving System Stability of Electricity Supply**

The North-South 500 kv Transmission Line was completed in 1994. By transferring low-cost, surplus electricity generated by the Hoa Binh hydropower plant (also completed in 1994), the 500 kv line has contributed to mitigating power shortages in the fast growing South (which often had to rely on costly diesel-fired generation). Upon its operation, the demand for electricity in South and Central regions dramatically increased, by about 20 percent rise per year.

The 500 kv transmission line provides system stability and shifts electricity between North, Central and South at peak times. At present, Vietnam's integrated power system consists of the following:

- Transmission line with the length of 1,487km (bundle conductor 4x330m²)
- 5 substations with total capacity of 3,150 MVA (Hoa Binh substation/900 MVA, Ha Tinh substation/450 MVA, Da Nang substation/450 MVA, Pleiku substation/450 MVA, Phu Lam substation/900 MVA).

Source: Prepared by the author, based on the information from Electricity of Vietnam (EVN).

Regarding the general information on the transport and power sectors, this study will rely on number of the existing strategic and technical documents, including the government's sector development plans, master plans, and donor-supported studies such as the Vietnam National Transport Strategy Study (VITRANSS)²⁰ and rural transport strategy.

²⁰ VITRANSS is a comprehensive study focusing on major transport infrastructure, assisted by Japan/JICA during 1990-2000. It is designed to support the formulation of: (i) long-term development strategies (up to

In addition, there are two parallel initiatives in the transport sector, which could be highly relevant to this study. One is the World Bank-supported effort in the transport sector strategy. Closely coordinated with the government, donors and other partners involved in the sector, this exercise should provide important inputs, particularly for the issues on future strategic planning of infrastructure development and aid partnership.

The other is the ADB-supported technical assistance (TA) on the transport services networks for the poor, within the framework of the ongoing Central Region Roads Project. The objectives of this TA are to: (i) develop a methodology for selecting and defining sub-projects, based on considerations of road networks rather than individual road links and poverty impact criteria, and (ii) support the implementation of pilot-based models in selected provinces under the Central Region Roads Project²¹. Although the timeframe of TA goes beyond this study period, due consideration will be given to its methodology and preliminary findings.

In this way, during the course of the study, there will be close collaboration among the government and those donors and institutions actively involved in Vietnam's infrastructure development. This will provide an opportunity for mutual learning of respective experiences and contribute to nurturing common understanding of the role of large-scale infrastructure in growth and poverty reduction. Furthermore, it is hoped that the study will help deepening the ongoing discussions on future infrastructure investments, within the overall strategic planning for Vietnam's development.

Appendix: Terms of Reference

2020); (ii) national transport development master plan (up to 2010); and a short-term investment program (up to 2005).

²¹ This TA has started in February 2003. Moreover, as a part of Regional TA program (RETA5974), since 2001 ADB has been conducting a comprehensive study to assess the impact of transport and energy infrastructure on poverty reduction, in collaboration with the World Bank, DFID, and JBIC. The study includes case studies of infrastructure projects in China, India and Thailand.

**Analytical Research on the Impact of Large-Scale Infrastructure
for Economic Growth and Poverty Reduction
in the Context of CPRGS of the Government of Vietnam
(TERMS OF REFERENCE)**

A) Background

1. The Comprehensive Poverty Reduction and Growth Strategy (CPRGS) of the Government of Vietnam was approved by the Prime Minister Phan Van Khai in May 2002, and also endorsed by the Boards of the IMF and IDA as the Poverty Reduction Strategy Paper (PRSP) in June 2002. One of the major characteristics of the CPRGS, in relation to PRSP of other countries, is that it incorporates growth element. The title of the document spells out “G” for “Growth”, and the document has a section which addresses the relationship between growth and poverty reduction.
2. In this context, it should be noted that the current CPRGS does not fully elaborate the role played by large-scale infrastructure, though it is widely understood that large-scale infrastructure contributes to economic growth, and is conducive for poverty reduction.
3. At the CG meeting in December 2002, Mr. Vo Hung Phuc, Minister of Planning and Investment stated, based on the discussion during the meeting, the following; “CPRGS should be further revised on the part related to large scale infrastructure.(We) should add large scale infrastructure development to the CPRGS in order to create momentum for economic development, with high and sustainable growth. For example, we may add the building of bridges, roads, highway, ports, power plants, power transmission system that aim at poverty reduction, as I mentioned to you. And I also suggest that early next year, when we review the implementation of the CPRGS, we will officially amend with a legal document by the government.”
4. Based on the conclusion above of the CG meeting, the Government of Vietnam is to work on to incorporate the role of large-scale infrastructure for economic growth and poverty reduction.

B) Scope

5. The basic objective of this analytical research is to conduct qualitative analysis on the channels through which the large-scale infrastructure contributes to growth and poverty reduction. This work is conducted with a view to support the work of the Government of Vietnam to incorporate the role of the large-scale infrastructure in the CPRGS. (Thus, this analytical research is to be carried out in close cooperation with the team designated by the Ministry of Planning and Investment of the Government of Vietnam to work on to incorporate the role of large-scale infrastructure for economic growth and poverty reduction into CPRGS.)
5. It is requested that this analytical research will elaborate the channels through which the large-scale infrastructure contributes to growth and poverty reduction. This might include, but not be limited to, the channels below.
 - (1) Economic growth
Large-scale infrastructure is assumed to contribute to economic growth through several channels, which might include;
 - ◆ Channel through increasing investment in the macro-economy,
 - ◆ Channel through upgrading investment environment, thus attracting FDI and stimulating local investment.
 - (2) Poverty reduction
Large-scale infrastructure is assumed to contribute to poverty reduction through several channels, which might include;
 - ◆ Channel through expansion of macro-economy,
 - ◆ Channel through stimulating economic activities in the regional economy,
 - ◆ Channel through creating employment by implementing the project itself.

C) Schedule

7. The schedule of this analytical research is as follows;
 - ◆ March: finalize the TOR and commission research (work period: around 6 months).
 - ◆ August: complete the first draft (by the end of August)
 - ◆ September: organize workshop based on the first draft, and complete the final draft (by the end of September)

D) Output

8. The output of this work will be put into draft 30 page paper.

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