



2023 Report to APEC Finance Ministers

FINANCING THE FUTURE OF APEC

Toward a Green and Digitally Connected Asia-Pacific Region



APEC Business Advisory Council

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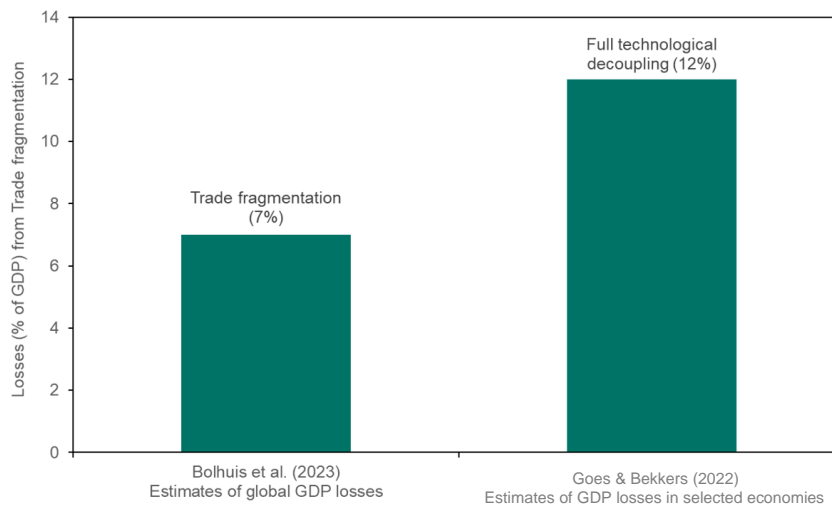
Toward a Green and Digitally Connected Asia-Pacific Region

Introduction

Asia-Pacific economies today face an environment of heightened uncertainty. This comes against the backdrop of protracted crisis: a deeply concerning global outlook, conflict, and a series of grave challenges – geopolitical, economic, environmental and financial – that continue to confront the region. Although the situation remains fluid, anxiety remains about the resilience of the global financial system. This heightened sense of uncertainty is exacerbating the growing trend toward *economic fragmentation*, which is a serious challenge that threatens APEC’s vision of free and open trade and investment and regional integration.

Trade restrictions and disputes have enormously increased over the past decade and their growth has accelerated. In addition to the fragmentation resulting from the factors mentioned above, the *uncoordinated approaches* to digital transformation, data protection, development of digital currencies and sustainable finance frameworks have significant potential to cause huge output losses from trade and technological fragmentation. Some estimates indicate that such output losses from trade fragmentation could reach as high as 7 percent of global GDP (roughly equivalent to the combined output of Japan and Germany) and as much as 12 percent in selected economies if the impact of technological fragmentation is added (See Figure 1).

FIGURE 1: The Long-Term Costs of Economic Fragmentation



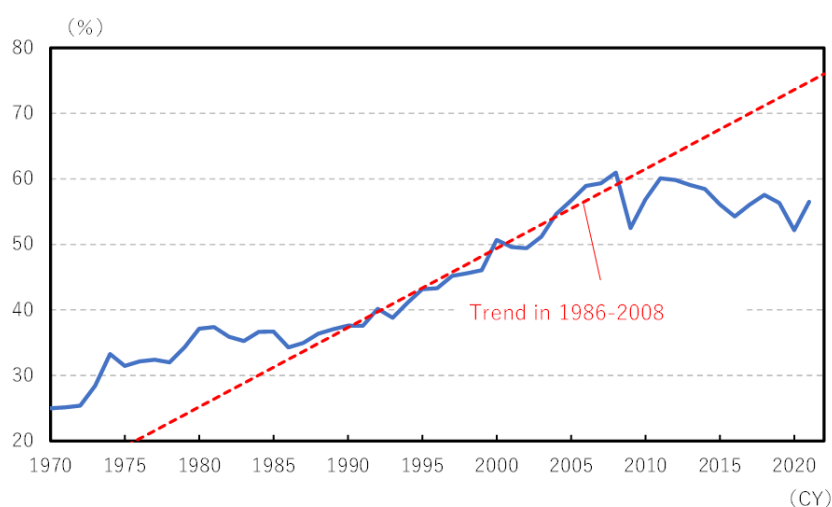
Source: Marijn A. Bolhuis, Jiaqian Chen, Benjamin R KettBolhuis, 2023. "Fragmentation in Global Trade: Accounting for Commodities." IMF Working Paper, Carlos Goes, Eddy Bekkers, 2022. "The Impact of Geopolitical Conflicts on Trade, Growth, and Innovation." WTO Staff Working Paper; compiled by DIR

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Three important considerations call for attention. First, the deeper the fragmentation is, the larger the economic losses are likely to be. Second, the combined effects of trade and technological fragmentation will take a significantly heavy toll on the global economy. Third, Asia-Pacific economies that are highly dependent on trade are likely to incur bigger losses. Unless addressed, growing economic fragmentation will further widen the gap between the actual volume of global trade and what it could have been based on the long-term trend from the period of 1986 to 2008 when the global economy enjoyed a peace dividend from the end of the Cold

War up until the Global Financial Crisis (GFC) – a gap that has already been widening since 2010 as a result of structural factors. (See Figure 2).

FIGURE 2: Global Trade to GDP Ratio



Source: World Bank; compiled by DIR

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As the principal forum for Asia-Pacific regional collaboration, APEC can play an important role in addressing the factors leading to economic fragmentation. It can bring the region’s economies back on the path to sustained trade, investment and economic growth, and to realize the promise of digitalization and sustainable development. Within APEC, the Finance Ministers’ Process can take the lead in advancing initiatives that will enable the financial sector to harness the power of technology to more efficiently and effectively play its critical and catalytic roles in the region’s economy. These roles include:

- more affordable and speedier financing of trade across markets and supply chains;
- providing more efficient and safer ways for consumers and business owners to access a wider variety of services by leveraging their data;
- enabling more efficient large-value payment and settlement transactions among financial institutions;
- facilitating expanded safe and trusted use and flows of data in financial services across jurisdictions; and
- mobilizing capital across the region to finance projects and innovations that can accelerate member economies’ and companies’ progress toward their net zero carbon emissions goals.

This report seeks to provide concrete recommendations for endorsement by APEC Finance Ministers and for action by relevant stakeholders in member economies in pursuit of these objectives. It is divided into two parts.

- The first part contains recommendations related to the **interoperable digitalization of finance**: the end-to-end digitalization of trade finance, the development of interoperable open data systems, the development of a toolbox of mechanisms to facilitate cross-border data flows and wider adoption of privacy enhancing technologies; and the development of interoperable wholesale central bank digital currencies (wCBDCs).
- The second part focuses on **mobilizing sustainable finance** through the development of a regional framework for financing and supporting just and affordable transition and enabling and facilitating finance for sustainable innovation.

The recommendations contained in this report have been developed through discussions with experts from industry, multilateral organizations, and government and regulatory agencies in the course of several roundtables that ABAC convened in collaboration with FMP policy initiatives, various entities and institutions.¹

¹ These included the ASEAN Bankers’ Association, the ASEAN Business Advisory Council, the Asia-Pacific Financial Forum (APFF) Data Ecosystem Working Group, the APFF Digital Trade Finance Lab, the APFF Financial Market Infrastructure Network, the APFF Sustainable Finance Development Network (SFDN), the Asia-Pacific Infrastructure Partnership (APIP), the Asian Development Bank (ADB), the Australian APEC Study Centre at RMIT,

The reports and summaries of these roundtables form the annexes to this report and are available for download. The 2023 Progress Report of the Asia-Pacific Financial Forum (APFF), the Asia-Pacific Financial Inclusion Forum (APFIF) and the Asia-Pacific Infrastructure Partnership (APIP) is also annexed to this report.

I. Building Interoperable Digital Financial Systems

END-TO-END DIGITALIZATION OF TRADE AND SUPPLY CHAIN FINANCE

Despite significant advances in digital technology, trade finance (and trade in general) remains to this day largely paper-based and manual. Lack of common standards for trade documents across economies hinders the use of technologies to digitalize and automate on an end-to-end basis the various processes involved in trade finance.² Lack of interoperability of legal frameworks surrounding digital documents also poses another important challenge. Uncertainties over the validity of electronic documents related to acceptance of security or ownership across jurisdictions result in continued reliance on paper documents. These are particularly key challenges for micro-, small and medium enterprises' (MSMEs) participation in global supply chains.³

In 2022, a Regional Digital Trade Transformation and Connectivity Network was started through a pilot that connected Thailand's National Digital Trade Platform (NDTP) with Singapore's Networked Trade Platform (NTP) and Japan's TradeWaltz. Proof-of-concept undertakings were successfully executed among the three platforms, and additional ones between TradeWaltz and TradeWindow of Australia and New Zealand were completed. This network seeks to standardize key trade documents,⁴ promote interoperable legal frameworks aligned with the UNCITRAL Model Law on Electronic Transferable Records (MLETR) and develop domestic digital supply chain finance platforms that comprise an important prerequisite for inclusive end-to-end digitalization of trade finance.

If expanded with the participation of more APEC economies, this can accelerate digital trade transformation and connectivity in our region. Considering that APEC accounts for over 44 percent of total world trade, an initiative to digitalize trade under its leadership can influence the rest of the world to move faster. Because it will lower costs and speed up the processing of trade documents and allow supply chain participants to access credit using transactional data, this will also have a profound impact on MSMEs' ability to access trade financing and participate more widely in global supply chains. There is also potential for the platform to provide data that can be used for evidence-based Scope 3 measurement of greenhouse gas emissions to facilitate the greening of supply chains. There is an important role that APEC can play, in collaboration with the private sector through ABAC and leveraging public-private collaboration platforms such as the APFF, to provide a forum for promoting expanded and more active participation by member economies in this initiative.

Recommendation #1:⁵

We recommend participation of more member economies in the Regional Digital Trade Transformation and Connectivity Network to standardize and digitalize trade documents,

Daiwa Institute of Research, the Emerging Payments Association (EPA) Asia, FinCity Tokyo, the Institute of International Finance (IIF), the International Chamber of Commerce (ICC) Digital Standards Initiative, the Joint Standing Committee on Industry Commerce and Banking (JSCCIB) of Thailand, KPMG, the Ministry of Digital Economy and Society (MDES) of Thailand, the World Bank Group's International Finance Corporation (IFC), the Singapore Business Federation, Standard Chartered Bank (Hong Kong), the Thai Bankers' Association (TBA) and the US NCAPEC.

² These include product selection, data entry, workflow management, document checks, compliance checks and post-transaction problem resolution.

³ MSMEs' participation in global supply chains, in most cases as second- and third-tier suppliers, is important for them to benefit from and contribute to the region's economic integration. Much of trade is dependent on availability of and accessibility to trade finance, and the high operational costs and amount of time needed to process documents make it very challenging for financial institutions to provide timely access to affordable working capital particularly to MSMEs.

⁴ These include electronic purchase order, e-invoice and e-packing lists. It also involved the process for verifying the authenticity of underlying documents for financing by banks.

⁵ For details, refer to the Report *Facilitating End-to-End Cross-Border Digital Trade Finance*.
<http://www2.abaonline.org/content/download/22632371>

promote alignment of legal frameworks with UNCITRAL Model Law on Electronic Transferable Records (MLETR) and develop interoperable domestic digital supply chain finance platforms. We encourage participating member economies to establish task forces in their respective jurisdictions comprising both public and private/business sectors to facilitate their active engagement in this initiative.

INTEROPERABLE OPEN DATA SYSTEMS

The development of secure, efficient and inclusive open data⁶ and payment systems is key to achieving strong and sustained growth in the digital economy. It is important that such systems be designed and implemented in a way that best fits the specific conditions in each market and meets the needs of its consumers and businesses. For member economies of APEC, which aspires to a vision of regional economic integration and free and open trade and investment, there is an added requirement that future open data systems be interoperable. In order to avoid the region's fragmentation into isolated digital islands and ensure the free flow of services across the Asia-Pacific in the digital age, APEC member economies need to advance the development of their respective open data systems in accordance with commonly agreed principles that can help them achieve future interoperability.

To assist in this process, ABAC undertook discussions with experts from industry, public sector and international organizations to develop guiding principles that member economies can consider and use as reference in the development of open data systems in their respective jurisdictions. These principles draw from experiences of industry and regulators with the workings of open banking systems where they have been introduced, perspectives from market participants operating across the region and insights from financial, technology and services industry experts. The guiding principles⁷ are organized under the following six sections:

- *Achieving Domestic and International Interoperability.* The principles stress the importance of a Whole-of-Economy approach, which will involve collaboration among government and regulatory agencies and private/business sectors. While economies should adopt models that best fit their respective market conditions, they should be designed and implemented with a view toward international interoperability through collaboration with international standard setting bodies.
- *Enabling Trusted and Secure Sharing and Use of Data.* The principles highlight the need for developing a toolbox of mechanisms that can enable expanded trusted and secure cross-border data flows, agreement on common principles of privacy protection in the context of the introduction of data localization measures, and promoting wider adoption of privacy enhancing technologies. The principles also call for proportionality in the design and implementation of data laws and regulations.
- *Providing an Enabling Governance and Regulatory Framework.* The principles call for a centrally organized framework that provides standards, tools, policies and regulations based on constant communication between business and regulators. It also calls for regulatory cooperation in utilizing global data to strengthen AML and CFT efforts and combating crime and fraud; as well as incentives and regulations that can drive market competition, innovation and connectivity; and adaptation of regulatory frameworks to ensure financial stability.
- *Building the Infrastructure.* The principles highlight the importance of a common identity and authorization framework as a foundation of an open data ecosystem and a sufficient foundational infrastructure to enable collection, processing and sharing of customer data.

⁶ Open data is an expanded version of open banking, a concept implemented in Europe through the Payment Services Directive 2 (PSD2), as well as in a few other markets. While the classic open banking involves a one-way flow of permissioned consumer data from banks to third-party service providers, open data involves a multi-directional flow of data across market participants. If properly designed, an open data system can enable competition and empower innovation. It can enable better consumer outcomes and provide an ecosystem for fintech firms and service providers to collaborate with banks. Examples of the wide range of services that open data can provide to customers include business accounting, authentication and identity, budgeting and financial planning, data analytics, payment processing, account aggregators, credit scores, and subscription and tax management. When supported by digital enablement and access, open data can promote financial inclusion.

⁷ *Guiding Principles for the Development of Interoperable Open Data Systems in the Asia-Pacific Region*
<http://www2.abaconline.org/content/download/22632171>

- *Fostering a Dynamic Market.* The principles emphasize the importance of customer-centricity and of creating an efficient and competitive market conducive to innovation and the secure and trusted unlocking of data sets across industries.
- *Laying the Foundations for Adoption through Education.* The principles highlight the importance of customer education and the development of human resources for open data systems, both on the industry and the regulatory side.

Recommendation #2:

We recommend that APEC member economies use the *Guiding Principles for the Development of Interoperable Open Data Systems in the Asia-Pacific Region* as a reference in the design and implementation of open data systems.

EXPANDED CROSS-BORDER DATA SHARING AND PRIVACY ENHANCING TECHNOLOGIES

Data sharing plays a central role in financial services and inclusive economic growth, enabling lenders and insurers to make risk-based decisions based on customer information. The financial services sector is reliant on data sharing as financial transactions have become data transfers, market infrastructures have become data networks and financial institutions have become data processors that gather, analyze and trade customer data.⁸ The issue of cross-border data sharing arising from differences in regulatory requirements is becoming ever more critical for financial inclusion, particularly with respect to cross-border payments and credit history.

The main barrier to data sharing has not been the lack of tools but the complexity of legal frameworks. This is true in domestic contexts wherever the approach to data privacy is fragmented. In today's world, fragmentation of rules governing the cross-border flow of data poses an even bigger challenge for businesses in making cross-border data transfers. MSMEs are particularly impacted, as unlike larger companies they do not have the resources to navigate through different laws, definitions and sectoral regulations applying to the same sets of data.

Data adequacy across economies would be the ideal solution, but it is currently difficult to achieve due to the inherent inefficiency in its application, as demonstrated by the limited number of jurisdictions that have succeeded in concluding adequacy arrangements. Without any consensus for the moment on more flexible ways to achieve data adequacy, the region will need to develop practical interim solutions that could enable firms to conduct business operations that require cross-border sharing of data. These include business-level mechanisms such as contractual safeguards, binding corporate rules, certification, codes of conduct or privacy codes, statutory and administrative exemptions and wider participation in the APEC Cross-Border Privacy Rules (CBPR).⁹

⁸ Douglas Arner, Giuliano Castellano, Eriks Selga, *Financial Data Governance: The Datafication of Finance, the Rise of Open Banking and the End of the Data Centralization Paradigm* (February 2022) [<https://hub.hku.hk/bitstream/10722/311588/1/content.pdf?accept=1>]

⁹ Asian Business Law Institute, *Transferring Personal Data in Asia: A path to legal certainty and regional convergence* (May 2020). [https://fpf.org/wp-content/uploads/2021/01/Girot_Transferring.pdf]. These mechanisms are as follows:

- **Contractual safeguards:** Regulators could agree to a set of contractual data privacy and security controls that are compatible across jurisdictions, allowing for flexible implementation. Clauses will need to be sufficiently detailed, and common approaches developed to provisions for recourse of individuals whose data are transferred.
- **Binding corporate rules (BCRs):** Authorities could develop common procedural and administrative rules (e.g., prior regulatory authorization) based on assessment of BCRs' strengths and limitations in the Asia-Pacific context and the demand for this mechanism among companies operating in the region.
- **Certification:** Regulators could develop common criteria for certification and accreditation of certification bodies to promote convergence of certification mechanisms across jurisdictions that would enable organizations to demonstrate their adoption of safeguards that would be compliant with personal data protection frameworks across the region. This could build on certification schemes that are already in place within the region such as in Japan, the Republic of Korea and Singapore.
- **Codes of Conduct or Privacy Codes:** Jurisdictions could allow organizations to transfer data to overseas organizations that adhere to a locally approved Code of Conduct or Privacy Code. This would require the Code to be legally binding and a contract between organizations transferring data across borders to be concluded to ensure application and enforcement of the safeguards of the Code, especially those concerning the rights of data subjects, in the receiving jurisdiction. In addition, this would also require agreement among jurisdictions on the criteria for approval of Codes, how the Codes may be considered legally binding in multiple jurisdictions, appropriate recourse mechanisms for

The uncertainties arising from data localization may be practically addressed through various means. These include rules requiring common and consistent standards for localization requirements as applied to different sectors. They may also be addressed by clarifying the interplay between transfer provisions in general data protection laws and localization requirements mandated by specific sectoral laws or regulations. Clarification of the scope of localization measures, the conditions under which exemptions are permitted and regulatory expectations in the implementation of localization rules for specific categories of data will also be important.

Privacy-enhancing technologies (PETs) have great potential as pragmatic digital solutions that can enable the processing of data in ways that comply with privacy and data protection rules. There are various categories of PETs with different use cases, including tools for data obfuscation, distributed data processing, data accountability and encrypted data processing (See Figure 3).¹⁰ Technologies are rapidly evolving, and are at various stages of maturity. Being still at early stages of development, PETs face a number of challenges.¹¹ In order to facilitate their adoption, governments have taken various measures providing useful examples that can be studied.¹²

individuals in the event of breaches happening overseas, and criteria for accrediting monitoring bodies to ensure compliance with the Code, among others.

- **Exemptions:** Jurisdictions could work toward harmonization of existing statutory exemptions or derogations from the main rule applicable to data transfers to allow the same approach to be used in the same set of circumstances across the region. While this approach may not be practically applicable in matters of sovereignty, exemptions in more neutral areas could be achievable. Commonly agreed rules of interpretation would be needed to ensure that exemptions are narrowly interpreted and do not end up becoming the rule.
- **Administrative exemptions:** Jurisdictions could work together to harmonize the conditions for granting individual exemptions from compliance with data transfer rules that are granted upon request in certain jurisdictions.
- **Wider participation in the APEC Cross-Border Privacy Rules (CBPR):** Participation of more economies as well as organizations would help CBPR achieve a network effect and facilitate its use to enable expanded data transfers across the region.

¹⁰ Future of Privacy Forum, *Privacy 2020: 10 Privacy Risks and 10 Privacy Enhancing Technologies to Watch in the Next Decade* [https://fpf.org/wp-content/uploads/2020/01/FPF_Privacy2020_WhitePaper.pdf]; and OECD (2023), "Emerging privacy-enhancing technologies: Current regulatory and policy approaches", *OECD Digital Economy Papers*, No. 351, OECD Publishing, Paris [<https://doi.org/10.1787/bf121be4-en>].

¹⁰ These include insufficient understanding by many regulators and consequently the lack of clear guidance that can provide certainty to businesses that the use of particular technologies are compliant with privacy requirements in their jurisdictions, which in turn hinders investment given the high cost of implementation in terms of effort, time and resources and the development of talent.

¹¹ These include insufficient understanding by many regulators and consequently the lack of clear guidance that can provide certainty to businesses that the use of particular technologies are compliant with privacy requirements in their jurisdictions, which in turn hinders investment given the high cost of implementation in terms of effort, time and resources and the development of talent.

¹² Examples from OECD (2023) are as follows:

- **Research and development:** The US' official strategy for privacy preserving data sharing and analytics aims to foster R&D to help researchers, physicians and others gain better insights from sensitive data without the need for data access.
- **Secure data processing platforms:** In the United Kingdom, OpenSAFELY was developed as a secure analytics platform in response to the COVID-19 pandemic.
- **Certification of trusted PETs:** In Japan, the Ministry of Internal Affairs and Communications (MIC) and the Ministry of Economy, Trade and Industry (METI) formulated guidelines for the certification of personal data trust banks that are used by private organizations such as the Information Technology Federation of Japan.
- **Innovation contest:** In France, the CNIL together with the French National Institute for Research in Digital Science and Technology (Inria) have been giving since 2016 the CNIL-Inria Privacy Award to scientists and researchers in order to encourage research on PETs. Similar initiatives are also being sponsored by the UK and USA.
- **Regulatory sandboxes:** In Singapore, the Infocomm Media Development Authority (IMDA) and the Personal Data Protection Commission (PDPC) launched in 2022 a PETs sandbox aiming to provide a safe environment and testing ground for pilot PET projects, with participation from the financial industry.
- **Digital identity management:** In Finland, policymakers are developing domestic legislation on digital ID and digital wallet solutions that can enable individuals to have enhanced control over their personal data using PETs.

FIGURE 3: Overview of Major Types of Privacy Enhancing Technologies

Types of PETs	Key technologies	Current and potential applications*	Challenges and limitations
Data obfuscation tools	Anonymisation / Pseudonymisation	Secure storage	- Ensuring that information does not leak (risk of re-identification)
	Synthetic data	Privacy-preserving machine learning	- Amplified bias in particular for synthetic data
	Differential privacy	Expanding research opportunities	- Insufficient skills and competences
	Zero-knowledge proofs	Verifying information without requiring disclosure (e.g. age verification)	- Applications are still in their early stages
Encrypted data processing tools	Homomorphic encryption	Computing on encrypted data within the same organisation	- Data cleaning challenges
	Multi-party computation (including private set intersection)	Computing on private data that is too sensitive to disclose Contact tracing / discovery	- Ensuring that information does not leak - Higher computation costs
	Trusted execution environments	Computing using models that need to remain private	- Higher computation costs - Digital security challenges
Federated and distributed analytics	Federated learning	Privacy-preserving machine learning	- Reliable connectivity needed - Information on data models need to be made available to data processor
	Distributed analytics		
Data accountability tools	Accountable systems	Setting and enforcing rules regarding when data can be accessed	- Narrow use cases and lack stand-alone applications - Configuration complexity - Privacy and data protection compliance risks where distributed ledger technologies are used - Digital security challenges - Not considered as PETs in the strict sense
		Immutable tracking of data access by data controllers	
	Threshold secret sharing	Providing data subjects control over their own data	
	Personal data stores / Personal Information Management Systems		

Note: (*) Only one application has been included for the sake of readability.

Source: OECD (2023), "Emerging privacy-enhancing technologies: Current regulatory and policy approaches", *OECD Digital Economy Papers*, No. 351

Recommendation #3-A:¹³

We recommend that APEC member economies actively explore the coordinated adoption of a toolbox of business-level mechanisms supporting the goal of secure and trusted sharing of data in the region. These could include interoperable contractual safeguards, binding corporate rules, certification, codes of conduct or privacy codes, and harmonizing exemptions currently granted under existing legal or administrative frameworks.

Recommendation #3-B:

We recommend that APEC member economies develop common core principles for data protection that promote wider and safer data sharing and address uncertainties arising from measures that restrict the flow of data.¹⁴

¹³ For details, refer to the Report *Toward Freer Safe and Trusted Flow of Data in the Asia-Pacific Region*. <http://www2.abaonline.org/content/download/22632381>

¹⁴ These could include agreement on a principles-based approach to data protection; enhanced international cooperation; use of international trade agreements to remove barriers; and addressing regulatory concerns by focusing on rules of access and the quality of the outsourcing solution instead of location. Uncertainties related to data localization may be addressed through common and consistent standards for localization requirements as applied to different sectors; clarifying the interplay between provisions in general data protection laws and localization requirements mandated by specific sectoral laws or regulations; and clarifying the scope of localization measures, the conditions under which exemptions are permitted and regulatory expectations in the implementation of localization rules for specific categories of data.

Recommendation #3-C:

We recommend that APEC member economies foster innovation in relation to privacy enhancing technologies (PETs). This can be achieved through measures such as supporting research and development, providing secure data processing platforms, certification of trusted PETs, innovation contests, regulatory sandboxes and digital identity management, among others.

PROMOTING THE DEVELOPMENT OF INTEROPERABLE WHOLESALE CBDCs

Payment systems play a critical role in enabling cross-border trade, investment and foreign exchange transactions, which are important for achieving the APEC vision of free and open trade and investment. The region's economies are currently exploring ways to create more effective and efficient arrangements leveraging new technologies. In recent years, wholesale Central Bank Digital Currencies (wCBDCs) have attracted much attention as a way to reduce the costs and increase the speed of cross-border payments. Today many Asia-Pacific economies are conducting research, exploration and testing of wCBDCs.

While wCBDCs hold the promise of greater efficiency, their uncoordinated adoption across the region carries the risk of fragmentation, which could increase barriers to cross-border business transactions among Asia-Pacific economies, in contravention of the APEC vision. In this context, ABAC submitted to the APEC Finance Ministers in 2022 a White Paper¹⁵ as an annex to its annual report. The paper called on the Ministers to “encourage relevant stakeholders to collaborate in drafting common principles to guide member economies intending to develop wCBDCs.”

Following the 2022 AFMM Chair's Statement¹⁶ calling on relevant stakeholders to collaborate in implementing ABAC's recommendations, ABAC endeavored to develop the Common Principles in 2023. In support of this effort, the APFF convened various experts from financial industry associations and firms, multilateral institutions, central banks and government and regulatory agencies to develop a set of principles that could assist APEC member economies in coordinating the development of wCBDCs to avoid fragmentation and enhance regional integration.

The Common Principles are primarily concerned with domestic and cross-border *wholesale* CBDC arrangements for faster, efficient, transparent and accessible financial system flows. They are aligned with an analogous set of principles for *retail* CBDC (rCBDC) arrangements put forward by the G7,¹⁷ the G20 and the BIS.¹⁸ In proposing these Common Principles, ABAC is not in any way recommending the adoption of wCBDCs as the most suitable arrangement for member economies. However, they are addressed to those member economies that are exploring wCBDCs for possible adoption, for the purpose of assisting them in designing interoperable wCBDCs. The Common Principles are divided into two main sections: foundational principles and design principles.

The *foundational principles* touch on fundamental considerations to facilitate the conceptualization of wCBDCs that are intended to provide seamless interoperability across markets.

- These include policy considerations such as a conscious intent to design for cross-border interoperability, a recognition of diversity across jurisdictions, anticipation of a need to balance conflicting policy goals and recognition of the need for seamless linkage with domestic arrangements to ensure a coherent and efficient payment infrastructure.
- They also include a reference to an ecosystem approach that needs to be considered from the outset to ensure the coherence of wCBDCs with the broader economy and basic policy and regulatory goals, including the engagement of all relevant stakeholders and coexistence with other payment methods.

¹⁵ Laying the Foundations of Interoperable Wholesale Central Bank Digital Currencies in the Asia-Pacific Region
<http://www2.abaconline.org/content/download/22629711>

¹⁶ <https://www.apec.org/meeting-papers/sectoral-ministerial-meetings/general/chair-s-statement-of-the-29th-apec-finance-ministers-meeting>

¹⁷ See G7: [Public Policy Principles for Retail Central Bank Digital Currencies \(CBDCs\)](#). 2021; [G7 Finance Ministers and Central Bank Governors' Statement on Digital Payments](#) | U.S. Department of the Treasury, Oct. 2020

¹⁸ BIS, “Group of seven” Central Banks: [Central bank digital currencies: foundational principles and core features](#). June 2020

The *design principles* focus on the key features that need to be incorporated into wCBDC arrangements across jurisdictions in order to promote consistency among economies that can facilitate interoperability. These include:

- principles that fall under general organization (terminological clarity and the legal and governance frameworks underpinning wCBDC arrangements);
- considerations around financial stability and monetary and fiscal policy (doing no harm to jurisdictions' financial stability and control over policy, as well as monitoring and review to address unintended consequences);
- alignment with international obligations around data privacy and security and integrity of financial systems;
- facilitation of cross-border foreign exchange transactions and investment; and
- alignment with broader policy goals of fair competition, innovation and inclusion, and common policy goals that have been adopted by jurisdictions as part of their international engagement, including the APEC vision of free and open trade and investment and an open, dynamic, resilient and peaceful Asia-Pacific community as well as the UN Sustainable Development Goals.

Recommendation #4:

We recommend that APEC member economies consider using the *Common Principles for the Development of Interoperable Wholesale Central Bank Digital Currencies* proposed by ABAC¹⁹ as a reference in the design and implementation of their respective wCBDCs.

II. Mobilizing International Capital to Accelerate Sustainable Transition

CREATING A COLLABORATIVE FRAMEWORK FOR FINANCING SUSTAINABLE TRANSITION

Transition finance focuses on decarbonizing high-emitting industries that currently form a large part of the economy.²⁰ There is broad agreement on basic principles among economies in East Asia, the G-20, OECD, ASEAN, global financial institutions and members of the Glasgow Financial Alliance for Net Zero (GFANZ). An important point of agreement is the need to incentivize not just “green” projects, but also “amber” projects that can enable companies to realistically transition to achieve the net zero goals. These cover not only investments in energy saving and efforts to utilize cleaner fossil fuels but also R&D for new energy sources like hydrogen and ammonia as well as innovative carbon dioxide capture, utilization and storage (CCUS) technologies and their deployment.

Various economies have adopted a flexible approach instead of a binary green versus brown approach. In Japan, the government issued basic guidelines on climate transition finance with sector-specific roadmaps for industries that contribute significantly to greenhouse gas emissions.²¹ These roadmaps became the basis for the issuance of transition bonds that are now helping firms in these sectors transition toward the net zero goals. In Southeast Asia, the ASEAN Taxonomy²² identified sectors where efforts need to be focused. Similar approaches are now also being developed in other economies. It is important for companies across the region to be able to leverage these efforts to obtain financing for transition projects, especially for those that constitute important parts of supply chains and face the common challenge toward carbon neutrality.

Each jurisdiction will need to develop its own roadmap with very clear verification mechanisms and robust disclosure frameworks to ensure against greenwashing, and this will need to be done for each sector as well.

¹⁹ Common Principles for the Development of Interoperable Wholesale Central Bank Digital Currencies
<http://www2.abaonline.org/content/download/22632181>

²⁰ As the 2022 G20 sustainable finance report notes, a very narrow interpretation of “green” finance would limit the flow of capital towards activities and investments to support their climate transition. It may entail the risk of penalizing such companies despite having credible transition plans, thus increasing the cost of capital to firms in need of investment to realize their green transition. G20 Sustainable Finance Working Group, *2022 G20 Sustainable Finance Report* [<https://g20sfwg.org/wp-content/uploads/2022/10/2022-G20-Sustainable-Finance-Report-2.pdf>]

²¹ https://www.meti.go.jp/english/press/2021/0507_001.html

²² <https://afcwp.asean.org/wp-content/uploads/2021/10/Annex-12-WC-CMD-Updates-on-ASEAN-Taxonomy-Board.pdf>

However, these roadmaps will need to be comparable, credible, consistent and interoperable across the region to allow companies to access the large-scale financing that is potentially available for their transition projects. A number of challenges²³ would need to be overcome, but there are also opportunities²⁴ that can be leveraged. While taxonomies and transition roadmaps are recent developments and are still currently evolving, there is a potential for convergence that can be harnessed.

Following are key conclusions from discussions among industry, regulators and international organizations:

- First, concrete, science-based and credible transition roadmaps for each economy and each key sector, with robust verification mechanisms, are needed to guide project development. They are also needed by investors and lenders to ensure against greenwashing and avoid reputational risk. These roadmaps will need to be developed through a bottom-up approach that requires close collaboration between government and industry. At the same time, this process will need to be coordinated across economies to ensure comparability, consistency, credibility and interoperability, which are key to promoting access to financing from across the region.
- Second, transition bonds and loans need to be developed as a new asset class in order to attract financing. This process should go hand-in-hand with the build up of investors' knowledge that would enable them to make informed investment decisions.
- Third, the development of interoperable emissions trading systems should be pursued in order to provide strong incentives for transition toward the net zero goals. These could be combined with complementary fiscal policies to provide strong incentives for companies to accelerate the process of decarbonization.
- Fourth, there is a need to address the issue of financing emissions. This will require public sector involvement, including the formulation of appropriate regulatory approaches, incentives and actions by central banks and financial regulators to make bank financing facilities available.
- Fifth, it is important to establish consortia or governance structures around climate disclosure in each economy, based on the foundations laid down by the Task Force on Climate Related Financial Disclosures or TCFD, to achieve coordination among relevant public and private sector stakeholders. They can also facilitate active engagement in the ongoing efforts of the International Sustainability Standards Board (ISSB) and adoption of future standards of mandated disclosure.

Accomplishing all these would require a region-wide international framework for collaboration among economies. This would serve as a platform to coordinate the bottom-up development of transition roadmaps for

²³ Among the key challenges are the following:

- First, significant differences in backgrounds and starting points across economies in the region pose a challenge for developing comparable roadmaps. An example is the widely varying importance of coal as part of the energy mix in Japan and ASEAN.
- Second, incorporating technological factors in technical screening criteria would be difficult for many developing economies. For developing economies, affordability and access to technology would be challenging to many businesses. In addition, the complexity and technical details would be difficult for many stakeholders to sufficiently understand.
- Third, there are widely varying views on what "just transition" means and how it can be incorporated in a regional transition framework.
- Fourth, there is now a lot of work on developing standards around the disclosure framework. Because this has the potential of being translated into regulatory guidelines, it is important to ensure that reliable transition pathways for financing of projects are enabled.
- Fifth, the financial sector can play a key role, but it cannot drive transition alone by itself, especially in a cross-border context. There is a need for collaboration from the public sector and other industries where technological knowledge resides.

²⁴ These include the following:

- First, there are a lot of commonalities and overlaps in principles for transition finance in Japan, ASEAN and China (for example, principles like do no significant harm and consistency). It would be important for economies to agree on a common set of principles containing all these elements.
- Second, the flexibility of current frameworks provides a path to convergence. In the case of the ASEAN Taxonomy, the tiered system comprising green, amber tier 2 and amber tier 3 allow for the financing of projects that meet global standards that are accepted in the EU but also provide ways to invest in projects that may not meet these standards but help companies to reach net zero goals. In the case of Korea's k-taxonomy, it is revised every 3 years to take into consideration new developments such as the emergence of new technologies. The ASEAN Taxonomy is also understood as a work in progress that will continue to be updated and further developed.
- Third, the common ground taxonomy approach used by China and the EU has good potential for use in developing a framework for financing transition projects across the region. However, technical screening criteria need to be specific enough to be usable by investors and lenders. This underscores the importance of collaboration among the financial sector, wider industries and the public sector.

individual economies and key sectors, while promoting comparability, consistency, credibility and interoperability and preventing sustainability arbitrage. This process will need to involve the financial sector and relevant government and regulatory bodies. APEC is well-positioned to provide such a collaborative platform, involving key stakeholders such as finance and other relevant ministries, central banks and financial regulators, as well as the private sector. APEC should also seek to develop synergies with other international bodies that pursue similar goals, such as the ADB, World Bank Group, IMF, ASEAN, G20, G7, and GFANZ, by leveraging existing collaborative platforms under the FMP, including the APFF Sustainable Finance Development Network.

Recommendation #5-A:²⁵

We recommend that APEC provide a common platform for member economies to coordinate the development of climate finance transition roadmaps for each economy and for each key sector. This common platform should assist in the establishment of transition bonds and loans as a new asset class and in the development of interoperable emissions trading systems. It should also assist in the coordination of complementary fiscal incentives and regulatory approaches that can facilitate the financing of transition projects from across the region.

Recommendation #5-B:

We recommend that APEC member economies establish climate disclosure consortia within their respective jurisdictions, based on the foundations laid down by the Task Force on Climate Related Financial Disclosures (TCFD). These consortia should promote coordination among relevant public and private sector stakeholders domestically and support regional coordination among member economies in promoting robust and standardized disclosure across the region. They should also facilitate active engagement in the ongoing efforts of the International Sustainability Standards Board (ISSB) to develop and promote disclosure standards.

FINANCING JUST AND AFFORDABLE ENERGY TRANSITION

While energy is the driver of our societies' economic growth and development, the energy sector is also the single largest contributor to global warming, accounting for around two-thirds of global greenhouse gas emissions attributed to human activity.²⁶ Major Asia-Pacific economies are undertaking massive public sector investments in renewable energy infrastructure and innovation. However, current financing trends are still not aligned with the required transformation as fossil fuel based energy supply continues to usurp the lion's share of planned investment in Asia.²⁷ In Southeast Asia, for example, fossil fuels are expected to remain the most important source of energy supply through 2050 (See Figure 4).

There is increasing recognition that the costs of the transition ought to be distributed across societies in accordance with the principles of justice.²⁸ In this context, the first key challenge is how to achieve energy transition while fulfilling important social development goals such as investment in health, education and infrastructure while operating in a constrained fiscal environment. This needs to take into consideration that the potential pain of transition will also vary across markets. The second challenge is how to increasingly replace fossil fuels with renewable energy sources while meeting continued growing demand for a stable supply of electricity.

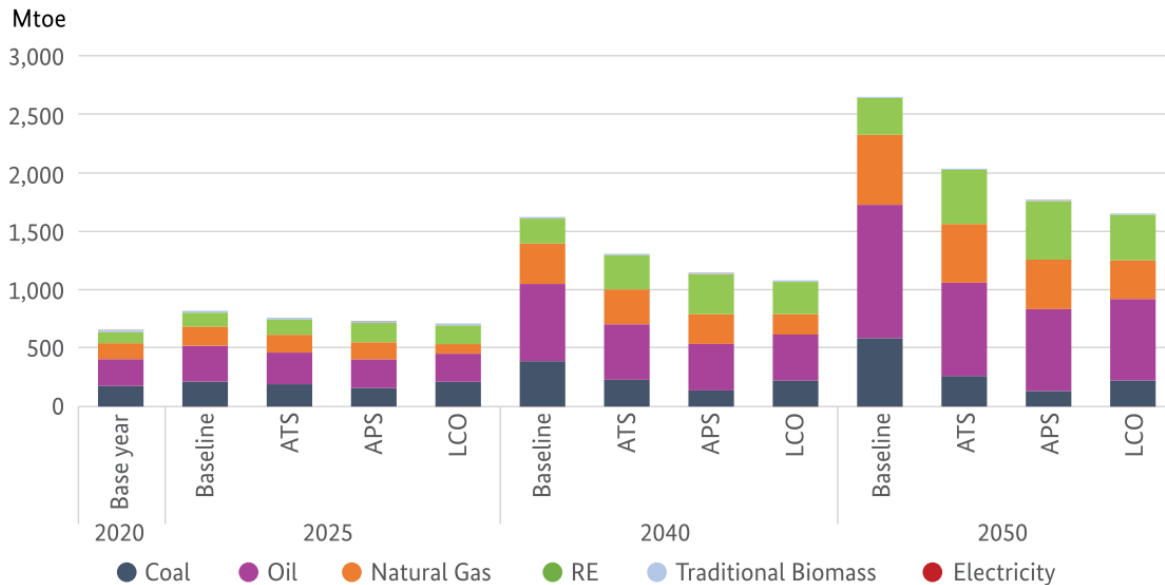
FIGURE 4: ASEAN Energy Supply Projection by Fuel Across Scenarios

²⁵ For details, refer to the Report *Strategizing an Approach to Transition Finance in the Region* <http://www2.abaconline.org/content/download/22632391>

²⁶ <https://www.unep.org/explore-topics/energy/why-does-energy-matter>

²⁷ FFA 2022. https://fairfinanceasia.org/wp-content/uploads/2022/12/Report_FFA-SEI_Financing-just-energy-transition_powering-Asias-energy-future_final.pdf

²⁸ Paris Agreement (2015) [https://unfccc.int/files/meetings/paris_nov_2015/application/pdf/paris_agreement_english_.pdf]; COP26 Just Transition Declaration (2021) [<https://ukcop26.org/supporting-the-conditions-for-a-just-transition-internationally/>]



Scenarios

- **Baseline:** This scenario follows the historical trend of ASEAN Members' energy systems.
- **ATS (ASEAN Members' Targets Scenario):** This scenario ensures attainment of official ASEAN members' policies, especially for energy efficiency (EE) and renewable energy (RE) targets.
- **APS (ASEAN Plan of Action for Energy Cooperation Targets Scenario):** This scenario seeks to bridge the gap between individual ASEAN Members' and regional targets outlined in APAEC 2016-2025 by escalating national energy intensity reduction and RE targets, and/or setting new target for Members that could potentially adopt specific policies.
- **LCO (Least-Cost Optimisation Scenario):** This scenario explores the least-cost dispatch in the power sector to meet the regional target throughout the entire modelling period with a technology-neutral approach that considers all viable technologies in the region.

Source: ASEAN Centre for Energy, *The 7th ASEAN Energy Outlook, 2020-2050* (Volume 7, 2022)

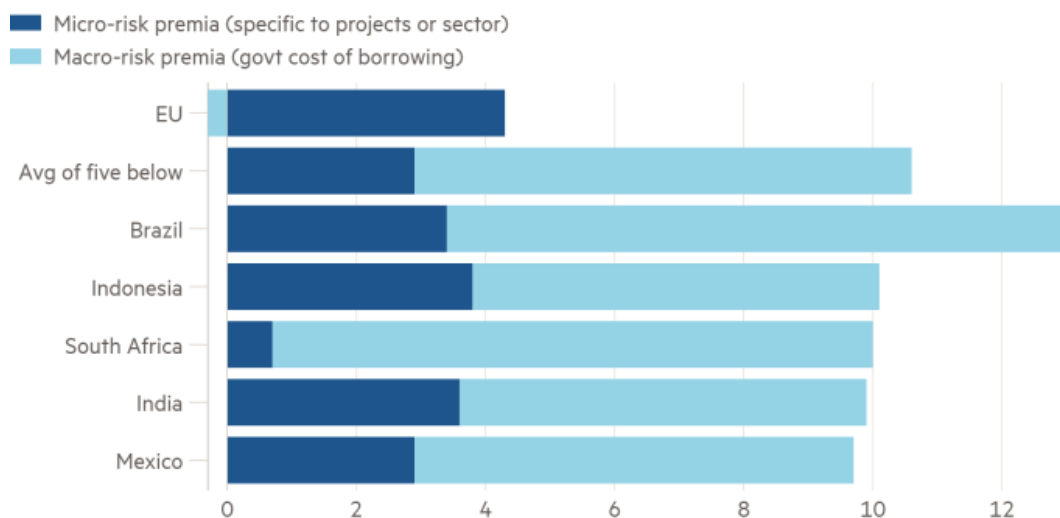
Financing a just and affordable energy transition is a substantial challenge that will require enormous amounts of investment in renewables and new sources of energy as well as in reducing emissions in hard-to-abate sectors. While there is no shortage of global capital looking for investment opportunities in developed economies, there are challenges for developing economies in attracting access to sufficient hard currencies. A significant factor in this is currency risk. The task of identifying and getting the right projects ready for financing to reach the net zero goal by 2050 is complex and difficult due to various reasons. These include:

- the current context of heightened macroeconomic, policy and political uncertainties;
- the different requirements for energy transition across a very diverse region;
- the requirement for international coordination;
- the challenges economies face in effective execution of strategies and policies;
- the need to consider not just environmental, but also social and governance factors;²⁹ and
- currency risk, which is difficult for most developing economies and small projects to bear (See Figure 5).

²⁹ For example, regulators need to design rates in the power sector equitably to provide sufficient buffers to low-income households, while at the same time providing clear signals to markets that can enable movement toward net zero. They also need to pay attention to social and governance factors in the energy supply chain, production centers and sources of raw materials, including the impact of transition on communities and workers in sectors and industries that are heavily reliant on fossil fuels and greenhouse gas emitting activities.

FIGURE 5: Capital Costs to Developing Economies Reflect Macroeconomic Risk

Comparative weighted cost of capital for a solar farm (2021, %)



Note: EU is a proxy for developed economies. Five economies selected are major industrializing developing economies. China excluded as its cost of capital is similar to developed economies.

Source: Avinash Persaud. From Martin Wolf, The green transition won't happen without financing for developing [economies], Financial Times [<https://www.ft.com/content/770aadbb-1583-40ae-b072-9ef44c27cc15>].

Because no one size fits all, attention needs to be focused on developing realistic and practical roadmaps for individual jurisdictions and sectors. While the goal is to progressively reduce the use of fossil fuels, economies will need to make their own decisions on practical approaches that best enable them to achieve net zero goals given local economic and political realities.³⁰ Energy transition involves well-coordinated policies across government agencies and thus needs leadership from the top level of government and a whole-of-government approach. Financing just and affordable energy transition will require development of commonly agreed definitions and standards and promoting availability of data, technology and metrics needed to develop strategies and identify investment opportunities.

Currency risk is increasingly being viewed as a major deterrent to marrying funding supply with demand. An initiative to address this challenge would be the establishment of a market instrument that significantly reduces currency risk by diversifying exposure over a basket of currencies. This could be achieved by creating a reference point for repayment and interest against a basket of international currencies explicitly chosen to reduce overall currency volatility. Fixed rate long-term bonds in which servicing and repayment obligations are indexed to such a currency basket could serve as a 'risk-free' reference rate within the new financial instrument market, leveraging diversification and indexation principles to effectively mitigate risk.³¹

Diversification and indexation, which are consistent in principle with the IMF's Special Drawing Rights, can serve this purpose if used with a selected index that is transparent, robustly and properly regulated, and recognized by the global financing system as an appropriate store of value. Convertibility of component currencies is a key success factor for indices among those offered by several trustworthy currency index providers today that enjoy wide acceptance in the market.

³⁰ Such approaches may, for example, involve the transitional use of cleaner fossil fuels (e.g., natural gas or blended biofuels) or use of nuclear energy.

³¹ One currency basket that may be considered for this purpose is the World Parity Unit (WPU). This is a basket of 11 widely traded international currencies, the daily settlement price of which is calculated by the FTSE-Russell division of the London Stock Exchange. For more details, see Robert Dohner, *Financing the Energy Transition: Currency Risk and WPU Indexed Bonds* https://www.mountainpacificinstitute.org/Financing_the_Energy_Transition_20230720.pdf

The bond issuance and disaggregation mechanisms would enable funding to be made available for MSMEs. It is intended to enfranchise relatively small projects enabling them to borrow transition technologies, and would be a major practical measure towards the goal of making the transition just and affordable.

In addition to the previously mentioned recommendations (see Recommendations #5-A and #5-B above) to provide a common platform for coordinating the development of transition roadmaps and financing mechanisms for the energy and hard-to-abate sectors, and to promote robust and standardized disclosure, an additional set of recommendations is needed to address challenges specific to just and affordable energy transition.

Recommendation #6-A:³²

We recommend that APEC member economies leverage existing and ongoing initiatives to promote the development of a pipeline of energy transition projects that can attract private sector financing. Examples are the digital project preparation platform SOURCE, the Global Infrastructure Hub (GIH) and GFANZ, through existing FMP policy initiatives such as the APFF Sustainable Finance Development Network (SFDN) and the Asia-Pacific Infrastructure Partnership (APIP).

Recommendation #6-B:

We recommend that APEC provide a common platform to facilitate the use of blended finance through collaboration among governments, multilateral institutions and international initiatives to attract financing for just energy transition projects.

Recommendation #6-C:

We recommend that Ministers explore the issuance of fixed rate long-term bonds in which servicing and repayment obligations are indexed to a basket of major international currencies. This should be designed to reduce borrower and lender risk from swings in the exchange rate of the currency of issue and thereby enable broader financing options. Suitably indexed bonds could become core allocations in the portfolios of global investors and thus allow international capital to be made available to finance a just and affordable energy transition.

FINANCING SUSTAINABLE INNOVATION

Achieving the net zero goals will require a rapid reduction of carbon emissions, which at present remain at unsustainably high levels. Transitioning from the current situation to reach these goals will require faster innovation. In addition to innovations in technologies for developing commercially viable clean energy sources and innovations across hard-to-abate sectors, innovations in the use of digital technology and finance will also be needed. These innovations will be important for lowering the costs and accelerating the transition toward a green future, especially for Asia-Pacific developing economies and for MSMEs.

For the region to accelerate the achievement of the net zero goals, economies need to develop enabling ecosystems for financing innovations. Such an ecosystem will require coordination of key stakeholders through their engagement in formulating well-defined objectives and identification of policy levers. Most critical would be the collaboration among governments, the private sector and MFIs and a holistic approach to enabling MSMEs to effectively participate in global value chains and bring innovations to the market. Strong and clear signals from regulators and governments and clear transition pathways can facilitate the flow of transition finance to sustainable innovations. Voluntary carbon market (VCM) exchanges and over the longer term, emissions trading systems, can play important roles in incentivizing innovations. It is also important to focus promotion efforts on innovations that are most needed in the region's developing economies, such as CCUS.

Economies' intellectual property (IP) regimes have significant potential to facilitate the financing of innovation projects by companies and start-ups to help accelerate the transition to net zero in the region. IP financing is

³² For details, refer to the Report *Financing a Just and Affordable Energy Transition in the Asia-Pacific Region* <http://www2.abaconline.org/content/download/22632401>

growing, but is still very much at a nascent stage, as there is yet no commonly accepted global standard for valuing and financing IP assets. Leveraging on IP to finance sustainable innovation entails a process of coordination among key stakeholders such as international organizations and experts in the fields of intellectual property, law, regulation and valuation to address this challenge.

Also in addition to consistent, comparable, credible and clear science-based sectoral technology transition roadmaps with robust mechanisms for third party review, assurance and verification, as proposed in Recommendations #5-A and #5-B above, we propose the following:

Recommendation #7-A:³³

We recommend that APEC member economies collaborate with multilateral institutions and the private sector to design enabling ecosystems for financing sustainable innovation that leverage their complementary roles³⁴ and meet the needs of their respective jurisdictions. Initial efforts could focus on fostering voluntary carbon market exchanges and prioritize incentives for the development of technologies most needed in developing economies, such as those related to carbon capture, utilization and storage (CCUS).

Recommendation #7-B:

We recommend that APEC promote legal and regulatory reforms to enable intellectual property (IP) financing and IPR ownership under the Enhanced APEC Agenda for Structural Reform (EAASR). As a first step, we recommend that member economies collaborate with relevant international organizations and the private sector in initiating a pilot project to develop and implement a reform agenda enabling the use of IP supporting sustainable innovation to access finance (such as through IP-backed loans and securitization). This could start with a product-based diagnostic for each participating jurisdiction to assess gaps and opportunities in the legal and regulatory environment. The diagnostic could map alignment of laws, regulations, valuation standards, business practices, and market development with international standards and best practices.

Conclusion

The Asia-Pacific region today is facing enormous economic and social challenges arising from a deeply concerning global outlook, conflict, and a series of grave challenges – geopolitical, economic, environmental and financial. The growing associated trend toward fragmentation of supply chains and payment systems is seriously impacting consumers and businesses, especially MSMEs that collectively represent the largest provider of employment in any economy. A less visible but more fundamental source of fragmentation is the uncoordinated response of economies in the region to the challenges of digital transformation and climate change, which if not addressed can create new barriers to cross-border business, increase costs and risks for consumers and businesses, and negate APEC’s vision of free and open trade and investment and an open, dynamic, resilient and peaceful regional community.

³³ For details, refer to the Roundtable Report *Financing Sustainable Innovation in the Asia-Pacific Region* <http://www2.abaconline.org/content/download/22632421>

³⁴ Collaboration between government and private sector with support from MFIs, playing complementary roles, can help provide an enabling ecosystem for financing of sustainable innovation.

- Government’s role is to develop and implement robust and credible just transition plans, provide public resources to crowd-in private sector financing and facilitate the private sector’s contributions through regulation, policy, encouragement of voluntary efforts at corporate social responsibility, IPR enforcement and supportive international agreements.
- MFIs can provide concessional capital to help leverage private sector funding and capacity building support and technical assistance to help governments and regulators adopt and implement policies and regulations based on internationally accepted principles (e.g., the OECD principles on blended finance) and best practices.
- The private sector can provide commercial funding in alignment with economies’ strategies, provide useful feedback to help improve the effectiveness of policies and regulations, and voluntary support through the engagement of philanthropies and socially responsible investors.

Financial systems, which play a central role in connecting enterprises and individuals within and across markets, will need to be an important focus of efforts to bring the region back from the path of fragmentation to the path of integration. This report identifies practical and actionable measures that APEC and its member economies can adopt and implement to help them align their efforts to promote digital transformation and sustainable finance with the APEC vision. These include measures to facilitate end-to-end cross-border digital trade finance, ensure future interoperability of digital financial transactions and wholesale payments, promote wider cross-border sharing and use of data, and create international frameworks for financing just and affordable transition of economies toward the net zero goals and financing innovations that can lower the costs and accelerate this process.

These objectives can only be attained through collaboration within and among member economies and between the public and private sectors. For this reason, we call on APEC Finance Ministers to endorse these recommendations and urge relevant stakeholders, including government and regulatory agencies, the private sector and multilateral institutions, to work together in implementing them within APEC's voluntary and non-binding framework. We in ABAC and our network of collaborators in the APFF, APFIF and APIP remain committed to supporting the Finance Ministers in implementing their initiatives and in their continuing efforts to promote stronger, more inclusive, more sustainable and more balanced growth in a green and digitally connected Asia-Pacific region.

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