Asia Pacific Perspectives

Published in December 2025

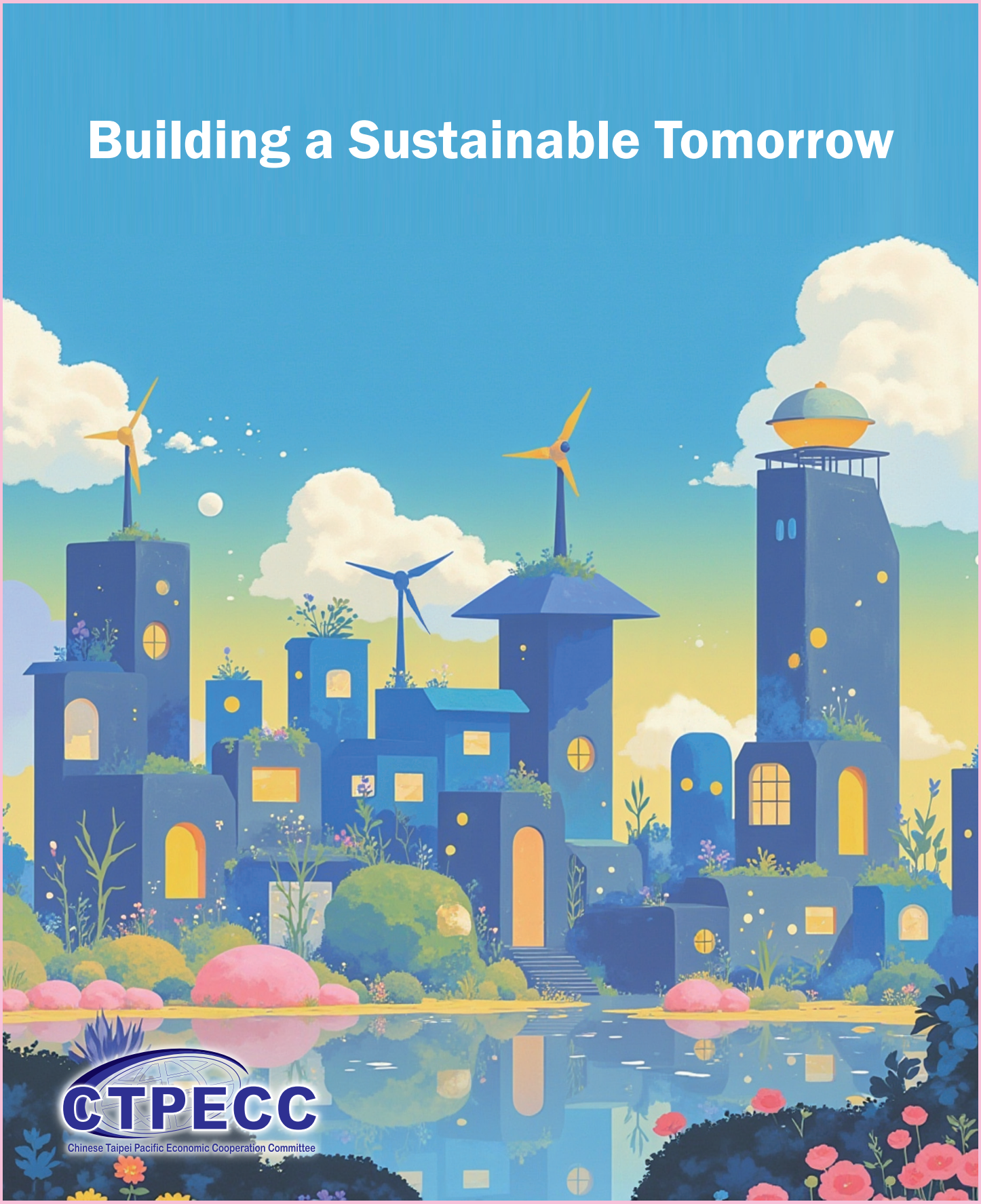

Table of Contents

Chief Editor
Dr. Alex Hsu
(Director General, CTPECC)

Editorial Committee
Dr. Shunyo Liao
(Professor, National Chung Hsing University)
Dr. Chen-Sheng Ho
(Research Fellow, Department of International Affairs, TIER)

Editor
Austin Chou
(Assistance Research Fellow, CTPECC)
Louisa Wu
(Assistant Research Fellow, CTPECC)

About the CTPECC

CTPECC is a full member of Pacific Economic Cooperation Committee (PECC), which is an international organization for economic cooperation in the Asia-Pacific region and plays a key role in consultation and advice on APEC's major initiatives and plans. The participation of CTPECC is to assist the government in researching and analyzing economic cooperation plans, and to strive for greater opportunities to participate in cooperation mechanisms and dialogues.

Connecting Taiwan to the Global Goals on Adaptation for a Resilient Tomorrow

Shin-Cheng Yeh

Distinguished Professor,
Graduate Institute of Sustainability Management and Environmental Education,
National Taiwan Normal University
E-mail: scyeh@ntnu.edu.tw

Yu-Yuan Shih

Assistant Professor,
Graduate Institute of Sustainability Management and Environmental Education,
National Taiwan Normal University
E-mail: shihyu@ntnu.edu.tw

1. Urgency of Aligning Taiwan with Global Goals on Adaptation to Establish a Comprehensive Climate Adaptation Mechanism

Climate change is an undeniable scientific reality. According to the World Meteorological Organization (WMO), global temperatures in 2024 have risen by 1.55°C relative to pre-industrial levels-setting a new record in the era of complete meteorological data and surpassing the 1.5°C threshold initially hoped to be maintained until 2100 (WMO, 2025). With 75 years still to go, this milestone underscores the urgency. Rising global and ocean temperatures are turning previously rare extreme weather events into persistent threats. Over the past decade, Taiwan has experienced increasingly intense extreme rainfall, more frequent heatwaves and cold spells, and a rise in compound disasters. A representative case is the collapse of the Matalaan Creek landslide dam in the second half of 2025.

Since the adoption of the United Nations Framework Convention on Climate Change (UNFCCC) in 1992, mitigation-focused on reducing greenhouse gas emissions-has been the central strategy in global climate response. It wasn't until COP11 in 2005 that the Nairobi Work Programme (NWP) formally introduced adaptation into the UN agenda. In 2010, COP16 adopted the Cancún

Adaptation Framework, elevating adaptation to equal importance with mitigation. Following the Paris Agreement in 2015, global efforts increasingly emphasized the implementation of adaptation measures. The Global Goal on Adaptation (GGA), as the core of Article 7 of the Paris Agreement, aims to enhance global adaptive capacity, strengthen resilience, and reduce vulnerability to climate change. As extreme weather intensifies, climate adaptation has become an urgent challenge. COP recently convened from November 10–21, 2025, in Belém, Pará, Brazil, with one of its core goals being the development of 100 specific indicators for the global adaptation goal-transforming complex adaptation efforts into manageable and trackable actions.

Guided by Taiwan's Climate Change Response Act and the National Climate Change Adaptation Action Plan, the country has laid the foundation for climate adaptation. Taiwan must now align with Global Goals on Adaptation and establish a more comprehensive scientific and governance mechanism for climate adaptation. On October 30, 2025, the President chaired the fifth meeting of the Climate Change Response Committee, emphasizing the need to strengthen Taiwan's disaster response capabilities, build a robust adaptation mechanism, and enhance resilience to tackle compound disasters-paving the way for a sustainable future.

2.Rethinking Resilience: How Climate Adaptation Evolves Through Layers of Change

In Spatial planning, climate resilience is often discussed in terms of infrastructure upgrades and emissions reductions. Yet one critical strategy-adaptation-remains underrepresented in public discourse. While mitigation efforts like "carbon reduction" dominate educational campaigns and media coverage, adaptation is frequently misunderstood. A 2022 survey by Taiwan's Environmental Protection Administration revealed that only 11.4% of 2,589 randomly selected respondents correctly identified that "energy-saving and carbon reduction" are not forms of climate adaptation (EPA Taiwan, 2023). This confusion reflects a broader issue: many adaptation initiatives are retroactively labeled without embodying the true essence of adaptive planning.

Global institutions offer valuable frameworks to clarify adaptation. The UNFCCC defines it as (UNFCCC, 2024):

Adjustments in ecological, social, or economic systems in response to actual or expected climate stimuli and their effects or impacts. It involves changes in processes, practices, and structures to moderate potential damage or capitalize on opportunities associated with climate change.

This definition highlights adaptation as a proactive recalibration of systems-essential for cities facing rising temperatures, sea-level rise, and shifting weather patterns.

The IPCC's Fifth Assessment Report (AR5, 2013) adds nuance:

The process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities. In some natural systems, human intervention may facilitate adjustment to expected climate and its effects.

Notably, the IPCC distinguishes between incremental adaptation, which preserves existing systems, and transformational adaptation, which reimagines them entirely. In urban terms, this could mean upgrading drainage systems (incremental) versus relocating entire communities away from flood-prone zones (transformational).

Synthesizing these perspectives, adaptation emerges as a multi-layered response to climate disruption. It's not just about reacting to change-it's about changing how we respond to change. In urban or spatial planning, this involves three nested layers:

1.Climate change itself-the shift in global and regional climate patterns.
2.Impacts of climate change-such as heatwaves, flooding, and infrastructure stress.
3.Human responses to those impacts-new policies, technologies, and behaviors.

This nested structure adapts "the change of the change of the change." Omitting any layer risks an incomplete strategy-and the consequences will only compound.

Consider Tuvalu, a Pacific island nation and ally of Taiwan. Rising sea levels (first change) have led to seawater intrusion (second change), salinizing soil and reducing yields of traditional crops like taro and cassava (third and fourth changes). In response, Tuvaluans have shifted to imported staples like rice, altering their diets (fifth change). This cascading adaptation illustrates how climate impacts ripple through ecosystems, economies, and cultures (DQ Earth Picture Team, 2019).

For cities like Taipei, Kaohsiung, or Taichung, the lesson is clear: adaptation must be embedded in every layer of urban development-from zoning laws to food systems, from public health to cultural preservation. Only then can we build communities that thrive amid change, not just survive it.

3.Implications of Global Goals on Adaptation for Taiwan's Adaptation Policy Direction

Establishing concrete and measurable national adaptation goals is key to the success of Taiwan's climate adaptation efforts. According to Taiwan's National Climate Change Adaptation Action Plan (2023–2026), the main challenges include:

1.The need to strengthen the operational mechanisms of the adaptation system and action plans.
2.Lack of clarity and rationality in adaptation planning and goal-setting.
3.Absence of standardized methods for risk assessment and climate data application.

Taiwan should align its national adaptation targets with the Global Goals on Adaptation. Through inter-ministerial collaboration and a rolling revision approach, Taiwan can promote sustainable development across society, economy, and environment.

In the following, we will draw on global adaptation goal indicators to identify challenges and propose recommendations for Taiwan's adaptation policy in areas such as research and governance collaboration, goal-setting and private-sector financing, and transformational adaptation strategies.

(1)Developing National Adaptation Indicators Requires Collaboration Between Research and Governance Institutions

At COP28 in 2023, the UAE Framework for Global Climate Resilience introduced 11 Global Goals on Adaptation-four focused on the adaptation cycle (risk assessment, planning, implementation, and learning), and seven thematic goals covering water resources, food and agriculture, health, ecosystems, infrastructure, poverty eradication, and cultural heritage. However, a common issue is the lack of data to evaluate these indicators. Therefore, establishing a robust national adaptation indicator database is essential.

A study by Biesbroek, Mirbach, Sietsma, and Garschagen (2025) surveying over 150 countries

found that available data is concentrated in adaptation cycle goals and thematic areas such as water resources, ecosystems, food and agriculture, and health. Other areas suffer from significant data gaps.

(2)Difficulty in Defining Adaptation Goals Requires Government Guidelines and Public-Private Partnerships to Mobilize Private Financing

An OECD report from October 2025 highlights that aligning with Global Goals on Adaptation and setting national targets can serve as a foundation for financing national climate adaptation plans (Lamhauge & Duluk, 2025). For example, between 2021 and 2024, Japan introduced the "Adaptation Finance Guidelines for Financial Institutions" and the "Contribution Indicator Guidelines for Adaptation Projects," which established measurable adaptation goals in agriculture, water environments and resources, ecosystems, and health. These goals guide adaptation financing and integrate financial tools to help businesses and local governments address climate risks (Watanabe, 2025).

Defining adaptation goals for each sector is the first step in establishing adaptation finance criteria. Taiwan can reference global adaptation indicators and Japan's adaptation finance guidelines to support private sector involvement. Currently, most funding for Taiwan's adaptation plans comes from the public sector. Selecting suitable public infrastructure projects and offering policy incentives can encourage public-private partnerships and attract private investment.

(3)Global Goals on Adaptation can inform Taiwan's Principles for Transformational Adaptation Policies

A common principle in recent international adaptation policy development is transformational adaptation. The IPCC (2025, 2022, 2014) defines transformational adaptation as "fundamental changes to existing institutions, infrastructure, or socio-economic systems." The UN identifies six dimensions-political, economic, social, technological, environmental, and legal-as key strategies for transformational adaptation, with prioritizing national adaptation goals among them. COP28's UAE Framework for Global Climate Resilience explicitly states that Global Goals on Adaptation can serve as guiding principles for transformational adaptation (UNFCCC, 2024).

Taiwan's long-term development planning should include the formulation of concrete and feasible national adaptation goals to identify and guide transformational adaptation projects. Taiwan must reference global adaptation indicators, distinguish between common, sector-specific, and governance-related indicators, and strengthen research and governance mechanisms to establish a robust adaptation framework. Importantly, Taiwan's future adaptation goals and transformational adaptation principles should remain flexible, as the global stocktake (GST) process following COP31 is likely to lead to ongoing revisions to global adaptation indicators.

Reference

1.Biesbroek, R., Mirbach, C., Sietsma, A., & Garschagen, M. (2025). Assessment of existing datasets for tracking progress towards the Global Goal on Adaptation (and beyond). Climate Policy, 1-15.

2.DQ Earth Picture Team, "One day it will be eaten by the sea" Tuvalu Islands will be submerged soon", 2019/5/22, https://dq.yam.com/post/11118

3.EPA Taiwan, Taiwan's public climate change literacy and database construction plan, 2023.

4.Intergovernmental Panel on Climate Change (IPCC). (2014). Climate change 2014: Impacts,

adaptation, and vulnerability. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press.

6. Intergovernmental Panel on Climate Change (IPCC). (2018), Annex II, Work Group II of AR5, 2013, https://www.ipcc.ch/site/assets/uploads/2018/02/WGIIAR5-AnnexII_FINAL.pdf
7. Intergovernmental Panel on Climate Change (IPCC). (2022). Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Geneva, Switzerland: IPCC.
8. Intergovernmental Panel on Climate Change (IPCC). (2025). Seventh Assessment Report – AR7. Retrieved from https://www.ipcc.ch/assessment-report/ar7/
9. Lamhauge, N., & Duluk, M. (2025). Insights for Global Goal on Adaptation indicators for enabling factors for implementation, including means of implementation. OECD/IEA Climate Change Expert Group Papers, 2025(04).
10. United Nations Framework Convention on Climate Change (UNFCCC). (2024), What do adaptation to climate change and climate resilience mean?, accessed April 2024, https://unfccc.int/topics/adaptation-and-resilience/the-big-picture/what-do-adaptation-to-climate-change-and-climate-resilience-mean#eq-5
11. United Nations Framework Convention on Climate Change (UNFCCC). (2024). Defining and understanding transformational adaptation at different spatial scales and sectors, and assessing progress in planning and implementing transformational adaptation approaches at the global level (Technical paper by the secretariat, FCCC/TP/2024/8)
12. Watanabe, Yasuko (2025). Current state of adaptive finance - Utilization of green finance and efforts to improve resilience, https://adaptation-platform.nies.go.jp/moej/tcfd-scenario-analysis/topics/topic-05.html#to-green-finance
13. World Meteorological Organization, WMO confirms 2024 as warmest year on record at about 1.55°C above pre-industrial level, January 10 2025, https://wmo.int/news/media-centre/wmo-confirms-2024-warmest-year-record-about-155degc-above-pre-industrial-level

From Climate Challenges to Shared Opportunities: Innovation, Education, and Climate-Resilience Technologies for Building a Sustainable Tomorrow in the Asia-Pacific

Ching-Pin Tung
Professor
Bioenvironmental Systems Engineering National Taiwan University
Theme: Building a Sustainable Tomorrow
Date: November 2025

I.Reframing the Climate Narrative

Over recent decades, the human society and natural ecosystem have faced unprecedented challenges brought by climate change. The Asia-Pacific is considered as the most vulnerable region to natural disasters such as floods, drought, typhoons, and landslides. APEC looks ahead to 2025 on the theme Building a Sustainable Tomorrow, while recognizing the necessity not just of climate risk reduction but also of Building Back Better and Higher Quality Tomorrow through innovation and education for net zero and climate-resilience technologies.

Building a sustainable tomorrow is not defined by carbon reduction targets alone but also building resilience and learning to thrive in a changing climate, leveraging innovative technology and value. Artificial intelligence (AI) and digital twins are leading technology that are now building and expect to assist governments and communities transition to visualized planning. And, if well applied, these technologies not only prevent harm, but they also improve quality of life and generate new economic value.

From Taiwan's perspective, the road to a better sustainable future is one already travelled and can expect more transformation. The island's research universities, technology industries and governmental agencies have, in recent decades, collaborated to experiment with what might be termed "resilience technologies." These domestic and regional collaboration-backed initiatives underpin that sustainability can be at the same time science-driven and people-focused. This article suggests that APEC economies can turn climate threats into common chances for high-quality and inclusive growth, through mainstreaming net zero innovation, climate resilience adaptation technology, as well as

education for sustainable development.

II. Turning Challenges into Shared Innovation Opportunities

The richness of diversity in the Asia-Pacific provides, at the same time, both a critical diverse range of vulnerabilities and a vital center of strength. The very geographical and climatic variations that make the region susceptible to natural calamities also nurture innovation. This shared experience of climate stress, from Pacific islands struggling with sea level rise to rapidly urbanizing metropolises, has sparked a profound burst of technological innovation and driven home the necessity of regional cooperation on an unprecedented scale.

New models of collaboration are being developed across APEC value chains. AI-based carbon accounting, digitization of supply-chain emissions monitoring and climate-smart agriculture are no longer niche experiments but a part of a regional ecosystem for sharing innovation. The logic is straightforward: what one economy invents can rapidly help others gain ground, provided that data and standards are open and compatible. In this context, Taiwan's universities and start-ups have played an important intermediary role. Their AI-based models for environmental monitoring and disaster prediction can be scaled through suitable digital-innovation platforms and adapted to different local conditions.

The term "shared innovation" describes this process well. Co-creation and co-delivery of knowledge enable economies to experiment with wise solutions, whether smart building energy management systems, circular economy, eco-design for sustainable product, urban-resilience design, and share risk-taking across multiple economies, reducing the amount of replicated resources. The more that these efforts are linked, the faster green technologies spread and the stronger the region becomes.

III. Building Resilience through Digital and AI Technologiess

The 21st century has seen resilience emerge as a metric of national competence. Infrastructure matters, but digital infrastructure increasingly determines how well societies can predict and weather climate shocks. AI, big data and digital-twin systems are especially transformational. A digital twin is an avatar of a physical entity, incorporating its real-time data feed to allow for simulations or support decision making, which is also a data-driven replica of a physical system that enables scenario simulation.

A climate smart agriculture project for Yunlin County has become a testbed for climate-resilient farming with early warning systems. Farmers can use mobile platforms combining weather forecasts, soil data, and AI flooding prediction models to decide when to plant, irrigate, fertilize, or harvest. The goal is to know the weather, to use nature-based solution, and to live happily with nature. This human-scale approach-grounded in both technology and local wisdom-has improved yields and reduced losses during extreme events. More importantly, it restores confidence to communities often portrayed as victims of climate change.

Similar approaches can be seen in different countries in the region, including digital dashboards that integrate health, energy, and disaster information; early warning that help cities and famers to prepare for disaster risk reduction and climate change resilient adaptation. When knowledge is shared and systems are interoperable, adaptation becomes not only more efficient but also more inclusive. A society that can see tomorrow becomes more capable of shaping it.

IV. Climate Change Adaptation Teaching Alliance

Societies, economies and ecosystems have been disproportionately affected by climate change

at an accelerating pace. In Taiwan, a divergence between actual impacts of climate in the real world and contents of conventional education has begun to be observed. For instance, intense rainfall events-now more common and of higher intensity than what urban drainage systems were originally designed to handle-have turned urban floods into a seasonal, rather than an occasional, calamity. Similarly, higher temperatures introduce new complications for farmers and farm laborers such as heat stress, decreased crop yields, and shifts in planting dates. These are not simply scientific issues; they are experiences that communities have had, and they need a new generation of leaders who can not only understand climate science, but who can also understand how you manage risk and design adaptive solutions.

Yet most of the existing textbooks and course materials were written before these changes, and consequently they are not fully up to date with the best knowledge on adaptation technologies, risk governance, and cross-disciplinary coordination. Several teachers interested in teaching about climate risks and adaptation often have said that it is hard to find teaching materials with or case studies with which students can relate. This is exactly where the Climate Change Adaptation Teaching Alliance (CATA) makes a difference.

The Alliance consists of university faculty, secondary school educators, climate scientists, and climate adaptation and sustainability professionals. Instead of each professor reinventing the wheel, the Alliance provides a common platform to develop and adapt curriculum. These range from contributing to and reviewing core curriculum modules, to creating learning material based on industry needs, to organizing industry–academia workshops to discuss what the industry really requires in the classroom. Along with expert courses the Alliance delivers delivery teacher training programs, promotes teaching innovation and offers a measure to evaluate adaptation literacy making talent development systematized and measurable.

Currently the Climate Change Adaptation Teaching Alliance is in the process of both building a stronger network within Taiwan and establishing an international presence. The intention is to partner with universities and institutions throughout the Asia-Pacific, an area where many nations are particularly vulnerable to similar climate hazards-heatwaves, intense rainfall, drought, coastal erosion, and so forth-and where socio-economic and adaptation capacities vary widely though geography-bound and culture-bound similarities would nevertheless hold. Through the exchange of curriculum, cases, and pedagogies, Alliance members believe they can speed regional learning and continue to develop a corps of educators ready to train the next wave of climate adaptation professionals.

In the future, CATA can works together with colleagues in other countries to develop a set of open-access multilingual teaching packages, enabling teachers in the Asia-Pacific to adapt lesson plans without restarting from zero.

V.Cooperation Mechanisms within the APEC Value Chain

Technology itself does not promise a sustainable future. As important are the policy mechanisms linking innovation to governance, finance and education. Among a highly diverse APEC membership, four pathways are apparent.

1.Knowledge Co-creation. Common norms and transparent data are the basis of regional development. For example, frameworks for carbon neutrality (e.g.\ ISO 14068-1), climate disclosure (e.g.\ IFRS S2), and nature-related risk (e.g.\ TNFD) can be adapted and correlated through APEC working groups. Taiwan research centers and think tanks have facilitated similar capacity-

building efforts in the region, translating complex standards into practical tools for small- and medium-sized enterprises.

2. Technology Co-development. Multiple country demonstration projects can link digital innovation with sustainability goals. Examples include AI-ESG management systems, climate-resilient capacity building, and low-carbon urban planning. Taiwan's semiconductor and ICT sectors, together with its universities, are natural partners for such collaboration to bridge advanced manufacturing expertise with applied climate research.
3. Education and Capacity Co-building. In the end, human capital is also what makes policy gains sustainable. In Taiwan, the CATA at its universities has started to produce interdisciplinary curricula and case studies on adaptation governance, risk communication and ESG integration. Through APEC cooperation, it is possible to develop into a regional Climate Adaptation Teaching Network which supports the exchange of faculties, joint summer schools and open learning resources. Such partnerships would broaden the training opportunities for government officials, engineers and businesspeople in all economies as well as ensure that technological capability is complemented by institutional learning.
4. Finance and Impact Co-investment. Scaling innovation requires financial alignment. Blended-finance tools-incorporating public finance, private-sector investment, and multilateral backing-could help speed adaptation projects with deliverable results. The increasingly robust ecosystem of ESG-tied loans and, particularly in Taiwan's case, impact-investment tools offer a sensible template for matching investors with credible climate solutions.

These four pillars: knowledge, technology, education and finance which put together could become the building blocks of an APEC Climate-resilience technologies and Teaching Partnership. This would serve to harmonize pilot projects, data exchange and policy research among economies, with universities serving as motors of innovation and capacity-building. In doing so, it would translate APEC's long-standing commitment to open cooperation into a practical roadmap for climate resilience.

Small economies often have limited resources and expertise. An array of shared models, training courses and open source tools, operating as a regional platform, could significantly lower adaptation costs and speed up technology adoption.

VI. Building a Hopeful and High-Quality Tomorrow

Climate change has profound implications and could cause enormous damage but building a hopeful and high-quality future through cooperation and innovation is very much needed for the Asia-Pacific. Therefore, building a Sustainable Tomorrow is not just a goal for the environment but a goal for human development.

Smart and inclusive high-quality development need to incorporate net zero pathways, climate resilience adaptation technologies, and educational collaboration. Digital twins enhance city safety, and climate smart agriculture empowers rural farmers. Conversely, teaching networks at the regional level nurture the next generation of climate professionals. All these efforts, reinforce the region's overall ability to prepare for changing climate in the future.

Building a Sustainable Tomorrow is the turnaround from fear to better sight, from risk to opportunity, from seclusion to mutual learning and collaboration. As science, policy, and education converge, there is no longer a need to perpetuate fear, and we can look to the high-quality future with optimism.

Blended Finance, Digitalization, and Food Resilience in the APEC Region: Institutional Pathways for Sustainable Growth

Fang Yuan-Yi
Affiliation: Chinese Culture University /
Professor of Law/
Dean of College of Sustainability & Innovation
Date: November 2025

Introduction

The 31st APEC Finance Ministers' Meeting in Lima (21 October 2024) reaffirmed a regional ambition expressed in the formula "Sustainable + Digital + Resilient = APEC," emphasizing a balanced policy mix and the centrality of multilateral cooperation for inclusive prosperity. The Joint Statement called for responsible fiscal and monetary policies, enhanced debt transparency, and targeted support for quality, reliable, sustainable, and resilient infrastructure that integrates climate risk. Within this framing, sustainable finance is not only about capital volumes but about aligning incentives, information, and governance so that private investment can complement public mandates. The creation of the Sustainable Finance Initiative (SFI) as a voluntary platform to coordinate information-sharing and capacity-building through 2027 underscores APEC's intent to institutionalize practice across diverse regulatory contexts. This architecture builds on the Cebu Action Plan and is nested within the Putrajaya Vision 2040 and the Aotearoa Plan of Action, which together seek resilient, innovative, and people-centered growth.

Yet despite policy momentum, blended finance-defined as the strategic use of public or philanthropic concessionally to mobilize commercial capital-has not achieved systemic scale. Governance architecture, far more than product design, appears to be the binding constraint. This article therefore examines how institutional reforms (transparency, standardization, supervisory coherence) and digitalization (open finance, e-MRV, AI-enabled analytics) can convert resilience and sustainability into investable outcomes in line with the Food Security Roadmap Towards 2030 and the 2024 Trujillo Principles. Operational lessons from the Asian Development Bank (ADB) and Mercy Corps are paired with a concrete digital

agriculture case-AIMIA Prophet-documented by Chen (2025) to show pathways from policy declarations to bankable delivery.

The 2025 APEC Finance Ministers' Joint Statement issued in Incheon under the theme "Sustainable Growth and Shared Prosperity in the Region" consolidates this turn toward institutionalized blended-finance practice within the Finance Ministers' Process (FMP). While the Statement does not use the term explicitly, it operationalizes core principles: mobilizing both public and private investment for MSMEs and high-potential startups; strengthening digital finance rails and responsible AI in financial services; institutionalizing Disaster Risk Financing and Insurance (DRFI); and reaffirming Public-Private Partnerships (PPPs) as vehicles for resilient infrastructure and service delivery. The adoption of the Incheon Plan-structured around Innovation, Finance, Fiscal Policy, and Access and Opportunity for All-provides the policy architecture to mainstream these mechanisms across member economies in alignment with the Putrajaya Vision 2040 and the Aotearoa Plan of Action.

The Promise and Pitfalls of Blended Finance

Blended finance was advanced to close the SDG financing gap, particularly for climate adaptation, sustainable infrastructure, and agri-food systems in emerging markets. Conceptually compelling, it has struggled to move beyond bespoke deals. CCSI (2025) diagnoses four systemic barriers: (i) opaque subsidy accounting and insufficient disclosure; (ii) high transaction costs from non-standard structures; (iii) limited liquidity and unclear exit pathways that deter pensions and insurers; and (iv) misallocated concessionally that crowds in capital where it is least needed. UNDP (2025) warns that without governance safeguards, blended finance can inadvertently reinforce inequities by privileging bankable segments over vulnerable communities. ADB's operational evidence confirms that fragmented regulatory environments and inconsistent taxonomies increase risk premiums and slow deal flow. Mercy Corps shows that catalytic tranches and guarantees can unlock local lenders for smallholder-facing solutions, but only when regulators recognize de-risking explicitly and when monitoring frameworks are proportionate to enterprise stage . The implication is clear: the path to scale runs through institutions. Instruments require standardized templates, common impact vocabularies, and supervision that permits innovation while maintaining prudence.

Regulatory Reform as a Prerequisite for Scale

Fang (2025) argues that the primary constraint on blended finance is not market appetite but institutional maturity. Three 2025 benchmarks-CCSI, OECD, and UNDP-converge around a reform agenda: mandatory disclosure databases, standardized product architectures, prudential flexibility for long-term investors, legitimacy tests for subsidy allocation, and cross-border supervisory coordination. OECD (2025) adds that national platforms aligning donor, DFI, and private actions can reduce fragmentation and increase additionality, while common methodologies for mobilization and impact create comparability across portfolios. ADB demonstrates that taxonomy alignment-such as ASEAN sustainable finance guidelines-reduces search and structuring costs and supports pipeline development for green bonds, sustainability-linked loans, and risk-sharing facilities. Mercy Corps documents how regulatory

recognition of guarantees and first-loss tranches enables local banks to lend against new cash-flow profiles, crowding in private credit where collateral is scarce. UNDP situates these steps within a wider transition: integrating SDG-aligned mandates into investment policy statements and budgetary frameworks so that sustainability becomes a requirement, not an optional overlay. In the APEC context, the SFI can serve as a practical carrier for these reforms by curating model documents, open datasets, and supervisory dialogues that reduce friction for cross-border transactions.

Food Security as a Testbed for Institutional Innovation

Food systems-central to health, community well-being, and macroeconomic stability-provide a rigorous test of whether blended finance and digitalization can generate investable resilience. The Food Security Roadmap Towards 2030 and the 2024 Trujillo Principles articulate a coherent program: digitalization for data-driven decisions, inclusivity to reach smallholders and aging farmers, sustainability to reduce emissions and waste, and PPPs to scale innovation. Chen (2025) highlights Taiwan's constraints-limited arable land, climate pressures, and demographic aging-while demonstrating how AIMIA Prophet converts RGB images into multispectral proxies for crop physiology, enabling irrigation decisions that cut water use by 20% and methane emissions from paddy fields by 30–70%. The platform's mobile interface leverages a population with 97% smartphone-based internet access, converting tacit farming knowledge into parameters usable by AI.

These solutions are prime candidates for blended finance because they pair measurable environmental outcomes with productivity gains. ADB's agribusiness programs and climate facilities, alongside Mercy Corps' catalytic models, show how concessional capital can accelerate adoption, with sustainability-linked KPIs anchoring performance payments and risk-sharing. Embedding such projects in SFI-coordinated taxonomies and disclosure templates would strengthen comparability and crowd in institutional investors across APEC.

Digitalization and Financial Inclusion

The digital pillar of APEC's 2024 agenda-particularly voluntary work on Open Finance-creates the informational substrate for inclusive blended finance. Open APIs, interoperable consent frameworks, and consumer-centric data policies expand access to credit and insurance for underserved actors by reducing due-diligence costs and enabling risk-based pricing. In agriculture, mobile apps linked to AI platforms such as AIMIA Prophet allow smallholders to evidence good practices, making them bankable to local lenders and micro-insurers. Digital tools also improve fiduciary oversight: remote sensing and e-MRV (electronic measurement, reporting, and verification) reduce verification costs for sustainability-linked loans and blended facilities, increasing integrity and speed. However, digital inclusion is not automatic. UNDP cautions that literacy gaps, privacy risks, and algorithmic bias can exclude vulnerable groups; safeguards must be embedded from design to deployment. APEC's digital financial education efforts, paired with standardized data dictionaries and consent architectures, should be understood as core financial infrastructure, not only as social policy. When digital rails and blended-finance structures co-evolve, the result is a system capable of channeling capital to

high-impact actors at scale while maintaining accountability.

Institutional Synergy and Cross-Sectoral Governance

Institutional synergy-alignment among regulators, development banks, donors, investors, and local ecosystems-is the fulcrum on which blended finance scales. OECD calls for national platforms that integrate pipeline development, concessional sourcing, and private capital mobilization within coherent country strategies. ADB underscores how taxonomy convergence and predictable approval processes accelerate cross-border deals. UNDP's 2025 report elevates this to a financing-for-development agenda: SDG-aligned national financing frameworks that embed sustainability in public budgets and corporate mandates. Mercy Corps shows that when these layers align, local banks and cooperatives expand lending to climate-smart SMEs, while DFIs provide mezzanine and guarantee backstops. For APEC, the SFI can institutionalize this coordination by curating open repositories of term sheets, impact indicators, and case data, and by convening supervisory dialogues that normalize recognition of guarantees and first-loss tranches. Transparency is a public good: centralized disclosure reduces adverse selection and supports secondary market development, unlocking pension and insurance capital over time.

In the context of APEC 2025, the Gyeongju Leaders' Declaration further reinforces strategic alignment between APEC's sustainability agenda and blended-finance objectives. While the Declaration does not explicitly use the term, its principles closely mirror the mechanisms-mobilizing private capital, advancing PPPs, and embedding innovation and inclusivity in sustainable infrastructure and digital transformation. Provisions on resilient supply chains (para. 8), endorsement of the Incheon Plan under the Finance Ministers' Process (para. 9), and commitments to high-quality infrastructure and energy transition (paras. 11, 19) provide enabling conditions for blended-finance frameworks to mature in the region; the APEC AI Initiative (para. 15) highlights how technological and financial innovation are converging toward investable resilience.

Conclusion: Institutionalizing Impact

Scaling blended finance in APEC is a governance project. CCSI's five-pillar reset-disclosure, standardization, prudential flexibility, subsidy legitimacy, and supervisory coordination-provides a practical blueprint, reinforced by OECD's call for unified rules and UNDP's insistence on embedding sustainability in mandates. ADB and Mercy Corps contribute operational lessons on taxonomy design, pipeline preparation, catalytic risk-sharing, and proportionate verification. Chen's article demonstrates that when digital tools such as AIMIA Prophet are paired with blended finance and public policy, resilience becomes measurable and investable. APEC's SFI, Food Security Roadmap Towards 2030, and Trujillo Principles together form an implementation spine capable of converting Putrajaya Vision 2040 into concrete outcomes.

Policy continuity is essential. Looking ahead under Korea's chairmanship, efforts must be maintained and expanded so the region continues to lead responsibly. "Building a Sustainable Tomorrow" should translate into codified disclosure, standardized instruments, and interoperable digital rails-treating blended finance as an institutional technology (law, data, supervision), rather than a collection of bespoke transactions.

CTPECC

Chinese Taipei Pacific Economic Cooperation Committee

Published in March 2025

5th Floor, Number 16-8, Dehuei Street,
Zhongshan District, Taipei City 10461,
Taiwan (Republic of China)

Website

Reader Survey

For more information,
Please visit CTPECC website or email d35110@tier.org.tw, d23320@tier.org.tw

Authors of Asia-Pacific Perspectives should assure that they have cited references accurately in their articles and take the responsibility individually.
This publication is made of environmentally friendly paper.