

WORKING Papers

Foreign Direct Investment in
Cross-Border Infrastructure



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Foreign Direct Investment in Cross-Border Infrastructure Projects 1

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Abstract

In this paper we critically review the relevant information and literature and that can enhance the feasibility and the successful implementation of cross-border infrastructure projects. We provide detailed information concerning FDI into the major emerging regions: East Asia/Pacific, Latin America and Eastern Europe. We also discuss the theoretical and empirical literature which sheds light on the characteristics of transnational infrastructure projects, who should conduct them and what determines their existence. The literature points to the importance of governments to be involved in transnational infrastructure projects as there are clear externalities which will otherwise not be reaped. It also points to the importance of coordination for the project to be successful. The ADB is well placed to perform that role. Lastly we provided a total of six cases of cross-border infrastructure projects, with two from East Asia, two from Latin America and two from Eastern Europe. These cases illustrate the critical need for smooth coordination over the diverse groups of team players, a top-level backing of the projects as well as a thorough understanding of all the political and financial factors involved that can influence the success of these projects.

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1. Introduction

There has been a growing need to invest in infrastructure projects in the Asia-Pacific region. The need in financing infrastructure sectors (including energy, telecommunications, transportation and water supply and sanitation) has been estimated to be between US\$228 billion annually and US\$608 billion annually.² However, there is a big gap in the ability to finance all the infrastructure needs of the region. The financing gap has been estimated to be between US\$180 billion and US\$220 billion. Consequently it has long been suggested that the private sector has to be brought in as partners in financing infrastructure investment. A large part of the private sector investment in infrastructure in the developing world consists of foreign investment. For example, in 2003, one estimate shows that international investment in infrastructure in East Asia and the Pacific was 3.4% of gross domestic capital formation.

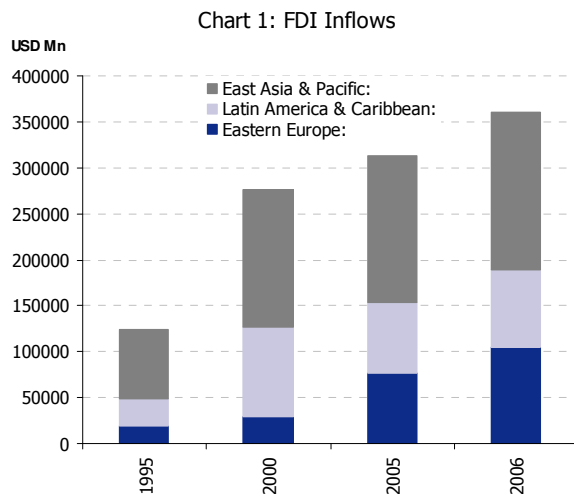
At the same time, due partly to the increasing integration of the Asian economies via the deepening of the regional and global production network, there is an increasing need to invest in cross-border infrastructure projects. Transnational infrastructure projects are expected to be more complex in many dimensions. At the same time, they are often of larger scale as well. The need to have foreign investment in cross-border infrastructure projects may be even more acute. In addition, foreign direct investment in infrastructure can bring in not only capital, but also technology and management skills.

There is only a small literature on the economic issues related to infrastructure development in emerging countries. There are even fewer *comparative* studies. In the next section, we will provide up-to-date and relevant information and data about the various aspects of foreign direct investment and infrastructure projects in developing economies, focusing on Latin America and Eastern and Central Europe. In section 3, we examine the relevant theoretical and empirical literature related to the issue of foreign direct investment in cross-border infrastructure projects. In section 4, we provide six case studies of investment in infrastructure projects in East Asia & Pacific, Latin America and Eastern Europe. In the last section, we conclude.

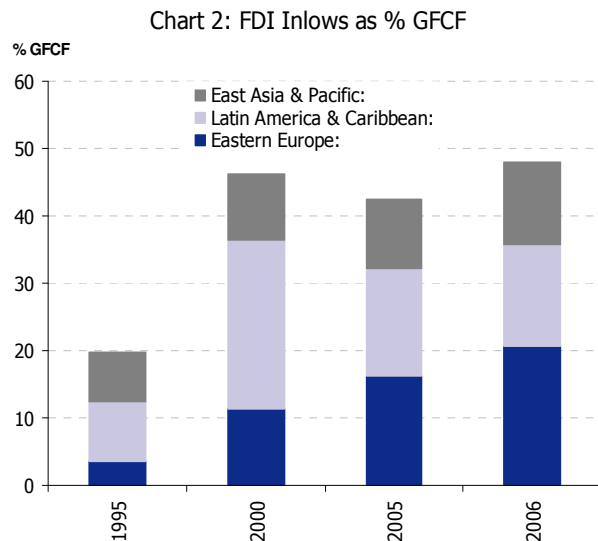
² The US\$228 billion is based on year 2000 prices, while the US\$608 billion figure is based on 2004 prices. These estimates are from Asian Development Bank, Japan Bank of International Cooperation and the World Bank, 2005, "Connecting East Asia: A New Framework for Infrastructure" and from estimates by ESCAP, respectively.

2. An Brief Overview of FDI and Infrastructure Projects in Emerging Countries

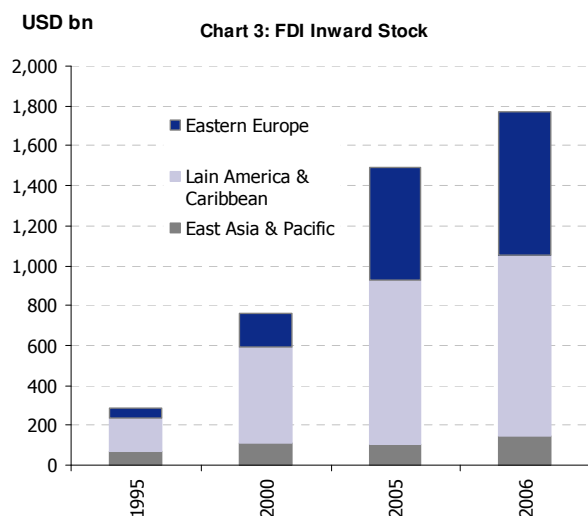
In this section, we report on recent trends on foreign direct investment (FDI) and infrastructure projects in the main emerging regions: East Asia and Pacific, Latin America and Eastern Europe. However, as can be seen in Chart 1, FDI inflows into Eastern Europe and Latin America has been dwarfed by those flowing into East Asia and Pacific Region. In fact, FDI inflow into East Asia and Pacific is nearly double that of the other two regions combined in every year for which data is available.



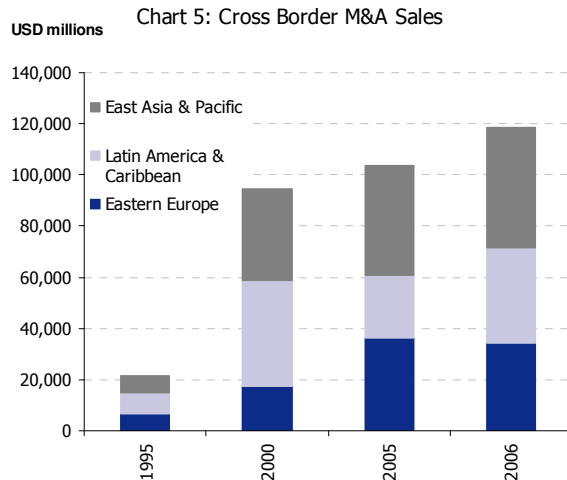
However, FDI inflows into Asia are much more concentrated. China, Hong Kong and Singapore receive over 80% of FDI inflows, leaving only less than 20% to the 29 countries classified as East Asia and Pacific. This situation is not true for Eastern Europe or in Latin America where FDI inflows are more evenly shared. Furthermore, despite having East Asia and Pacific receiving the highest volume of FDI inflows, they only represent a small proportion of the total gross fixed capital formation (GFCF), as shown in Chart 2. This is in contrast to Latin America and Eastern Europe. Indeed, in the latter case, such proportion has been growing rapidly over time.



In the same vein, Chart 3 shows that the stock of inward FDI has grown at a much slower rate in East Asia and Pacific than in Eastern Europe and Latin America. From 1995 to 2006, Inward FDI stock in Eastern Europe increased sixteen fold and more than quintupled in Latin America. In East Asia and Pacific, for the same period, the stock of inward FDI barely doubled.



In Chart 4 we highlight the value of cross-border M&A sales from 1995 to 2006. . M&A sales in these economies may be correlated with privatizations in these countries, including privatizations in the infrastructure sectors



Over time, the value of M&A operations has increased in all three regions. M&A sales in the Russian Federation, Romania, Brazil and Columbia were particularly high in 2006. M&A sales in the Russian Federation and Romania account for more than 25% and more than 15% of all Eastern European sales in 2006, respectively. In Latin America, Brazil accounts for more than 26% and Colombia accounts for over 10% of all the M & A sales in the region. In East Asia and Pacific, the amount of M&A sales in 2006 is the highest among the three areas and the region is also where most deals have been struck: 872 for a combined value of US\$48.9 billion, as opposed to 564 deals in Easter Europe for US\$34.1 billion and 384 cross-border M&A deals worth US\$37.6 billion in Latina America. From this we can extract that, on average, the value of cross-border M&A sales in Easter Europe and Latina America have been much higher than those that have taken place in East Asia and Pacific. One of the reasons for this is that more privatizations have taken place in Eastern Europe and Latin America, which have resulted in bigger cross-border M&A operations. In Chart 6 shows that overall M&A turnover follows a parallel trend to M&A sales

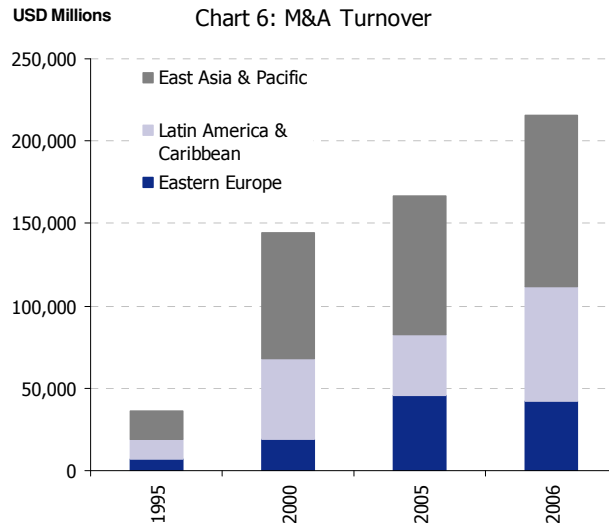
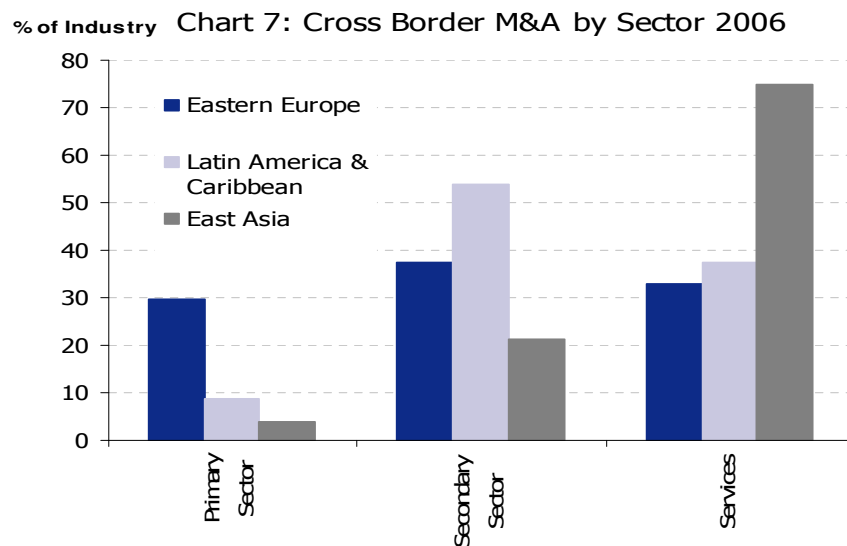
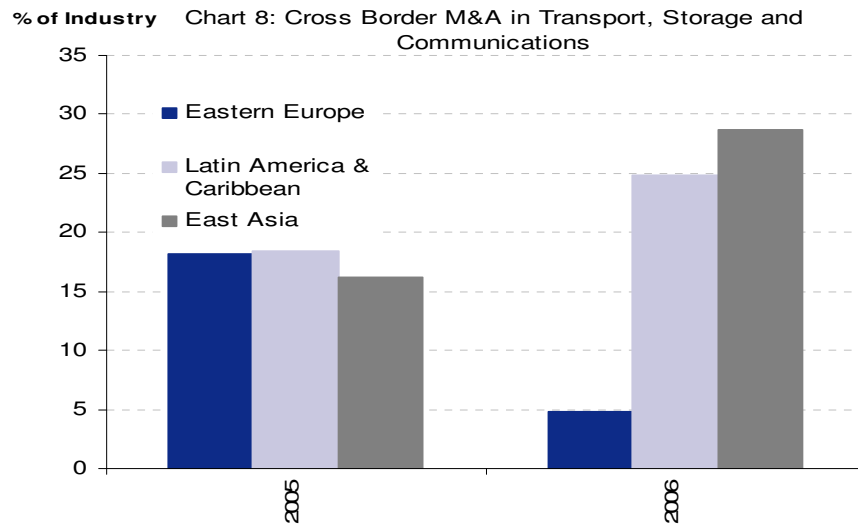


Chart 7 highlights cross-border M&A sales and purchases by broad sectors in these economies.

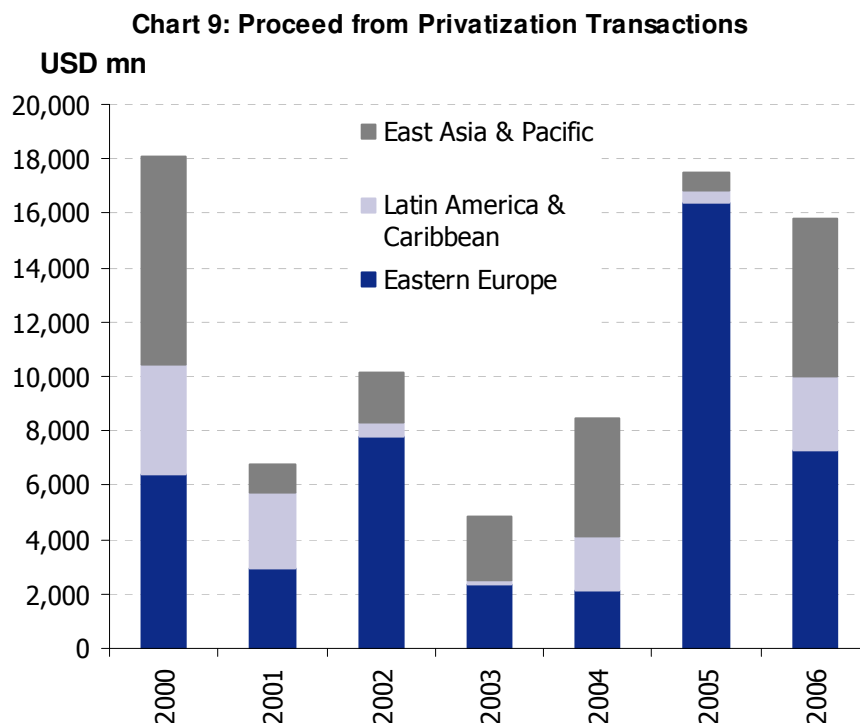


The chart clearly points out that most cross-border M&A operations that took place in East Asia and Pacific was in the service sector, covering over 70% of all industries, while in Latin America and Eastern Europe, cross-border M&A affected mostly the secondary sector. Chart 8 shows that M&A sales in the transport, storage and communication sector is relatively high (e.g. in 2005 the share of cross-border M&A sales in the industry was 18.5% and it rose to 24.9% in 2006 in Latin America).



Given the potential importance of the transport and communication sector, we focus on the share of FDI inflows going into such sectors in these economies. The results are shown in Appendix Table 1. It shows that in 2002, Peru had the highest share of its FDI going into these sectors, namely 59% of total FDI. In East Asia, Cambodia received the most FDI in the transport and communication sector (41% of total).

Chart 9 highlights the magnitude of the proceeds from privatization in the infrastructure sector from these economies. In Eastern Europe the proceeds reached US\$7.2 billion in 2006 as opposed US\$2.7 billion in Latin America. East Asia and Pacific lies in between with US\$5.8 billion. By countries, 86% of privatizations that were completed in East Asia and Pacific in 2006 took place in China, while Mexico accounted for 51% of privatizations in Latin America.



Overall, investment commitments to infrastructure projects with private participation in Latin America and the Caribbean reached US\$27.9 billion in 2006. The figure was somewhat lower in Europe and Central Asia (US\$23.4 billion) and much lower in East Asia and the Pacific (US\$18.5 billion).

In Appendix Table 2 we highlight the top ten sponsors by investment in infrastructure in various regions from 1990 to 2006. Most of the multinationals originate from developed countries, including those from France, Spain, Portugal, Germany and the United States. Not surprisingly, Telefónica SA has a substantial investment in the telecommunication sector in Latin America whilst Singapore Telecom is the biggest investor in East Asia.

Finally, in Charts 10-13, it can be seen that during the 1995-2007 time period, most investments in infrastructure were directed into the telecommunications sector in Latin America and in Europe and Central Asia. This pattern, however, was not followed in East Asia, where investments were geared towards transportation and to a lesser extent, water and sewage.

Chart 10 Investment in Transport
Infrastructure

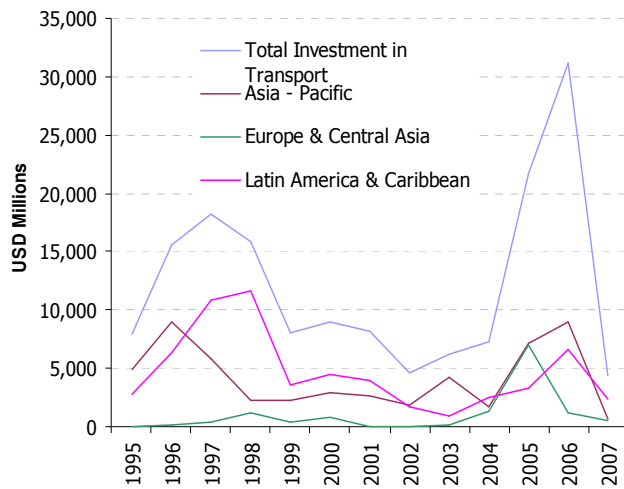


Chart 11: Investment in Telecom
Infrastructure

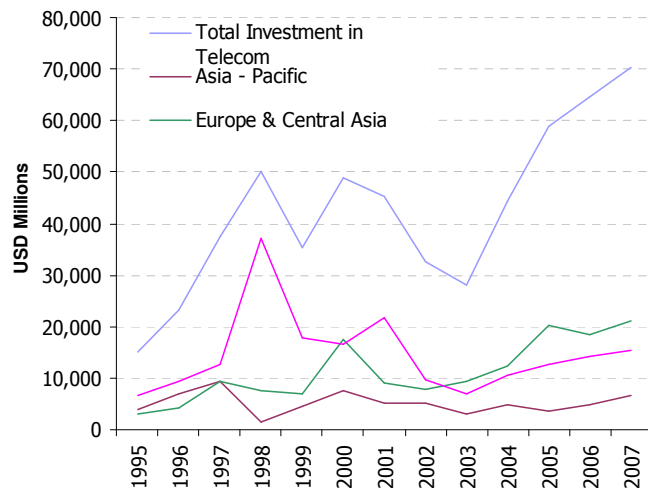


Chart 11: Investment in Telecom Infrastructure

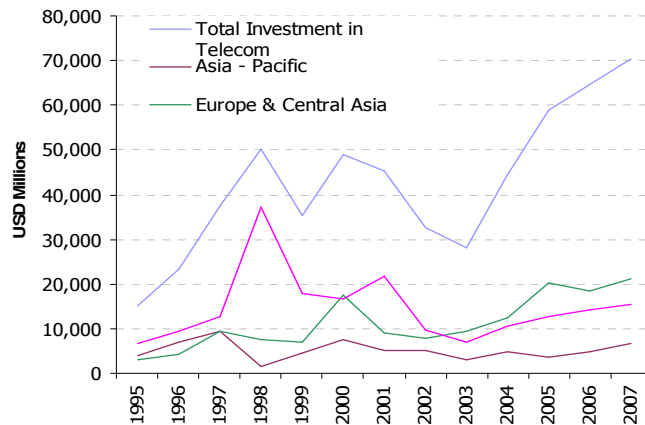
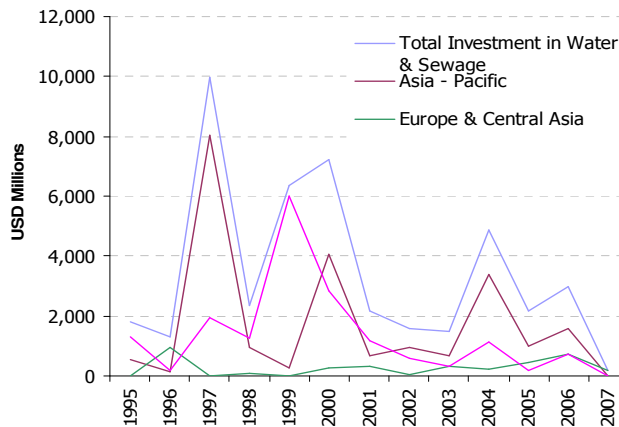


Chart 13: Investment in Water & Sewage Infrastructure



3. Analytical and Conceptual Frameworks on FDI in Cross-Border Infrastructure Projects

3.1 Theoretical Approaches

There is a very limited theoretical literature on FDI in cross-border infrastructure projects. Analytically, one can discern *three* interrelated approaches to studying cross-border infrastructure investment: public good approach, game-theory and incomplete contract theory. An example of the first approach is by Beato (2008), who uses a *regional public good* perspective and highlights the multi-directional externalities of transnational infrastructure projects. Given the potential free-rider problems as well as the positive spill-over over time and space, Beato (2008) reminds us yet again that there will be under-investment in cross-border infrastructure projects when left to the market. In relation to our interest on having foreign direct

investment in this area, it is also clear that even if a country receives a good amount of FDI, cross-border infrastructure may still be deficient from a *social* standpoint. Thus, while it is essential to invite FDI into infrastructure investment, national governments as well as international organizations should also be important contributors to the financing of such investment.

The second approach, game theory, offers a very similar conclusion. Carcamo-Diaz and Gabriel Goddard (2008) provide simple but useful illustrations showing that transport infrastructure often shares characteristics of a network, with the extra benefits only being realized if the two governments involved in a transnational project invest in the project (and not only one of them). With either party believing that investment by the other government may not materialize, then the strategy of [not invest, not invest] will become the risk-dominant strategy. The essential point can also be made and indeed reinforced if we adopt a dynamic game or if we use a model with strategic governmental interactions with private information. Co-ordination by a regional initiative or by international organizations such as the Asian Development Bank (ADB) would clearly help solve the co-ordination failure.

Finally, using an incomplete contract perspective, Navajas (2008) argues that energy infrastructure investment which facilitates long-term exchanges of energy will have to be supported by long-term contracting. But such contracting is necessarily incomplete. This is due partly to unforeseen domestic energy imbalances, which affect the incentive for the supplier to deliver the energy or the consuming country to accept the energy. Policy shocks and regulatory risks that occur beyond the contracting period will also lead to unforeseen circumstances that cannot be written in the original contract. Such contract-incompleteness implies that there has to be better energy planning as well as co-ordination of intergovernmental bodies.

3.2 Empirical literature

There is a wealth of empirical literature on *FDI determinants* but not for the specific issue of cross-border infrastructure. To that end we shall extract our own conclusions for cross-border infrastructure based on the existing literature.

From the FDI literature, we structure existing determinants into four sets of variables. The first is internal and it relates to *multinational firm-specific* factors such as scale economies and research and development intensity. The second set of factors is external and can be classified as *institutional* or *financial*. The institutional factors are well-known and they include the countries' corruption level, government stability, rule of law, etc. The financial factors include

exchange rates changes (or expectation of exchange rate changes), tax policies, trade protection and trade volumes, etc. The third set of factors relates to what *type of host economies* we are examining--whether the countries are OECD economies or developing countries. The data strongly suggest that FDI going to these different economies can be quite different. Parallel to the classification of countries is the *classification of industries*, as there is strong evidence that vertical FDI is strongest in machinery and in electronics. The last set of factors relate to the *neighbors* of the host economies. For example, U.S. multinationals have been investing in Ireland partly because they can then access Irish neighboring economies, including the United Kingdom, France and Germany.

With these determinants in mind, we can first think of factors that influence foreign direct investment in infrastructure. First, instead of internal, firm-specific factors, we need to adapt the determinants to be *project-specific*. For infrastructure, these factors include the scale of the investment, the degree of technological difficulties (e.g. whether the railroad to be built have to go over environmentally-sensitive mountains or rivers), the duration of the project and the expected time needed to recoup the investment.

For the external factors, these are the legal, institutional, political and social dimensions surrounding the infrastructure project. For example, there may be ambiguous or even conflicting centers of authority within the government. This may be related to the division between state and provincial vs. federal or central authority. Alternatively, this may be related to the different power structure within different ministries in the government. Another common example is that a new government in the country reneges on the promise made by the previous administration. Other impediments within the “soft” infrastructure include the reliability of the court system, the political opposition by existing state-owned service providers, corruption, unclear bidding and award procedures, corruption, uneven enforcement of the laws and regulations, etc.³ Infrastructure projects are inherently large scale and of long horizon. The risks involved faced by the international investors are substantial.

Next we turn to the economic or financial determinants of FDI in transnational infrastructure. These relate to the macroeconomic conditions of the countries such as current and future inflation rates, expected GDP growth rates, the degrees of foreign indebtedness as well as exchange rate risks.

Unlike purely national infrastructure projects, the external political and the financial determinants involved in transnational infrastructure projects have to be taken from *all* the host economies,

³ For a study comparing the importance of “soft” versus “hard” infrastructure in attracting FDI, see Fung, Garcia-Herrero, Iizaka and Siu (2005).

not just from one single country. Obviously this will compound the inherent difficulty of attracting more FDI to such cross-border projects.

The Asia-Pacific region has a deep and wide network of production sharing.⁴ It is natural then to think of certain transnational region rather than a single country, as an economic platform for production of components and parts. Furthermore, some regions, due to their strategic locations straddling several markets are also good candidates for linking several countries. Some examples of these cross-border projects include GMS northern economic corridor, the Nam Theun 2 hydropower project and Indonesian-Singapore gas transmission (see Kuroda, Kawai and Nangia 2007).

The risks facing private investors in financing cross-border infrastructure projects are immense and more complex than those projects located in a single country. Institutional or political risks now include potential failures and co-ordinations involving several governments (both local and central), compatibility or legal and social customs as well as oppositions from existing entities such as existing state-owned providers or ministries as well as different civil society groups located in different countries. In some cases, these factors involve primarily the financial and political situations within the provinces or states of each country. The relevant income growth rates which act as proxies for potential demands of future users may be the expected growth rates of the sub-national territories.

As for the third set of factors (the classifications by countries and by industries), our focus is emerging countries since they are more comparable to Asia's reality than developed ones, particularly with respect to infrastructure. For the fourth set of determinants, the neighborhood or spatial approach to FDI is very relevant here. Linking up several countries via a transport network, for example, can mean that a landlocked country can gain access to ports and harbors, which in turn, may mean that the country will be able to be a part of the "just-in-time" production sharing network. The potential benefits and income growth is then not limited to the GDP growth of the parties, but also the GDP growths of all contiguous neighbors as well as whether this is then linked to efficient shipping. In this approach, GDP or GDP growth weighted by distances from the host economy can act as a potential determinant.

An even more unique factor to attract FDI in cross-border infrastructure projects is the ability to co-ordinate a project. Here, much like the standard use of some corruption index or rule of law index, we may need to create a *co-ordination* or *compatibility index*. This may relate to how

⁴ For a recent comparative study of production sharing in East Asia and Latin America, see Fung, Garcia-Herrero and Siu (2009).

different countries' standards and ways of doing business are compatible with each other. The more compatible the countries are, the smaller are the coordination costs.

One additional set of risk involves the need for institutional or regime harmonization and the coordination of various governmental bodies and may involve different local civic societies. Balancing the fairness of returns to various parties and countries will also be a challenge. There is a greater need for multilateral agencies to help coordinate the financing of these projects, given that there are multiple jurisdictions.

The existing literature is not very adequate in providing us with exact guidelines as to how to improve and enhance FDI in cross-border infrastructure projects. However, we can extend the current ideas in the literature and mold them into a more relevant approach. Summarizing above, using insights from theories and from the empirical FDI literature, we can schematically show the relevant factors that will influence FDI in cross-border infrastructure projects as in Table A:

Table A: Determinants of FDI into transnational infrastructure

Determinants or Factors	FDI in Cross-Border Infrastructure Projects
Internal, Multinational Project-Specific Factors	The scale of the project, the degree of technological difficulty, research and development intensity, duration of the project, expected time needed to recoup the investment, etc.
External Political or Institutional Factors	Conflicting centers of authority within the government, turf battles between different ministries within the government, unclear bidding and award procedures, uneven enforcement of laws and regulations, potential repudiations of promises by the previous administration, oppositions from existing state-owned infrastructure operators, corruption index, government stability, rule of law index, etc. These factors are for all countries involved in the cross-border projects

External Economic or Financial Factors	Relevant growth rates of incomes, exchange rate changes, tax policies, trade protection, trade volume, current and expected inflation rates, degrees of foreign indebtedness, etc. These factors are for all countries involved in the cross-border projects
Coordination Factors	Compatibility of legal and social customs, different civil society groups across countries, coordination problems with different governments at different levels, balancing the perceived fairness of returns to various parties and countries

4. Case Studies of Transnational Infrastructure Projects in Emerging Regions

4.1 Latin America: IIRSA PPP

a) The Initiative for the Integration of Regional Infrastructure in South America (IIRSA)

South America ranks poorly in the transport and communications infrastructure pillar of the Global Competitiveness Index (CGI) compiled by the World Economic Forum (WEF). For example, in 2009-2010, Argentina ranks at 67, Brazil 68 and Mexico 74 out of all the sampled economies. The lack of an integrated and effective infrastructure network has resulted into a comparatively loose advantage in front of other developing regions. The difficult situation of some Latin American country's public finances has limited the number and magnitude of infrastructures projects, something that nowadays private investment has alleviated.

Probably the first sizable cross-border infrastructure project in the region was the Initiative for the Integration of Regional Infrastructure in South America (IIRSA). It was launched during the first South American Summit in 2000 as an instrument to promote interregional integration for as many as 12 countries in the region (details can be found on Table 3). The target sectors were transport, energy and telecommunications networks.

The IIRSA members are trying to fund the integration projects by partnering with other countries thereby reducing the impact on their public finances. Due to the difficult economic context at the beginning of this initiative the countries involved worked out three alternative sources of financing: Public-Private Partnership, fiscal margin for public investment (strict criteria on public investment and account record of public financing) and tailor-made financial instruments.

One of the most important proposals on innovative financing scheme is the South American Infrastructure Authority (ASI), a multilateral entity with capital made up of the contribution by member states. The assets would comprise the projects granted by the partners reducing the harm to their fiscal balances. This institution could attract funds and be entrusted with the development and management of the concessions. Other instrument examined in IIRSA is the creation of guarantee funds, styled after the MIGA or World Bank, with capital from countries. Some initial financial support, as well as technical assistance, came from Inter-American Bank of Development (IDB), Andean Corporation for Development and Fund for the River Plate Basin (FONPLATA). The total project portfolio investment accounts for US\$38 billion, from which 43% represents two-country linking projects.

Through medium-term territorial planning methodology and agreed by consensus, 426 projects are identified and classified into project groups according to their impact on sustainable development and technical, institutional, social, environmental, financial and political feasibility.

The Action Plan is structured in 10 “Hubs” (plurinational territories with shared natural, human and economic flows), with investment in transport, energy and telecommunications. They are complemented by Sectorial Integration Process (PSI); transversally structured actions aiming to improve sustainable development and competitiveness focusing on regulation framework harmonisation. In absence of a common institutional scheme and regulatory framework the PSI activities facilitates the correct development of the infrastructure projects by targeting the main operational and institutional obstacles for a regional integration.

The improvement in transport, energy and telecommunications networks should be accompanied by economic, social and regulatory progress to make them fully effective and equitable. Multi-target action plans are developed in order to prevent the possible social, cultural and environmental damages.

b) The Plan Puebla Panama (PPP)

The PPP is a planned set of development programs intended to promote regional integration and development within the Mesoamerican Region. It was first announced in March 2001 by Mexican President Fox and officially launched three months later. The PPP was originally seen as a method to establish infrastructure after Hurricane Mitch devastated the area in 1998, killing more than 14,500 people, leaving two to three million homeless, and costing over US\$5 billion in damages.

Nevertheless, the initiative later derived towards the economic development of five economic axes or corridors that are situated in the map following the trade flows across borders. The initiative is looking to develop infrastructure networks within these five economic axes through large infrastructure projects such as highways, air and sea ports, and electric and telecommunications grids, thereby aiming to solve the need of investment and trade.

Therefore, PPP envisages mainly coordinated improvements to trade, highway integration, energy interconnection, and the integration of telecommunication services for the movement of people and freight throughout Central America (details can be found in Appendix Table 4).

The investment required to fulfil the designated projects network in the involved countries amounts to some US\$ 8.07 billion. Of this amount, over \$4.5 billion in loans and grants has been disbursed. As for the source of the funding, 35% of the funds come from national governments in the region, 24% from the Inter-American Development Bank (IDB), 15% from the private sector, 7.5% from the Central American Bank for Economic Integration (BCIE), 5% from the World Bank and 13.5% from other sources.

At present, the PPP consists of over 28 projects affecting seven countries (Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama), and nine states within Mexico (Campeche, Chiapas, Guerrero, Oaxaca, Puebla, Quintana Roo, Veracruz and Yucatan). However, it has been noted that Governments and institutions involved in the PPP have often not specified which projects are part of the PPP initiative. There have been projects that have been removed from the plan and continued through other means or even cancelled. For instance, both the Anillo Periférico highway of El Salvador and La Parota dam of Mexico are no longer included in the plan and are still being promoted by the local government.

On top of that, the initiative has drawn the criticism of the Civil Society for its supposedly lack of transparency and unequal distribution of costs and benefits as most of the costs have often to

be borne by the local communities or indigenous communities that live throughout the Mesoamerican Plateau and most of the projects have a big impact on the environment and its ecosystems. As a result of these pressures and that of many environmental groups, some projects have had to be postponed or even abandoned.

Aiming to re-launch the PPP initiative, member countries announced the creation of a Funding and Promotion Committee (CPF) formed by IDB, CAF and CABI during the annual 2008 IDB meeting. CPF is promoting investors attraction and funding to the PPP through promoting and supporting concession initiatives and public-private partnerships.

4.2 Cases from Eastern Europe: TTFSE & BLACK SEA BASIN

ENPI CBC

a) Trade and Transport Facilitation in Southeast Europe Program (TTFSE)

TTFSE (Trade and Transport Facilitation in Southeast Europe Program) started in 1999 promoted under the umbrella of the Stability Pact for South Eastern Europe and currently involves 8 countries: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Macedonia, Moldova, Romania, and Serbia and Montenegro. These countries share 35 border crossing points and 8 inland terminals (details can be found in Appendix Table 5).

Due to the Balkan territory disintegration into smaller countries, South Eastern Europe common borders and long-distance routes needed a shared planning on regional transport framework.

Initially the program's main concern was the cooperation improvement in order to meet the accession to the EU requirements through the reduction in non-tariff and transport costs and removing smuggling and corruption at border crossings.

In order to achieve these objectives, four main activities were supported: Border Crossing Infrastructure and Equipment Provision, Customs Information System Modernization; Custom procedures improvement; Program Implementation and other trade facilitation measures, such as increasing participant's knowledge in trade, logistics, and international freight transport.

The Regional Steering Committee (RSC) is the principal governor of the program composed by the customs administration heads of the eight countries with both annual and semi-annual meetings. RSC promoted the exchange of information, share of experiences and different views. SECI-PRO (Public Private Partnership committees) seeks to eliminate obstacles to trade, increasing business and investment. The European Union (EU) has provided parallel assistance in the customs field in such areas as revenue collection, risk analysis, and enforcement.

The World Bank supports this program through funding and management ECSIE. Each country has its own Project Appraisal Document (PAD) and respective loan or credit agreement. The World Bank provided around 76 million US\$, National Governments 32 million US\$ and USAID 12 million US\$.

Phase II of TTFSE expects to go beyond the original program, focusing on EU transport corridors TEN T, inter-modal transport and inter-agency coordination. This new program is currently under preparation and possibly includes two more countries (Kosovo and Turkey). The final objective of this initiative is to boost trade competitiveness providing the region with adequate logistic services that connects the countries in the region with their neighbours and the global market.

The TTFSE program evaluations were mainly positive, contributing to decrease non-tariff costs in the region and new infrastructure creation. The impact on corruption and smuggling is harder to measure but some countries reported a decline.

b) The Black Sea Basin ENPI CBC Program

The Black Sea Basin CBC Programme is one of the EU operational programmes under the framework of the European Neighbourhood & Partnership Instrument (ENPI) that will be implemented during the period 2007 – 2013. With a budget of 19.8 US\$ million, The Black Sea Basin Program involves ten countries, some of them including the whole of their national territory (Armenia, Azerbaijan, Moldova and Georgia), while for some others those regions closest to the Basin (Bulgaria, Greece, Romania, Russia, Turkey and Ukraine).

The main purpose is to reach a stronger and more stable economic and social development of the Black Sea Basin regions. In 2007, the EU enlargement provided one more reason to be interested in its security and sustainable growth. The EU has set a strategy for the CBC target regions: equilibrate living standards in both sides of the external EU borders, through integrated regional partnership and cooperation (details can be found in Appendix Table 6).

According to the ENPI CBC Strategy Paper there are three principal objectives: Promoting economic and social development in the border areas; working together to address common challenges; and promoting local, people-to-people cooperation. Such objectives would be pursued through different means: Cross-border support to partnership for economic development based on combined resources, networking resources and competencies for environmental protection and conservation and cultural and educational initiatives for the establishment of a common cultural environment in the basin.

The program is financed by the European Neighborhood & Partnership Instrument in a 90%. The participation of Turkey is financed by the IPA (Instrument for Pre-accession Assistance) and the participating countries co-finance projects with a minimum of 10% of the EU contribution. Potential beneficiaries of this project will be regional and local authorities, NGOs, representative associations and organizations, universities, research institutes, cultural institutes and public agencies.

The final project-set details are yet to be implemented. The approval of the programming document by the EC took place in late 2008. It was estimated that by the first quarter of 2009 there was going to be the launching of the calls for proposals. These proposals had to be consistent with the Program requirements and take into account certain characteristics. By the first half of 2009, the evaluation of projects will precede the final process of operational and financial monitoring of projects

While the characteristics of the concrete projects are yet to be determined, we can foresee that they will be consistent with the main activities of the program: strengthening access and connection on interregional transport links, creation of tourism networks, environmental common regional actions and promotion of cultural and educational exchange.

4.3 Cases from South-East Asia: The GMS program and the Nam Theun 2 Hydropower Project

a) The Greater Mekong Subregion Program

In 1992, the Greater Mekong Subregion (GMS) Program was launched by the six member countries with the assistance of the Asian Development Bank. Since its creation, it has contributed significantly to facilitating cross-border flow of goods and people within the GMS and linking the subregion to other markets through the development of infrastructure and the required agreements for its efficient use (details can be found in Appendix Table 7).

More broadly, the program aims to facilitate sustainable economic growth by strengthening the economic ties among the member countries. At the same time, efforts are made to reduce poverty and improve the quality of life of the more than 300 million people that live in the territory. The strategy of the GMS 2009-2010 Business Plan is consistent with the three-fold GMS objective of an integrated, harmonious and prosperous subregion. To attain this, the program aspires to improve communication and transport through sustainable development of infrastructure and transnational economic corridors.

Since its foundation, the GMS Program has been involved in the planning and execution of several projects in nine main areas: transport, telecommunications, tourism, environment, human resource development, agriculture, trade facilitation and private investment. In all the areas, the development of infrastructure has played a decisive role towards setting the base for a sustainable and equally distributed growth within the regions. Therefore, the GMS Program has been the multilateral platform that has allowed cross-border infrastructure projects that have benefitted all the parts involved.

The GMS Program involves key stakeholders including governments, civil society organizations, the private sector through the GMS Business Forum, and major external aid and funding agencies. The ADB serves as coordinator for the GMS Program, as requested by the member countries. The Program has received as well the political support of the regional leaders in the GMS Summits of 2003 in Phnom Pehn (Cambodia), 2005 in Kunming (Yunnan Province, China) and 2008 in Vientiane (Lao PDR).

In the current portfolio, from the 26.5 US\$ billion budget, the projects that imply the coordination of two or more member countries are those related to the development of the North-South, East-West and Southern Economic Corridors. To support the integration of these regions, the current Business Plan projects to spend US\$1 billion in terms of Transport and Communications in the East-West Corridor during 2009 and another US\$1.14 billion in the Southern Corridor during 2010.

Although these steps towards economic development are met with high expectations from foreign investors, most cross-border infrastructure projects and programs often have to face the criticism or even the opposition of Civil Society. Among the main concerns stand the environmental and social costs associated with large high-impact infrastructure projects. On top of that, the involvement of different Administrations does not ensure an equal distribution of cost-benefit and compensations for loss of land and property are not necessarily fair to all the stakeholders. Nevertheless, the role of civil society is significant towards ensuring a rigorous system of monitoring for the transparency of the project process.

b) The Nan Theun 2 Hydropower Project

The Nan Theun 2 Hydropower Project has been under preparation since the mid-1980s when a feasibility study was undertaken by the World Bank. However, the development of the necessary infrastructure to take the most out of the region's potential had to be postponed due to the 1997 Asian Crisis.

The hydropower potential of the region, as well as that of the whole of the country, is increased by the mountainous terrain and the heavy rainfalls that end up in the multiple Mekong tributaries that flow from North to South of the country territory. This potential has been well exploited by the Lao PDR government and it is now coping with the steadily growing demand for electric energy of the neighboring countries, especially that of Thailand, given its practically non-existent energy resources. By doing so, it enhances economic integration and helps create a regional power market that provides energy security and regional stability. Moreover, it achieves environment benefits by substituting coal and other fossil fuels for hydropower. These cross-border infrastructures also allow countries like Lao PDR to export energy to provide revenues to meet the government's development objectives with particular emphasis on poverty eradication. This \$1.2 billion project is a private sector undertaking with multilateral and bilateral financial and technical support. To the government's pride, not only is it the largest private power project in Lao PDR but also the largest private sector hydroelectric cross-border project in the world (details can be found on Table 8).

As 30% of the project funds come from equity, Nam Theun 2 Power Company Limited (NTPC) was established under Lao PDR law to be the owner of the Project. Shareholders having shares in NTPC are the Lao Holding State Enterprise (25%), Electricity Generating Public Company Limited of Thailand (25%), Electricité de France International (35%) and Italian-Thai Development Public Company Limited of Thailand (15%). 27 international banks including international financial institutions such as the World Bank, the Asian Development Bank, the European Investment Bank and Agence Française de Développement, are involved in the financing of the project as well and account for about half of the 70% of total funding. The other half of the 70% of the funding comes from seven commercial Thai Banks. The first half of the debt is denominated in USD while the second half is in Thai Baht.

The project is near completion, and it is expected to start commercial use at the end of this year. However, all the process has not been easy; the project has had very strong supporters as well as several groups that have opposed it. Given the dimensions of the infrastructures, the social and environmental challenges were a major issue in the project. Although the government will receive \$1.9 billion revenue over the 25-year operating period from dividend income, royalties and taxes which will be dedicated to promote sustainable growth and poverty eradication, the main costs are borne by local communities and the environment around the project area. To reduce the impact to the more than 70,000 local inhabitants (some of them from ethnic minorities), a total of \$90 million has been designated as capital and operating expenditures for environmental and social mitigation and compensation.

5. Conclusion

In this paper we survey and critically review the relevant information, literature and tools that can enhance the feasibility and the successful implementation of cross-border infrastructure projects. We provide detailed background information concerning FDI into the major emerging regions: East Asia and Pacific, Latin American and Eastern Europe. We then review the theoretical and empirical literature which can shed light on the characteristics of transnational infrastructure projects, who should conduct them and what determines its existence. The literature points to the importance of governments to be involved in transnational infrastructure projects as there are clear externalities which will otherwise not be reaped. It also points to the importance of coordination for the project to be successful. The ADB seems to be well placed to perform that role.

Lastly we provide a total of six cases of cross-border infrastructure projects, with two from East Asia, two from Latin America and two from Eastern Europe. These cases illustrate the critical need for smooth coordination over the diverse groups of team players, a top-level backing of the projects as well as a thorough understanding of all the political and financial factors involved that can influence the success of these projects.

APPENDIX

Table 1: Share of Transport and Communications in Total FDI Inflows for Selected East Asia, Eastern Europe and Latin America Countries

Country	Infrastructure Sector	1995	2000	2001	2002
Eastern Europe					
Armenia (1998)	Total FDI (\$ million)	221	104	70	111
	Transport & comm. (\$ mill)	78	38	14	9
	as % of total FDI inflow	35.3	36.5	20.0	8.1
Russian Federation (1998)	Total FDI (\$ million)	2,761	2,714	2,748	3,461
	Transport & comm. (\$ mill)	250	1,326	..	..
	as % of total FDI inflow	9.1	48.9	..	..
Latin America					
Argentina	Total FDI (\$ million)	5,609	10,418	2,166	2,149
	Transport & comm. (\$ mill)	634	3,870	167	-715
	as % of total FDI inflow	11.3	37.1	7.7	-33.3
Brazil (1996)	Total FDI (\$ million)	10,792	32,779	22,457	16,590
	Transport & comm. (\$ mill)	819	10,979	4,276	4,337
	as % of total FDI inflow	7.6	33.5	19.0	26.1
Chile	Total FDI (\$ million)	3,041	4,860	4,200	2,550
	Transport & comm. (\$ mill)	412	870	1,281	336
	as % of total FDI inflow	13.5	17.9	30.5	13.2
Colombia	Total FDI (\$ million)	968	2,395	2,525	2,139
	Transport & comm. (\$ mill)	42	876	416	345
	as % of total FDI inflow	4.3	36.6	16.5	16.1
Ecuador	Total FDI (\$ million)	452	720	1,330	1,275
	Transport & comm. (\$	25	0.2	11	22

	mill) as % of total FDI inflow	5.5	0.0	0.8	1.7
El Salvador (1998)	Total FDI (\$ million)	1,104	173	279	470
	Transport & comm. (\$ mill)	251	2	62	49
	as % of total FDI inflow	22.7	1.2	22.2	10.4
Honduras	Total FDI (\$ million)	69	282	193	175
	Transport & comm. (\$ mill)	..	6	49	64
	as % of total FDI inflow	..	2.1	25.4	36.6
Mexico	Total FDI (\$ million)	9,526	17,789	27,449	19,363
	Transport & comm. (\$ mill)	876	-2,372	2,913	750
	as % of total FDI inflow	9.2	-13.3	10.6	3.9
Paraguay	Total FDI (\$ million)	103	104	84	10
	Transport & comm. (\$ mill)	7	29	-28	..
	as % of total FDI inflow	6.8	27.9	-33.3	..
Peru	Total FDI (\$ million)	609	1,433	696	669
	Transport & comm. (\$ mill)	3	1,036	27	395
	as % of total FDI inflow	0.5	72.3	3.9	59.0
East Asia					
Cambodia	Total FDI (\$ million)	2,032	181	146	155
	Transport & comm. (\$ mill)	10	..	..	64
	as % of total FDI inflow	0.5	..	..	41.5
Japan	Total FDI (\$ million)	3,930	28,998	17,921	17,436
	Transport & comm. (\$ mill)	70	7,020	6,837	1,394
	as % of total FDI inflow	1.8	24.2	38.1	8.0
Mongolia	Total FDI (\$ million)	37	91	126	173
	Transport & comm. (\$ mill)	13	7	1	2

	as % of total FDI inflow	34.4	7.2	0.7	1.1
Myanmar	Total FDI (\$ million)	668	218	19	87
	Transport & comm. (\$ mill)	119	8	..	..
	as % of total FDI inflow	17.8	3.7	..	..

Note: Countries which are not listed could be either no data available or small island countries.

Source: UNCTAD FDI Country Profile
web data.

Table 2. Top Ten Sponsors by Investment and Region, 1990-2006 (US\$ million)

Sponsor	Total Investment	East Asia and Pacific	Europe & Central Asia	Latin America & Caribbean	Middle East & North Africa	South Asia	Sub-S A
Telefonica SA	70,856	0	11,554	57,557	1,745	0	
Telecom Italia	35,030	0	320	34,710	0	0	
Carso Group	32,560	0	0	32,560	0	0	
America Movil	29,231	0	0	29,231	0	0	
SUEZ	28,095	8,206	1,902	13,670	4,154	0	1
France Telecom	27,459	1,009	18,946	1,285	3,893	0	2
AES Corporation	21,046	2,169	2,165	14,556	415	6	7
Deutsche Telekom	20,442	1,185	19,175	0	0	0	
Portugal Telecom	19,988	0	0	17,694	1,745	0	5
Singapore Telecom	18,684	10,774	0	0	0	59	

Source: World Bank, Infrastructure Projects Database at the web:

http://ppi.worldbank.org/explore/ppi_exploreDetail.aspx?mode=detail&panel=region&results=0.

Table 3: IIRSA (The Initiative for the Integration of Regional Infrastructure in South America)

Number of Projects	426 (Priority Portfolio: 31 high-impact projects to be carried out during 2005-2010)
Project Sector (Priority Portfolio)	Transport (84.19% of funds) Energy (15.78 of funds) Communications(0.03% of funds)
Project Type (Priority Portfolio)	Roads (76.25% of funds) Railway (10.33% of funds) Seaport (6.64% of funds) River Transport (4.54% of funds) Bridge (1.86% of funds) Border Crossing (0.2% of funds) Logistic Center (0.19% of funds)
Budget	40 US\$ billion (Priority Portfolio 6.4 US\$ billion)
Countries	Bolivia, Colombia, Ecuador, Peru, Argentina, Brazil, Paraguay, Uruguay, Venezuela, Guyana, Suriname, and Chile
Financial Sources (est.)	PUBLIC SECTOR (IDB, CAF and FONPLATA and National Governments) – 30% of investment PRIVATE SECTOR-15% of investment PUBLIC-PRIVATE PARTNERSHIP- 53%

Table 4: PPP (Plan Puebla Panama)

Number of Projects	Current portfolio: 100 (8 executed, 50 in progress and 42 in preparation)
Project Sector (Current Portfolio)	<p>Transport (76.15% of budget)</p> <p>Tourism (0.04% of budget)</p> <p>Human Development (7.43% of budget)</p> <p>Disasters, 0.7%, Trade (0.29% of budget)</p> <p>Sustainable Development (2.48% of budget)</p> <p>Energy (11.5 of budget)</p> <p>Communications (0.27% of budget)</p>
Budget	Current portfolio: 8.076 US\$ billion (50 US\$ billion expected)
Countries	Belize, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama and recently Colombia
Financial Sources (est.)	<p>PUBLIC SECTOR (IDB, CABI, CAF, World Bank and National Governments) – 71.5% of investment</p> <p>PRIVATE SECTOR-15% of investment</p> <p>OTHER- 13.5%</p>

Table 5:TTFSE (Trade and Transport Facilitation in Southeast Europe Program)

Number of Projects	8 (one for each countries)
Project Sector	Transport
Project Type	<ul style="list-style-type: none"> - Border Crossing Infrastructure and Equipment (62% total) - Customs Information System modernization(21% total) - Custom procedures improvement (9% total) - Program Implementation (4% total) - Other trade facilitation measures: increasing participants knowledge in trade, logistics, and international freight transport (3% total)
Budget	120 US\$ million
Countries	Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Macedonia (all closed in 2005), Moldova (closed in 2007), Romania (closed in 2004), and Serbia and Montenegro (closed in 2006).
Financial Sources (est.)	PUBLIC SECTOR : <ul style="list-style-type: none"> - World Bank – IBRD and IDA (63%) - USAID (10%) - National Governments (27%)

Table 6: BLACK SEA BASIN ENPI CBC

Number of Projects	To be determined
Project Sector	Multi-Sectorial (Democracy, Human Rights, Governance, managing Movement and improving Security, The 'frozen conflicts', Energy, Transport, Environment, Maritime policy, Fisheries, Trade, Research and Education Networks, Science and Technology, Employment and Social Affairs, Regional development)
Project Type	To be determined
Budget	19,8 US\$ million (without Turkey ⁵)
Countries	Bulgaria, Greece, Romania, Russia, Turkey, Ukraine Armenia, Azerbaijan, R. Moldova and Georgia,
Financial Sources (est.)	PUBLIC SECTOR: - European Union (90%) - National Governments (10%)

⁵ * IPA funds for the participation of Turkey are 1,000,000 Euro per year from 2007 to 2009. This amount will be revised for 2009-2013.

Table 7:GMS 2009-2011 (Greater Mekong Subregion 2009-2011)

Number of Projects	Current portfolio for 2009-2011: 58 projects
Project Sector (Current Portfolio)	<ul style="list-style-type: none"> - Multisector (30.02% of budget) - Agricultural and Natural Resources (20.06% of budget) - Energy (16.96% of budget) - Transport and Communications (13.96% of budget) - Water Supply and Sanitation (7.43% of budget) - Education (5.66% of budget) - Industry and Trade (3.77% of budget) - Health, Nutrition and Social Protection (2.14% of budget)
Budget	26.5 US\$ billion
Countries	Cambodia, the People's Republic of China (Yunnan Province, Guangxi Zhuang Autonomous Region), Lao People's Democratic Republic, Myanmar, Thailand, and Viet Nam.
Financial Sources	<p>PUBLIC SECTOR (ADB and National Governments) - 72% of investment</p> <p>PUBLIC-PRIVATE PARTNERSHIP - 3% of investment</p> <p>OTHER - 25% (Possible PPP cofinancing resources included)</p>

Table 8:Nan Theun 2 Hydropower Project

Number of Projects	1 project
Project Sector	Energy Poverty Reduction Environmental Protection
Project Type	<ul style="list-style-type: none"> - Construction of Power Plant and Reservoir in Lao PDR - Exports of 5,354 GWh (95%) of electricity to Thailand - Supply of 200-300 GWh (5%) of electricity to consumers in Lao PDR - \$1.9 bilion of revenue for the Lao Government over the 25-year operating period - Development Program for resettled villages and downstream areas - Protection of a 4,000km² biodiversity area - US\$1million per year for 31 years
Budget	1.25 US\$ billion (+ additional contingent financing of US\$ 200 million)
Countries	Lao PDR and Thailand.
Financial Sources	<p>EQUITY (SHAREHOLDERS) (30%)</p> <p>INTERNATIONAL LOANS (70%)</p> <ul style="list-style-type: none"> - International development and commercial financiers, debt in USD (1/2) - Seven Thai commercial banks, debt in Thai Baht (1/2)

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