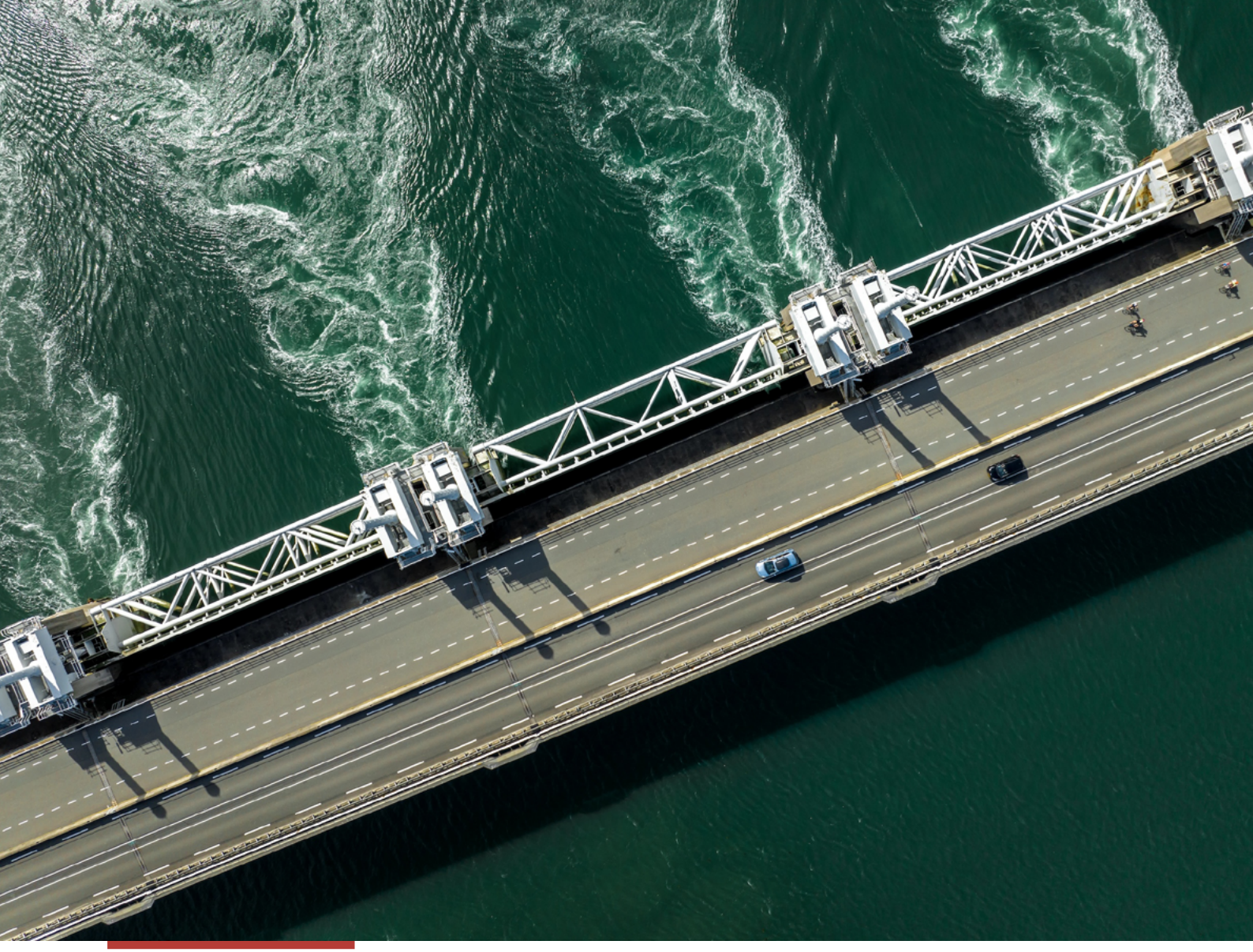

BRIEF

Responding to Risk: Tracking Financial Institutions' Progress on Adaptation and Resilience

July 2026

CLIMATE POLICY INITIATIVE

NETZERO FINANCE TRACKER
BY CLIMATE POLICY INITIATIVE

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ABOUT CLIMATE POLICY INITIATIVE

Climate Policy Initiative (CPI) is an analysis and advisory organization with deep expertise in finance and policy. Our mission is to help governments, businesses, and financial institutions drive economic growth while addressing climate change. CPI has offices in Austria, Brazil, India, Indonesia, South Africa, the United Kingdom, and the United States.

ABOUT THE NZFT

The Net Zero Finance Tracker (NZFT) is a not-for-profit dashboard that assesses how 1,500 of the world's largest financial institutions are responding to climate risk and driving real-economy outcomes. Drawing on over 600 datasets from 58 sources, it tracks progress across Targets, Implementation, and Impact, helping distinguish symbolic commitments from measurable action and supporting transparency in the climate transition.

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Tracking and Mobilizing Private Sector Climate Adaptation Finance

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EXECUTIVE SUMMARY

Physical climate risks are increasingly material for financial institutions (FIs), with implications for portfolio performance, financial stability, and the viability of the net-zero transition. While FIs increasingly assess and disclose physical climate risks, there is limited visibility on what action they are taking to manage those risks and support adaptation and resilience (A&R) in the real economy. At the same time, expectations for FI action on A&R are evolving across voluntary frameworks, investor initiatives, and regulatory guidance. However, there is no clear view of what constitutes leading practice, nor a consistent way to assess progress across institutions.

This review seeks to support FIs in navigating the complex, rapidly evolving landscape of frameworks and guidance by defining a set of best practices. It does so by providing an overview of key A&R frameworks developed for FIs to date, analyzing areas of convergence, and identifying the data landscape needed to fill the FI A&R knowledge gap. CPI has reviewed more than 30 documents and selected eight frameworks for in-depth analysis to elucidate critical A&R implementation actions. Findings from this brief will be integrated over time into the Net Zero Finance Tracker (NZFT) dashboard, CPI's flagship initiative to track FIs' progress on the climate transition and management of climate risks.

A&R is increasingly relevant to FIs as material physical climate risks become more acute and a significant proportion of FIs are now disclosing their climate risks. Data from the NZFT indicates that 79% of tracked FIs by assets under management/ownership (AUM/O) were disclosing their climate risks in 2024 (CPI, 2025d). There is also a growing body of literature relevant to FI A&R implementation to support the need to address physical climate risks in portfolios and fund A&R. Projected portfolio losses are 5% globally under +2°C to +3°C warming scenarios, particularly in asset-heavy sectors and more climate-vulnerable regions (CPI, 2025d).

KEY FINDINGS

CPI's analysis of the eight selected frameworks identified 26 A&R best practices for FIs. These may be categorized according to 1) governance; 2) strategy and planning; 3) risk management; and 4) real-economy and policy engagement.

Our analysis found convergence around a common A&R agenda, collectively defining best practices over time. The disclosure baseline has been established largely through frameworks aligned with the TCFD, namely the ISSB IFRS S2, and CSRD ESRS E1.[1] In addition, newer FI-specific guidance is pushing the financial sector toward creating A&R plans, integrating physical risk into capital allocation and underwriting, and engaging with highly exposed counterparties. Leading frameworks encourage FIs to advance beyond risk disclosure toward proactive, anticipatory action, such as setting adaptation finance mobilization targets. This is important because internal risk controls alone cannot reduce the underlying vulnerability of FIs' financed assets. Portfolio risk will continue to accumulate if assets remain exposed and not adapted.

There is a lack of a comprehensive assessment of how FIs are progressing on A&R to date. The current data landscape is not robust enough to link exposure—where assets, portfolios, and financial systems are exposed to physical climate hazards—with response data in a way that shows whether A&R action is truly reducing risk and increasing resilience. Current initiatives have not yet captured the causal chain between an adaptation response and a measurable resilience outcome. This limits the ability to understand how well the financial sector is prepared for climate risks and obscures potential opportunities to scale investment in A&R in the real economy.

HOW THE NZFT CAN HELP

Applying an even stronger A&R lens to the Net Zero Finance Tracker (NZFT) will enable a more systematic assessment of how FIs are managing physical climate risks and supporting resilience in the real economy. Building on its existing coverage of climate risk management, the NZFT is well placed to expand its assessment to include A&R metrics and indicators. This would provide an open evidence base to identify where progress is being made—and where gaps remain—across the financial system, helping policymakers and regulators, FIs, civil society, and data providers target action where it is most needed.

The NZFT provides the most robust, transparent, and freely accessible data on private FIs' transition to net zero, enabling informed policy, investment, and advocacy decisions. Explore the interactive platform: https://netzerofinancetracker.climatepolicyinitiative.org/

1 **TCFD:** Task Force on Climate-related Financial Disclosures.
ISSB IFRS S2: International Sustainability Standards Board International Financial Reporting Standard 2: Climate-related Disclosures.
CSRD ESRS E1: Corporate Sustainability Reporting Directive European Sustainability Reporting Standard E1: Climate Change.

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1. INTRODUCTION

1.1 RELEVANCE OF ADAPTATION AND RESILIENCE FOR FINANCIAL INSTITUTIONS

Climate change is contributing to increasingly acute and material physical climate risks. Its impacts, from acute extreme weather events to chronic shifts such as heat, drought, and sea-level rise, affect financial institutions' (FIs) portfolios through distinct short- and long-term channels. Near-term shocks can drive borrower defaults and collateral impairment for banks, asset repricing and liquidity stress for asset managers, and immediate valuation losses for pension funds and sovereign wealth funds. Over time, chronic impacts can erode asset values and returns, raise insurance and operating costs, weaken pension funding positions and sovereign fiscal resilience, and amplify macroeconomic disruptions such as inflation and lower growth.

These risks also threaten the viability of the net-zero transition. Without adaptation, physical climate impacts will undermine the activities on which transition investment depends. For example, extreme weather events such as storms and floods can damage grids supporting renewable energy assets; precipitation irregularity and drought threaten the operational continuity of hydropower plants; and shifting weather patterns affect the productivity of low-carbon supply chains, energy-efficient infrastructure, and low-carbon heating and cooling systems.

Climate risk management is integral to fiduciary duty. Projected portfolio losses are estimated at 5% globally under warming scenarios of +2°C to +3°C (CPI, 2025d). Asset-heavy sectors and climate-vulnerable regions may be worst hit; portfolio loss projections increase to 10-15% in emerging markets and developing economies (EMDEs) (CPI, 2025d). Research also estimates that without adaptation and resilience (A&R) measures, physical climate hazards cost real-economy companies an average of 3.3% annually of asset value and up to 28% in the most exposed cases by the 2050s (S&P Global, 2023). These impacts can transmit to FIs through credit losses, collateral impairment, lower portfolio valuations, insurance repricing, and broader market and macroeconomic stress. Climate-related impacts are already material: natural disasters caused estimated global losses of USD 224 billion in 2025 and USD 368 billion in 2024 (Munich Re, 2026).

Despite the mounting costs of climate change, current financial flows to support climate adaptation activities fall far short of estimated needs. Tracked adaptation finance amounted to USD 66.59 billion in 2023, with only 8% (USD 5.38 billion) of this from private sources (CPI, 2026).[2] By contrast, estimated investment requirements to adapt and build resilience to climate-related shocks amount to USD 212 billion per year by 2030 and USD 239 billion per year between 2031 and 2050 in EMDEs alone (CPI, 2025c).[3]

2 We note that there is insufficient data on private sector adaptation finance to provide a comprehensive, accurate assessment, hindering understanding private FIs' A&R progress (CPI, 2024). Without reliable private sector data, public and private decision-makers cannot accurately assess progress on reducing climate vulnerability or to direct future investment where it is most needed.

3 The scale of global adaptation finance needs is expected to be significantly understated since adaptation costs are difficult to quantify and have temporal and equity dimensions, and current estimates focus on adaptation needs in EMDEs only and use varied methodologies. Importantly, adaptation finance needs also depend on mitigation action (CPI, 2025c).

1.2 FINANCIAL INSTITUTIONS' ROLE IN ACCELERATING A&R UPTAKE IN THE REAL ECONOMY

FIs play a critical role in accelerating A&R activities in the real economy. To address physical climate risk exposure, which is foundational to A&R, FIs are pursuing risk disclosure and management. FIs can understand their exposure to physical climate risk through scenario analysis and portfolio-level risk assessment, and are increasingly required to integrate it into their firm-wide risk strategy and management frameworks.

FIs are exposed to physical climate risks and can respond to them through different channels depending on institution type, business model, balance sheet structure, fiduciary responsibilities, liability profile, and role in lending, capital allocation, stewardship, or risk underwriting.

Banks are primarily exposed through credit, collateral, operational, and wider financial stability channels, as physical climate impacts can affect their clients' repayment capacity, impair collateral values, disrupt bank operations, and contribute to broader macro-financial stress. They can respond by integrating physical risk into loan origination, underwriting standards, covenants, pricing, portfolio monitoring, and client engagement.

Asset owners, including pension funds, sovereign wealth funds, and insurers' investment portfolios, are exposed through the long-term value and risk profile of their holdings, particularly where they have long-dated liabilities or intergenerational mandates. They can respond by setting investment beliefs and mandates, allocating capital toward resilient assets, and requiring asset managers to assess and manage physical climate risk.

Asset managers are exposed through the portfolios they manage on behalf of clients and can respond through portfolio construction, product design, stewardship, voting, and engagement with investee companies. Insurers have a dual role as both capital allocators and risk underwriters. As investors, they face portfolio risks similar to other asset owners; as underwriters, they are directly exposed to physical climate risk through claims volatility, catastrophe exposure, reinsurance costs, liquidity needs, and solvency capital requirements. They can respond through underwriting criteria, risk pricing, coverage terms, incentives for risk reduction, and claims data.

Insurance availability, pricing, deductibles, exclusions, and claims experience can also provide useful market signals for banks, investors, and real-economy counterparties on where physical climate risks are rising or where adaptation measures may be reducing residual risk, although these signals should be interpreted alongside affordability, regulatory, and market-capacity considerations.

FIs are actively expanding their climate strategies and actions to integrate A&R[4] in response to the material physical climate risks identified. Their disclosures are typically made through annual reporting in line with Task Force on Climate-Related Financial Disclosure (TCFD) recommendations and/or voluntary disclosure frameworks like the Carbon Disclosure Project (CDP). Data from the NZFT indicates that 79% of FIs by AUM/O in 2024 are formally disclosing climate risk, and 83% have reported some level of climate risk management (CPI, 2025d). However, only 33% of FIs evaluate and manage climate risks using appropriate tools on most assets (CPI, 2025b). According to CDP (2025a), 84% of FIs reflect environmental information in their due diligence, and 85% are offering products and services that enable climate mitigation and/or adaptation.

4 Definitions of adaptation, resilience, adaptation finance, and resilience finance can vary depending on the organization and the type of adaptation taxonomies applied (NGFS, 2024). CPI recognizes these differences and defines adaptation finance as resources directed to activities aimed at reducing the vulnerability of human or natural systems to the impacts of climate change and climate-related risks, by maintaining or increasing adaptive capacity and resilience (CPI, 2025a).

Therefore, these data suggest a gap between physical climate risk disclosure and management and evidence that FIs are systematically managing such risks across portfolios, engaging with exposed clients and counterparties and financing A&R in the real economy.

Supervisory expectations requiring or encouraging FIs to integrate climate-related risks into governance, strategy, risk management, scenario analysis, and/or capital and solvency processes are now present across jurisdictions, including the UK, EU, Canada, Australia, Singapore, Hong Kong, and Brazil (PRA, 2025; ECB, 2020; EBA, 2025; OSFI, 2024; APRA, 2021; MAS, 2020; HKMA, 2021; CMN, 2021). In the UK, for example, the Prudential Regulation Authority (PRA) has proposed that banks incorporate climate-related risk drivers into Expected Credit Loss (ECL) calculations and that insurers ensure that their Own Risk and Solvency Assessment and Solvency Capital Requirements do not underestimate climate-related risk exposure through underwriting and investment activities (PRA, 2025).

Internal risk management measures, including portfolio limits, pricing adjustments, and insurance, can reduce an FI's own financial exposure (Box 1). However, these do not necessarily reduce the underlying vulnerability of financed assets or communities unless paired with adaptation, resilience-building, or client and counterparty engagement. Portfolio risk can therefore reappear or accumulate elsewhere if assets remain exposed and not adapted. **This makes a strong case for FIs to finance A&R activities, such as climate-smart agriculture, resilient infrastructure, and adaptation-enabling technologies, in the real economy as an essential element of strategy for preserving long-term portfolio quality and business viability.**

To accelerate A&R uptake in the real economy, FIs must advance beyond risk disclosure toward proactive, anticipatory action. FIs can lower risk profiles and facilitate A&R through their investment strategy, client and counterparty engagement, policy advocacy, and the development and publication of an A&R plan.

Box 1. Managing physical climate risk without leaving vulnerable sectors behind

Climate risk is not a reason to exit certain sectors or geographies. FIs should first assess whether physical climate risks can be managed over the relevant time horizon, taking into account the lifespan of physical assets, the tenor or expected holding period of the financing, and the extent to which residual risks remain after taking feasible adaptation, resilience-building, and risk-transfer measures. In extreme cases, where assets remain unadaptable, and after an engagement strategy has not been successful, FIs may have to pursue managed divestment as a last resort (UNEP FI PRB, 2023). Even in that case, divestment should not be treated as the goal of risk management. FIs should continue to manage residual risk during the holding or disposal period and, where appropriate, support an orderly transition to another capital provider better suited to the asset's adaptation needs, financing structure, or risk-return profile. Diverting funds away from climate-vulnerable industries and regions can exacerbate existing vulnerabilities and further erode communities' ability to adapt and build resilience. Therefore, engagement and advocacy are the preferred approach to ensure inclusive adaptation, and where not possible, cooperation with relevant government agencies to equitably manage the consequences of disinvestment is highly encouraged.

A&R, while often viewed through a risk mitigation lens, also presents strategic growth opportunities. For example, as corporates respond to escalating physical climate risks, demand for external A&R financing is expected to grow. BCG estimates that corporate investment in A&R measures could reach USD 800 billion–1.2 trillion per year between 2026 and 2030, creating an estimated USD 100 billion–130 billion annual financing opportunity for banks (BCG, 2026). Targeted A&R investments can augment the returns of decarbonization investments by futureproofing them against climate-related impacts, can support increased investment in nature and biodiversity, and can build resilience more broadly in vulnerable communities (GARI, 2024b). Yet, despite the anticipated return on A&R, private FI A&R investment remains a fraction of total adaptation finance (CPI, 2026). Physical climate impacts are often not considered as near-term risks and sit outside FIs' typical planning horizons, slowing A&R investment (ITPN, 2024). Additionally, uncertainty surrounding financial returns from adaptation as opposed to those for mitigation can be a deterrent.

1.3 PURPOSE OF THIS DOCUMENT

This brief provides an overview of key FI A&R frameworks, identifying best practices through an analysis of areas where they converge (Section 2), as well as the indicators and associated data needed to fill the FI A&R progress knowledge gap (Section 3). From an initial list of more than 30 documents (Annex 1), CPI has analyzed eight frameworks in depth (Table 1) based on their relevance to private FIs, coverage of A&R implementation actions, and role in shaping industry practice or disclosure expectations.[5] Findings from this brief will be integrated over time into CPI's Net Zero Finance Tracker (NZFT) dashboard, CPI's flagship initiative to track private FIs' transition to net zero.

By applying an A&R lens to the NZFT, we can gather actionable information across FI resilience planning, implementation of adaptation measures, and real-economy impact.

- **Policymakers and regulators** can assess how policy signals can help shape private investor behavior.
- **Financial institutions** can assess their ability to anticipate and respond to physical climate risk, identify areas for improvement, and gauge the strength of resilience planning of portfolio companies.
- **Data providers** can identify data gaps that can be addressed through expanding data collection efforts, supporting greater transparency around FI A&R progress.

5 **Note on Exclusions:** Frameworks designed only for public FIs, financial instruments, or real-economy companies are outside of the scope of this review. Additionally, adaptation taxonomies, adaptation investment screening principles, implementation tools, concept notes, resource guides, compendia of metrics and indicators, nature-specific frameworks, and case studies were also excluded. CPI acknowledges the prominent role of governments and policymakers in enabling A&R but focuses primarily on private FIs for this brief.

2. FRAMEWORKS FOR A&R BEST PRACTICE IN THE FINANCIAL SECTOR

Several frameworks now guide FIs' A&R planning. Guidance has evolved from risk identification and disclosure, through risk management and planning, toward implementation, engagement, and finance mobilization for adaptation.

2.1 MAIN FRAMEWORKS SHAPING FINANCIAL INSTITUTION A&R STRATEGY

This section provides an overview of eight FI-specific A&R frameworks, ranging from the TCFD, first introduced in 2015, through to guidance released in 2026 (see Table 1). It also identifies where these frameworks converge on their expectations of best practice for action. The analysis largely focuses on FI best practices regarding their portfolios rather than their own operations.

A&R frameworks for FIs are largely rooted in the TCFD, which laid the foundation for subsequent guidance. The first three regulatory frameworks—TCFD, the International Sustainability Standards Board (ISSB) IFRS S2, and the EU Corporate Sustainability Reporting Directive (CSRD) ESRS E1—established the disclosure floor. Five more recent frameworks outline increased expectations of FIs to move toward anticipatory and active risk management, adaptation planning, and measurable finance flows. Guidance from the Institutional Investors Group on Climate Change (IIGCC) and the Climate Financial Risk Forum (CFRF) advances toward operational integration of A&R through risk management, client engagement, adaptation finance targets, and transition plan integration. The UNEP FI Principles for Responsible Banking (PRB) and the Net-Zero Asset Owner Alliance (NZAOA) Target-Setting Protocol support the adoption of adaptation targets and finance mobilization. Finally, the ACT Finance (Banking and Investing) methodologies are FI-specific climate frameworks.

Seven of the eight analyzed frameworks were published or substantially updated between 2024 and 2026, reflecting the increasing urgency for FIs to address intensifying physical climate-related risks.

Table 1: Overview of frameworks reviewed

Framework	Scope	Year	Description
Task Force on Climate-Related Financial Disclosures (TCFD)	All FIs	2017	Sets out recommendations for consistent climate-related financial disclosures around four pillars: governance, strategy, risk management, and metrics and targets, intended to help FIs assess and price climate-related risks and opportunities. It serves as the foundation for most subsequent A&R frameworks.
International Sustainability Standards Board (ISSB) IFRS S2	All FIs	2025	Incorporates TCFD's physical risk framework into a globally applicable, private sector climate disclosure standard requiring entities to disclose material climate-related risks and opportunities, their effects on strategy and financial planning, and the metrics and targets used to manage them.
Corporate Sustainability Reporting Directive (CSRD) ESRS E1	EU-based FIs	2025	Mandates sustainability reporting for applicable EU-based companies, amended by Directive (EU) 2026/470, with ESRS E1 specifically pertaining to climate change. On adaptation, ESRS E1 requires companies to 1) identify climate-related physical risks across their assets and value chains, 2) use scenario analysis to test the resilience of their strategy to those risks, 3) disclose the carrying amount of assets at material physical risk before and after adaptation actions, and 4) disclose policies and targets related to climate adaptation.
Climate Financial Risk Forum (CFRF): From Risk to Resilience	Banks, Insurers, Asset Managers	2025	Introduces a framework to support FIs in moving beyond physical risk assessment to actively financing A&R. This is a subsequent report to the introduction of the Aim-Build-Contingency framework for decision-making in the face of uncertainty in CFRF's 2024 Mobilising Adaptation Finance to Build Resilience.
Institutional Investors Group on Climate Change (IIGCC) Climate Resilience Investment Framework (CRIF)	Asset Owners, Asset Managers	2025	A framework for asset owners and asset managers for managing physical climate risks across their portfolios, covering asset-level targets, portfolio construction, stewardship, and macro-level policy engagement, built on the Physical Climate Risk Appraisal Methodology (PCRAM). The aim is to increase A&R in the real economy through investment, engagement, and stewardship, positioning adaptation as the investor-facing complement to the Net Zero Investment Framework for mitigation.
UNEP FI Principles for Responsible Banking (PRB) Adaptation Target Setting	Banks	2023, 2025	Co-developed with 27 PRB signatory banks, this guidance provides a target-setting framework for banks seeking to embed climate adaptation into their strategies, covering physical risk assessment, client engagement, and adaptation finance mobilization across their lending and investment portfolios. It is the primary adaptation-specific framework for commercial banks, detailing a four-step process: understand context, set a baseline, set SMART targets, and develop action plans. It also provides example practice targets for internal risk management, client engagement, and adaptation finance. After piloting this framework, UNEP FI published Practical Guidance on Implementing Adaptation and Resilience for Banks in July 2025.
Net-Zero Asset Owner Alliance (NZAOA) Target-Setting Protocol (5th Edition)	Asset Owners	2026	A framework for institutional asset owners committed to achieving net-zero investment portfolios by 2050. Establishes criteria for investment targets for climate solutions, including adaptation. Signatories are required to report on investments that reduce adverse climate impacts and to ensure those investments do no significant harm to people or the environment.
Assessing Low-Carbon Transition (ACT) Finance: Banking and Investing methodologies[6]	Asset Owners, Asset Managers, Banks	2024	A framework for evaluating commercial banks', asset owners', and asset managers' alignment with a 1.5°C pathway. While mitigation-focused, its risk management modules are relevant to A&R, as the methodologies assess integration of climate risk into FIs risk governance processes and client engagement strategies. While ACT does have an adaptation methodology, it is geared toward real-economy companies rather than the financial sector. These methodologies could theoretically be applied together for an FI-specific adaptation assessment. This review excludes ACT Adaptation based on the scoping criteria.

Source: CPI; TCFD, 2017; ISSB, 2025; EFRAG, 2025; CFRF, 2025; IIGCC, 2025a; UNEP FI PRB, 2023; UNEP FI NZAOA, 2026; ACT, 2024a; ACT, 2024b

6 In this review, ACT Finance methodologies are consolidated into a single column for brevity.

Despite differences in scope and intended users, the above frameworks demonstrate significant convergence on a common set of A&R expectations. The next section identifies these areas of convergence and synthesizes them into a set of best practices for FIs.

2.2 BEST PRACTICES IN EXISTING FRAMEWORKS

FIs are rapidly maturing their A&R governance, strategy, and investment activities and disclosure, driven by a converging set of voluntary frameworks, investor alliances, and emerging regulatory expectations. The frameworks reviewed vary in their application. The TCFD framework provides the structural scaffold against which all reviewed frameworks can be assessed for areas of convergence and best practices, since they are designed to be TCFD-consistent. This and other disclosure-based frameworks (ISSB IFRS, CSRD, ESRS) often apply broadly to the private sector, while other implementation, process-based frameworks are more specific to FIs. Banks, asset owners, and asset managers have the most substantive, dedicated guidance from UNEP FI PRB, ACT Finance methodologies, CFRF, IIGCC CRIF, and the NZAOA Target-Setting Protocol (TSP). Despite variance in scope, the areas for convergence across the four pillars hold, concretizing FI A&R expectations even as implementation guidance continues to develop.

It is impractical for an FI to comply with every one of these frameworks. Rather than representing a set of cumulative requirements, this collection of guidance presents varying perspectives on a broad set of converging best practices that can inform FIs as they embed A&R in their portfolios.

CPI identified 26 best practices in the frameworks. These have been arranged under four pillars: 1) governance; 2) strategy and planning; 3) risk management; and 4) real-economy and policy engagement.[7] Alongside the framework review, CPI signals where the NZFT captures data and disclosures tracking A&R activities for FIs that are already available to inform users.

The following sections set out best practices identified for each pillar and illustrate where frameworks are converging. The mapping might not capture all best practices in this rapidly evolving space, and more specific actions may exist for certain FI types. The actions are not binary, and some have been simplified or abstracted for broader application. For instance, there are several KPIs for engagement, but CPI establishes this as one area of real-economy and policy engagement. While this review does not develop maturity scales for the identified best practices, in practice, FIs will have varying levels of ambition and implementation based on institution type and level of readiness. In addition, transparent, complete, and robust disclosure and reporting should be understood as fundamental to best practice across all pillars. Finally, this brief synthesizes and identifies best practices. For examples of how FIs are implementing A&R measures, see Section 10 in GFANZ's 2026 *Physical Risk & Climate Change Adaptation and Resilience: A Curated Guide for Financial Institutions,* GFANZ's 2026 *Investing in resilience: Lessons from private finance for unlocking investment in adaptation*, and CFRF's 2025 *From Risk to Resilience* compile case studies (see Annex 1).

7 These pillars build upon the four TCFD core elements of Governance, Strategy, Risk Management, and Metrics & Targets. To accommodate additional best practices not found in the TCFD, CPI broadened the TCFD strategy pillar to include A&R planning and finance mobilization, and metrics and targets have been absorbed under relevant pillars. CPI also added a pillar to cover engagement, which has been included in recent FI A&R frameworks and reiterated as an apparatus for enabling A&R.

2.2.1 PILLAR 1: A&R IN GOVERNANCE

Six FI governance best practices were identified, covering the internal procedures, structures, and policies to address physical climate risk and enable A&R. These become increasingly granular in newer FI A&R frameworks.

Table 2: A&R governance best practices[8]

Covered | Partially covered

Governance Action	Description	TCFD	ISSB IFRS S2	CSRD ESRS E1	CFRF	IIGCC CRIF	UNEP FI PRB	NZAOA TSP	ACT Finance	NZFT Tracked
Board- and senior-level oversight	The FI has established board-level, or equivalent highest-level, ownership and oversight of climate physical risks and opportunities.	Covered	Covered	Covered	Covered	Covered	Covered	Covered	Covered	Partially covered
Cross-functional governance	Business units across the FI, including but not limited to risk, business, and sustainability teams, are jointly responsible for A&R-related targets.	—	—	Covered	Partially covered	Covered	Covered	—	Partially covered	—
Executive/C-suite remuneration	The FI has linked executive and/or C-suite incentives and compensation to climate and A&R performance.	Partially covered	Partially covered	Covered	Partially covered	Covered	—	Partially covered	Partially covered	Partially covered
Independent third-party assurance	A&R plans and physical risk assessments have been independently verified through third-party audits to ensure credibility.	—	—	—	—	Covered	—	Partially covered	—	—
Integration of A&R plan into asset manager selection	For asset owners, A&R plans are integrated into asset manager selection, appointment, and monitoring mandates.	—	—	—	—	Covered	—	—	—	—
Capacity building	The FI is skilling and upskilling staff across the organization to implement and monitor A&R measures.	—	Partially covered	—	Covered	Covered	Covered	—	Partially covered	—

Source: CPI; TCFD, 2017; ISSB, 2025; EFRAG, 2025; CFRF, 2025; IIGCC, 2025a; UNEP FI PRB, 2023; UNEP FI NZAOA, 2026; ACT, 2024a; ACT, 2024b

8 Partial coverage is assigned when frameworks satisfy some but not all dimensions of the definition. For example, NZAOA Target-Setting Protocol partially covers governance action executive and C-suite remuneration because it requires this linkage for climate performance generally and does not specify A&R explicitly.

Governance structures for accountability in physical climate risk management are an integral and consistent feature of the assessed frameworks. TCFD (2017) introduced disclosure recommendations on board oversight of climate-related risks and opportunities, and management's role in evaluating and managing those risks. These have been reproduced in subsequent frameworks, often with greater operational detail. The ISSB IFRS and the CSRD ESRS require disclosure of governance processes for sustainability issues in general, including climate risks and opportunities. The NZAOA TSP notes board-level oversight and executive remuneration linked to climate performance as criteria for assessing investee companies' transition plans. The ACT Finance Banking and Investment methodologies assess FIs on board- and senior-level oversight of climate-related topics and expertise. While governance structures for climate risks and opportunities are well established, TCFD, IFRS, ESRS, NZAOA, and ACT frameworks do not explicitly list climate adaptation within responsibilities.

More recent, A&R-specific frameworks contain expectations for adaptation mandates to sit within broader governance structures. This indicates growing consensus that adaptation should be embedded in accountability structures. The IIGCC CRIF outlines governance actions for progressing A&R, including assigning A&R roles and responsibilities and implementing an internal monitoring system for A&R plans. The CFRF details elements of an integrated adaptation plan corresponding to transition plan disclosure elements. Governance includes embedding adaptation into institutional governance mechanisms, capacity building, and remuneration and incentives (CFRF, 2025). The CFRF (2025) also provides example governance KPIs for FIs at low, medium, and high A&R maturity, e.g., disclosure of annual updates of climate risk assessments and risk prioritization. The UNEP FI PRB Adaptation Target Setting Framework (2023) reinforces that any A&R targets, such as targets for adaptation finance mobilized or engagements with highly exposed clients, should be approved by senior management, in line with banks' governance processes, and disclosed as part of climate strategy, where relevant.

2.2.2 PILLAR 2: A&R STRATEGY AND PLANNING

In this review, strategy and planning refers to how FIs use physical risk evidence to set ambition, develop A&R plans, allocate capital, and shape business strategy. This pillar comprises the largest subset of best practices, highlighting the development of FI A&R frameworks toward proactive physical risk management and adaptation to build resilience.

Overall, the framework review reveals strong guidance on risk identification and disclosure. The most advanced frameworks treat physical risk as a strategic input that shapes capital allocation, product development, and engagement. Table 3 identifies eight best practices across the reviewed frameworks.

Table 3: A&R strategy and planning best practices

Covered | Partially covered

Strategy and Planning Action	Description	TCFD	ISSB IFRS S2	CSRD ESRS E1	CFRF	IIGCC CRIF	UNEP FI PRB	NZAOA TSP	ACT Finance	NZFT Tracked
Identification & classification of physical climate risks	Physical climate risks are identified and classified (acute versus chronic) over short-, medium-, long-term time horizons.	Covered	Covered	Covered	Covered	Covered	Covered	—	Covered	Covered
Analysis of climate scenarios	The FI has conducted climate scenario analysis for physical risks.	Covered	Covered	Covered	Covered	Covered	Covered	—	Covered	Covered
Development and disclosure of A&R plan	The FI has developed and disclosed an A&R Plan or A&R-inclusive transition plan, and it has committed to periodically reviewing the plan.	—	Partially covered	Covered	Covered	Covered	Covered	—	—	—
Link between physical risk findings and financial planning	The FI explicitly links physical risk insights, and the quantification of financial impacts from physical risk, to financial planning and capital allocation decisions.	Covered	Covered	Covered	Covered	Covered	Covered	—	Partially covered	Covered
Integration of A&R into investment strategy	The FI integrates A&R solutions into investment strategy as a positive opportunity, as opposed to only risk reduction.	—	—	—	Covered	Covered	Covered	Covered	—	Partially covered
Adaptation finance mobilization and investment targets	Taxonomy-aligned adaptation finance mobilization and investment metrics and targets capture the A&R opportunity i.e., capital allocated for adaptation solutions.	—	Partially covered	Covered	Covered	Covered	Covered	Partially covered	Partially covered	Partially covered
Development of adaptation-focused financial products and services	The FI develops and offers adaptation-focused financial products (e.g., resilience bonds) and services (e.g., ESG advisory, climate scenario analysis, and transition planning support) to clients and counterparties. Services and products can be an outcome as well as tools for engagement.	—	—	—	Covered	Covered	Covered	—	—	—
Identification of EMDE physical risk interdependencies	The FI identifies EMDE physical risk interdependencies with developed-economy portfolios and addresses these in strategy e.g., supply chain disruption, sovereign debt stress, and stranded-asset risk in EMDE markets.	—	—	—	Covered	Covered	Covered	—	—	—

Source: CPI; TCFD, 2017; ISSB, 2025; EFRAG, 2025; CFRF, 2025; IIGCC, 2025a; UNEP FI PRB, 2023; UNEP FI NZAOA, 2026; ACT, 2024a; ACT, 2024b

Physical climate risk assessment and the use of related scenario analysis are consistently recommended across frameworks. The TCFD recommends that organizations describe the resilience of their strategy under climate scenarios, including high-physical risk pathways. The IFRS S2 builds on this foundation to require disclosure of anticipated financial effects of physical risks across short-, medium-, and long-term time horizons. ESRS E1 DR E1-2 goes further to specify that at least one high-emission scenario must be applied when physical climate risks are assessed. The CFRF, IIGCC CRIF, UNEP FI PRB, and ACT methodologies include these requirements, reflecting sector consensus that they form the minimum credible baseline for climate strategy. Frameworks do not specify the scenario methodologies to be used, complicating the comparability of results across FIs. The NZAOA TSP, while not a physical climate risk-related framework, posits net-zero target-setting and decarbonization as integral to managing climate-related risk (2026).

Recent frameworks have moved beyond disclosure toward recommendations on integrating physical climate risk into core business strategy and financial decision-making, advancing resilience across FI operations. The CFRF's four-step process of 1) identify risks, 2) set ambition, 3) plan actions, and 4) implement, provides a path for embedding adaptation alongside decarbonization in institutional strategy. ESRS E1 DR E1-3 requires disclosure of how adaptation actions contribute to the resilience of an institution's strategy and business model. After the regulation takes effect in 2027, it will be clearer whether the requirement is specific and robust enough to prompt FIs to make high-quality disclosures on A&R processes. IIGCC CRIF reinforces ESRS E1 DR E1-3 through its A&R plan recommendation, which is integral to the framework's governance and strategy pillar.

While increasingly recognized as strategic tools for mitigating physical climate risks, A&R plans remain scarce (CDP, 2026). While 50% of 544 CDP-disclosing FIs and 272 out of 1,500 NZFT-assessed FIs representing USD 99.5 trillion in AUM/O have publicly available climate transition plans, these plans primarily address mitigation risks rather than physical risks and adaptation (CDP, 2025a; CPI, 2025b; NGFS, 2025a). The CFRF (2025) supports adaptation-inclusive transition plans, and the Network for Greening the Financial System (NGFS) and the International Transition Plan Network (ITPN, formerly the Transition Plan Taskforce (TPT)) encourage integrating adaptation into transition plans (ITPN, 2024; NGFS, 2025a). The IIGCC (2025a) supports the development of a standalone A&R plan. The UNEP FI PRB (2023) also stresses the importance of A&R plans but is format-agnostic. A&R plans vary across institutions, raising questions around quality and comparability. Future guidance may build consensus around core elements of A&R plans, as has happened for transition planning guidance.

A&R planning should make an explicit connection between physical risk findings and financial planning and capital allocation decisions. Physical risk assessments tend to sit within sustainability or risk functions, but best practice suggests quantification of financial impacts associated with physical risks and systematic integration of these findings into credit underwriting, loan origination, capital adequacy planning, or investment committee processes. Integration and tracking of relevant data would enable analysis that captures real-economy A&R outcomes. Additionally, an adaptation-inclusive investment strategy and capital allocation alignment with adaptation pathways allow FIs to simultaneously mitigate risks and realize opportunities. The CFRF, IIGCC, and UNEP FI PRB propose incorporating adaptation into investment strategy and tracking associated resilience outcomes.

The reviewed frameworks all call on FIs to set quantitative A&R targets and to track the amounts of adaptation finance they mobilize. However, the ability to compare progress across FIs is limited by the absence of a common definition and parameters for adaptation finance, and by the nascency of outcome-based climate adaptation metrics that demonstrate whether interventions reduce vulnerability, expected losses, disruption, or residual risk, along with associated methodologies.

Institutional mobilization targets can support increased investment in A&R. At the portfolio level, the IIGCC (2025a) encourages investors to set targets for the share of their AUM aligned with an A&R plan, and for resource mobilization to adaptation solutions as a separate portfolio-level objective. The NZAOA TSP (2026) addresses adaptation indirectly through its climate solutions investment target category. Signatories report annually on their investments in climate solutions, including economic activities contributing to climate adaptation, in line with existing sustainability taxonomies (see Box 2).

Box 2. Taxonomy-aligned adaptation finance and safeguard standards

Taxonomy-aligned adaptation finance mobilization targets include quality and safeguard standards that ensure A&R measures do not inflict harm upon or prevent the adaptation of others. A&R activity classification can draw on taxonomies, such as the EU Taxonomy for sustainable activities and other jurisdictional taxonomies, and investment principles, such as the Global Adaptation and Resilience Investment (GARI) Working Group's Climate Resilience Investment in Solutions Principles (CRISP), to identify activities and companies that contribute to A&R (EU Commission, 2020; GARI, 2024a). For example, the EU Taxonomy requires that any economic activity making a substantial contribution to climate change adaptation must simultaneously demonstrate the Do No Significant Harm (DNSH) principle and comply with minimum social safeguards, preventing investments from being labeled as adaptation if they worsen vulnerability elsewhere (EU Commission, 2020). The ESRS E1 (2025) incorporates this by cross-referencing the taxonomy, while UNEP FI PRB (2023) builds in a parallel DNSH and Leave No One Behind (LNOB) screen for adaptation targets. This screen requires banks to assess whether adaptation measures could enhance existing vulnerabilities or inequalities, and to screen for maladaptation risks in land and water use, infrastructure siting, and project design. The IIGCC (2025a) also underscores the necessity of DNSH and other environmental and social safeguards.

The adaptation metrics landscape is rapidly evolving from disclosure to quantifying investment flows and capturing real-economy impacts. Metrics and targets can leverage various adaptation solutions definitions, taxonomies, eligible activities, and methodologies, and A&R target setting is particularly context-specific, complicating the establishment of best practices for metrics, targets, and finance mobilization. There is increasing work to measure A&R impacts, such as UNEP FI's 2025 *Adaptation and Resilience Impact Measurement Toolkit*; however, despite the expansion of A&R metrics and indicators for the financial sector, a consistent methodology for measuring adaptation finance as a distinct and comparable flow is absent across all frameworks.

UNEP FI PRB's Adaptation Target Setting framework offers the most advanced metric and target structure, spanning early-stage indicators to more sophisticated outcome-based targets. Its ten indicators (AR1–AR10), designed specifically for banks, span four categories: internal policies and processes, business opportunities and financial flows, client engagement, and resilience outcomes. The proposed "practice targets" are acknowledged as a work in progress, reinforcing that A&R metrics and targets are still evolving. The CFRF (2025) similarly organizes metrics and targets around a maturity ladder. While the framework provides examples of KPIs, the development of metrics and targets is left to FI discretion, given a lack of consensus on the methodology for selecting indicators.

Developing and introducing adaptation-focused financial products is part of strategy and planning. MSCI (2026) analyzed companies in its All Country World Index (MSCI ACWI), representing USD 96 trillion in global market capitalization, as of January 26, 2026, and found that 63% of FIs offer at least one product

related to climate hazards, with FIs acting as capital intermediaries and risk underwriters. Solutions include lending and underwriting adjusted for physical risk and resilience considerations. For example, the CFRF (2025) proposes that banks incentivize A&R by offering more attractive terms to clients based on their demonstrated improvements to creditworthiness and reductions in asset vulnerability from A&R investment. The UNEP FI PRB (2023) presents a range of financial products that could contribute to adaptation, such as sustainability-linked loans, resilience bonds, credit guarantees, and blended finance vehicles for EMDE contexts. Other A&R-related instruments include green and blue bonds, as well as debt-for-nature swaps.

Interdependencies between physical climate risks in EMDEs and developed-economy portfolios are emerging as an important factor in A&R strategy and planning. The IIGCC incorporates considerations regarding A&R investments in EMDEs throughout the framework, and the CFRF addresses these nuances in sovereign credit assessments. While not explicit in recommended actions, the UNEP FI PRB notes potential barriers to data availability, data quality, capacity, and resources for understanding and managing physical climate risks in EMDEs, and the NZAOA TSP encourages reflection on cross-border physical risk exposures.

2.2.3 PILLAR 3: PHYSICAL CLIMATE RISK MANAGEMENT

Physical climate risk assessment and management are the cornerstone of FI A&R frameworks. While strategy and planning concern the forward-looking response to physical risk information, risk management refers to the processes used to identify, assess, monitor, and manage physical climate risk and maladaptation risk across portfolios, counterparties, assets, products, and services. Table 4 outlines seven risk management best practices and their coverage across frameworks. Portfolio-level physical risk assessment is the most universally expected, while incorporating counterparties' and clients' adaptive capacity is leading-edge.

Table 4: Risk management for A&R best practices

Covered | Partially covered

Risk Management Action	Description	TCFD	ISSB IFRS S2	CSRD ESRS E1	CFRF	IIGCC CRIF	UNEP FI PRB	NZAOA TSP	ACT Finance	NZFT Tracked
Assessment of physical risk for material share of portfolio	The FI has completed physical risk assessment for material share of portfolio and discloses the proportion of the portfolio covered.	Covered	Covered	Covered	Covered	Covered	Covered	—	Covered	Covered
Assessment of asset-level risk	Where applicable, the FI has conducted asset-level risk assessments, applying a credible asset-level methodology (e.g., IIGCC PCRAM) to quantify financial impacts of physical risk and assess the case for adaptation investment.	Partially covered	Partially covered	Partially covered	Covered	Covered	Partially covered	—	—	Partially covered
Portfolio-level risk management coverage metrics and targets	Portfolio-level risk and coverage metrics and targets measure and raise ambition for the proportion of the portfolio being actively managed for physical risk.	—	Covered	Covered	Covered	Covered	Covered	—	—	Covered
Integration of physical risk into due diligence	The FI has integrated physical risk findings into its due diligence and financial products and services e.g., credit underwriting, loan origination, and collateral valuation processes.	—	—	Partially covered	Covered	—	Covered	—	Partially covered	Covered
Assessment and management of indirect exposure	The FI has assessed and managed physical risk in portfolio companies' supply and value chain, accounting for indirect exposure.	Partially covered	Partially covered	Partially covered	Covered	Covered	—	—	—	—
Incorporation of counterparties' /clients' adaptive capacity	The FI incorporates findings related to the adaptive capacity of counterparties and clients into its risk management.	—	—	—	Covered	Covered	Partially covered	—	—	—
Assessment of maladaptation risk	The FI assesses maladaptation risk, ensuring adaptation options do not increase vulnerability or lock in harm to others.	—	—	Covered	Covered	Covered	Covered	—	Partially covered	—

Source: CPI; TCFD, 2017; ISSB, 2025; EFRAG, 2025; CFRF, 2025; IIGCC, 2025a; UNEP FI PRB, 2023; UNEP FI NZAOA, 2026; ACT, 2024a; ACT, 2024b

Frameworks converge on the expectation that physical climate risk identification and assessment should be integrated into enterprise-wide risk management processes rather than treated as a separate exercise. IFRS S2 and ESRS E1 DR E1-2 operationalize the TCFD by requiring hazard screening across own operations and value chains, with ESRS E1 Application Requirement (AR) 6 specifying that screening should assess exposure and sensitivity to climate-related hazards, accounting for likelihood, magnitude, duration, and asset location. ESRS E1 DR E1-11 requests the carrying amount of assets at material physical risk before adaptation actions, and the percentage of those assets addressed by adaptation actions at the reporting date, creating a balance-sheet-level adaptation coverage ratio. The methodology used to calculate these figures must also be disclosed, including scope, assumptions, and scenario basis (EFRAG, 2025). ISSB IFRS S2 (2025) similarly requires disclosure of the percentage or amount of assets exposed to climate risk, and of those exposed, how resilient the entity's strategy and business model is to climate-related changes using scenario analysis. However, the ISSB does not require disclosure of the percentage of exposed assets addressed by adaptation actions.

Frameworks illustrate the strategic importance of risk management. The IIGCC CRIF and CFRF advise applying the Physical Climate Risk Appraisal Methodology (PCRAM) at the asset level and to quantify the financial case for adaptation investment. The IIGCC (2025a) positions PCRAM, as a "continuous process" supporting A&R governance, strategy, implementation, and engagement.

Adaptation pathways are not easily standardizable into a universal performance benchmark. Portfolio-level metrics can include the setting of asset alignment targets; share of portfolio that is managed for physical climate risks disclosed and tracked over time; and probability of default (PD) / Expected Credit Loss (ECL) adjusted to reflect the resilience benefits of adaptation.

The IIGCC CRIF takes a process-based approach, given the context-dependent nature of adaptation pathways. The framework requires investors to set a five-year asset alignment target expressed as the percentage of AUM that is 'aligning (planning)' to an adaptation pathway, as assessed through the PCRAM. It also requires an engagement threshold specifying a minimum portion of assets either assessed as 'aligned' or subject to active engagement (IIGCC, 2025a). This guidance currently applies to real estate and infrastructure assets, with plans to expand to cover sovereign bonds and corporate assets (IIGCC, 2025a).

Within banking, the CFRF and UNEP FI PRB connect physical risk assessment to credit risk, demonstrating how resilience investments reduce expected credit losses and lower probabilities of default. The UNEP FI PRB Adaptation Target Setting Framework notes that physical risk scenario analysis is increasingly required in counterparty default risk and collateral valuations in several jurisdictions. Adaptation, in this framing, is a risk mitigant with measurable financial value. Frameworks are advancing a holistic value chain risk management approach that factors in adaptive capacity of counterparties and maladaptation risk to accelerate A&R in the real economy.

2.2.4 PILLAR 4: REAL-ECONOMY AND POLICY ENGAGEMENT ON A&R

Internal risk management protocols alone are insufficient to address inherent vulnerability of financed assets, as discussed in Section 1. Real-economy client, counterparty, and policy engagement have emerged as critical mechanisms through which FIs can transform risk analysis into real-economy resilience outcomes, reducing portfolio physical risk. Table 5 outlines five real-economy and policy engagement best practices.

Table 5: A&R real-economy and policy engagement best practices

Covered | Partially covered

Engagement Action	Description	TCFD	ISSB IFRS S2	CSRD ESRS E1	CFRF	IIGCC CRIF	UNEP FI PRB	NZAOA TSP	ACT Finance	NZFT Tracked
Engagement with highly exposed clients or investees	The FI engages with counterparties in highly exposed sectors and geographies to drive physical climate risk management and disclosures.	—	—	—						
Engagement with clients or investee companies on A&R plans	The FI engages clients or investee companies on A&R planning, beyond risk disclosure. As a metric, FIs can track the percentage of clients or investee companies with A&R strategies and governance in place.	—	—	—				—	—	—
A&R engagement metrics and targets	Engagement metrics and targets are adopted by FIs in measuring engagement with clients, investees, asset managers, and policy or market stakeholders to track A&R engagement coverage and outcomes.	—	—	—					—	
Escalation strategies for A&R	In cases where engagement is not leading to changed behavior, the FI has an escalation strategy in place.	—	—	—	—					
Demonstration of A&R policy advocacy	The FI demonstrates active policy advocacy for adaptation finance enabling conditions (e.g., regulatory, fiscal, data infrastructure).	—	—	—						

Source: CPI; TCFD, 2017; ISSB, 2025; EFRAG, 2025; CFRF, 2025; IIGCC, 2025a; UNEP FI PRB, 2023; UNEP FI NZAOA, 2026; ACT, 2024a; ACT, 2024b

The CFRF, IIGCC, UNEP FI PRB, and NZAOA all reference engagement as a core component of A&R strategy, tailoring their emphases for different FI types (banks, asset managers, and asset owners). NZAOA encourages asset owners to engage asset managers on stewardship, including in relation to physical climate risks and opportunities, and to have escalation strategies with time-bound targets (UNEP FI, 2026). The UNEP FI PRB (2023) and CFRF (2025) recommend tracking the number of engagements, and the CRIF encourages engagement threshold targets for assets, establishing a minimum proportion that are subject to engagement (IIGCC, 2025a).

As engagement matures, the focus pivots from coverage to outcomes, measuring whether interactions are influencing counterparty behavior. Over time, FIs can track related outcomes such as the number of counterparties with A&R strategies in place, or they can launch escalation strategies depending on A&R progress (UNEP FI, 2023; CFRF, 2025; IIGCC, 2025a). Engagement outcomes can indicate FI influence in promoting system-wide A&R. Where assets are persistently not adapted and unadaptable, the UNEP FI PRB (2023) includes managed divestment as a last-resort risk-reduction strategy.

Engagement is a means to progress portfolio-level indicators and an area for setting metrics and targets. The CFRF, IIGCC, and UNEP FI PRB encourage setting engagement targets. The CFRF primarily recommends setting engagement targets to improve data coverage and to design and offer adaptation-focused financial products and advisory services. For assets, the IIGCC recommends an engagement threshold target where "a minimum proportion of infrastructure assets that are assessed as 'aligned' to an adaptation pathway, or are subject to engagement, increases gradually over time" (2025). The UNEP FI PRB supports targets to source information on risks and opportunities and to increase awareness among clients of A&R options (e.g., of adaptation-focused products and services). For example, a bank might disclose the number of engagements with clients with highly exposed assets, or the percent increase of clients with A&R strategies following engagement (UNEP FI PRB, 2023).

Other leading engagement practices cited by the CFRF, IIGCC, UNEP FI PRB, NZAOA, and ACT are policy advocacy and market stakeholder engagement to create an enabling environment for private adaptation finance. Frameworks are aligned on policy advocacy, with all types of FIs encouraged to influence the conditions under which adaptation finance can scale. Policy engagement is context-specific. It may involve responding to supervisory consultations or supporting the uptake of mandatory physical climate risk disclosure, cementing the disclosure precedent set by TCFD, ISSB IFRS, and CSRD ESRS. In others, it may include advocating for enabling policies, supporting the development of National Adaptation Plans, or engaging with multilateral development banks (MDBs), which may provide first-loss guarantees and blended finance to derisk private investments. **The frameworks reviewed posit engagement as a key strategic apparatus for building a resilient economy; however, it is one of the least consistently measured and disclosed pillars of FI A&R practice.**

3. TRACKING A&R PROGRESS OF FIS

Comparable, decision-useful data on FIs' implementation of best practices and outcomes for A&R can enable stakeholders to distinguish between disclosure activity and genuine resilience-building. There is also a need to identify where policy, supervisory, market, or data interventions are needed to close gaps. Following the identification of best practices frameworks in Section 2, this section turns from definition to measurement, and how we can track A&R across the financial system.

3.1 WHAT IS BEING MEASURED

This section sets out the data required to assess whether FIs are putting the actions identified in Section 2 into practice. It broadly covers two areas: 1) the extent of FIs' physical climate risk exposure, and 2) the extent and sufficiency of the response.

1. **Exposure:** Where and how assets, counterparties, portfolios, and financial systems are exposed to physical climate hazards and the potential financial consequences. This includes data on hazard location and intensity, asset vulnerability and sensitivity, financial exposure, sector and geographic concentrations, and modeled impacts on credit, market, underwriting, operational, or macro-financial risk.
2. **Response:** What real-economy actors and FIs are doing in response to identified exposure, and whether those actions are reducing vulnerability, improving resilience, or mobilizing adaptation finance. This includes data on A&R governance, plans, targets, risk management processes, client engagement, adaptation CapEx/OpEx, resilience measures implemented, adaptation-focused financial products, and evidence of changes in expected losses, insurability, credit quality, asset value, or operational continuity.

Table 6 maps the best practices identified in Section 2 to the types of data needed (exposure, response or both). For example, development of adaptation-focused financial products requires both exposure and response data, as these products may respond to existing physical climate risk exposure as well as facilitating further resilience-building activities.

Table 6: Linking data type to A&R best practices for understanding data needs

Data type: Exposure Response Both

Governance	Strategy and Planning	Risk Management	Real Economy and Policy Engagement
Board oversight of climate physical risk and opportunities and A&R planning	Identification & classification of physical climate risks	Assessment of physical risk for material share of portfolio	Engagement with highly exposed clients or investees
Cross-functional governance	Analysis of climate scenarios	Assessment of asset-level risk	Engagement with clients or investee companies on A&R plans
Executive/C-suite compensation linked to climate/A&R performance metrics	Development and disclosure of an A&R plan	Portfolio-level risk and risk management coverage metrics and targets	A&R engagement metrics and targets
Independent assurance	Physical risk findings linked to financial planning	Integration of physical risk into financial products	Adoption of escalation strategies for A&R
A&R plan integrated into asset manager selection, appointment, and monitoring mandates	Adaptation-inclusive investment strategy	Assessment and management of indirect exposure	Demonstration of policy advocacy
Capacity building	Adaptation finance mobilization and investment targets	Incorporation of counterparties' /clients' adaptive capacity	
	Development of adaptation-focused products	Assessment of maladaptation risk	
	Identification of EMDE physical risk interdependencies		

Source: CPI analysis

3.2 LEVELS OF MEASUREMENT

Because data availability, standardization, and aggregation vary by actor and by the question being addressed, we assess the ability to track A&R progress across three levels:

1. **Real-economy and asset level:** Data on financed or insured assets, companies, projects, sovereigns, facilities, and supply chains. This captures physical risk exposure, vulnerability, potential financial impacts, A&R actions, resilience investments, insurance or continuity arrangements, and evidence of reduced risk.
2. **FI level:** Aggregated data across an FI's portfolios, asset classes, sectors, geographies, and client segments. This shows where physical risks are concentrated and how the FI is responding through governance, planning, risk management, engagement, products, targets, and adaptation finance.
3. **Financial system level:** Aggregated data across FIs, jurisdictions, sectors, and finance flows. This identifies systemic physical risk concentrations and assesses whether the financial sector is managing risks, supporting real-economy resilience, and mobilizing adaptation finance at scale.

To assess exposure and risk data systematically against the three levels of observation, we propose evaluating them against a consistent set of dimensions defined in Table 7. These dimensions form the analytical lens applied throughout this chapter. Table 8 applies them to exposure data and Table 9 to response data, in each case across the three levels of observation.

Table 7: Analytical dimensions on the state of A&R exposure and response data

Dimension	Description
Analytical question	The main question that the data is intended to answer.
Unit of observation	The entity, asset, portfolio, institution, or system being assessed.
Core data inputs	The underlying information required to conduct the analysis.
Modeling layer	The methods, assumptions, or analytical steps used to transform inputs into insights.
Derived outputs	The indicators, scores, estimates, or metrics produced by the analysis.
Output data sources	The disclosures, datasets, tools, or reporting channels where outputs can be found.
Current standardization	The extent to which data and methods are comparable across actors and jurisdictions.
Main coverage gaps	The areas where data availability, quality, or consistency remains limited.
Aggregation potential	The extent to which data can be combined across assets, portfolios, institutions, or the financial system.

Source: CPI analysis

Taken together, the above dimensions show not only what each data type reveals, but also how reliably it can be compared and aggregated, which is where the central gaps in tracking A&R progress become visible.

3.3 EXPOSURE

3.3.1 REAL-ECONOMY COUNTERPARTY/ASSET LEVEL

At the real-economy counterparty and asset level, exposure data indicates where financed or insured entities are exposed to material physical climate hazards, how vulnerable they are, and what financial impacts may follow. Assessed entities may include assets, companies, borrowers, projects, sovereigns, facilities, or supply-chain nodes.

- **Core output metrics** include hazard scores, expected loss, corporate climate Value at Risk (CVaR) for debt and equity, assets at material physical risk, and the location of significant exposed assets.
- **Relevant output sources** include corporate disclosures under CDP, IFRS S2, ESRS E1 or TCFD-aligned reporting; real-asset datasets; commercial physical risk models; and catastrophe-loss databases.
- **Standardization** of metrics is moderate for broad hazard categories, geospatial exposure flags, and some asset-level physical risk scores, but lower for comparable expected-loss metrics, downscaled hazards, asset characteristics, vulnerability assumptions, adaptive capacity, damage functions, and residual-risk metrics that account for existing protections or insurance.
- **Data coverage** is strongest for listed companies, real estate, infrastructure, and data-rich jurisdictions, but remains weak for private companies, SMEs, unlisted assets, EMDE-based assets and borrowers, supply chains, non-real-estate assets, exact locations, insurance and claims data, existing physical protections, corporate credit ratings that factor in physical climate risk, and asset-level ownership structure information.
- **Aggregation** potential is high where output metrics are geocoded, quantitative, asset-specific, and linked to financial exposure, but low where outputs are qualitative, narrative-based, unverified, or produced through proprietary models with limited transparency.

3.3.2 FI LEVEL

At the FI level, exposure data aggregates asset- and counterparty-level information across institutional exposures to identify concentrations of physical climate risk and implications for credit, market, underwriting, liquidity, operational risk, and capital planning.

- **Institutional exposures** include portfolios, asset classes, business lines, sectors, geographies, and client segments.
- **Core outputs** include portfolio heatmaps, expected loss, portfolio climate Value at Risk (CVaR), Expected Credit Loss (ECL) or capital impacts, and sector or geography risk concentrations. Sources include FI annual and sustainability reports, TCFD, ISSB, ESRS and CDP financial services disclosures, PRI reporting, EBA Pillar 3 ESG disclosures, and NZFT physical risk indicators.
- **Standardization** is stronger where disclosures follow regulated or widely used templates, but weaker for vendor scores, modeled financial impacts, climate VaR, expected loss, ECL, capital impacts, damage functions, scenario assumptions, and time horizons.

- **Coverage gaps** include non-bank finance, private credit, private markets, collateral geolocation, full portfolio look-through, insurance underwriting, indirect value chain transmission, model validation, uncertainty ranges, full and robust quantification of losses across the whole portfolio beyond immediate asset exposure, and the extent to which existing adaptations are reflected in risk metrics.
- **Aggregation** is moderate for portfolio heatmaps, exposure concentrations, and physical risk assessment coverage, but lower for expected losses, capital impacts, and changes in exposure over time.

3.3.3 FINANCIAL SYSTEM LEVEL

At the financial system level, exposure data aggregates FI-level outputs to identify systemic concentrations of physical climate risk and potential transmission channels across institutions, sectors, regions, and asset classes.

- **Core outputs** include aggregate exposure indicators, system-wide stress test results, and sector or geography risk concentrations.
- **Sources** include NGFS scenarios and physical risk outputs, European Central Bank (ECB) physical risk analytical indicators, EBA Pillar 3 datasets, central bank and supervisory publications, system-wide stress tests, and aggregate FI datasets such as the NZFT.
- **Standardization** is moderate within specific supervisory, regulatory, or scenario frameworks, where templates and assumptions are defined consistently, but low globally across jurisdictions, FI types, non-banking FIs (NBFIs), private markets, asset classes, and EMDEs.
- **Coverage** gaps include cross-border exposures, harmonized identifiers, comparable loss metrics, double-counting controls for intermediated holdings, and limited modeling of how adaptation affects macro-financial exposure.
- **Aggregation** potential is strongest within a common regulatory, supervisory, or scenario framework. However, the potential weakens across jurisdictions and FI types because of differences in scope, methods, definitions, and double-counting risks.

Table 8: Dimensions of exposure data for understanding A&R progress at three levels

Dimension	Real-economy/asset	FI	Financial system
Analytical question	Which financed or insured assets, counterparties, projects, sovereigns, or supply chain are exposed to material physical hazards? What are the financial implications?	Where are physical climate risks concentrated across the FI's portfolios, business lines, sectors, geographies, and client segments, and how may they affect financial risk?	Where are physical climate risks concentrated across the financial system, and could they create systemic vulnerabilities or transmission channels?
Unit of observation	Asset, facility, company, borrower, project, sovereign, or supply chain node.	Portfolio, asset class, business line, sector, geography, client segment, or counterparty group.	Financial system, disaggregated by region, sector, asset class, and institution type.
Core data inputs	Hazard and scenario data; geolocation; asset characteristics; financial values; vulnerability, loss, insurance, and supply chain data.	Holdings, loan books, underwriting and collateral exposures; counterparty and asset location data; vendor risk estimates; scenarios; internal risk models.	Bottom-up, self-assessed FI data; supervisory, central bank, insurance, securities, and credit datasets; financial accounts; NGFS scenarios.
Modeling layer	Hazard screening, downscaling, catastrophe modeling, damage and loss estimation, business interruption modeling, and asset-level risk appraisal.	Portfolio aggregation, stress testing, PD/LGD/ECL adjustments, collateral valuation, capital or liquidity analysis, and concentration analysis.	Macro-financial stress testing, systemic risk mapping, sector and geography concentration analysis, and cross-border exposure analysis.
Derived outputs	Hazard or exposure scores; expected loss; assets at material physical risk; location of significant exposed assets.	Portfolio heatmaps; expected loss; climate VaR; ECL or capital impacts; sector, geography, or asset class risk concentrations.	Aggregate exposure indicators; system-wide stress test results; aggregate sector, geography, and institution-type risk concentrations.
Output data sources	Corporate disclosures, including CDP, ISSB, ESRS, or TCFD-aligned reporting; real-asset datasets; catastrophe-loss databases; commercial physical risk models.	FI annual and sustainability reports; TCFD, ISSB, ESRS, CDP, PRI, and EBA Pillar 3 disclosures; NZFT physical risk indicators.	NGFS physical risk outputs; ECB and EBA datasets; central bank and supervisory publications; system-wide stress tests; aggregate FI datasets such as the NZFT.
Current standardization	Moderate for broad hazard categories, geospatial exposure flags, and some asset-level scores. Lower for expected loss, vulnerability, damage functions, adaptive capacity, and residual risk metrics.	Moderate where disclosures follow common reporting templates. Lower for modeled financial impacts, climate VaR, expected loss, ECL, capital impacts, vendor scores, scenarios, and time horizons.	Moderate within specific supervisory, regulatory, or scenario exercises. Low globally across jurisdictions, FI types, asset classes, NBFIs, private markets, and EMDEs.
Main coverage gaps	Private companies, SMEs, unlisted and EMDE-based assets, exact asset locations, asset characteristics, supply chains, insurance and claims data, and existing physical protections.	Full portfolio look-through, collateral geolocation, private credit, private markets, insurance underwriting, indirect value-chain transmission, NBFIs, and existing adaptation in financed assets.	Non-bank finance, private markets, cross-border exposures, EMDE coverage, harmonized identifiers, comparable loss metrics, double-counting controls, and modeling of how adaptation affects system-wide exposure.
Aggregation potential	High where data are geocoded, quantitative, asset-specific, and linked to financial exposure. Weaker where outputs are qualitative, unverified, or based on proprietary models with limited transparency.	Moderate for portfolio heatmaps, exposure concentrations, and assessment coverage. Lower for expected loss, climate VaR, ECL, capital impacts, and changes in exposure over time due to varying assumptions and inputs.	Strongest within a common regulatory, supervisory, or scenario framework. Low-to-moderate across jurisdictions and FI types because of differences in scope, methods, definitions, and double-counting risks.

Source: CPI analysis

While exposure data can show what is at risk, response data is needed to show whether vulnerability is being reduced. For example, exposure data can show that an infrastructure asset is at risk of flooding, while response data indicate whether flood defenses, insurance coverage, or other resilience measures have altered the expected financial impact of that exposure.

3.4 RESPONSE

3.4.1 REAL-ECONOMY COUNTERPARTY/ASSET LEVEL

At the real-economy counterparty and asset level, response data asks whether financed or insured assets, companies, borrowers, projects, sovereigns, facilities, or supply chain nodes are addressing material physical climate risks, and whether those actions are reducing vulnerability, expected loss, downtime, disruption, or other adverse outcomes.

- **Core output metrics** include A&R plans or measures implemented, adaptation CapEx and OpEx, the share of exposed assets addressed, residual risk or alignment scores, reduced losses, downtime, repair or insurance costs, improved insurability, service continuity, and safeguards against maladaptation.
- **Relevant output sources** include company reports; ESRS, ISSB, TCFD or CDP disclosures; ResilienceArc; project, engineering, insurance and claims records; due diligence files; asset-level assessments; and commercial providers that include adaptation assumptions.
- **Standardization** remains low for implemented measures, costs, implementation status, maintenance, residual risk, and realized outcomes. It is improving for corporate process disclosures and taxonomy-linked CapEx or OpEx, but verified outcome metrics remain rare.
- **Data coverage** is weakest for private companies, SMEs, unlisted and EMDE-based assets, supply chains, local adaptation measures, insurance and claims data, maintenance, safeguards, and social or ecosystem resilience outcomes.
- **Aggregation** is moderate for binary indicators, taxonomy-tagged measures, and disclosed adaptation expenditure, but low where disclosures are narrative-based, unverified, or not linked to baseline and post-response risk.

3.4.2 FI LEVEL

At the FI level, response data assesses whether an FI is embedding A&R into governance, strategy, risk management, client engagement, products, covenants, mandates, underwriting, investment decisions, and capital allocation, and whether this is changing client behavior or portfolio resilience.

- **Core output metrics** include A&R governance, targets or plans, the share of portfolios assessed for physical risk, high-risk portfolio coverage, clients engaged or with A&R plans and adaptation finance mobilized.
- **Sources** include FI annual and sustainability reports, transition or A&R plans, CDP financial services questionnaires, PRI, PRB and NZAOA reporting, CPI's NZFT, WBA's Financial System Benchmark, EBA Pillar 3 ESG disclosures, and FI stewardship, lending, investment, underwriting and product records.

- **Standardization** is moderate for process-oriented indicators, such as governance, risk assessment coverage, risk management integration and high-level targets, but lower for adaptation finance, product-level data, covenants, mandates, engagement outcomes and client uptake.
- **Data coverage** gaps remain significant for adaptation finance tagging, engagement escalation, pricing and underwriting decisions, private credit, private markets, insurance underwriting, NBFIs, full portfolio look-through, and externally assured response metrics.
- **Aggregation** is strong for binary process indicators, moderate for portfolio coverage or engagement coverage, and low for client and portfolio resilience outcomes without longitudinal exposure-response data.

3.4.3 FINANCIAL SYSTEM LEVEL

At the financial system level, response data aggregates FI-level activity to assess whether the financial sector is managing physical climate risk and mobilizing A&R finance at a pace and scale consistent with the risks it faces.

- **Core output metrics** include the share of FIs with A&R governance, plans, targets, risk management processes or engagement strategies; adaptation finance by FI type, instrument, sector and region; high-risk portfolio coverage; maturity scores; finance gaps; protection gaps; and evidence of reduced systemic vulnerability.
- **Sources** include EBA Pillar 3 datasets; central bank and supervisory publications; CPI's Global Landscape of Climate Finance; CPI's NZFT; WBA's Financial System Benchmark; aggregate CDP, PRI, PRB and NZAOA reporting; taxonomy-aligned finance datasets; and relevant stress test outputs.
- **Standardization** is low globally, although stronger in regulatory datasets, taxonomies, benchmarks, or alliances that use common templates.
- **Coverage** gaps include private adaptation finance, non-bank finance, private markets, EMDE flows, comparable taxonomies, consistent adaptation finance definitions, attribution methods and double-counting controls, and outcome metrics.
- **Aggregation** is strongest within harmonized regulatory or benchmark frameworks and moderate for finance flows where definitions and double-counting controls are clear. It remains weak for measuring whether finance and FI action are reducing vulnerability across the system.

Table 9: Dimensions of A&R response data at three levels

Dimension	Real-economy/asset	FI	Financial system
Analytical question	Are exposed assets, borrowers, projects, sovereigns, or supply chain nodes acting on physical climate risks? Are those actions reducing vulnerability, losses, disruption, or residual risk?	Is the FI embedding A&R into governance, strategy, risk management, engagement, products, and capital allocation in ways that improve client and portfolio resilience?	Is the financial sector managing physical risk and mobilizing adaptation finance at scale, with evidence of reduced vulnerability rather than only disclosure or commitments?
Unit of observation	Asset, facility, company, project, borrower, sovereign, supply chain node or specific A&R measure or resilience investment.	FI, portfolio, asset class, business line, sector or geography, client segment, engagement, product, covenant, or mandate.	FI type, jurisdiction, sector, instrument, adaptation finance flow, or the financial system.
Core data inputs	Baseline exposure and vulnerability; A&R plans or measures; cost, timing, and implementation status; residual risk; continuity, insurance, claims, and safeguard information.	Portfolio and counterparty exposures; high-risk segments; client A&R information; engagement and escalation records; adaptation finance; product, covenant, taxonomy, and risk model inputs.	FI universe exposures; A&R governance, strategy, and engagement coverage; adaptation finance flows; taxonomy tags; supervisory or benchmark data; needs benchmarks; double-counting controls.
Modeling layer	Classify A&R measures, map them to relevant hazards, assess adequacy and safeguards, and compare baseline and post-response risk where possible.	Assess portfolio coverage, maturity, and alignment; classify adaptation finance; track engagement and client action; link A&R responses to pricing, credit, underwriting, or investment decisions.	Aggregate and classify FI actions and finance flows; benchmark progress against exposure and needs; distinguish process, implementation, finance, and outcome indicators; control for double-counting.
Derived outputs	A&R plans or measures implemented; adaptation CapEx or OpEx; exposed assets addressed; residual-risk or alignment indicators; evidence of avoided losses, reduced disruption, improved insurability, service continuity, or safeguards.	A&R governance, plan, or targets; portfolio assessed or managed for physical risk; high-risk exposure covered; clients engaged or with A&R plans; adaptation finance mobilized; products or terms updated; changes in risk metrics.	Share of FIs with A&R governance, plans, targets, risk management, or engagement; adaptation finance by FI type, instrument, sector, and region; high-risk coverage; maturity scores; finance or protection gaps; systemic resilience evidence.
Output data sources	Corporate disclosures; borrower questionnaires; project, engineering, insurance, claims, and due diligence records; asset-level assessments; selected commercial datasets.	FI reports; A&R or transition plans; CDP, PRI, PRB, NZAOA, NZFT, and WBA data; EBA Pillar 3 and supervisory reviews; internal lending, investment, stewardship, underwriting, and product records.	Regulatory & supervisory datasets; central bank publications; climate finance datasets; aggregate voluntary reporting; taxonomy-aligned finance datasets; stress test outputs.
Current standardization	Low overall. Process disclosure and taxonomy-linked expenditure are improving, but implementation status, maintenance, residual risk, and realized resilience outcomes remain weakly standardized.	Moderate for process indicators such as governance, risk assessment coverage, risk management integration, and targets, as well as some engagement indicators. Lower for adaptation finance, product terms, client uptake, and effectiveness metrics.	Low globally, but stronger within specific regulatory, benchmark, alliance, or taxonomy frameworks. Finance flow estimates are generally more comparable than verified resilience outcomes.
Main coverage gaps	Limited visibility on implementation measures, what they cost, how they are maintained, and whether they reduce risk. Gaps are largest for private companies, SMEs, unlisted and EMDE assets, supply chains, insurance and claims data, safeguards, and social or ecosystem outcomes.	Weak coverage of adaptation finance tagging, client uptake, escalation, product terms, pricing and underwriting decisions, capital allocation, and financed resilience outcomes. Gaps are largest in private credit, private markets, insurance underwriting, NBFIs, and full portfolio look-through.	Underreporting of private adaptation finance, NBFI and private market activity, and EMDE flows. Inconsistent taxonomies, attribution methods, double-counting controls, and outcome metrics limit system-wide conclusions.
Aggregation potential	Moderate for binary indicators, taxonomy-tagged measures, and disclosed CapEx or OpEx where they are linked to baseline and residual risk. Low for narrative, unverified, or non-comparable disclosures.	Strong for binary process indicators. Moderate for portfolio coverage, engagement coverage, and finance volumes where definitions are clear. Low for outcome-based resilience without longitudinal exposure-response data.	Strongest within harmonized regulatory, benchmark, or alliance frameworks. Moderate for well-defined finance flows, but low-to-moderate across jurisdictions and FI types, especially for measuring whether actions reduce vulnerability.

Source: CPI analysis

The main gap in the current data landscape is the ability to link exposure and response data to assess whether A&R actions are reducing risk. There is ample data for identifying where assets, portfolios, and financial systems are exposed to physical climate hazards, and there are initiatives, such as ACT, the NZFT, TPI, and WBA, cropping up to illuminate whether FIs have governance structures, risk assessments, risk management, or A&R measures in place. However, current initiatives do not capture the causal chain between a response and a measurable reduction in exposure, vulnerability, expected loss, or cost of capital. A&R outcomes are context-specific, time-lagged, and often counterfactual. Success may appear as avoided losses, preserved asset value, improved insurability, or lower credit risk rather than a single observable metric. Emerging methods for bridging the gap between exposure and response include those proposed by UNEP FI PRB (2025) for integrating exposure into financial products, Bank for International Settlements (BIS, 2025) to convert physical risk exposure into credit-risk model inputs, and Carlyle (2026) to apply an insurance-centric investment model. These approaches demonstrate the practical data chain linking baseline exposure, vulnerability and adaptive capacity, response implemented, cost and financing, and changes in resilience or risk-adjusted financial outcomes.

Studies have attempted to quantify and demonstrate the potential return on investment for adaptation: CDP analysis shows that every USD 1 spent on A&R could offer up to USD 21 in return, while J.P. Morgan research suggests a return between USD 2 and USD 43 (CDP, 2025b; J.P. Morgan, 2025). WRI estimates average returns of 20-27% for A&R investment (WRI, 2025). However, these figures are indicative rather than directly comparable or investment decision-ready estimates. Approaches vary significantly in the benefits they measure and often rely on context-specific assumptions about hazards, exposure, vulnerability, baselines and counterfactuals.

To scale A&R, the market needs evidence that adaptation works in practice. Examples include resilient infrastructure lowering insurance premiums or default probabilities, client engagement leading to adaptation CapEx, or adaptation finance improving asset value and portfolio resilience over time. Building this evidence base requires data that links baseline exposure, the response implemented, the cost of that response, and the resulting change in risk-adjusted financial outcomes. By linking exposure and response data, FIs can bolster their evidence base for avoided losses, preserved asset value, improved credit quality, and sustained investability to show the value of resilience. Creating this throughline will make A&R implementation easier to price, compare, and, most importantly, scale.

4. CONCLUSION

A&R must become a core component of FIs' climate strategies, transition planning, risk management, and capital allocation. As physical climate risks intensify, A&R is no longer a peripheral sustainability issue: it is essential to preserving portfolio value, supporting real-economy decarbonization, and identifying new climate solutions investment opportunities. Without credible action to reduce physical vulnerability, climate impacts will continue to undermine the assets, companies, infrastructure, and supply chains upon which both financial performance and the net-zero transition depend.

Expectations for FIs' A&R action are beginning to converge across leading frameworks. CPI's in-depth analysis of eight FI-specific A&R frameworks, surfaced 26 best practices across governance, strategy and planning, risk management, and real-economy and policy engagement. Leading practice is moving beyond risk identification and disclosure toward governance structures and accountability mechanisms, A&R planning, active portfolio risk management, stakeholder engagement, and adaptation finance mobilization. The most advanced frameworks treat physical climate risk as a strategic input, not only a reporting obligation.

Effective A&R implementation starts with risk assessment but must extend into financial decision-making and real-economy engagement. Risk assessment and climate scenario analysis remain essential first steps for establishing baseline awareness of material physical risks. From there, FIs can develop and implement A&R plans, either standalone or integrated into transition plans, and embed them into governance, financial planning, credit and investment decisions, client engagement, and product development. Real-economy and policy engagement has emerged as a critical lever for strengthening both portfolio and real-economy resilience, especially where internal risk management alone cannot reduce the underlying vulnerability of financed assets. However, metrics and targets remain nascent in application, and the context-specific nature of A&R outcomes complicates accurate and comparable conclusions around finance mobilized, resilience outcomes, avoided losses, or reduced vulnerability.

The central data gap is no longer only identifying physical risk but understanding whether FI responses are reducing physical climate risk exposure and the underlying vulnerability. Exposure data is improving through more sophisticated tools, scenarios, geospatial datasets, and disclosure requirements, enabling FIs to identify where physical risks are concentrated across assets, portfolios, sectors, and geographies. Response data, the data showing what FIs and their counterparties are doing in response, and whether those actions improve resilience, is still inconsistently disclosed, not systematically tracked, and difficult to aggregate. As a result, the financial sector can increasingly identify risk, but it still cannot determine with sufficient confidence whether A&R measures are reducing vulnerability, lowering expected losses, improving insurability, strengthening credit quality, or preserving asset value.

The Net Zero Finance Tracker (NZFT) is well positioned to help close this financial system-level information gap and already provides a strong foundation for expanded A&R tracking. The dashboard already captures important dimensions of FI A&R performance through indicators on climate risk strategy, climate risk management, and climate solutions investment targets. It also draws on a wide range of public and private data sources and has an established architecture for aggregating FI-level disclosure and strategy data into system-wide insights. Building on this foundation, the NZFT can expand its coverage to include adaptation-specific targets, portfolio-level resilience assessment, A&R engagement, A&R planning, and adaptation finance mobilization, enabling a more comprehensive picture of how FIs are responding to physical climate risk and supporting resilience in the real economy.

CPI plans to strengthen the NZFT's A&R lens. Reinforcing the best practices identified in Section 2 and responding to the data challenges outlined in Section 3 will strengthen accountability, comparability, and decision-useful evidence across the financial system. FIs would gain an independent, open benchmark against which to calibrate their strategies and assess performance relative to peers. Policymakers and regulators would gain a system-wide evidence base to assess whether disclosure requirements, taxonomies, supervisory expectations, and other policy signals are shaping FI behavior. Data providers would be able to identify where disclosure gaps are most acute and where expanded data collection would have the greatest impact. Civil society and accountability bodies would gain a traceable, comparable record of FI A&R commitments and implementation.

Ultimately, scaling adaptation finance requires evidence that FIs' A&R action works in practice. Linking exposure data with response data, and tracking changes over time can demonstrate avoided losses, preserved asset value, improved credit quality, and sustained investability. By expanding the NZFT to capture A&R-specific planning, engagement, finance mobilization, and resilience metrics, CPI can help build the evidence base needed to understand whether FIs are responding to risk at the pace and scale required.

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6. ANNEX

Annex 1: Full list of documents reviewed

Included in best practice assessment

Title	Type	Organization	Date	Inclusion in full analysis
Recommendations of the TCFD	Framework	FSB	2017	Included
IFRS S2 Climate-related Disclosures	Disclosure framework	ISSB	2023, 2025	Included
CSRD ESRS E1 Climate Change	Disclosure framework	EU Commission	2025	Included
From Risk to Resilience: Integrating Adaptation into Finance	Framework (includes case studies)	CFRF	2025	Included
Mobilising Adaptation Finance to Build Resilience	Framework / Guidance	CFRF	2024	Referenced as previous version of CFRF frameworks
Climate Resilience Investment Framework (CRIF)	Framework	IIGCC	2025	Included
The Physical Climate Risk Appraisal Methodology 2.0 (PCRAM)	Methodology	IIGCC	2025	Referenced as methodology underpinning the CRIF
Climate Adaptation Target Setting	Framework	UNEP FI PRB	2023	Included
Practical Guidance on Implementing Adaptation and Resilience for Banks	Guidance (case studies)	UNEP FI PRB	2025	Referenced as an iteration of the 2023 framework
NZAOA Target-Setting Protocol Fifth Edition	Framework	UNEP FI NZAOA	2026	Included
Addressing Climate Impacts: An overview of NZAOA asset owners' long-term interests and responsibilities	Guidance	UNEP FI NZAOA	2025	Excluded
ACT Finance – Banking	Assessment Methodology	ACT	2024	Included (combined with ACT Finance – Investing)
ACT Finance – Investing	Assessment Methodology	ACT	2024	Included (combined with ACT Finance – Banking)
ACT Adaptation	Assessment Methodology	ACT	2023	Referenced as a potentially complementary framework to ACT Finance
Joint Methodology for Tracking: Climate Change Adaptation Finance	MDB / DFI Framework	ADB	2023	Excluded
EU taxonomy for sustainable activities	Taxonomy	EU Commission	2020	Excluded
Adaptation & Resilience Taxonomy	Taxonomy	Tailwind Futures	2024	Excluded
ASEAN Taxonomy for Sustainable Finance	Taxonomy	ASEAN Taxonomy Board	2024	Excluded
Climate Bonds Resilience Taxonomy v1 and Resilience Criteria	Taxonomy	CBI	2026	Excluded
Climate Resilience Investments in Solutions Principles (CRISP)	Investment Principles	GARI	2024	Excluded
Building Climate-ready Transition Plans: Including adaptation and resilience for comprehensive transition planning approaches	Primer	ITPN	2024	Referenced but excluded from review

Title	Type	Organization	Date	Inclusion in full analysis
An Introduction to Responsible Investment: Climate Adaptation and Resilience	Guidance	PRI	2025	Excluded
Conceptual Note on Adaptation	Technical note	NGFS	2024	Excluded
Integrating adaptation and resilience into transition plans	Input paper	NGFS	2025	Referenced but excluded from review
Climate Adaptation Investment Framework	Framework (for governments)	OECD	2024	Excluded
Investing in Tomorrow: A Guide to Building Climate-Resilient Investment Portfolios	Guidance	CISL	2025	Excluded
Physical Risk & Climate Change Adaptation and Resilience: A Curated Guide for Financial Institutions	Guidance; Case studies	GFANZ	2026	Excluded
Investing in resilience: Lessons from private finance for unlocking investment in adaptation	Case studies	GFANZ	2026	Excluded
Reporting on Climate Transition Plans	Technical note	CDP	2026	Excluded
Adaptation & Resilience Impact: A measurement framework for investors	MDB / DFI Guidance	UNEP FI	2024	Excluded
Physical Climate Risk Assessment and Management An investor playbook	MDB /DFI Guidance	UNEP FI	2024	Excluded
Adaptation and Resilience Impact Measurement Toolkit: A Practical Framework for Financial Institutions	Toolkit (Metrics)	UNEP FI	2026	Excluded
Aligning Finance with Adaptation and Resilience Goals: Targets and Metrics for Financial Institutions	Technical note (Metrics)	University of Oxford; CGFI	2023	Excluded
Investor Stewardship for Climate Resilience Sourcebook	Guidance (Engagement and stewardship)	Cadlas	2025	Excluded
Assessing Climate Risk, Framing Resilience, and Reporting Impact: A Guide for Climate Finance Practitioners	Guidance (Investment vehicle design)	CPI	2026	Excluded
Recommendations of the Task Force on Nature-related Financial Disclosures	Voluntary Disclosure Framework	TNFD	2023	Excluded
Beyond Risk to Building Resilience: Investor Expectations of Companies on Physical Risk Management and Resilience	Investor Expectations (for real-economy companies)	Investor Group on Climate Change (IGCC)	2025	Excluded