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Scaling adaptation finance in Southeast Asia

Opportunities exist to close Southeast Asia's adaptation funding gap and strengthen climate resilience

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Contents

Figures and tables

Key findings

Asia remains disproportionately vulnerable to climate shocks, with direct economic losses averaging USD75.7 billion annually between 2000 and 2023. Yet adaptation finance lags. Global flows in 2023 were only USD65 billion, while just 12% of Southeast Asia's USD27.8 billion climate finance in 2018–2019 supported adaptation.

Multiple structural barriers constrain the scaling of adaptation finance, including limited recognition of adaptation benefits, unclear revenue streams, and small and fragmented projects. In Southeast Asia, these challenges are exacerbated by fiscal pressures, weak planning, heavy reliance on international financing, and varied institutional capacity.

Adaptation should be systematically integrated into national planning and budgeting alongside strengthened project preparation and enhanced local implementation capacity. Embedding adaptation into taxonomies with clear guidelines and incorporating the full economic benefits would reinforce the financial case for investments in resilience.

Amid uncertainty in international development finance, mobilizing domestic capital through tailored financial instruments, better capital market access, and innovative tools is essential for Southeast Asia to meet the adaptation challenge.

Executive summary

Asia remains disproportionately vulnerable to climate shocks, as global climate finance continues to prioritize mitigation over adaptation. In 2023, global adaptation finance amounted to just USD65 billion — approximately 4% of total climate finance flows of USD1.9 trillion.[1] The consequences are particularly evident in Asia, where direct economic losses from climate-related events averaged USD75.7 billion annually between 2000 and 2023, accounting for about 40% of global losses over the same period.[2] Although international commitments at the 26th and 30th United Nations Climate Change Conferences (COP26 and COP30) pledged to scale adaptation finance to USD40 billion by 2025 and USD120 billion by 2035 respectively, these figures remain far below projected requirements. By 2035, developing economies are expected to need USD310–365 billion annually for adaptation, resulting in an estimated shortfall of USD284–339 billion.[3]

Multiple structural barriers continue to constrain the scaling of adaptation finance. Unlike mitigation investments, adaptation projects rarely generate predictable revenue streams, as their value is primarily derived from avoided losses and public benefits rather than direct cash flows. Returns are typically realized over long time periods and depend on grants or concessional funding. Project fragmentation and relatively small transaction sizes further increase costs and deter institutional investors.

Measurement challenges compound these issues as adaptation outcomes are highly context-specific, limiting the use of standardized metrics. Planning and institutional capacity gaps exacerbate financing constraints across Southeast Asia. While some countries have established relatively comprehensive national adaptation plans (NAPs), others lag behind. At the same time, fiscal pressures — intensified by post-pandemic debt burdens — restrict public expenditure.

Despite these constraints, there is growing evidence that adaptation investments deliver substantial economic and social returns by avoiding losses, increasing economic activity, and generating broader environmental and social benefits. Estimates from the Global Center on Adaptation (GCA) suggest that USD1.8 trillion in global adaptation investments could yield USD7.1 trillion in net benefits across five priority areas, implying returns of two to ten times the initial cost.[4]

Other assessments find benefits distributed relatively evenly across avoided damages, economic development gains, and social and environmental outcomes. Notably, more than half of these advantages accrue independent of disaster events, including productivity improvements and emissions reductions, particularly in forestry and urban initiatives. Approximately half of the projects also exhibited links with mitigation, enabling access to carbon markets. Therefore, private sector participation should be catalyzed since there are significant opportunities in adaptation-related solutions. In Asia, adaptation

[1] Climate Policy Initiative. Global Landscape of Climate Finance 2025. 23 June 2025.
[2] United Nations Office for Disaster Risk Reduction. Global Assessment Report on Disaster Risk Reduction 2025: Resilience Pays: Investing and Financing for Our Future. 27 May 2025.
[3] United Nations Environment Programme. Adaptation Gap Report 2025: Running on empty. 29 October 2025.
[4] Financial Times. Adaptation: The Key to Combating Climate Disruption. Date accessed: 12 January 2026.

needs are concentrated in agriculture, infrastructure, water systems, and biodiversity — sectors that already present scalable private investment opportunities.

Southeast Asia faces distinct regional challenges. Adaptation readiness varies widely, with countries such as Singapore, South Korea, and Japan ranking relatively high, while Thailand and Cambodia lag, according to Bloomberg New Energy Finance (BNEF) assessments.[5] Blended finance remains underdeveloped and relies predominantly on international capital, with limited mobilization of domestic resources. As overseas development assistance declines, philanthropic capital and non-governmental organizations could play a more significant role in financing early-stage project preparation. Weak project pipelines persist, driven by gaps in climate-risk data, technical capacity, and bankable project design, leading to frequent rejections of funding proposals.

Several pathways exist to unlock greater volumes of adaptation finance. Sustainable bond markets represent one such avenue, with adaptation-focused bonds accounting for an estimated 6–10% of total sustainable issuances by volume between 2021 and 2024.[6] Recent transactions — including a USD700 million resilience bond[7] issued by the European Bank for Reconstruction and Development and a EUR300 million Tokyo metropolitan bond[8] that was oversubscribed seven times — demonstrate strong investor appetite. Greater integration of adaptation into sustainable finance taxonomies could further improve market clarity. At the regional level, the Association of Southeast Asian Nations (ASEAN) Mitigation Co-benefit and Adaptation for Resilience Guide[9] proposes six principles to ensure that criteria are science-based and context-specific. Debt-for-nature and debt-for-resilience swaps offer additional fiscal space.

Strengthening resilience across Southeast Asia will require coordinated public and private action. Governments should commit to stable, long-term budgetary allocations for adaptation, expand blended finance mechanisms to facilitate nature-based solutions, and strengthen supportive policies such as carbon pricing and green bond frameworks. The private sector must assess physical climate risks more systematically, deploy green finance instruments, and recognize adaptation as a source of growth and investment protection rather than a defensive cost. Progress in national planning, project pipeline development, and outcome measurement will be essential to accelerating capital flows. Countries should identify adaptation investment prospects more efficiently and create credible, implementation-ready funding pipelines. With sustained and aligned efforts, the region can narrow the adaptation finance gap and convert escalating climate risks into resilient and inclusive growth opportunities.

[5] BNEF. Ranking Resilience: Assessing Country Climate Adaptation. 13 October 2025
[6] Organisation for Economic Co-operation and Development. Sustainable Bonds: Trends and Policy Recommendations. 17 November 2025.
[7] European Bank for Reconstruction and Development. World's First Dedicated Climate Resilience Bond, for US$700m, issued by EBRD. 20 September 2019.
[8] Climate Bonds Initiative. Tokyo Metropolitan Government to issue world's first Climate Bond Certified using the Resilience Criteria and Taxonomy. 10 October 2025.
[9] ASEAN Capital Markets Forum. Phase 1 White Paper on Key Principles and Methodological Approaches: For the Development of the Mitigation Co-benefit and Adaptation for Resilience (mARs) Guide in support of the ASEAN Taxonomy for Sustainable Finance. November 2025.

Introduction

Climate finance has historically focused on mitigation, with most funding directed toward renewable energy, energy efficiency, industrial decarbonization, and other efforts to reduce greenhouse gas (GHG) emissions. In contrast, adaptation finance — which supports measures to manage the unavoidable impacts of climate change by building resilience through measures such as flood management, coastal protection, and climate-resilient infrastructure — has received far less attention and investment.

With global temperatures setting new records every year, the world is experiencing a marked rise in the frequency and intensity of climate-related disasters. According to the United Nations Office for Disaster Risk Reduction, direct disaster costs averaged USD70–80 billion per year between 1970 and 2000, but rose sharply to USD180–200 billion annually between 2001 and 2020.[10] Annual direct losses are estimated at approximately USD202 billion. When cascading and ecosystem-related costs are included, total losses may reach nearly USD2.3 trillion, or 2% of global gross domestic product (GDP).[11] Earthquakes, floods, storms, droughts, and heatwaves accounted for more than 95% of direct losses over the past two decades. Many of these impacts could have been avoided if stronger, more comprehensive adaptation measures had been in place.

The impacts of climate-related disasters are particularly severe in Asia. The region faces some of the world's highest exposure to floods, typhoons, and heatwaves, and is home to large coastal populations and climate-vulnerable sectors such as agriculture and fisheries. Between 2000 and 2023, Asia recorded average annual direct economic losses of USD75.7 billion from climate events or 40% of the global average, reflecting both the region's physical vulnerability and the scale of assets at risk.[12] Southeast Asia faces recurring floods and storms that impose significant fiscal burdens, strain public infrastructure, and disrupt livelihoods. For instance, Thailand's November 2025 floods across ten southern provinces, caused by heavy monsoon rains, affected 1.9 million people and resulted in daily trade and tourism losses of approximately THB1–1.5 billion (USD31–47 million).[13]

Asia is warming at twice the global average due to its extensive landmass.[14] Despite mounting climate risks, adaptation investment in the region remains far below what is needed. Many developing economies continue to rely heavily on international finance to fund adaptation initiatives, while facing fiscal constraints that limit their ability to scale up public spending. At the same time, private sector

[10] United Nations Office for Disaster Risk Reduction. Global Assessment Report on Disaster Risk Reduction 2025: Resilience Pays: Financing and Investing for Our Future. 27 May 2025.
[11] United Nations Office for Disaster Risk Reduction. Global Assessment Report on Disaster Risk Reduction 2025: Resilience Pays: Financing and Investing for Our Future. 27 May 2025.
[12] United Nations Office for Disaster Risk Reduction. Global Assessment Report on Disaster Risk Reduction 2025: Resilience Pays: Financing and Investing for Our Future. 27 May 2025.
[13] The Nation. Southern Floods Submerge 10 Provinces, Causing Daily Trade and Tourism Losses of Up to 1.5 Billion Baht. 25 November 2025.
[14] United Nations. Asia Is Warming Twice as Fast as the Rest of the World. 23 June 2025.

participation in these activities remains limited, reflecting persistent challenges related to project bankability, risk perception, and a lack of clear investment frameworks.

This report examines why adaptation activities have struggled to secure financing, identifies key barriers in Southeast Asia, and explores avenues and opportunities to help scale investment.

Adaptation finance remains severely underfunded

Global climate finance flows reached USD1.9 trillion in 2023, with the vast majority directed toward mitigation. However, adaptation finance accounted for only USD65 billion, or 4% of the total.[15] This imbalance reflects the economic characteristics of the mitigation and adaptation categories. Mitigation investments often generate direct and predictable cash flows, allowing private investors to earn returns. Adaptation investments, by contrast, predominantly generate public benefits such as reduced disaster losses, improved health outcomes, or greater economic stability, which individual investors cannot easily monetize.

Several international commitments have been made to address this long-standing disparity, particularly for developing countries that face greater challenges in coping with climate change impacts. At the 26th United Nations Climate Change Conference (COP26) in 2021, developed countries pledged to at least double annual adaptation finance for developing nations from USD20 billion in 2019 to approximately USD40 billion by 2025.[16] At COP30, countries once again reaffirmed the importance of adaptation finance and agreed to triple funding to USD120 billion by 2035.[17]

Despite these commitments, requirements remain well above current and pledged funding levels. Recent assessments suggest that the new targets are unlikely to be met, partly due to global reductions in development aid. The Organisation for Economic Co-operation and Development (OECD) has projected a likely 9–17% decline in official development assistance (ODA) across all categories in 2025 to a net ODA of between USD186 billion and USD170 billion, following a 9% decrease in 2024.[18]

The United Nations Environment Programme (UNEP) estimates that by 2035, developing countries will require USD310–365 billion annually (in 2023 prices) for adaptation, to be financed through public funds or a combination of public and private capital.[19] The International Monetary Fund (IMF) notes that while adaptation costs are likely to reach around 0.25% of global GDP in the coming decades, they could exceed 1% of GDP for low-income and developing countries within the next 10 years, and rise to as high as 20% of GDP for small island states.[20] With much of Southeast Asia exposed along vast

[15] Climate Policy Initiative. Global Landscape of Climate Finance 2025. 23 June 2025.
[16] UNFCCC. Executive Summary by the Standing Committee on Finance: Report on the Doubling of Adaptation Finance. 20 November 2023.
[17] COP30 Brasil. COP30 Approves Belém Package. 22 November 2025.
[18] OECD. Cuts in Official Development Assistance: OECD Projections for 2025 and the Near Term. 26 June 2025.
[19] United Nations Environment Programme. Adaptation Gap Report 2025: Running on empty. 29 October 2025.
[20] IMF Blog. Poor and Vulnerable Countries Need Support to Adapt to Climate Change. 23 March 2022.

coastlines, the risk of increasing expenses is high. Meanwhile, international public adaptation finance from developed to developing countries totaled just USD26 billion in 2023, leaving a significant annual financing gap of USD284–339 billion.

Between 2018 and 2019, Southeast Asia[21] received USD27.8 billion in total climate finance, representing just 5% of the share for Asia and the Pacific.[22] Public finance accounted for 65% of this amount, led by multilateral development financial institutions (DFIs) (USD6.1 billion), followed by government budget allocations (USD5.3 billion), and bilateral DFIs (USD4.4 billion).[23] The subregion's three most populous countries — the Philippines, Vietnam, and Indonesia — received the majority of climate finance, accounting for 31%, 32%, and 24%, respectively. Despite being among the world's most climate-vulnerable regions, adaptation finance remained limited, comprising only 12% of Southeast Asia's total climate finance.[24]

Why adaptation projects have struggled for capital

The absence of clear, consistent revenue streams

A critical barrier to scaling up adaptation projects is the lack of clear and consistent revenue streams. Unlike mitigation initiatives, such as renewable energy or energy efficiency projects, which generate predictable cash flows through power sales or cost savings, most adaptation measures focus on reducing vulnerability and preventing future climate-related losses. While adaptation benefits can be significant, they are often indirect, taking the form of avoided losses or societal benefits that are difficult to quantify and realized only over the long term. This uncertainty makes it challenging to attract private investment, as traditional investors rely on measurable returns within defined payback periods. Consequently, adaptation projects typically rely on grants and concessional financing.

There has been limited progress in incorporating forward-looking resilience benefits into financial appraisal and investment decision-making, in part because adaptation is still widely framed as a cost rather than a source of economic value and returns. Macroeconomic analysis highlights the potential scale of avoided losses. For example, the World Bank Group's "Finance and Prosperity 2024" report estimates that timely adaptation measures could reduce climate-related GDP impacts in the Philippines and Cambodia by 2050 from 11% and 9.4% to 3.8% and 4.9%, respectively. Similarly, the economic effect for Thailand by 2030 is estimated at 7.9% — 400 basis points (bps) lower than in a scenario without adaptation measures.[25]

However, these figures are rarely incorporated into investment appraisal frameworks, project-level valuations, or risk pricing methodologies used by public financiers and private investors. Avoided

[21] Countries include Cambodia, Indonesia, Lao People's Democratic Republic, the Philippines, Thailand, Timor-Leste, and Vietnam.
[22] Asia Development Bank. Climate Finance Landscape of Asia and the Pacific. August 2023.
[23] Asia Development Bank. Climate Finance Landscape of Asia and the Pacific. August 2023.
[24] Asia Development Bank. Climate Finance Landscape of Asia and the Pacific. August 2023.
[25] World Bank Group. Finance and Prosperity 2024. Date accessed: 12 January 2026.

losses and resilience benefits are typically treated as non-cash, uncertain, or external to balance sheets, and are therefore excluded from cost-benefit assessments and credit risk evaluations. Conventional appraisal tools are also inadequate for capturing long-term, probabilistic, and systemic benefits, such as reduced revenue volatility, lower default risk, and improved asset durability. As a result, adaptation investments remain undervalued in capital allocation decisions.

Small scale and fragmentation of adaptation projects

Adaptation projects are often fragmented and small-scale, reflecting localized climate risks and community-level needs. This fragmentation limits efficiency, increases transaction costs, and makes it challenging to develop investment pipelines large enough to attract institutional capital.

Globally, a range of dedicated funds support adaptation initiatives, particularly in developing countries, where the average climate finance project size is about one-third of that in developed economies.[26] These funds provide support through instruments such as grants, concessional financing, co-financing, equity, and guarantees (Table 1). Notable examples include the Least Developed Countries Fund and the Adaptation Fund, which have committed USD2.1 billion and USD1.5 billion in grant financing, respectively.

In Asia, regional and subregional efforts are underway to scale up adaptation finance. Key initiatives include the Asian Development Bank's (ADB) Community Resilience Financing Partnership Facility, which provides USD189 million in grants and technical assistance for community-led adaptation projects[27], and the Association of Southeast Asian Nations (ASEAN) Catalytic Green Finance Facility, which, with commitments of USD2.4 billion[28], helps de-risk investment by covering upfront costs and mobilizing private capital. These initiatives aim to improve the bankability of adaptation projects. However, the scale of such programs remains insufficient relative to the region's vast adaptation needs.

[26] Climate Policy Initiative. Partnering for Finance Adaptation. September 2024.
[27] Asian Development Bank. Community Resilience Financing Partnership Facility (CRFPF). Date accessed: 03 December 2025.
[28] Asian Development Bank. ASEAN Catalytic Green Finance Facility 2024: Advancing Green Projects Through Partnerships. February 2025.

Table 1: Notable initiatives that support adaptation projects in developing countries

Fund	Mission	Size
Least Developed Countries Fund (LDCF)	Targets the least developed countries in implementing country-driven strategies to address their most urgent adaptation needs through National Adaptation Programmes of Action (NAPAs) and also supports the development and implementation of NAPs	USD2.1 billion in grants[29]
Adaptation Fund	Supports vulnerable developing countries in adapting to the impacts of climate change	USD1.5 billion in grants[30]
Special Climate Change Fund (SCCF)	Supports adaptation and technology transfer projects and programs in all developing countries	USD394 million in grants[31]
Green Climate Fund's Enhancing Direct Access (EDA)	Supports locally-led climate action (mitigation and adaptation) by devolving decision-making to national or subnational level based on pre-approved criteria to support a comprehensive and stakeholder-driven approach	USD200 million in the form of grants, concessional loans, equity and guarantees[32]
ASEAN Catalytic Green Finance Facility	Accelerates the development of climate-resilient infrastructure across Southeast Asia	USD2.4 billion in co-financing funds and technical assistance[33]
Community Resilience Financing Partnership Facility (CRFPF)	Supports countries in Asia and the Pacific in scaling up community-level climate adaptation investments	USD189 million in grants and technical assistance[34]
Community Resilience Partnership Program (CRPP)	Supports adaptation measures that address the nexus between climate change, poverty, and gender inequality at the community level in Timor-Leste, Indonesia, Cambodia, Laos, Pakistan, Papua New Guinea, and Vanuatu[35]	USD120 million financing and USD630 million co-financing in the form of grants and loans

Source: IEEFA.

[29] Global Environment Facility. Least Developed Countries Fund – LDCF. Date accessed: 03 December 2025.
[30] Adaptation Fund. Adaptation Fund Board Advances Work Toward Paris Agreement Transition, While Surpassing 200 Projects on the Ground for Vulnerable Countries. 16 October 2025.
[31] Global Environment Facility. Special Climate Change Fund. Date accessed: 03 December 2025.
[32] Green Climate Fund. Enhancing Direct Access (EDA). December 2020.
[33] Asian Development Bank. ASEAN Catalytic Green Finance Facility 2024: Advancing Green Projects Through Partnerships. February 2025.
[34] Asian Development Bank. Community Resilience Financing Partnership Facility (CRFPF). Date accessed: 03 December 2025.
[35] Green Climate Fund. Community Resilience Partnership Program. Date accessed: 12 January 2026.

Lack of standardized metrics for measuring benefits

Unlike typical financial profit calculations, the diversity of adaptation activities and outcomes makes it challenging to apply a single standardized metric to measure benefits. Adaptation impacts are highly localized and context-specific, reflecting the unique vulnerabilities of specific regions or communities. In contrast, mitigation projects can be assessed using clear and comparable measures, such as carbon dioxide (CO_2) equivalent reductions or energy-efficiency gains. Adaptation benefits are evaluated in terms of avoided climate-related losses, including fewer lives lost during floods, reduced economic damage from extreme weather events, less frequent service disruptions, and improved livelihood security. These outcomes are difficult to quantify using traditional financial metrics and cannot be expressed in a universal measure. Consequently, the lack of standardization complicates impact assessment, project comparison, and performance benchmarking for investors.

Several initiatives aim to address this gap. In 2019, multilateral development banks (MDBs) introduced the Climate Resilience Metrics framework, which evaluates adaptation on two levels, guided by four core principles: the quality of project design and project results.[36] The World Bank's Resilience Rating System (RRS) similarly assesses projects along two dimensions: whether a project identifies climate risks, integrates adaptation measures, and remains economically viable, and the extent to which it strengthens the resilience of communities or sectors. These frameworks aim to provide investors and decision-makers with clearer, more reliable information. However, given the wide range of adaptation activities across different scales and project lifecycles, a single universal metric remains unrealistic. Adoption has therefore been limited, with only 21 projects (with a total investment value of USD2.92 billion) rated by the RRS between 2021 and 2022.[37]

The multiple benefits of adaptation

A limited understanding of the full benefits of adaptation underlies the challenges in mobilizing finance for adaptation and resilience (A&R). Adaptation benefits extend beyond loss minimization and damage avoidance and reduction to include broader economic, social, and environmental advantages.

Well-designed adaptation projects generate "triple dividends", a term used by the Global Center on Adaptation (GCA) to encapsulate diverse benefits.[38] The three benefits or dividends are defined as:

1. **The ability to withstand or reduce future losses both directly and indirectly** – for example health projects reduce mortality and morbidity from climate-exacerbated diseases

[36] African Development Bank, Asian Development Bank, Asian Infrastructure Investment Bank, European Bank for Reconstruction and Development, European Investment Bank, Inter American Development Bank, International Development Finance Club, and Islamic Development Bank. A Framework and Principles for Climate Resilience Metrics in Financing Operations. December 2019.
[37] World Bank Group. Resilience Rating System: A Methodology for Building and Tracking Resilience to Climate Change. 25 April 2024.
[38] Global Center on Adaptation. Adapting to climate change could add $7 trillion to the global economy by 2030. 10 September 2019.

2. **The positive economic fallout** via risk reduction, business continuity, better physical and social infrastructure, and enhanced productivity — all of which are mostly neglected in adaptation discussions
3. **Social and environmental benefits** in areas such as climate-resistant green infrastructure sustainable farming, urban renewal and planning, among others

Public infrastructure is often a critical refuge during acute climate events and natural disasters. Incorporating resilience elements can increase costs beyond standard project design and budgeting, but a climate-smart approach to public investment helps ensure that the benefits of such expenditures are included. It also enables the identification of public-private partnership opportunities in public investment by embedding climate-smart specifications into projects funded through private sector participation.

The GCA estimates significant benefits for such projects, ranging from 2 to 10 times the cost. It identifies five areas – early warning systems, climate-resilient infrastructure, improved dryland agriculture, mangrove protection, and investments in making water resources more resilient – and estimates that a USD1.8 trillion global investment would lead to overall net benefits of USD7.1 trillion.[39,40]

The World Resources Institute (WRI) has published two papers that explore this concept in granular detail and highlight these multi-level economic benefits.[41, 42] Examining 320 adaptation projects totaling USD133 billion across agriculture, health, water, and infrastructure in 12 low and middle income countries, it found the projects generated an average economic internal rate of return (EIRR) of 27%, with a median of 20.3% when taking all three benefit categories into account. The benefits were evenly divided among the categories, ranging from avoided losses at 35% to social-environmental benefits at 31%. The study also found significant links with mitigation, especially in forestry and urban resilience projects.

The connections between adaptation and mitigation need to be calculated and emphasized to unlock additional funding and attract investors seeking dual impacts, for example through carbon markets[43] or through voluntary carbon credits.[44] Moreover, this “second dividend” enables private sector engagement as resilient supply chains lower corporate risks and support instruments like resilience bonds or blended finance. Expanding the understanding of gains beyond loss avoidance to include complete “dividends” is also likely to encourage cross-sector collaborations, such as agriculture-water or health-infrastructure, to maximize positive outcomes.

[39] Financial Times. Adaptation: The Key to Combating Climate Disruption. Date accessed: 12 January 2026.
[40] The report was published in 2019, and the benefits are likely to be even greater currently.
[41] World Resources Institute. Heubaum et al. The Triple Dividend of Building Climate Resilience: Taking Stock, Moving Forward. 07 November 2022.
[42] World Resources Institute. Brandon et al. Strengthening the Investment Case for Climate Adaptation: A Triple Dividend Approach. 29 May 2025.
[43] UNFCC. Information paper on linkages between adaptation and mitigation. 25 February 2022.
[44] World Resources Institute. Guidance on Voluntary Use of Nature-based Solution Carbon Credits Through 2040. 02 June 2022.

Additionally, adaptation can provide attractive revenue opportunities for businesses and private-sector players focused on delivering adaptation solutions. A recent study by Singapore's Government Investment Corporation (GIC)[45], in collaboration with consultants Bain & Company, sees select adaptation solutions projected to generate USD1 trillion in annual revenues, surging to USD4 trillion by 2050 under a base case scenario aligned with the Intergovernmental Panel on Climate Change (IPCC) climate projection of 2.7°C. USD2 trillion of this growth represents incremental demand from global warming, often overlooked in traditional forecasts.

The Bloomberg Prepare and Repair Index, which tracks the share prices of companies that sell products and services to help prepare for and recover from climate events, has outperformed the broader stock market (as represented by the S&P 500 Index) over one-, three-, and five-year periods.[46] This sustained outperformance suggests that, while adaptation benefits are insufficiently captured in investment appraisal and risk-pricing frameworks, they are increasingly recognized through stronger earnings prospects, more resilient cashflows, and investor demand for business models aligned with growing adaptation needs.

The United Nations (UN) Adaptation Gap Report estimates that East Asian countries require USD141 billion annually for their adaptation needs, which is 39% of the USD365 billion estimated for the entire developing world.[47] Agriculture, forestry and biodiversity, infrastructure and building, and water are the areas where Asian countries have the most significant adaptation demands.

A comprehensive understanding of the financial returns will likely encourage the private sector to play a meaningful role across all these areas, and through a wide range of financial instruments. For example, a study by Boston Consulting Group (BCG) and Singapore's sovereign wealth fund Temasek estimates a USD115–135 billion market for private investors, with a potential growth of 4–7% in the agriculture sector. Sustainable projects that make agricultural systems climate-resilient create opportunities in climate-adapted inputs and stress-tolerant crop strains.[48] Similarly, the market for wind-resistant building components is expected to grow from USD40 billion to USD650 billion by 2050, particularly when integrated into enhanced storm-resilience projects.[49]

Notably, the GIC report shows that market estimates for adaptation solutions vary by only 4% under less damaging climate scenarios, indicating strong predictability and lower risk in resilience-related businesses. To scale these solutions, stakeholders need to raise awareness of these multiple returns, develop unified frameworks to enable visibility and analysis, and identify high-value solutions that can access diverse sources and instruments of finance.

[45] GIC. Sizing the Inevitable Investment Opportunity: Climate Adaptation. 02 May 2025.
[46] Quicken. Bloomberg Prepare & Repair Index. Date accessed: 13 January 2026.
[47] United Nations Environment Programme. Adaptation Gap Report 2024: Come Hell and High Water - As Fires and Floods Hit the Poor Hardest, it is time for the World to Step up Adaptation Actions. 07 November 2024.
[48] BCG & Temasek. The Private Equity Opportunity in Climate Adaptation and Resilience. 07 May 2025.
[49] GIC. Sizing the Inevitable Investment Opportunity: Climate Adaptation. 02 May 2025.

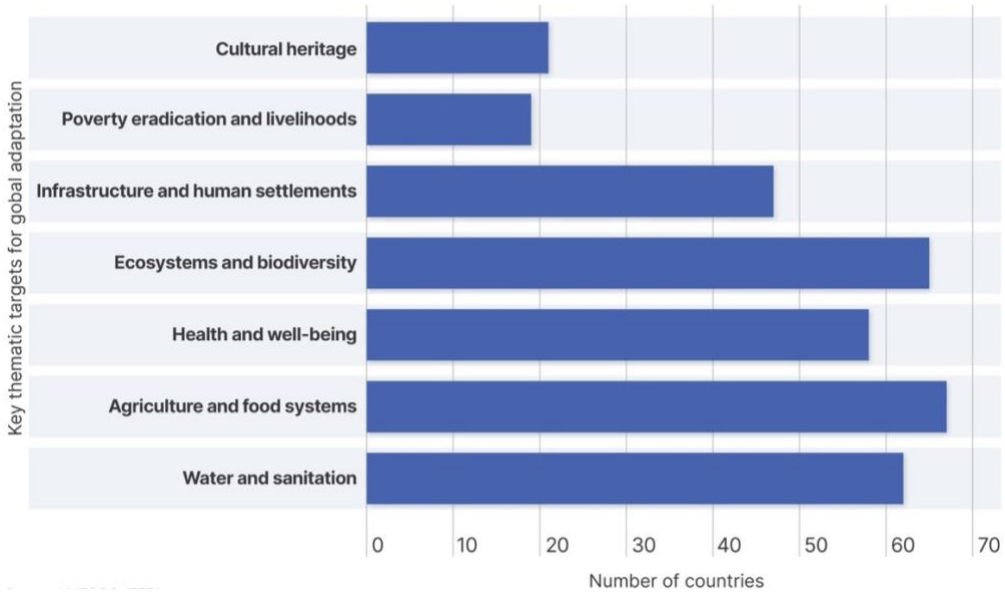
Key barriers to scaling adaptation finance in Southeast Asia

Weak national adaptation planning

National adaptation planning provides countries with a structured approach to assess climate risks, determine priorities, and integrate adaptation measures into national development and sectoral policies. Recognizing the importance, the National Adaptation Plan (NAP) process was established at COP16 in 2010, with initial guidelines established at subsequent conferences to support countries in identifying medium- and long-term adaptation needs and implementing related strategies according to seven thematic targets, namely water, health, biodiversity, food, infrastructure, poverty, and heritage.

As of September 2025, 144 countries had initiated the NAP process, and 67 developing countries had formally submitted their plans.[50] Among the proposed NAPs, the leading sectors aligned with these targets are agriculture and food systems, ecosystems and biodiversity, and water and sanitation (Figure 1). 58 developing countries advanced 116 single- or multi-country adaptation and cross-cutting projects for implementation under the Green Climate Fund (GCF), which represents USD6.91 billion in financing.[51]

Figure 1: Alignment of NAPs with global adaptation priorities



Source: UNFCCC; IEEFA.

[50] UNFCCC. Progress in the Process to Formulate and Implement National Adaptation Plans. 21 October 2025.
[51] UNFCCC. Progress in the Process to Formulate and Implement National Adaptation Plans. 21 October 2025.

Table 2: Major historical natural disasters in Southeast Asia

Country	Major historical natural disasters (1980–2024)
Brunei	Wildfire (100%)
Cambodia	Flood (51%), storm, drought, epidemic, extreme temperature
Indonesia	Flood (46%), earthquake, mass movement, volcanic activity, epidemic
Laos	Flood (50%), storm, epidemic, drought, earthquake
Malaysia	Flood (69%), epidemic, storm, mass movement, wildfire
Philippines	Storm (54%), flood, earthquake, mass movement, volcanic activity
Singapore	Epidemic (100%)
Thailand	Flood (57%), storm, drought, earthquake, epidemic, extreme temperature
Timor-Leste	Flood (39%), epidemic, drought, storm, earthquake
Vietnam	Storm (51%), flood, drought, epidemic, mass movement

Source: UNFCCC; World Bank Group.

Note: Disaster types are ranked according to their frequency of occurrence. Information on Myanmar is not available.

In Southeast Asia, progress on NAPs remains uneven, despite most countries facing significant challenges from floods and storms (Table 2). Among the seven countries that have submitted their plans, Cambodia, Thailand, and Timor-Leste were frontrunners, proposing their NAPs as early as 2021. Indonesia, Laos, Vietnam, and the Philippines followed with submissions in 2024 and 2025, while the remaining countries' plans are still under development (Table 3). The comprehensiveness of these plans varies. Some NAPs, such as those submitted by Cambodia and Vietnam, remain broad and high-level, while countries like Laos and the Philippines outline more detailed, feasible measures across priority sectors and assign responsibilities to relevant agencies with clear timelines.

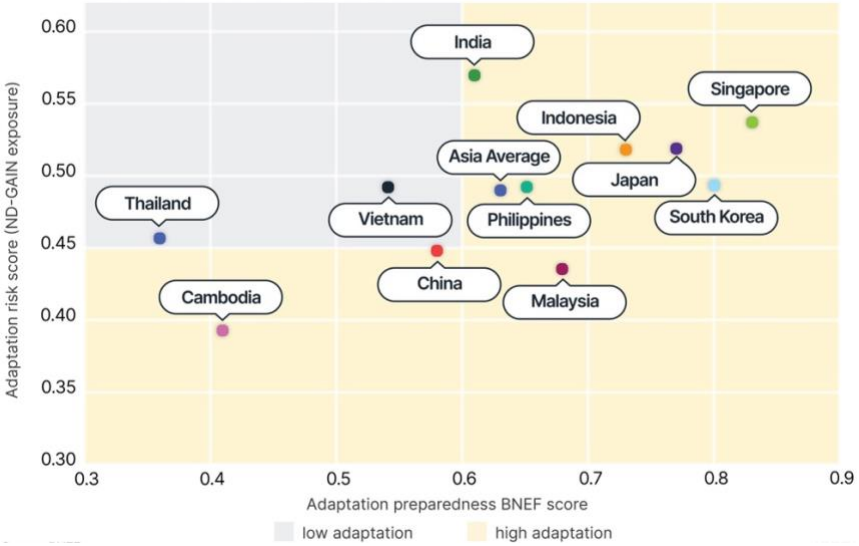
As NAPs are intended to serve as strategic roadmaps that translate adaptation priorities into actionable programs, countries with less detailed plans seem ill-prepared. A strong, detailed plan that provides clear guidance on strategic priorities, helps identify sectors and areas requiring the largest resource allocation, and fosters better coordination across agencies and sectors. Significantly, such plans are also likely to help investors identify, assess, and mobilize investment opportunities effectively.

Table 3: NAP submission status and detail in Southeast Asia

Country	NAP Submission	Submission Year	Remarks
Brunei	In progress		
Cambodia	Submitted	2021	Outlined broad and high-level strategies[52]
Indonesia	Submitted	2025	Outlined feasible measures across priority sectors and assigned responsibility to relevant agencies[53]
Laos	Submitted	2025	Outlined feasible measures across priority sectors and assigned responsibility to relevant agencies[54]
Malaysia	In progress		
Myanmar	In progress		
Philippines	Submitted	2023	Outlined feasible measures for priority sectors and assigned responsible agencies, with timelines and capital intensity levels[55]
Singapore	In progress		
Thailand	Submitted	2021	Specified sectoral goals, identified responsible agencies, and provided high-level guidelines[56]
Timor-Leste	Submitted	2021	Provided guidelines for priority sectors and assigned responsible agencies, with timelines[57]
Vietnam	Submitted	2025	Outlined broad and high-level strategies[58]

Source: IEEFA.

Figure 2: Assessment of climate risk and state of preparedness in Asia



Source: Bloomberg New Energy Finance.

[52] UNFCCC. Cambodia Climate Change Strategic Plan 2014-2023. 2013.
[53] UNFCCC. National Adaptation Plan (NAP) Republic of Indonesia 2026-2030 on the Pathway toward 2035. 2025.
[54] UNFCCC. National Adaptation Plan. 2025.
[55] UNFCCC. National Adaptation Plan of the Philippines. 2024.
[56] UNFCCC. Thailand's National Adaptation Plan (NAP). November 2023.
[57] UNFCCC. Timor-Leste's National Adaptation Plan: Addressing Climate Risk and Building Climate Resilience. 2021.
[58] UNFCCC. Report on the National Adaptation Plan for the Period 2021-2030, With a Vision to 2050 (Updated). February 2025.

Bloomberg New Energy Finance (BNEF) has studied 25 countries on their adaptation preparedness, considering factors such as dedicated budgets for climate adaptation, credible plans, and climate governance. The October 2025 report[59] analyzes a sample that included 11 Asian countries. Comparing these scores against a measure of climate risk (the Notre Dame Global Adaptation Initiative index [ND-GAIN])[60] reveals how Asian countries rank in terms of preparedness relative to climate vulnerability. Figure 2 shows a clear disparity in adaptation preparedness across Asia. Singapore, South Korea, and Japan are well prepared for their climate risks, while Cambodia and Thailand indicate low adaptation preparedness. Other ASEAN countries, including Indonesia, Vietnam, and the Philippines, fall in the middle, which highlights uneven progress and the need to strengthen adaptation planning and implementation across the region.

Weak project pipelines and limited bankable proposals

Most adaptation projects struggle to secure funding and timely disbursement due to complex application procedures, stringent criteria, and limited institutional capacity. These challenges are reflected in international public adaptation finance, which recorded a relatively low disbursement ratio of approximately 66% between 2017 and 2021, compared with a 98% disbursement ratio for overall development finance.[61] Key reasons cited were low grant-to-loan ratios and limited understanding of adaptation policies among decision-makers.

The Philippines' People's Survival Fund, established in 2015 to support national adaptation projects with an annual allocation of PHP1 billion (approximately USD16.9 million), approved only 6 out of 176 project proposals between 2015 to 2022, due to stringent eligibility criteria and technical capacity limitations of project proponents.[62] In many cases, adaptation project proponents do not have access to high-quality climate-risk assessments, hydrological studies, engineering designs, or socio-economic analyses that demonstrate how the proposed intervention will reduce vulnerability. Without this evidence, quantifying benefits, evaluating cost-effectiveness, or justifying the scale of investment required is challenging. Development banks and climate funds report that a large proportion of adaptation proposals are rejected or require extensive restructuring due to insufficient data, unclear baselines, or poorly articulated change theories. Institutional capacity constraints such as fragmented mandates across agencies, weak inter-ministerial coordination, and unclear roles between national and subnational authorities further undermine the planning and execution of adaptation investments. Therefore, even when funding is available, there are few mature, bankable adaptation projects.

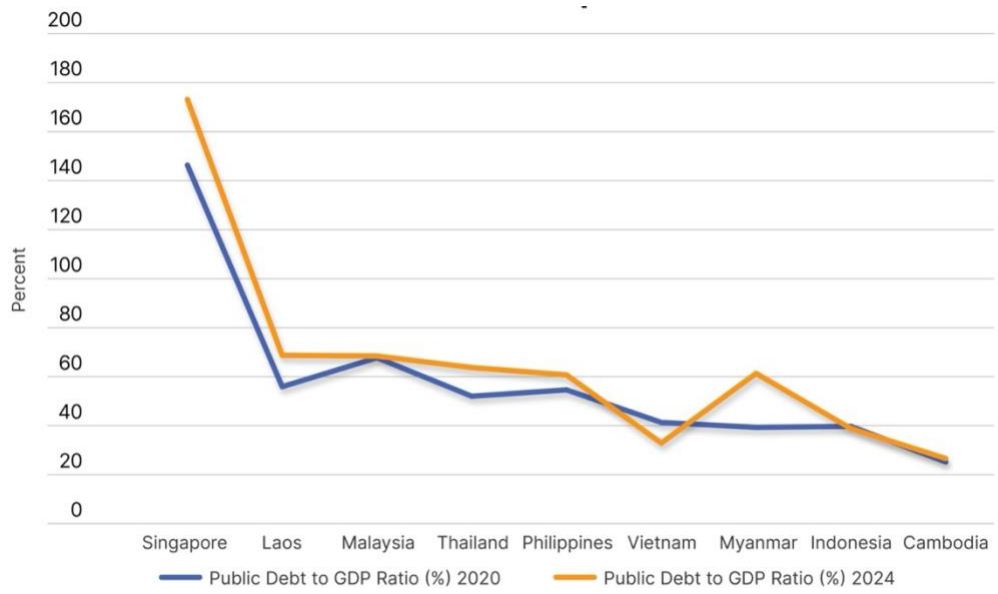
[59] BNEF. Ranking Resilience: Assessing Country Climate Adaptation. 13 October 2025
[60] University of Notre Dame. Notre Dame Global Adaptation Initiative. Date accessed: 08 January 2026.
[61] United Nations Environment Programme. Adaptation Gap Report 2023: Underfinanced. Underprepared. Inadequate Investment and Planning on Climate Adaptation Leaves World Exposed. 02 November 2023. Page 30.
[62] The Parliamentary Centre of Asia. Parliamentary Oversight of Climate Finance in ASEAN: A Compendium of Parliamentary Briefs on Climate Finance and Policy. 2025.

Limited fiscal capacity and competing priorities

Most ASEAN countries are developing economies with diverse national priorities, and their capacity to fund climate initiatives varies significantly. For several governments, fiscal space is minimal. The pandemic further strained public finances, as recovery efforts through extensive stimulus and relief measures drove up public debt across the region (Figure 3), leaving limited room for discretionary spending. Hence, climate budgets are minimal or even absent in some countries.

Similar to the NAPs, which remain incomplete or unavailable in parts of the region, not all ASEAN countries have dedicated adaptation budgets or clear financing strategies (Table 4). Malaysia, the Philippines, Singapore, and Vietnam have earmarked public funding for adaptation, albeit at relatively modest levels, while other countries rely predominantly on international financing sources. Such external funding is often complex to access, uncertain, and subject to shifting global priorities, as evidenced by recent cuts to ODA. The absence of predictable, domestically anchored funding streams constrains long-term planning, weakens implementation capacity, and leaves countries more exposed to climate- and disaster-related shocks, particularly as the frequency and intensity of extreme weather events increase.

Figure 3: Public debt trends in ASEAN countries before and after the pandemic



Source: Trade Economics, IEEFA.

Table 4: ASEAN countries with adaptation initiatives at national level

Country	Dedicated Adaptation Budget (Yes/No)	Allocated Amount	Remarks
Cambodia	No	N/A	Adaptation financing mainly from international development banks
Indonesia	No	N/A	The Climate Change Trust Fund – funds both mitigation and adaptation projects through government funding and international donor financing The Climate Resilience Fund – finance nature-based solutions with some having adaptation outcomes
Malaysia	Yes	MYR3.6 billion in Budget 2025	MYR3 billion for flood mitigation, MYR600 million for flood disaster preparation
Philippines	Yes	PHP889.7 billion in Budget 2025	Adaptation initiatives received 83% of climate budget allocated in 2022
Singapore	Yes	SGD10 billion	Launched the Coastal and Flood Protection Fund with SGD5 billion to protect Singapore and injected another SGD5 billion in 2025
Thailand	No	N/A	Adaptation projects mostly funded by international climate finance and development banks i. USD3 million grant from the Green Climate Fund ii. EUR6.5 million from Germany's International Climate Initiative to subsidize local and regional climate and regional climate adaptation and mitigation projects
Vietnam	Yes	Undisclosed	More than 90% of the climate budget was spent on adaptation initiatives during 2011-2020

Source: Bloomberg New Energy Finance.

Inadequate development of blended finance mechanisms

Blended finance is a key mechanism to align commercial investment with adaptation and resilience outcomes. Combining concessional finance with commercial capital can reduce risk, extend investment horizons, and make projects viable that would otherwise be excluded.

Blended finance is established as a credible funding source for climate solutions. Convergence, a global blended finance network, calculated a 1.2 times increase in the blended finance raised for climate purposes in 2024 compared to 2023, and of the total USD18.3 billion, climate-related funding represented almost 80% of total blended finance.[63] However, a large part of the funds are likely to have gone towards renewable energy and other climate mitigation efforts, with no division specified for adaptation purposes. A previous report[64] stated that mitigation investments averaged 2.3 times those

[63] Convergence. State of Blended Finance 2025. 21 May 2025.
[64] Convergence. State of Blended Finance 2024: Climate Edition. 30 October 2024.

related to adaptation and had higher commercial finance mobilization ratios (3.6 times compared to 2.12 times).

The Zurich Climate Resilience Alliance estimates that private finance currently contributes only about 3% of estimated adaptation finance needs in developing countries.[65] Thus, even where risk-sharing structures exist, private capital remains reluctant to invest at scale because the underlying return profile is weak.

The structure of many blended finance deals also suggests that considerable effort is still needed. Investors frequently seek impact-labeled or green opportunities, yet rarely allocate a portion of their capital to the non-repayable support required to de-risk projects operationally and ensure delivery against climate objectives. Without targeted technical assistance, investments may proceed but fail to strengthen resilience, address environmental risks, or reach vulnerable populations.

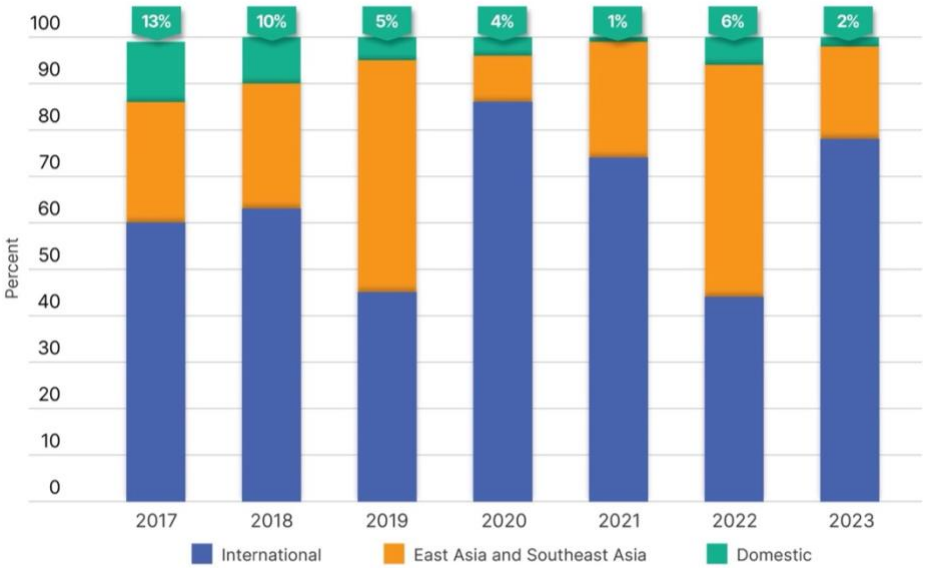
Evidence suggests that allocating a relatively small share of total investment to grant support can materially improve outcomes. Directing approximately 5–10% of total financing toward technical assistance, environmental and social safeguards, and impact measurement can enhance climate results and improve long-term financial performance. Public and concessional players also play a critical role in setting standards and anchoring accountability. However, concessional terms need to be paired with deliberate funding for technical capacity, governance, and measurement. While this thinking is emerging[66, 67, 68], it has yet to be adopted broadly.

Heavy reliance on international sources for blended finance

Blended climate finance in Southeast Asia remains heavily dependent on external capital. Between 2018 and 2023, international and regional investors accounted for 66% and 28% of investment commitments, respectively, with only around 6% on average contributed domestically (Figure 4).[69] This highlights the insubstantial role of local capital markets. Vietnam and Singapore are notable exceptions, where targeted policy frameworks have successfully mobilized domestic capital. In Vietnam, the introduction of the feed-in tariff policy in 2020 catalyzed significant domestic financing for solar projects, demonstrating the sector's capability given a conducive environment. In Singapore, local participation has been driven by large volumes of green and sustainable bond issuances.

[65] Zurich Climate Resilience Alliance. Adaptation Finance and the Private Sector: Opportunities and Challenges for Developing Countries. September 2025.
[66] Convergence. Blending with Technical Assistance. 28 September 2023.
[67] FMO – Entrepreneurial Development Bank. Technical Assistance Facility. Date accessed: 13 January 2026.
[68] FMO – Entrepreneurial Development Bank. Dutch Fund for Climate and Development. Date accessed: 13 January 2026.
[69] Catalytic Climate Finance Facility. Domestic Capital Mobilization for Climate Finance in Southeast Asia. 23 September 2025.

Figure 4: Breakup of investors in blended finance flows to Southeast Asia



Source: Catalytic Climate Finance Facility; IEEFA.

The limited role of domestic capital is largely structural. DFIs, MDBs, and multi-donor funds account for the largest share of blended climate finance transactions. Their role is essential for de-risking projects and scaling activity, but continued dominance has entrenched reliance on international financing rather than catalyzing sustained domestic capital mobilization.

Philanthropic foundations and non-governmental organizations also remain underutilized, despite their higher risk tolerance and suitability for providing catalytic capital. Given its relatively limited scale, philanthropic funding is particularly well-suited to enabling projects such as creating accurate databases, developing appropriate-granularity plans, and ensuring data quality. Public guarantees and concessional instruments remain central to mobilizing additional capital, but their availability ultimately depends on public balance sheets.

The New Collective Quantified Goal for climate finance commits developed countries to deliver USD300 billion each year for climate action by 2035, covering both mitigation and adaptation, alongside a broader ambition to mobilize USD1.3 trillion annually from all sources.[70] Achieving this goal assumes a significant role for public guarantees to leverage private finance. However, as aid budgets decline, the capital available to provide such guarantees is also constrained, limiting their effectiveness.

The OECD has projected a further 9–17% decline in ODA across all categories in 2025, following a 9% drop in 2024.[71] Several European donors have significantly reduced foreign aid as they divert fiscal resources toward defense, with the Netherlands decreasing its aid budget by 30%, Belgium by 25%,

[70] United Nations Climate Change. New Collective Quantified Goal on Climate Finance. Date accessed: 12 January 2026.
[71] OECD. Cuts in Official Development Assistance: OECD Projections for 2025 and the Near Term. 26 June 2025.

France by 37%, and the United Kingdom (UK) by 40%.[72] The closure of the United States Agency for International Development (USAID) eliminated USD679 million for financial year (FY) 2024 on bilateral international climate programs, which included USD256 million for adaptation investments.[73] These reductions erode the funding base for climate adaptation in developing countries. While some smaller donors have announced increases or reaffirmed existing commitments, their scale is insufficient to offset cutbacks by the largest contributors, resulting in a net decline in aid finance available for adaptation.

Government leadership is likely to be a critical differentiator in Asia. The SDG Indonesia One initiative demonstrates how coordinated public financing platforms can mobilize private capital at scale and align blended finance with national climate priorities.[74] In contrast, the absence of robust government-led blended finance mechanisms in Vietnam and the Philippines has constrained coordination and limited alignment with national objectives set out in their Nationally Determined Contributions (NDCs) and NAPs. Strengthening government leadership would improve coordination, attract domestic capital, and reduce long-term fiscal pressures.

Another promising initiative is Singapore's Green Investment Partnership, a key blended finance fund under the Financing Asia's Transition Partnership (FAST-P) initiative. Supported by a funding commitment of USD510 million from global and regional public, private, and philanthropic institutions, the partnership targets sustainable infrastructure opportunities in Southeast and South Asia.[75]

Overall, the risk of continued reliance on external climate finance is increasing, while the availability of overseas concessional capital that has traditionally underpinned blended climate finance in Southeast Asia may be constrained. The region faces heightened vulnerability if international public finance does not scale up at the required pace. Without stronger mobilization of domestic capital, climate investment will slow, project pipelines will shrink, and progress toward national climate targets will stagnate.

Avenues and opportunities

Tapping the bond market

Annual global sustainable bond issuance consistently exceeded USD1 trillion annually between 2021 and 2024, underscoring the market's scale and resilience. Over the 2015 to 2024 period, corporate issuers directed the largest share of bond proceeds into clean energy (21% for non-financial issuers and 15% for financial issuers) and energy efficiency projects, while public sector issuers allocated substantial portions to social expenditures (up to 29%), biodiversity conservation (up to 20%), and

[72] Forbes. Foreign Aid Is Shrinking—What Happens Next?. 25 February 2025.
[73] The World Wide Fund for Nature. Assessment of the Impact of Aid Cuts on Climate and Nature Action. 08 August 2025.
[74] PT SMI. Strategic Cooperation: SDG Indonesia One. Date accessed: 13 January 2026.
[75] Monetary Authority of Singapore. Green Investments Partnership, a Blended Finance Fund under Singapore's FAST-P initiative, Achieves First Close with US$510 Million in Committed Capital. 08 September 2025.

infrastructure development (up to 17%).[76] Contrastingly, climate change adaptation received only around 6–10% of total proceeds across both corporate and sovereign issuances.[77] Despite this relatively small share, the number of bonds with a climate change adaptation category grew sharply, rising from 39 in 2017 to 601 in 2024, with issuance volume climbing from EUR23 billion to EUR268 billion.[78]

There has been increased interest in adaptation and resilience bonds as tools to channel capital explicitly toward climate resilience. These instruments ring-fence proceeds for adaptation projects, helping issuers make these needs more visible and investable. The European Bank for Reconstruction and Development (EBRD) issued a landmark climate resilience bond in 2019. Aligned with the Green Bond Principles and the Climate Resilience Principles, the USD700 million issuance financed climate resilience projects across infrastructure, commercial operations, agriculture, and ecological systems in the 43 countries where the bank operates.[79, 80]

More recently, the Tokyo Metropolitan Government issued the Tokyo Resilience Bond, the first bond to be certified under the Climate Bonds Standard. The Standard enables investors and intermediaries to assess the climate credentials and environmental integrity of bonds, incorporating the Climate Bonds Resilience Taxonomy to define what constitutes a resilient investment.[81] The EUR300 million issuance, expected to carry an A+ rating in accordance with Japan's sovereign rating, was oversubscribed seven times, signaling strong investor demand for credible resilience-focused instruments. It also highlighted their potential to bridge the adaptation financing gap.

For Southeast Asian countries, Tokyo's example offers a replicable model for scaling adaptation finance. Sovereigns can leverage internationally recognized standards to enhance credibility and attract a broader pool of global investors. When combined with development bank credit enhancements or guarantees — particularly for countries with weaker sovereign ratings — such instruments can provide a practical pathway to attract private capital and finance priority climate resilience projects.

Integrating adaptation in taxonomies

A sustainability taxonomy establishes a common language and classification for defining sustainable investments aligned with a jurisdiction's goals. It provides a clear and consistent framework for identifying environmentally sustainable economic activities, reducing ambiguity and ensuring a shared

[76] Organisation for Economic Co-operation and Development. Sustainable Bonds: Trends and Policy Recommendations. 17 November 2025.
[77] Organisation for Economic Co-operation and Development. Sustainable Bonds: Trends and Policy Recommendations. 17 November 2025.
[78] ISS-Corporate. Financing Climate Change Adaptation: Turning Risk into Resilience. 30 October 2025.
[79] European Bank for Reconstruction and Development. World's First Dedicated Climate Resilience Bond, for US$700m, issued by EBRD. 20 September 2019.
[80] European Bank for Reconstruction and Development. Where We Invest. Date accessed: 12 January 2026.
[81] Climate Bonds Initiative. Tokyo Metropolitan Government to issue world's first Climate Bond Certified using the Resilience Criteria and Taxonomy. 10 October 2025.

understanding among stakeholders. Standardized criteria enable comparability across entities and over time, strengthen credibility by limiting mislabeling, and support more informed decision-making.

Globally, more than 50 governments have developed taxonomies, operating at both regional and national levels. In Asia, these frameworks are primarily introduced at the national level to guide markets and channel investment more efficiently toward countries' climate and development goals. However, since they reflect national circumstances, the classification of certain activities varies. For example, coal is considered non-green by most taxonomies, except in Indonesia, where new coal plants may be classified as green under certain conditions.[82] Similarly, the categorization of gas financing also differs. China, Hong Kong, Singapore, and Thailand explicitly exclude it from green classification, while other taxonomies take a more permissive approach.

Climate change adaptation is recognized as an environmental objective in most Asian taxonomies, with the exceptions of China and Vietnam (Table 5). However, the classification criteria for adaptation are either not fully defined or are presented mainly through qualitative descriptions, lacking the detailed technical screening criteria and thresholds that typically apply to mitigation activities. This ambiguity limits clarity on what qualifies as a climate change adaptation activity and reflects the inherent challenge of developing quantitative, context-specific adaptation metrics.

[82] Institute for Energy Economics and Financial Analysis. Sustainable Finance in Asia: A Comparative Study of National Taxonomies. 01 October 2024.

Table 5: Treatment of climate change adaptation across taxonomies

Market	Current Approach	Remarks
Singapore (Singapore-Asia Taxonomy)	Adaptation is identified as one of five environmental objectives: 1. Climate change mitigation 2. Climate change adaptation 3. Protect healthy ecosystems and biodiversity 4. Promote resource resilience and circular economy 5. Pollution prevention and control	An economic activity is considered to meet the climate change adaptation objective if it[83]: 1. Implements measures to increase own resilience; and/or 2. Does not adversely affect adaptation efforts by others.
Hong Kong (Hong Kong Taxonomy for Sustainable Finance)	Adaptation is introduced in Phase 2 using a whitelist approach. Phase 1: Climate Change Mitigation (Sectors covered: energy, transportation, construction, waste, manufacturing, information and communications technology) Phase 2: Climate Change Adaptation	A whitelist specifies adaptation measures that are automatically considered taxonomy-aligned without requiring additional eligibility criteria. Currently, it includes four adapting measures focused on the water sector[84]: 1. Implementation of stormwater separation 2. Installing water metering 3. Implementation of automated water control systems 4. Installing water resource monitoring equipment
China (Green Finance Taxonomy)		The current version[85] does not include explicit labeling for climate adaptation activities
Taiwan (Taiwan Sustainable Taxonomy)	Adaptation is identified as one of six environmental objectives: 1. Climate change mitigation 2. Climate change adaptation 3. Water resource protection 4. Circular economy 5. Pollution prevention 6. Protection and restoration of biodiversity	At present, only climate change mitigation has an established technical screening criteria. The other objectives follow the principle of "do no significant harm".[86]
Thailand (Thailand Taxonomy)	Adaptation is identified as one of six environmental objectives: 1. Climate change mitigation 2. Climate change adaptation 3. Sustainable use and protection of marine and water resources 4. Promotion of resource resilience and transition to a circular economy 5. Pollution prevention and control 6. Protection and restoration of biodiversity and ecosystems	Specific screening criteria and thresholds have yet to be established

[83] Monetary Authority of Singapore. Singapore-Asia Taxonomy for Sustainable Finance: 2023 Edition. December 2023.
[84] Hong Kong Monetary Authority. Prototype of Hong Kong Taxonomy for Sustainable Finance (Phase 2A). September 2025.
[85] 中国人民银行. 绿色金融支持项目目录 (2025年版). 14 July 2025.
[86] Financial Supervisory Commission Republic of China (Taiwan). Taiwan Sustainable Taxonomy. 04 August 2023.

Malaysia (Principles-based Sustainable and Responsible Investment Taxonomy for the Malaysian Capital Market)	Adaptation is identified as one of four environmental objectives: 1. Climate change mitigation 2. Climate change adaptation 3. Protection of healthy ecosystems and biodiversity 4. Promotion of resource resilience and transition to circular economy	An economic activity can be considered to meet the climate change adaptation objective if it[87]: 1. Implements measures to increase own resilience to climate change; and/or 2. Enables other stakeholders to increase resilience to climate change. The best available climate information and evidence must be used to: 1. Identify expected negative effects of climate change with evidence and appropriate climate information; and 2. Demonstrate how the activity or measures taken build resilience, prevent an increase in, or reduce the identified climate change impact.
Indonesia (Indonesia Taxonomy for Sustainable Finance)	Adaptation is identified as one of four environmental objectives. 1. Climate change mitigation 2. Climate change adaptation 3. Protection of healthy ecosystems and biodiversity 4. Resource resilience and the transition to a circular economy	An economic activity is considered to meet the climate change adaptation objective if it fulfills one of the following questions[88]: 1. Do the business's policies and strategies support the climate change adaptation principles? 2. How does the activity strengthen the business's resilience to current and future climate impacts? 3. Does the activity help stakeholders or other activities manage physical climate risks?
The Philippines (Philippine Sustainable Finance Taxonomy Guidelines)	Adaptation is identified as one of two environmental objectives: 1. Climate change mitigation 2. Climate change adaptation	The framework sets out nine guiding questions to assess whether an economic activity meets the climate change adaptation objective, focusing on a) whether the activity implements measures to enhance resilience to climate change, and b) whether it enables other stakeholders and/or activities to increase their resilience to climate change[89]
South Korea (The Korean Green Taxonomy)	Adaptation is identified as one of six environmental objectives: 1. Greenhouse gas reduction 2. Adaptation to climate change 3. Sustainable water conservation 4. Recycling 5. Pollution prevention and management 6. Biodiversity	Adaptation criteria are not fully articulated
Vietnam (National Green Taxonomy)		The current version[90] does not include explicit labeling for climate adaptation activities

Source: IEEFA.

[87] Securities Commission Malaysia. Principles-based Sustainable and Responsible Investment Taxonomy for the Malaysian Capital Market. December 2022.
[88] Indonesia Financial Services Authority. Indonesia Taxonomy for Sustainable Finance: Version 2. February 2025.
[89] Bangko Sentral ng Pilipinas. Circular No. 1187. 14 February 2024.
[90] Vietnam Bond Market Association. Decision No. 21/2025/QĐ-TTg stipulating environmental criteria and confirming investment projects in the green taxonomy. 08 July 2025.

The ASEAN taxonomy serves as a common framework for member countries, standardizing definitions and criteria for sustainable economic activities. It plays an important role in addressing the fragmentation in Asian taxonomies. A recent white paper, developed by the ASEAN Capital Markets Forum, Sustainable Finance Institute Asia, and the United Nations Environment Programme Finance Initiative, lays the groundwork for the forthcoming Mitigation Co-benefit and Adaptation for Resilience (mARs) Guide.

Phase 1 of the Guide maps NAPs and related national strategies across ASEAN Member States (AMS) and reviews international sustainable finance taxonomies and adaptation frameworks. This exercise identified shared principles, good practices, and methodological approaches that can be adapted to the ASEAN context, ensuring the Guide is regionally relevant, evidence-based, and aligned with both local priorities and global standards.

The white paper introduces six key principles[91]:

1. **Context-relevant and locally prioritized:** Criteria should reflect local vulnerabilities, priorities, and governance across AMS and be practical under varying data and capacity conditions.
2. **Science-based and evidence-led:** Definitions and eligibility criteria should rely on recognized scientific authorities with transparent data, assumptions, and uncertainty ranges.
3. **Inclusive across AMS:** Requirements should be accessible and proportionate for all members, supporting equivalence and acting as a regional reference for assessing climate adaptation, using clear language and avoiding undue burden.
4. **Maladaptation risk management:** Eligibility should consider future uncertainty, avoid lock-in and trade-offs that increase vulnerability, and track adaptation outcomes for consistent and credible measurement with a preference for robust or no-regrets options.
5. **Interoperable and comparable:** Terminology, data, and outcomes should map to major frameworks, e.g., the European Union (EU) Taxonomy, and align with other taxonomies and sustainability guidelines.
6. **Usable for finance and the real economy:** The guide shall be readily applicable by various user groups, enabling bankable climate adaptation project proposals with minimal reporting burden and clear adaptation outcomes.

The mARs Guide is expected to complement the ASEAN taxonomy by clarifying what constitutes adaptation finance and how resilience outcomes should be assessed. This is a positive development, as the Guide could serve as a reference for developing and harmonizing adaptation definitions across ASEAN. By reducing ambiguity, lowering transaction costs through streamlined validation and reporting, and enhancing comparability across jurisdictions, it can strengthen investor confidence and

[91] ASEAN Capital Markets Forum. Phase 1 White Paper on Key Principles and Methodological Approaches: For the Development of the Mitigation Co-benefit and Adaptation for Resilience (mARs) Guide in support of the ASEAN Taxonomy for Sustainable Finance. November 2025.

increase the credibility and visibility of adaptation projects. These improvements are critical for unlocking larger capital flows into regional climate adaptation initiatives.

Exploring innovative financing tools such as debt (for nature) swaps

Debt swaps are increasingly used to help heavily indebted countries raise funds for climate-related projects. Typically, a country repurchases higher-cost debt and replaces it with cheaper financing, often facilitated by a development bank.

The Seychelles debt-for-nature swap was the first of its kind and demonstrated how innovative debt instruments can expand fiscal space while advancing environmental protection. The transaction restructured USD21.6 million of the country's debt through an arrangement involving the government, creditors, and The Nature Conservancy (TNC).[92] Concessional financing enabled the government to repurchase existing debt at a discount, resulting in reduced debt obligations, extended maturities, and lower interest rates. In exchange, Seychelles committed to directing the savings generated toward marine conservation and climate resilience. The Seychelles Conservation and Climate Adaptation Trust was established to manage a long-term endowment fund and administer grants for conservation and adaptation projects. This transaction offers a compelling and replicable model for other climate-vulnerable countries facing debt constraints.

In 2024, Barbados completed a debt-for-climate swap to finance water and sewage projects. Expensive bonds with rates ranging from 3.75% to 8% were replaced with a lower-cost USD592.7 million syndicated loan (tied to sustainability performance targets and disaster clauses)[93] from domestic banks at 3.5%, with guarantees from the Inter-American Development Bank (IDB) and the European Investment Bank (EIB). Since the retired bonds were worth about USD595.7 million, the swap did not increase the country's overall debt. The interest savings, estimated at USD220 million over 10 years, were used to fund the South Coast Water Reclamation Project, with additional funding from IDB (a USD80 million loan) and the Green Climate Fund (a USD60 million loan and USD80 million grants).[94] Earlier, in 2022, Barbados completed another debt-for-nature conversion, supported by a USD150 million guarantee from the IDB and TNC, which enhanced a blue loan[95] to buy back existing debt.[96] Savings of around USD50 million were generated and used to fund marine conservation initiatives.

In ASEAN, Indonesia and the Philippines have implemented several debt-for-nature transactions (Table 6), with financing reaching up to USD30 million for Indonesia and USD40 million for the Philippines. Through several agreements with the United States (US) under the 1998 Tropical Forest Conservation

[92] Seychelles Conservation and Climate Adaptation Trust. The Seychelles Debt-for-Nature Swap: A Case Study. March 2024.
[93] The performance targets require the government of Barbados to achieve specified water management goals by November 2030, and financial penalties will be incurred if these targets are missed. Meanwhile, the natural disaster and pandemic clauses allow principal payments to be deferred in the event of major shocks.
[94] Central Bank of Barbados. Debt-for-Development Swaps. A tool for Climate Action and Economic Resilience. 20 February 2025.
[95] A blue bond is a debt instrument for financing marine and ocean-based projects.
[96] IDB. Barbados Places Climate Financing Firmly on Agenda with IDB, Nature Conservancy Support. 21 September 2022.

Act (TFCA)[97, 98], Indonesia has reduced debt service obligations to the US while funding climate projects. Previous swaps saved nearly USD70 million, primarily for rainforest conservation, while a more recent USD35 million transaction supported coral reef protection and preservation.[99] The Philippines has also executed several debt-for-nature swaps, redirecting tens of millions of dollars in debt payments toward various conservation programs.

Notably, these debt-for-nature swaps were undertaken specifically under US legislation. Current shifts in US climate policy may make further progress under these laws more challenging in the near term. To sustain momentum, other governments and multilateral institutions should draw on the TCFA's success and develop similar support for debt-for-nature or debt-for-climate mechanisms.

Table 6: Completed debt-for-nature swaps in ASEAN

Country	Debt Size	Purpose
Indonesia	2009 – USD30 million (US government)	Forest conservation
	2011 – USD28.5 million (US government)	Forest and biodiversity conservation
	2014 – USD12 million (US government)	Wildlife protection
	2024 – USD35 million (US government)	Coral reef conservation
Philippines	1989 – USD0.39 million (World Wildlife Fund [WWF])	Natural resource and biodiversity conservation
	1992 – USD9.8 million (WWF, United States Agency for International Development)	Various conservation and development projects
	1993 – USD19 million (WWF, United States Agency for International Development)	Various conservation and development projects
	2022 – USD40 million (US government)	Forest and biodiversity conservation

Source: IEEFA.

[97] US Congress. Debt-for-Nature Initiatives and the Tropical Forest Conservation Act (TFCA): Status and Implementation. 24 July 2018.
[98] Note that the TFCA is a US law enacted in 1998 that enables debt-for-nature swaps, allowing developing countries to reduce official debt owed to the US in exchange for local currency funds dedicated to tropical forest conservation and coral reef protection.
[99] The Jakarta Post. Indonesia and US seal USD35 million Coral Reef Debt Swap. 09 July 2024.

Recommendations and conclusion: Steps to build resilience

Closing the adaptation financing gap requires considering adaptation as a core development and economic priority. Emergent NAPs, dedicated funds, blended finance platforms, and the market for adaptation solutions are currently undersized and fragmented. A more strategic approach is needed that embeds adaptation in national planning and budgeting, strengthens project preparation, restructures blended finance, mobilizes domestic capital, and corrects the undervaluation of economic benefits. This approach would support better planning, selection, and implementation of projects, as well as a more holistic assessment of benefits and the development of tailored financing instruments.

Develop coordinated and coherent NAPs with dedicated budgets

Countries with more detailed and operational NAPs — those that define priority sectors, responsible agencies, and implementation timelines — are better positioned to identify investment needs and channel finance effectively. In Southeast Asia, however, many NAPs remain high-level or under development and are not consistently integrated with fiscal frameworks or medium-term expenditure plans. This undermines coordination and weakens the pipeline of well-prioritized projects.

All countries in the region need to upgrade NAPs into comprehensively valued, implementation-oriented documents that explicitly guide sectoral policies and public investment decisions. This requires using climate-risk assessments to develop targeted programs — particularly in social sectors such as agriculture, water, health, and urban development — with clear budgets, implementing agencies, and performance benchmarks. Adaptation measures should be systematically embedded in new projects rather than treated as optional enhancements vulnerable to fiscal pressures.

Dedicated and predictable budget allocations are essential to translate adaptation plans into action. Anchoring adaptation spending in national budgets signals government commitment, strengthens accountability, and reduces the risk of deferral under fiscal pressure. Consistent budgetary support shifts adaptation beyond planning exercises, enabling agencies to implement priority projects at scale and deliver tangible resilience outcomes.

Build and bolster project preparation and local implementation capacity

Low disbursement ratios for adaptation funds relative to overall development finance, and the small share of proposals approved, point to weaknesses in adaptation project preparation, especially among municipalities and sectoral agencies closest to climate impacts that often lack technical and institutional capacity. These gaps in climate-risk analysis, design, and socio-economic assessment result in frameworks that prevent concepts from becoming financeable projects.

Resilience planning should therefore be assisted by dedicated, well-resourced project preparation and implementation support facilities focused on adaptation. This would lead to better-designed projects with clear results and impact that meet the requirements of multilateral development banks and climate funds. Strengthening local capacity for implementation and monitoring helps build a track record and enables easier identification of credible project pipelines.

Calculate and incorporate the full economic value of adaptation in financial decision-making

Chronic under-investment in adaptation stems from a narrow financial valuation of benefits, which focuses mainly on avoided losses and ignores wider economic, social, and environmental gains. Including avoided damages and economic disruptions, induced economic development, and co-benefits such as improved health, ecosystem services, and connections with environmental mitigation would more accurately reflect the real financial and societal returns. These returns are highly valued by investors and financiers, as evidenced by the performance and valuations of businesses involved in adaptation, as well as the potential commercial opportunities in this area.

A complete economic evaluation requires updating appraisal guidelines for public investment, development bank lending frameworks, and corporate capital budgeting and disclosure practices to explicitly recognize forward-looking resilience benefits. Improving and widely applying existing adaptation metrics and rating systems will help investors compare opportunities, track performance, and justify allocating capital to adaptation resilience in proportion to its actual economic and social returns.

Strengthen adaptation taxonomies, metrics, and disclosure

The dominant perception that adaptation benefits are “hard to measure” continues to constrain investment, despite evidence that adaptation projects can deliver attractive economic rates of return when full benefits are counted. This highlights an urgent need to accelerate the development of practical, interoperable adaptation criteria and outcome indicators. Sustainable finance taxonomies that account for and credit measures related to adaptation can play a crucial role in mainstreaming these criteria and thereby facilitate financing and investments. The ASEAN taxonomy is currently being updated to reflect these requirements and, if designed comprehensively, can clarify and ease the flow of finance into adaptation projects in the region, while serving as an example for other regional taxonomies.

Reorient financial instruments toward resilient development and adaptation

International public finance and external concessional flows cannot meet Southeast Asia’s adaptation needs on their own, particularly given constrained fiscal space and looming reductions in official

development assistance. Blended finance is widely promoted as a solution, but remains skewed toward mitigation, with adaptation receiving a smaller share of transactions and mobilizing less private capital per unit of concessional funding. Consequently, there is a strong case for reorienting blended finance to directly target adaptation and resilience outcomes, rather than treating them as secondary components within climate portfolios.

Concessional windows, guarantees, and first-loss tranches should be calibrated to the risk and revenue characteristics of adaptation projects, with dedicated provision for grant-funded technical assistance, safeguards, and monitoring. Even modest allocations can substantially improve climate impact and financial performance. Development banks and DFIs can play a pivotal role by structuring facilities that bundle smaller, localized adaptation measures into larger portfolios aligned with national priorities and crowd in commercial lenders.

The strategic use of capital markets is also crucial to systemically integrate adaptation into bond issuance, including through emerging instruments such as adaptation and resilience bonds. While still nascent in Southeast Asia, these instruments have gained traction in developed markets and demonstrate evidence of strong investor demand when supported by clear use-of-proceeds frameworks and credible impact reporting.

For financially vulnerable countries, debt restructuring or debt exchange mechanisms linked to climate resilience commitments warrant deeper consideration. Debt-for-resilience swaps can help ease fiscal pressures while creating dedicated funding streams for priority adaptation programs aligned with NAPs.

Implementing these measures at scale offers countries a credible way to address climate change impacts, minimizing losses while enhancing economic and social opportunities.

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The Institute for Energy Economics and Financial Analysis (IEEFA) examines issues related to energy markets, trends and policies. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy economy. www.ieefa.org

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