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Addressing Infrastructure Financing in Asia

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EXECUTIVE SUMMARY

- Between 2010 to 2020, Asia needs to invest a total of around US\$8 trillion in overall national infrastructure and an additional US\$287 billion in specific regional infrastructure projects. (ADB/ADBI 2009)
- Financing such national and cross-border infrastructure projects for economic integration in the Asia-Pacific region is challenging and complicated. In general, there are several sources of infrastructure finance -- Government Budget, Multilateral Development Banks, Commercial Bank Credit, Capital Markets, Sovereign Wealth Funds and Public-Private-Partnership. But each of these has its own features and certain limitations.
- While national government budgets will continue to be the mainstay for financing infrastructure, it will need to be supplemented by Multilateral Development Banks in the future.
- Asian governments must put their collective work to mobilize their large pool of savings for regional infrastructure investments. Strengthening national and regional bond markets—through vehicles like the Asian Bond Market Initiative and the Asian Bond Funds— is one of the few steps in narrowing the infrastructure financing gap. The Asian region's forex reserve, including those in the Sovereign Wealth Funds, could also play an important role.
- Public-Private Partnership may play a bigger role in the near future. What is needed is substantial work to address the challenges to build and implement the PPP models. Asian governments need to act together and develop 'bankable' projects for attracting the private sector.

INTRODUCTION

In the Asia-Pacific region¹, building and maintaining quality infrastructure so as to meet the demand from its growing population and its increase in economic activities is gaining policy recognition. The Asian Development Bank (ADB) estimates that from 2010 to 2020, Asia's overall national infrastructure investment needs will reach US\$8 trillion, out of which 68 per cent will be for new capacity investments and 32 per cent will be for maintaining and replacing existing infrastructure. Hence, on average the infrastructure investment need is expected to amount to about US\$730 billion per year (*Table 1*). In addition, the region will need to spend approximately US\$300 billion on regional pipeline infrastructure projects² in transport, energy, and telecommunications. Altogether, there will be an infrastructure investment need of about US\$750 billion per year during this 11-year period (ADB/ADB I 2009, Bhattacharya, 2010).

**Table 1: Asia's Total Infrastructure Investment Needs, 2010-2020
(in 2008 US\$ billion)**

	New Capacity	Replacement	Total
Energy (Electricity)	3167	912	4088
Telecommunication	325	730	1055
Transport	1762	704	2466
Water and Sanitation	155	226	381
Total	5419	2573	7992

Source: ADBI (2009)

Out of this, infrastructure financing needs for the ASEAN region accounts for over US\$60 billion per year. The rapid growth of ASEAN economies since the 1997-98 crisis, this put substantial pressure on the infrastructure coverage of the ASEAN region. Moreover, ASEAN members are aware of the critical need of both hard and soft infrastructure as the region move towards an economic community by 2015.

¹ hereafter referred to as Asia

² Regional Infrastructure Projects are defined as (i) projects that involve physical construction works and/or coordinated policies spanning two or more countries, (ii) national infrastructure projects that have a significant cross-border impact

The region has after all adopted the Master Plan on ASEAN Connectivity that identified 15 priority projects spanning across physical, institutional and people-to-people connectivity. *Table 2* gives the infrastructure requirement in ASEAN.

**Table 2: ASEAN’s Total Infrastructure Investment Needs, 2010-2020
(in 2008 US\$ billion)**

Sector	New Capacity	Maintenance	Total
Power	170.3	46	216.3
Transport	95.6	61.2	156.8
Water and Sanitation	98.8	60.6	159.4
Telecommunications	30.9	32.7	63.6
Total	395.6	200.5	596.1

Source: ADB, ASEAN Secretariat

The funding requirements are large and the countries are expected to face a large financing gap i.e. between the total financing requirement and the available financing. This situation may also exacerbate with cross border or regional infrastructure projects competing with national projects for limited funding.

This paper reviews various options for financing national and regional infrastructure projects in Asia. These include – National Government Budgets, Multilateral Development Banks, Commercial Bank Credit, Capital Markets, Sovereign Wealth Funds, and Public-Private-Partnership. It discusses gaps in the traditional sources of financing Asia’s infrastructure and considers alternative funding mechanisms to support existing ones. Finally, the paper concludes with some recommendations.

SOURCES OF INFRASTRUCTURE FINANCING

In view of the large infrastructure financing requirements, Asia has resorted to various sources of financing ranging from traditional sources like government budgets to Public-Private Partnership financing mechanisms.

Government Budget

As infrastructure projects are public goods in nature and have significant externalities for society, funding through national government budgets has been the mainstay for infrastructure financing. The high asset value of infrastructure, including long gestation periods, high incremental capital output ratios, low returns and lumpiness of capital, carries high financial risks which private investors are not willing or able to take on. Transport sector projects like the Singapore North East MRT line and the Bangkok Metro are examples of infrastructure projects financed by public sector monies. In general, public financing accounts for nearly 70 per cent of infrastructure financing with just 20 per cent coming from the private sector and the remaining 10 per cent financed through ODA³.

Asian public funding for infrastructure has seen an increase following the 2008 Global Financial Crisis (GFC) because of risks from the advanced economies in terms of financial sector uncertainties and export demand. While this makes raising funds in the domestic markets difficult, it also forces governments to take a prudent stance in macroeconomic management. Interestingly, this raises the importance of infrastructure investment by governments as it acts as a countercyclical investment. Similarly, the need for infrastructure services (e.g. education and health care) as part of the social safety net in hard times makes it an even more important priority (Bhattacharya, 2010).

ASEAN economies have adopted a cautionary approach towards economic management and generally have limited fiscal space for expansionary policy (*Table 3*). Nevertheless, in the next few years, Malaysia is expected to benefit from an increase in infrastructure spending under its Economic Transformation Programme (ETP). Indonesia's government has allocated US\$20 billion for infrastructure development this year while the Aquino administration in the Philippines has earmarked US\$ 9.6 billion for infrastructure projects and capital outlays under the 2013 budget⁴. According to ADB forecasts, the public sector will continue to play a dominant role in light of global economic uncertainty, although it may need to be supplemented by funds from domestic and regional financial markets (ADB/ADBI 2009).

³ See World Bank, *Private Participation in Infrastructure website*, <www.worldbank.org/infrastructure/ppi/index.html>.

⁴ 1 Peso =9.68 USD. <http://www.philstar.com/business/2013/04/04/926594/budget-deficit-soars-january-february> accessed on 24th April 2013.

Table 3: Asia's Fiscal Balance (as % of GDP)

Country	2005	2009	2011
Australia	1.3	-2.4	-3.7
Cambodia	0.0	-2.3	-4.2
India	-3.2	-5.4	-3.7
Indonesia	-0.1	-1.7	-1.1
Japan	-4.1	-7.6	-8.3
Korea, Rep.	0.9	0.0	1.8
Lao PDR		-1.7	-0.9
Malaysia	-3.8	-6.1	-4.8
Philippines	-2.8	-3.8	-1.8
Singapore	6.5	1.8	9.8
Thailand	2.5	-3.0	-1.2

Source: World Development Indicators

Multilateral Development Banks (MDBs)

MDBs such as the World Bank and the Asian Development Bank have an important role to play in narrowing the funding gap in national and cross-border infrastructure projects. This can take the form of supplementing national budgets through sovereign lending, leveraging private sector participation through guarantees instruments, financing feasibility studies and providing project-structuring support. MDBs also play a critical role in improving regulatory environment, supporting transfer and diffusion of technology and improving business and governance practices, particularly in emerging economies such as those in ASEAN. Finally, MDBs can play the key role of being a coordinator among multiple stakeholders for regional integration

and infrastructure development. These initiatives and tools can boost investor confidence and attract commercial lenders and equity investors in developing countries (Nataraj, 2007).

Commercial Banks

Commercial banks, leveraging on their access to capital due to stronger deposit bases, are another source of funding for addressing potential financing gaps. Indonesia's private bank, Bank Central Asia, has allocated US\$2 billion of loans this year to finance infrastructure projects. Similarly, in Singapore, a syndicate of regional banks arranged for a US\$1.2 billion loan to Singapore Power. However, the high degree of perceived risk in big-size, long-tenor infrastructure investments, particularly in emerging Asian markets, has stalled funding from regional private sector lenders⁵. This has become particularly evident after the 2008 Global Financial Crisis as commercial banks hold back lending opportunities in the face of conservative risk profiles, lack of track record and imposed constraints in lending limits.

However, new sources of finance are already emerging like export credit and multi-lateral agencies which are much more active. Institutional investors are arriving through co-operation agreements with international banks while local banks are getting increasingly confident of their own funding, taking advantage of the positive yield curve.

Capital Market Initiatives

Asia has huge savings surpluses (*Table 4*). They are generally owned by private individuals and businesses, whose investment decisions are based on risk and return. Moreover, much of the savings are invested in real estate or the stock market. To channel these savings into 'bankable' infrastructure investments and attract private investment, there is a need to develop the domestic financial markets, in particular a strong bond market, along with appropriate financial instruments.

⁵ *Managing Infrastructure Investing Risk in a Sifting Lending Environment, Asia Director's Series, Mash and McLennan Companies, Issue 1, 2013*

Table 4 : Gross Domestic Savings and International Reserves with countries in the Region (USD Billion)

Country	Gross Domestic Savings (2011)	Gross International Reserves (Dec 2012)
China	3843.5	3352.3
India	543.1	292.3
Korea	351.3	327.0
Japan	1111.7	1304.1**
ASEAN-10	718.2*	815.1

*excludes Myanmar. Gross Domestic Savings from CEIC Database. Gross International Reserves from the Asian Development Bank Outlook, 2013

** figures for Japan from www.gfmag.com accessed on 25th April 2013

Borderless Capital Market: As part of the roadmap to integration, ASEAN aims to have a freer movement of capital in the region. One key initiative in this regard is the move to create a regional stock market linking the main exchanges of ASEAN. Investment in infrastructure assets can be done either through direct investment, into the assets, or indirect investment through investments in companies that are involved in developing, constructing or operating several infrastructure assets. The linking of the main exchanges in ASEAN is also expected to promote ASEAN asset class to the world and reduce the cost of doing business for regional brokers who will now have one point access to pan-ASEAN assets. It will also allow companies listed on the region's bourses to tap into a wider pool of capital. As part of the first phase of the project, a three-way link has been created between the Singaporean, Thai and Malaysian stock exchanges.

Asian Bond Markets Initiative (ABMI): The vulnerability of the region to sudden reversal of capital inflows, which are particularly risky for long-term investments, came to light in the 1997-98 Asian financial crisis. Since then ASEAN+3 has been working together to strengthen the resilience of the financial system in the region by developing local currency bond markets to mitigate capital flight and mobilize domestic savings for long-term investment. The development of local currency bond markets reduces foreign currency risk for borrowers and helps to minimize currency and maturity mismatches, which is crucial for infrastructure investments.

Several important initiatives have been launched in this regards with the aim of integrating the region financially. Notable among these are the Chiang Mai Initiative, ABMI, and the Asian Bond Funds (ABF).

The ABMI, launched by ASEAN+3 in 2002 was the first regional initiative designed to achieve this endeavour. It is an effective mechanism for channelling the region's forex reserves of about US\$5.8 trillion⁶ towards financing long-term investment projects. ABMI aims to enable private sectors in Asia to raise and invest long-term capital without maturity and currency risks. It aims to facilitate access to market via a wider variety of bond issuers in Asia and develop an efficient and liquid bond markets in the region. While it is expected to foster a high degree of financial independence in Asia and support infrastructure development in the region, more work is nevertheless required to improve the efficiency and liquidity of the bond markets.

ASEAN Infrastructure Fund (AIF): Established in 2011, the objective of AIF is to mobilise financial resources within ASEAN to support regional infrastructure development. This is a significant move as it shows ASEAN's self-reliance and centrality in achieving ASEAN infrastructural connectivity.

AIF's equity contribution will be funded by ASEAN and ADB at a total amount of US\$ 485.2 million, of which a total of US\$335.2 million (69.08 per cent) will come from ASEAN, while ADB will contribute US\$150 million (30.92 per cent). In addition, a hybrid capital of US\$162 million, as a financial instrument that has both debt and equity characteristics, will be issued after the third and last tranche of the initial core equity contributions. With the confirmation of the pledges, the total capital structure of the AIF is US\$647.2 million.

The AIF has been established as a corporate entity domiciled in Malaysia. It has a Board of Directors (BOD) that acts as a decision making body. Currently ADB is managing and administering the AIF on behalf of ASEAN. But the size of the fund is currently small compared to ASEAN's estimated financing needs up to 2020.

ASEAN+3 Bond Market⁷: The high savings rate across the Asian economies can be potentially leveraged for infrastructure financing. However due to underdeveloped capital markets, the region has not been able to match its vast savings with the huge investment needs and consequently most of the Asian savings remains invested in developed countries' government securities or invested in sectors, such as real estate or stock market speculation. Bond market development in Asia is critical for channelling the savings into "bankable" projects.

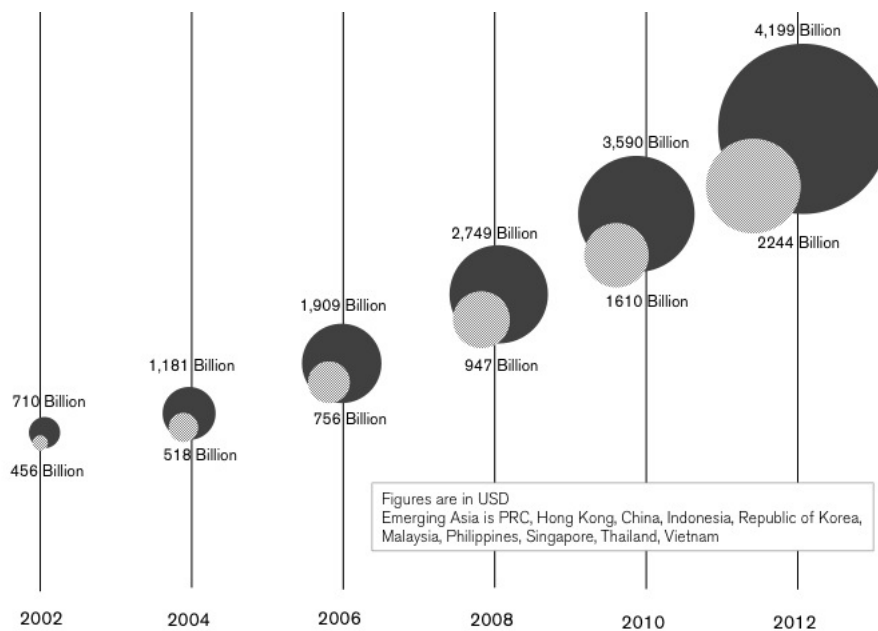
The ASEAN+3 Bond Market Forum (ABMF) was endorsed by the ASEAN+3 Finance Ministers in 2010 with the objective of fostering standardization of market practices and harmonization of regulations relating to cross-border bond transac-

⁶ 2012 Figures. CEIC Database. Includes China, India, Japan, Korea and ASEAN 6.

⁷ ADB, ASEAN+3 Bond Market Guide

tions in the region. In 2010, the share of emerging East Asia's Local Currency (LCY) Bonds in the world's total reached 8 per cent overtaking United Kingdom (2.5 per cent), Germany (4 per cent), and France (4.8 per cent). Clearly emerging East Asia LCY bonds have become an important asset class and while the LCY bonds are growing very rapidly, intra-regional financial flows are still comparatively small and financial markets in the region remain far less integrated as compared to the trade and supply chain connectivity (Figure 1)

Figure 1: Growth of Emerging Asia's Local Currency Bond Markets



Source: Asian Bond Monitor (March 2013); Wignaraja 20138

Sovereign Wealth Funds

Asian Central Banks have accumulated huge foreign exchange reserves, most of which is invested in safe but low yielding US Treasury Bills, due to the prevailing domestic investment regulations governing the use of these reserves.

More recently, many Asian countries' foreign exchange reserves have come to exceed central banks' minimum requirement for maintaining exchange rate stability and hence part of those reserves have been channelled into Sovereign Wealth

8 Resource Mobilization for building connectivity by Ganeshan Wignaraja, presented at the Singapore APEC Study Centre Symposium on 3rd April 2013, ISEAS, available at <http://www.iseas.edu.sg/ISEAS/upload/files/Wignaraja.pdf>

Funds (SWFs).(Bhattacharya 2010). Asia has several SWFs (*Table 5*) and they are allowed to invest in foreign assets that offer reasonable returns under Central Bank investment guidelines. However, to obtain infrastructure financing from them, projects have to be big in size, long-tenured and have to provide good financial returns at an acceptable level of risk.

Table 5: Selected Asian Sovereign Wealth Funds

Country	Sovereign Wealth Fund	Assets Under Management (US\$ billion), Mar 2013	Gross International Reserves (2012), in US\$ billion
China	China Investment Corporation	482	3352.3
Korea	Korea Investment Corporation	56.6	327.0
Malaysia	Khazanah Nasional	39.1	139.6
Singapore	Government Investment Corporation	247.5	259.3
	Temasek Holdings	157.5	
Vietnam	State Capital Investment Corporation	0.5	25.4

Source: <http://www.swfinstitute.org/fund-rankings/> updated March 2013. Gross International Reserves from ADB Outlook 2013.

Thus, one can tap this source of funding only when they are financially viable or structured on a commercial basis. Indeed, projects involving PPPs are likely to form the basis for attracting financing from SWFs (ADB/ADBI 2009).

Public-Private-Partnership (PPP)

As mentioned earlier, the bulk of financing for new and for upgrade of physical infrastructure projects comes from the public sector, ODA, or MDBs. But the private sector can also contribute substantially – approximately 30 per cent of the total investment needs. One way to engage the private sector in infrastructure projects is through the PPP.

Since the 1990s, PPP models have been increasingly viewed as a credible financing mechanism for infrastructure assets in the Asian region. A PPP can be undertaken through various modalities, such as joint ventures, concessions, management contracts, BOO (Build Own Operate), BOT (Build Operate and Transfer), BOOT (Build Own Operate Transfer), and BOLT (Build Own Lease Transfer) that facilitate the participation of the private sector in providing public infrastructure and services. PPPs are not only required for funding, but also for technology and efficiency in the project implementation.

The Economist Intelligence Unit (EIU)⁹, in its 2011 Infrascopes report, assessed countries' readiness and capacity for sustainable, long-term PPP projects. It reported that while Australia and the UK were world leaders in sophisticated PPP practice, it termed the Republic of Korea, Japan and India as "developed" with a decent institutional and regulatory framework. Among the four ASEAN countries that have been studied, Thailand, Indonesia and the Philippines are emerging countries in PPP experience and have mixed success in development and execution of projects. They have recently taken action to improve aspects of the operating environment and to boost institutional capacity. With some experience in engaging the private sector in the development of power facilities, Vietnam has recently developed pilot legislation allowing PPPs between private- and public-sector entities.

To develop general competence for PPP, governments in Asia need to provide fair and transparent tendering processes, ensure symmetrical information and build clarity around policy goals, development priorities and implementation processes. They also need to ensure clear concession arrangements that are consistent with the underlying objectives. Most importantly, they need to create globally comparable regimes around foreign ownership and investment, foreign currency exchange and taxation to boost investors' confidence.

PPPs are negotiated in such a manner that risks get allocated to the party who can manage it most efficiently at the lowest cost. *Table 6* presents an overview of the kinds of risks that the public and private sectors usually assume during the life of a long-term project (Bracey and Moldovan 2006)

⁹ *Evaluating the environment for public-private partnerships in Asia-Pacific, The 2011 Infrascopes, Economist Intelligence Unit, 2011.*

Table 6: Risk Allocation Arrangement for PPP projects

Party affected by and/or assuming risk	Type of Risk
Private Sector	Design, construction, and maintenance risk: includes day-to-day operational and management risks, delays in acquiring necessary permits, problems with subcontractors, completion risk, and cost and schedule overruns.
	Demand/revenue risk: includes unexpectedly high or low demand compared to initial market assessments.
	Political risk: changes in government, changes in public policy, corruption and favouritism, lack of sanctity of contract, and arbitration difficulties.
	Currency risk: unexpected severe depreciation or appreciation of currency that affects the service provider's ability to pay investors.
Public Sector	Political risk: potential changes in public policy Bankruptcy risk: Private company declares bankruptcy while working on a contract.
	Closure Risk: The inability of the bidding party to reach financial closure.
	Land risk: expropriation and eminent domain issues, difficulties acquiring land.

Source: Adapted from Bracey and Moldovan, 2006 *Public-Private-Partnerships: Risks to the Public and Private Sector*

MEASURES FOR BOOSTING INFRASTRUCTURE FINANCING

Align ASEAN connectivity initiatives with national projects to facilitate resource mobilization. Most often, when an infrastructure involves more than one country and is considered a regional one, it gets low priority from the domestic policymakers and hence lower budgetary allocation. Just as a national infrastructure has regional impact, a regional infrastructure is likely to benefit a national connective infrastructure. Governments should thus be encouraged to work together and supply the needed cross-border infrastructure. Moreover, if an infrastructure project lies in areas with less economic activities and few advocacy groups, governments would be better placed to arrange concessionary financing from external sources, thereby making the project economically viable.

Implementing agency needs to give adequate emphasis on project development and documentation to attract private interest. Although when an implementing agency has secured the basics of a project (land, concession agreements), it may not have structured the project in the best possible way to attract funding. This may delay the process of fund raising or may increase the time needed, as well as trans-

action and restructuring costs. One way to overcome this is to prepare the quality documentation (like feasibility studies and financial models) before meeting the funding agencies. As per ADB estimates, project development costs is generally about 5 per cent of total project cost and may need about US\$ 2-3 million towards transaction advisory support¹⁰.

Strengthen the ASEAN Secretariat and address capacity issues. The European Union was able to promote PPPs by allocating a significant amount of resources to develop regional projects. There were also funds put in place to attract private capital, including through the European Bank of Reconstruction and Development. Developing regional infrastructure is a long-term process that requires a strong coordination mechanism. Similarly, ASEAN needs to ratify and implement all transport and infrastructure-related agreements. Thereafter, the region needs to develop PPP units in member countries that can be linked under an ASEAN process.

Intensify private sector engagement. Currently in most of the Asian states, transparency in the administrative process is not of international standards. It is also not uniform across the states. With regard to the PPP method, this may hinder sufficient competition for tenders, development of complex contracts and translation of the final output into a proper commercial venture.

The private sector may get discouraged to participate in a PPP process if the social benefits (fairness to consumer) of the project are not supplemented by the financial return (from tariffs) for them. Also, as returns for infrastructure development only accrue in the long-term, the level of risk may limit the interest of the private sector in large infrastructure projects. Therefore, countries need to establish appropriate legal and institutional frameworks that can improve the financial viability of infrastructure services to attract private sector funding as well as to promote competition and improve regulatory frameworks that protect public interests.

Continue working with Dialogue Partners and Multilateral Development Banks. While AIF is a useful source in financing profitable regional infrastructure projects, the fund is not big enough to address the entire infrastructure needs of ASEAN. One way to address this is to enlarge the fund into a pan-Asian infrastructure fund. This could be done if the Plus Three countries (China, Korea, Japan) and India participate in this process.

ABMI is still at an early stage. Increased efforts are needed in Asia to develop more efficient, robust, and deep financial markets. The local currency capital markets have to be strengthened so that they can effectively intermediate local savings, reduce currency risks to investors and create a more stable financial system. The domestic financial markets need to be linked to each other, wherever feasible, so as to lower transaction costs.

¹⁰ <http://www.adb.org/sites/default/files/ppp-operational-plan-2012-2020.pdf>

CONCLUSION

Between 2010 and 2020, Asia's total infrastructure investment needs are estimated to be US\$8 trillion. But financing this amount is a challenge for many reasons. Investments are relatively large and lumpy, their implementation period is long and they create uncertainties about future costs and revenue streams. Most infrastructure projects are therefore developed and financed by the public sector. This is followed by the Multilateral institutions –especially ADB, World Bank – that play an important role in financial and technical assistance.

However, spending from government budgets and MDBs need to be supplemented by other sources. This was what led the policymakers to consider alternative, mainly private, sources of funding. Asia's huge forex reserve, including those accumulated in SWFs, can provide support to investment needs. The vast domestic savings also needs to be channelled through domestic and regional financial markets. Strengthening bond markets, through the ABMI and AIF, are one of the few steps needed to create a viable source of financing. PPP is also gaining weight in infrastructure financing, with governments in the region working on improving their PPP readiness through appropriate legal and regulatory frameworks.

What Asia needs is to develop 'bankable infrastructure projects'. It needs to create and facilitate the right investment climate so that the private sector can increasingly share the burden of infrastructure financing in the region. In this regard, regional organisations like ASEAN and APEC are proposing several initiatives. What needs to be seen is how members can leverage on each other's knowledge and avoid duplication.

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