



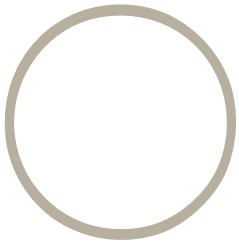
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Economic benefits of trade facilitation in the Greater Mekong Subregion



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Executive summary

The GMS region is one of the most dynamic parts of the world economy. Over the past decade the region has experienced rapid economic growth fuelled by expanding trade and strong flows of foreign investment. This growth has translated into a remarkable improvement in living standards, with a significant reduction in poverty in most parts of the region.

Intra-GMS integration has played an expanding role in the performance of GMS member countries, as physical connectivity has improved and policy barriers to trade with and investment from neighbours have been reduced.

But there is scope for regional integration to play a bigger role in development, by reducing the costs of cross-border trade and transport. While GMS countries have made improvements in trade and transport facilitation, they are still a long way away from Asian best practice with respect to the costs and time involved in cross-border trade. Reducing these costs would bring national economic benefits in much the same way that removing policy barriers to trade has done in the past: making trade easier and less costly and removing uncertainties in dealing with procedures has the same effect as removing a tax on trade.

The evidence suggests that the benefits that GMS members could gain from making improvements in trade and transport facilitation are large: ADB studies have indicated that feasible reductions in the costs of transport and the delays in processing trade at the border could lead to the GDP of GMS members being up to 7 per cent higher, with the smaller and less developed members standing to gain the most.

The Cross-Border Transport Agreement (CBTA) and the Strategic Framework for Action on Trade Facilitation (SFA-TFI) are two initiatives under the GMS Economic Cooperation Program (GMS-ECP) that are aimed at helping address the underlying causes of high costs and long delays in regional trade. They directly target key problem areas, and complement other national and regional initiatives to improve border processing and remove impediments to a better integrated transport and logistics sector.

But progress on these initiatives has been very slow. As a consequence, the potential benefits of the large GMS-ECP investment (over US\$11 billion) in road transport and economic corridor development are far from being fully realised. And opportunities to improve the well being of the people of the region are being foregone. There is

scope for a strong revitalisation of efforts in trade and transport facilitation which could yield large gains, some with relatively modest outlays. And the GMS initiatives provide a collaborative way to pursue these gains in a way that benefits all countries in the region.

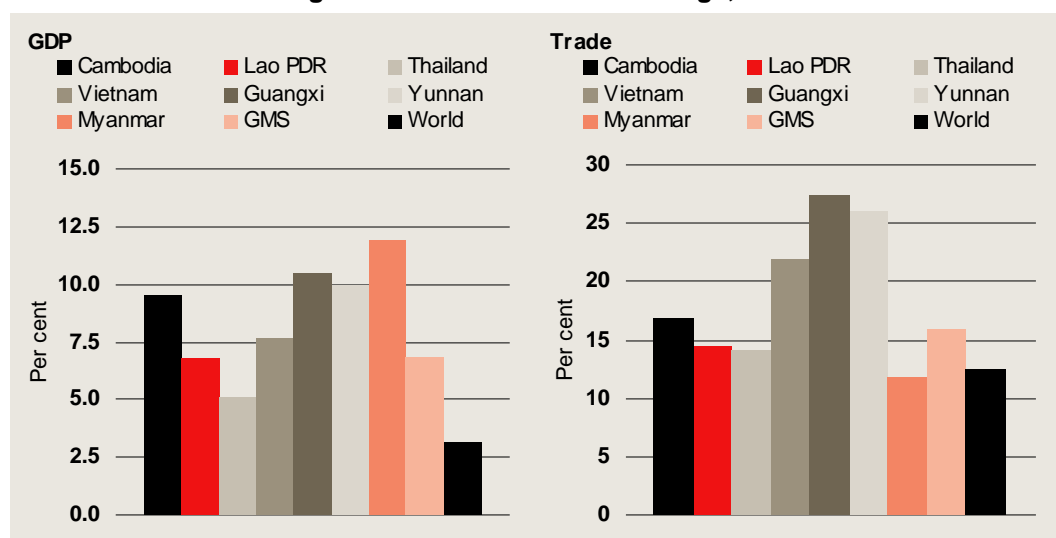
The GMS region and TTF

Regional and global integration have been major forces behind the recent dynamic performance of the Greater Mekong Subregion (GMS). A number of the countries making up the region have been undertaking progressive transformations towards more open, diversified and market-based economies, and their efforts have been rewarded by sustained growth and improvements in standards of living.

Dynamic growth has been underpinned by strong trade and investment performance ...

In the decade 1999-2008, the six countries and the two provinces of China that make up the GMS have grown twice as fast as the world economy, and their international trade has grown 25 per cent faster than world trade (chart 1).

1 GMS GDP and trade growth faster than world average, 1999-2008

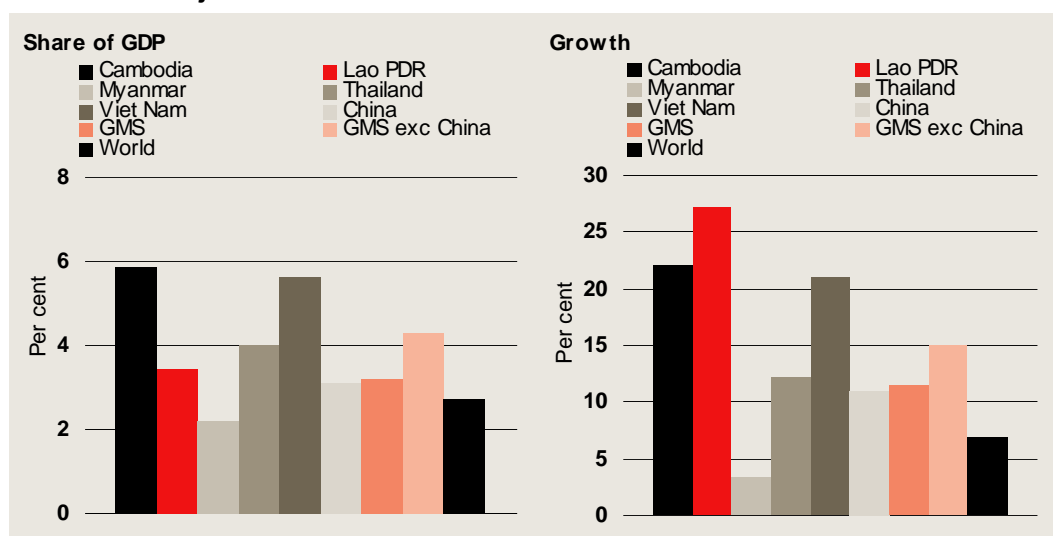


Note: The chart shows trade annual trend growth in GDP and total trade (exports plus imports) for 1999-2008.

Data source: World Bank, World Development Indicators, China National Statistics Yearbook.

Open policies have enabled the countries of the GMS region to realise their potential as a destination for foreign investment. The ratio of FDI to GDP for the countries exceeds the world average (for the smaller countries by over 60 per cent), and for most countries, the value of FDI has been growing much more rapidly than the world average (chart 2).

2 GMS a major destination for FDI



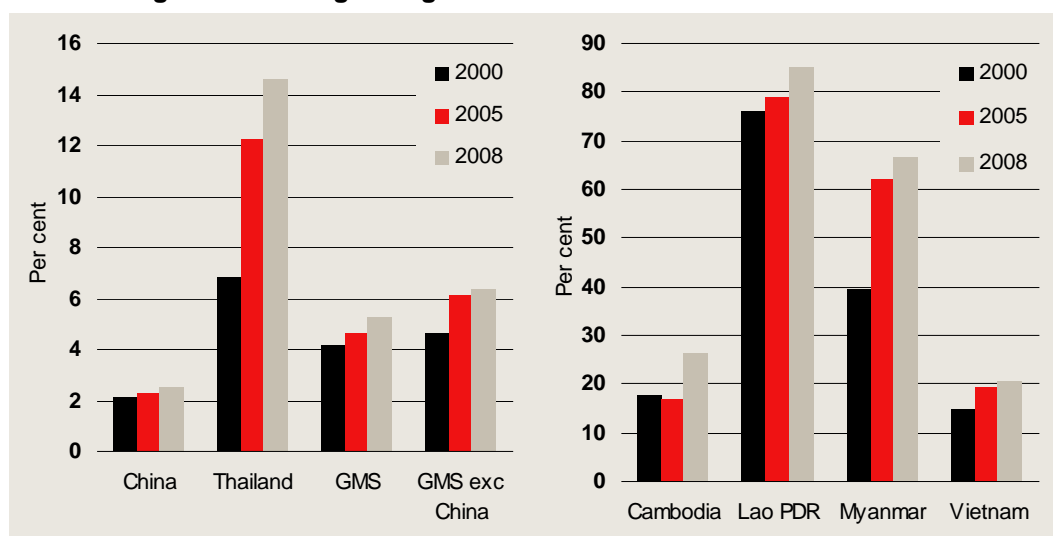
^a The chart shows the ratio of average FDI to average GDP for the period 1999-2008, and the trend rate of growth of FDI for the same period. Separate data not available for Yunnan Province and Guangxi Zhuang Autonomous Region.

Data source: UNCTAD World Investment Report 2009.

... with intra GMS trade playing an important role ...

Intra-regional trade and investment is playing an increasingly important role in the development experience of the GMS. Intraregional trade has been growing more rapidly than trade with the rest of the world: data from United Nations Comtrade database indicates that trade between the member countries grew by 500 per cent between 2000 and 2008, compared with 380 per cent for trade with the world. The same data suggests that as a share of total trade, intra GMS trade has become more important in all GMS countries (chart 3).

3 Intraregional trade a growing share of GMS trade



Note: the chart shows the share of trade with GMS member countries as a share of total trade.

Data source: UN Comtrade statistics.

As table 4 shows, GMS trade is important for the two Chinese provincial members of GMS, as well as for the smaller member countries.

4 Direction of trade in 2006 (per cent of total)

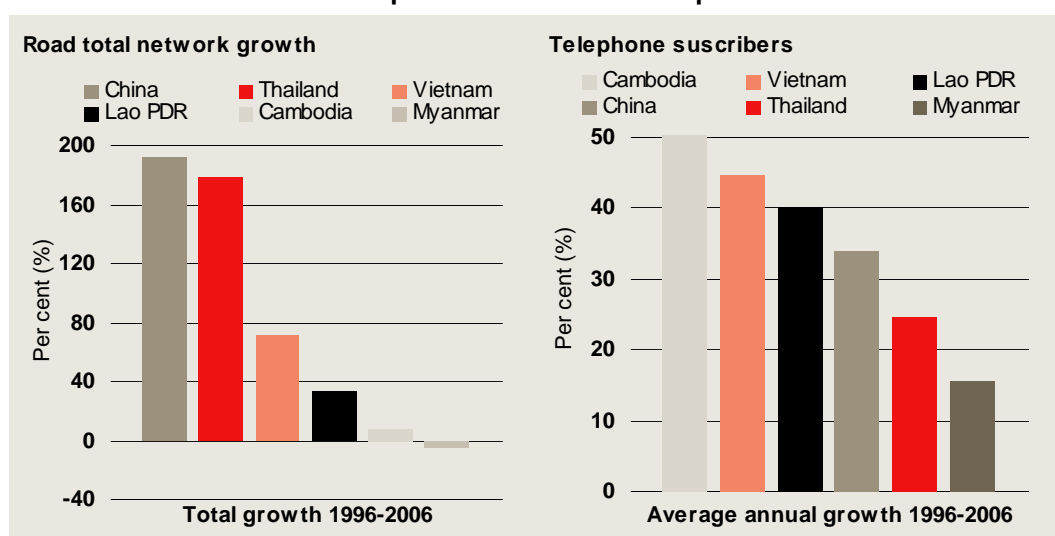
Country	GMS		Other Asia		United States		Europe		Others	
	Export	Import	Export	Import	Export	Import	Export	Import	Export	Import
Cambodia	2.5	23.1	20.1	66.0	53.3	0.9	0.4	0.2	23.6	9.8
Lao PDR	54.7	76.5	9.3	15.4	0.7	0.5	0.8	0.3	34.4	7.3
Thailand	4.1	1.2	38.7	38.4	15.0	7.5	1.9	1.6	40.3	51.2
Vietnam	5.0	10.2	19.3	60.3	21.2	2.6	2.3	1.8	52.2	25.1
Guangxi	22.3	24.3	37.6	23.3	11.3	5.8	18.1	12.0	10.7	34.6
Yunnan	15.4	6.7	63.0	26.1	6.4	4.4	10.7	12.9	4.5	49.8

Source: ADB 2008.

... assisted by improved connectivity ...

One important reason why intraregional trade links have been growing in the last decade is that internal and external connectivity has improved significantly. Along with the major improvements in regional connectivity associated with GMS Program investments, national road networks have been expanding and modern communications technology has spread rapidly throughout populations. As chart 5 shows, in the period 1996–2006, the road networks of China and Thailand almost tripled in length, with significant expansions in Vietnam and Lao PDR. In all countries in the region the number of people with access to telephones has been growing rapidly: by over 30 per cent a year in Cambodia, Vietnam, Lao PDR and China.

5 Communications and transport in the GMS have improved



Note The chart shows the change in the kilometres of road network between 1996 and 2006, and the average annual change in the number of mobile and fixed line subscribers over the same period.

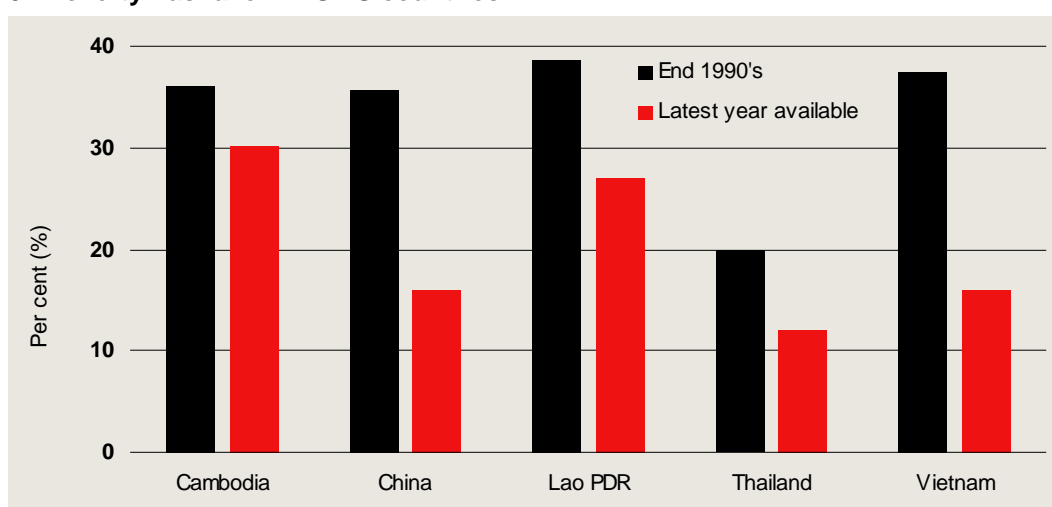
Data source: World Bank Development Indicators.

... and translating into significant improvements in living standards

Sustained economic growth has made possible a remarkable improvement in the standards of living of the people in the Mekong region. The proportion of people living below national and international poverty lines has fallen substantially, with some countries recording quite dramatic reductions (chart 6).

But in all countries, there are significant pockets of rural poverty, often concentrated in communities that remain unconnected to the main centres and corridors of growth.

6 Poverty has fallen in GMS countries



Note: The chart shows poverty head count measures for those GMS countries where data is available. End 1990's corresponds to 1998 for Lao PDR and Vietnam, 1999 for China and Thailand, 1997 for Cambodia. Latest year available: Cambodia — 2007, China — 2005, Lao PDR — 2007, Thailand — 2004, and Vietnam — 2006. Data for China corresponds to the proportion of the population living under the international poverty line of \$1.25 a day, and data for Thailand corresponds to the \$2.00 a day poverty line.

Data source: World Bank, World Development indicators, UNDP 2008 and ADB, 2009.

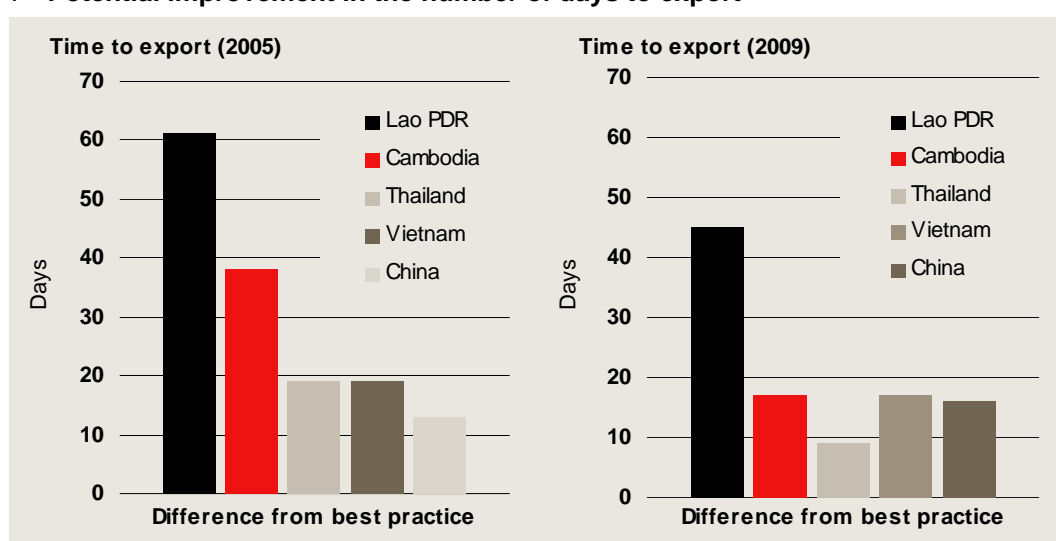
There is scope to do even better by reducing costs of cross-border trade and transport ...

Much of the success of the GMS region in reaping the benefits of integration has come from liberalisation of policies towards foreign trade and investment — removing or reducing tariff and non-tariff barriers, and establishing a favourable legal basis for foreign investors. There is considerable scope however, to get further gains from integration — especially regional integration — from reducing avoidable transaction costs and delays in cross-border trade.

International indicators show that while GMS countries have made improvements in trade and transport facilitation that have reduced the delays in, and costs of, international trade transactions, most are still a long way from Asian best practice.

Chart 7 shows how GMS countries compare against Asian best practice (as represented by Singapore) in terms of the time taken to effect an export transaction. While things have improved since 2005, there is still considerable scope for improvement: it still takes between 3.5 and 10 times as long to complete an export transaction in GMS countries as it does in Singapore. If transport times are excluded from the analysis, and only the time taken to complete export formalities is considered, the comparisons with Singapore are even more striking: it takes between 4 and 13 times as long to complete these formalities (12 to 40 days) in GMS member countries as it does in Singapore (3 days).

7 Potential improvement in the number of days to export



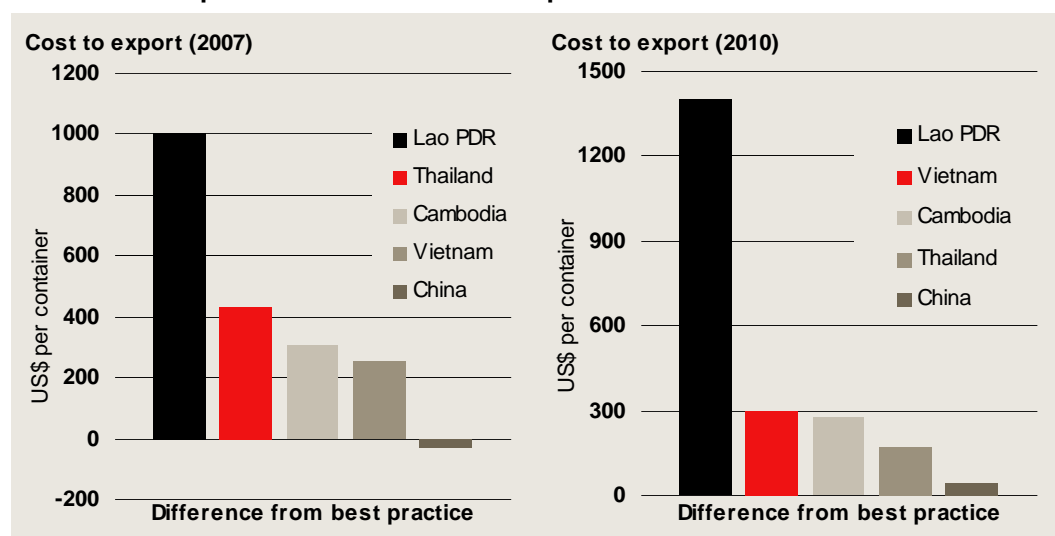
Note: Best practice is Singapore, where export lead times have been five days since 2005.

Data source: World Bank, Doing business indicators, CIE calculations.

Chart 8 shows how GMS countries compare against Asian best practice with respect to costs of exporting. While China is very close to best practice, costs in Lao PDR are four times the costs in Singapore, and costs in Cambodia and Vietnam are twice those in Singapore. The costs of dealing simply with export formalities (excluding the costs of transport and handling) in the GMS region range between 1.5 and 2.5 times the costs in Singapore.¹

¹ Note that these costs exclude the payment of bribes and informal payments.

8 Potential improvement in the cost to export



Note: The chart shows costs to export a 20 foot container. Best practice is Singapore, where costs were US\$416 in 2007 and US\$456 in 2010.

Data source: World Bank, Doing business indicators.

The international indicators may also give some indication of what may be driving some of these deviations from Asian best practice. Table 9 compares the number of documents required for an export transaction in GMS countries with Asian best practice (Singapore) and the East Asia and Pacific region average. Given that the underlying objectives of trade regulation do not vary much between countries, it is reasonable to ask why some GMS countries require two to three times as many documents as Singapore, and what benefits in terms of regulatory outcomes the documentation achieves.

9 Number of documents to export and import in GMS countries

	Documents to export					Documents to import				
	2006	2007	2008	2009	2010	2006	2007	2008	2009	2010
	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
Cambodia	8	11	11	11	11	12	11	11	11	11
China	6	7	7	7	7	11	6	6	6	5
Lao PDR	11	11	9	9	9	15	15	10	10	10
Thailand	9	9	7	4	4	12	12	9	3	3
Vietnam	6	6	6	6	6	8	8	8	8	8
Singapore	4	4	4	4	4	4	4	4	4	4
EAP average	7	7	7	7	7	9	8	8	8	7

Note: EAP – East Asia and the Pacific region.

Source: World Bank Doing Business indicators.

Similarly table 10 shows the scoring of logistics performance in each GMS country according to surveys of international logistics professionals carried out for the World Bank's Logistics Performance Index. It highlights the areas of lowest rating for each country under the six headings of customs/border processing, infrastructure,

management of international shipments, logistics competence, tracking and tracing and timeliness. For China and Thailand, the worst performing area is in the efficiency of processing by customs and other border agencies. For the other GMS countries, the quality of transport and ICT infrastructure for logistics receives the lowest rating: but border processing is also rated fairly poorly.

10 Logistics performance in the GMS, international LPI scores 2010

Country	LPI	Customs	Infrastructure	International shipments	Logistics competence	Tracking & tracing	Timeliness
Cambodia	2.37	2.28	2.12	2.19	2.29	2.5	2.84
China	3.49	3.16	3.54	3.31	3.49	3.55	3.91
Lao PDR	2.46	2.17	1.95	2.7	2.14	2.45	3.23
Myanmar	2.33	1.94	1.92	2.37	2.01	2.36	3.29
Thailand	3.29	3.02	3.16	3.27	3.16	3.41	3.73
Vietnam	2.96	2.68	2.56	3.04	2.89	3.1	3.44
Singapore	4.09	4.02	4.22	3.86	4.12	4.15	4.23
EAP average	2.73	2.41	2.46	2.79	2.58	2.74	3.33

Note: Scores range from 1 (worst) to 5 (best). EAP — East Asia and the Pacific region. The worse performing element for each country is highlighted.

Source: World Bank, LPI international.

... and GMS initiatives provide a vehicle for making progress

For over 18 years, the GMS Economic Cooperation Program (GMS-ECP) has been a core vehicle for improving connectivity and improving economic relations amongst the countries of the region. In addition to its contribution to developing infrastructure to increase physical connectivity ('hardware'), it provides, through the Cross-Border Transport Agreement (CBTA) and the Strategic Framework for Action on Trade Facilitation and Investment (SFA-TFI) two initiatives targeting improvements in the software of regional trade and transport to help reduce the costs discussed above. The CBTA and SFA-TFI, with their focus on trade and transport facilitation (TTF)², have the potential to complement and support ASEAN-related trade facilitation initiatives, and the work of national governments to improve the performance and functionality of customs and other border processing institutions.

² Trade facilitation is concerned with how procedures and controls governing the movement of goods across national borders can be improved to reduce associated cost burdens and maximize efficiency while safeguarding legitimate regulatory objectives (http://en.wikipedia.org/wiki/Trade_facilitation), while transport facilitation focuses on logistical and other factors that affect the costs of transporting goods across borders.

Open policies and TTF help in achieving economic outcomes

How do improvements in trade and transport facilitation assist the GMS region in further reducing poverty and improving living standards? The answer lies in the powerful links between international trade and investment and growth, and the critical link between growth and poverty reduction.

Openness enables growth

The relationship between growth and poverty reduction is relatively straightforward. If aggregate national income is not growing, the only way that poor people can get better off is if wealth is transferred to them from those on higher incomes. While this is not impossible, it is very difficult to achieve, and typically only occurs in countries where average income levels are already very high. The key to poverty reduction is ensuring that poor people have the opportunity to use their labour, land, ingenuity and other resources to increase their productivity and earn higher incomes – the basis of growth. Without growth, it is also difficult for governments to gather sufficient revenues to fund basic social expenditures and public investment in the health and education of their people.

Openness to international trade and investment plays a crucial role in this growth process for developing economies, by:

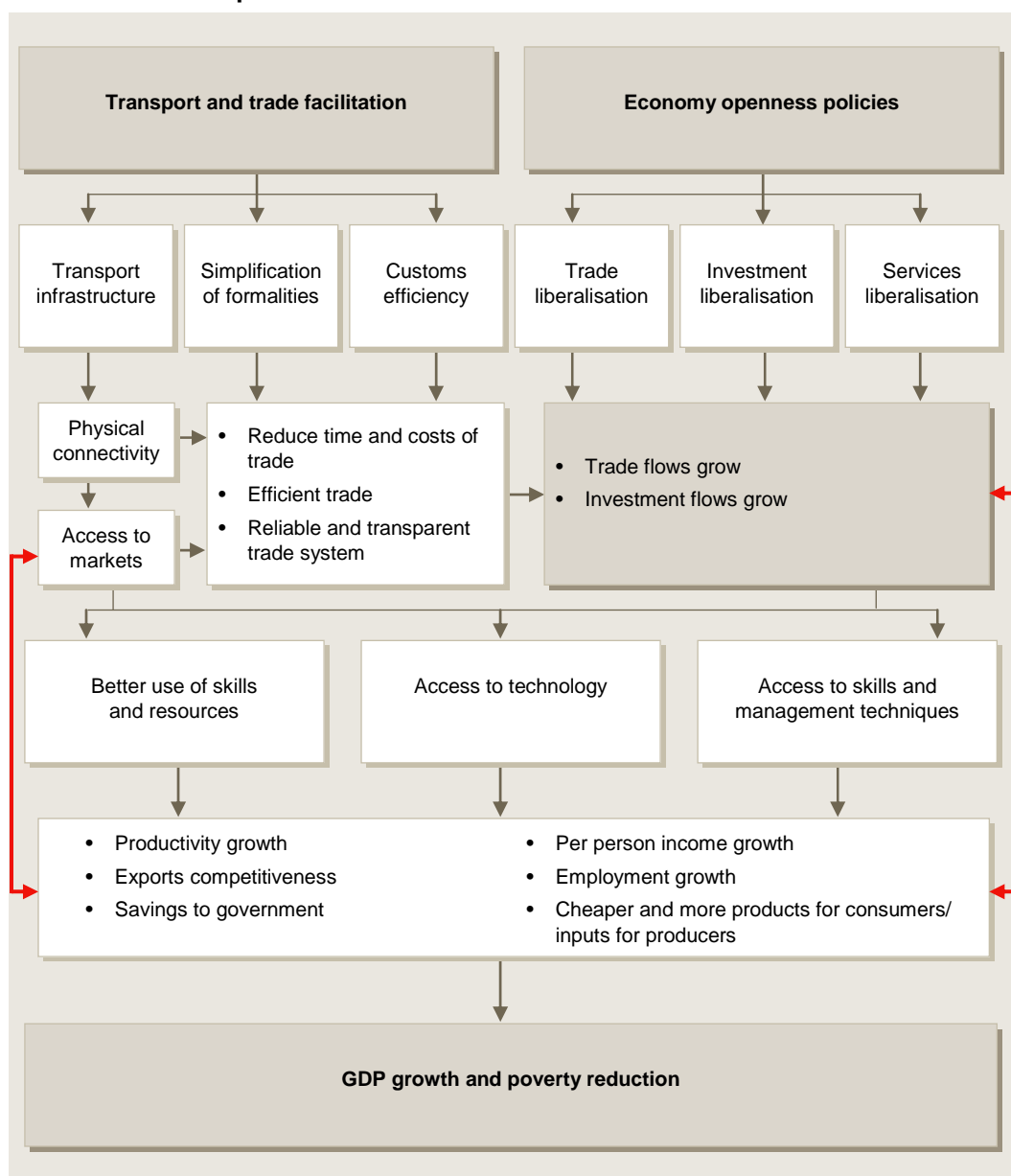
- providing access to knowledge and technology to facilitate a process of catching up with other countries;
- subjecting foreign and local enterprises to competitive pressure to improve efficiency, while providing access to new inputs, intermediate products and production practices;
- enabling exploitation of economies of scale and specialisation by expanding market opportunities; and
- reducing risks through diversification of markets and sources of supply and locking in good economic management.

Trade and transport facilitation (TTF) policies play an important role by making trade less costly and increasing the returns from engaging with regional and global markets. Slow and costly transport and border procedure practices are like a tax on trade: and like all taxes, they reduce the amount of effort that businesses are

prepared to devote to trade (but unlike formal taxes, they generate no revenue for the government). And when lack of transparency and predictability of regulation and administration of trade creates uncertainty, it also has the same effect as a tax.

Chart 11 illustrates the way in which TTF policies complement open trade and investment policies in enabling growth and poverty reduction.

11 Trade and transport facilitation and economic outcomes



Actions on the TTF agenda may include improving physical connectivity through transport infrastructure projects; easing the transit of vehicles, goods and business people between borders; simplifying formalities to trade; making customs systems more efficient through automation and sharing of information between crossing

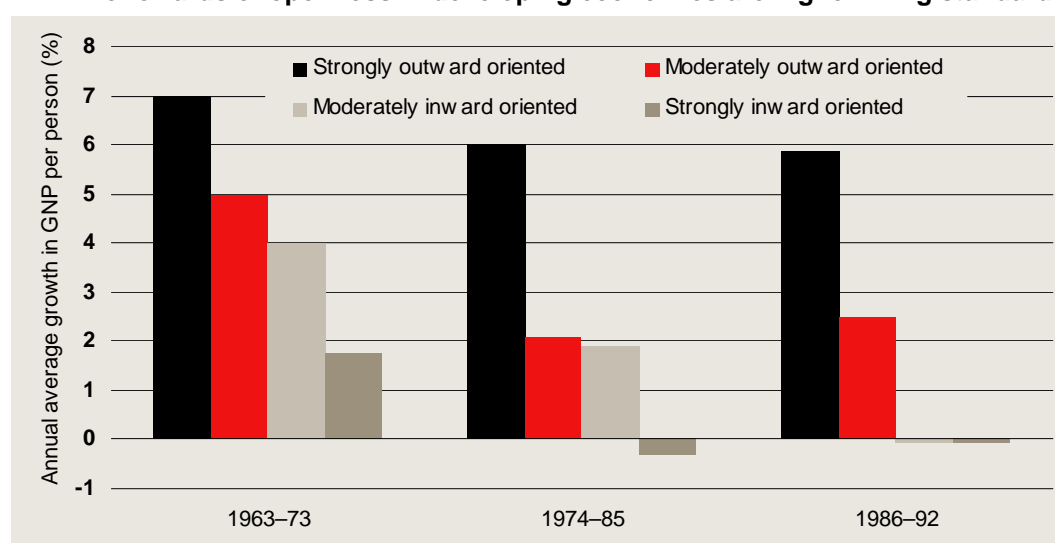
points; among others. In a broad sense, these actions reduce transaction costs of trade, making trade more efficient and reliable and stimulating its growth.

Initiatives to improve physical connectivity through building roads between countries or connecting isolated areas to main corridors of trade provide communities with access to markets. This is particularly important for the poor.

... and the link between trade and growth is strong

There have been many studies of the relationship between international trade, openness and growth. A report by the Organisation for Economic Cooperation and Development (OECD) in 1999 provided compelling evidence of the extent to which economies that had been open to international trade and investment had performed consistently better than economies with inward oriented development policies. Chart 12 summarises the evidence. Those economies around the world with a strong outward orientation were found to have grown much faster than those economies with an inward orientation. Moreover, this relationship seems robust over different periods. Growth rates in strongly outward-oriented economies have been several times larger than those of strongly inward-oriented economies.

12 The rewards of openness in developing economies are higher living standards



Note: GNP — Gross National Product, a measure of income accruing to nationals of a country.

Data source: OECD 1999.

Of course, a simple relationship between openness and growth does not establish cause and effect. It could be that high growing developing economies also start to trade more and so become more open. But a 1999 paper by Frankel and Romer sorted out the interdependency between trade causing growth and growth causing trade, and found that for every 1 percentage point increase in ratio of trade to GDP across countries, productivity, measured by per capita GDP, is higher by 2 to 3 per cent.

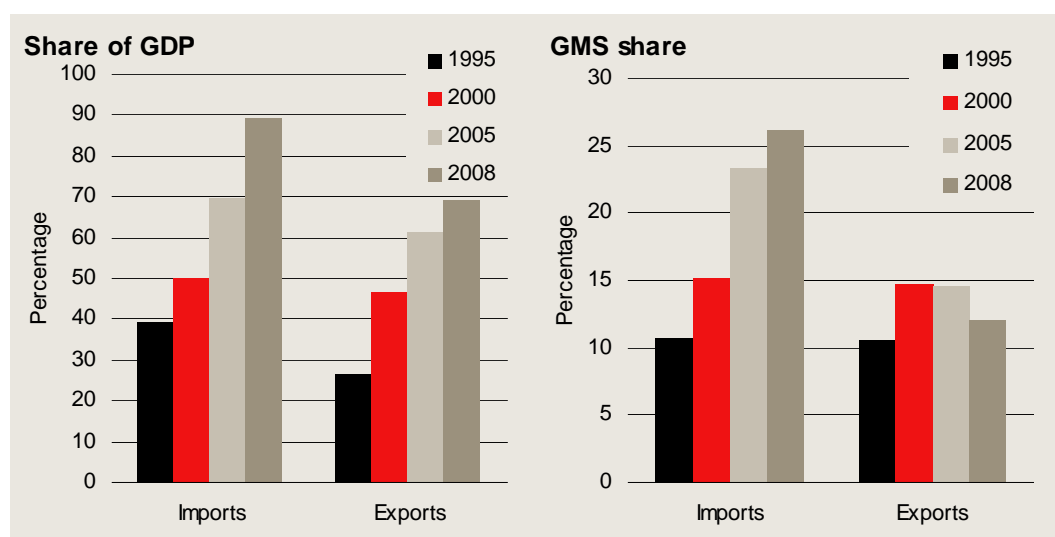
Two case studies from the region provide strong evidence

The direct experience of GMS economies provides strong evidence of the link between openness, connectivity and growth and poverty reduction.

Vietnam – a case study of the power of international trade

Openness to international trade and investment has been a key feature of Vietnam's development strategy since it first began its transition to an open economy in the latter half of the 1980s. As a result of the process of removing impediments to international trade and investment, exports (and imports) have grown to play a large role in the economy. As chart 13 shows, the share of exports in GDP grew from 26 to 69 per cent of GDP between 1995 and 2008, while the share of imports grew from 39 to 89 percent. Trade and investment liberalisation enabled Vietnam to realise its underlying attractiveness as a destination for foreign investment: the country received over US\$44 billion of direct and portfolio investment between 1995 and 2008. This investment and exploitation of the opportunities to produce for international markets helped Vietnam achieve one of the most rapid, sustained growth paths in the world. Between 1995 and 2008, real GDP grew at a trend rate of 7.5 per cent, and this growth was accompanied by a deep reduction in the share of people living below the national poverty line – from 58 per cent in 1993 to 16 per cent in 2006, a reduction of more than two-thirds.

13 Growth of international trade in Vietnam



^a GMS includes China and Myanmar.

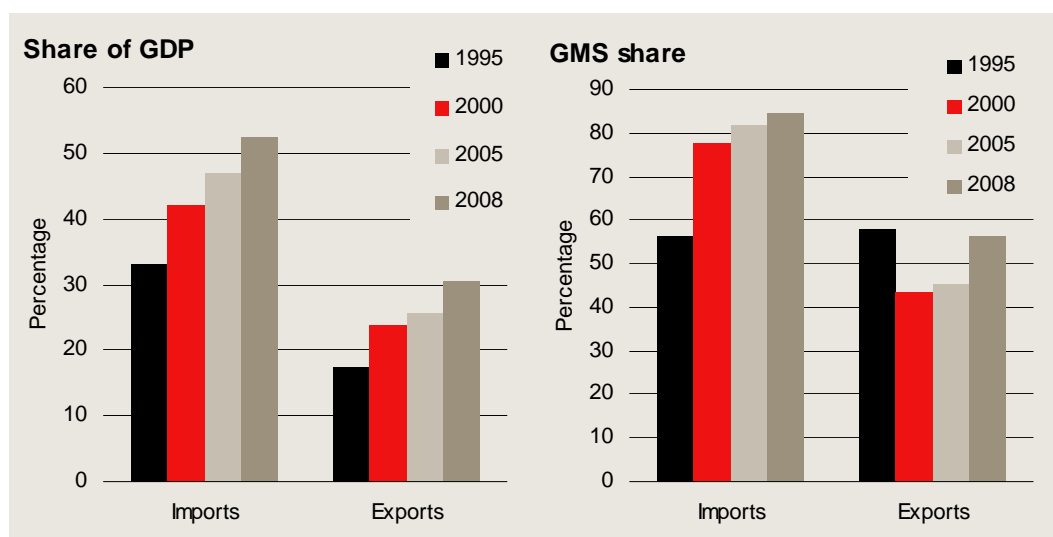
Data source: ADB Key Indicators 2009, General Statistics Office, 2010.

Lao PDR – regional integration for a landlocked country

Like Vietnam, Lao PDR is a country for which international trade and investment have been playing a critical role in development. Since the introduction of the New

Economic Mechanism in the mid 1980s, trade and investment liberalisation have been significant drivers of economic growth, with exports now accounting for over 30 per cent of GDP, and imports a much higher share (chart 8). The country's trade is heavily influenced by its increasing integration with its GMS neighbours: in 2008 over 80 per cent of its imports came from the GMS region, with 69 per cent coming from Thailand alone. In the same year, the region took 56 per cent of the country's exports (chart 14): together Thailand and Vietnam take about a half of the country's exports of copper and gold, and Thailand accounts for most of the country's exports of electricity. Thailand, Vietnam and China also account for the bulk of foreign investment in Lao PDR.

14 Growth of international trade in Lao PDR



^a GMS includes China but excludes Myanmar.

Data source: ADB Key Indicators 2009.

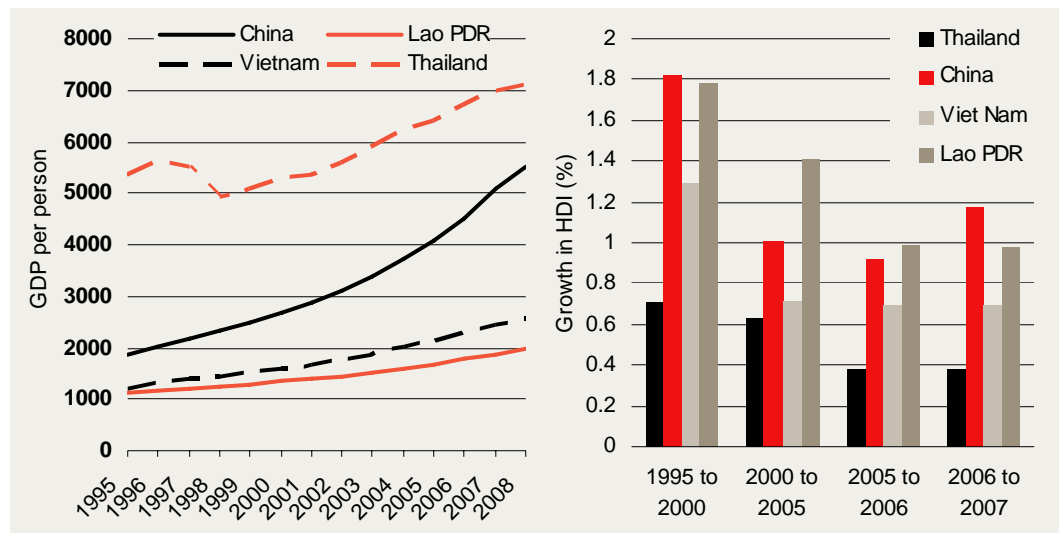
The close linkages with its rapidly growing neighbours, facilitated by GMS related investment in transport infrastructure, has underpinned Lao PDR's impressive growth performance. GDP per person has grown at around 6 per cent a year, and this growth has been converted into strong human development gains (chart 15).

As a land-locked country aspiring to become land-linked, Lao PDR is a significant beneficiary of GMS trade and transport facilitation improvements to reduce the costs of its global as well as its regional trade. A large share of the country's trade transits through Thailand: in 2004, over 60 per cent of Lao PDR's exports (other than to Thailand) transited through Thailand. Bilateral agreements with Thailand (the Lao-Thai Transit Agreement) and Vietnam (the Agreement on Road Transport) facilitate transit trade.

Lao PDR is undertaking a major program of Customs and SPS reform and development to reduce transaction costs and simplify and rationalizing formalities

by the adoption of internationally agreed standards and good practices for cross-border movement of goods.

15 Economic welfare: Lao PDR and its GMS neighbours (GDP per person in PPP^a terms, and growth in HDI^b)



^a PPP refers to 'purchasing power parity' and is a way of putting GDP levels of different countries on a comparable basis. The chart presents GDP per person in constant 2005 US dollars.

^b Human Development Index — composite measure of progress along a number of indicators of human welfare. The chart shows the annual growth in the index over the specified periods.

Data source: IMF, World Bank, CIE estimates, United Nations Human Development Database.

How big are the benefits of improving TTF?

The early parts of this paper have shown that making progress on the TTF agenda can deliver benefits. For the members of GMS, it is reasonable to ask how big the achievable benefits might be. This depends to some degree on the scope for improvements, and how much poor performance inhibits achieving the gains from expanding trade.

The magnitude of the costs and time delays on trade

The benefits of trade and transport facilitation can be measured by looking at the costs of inefficiencies in trading across borders. If the costs are high the potential benefits from removing the inefficiencies can also be high.

There are direct and indirect transaction costs in trading across borders. Direct costs include costs of providing information and documents to customs authorities, customs fees, port handling charges and other payments while indirect costs relate to delays and unpredictability of the system that translate into greater costs of inventories and insurance. Surveys aimed at calculating these costs suggest that they may range from 2 per cent to 15 per cent of the value of traded goods (OECD 2005). The inefficiencies in border procedures that represent extra costs for traders end up being passed onto consumers or back to exporters.

A recent study commissioned by the United States Agency for International Development (USAID) assessed the performance of the logistics sector in members of ASEAN. It measured the impact of its inefficiencies in two ways:

- the share of the cost of logistics in free-on-board (fob) costs of exports, and
- the loss in trade volume due to time delays from poor logistics.

The study involved a survey of agencies in member countries, and an analysis of performance in two corridors in the GMS region (Vientiane – Laem Chabang and Da Nang-Savannakhet-Mukdahan).

After poor infrastructure, the biggest impediment to the efficient flow of goods and services across GMS countries lies in the institutional framework

The study found that the logistics sectors in Cambodia, Lao PDR, Vietnam and Myanmar faced significant road transport constraints, mainly due to roads being old

and narrow, and often not useable in all seasons. However, after poor infrastructure, the biggest problem facing ASEAN countries is the institutional framework: in particular the fact that multiple agreements between countries overlap in terms of border procedures and transit of goods (the study observed that while bilateral agreements, such as the Lao-Thai transit agreement have been struck between members of ASEAN, such agreements do not encourage trade with other countries or lead to greater integration of the ASEAN logistics sector). The study found that transit across borders was more problematic than direct exporting and importing, because of challenges in identifying and preparing the correct documentation, dealing with the large number of documents required, and providing financial guarantees.

More than 30 per cent of the total logistics costs for exports arises from compliance with institutional rules and regulations

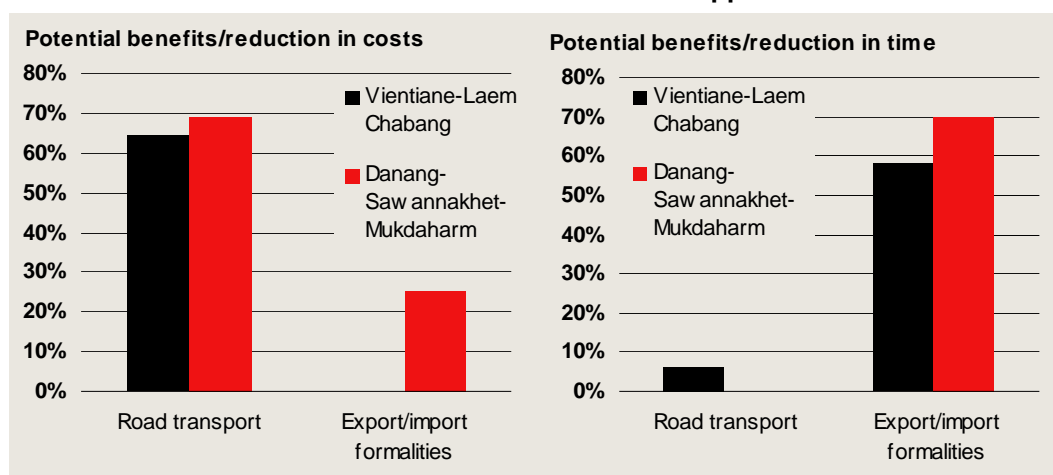
The study examined export processing costs related to documentary procedures and fees for speeding up processing. Complying with procedures often involved considerable delays, which can impose significant costs for perishable products, add to the costs of holding inventories and make it hard to participate in international value chains. The survey found that while transport costs accounted for around 28 per cent of total export logistics costs in ASEAN member economies, complying with export procedures amounted to around 34 per cent of these costs.

The time required for trade formalities and road transport costs are between two and three times higher than international standard practice

The study's corridor assessments provided interesting insights into the high transaction costs of trading across the borders between Lao PDR, Thailand and Vietnam. The assessments looked at various logistics elements/services/infrastructure such as port and terminal operations, seaport customs, rail transport, inland clearance depots operations, road transport, transloading, inland customs and exports/imports formalities. In both corridors the exports/imports formalities and the road transport were the weakest points of the logistics chain. The potential for improvement of these areas is large.

Chart 16 indicates the potential reduction in costs for road transport and time for trade formalities that could be achieved in these corridors if they were to perform at international standards.

16 Potential benefits/reduction on costs and time to shippers



Data source: Nathan Associates 2007b.

Each day that a product is delayed before being shipped reduces trade by at least 1 per cent (Djankov et al, 2006)

The costs caused by delays act as a tax on trade, and reduce levels of trade below what can be achieved with more efficient facilitation. For time-sensitive agricultural products the reduction in trade can be very high.

The importance of the 'delay tax' is illustrated in a study by Djankov et al that concluded that each day that products are delayed before being shipped reduces trade by at least one per cent. Given the differences from best practice in lead times to export shown in chart 7 above, it is clear that GMS countries may be seriously suppressing their international trade through inefficient processing of trade.

Reducing costs and delays will not mean a loss of revenue

An important message of the USAID study is that reducing export processing costs will not lead to a loss of revenue:

Reducing export processing costs does not mean a loss of revenue for ASEAN governments because facilitation measures can increase the volume of related exports transactions (Nathan Associates 2007b).

CBTA and SFA-TFI address areas that represent the largest costs to trade

The study proposed a range of actions to increase the efficiency of customs and road transport and to achieve the gains in competitiveness of a competent trade logistics system. The proposed actions included implementing an electronic single window, adopting a single declaration document, installing computerized/electronic systems, establishing inland warehouses, improving maintenance of international roads, establishing common standards for international truck facilities at border crossings

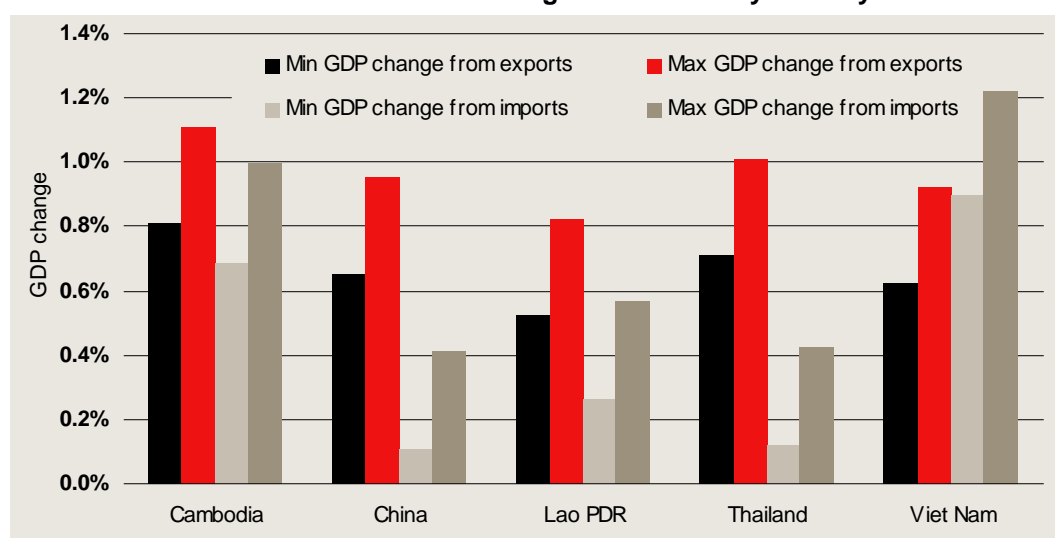
and transloading areas, and developing agreements allowing trucks to cross borders with transit goods. Many of these actions are being proposed and supported for GMS members in the CBTA and the SFA-TFI.

The economy-wide gains from TTF can be significant

GDP can increase by up to 1.2 per cent per each day's reduction in average time to trade

USAID has developed a tool (the Trade Facilitation Impact Calculator (TFIC)) for estimating the impact on GDP of reducing the average time to conduct export or import transactions by one day for more than 130 countries.³ The tool models costs of delays, and takes account of the fact that delays are more costly for some goods than for others, and of the variation across countries in the importance of such goods in their total trade basket. Chart 17 shows the estimates from using the tool of the impact on GDP of reducing the time to export and import by one day for GMS countries. For Cambodia, the tool suggests that if the average time to export were one day shorter, GDP would be between 0.8 and 1.1 per cent higher. Similarly, it suggests that if the average time to import were one day shorter, GDP would be between 0.7 and 1.2 per cent higher than would otherwise be the case. For Vietnam the increase in GDP would be between 0.6 and 1.2 per cent.

17 Potential increase in GDP from reducing time to trade by one day



Data source: Trade Facilitation Impact Calculator.

³ Trade Facilitation Impact Calculator (TFIC) available at <http://www.tcboostproject.com/resources/tools/impactcalculator.php>

If GMS countries facilitate trade and transport simultaneously GDP can increase by up to 7 per cent for some GMS countries

A recent study by the ADB Institute⁴ examined the impact of transport infrastructure and trade facilitation in the GMS region. Based on previous studies that assessed the performance of GMS economic corridors, the authors quantified the potential benefits arising from reducing transport costs and the transaction costs of trade associated with border and other procedures. The findings suggest that the gains from trade facilitation are considerable and larger than those from infrastructure improvements. This is because trade facilitation reduces overall costs for all traded products while road infrastructure developments benefit mostly those economic sectors that rely on this mean of transportation.

The study used a large model of world trade (the methodology used in the study is described in appendix D), and used evidence from other work on logistics in GMS and on particular corridors to identify achievable reductions in land transport costs (a 45 per cent reduction) and in trade costs from time savings from implementation of the CBTA (a 25 per cent reduction).⁵ It estimated that these reductions to costs of intra-GMS trade could increase GDP in the region, if pursued separately or together. Table 18 presents the estimated impact on economic activity of each GMS country per scenario.

18 Increase in GDP from reduction in land transport and trade costs in intra-GMS trade

<i>Country</i>	<i>45 per cent transport cost reduction</i>	<i>25 per cent trade cost reduction</i>	<i>Transport and trade costs reduction combined</i>
	%	%	%
Cambodia	0.08	6.71	7.01
China	0.00	0.06	0.06
Lao PDR	0.06	6.32	6.43
Myanmar	0.06	4.22	4.35
Thailand	0.01	0.87	0.89
Vietnam	0.10	3.15	3.29

Source: Stone and Strutt 2009.

Infrastructure improvements bring about economic growth but trade facilitation leads to higher growth

The table shows that those countries that face high transport and trade costs have most to gain from reductions in such costs. Also, those with a larger trade base benefit the most.

⁴ Stone and Strutt 2009.

⁵ Adjustment to these costs reductions were made to take account of the fact that only two provinces of China are part of the GMS region. The reduction in land transport costs in Chian was 25 per cent and of trade costs of 5 per cent.

In the case of infrastructure improvements, Myanmar and Lao PDR have much to gain but the smaller trade base (compared to the larger countries) means that the impact on GDP is not as large as, say, for Vietnam. (For Vietnam land transport costs are relatively more important for its exports to the region, and it has a large trade base to benefit from a reduction in these costs).

There are economic benefits for all countries in the GMS region from continued improvements in road infrastructure: however, the gains from trade facilitation are larger.

The highest economic benefits of reducing trade costs in the GMS region accrue to Cambodia, Lao PDR and Myanmar, the poorest countries in the region

Reducing trade costs through TTF activities could generate an increase in GDP of over 6 per cent for Cambodia and for Lao PDR, and over 4 per cent for Myanmar; the poorest countries in the GMS region. Benefits to Thailand, China and Vietnam are smaller but still considerable.⁶

Reducing trade costs within GMS can induce adjustments in the export sector in favour of internal trade and product diversification

Achieving cost reductions on intra-GMS trade favours trade between these countries compared with trade with the rest of the world. This could lead to an expansion in intra-GMS trade at the expense of some reduction in trade with other partners. But overall, income as measured by GDP would be higher in countries implementing the reforms. Even though exports to large, high-value markets may decline in some GMS countries, real income would be higher because of the reduction in the cost of imports from neighbours.

Trade and transport facilitation that reduces the time to trade can open up commerce in time sensitive products such as fruit and vegetables. Countries unable to trade on perishable agricultural goods because of time delays at the borders could start exporting these goods if efficiencies are achieved.

The greatest benefits to GMS countries come from progressing on both fronts: transport infrastructure and trade facilitation

As shown in table 17, the greatest benefits to GMS come about if the problems of transport infrastructure and trade facilitation are addressed together. Again the

⁶ The effect of actions to facilitate transport and trade across GMS borders may be underestimated. Intra trade shares calculated from GTAP database by Stone and Strutt seem to be substantially lower than those observed from international trade statistics. In this case the importance of the regional trade may be miscalculated along with the impact on total trade and GDP.

poorest countries benefit the most. However the impact is not substantially higher than that achieved by only pursuing trade facilitation. An interpretation of this is given by Stone and Strutt:

What may be inferred from this result is that once the physical infrastructure is in place, diminishing returns set in rather quickly. Physical infrastructure is a necessary but not sufficient condition for an economy to obtain benefits from trade expansion. Marginal benefits from a physical base are highest when policy programs include trade facilitation. Page 17, paragraph 2.

These results are consistent with other studies of the gains from transport and trade facilitation (see box 19).

19 Regional trade facilitation initiatives can provide benefits: the case of GMS members of APEC

A report by the APEC Economic Committee (2002) shows that reducing trade-related transaction costs by 5 per cent through regional trade facilitation could increase APEC's GDP by 0.98 per cent. The estimated impacts on Thailand, China and Vietnam as a result of this improvement are substantial; GDP would be 2.15 per cent in higher Thailand, 2.30 per cent in China and around 6 per cent in Vietnam.

The Australian Department of Foreign Affairs and Trade explored some of the specific activities that APEC countries were pursuing to achieve the gains from lower transaction costs (DFAT, 2002). The study estimated the economic benefits from at-the-border reforms of customs procedures in three APEC economies. One case study was of the adoption of Thailand's electronic data interchange system, which allows the transfer of customs documentation using an online system, reducing the time and cost of cross-border trade. Adoption of the system led to the time to complete documentation falling by at least a third. This was estimated to reduce the costs to traders by at least 1.5 per cent of the value of the items imported. These reductions in time and costs to trade were estimated to lead to Thailand's GDP being 0.16 per cent higher than it would otherwise be.

Importance of GMS TTF agenda in achieving the benefits

The gains for GMS members in improving trade and transport facilitation are clearly quite large. But progress on the GMS – TTF agenda has been slow. The ADB's 2008 evaluation of the GMS – TTF sector assistance program concluded (accurately, as it has turned out) that full implementation of the CBTA by the 2010 target was unlikely, meaning that only a portion of the potential gains from the \$11 billion of infrastructure spending under GMS-ECP were likely to be achieved. The evaluation cited the absence of an agreement to facilitate cross-border movement of vehicles as

an important impediment, and pointed out that nearly half of the time (and over 40 per cent of the costs) involved in traversing the East-West corridor were attributed to customs and border clearance formalities. In practice, the pilot projects under the CBTA are not proceeding to the envisaged extent, and goods processing at most border checkpoints remains characterised by redundancy and lack of coordination, with limited use made of risk management techniques and of information and communications technology. Similarly, limited progress has been made in adoption of the GMS Customs Transit System, which had been developed to address a key problem affecting landlocked member of GMS (see box 20).

20 The importance of transit facilitation: a key component of CBTA

For landlocked countries trade and transport facilitation is vital, as they depend upon the efficiency of their neighbour's logistics to trade. For these countries facilitation of transit trade in neighbouring countries is very important⁷. The World Bank states that inland locations often face high trade transaction costs, with logistics costs accounting for 30 per cent of the GDP of the landlocked least developed countries (LLDC), which is double that in other emerging economies and three times than in developed countries.

Transit trade is highly vulnerable to rent-seeking activities, inefficient bureaucratic procedures, and the inadequate provision of private sector services. The deficiencies extend to the reliability of supply chains particularly in the context of the small, distant markets served by many LLDCs. Recent Bank studies have identified high trade transaction costs attributable to other deficiencies in national trade and transport policies and in the governance of transit systems.

The CBTA Customs Transit and Temporary Admission System is one GMS initiative aimed at addressing some of these problems. However, it has yet to properly take off and may need to be coordinated with related ASEAN frameworks and the Convention on International Transport of Goods Under Cover of Transit International Routiers Carnets.

Adapted from the World Bank <http://go.worldbank.org/FK2KPB1AM0>

While elements of the CBTA may have been overtaken by other initiatives, especially in fields such as the ASEAN Single Window, the activities in the GMS-TTF agenda under the CBTA and the SFA-TFI are focussed on issues that drive much of the 'excess' costs of trade logistics, such as customs procedures and clearance, simplification of formalities and improvement of trade-related infrastructure. GMS

⁷ Transit trade describes the inland movement of goods under customs control that is not cleared by customs: transit can take place in the country of destination/origin of the goods (national transit) or in a third country where the merchandise is carried from an entry post to an exit post (international transit).

members will need to decide how to manage the apparent ‘overlap’ of initiatives, which issues are best progressed under the CBTA umbrella, and where the GMS-TTF agenda can be used to support adoption and implementation of other initiatives, where relevant. (Box 21 identifies some of the other TTF initiatives being pursued by GMS members.)

21 Other collective TTF initiatives

GMS member countries are pursuing TTF issues as part of a number of multilateral and regional agreements to which some are members. All members but Lao PDR are members of the WTO, and as such are working on implementation of agreements on customs valuation and sanitary and phyto-sanitary procedures (and Lao PDR is fairly advanced in the process of acceding to the WTO, so is preparing to implement the agreements).

All members other than PRC are members of ASEAN, which has a range of TTF initiatives, including:

- The ASEAN Framework Agreement on the Facilitation of Goods in Transit;
- The ASEAN Agreement on the Facilitation of Inter-State Transport;
- The ASEAN Framework Agreement on Multimodal Transport;
- The Agreement on the Recognition of Commercial Vehicles Inspection Certificates for Goods Vehicles and Public Services Vehicles;
- The Agreement to Establish and Implement the ASEAN Single Window;
- The ASEAN Customs Transit System;
- The ASEAN Sectoral Integration Protocol for the Logistics Services Sector; and
- The ASEAN Cargo Processing Model.

At the same time, the increased efforts being given to supporting institutional development within GMS countries (such as the large customs modernisation and trade facilitation projects in Cambodia, Lao PDR and Vietnam) provide a platform for accelerating work on the CBTA and SFA-TFI agenda, as they are addressing some of the systemic constraints that have held back progress in the past.

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Appendices

A *GMS background indicators*

A.1 Population (millions of people)

	1990	1995	2000	2005	2009
Cambodia	8.49	11.50	12.68	13.83	13.94
China	1143.33	1211.21	1267.43	1307.56	1334.74
Lao PDR	4.13	4.69	5.28	5.91	6.38
Myanmar	40.79	44.74	50.13	55.39	59.98
Thailand	56.41	59.46	62.40	65.11	66.98
Vietnam	66.02	72.00	77.64	83.11	87.21

Source: IMF.

A.2 GDP annual growth (per cent) 1998–2008

Country	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Average
Cambodia	5.0	11.9	8.8	8.0	6.7	8.5	10.3	13.3	10.8	10.2	6.7	9
China	7.8	7.6	8.4	8.3	9.1	10.0	10.1	10.4	11.6	13.0	9.0	10
Lao PDR	4.0	7.3	5.8	5.8	5.9	6.1	6.4	7.1	8.4	7.6	7.5	7
Myanmar	5.9	10.9	13.7	11.3	12.0	13.8	13.6	13.6	12.7			12
Thailand	-10.5	4.4	4.8	2.2	5.3	7.1	6.3	4.6	5.1	4.9	2.5	3
Vietnam	5.8	4.8	6.8	6.9	7.1	7.3	7.8	8.4	8.2	8.5	6.2	7
Guangxi	18	-2	8	8	9	10	7	11	13	17	11	10
Yunnan	33	-13	8	8	9	10	15	5	10	13	10	10

Note: Data for Guangxi and Yunnan provinces of China was calculated from 1998 and 2008 data.

Source: World Bank Development indicators.

A.3 Exports (merchandise) annual growth (per cent) 1998–2008

Country	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Average
Cambodia	9	41	23	8	28	10	32	10	14	16	5	18
China	1	6	28	7	22	35	35	28	27	26	17	21
Lao PDR	3	-16	6	-3	-6	12	8	52	59	5	17	12
Myanmar	23	5	45	45	28	-18	-4	60	20	38	9	23
Thailand	-5	7	18	-6	5	18	20	15	17	17	17	11
Vietnam	2	23	25	4	11	21	31	22	23	22	30	19
Guangxi	75	-39	53	-11	22	35	35	28	27	5	44	25
Yunnan	38	-23	51	-9	22	35	35	28	27	23	5	21

Note: Data for Guangxi and Yunnan provinces of China was calculated from 1998 and 2008 data.

Source: World Bank Development indicators.

A.4 Imports (merchandise) annual growth (per cent) 1998–2008

Country	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Average
Cambodia	10	36	22	8	11	10	25	23	21	14	20	18
China	-1	18	36	8	21	40	36	18	20	21	19	21
Lao PDR	-22	-5	2	-5	-12	3	54	24	20	1	30	8
Myanmar	31	-14	3	20	-18	-11	5	-12	33	29	30	9
Thailand	-32	17	23	0	4	17	25	25	9	9	28	11
Vietnam	-1	2	33	4	22	28	27	15	22	40	28	20
Guangxi	120	-47	32	79	21	40	36	18	20	31	42	36
Yunnan	36	-14	28	41	21	40	36	18	20	37	15	25

Note: Data for Guangxi and Yunnan provinces of China was calculated from 1998 and 2008 data.

Source: World Bank Development indicators.

A.5 GMS intra trade — value of imports from and exports to GMS members

	Cambodia	China	Lao PDR	Myanmar	Thailand	Vietnam
	US\$m	US\$m	US\$m	US\$m	US\$m	US\$m
Mid 90's	564	5,294	532	2 103	5 732	1 563
2000	503	9,976	895	2 024	8 932	4 484
2005	814	31 909	1 587	5 026	27 977	13 323
2008	2 301	6 ,914	4 054	10 164	51 614	29 311
Change 2000-08 (per cent)	457%	651%	453%	502%	578%	654%

Source: UN Comtrade.

A.6 Poverty headcount ratio

Country	End 1990s	Latest year available	Reduction
	%	%	%
Cambodia	36.1	30.1	16.5
China	35.6	15.9	55.3
Lao PDR	38.6	27.0	30.1
Thailand	20.0	12.0	40.0
Vietnam	37.4	16.0	57.2

Note: The table shows the proportion of the population living below the national poverty line, except for China, where it shows the proportion of the population living below the international poverty line of US\$1.25 a day.

Source: World Bank Development indicators.

B GMS TTF initiatives

Economic integration has long been part of the agenda of the GMS countries. The GMS Economic Cooperation Program (GMS-ECP) is a core initiative for pursuing further integration. Eighteen years after the start of the program, the GMS region has consolidated a space for discussion and teamwork to address key issues in infrastructure, environment protection, capacity building, investment and trade.

Two key initiatives within the GMS-ECP relate to facilitating transport and trade.

Cross-Border Transport Agreement (CBTA)

CBTA is a powerful transport facilitation instrument. The importance of the CBTA is that it covers a broad spectrum of relevant aspects on transport of goods and people through selected routes and points of access in all GMS countries. Key aspects are:

- Single-stop/single-window customs inspection
- Cross-border movement of people and vehicles
- Transit traffic regimes and exchange of commercial traffic rights
- Infrastructure, including road design standards, signs, and signals

The CBTA was ratified by all GMS countries in 2003 and its full implementation was expected by 2007–08 but has not yet taken place except for some pilot border crossings pairs for which there exist memoranda of understanding.

Strategic Framework for Action on Trade Facilitation and Investment (SFA-TFI)

The SFA-TFI covers four priority areas:

- Customs procedures
- Inspection, quarantine and SPS measures
- Trade logistics
- Mobility of business people

Despite the endorsement of the Framework in 2005 and expected completion of principal actions by 2010, implementation has not yet started except for some actions in the logistics and SPS areas.

C TTF and logistics indicators

This appendix provides some background information on the indicators used in this report.

Doing business indicators

The World Bank Doing Business project attempts to provide an objective basis for understanding and improving the regulatory environment for business. It covers ten indicator sets in 183 economies.

It provides a quantitative measure of regulations for starting a business, dealing with construction permits, employing workers, registering property, getting credit, protecting investors, paying taxes, trading across borders, enforcing contracts and closing a business – as they apply to domestic small and medium-size enterprises⁸.

The Doing Business incorporates data from analysis of laws and regulations and indicators of the efficiency in achieving a regulatory goal. Cost estimates within the indicators come from official fee schedules where applicable. The information collected by the Doing Business project applies to domestic small to medium size enterprises in the formal sector.

It uses simple averages for weighting sub-indicators and calculating rankings. On trading across borders, data on time (days) and cost to trade (US per container) is included as well as number of documents required.

Tables C1 to C3 show the Doing Business data for the GMS countries.

⁸ It is assumed that the firm has at least 60 employees, is located in the country's most populous city, is a private, limited liability company, it does not operate within an export processing zone or an industrial estate with special export or import privileges, is domestically owned with no foreign ownership, it exports more than 10 per cent of its sales.

C.1 Number of documents to export and to import in GMS countries

	<i>Documents to export</i>					<i>Documents to import</i>				
	2005	2006	2007	2008	2009	2005	2006	2007	2008	2009
	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number
Cambodia	8	11	11	11	11	12	11	11	11	11
China	6	7	7	7	7	11	6	6	6	5
Lao PDR	11	11	9	9	9	15	15	10	10	10
Thailand	9	9	7	4	4	12	12	9	3	3
Vietnam	6	6	6	6	6	8	8	8	8	8
EAP aver.	7	7	7	7	7	9	8	8	8	7

Source: World Bank Doing Business indicators.

C.2 Lead time to export and to import in GMS countries

	<i>Time to export</i>					<i>Time to import</i>				
	2005	2006	2007	2008	2009	2005	2006	2007	2008	2009
	Days	Days	Days	Days	Days	Days	Days	Days	Days	Days
Cambodia	43	37	37	22	22	55	46	46	30	30
China	18	21	21	21	21	24	24	24	24	24
Lao PDR	66	66	50	50	50	78	78	50	50	50
Thailand	24	24	17	14	14	22	22	14	13	13
Vietnam	24	24	24	24	22	23	23	23	23	21
EAP aver.	28	27	26	25	25	31	30	28	27	27

Source: World Bank Doing Business indicators.

C.3 Cost to export and to import in GMS countries

	<i>Cost to export a container</i>					<i>Cost to import a container</i>				
	2005	2006	2007	2008	2009	2005	2006	2007	2008	2009
	US\$	US\$	US\$	US\$	US\$	US\$	US\$	US\$	US\$	US\$
Cambodia	736	722	722	732	732	816	852	852	872	872
China	335	390	390	460	500	375	430	430	545	545
Lao PDR	1,420	1,420	1,750	1,860	1,860	1,690	1,690	1,930	2,040	2,040
Thailand	848	848	615	625	625	1,042	1,042	786	795	795
Vietnam	669	669	669	734	756	881	881	881	901	940
EAP aver.										

Source: World Bank Doing Business indicators.

The Logistics Performance Index

The World Bank's Logistics Performance Index is a measure of performance along the logistics supply chain within a country from two different perspectives; international and domestic.

It is based on a worldwide survey of operators on the ground (global freight forwarders and express carriers), providing feedback on the logistics 'friendliness' of the countries in which they operate and those with which they trade. World Bank web site.⁹

The Logistics Performance Index (LPI) provides a point of reference for countries to identify the challenges and opportunities in their trade logistics system. It allows for international comparison between 155 countries, incorporating six dimensions of logistics: customs, trade infrastructure, ease of arranging competitively priced international shipments, logistics competence, ability to track and trace consignments and timeliness.

The international LPI provides qualitative evaluations of a country in six areas by its trading partners – logistics professionals working outside the country.

The domestic LPI provides both qualitative and quantitative assessments of a country by logistics professionals working inside it. It includes detailed information on the logistics environment, core logistics processes, institutions, and performance time and cost data.

Scores in the LPI range from 1 (worst) to 5 (best). The regions correspond to those of the World Bank classification. The averages per region refer to a simple average of the member countries.

Table C.4 shows the scores of each of GMS countries per trade logistics dimension according to the international LPI. Areas with the lowest score in each country are shaded.

C.4 LPI scores by country, GMS region, 2010

	<i>LPI</i>	<i>Customs</i>	<i>Infrastructure</i>	<i>International shipments</i>	<i>Logistics competence</i>	<i>Tracking and tracing</i>	<i>Timeliness</i>
	Score	Score	Score	Score	Score	Score	Score
China	3.49	3.16	3.54	3.31	3.49	3.55	3.91
Thailand	3.29	3.02	3.16	3.27	3.16	3.41	3.73
Vietnam	2.96	2.68	2.56	3.04	2.89	3.1	3.44
Lao PDR	2.46	2.17	1.95	2.7	2.14	2.45	3.23
Cambodia	2.37	2.28	2.12	2.19	2.29	2.5	2.84
Myanmar	2.33	1.94	1.92	2.37	2.01	2.36	3.29
EAP (reg. aver)	2.73	2.41	2.46	2.79	2.58	2.74	3.33

Note: Scores range from 1 (worst) to 5 (best).

Source: World Bank, LPI international.

⁹ <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTTRANSPORT/EXTTTL/0,,contentMDK:21514122~menuPK:3875957~pagePK:210058~piPK:210062~theSitePK:515434,00.html>

Enabling Trade Index

The World Economic Forum has published the Global Enabling Trade Report for three years, including the 2010 edition. The report includes data for 125 economies worldwide and presents the extent to which countries have in place the attributes required for enabling trade and areas where improvement is needed.

The index involves four subindexes:

- market access index;
- border administration index;
- transport and communications infrastructure index; and
- the business environment index.

The subindexes in turn include variables on enabling trade. The information for all areas is composed by hard data from public international sources and Executive Opinion survey conducted by the World Economic Forum.

Countries are ranked and given performance scores to enable comparisons between countries. Scores range from 1 (worst) to 7 (best) and the overall index relates to unweighted average of the scores of the subindexes per country.

Table C.5 shows the scores and rank for the overall index and the subindexes for GMS countries, except for Lao PDR and Myanmar for which there is no data reported. The subindexes on border administration and transport communication infrastructure cover some of the most important aspects of trade facilitation.

C.5 Enabling trade index and subindexes for GMS countries

		<i>Cambodia</i>	<i>China</i>	<i>Thailand</i>	<i>Vietnam</i>
OVERALL INDEX	Rank	102	48	60	71
	Score	3.6	4.3	4.1	4
Market access	Rank	40	79	113	50
	Score	4.6	3.9	3.5	4.4
Domestic market access	Rank	96	81	124	58
	Score	4.3	4.5	2.9	4.8
Foreign market access	Rank	6	83	18	47
	Score	5.2	2.5	4.7	3.6
Border administration	Rank	96	48	41	88
	Score	3.3	4.5	4.6	3.5
Efficiency of customs administration	Rank	89	40	36	107
	Score	3.4	4.6	4.7	2.9
Efficiency of import-export procedures	Rank	96	33	14	54
	Score	4	5.3	5.8	4.8
Transparency of border administration	Rank	120	56	71	104
	Score	2.4	3.7	3.3	2.7
Transport and communication infrastructure	Rank	116	43	40	68
	Score	2.5	4.1	4.2	3.6
Availability and quality of transport infrastructure	Rank	115	57	40	103
	Score	2.8	4.3	5	3.2
Availability and quality of transport services	Rank	112	18	26	31
	Score	3	5	4.6	4.4
Availability and use of ICTs	Rank	117	70	73	59
	Score	1.8	3.1	3	3.3
Business environment	Rank	88	41	71	64
	Score	3.9	4.7	4.2	4.3
Regulatory environment	Rank	87	43	53	60
	Score	3.5	4.2	4	3.8
Physical security	Rank	91	44	84	66
	Score	4.3	5.3	4.5	4.9

Note: Data for Myanmar and Lao PDR is not reported.

Source: World Economic Forum.

D GTAP and gravity models

There have been several studies attempting to estimate the benefits of trade facilitation. The attribution of the benefits to particular actions within the TTF agenda is hard as other factors and policies also influence the growth of trade and economic activity. However, the impact of TTF activities in conjunction is what is usually quantified; this is that they reduce time and costs of trading across borders stimulating trade and socio economic outcomes.

The studies have attempted to estimate this impact through modelling exercises. There are two broad approaches for conducting the modelling. One is the use of gravity models. These models predict bilateral trade flows according to the sizes of the economies and the distance between the two countries analysed. Additional variables are included to analyse the impact of policies in the international trade sphere such as preferential trade agreements. These models have been useful for testing the relation between trade costs and increases in the volume of trade.

A second approach is the use of computable general equilibrium models which are more suited for explaining economy-wide effects of policies. The use of the Global Trade Analysis Project (GTAP) model is common for capturing such effects. This model incorporates relations between economic sectors and countries, resource constraints and an economic framework that accounts for the behaviour of consumers and firms. The results presented in this paper have been drawn from studies using this model.

The Global Trade Analysis Project model

GTAP is a modelling framework that assists in quantifying the impacts of policy issues and has commonly being used for analysing impact of trade liberalization and trends. As with any other model it simplifies the real world to allow for analysis and prediction of the impact of policies on economic activity.

It is a computable general equilibrium model that incorporates multiple economic sectors and regions, capturing the links between them by modelling the behaviour of and interaction between consumers, producers and government.

Underlying assumptions in GTAP include:

- perfect competition;
- constant returns to scale;

- consumers maximize welfare according to budget restrictions and producers maximize profits subject to the resource availability;
- bilateral trade is handled via the Armington assumption; imperfect substitution between products from different origins; and
- a global banking sector intermediates between global savings and consumption.

The standard GTAP model is supported by the GTAP database which includes 57 sectors and over 100 countries. The database take account of bilateral trade patterns, production, consumption and intermediate use of commodities and services.