

## **Anticipate, Absorb, Reshape (A2R): A Baseline Study of Climate Resilience in Developing Countries**

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### **Abstract**

The United Nations Climate Resilience Initiative: Anticipate, Absorb, Reshape (A2R) is a global, UN-led, multi-stakeholder initiative that strengthens climate resilience for vulnerable countries and people. A2R addresses the urgent needs of Least Developed Countries (LDCs), Small Island Developing States (SIDS), Africa and other vulnerable regions. The initiative accelerates action on key aspects of climate resilience under its three pillars: 1) Anticipate – Increased capacity to better anticipate and act on climate hazards and stresses through early warning and early action; 2) Absorb – Increased capacity to absorb shocks by increasing access to climate risk insurance and social protection systems; and 3) Reshape – Increased capacity to reshape development pathways by transforming economies to reduce risks and root causes of vulnerabilities and support the sound management of physical infrastructure and ecosystems to foster climate resilience. This report outlines the current status of key indicators relevant to the three pillars. It also identifies some of the challenges faced in this analysis and suggests ways of overcoming them, so that we may, in the future, be able to provide a fuller picture of progress on these three key capacities for climate resilience.

## **I. Introduction & Project Overview**

The United Nations Climate Resilience Initiative: Anticipate, Absorb, Reshape (A2R) is a global, UN-led, multi-stakeholder initiative that strengthens climate resilience for vulnerable countries and people. Launched in November 2015 during the 21st Conference of Parties of the UN Framework Convention on Climate Change in Paris, this initiative brings together governments, international agencies, regional initiatives, the private sector, civil society, and academia. A2R addresses the urgent needs of Least Developed Countries (LDCs), Small Island Developing States (SIDS), African nations, and other vulnerable regions.

The initiative accelerates action on key aspects of climate resilience according to three pillars:

- **Anticipate** – Increased capacity to better anticipate and act on climate hazards and stresses through early warning and early action.
- **Absorb** – Increased capacity to absorb shocks by increasing access to climate risk insurance and social protection systems.
- **Reshape** – Increased capacity to reshape development pathways by transforming economies to reduce risks and root causes of vulnerabilities and support the sound management of physical infrastructure and ecosystems to foster climate resilience.

One of the A2R Initiative's functions is to analyze progress in these three areas in light of previously stipulated global goals and targets, including those set out in the 2030 Sustainable Development Agenda, the United Nations Framework Convention for Climate Change (UNFCCC), and the Sendai Framework for Disaster Risk Reduction.

This report is a first attempt to establish baseline data that provide a brief glimpse into contemporary national resiliency efforts. A2R is expected to periodically re-assess progress, thereby identifying both where gains have been significant and where additional support might be focused. The article outlines the current conditions of key indicators relevant to the three pillars. It also identifies some of the challenges faced in this analysis and suggests ways of overcoming them so that we may, in the future, conduct a more comprehensive study of progress on climate resilience. This study will also inform the A2R Initiative in bringing partners together to fill vital gaps in climate resilience action.

The report begins with an explanation of our methodology and is organized by the three pillars of A2R. In each section, an overview provides a framework for analysis and a research summary highlights specific challenges encountered during the investigation. We then present our findings and a discussion of data gaps. Appendix A charts our complete findings.

## **II. Methods**

Drawing heavily from research and reporting of intergovernmental processes, this research focused on data sources relevant to climate resilience policy. With guidance

from the A2R Leadership Group, we identified existing datasets that were available for at least two-thirds of the 114 countries studied. The countries selected for analysis were chosen specifically to cover LDCs, SIDS, and African countries (see Appendix B). Given our objective of quantifying information across 114 countries, we chose indicators that provided binary or multiple-choice responses. Thus, the scope of this research was limited to data that provided a snapshot of baseline conditions and does not paint a fuller, more nuanced portrait. Overwhelmingly, available data was found in the disaster risk reduction literature, and while this information offers important insights into climate resilience it does not adequately capture slow-onset elements such as drought and sea-level rise.

Criteria and indicators were developed to combine datasets from varied sources and present a more complete representation (see Appendix A). Each pillar contains two to four criteria, selected both to highlight essential components of desired actions toward improved resilience and to reflect existing international efforts. To assess progress, we identified two to five indicators; see Appendix A for summary of criteria and indicators used. Where possible, indicators draw on data from disparate sources or from different sections within a given source.

Three fundamental methodological challenges were apparent throughout the research process. First, key terms like “early warning – early action systems” and “climate resilient development pathways” are used widely but without a clear, shared definition. In the absence of agreed parameters, organizations have interpreted the terms differently. Consequently, data that appears similar but comes from different sources may offer conflicting results. We have attempted to combine data from different sources for each criterion to minimize this effect.

Second, data is not available for many of our desired indicators. Even where data has been gathered on a metric of interest, we find persistent gaps. For example, of the countries studied, the 14 that are not independent sovereign nations<sup>1</sup> often lack data. We have included them in our total because the United Nations (UN) system recognizes them in its disaster risk reduction programs.

Third, much of the existing data is self-reported. Countries are accountable to a range of international organizations for a myriad of tracking requests, but response rates vary widely, and independent verification of the data is uneven.

An additional challenge arises from the lack of Sex and Age Disaggregated Data (SADD). Practitioners note that any effort made to enhance climate resilience must address existing gender inequities before, during, and after a climate-related disaster. With an overwhelming majority of male expert disaster management staff, women are likely at a disadvantage even in the planning stage. These asymmetries continue through the disaster phase and into recovery (Fordham, 2011). When a hazardous event occurs, women are more likely to suffer, slower to recover, and less likely to build long-term resilience. With such a significant proportion of populations thus at a disadvantage, these patterns will be reflected in the crisis impact, rate of recovery, and level of resilience of the whole community. Integrating a gender perspective into all disaster management policies, plans, and decision-making processes is essential

(UNISDR, 2011). We have been unable to provide disaggregated data for the indicators used here and understand that to be a weakness in our conclusions.

During each stage of research, we have been cognizant of separating inputs, outputs, and outcomes. Inputs generally refer to resources such as human capital, funding, and equipment. In the policy sphere, some consider frameworks like enabling legislation to be an input, as the collection of these resources sets the stage for action to occur. For example, inputs may include funding to develop an early warning system and the assignment of staff. Outputs are the direct and immediate deliverables associated with the implementation of policy or the deployment of resources toward a concrete aim. Continuing the previous example, outputs might include new technology that is designed to facilitate improved outreach to vulnerable communities. Outcomes refer to the relative success of results. If new early warning technology fails to operate prior to a climate event or does not succeed in reaching more individuals, then those outcomes indicate low effectiveness and are critical factors to consider when assessing a country's progress. Throughout the research conducted, we have sought to include data for all three dimensions. Unsurprisingly, measuring effectiveness – outcomes – is consistently the most challenging to quantify. Part of the difficulty in capturing effectiveness is related to mis-matched time frames. Short-term inputs and outputs may contribute to longer-term process-related outcomes, but those connections are not always apparent. This research therefore has identified the existence (or lack) of various elements relevant to climate resilience across countries of interest, but much less can definitively be said about the relative effectiveness of those elements.

### **III. Pillar 1: Anticipate**

#### **A. Overview**

The Anticipate pillar centers on accelerating action that establishes and strengthens early warning-early action systems that address climate risks, such as floods and storms.

With a focus on enhanced preparedness and early response to the increased vulnerabilities and risks associated with climate change, this pillar reflects the fundamental need to safeguard vulnerable communities and ensure that countries have the capacity to implement effective multi-hazard early warning and early action programs. Analysis of this pillar aims to capture the baseline scope and comprehensiveness of early warning and early action systems, along with their potential effectiveness at reducing the impact of climate-related disasters.

#### **B. Research**

Research on early warning-early action systems faces several challenges. First and most generally, there is little global information on scope, implementation, and effectiveness of national early warning systems, apart from what is self-reported by countries under the Hyogo Framework for Action (HFA). Second, there is also a diversity of early warning system approaches, which can limit comparability. The term *early action* is complex, spanning a range of activities and approaches at different timescales. For example, the International Federation of Red Cross and Red

Crescent Societies considers early action to encompass wide-ranging strategies including addressing systemic vulnerabilities like poverty, improving building codes to reduce disaster risks, and providing near-term responses to impending cyclones and floods (IFRC, 2009). In this report, we have not assessed all of these elements in this pillar; some are captured in assessments of the other two pillars, and some are difficult to track using existing sources. Lastly, assessing the effectiveness of early warning-early action systems can be complicated by the reality that a reduction in climate-related impacts does not necessarily indicate system effectiveness. It may, for example, indicate fewer flooding events in a given timeframe, or storm surges that hit relatively unpopulated areas.

### C. Findings

Results suggest that countries face challenges when implementing comprehensive early warning systems. The first criterion captures indicators for one critical input: whether countries have a comprehensive early warning system. At the national level, only 2 out of 81 countries with available data report that integrated early warning systems are in place for all major hazards, although 77 suggest they have made some progress toward that goal. More countries (45) report a multi-hazard risk assessment with common methodology to inform planning and development decisions. With all 114 countries reporting on the third indicator, we found only 31 having declared a national platform for Disaster Risk Reduction. However, 57 out of 81 countries report participating in regional or sub-regional early warning programs, suggesting that engagement and coordination across countries is a promising development.

The second criteria – assessing whether early warning systems are people-centered – relies on information from the HFA Reports and therefore only has data for 81 nations. Many of those countries (58) report that their early warning programs account for the most vulnerable populations, and an additional 11 describe some limited progress toward that aim. Similarly, 57 countries have systems in place that consider local or traditional knowledge, with an additional 5 showing progress. 51 countries, nearly half of the total included as part of this study, report either that “gender concerns inform policy and program conceptualization and implementation in a meaningful and appropriate way” or that, for the 2007–2009 and 2009–2011 reporting periods, gender perspectives on risk reduction and recovery have been adopted and institutionalized. However, narrative descriptions of progress around gender integration provided by countries vary widely, suggesting that there are still significant gaps which binary “yes/no” self-reporting may fail to capture. Finally, 52 countries report that disaster information is disseminated through multiple, appropriate channels. These elements reflect progress on inputs and outputs but reveal little about longer-term outcomes.

Data collected for the third criteria show that many countries do not yet operate comprehensive early action systems. Communication and education about disaster risks are an essential part of ensuring that communities and individuals are made aware of hazards and can respond effectively. 65 countries report that public education campaigns for risk-prone communities and local authorities include disaster risk, or that (in the case of 2007–2009 reports) countrywide public awareness strategies exist to stimulate a culture of disaster resilience with outreach to urban and

rural communities. While this suggests a relatively high level of communication, public education targeted at risk-prone communities represents a somewhat basic early action threshold, indicating that greater efforts should be made. Regarding the incorporation of climate risks into disaster management, which may signal the inclusion of proactive early action systems alongside traditional disaster management, only 30 countries report that potential risk scenarios consider climate change projections. Relatively low affirmative responses suggest that climate risk is still underrepresented in disaster management.

The final criteria for this pillar seeks to capture outcomes by measuring the effectiveness of early warning – early action systems. 57 countries report that their warnings are timely and reach at-risk populations. Beyond self-reporting, three additional indicators assess changes in damage and deaths for climate related disasters from 1995-2004. With data for only 75 countries, 42 saw decreased damage during that span. Of the 95 countries with data, 50 show fewer people killed and 40 saw fewer people reported affected by those disasters. These data are far from conclusive and do not provide insight into the frequency of disasters during these years, a factor that would influence results.

#### **D. Data gaps**

There are a number of critical data gaps that limit this baseline assessment. Of particular importance is that data sources on early warning-early action with specific attention to climate hazards are extremely limited. As the HFA national reports focus on disaster risk reduction generally, distinguishing between actions specific to climate-related hazards and those related to other general (and non-climate) hazards is problematic. Moreover, responsiveness is a limiting factor. Out of a total of 114 countries, 81 submitted reports under the HFA, leaving 33 countries with no available data. Given the importance of the information collected in these reports to the conclusions we present here, it is important to note that more complete information may lead to different findings. Furthermore, although the HFA reports provide helpful data, they are self-reported, and questions in the reporting template are often open to interpretation.

Data is similarly limited for evaluating the effectiveness of early warning-early action systems. While disaster impact sources such as the EM-DAT database are often thorough and accessible, causally linking impacts to the scope and comprehensiveness of early warning-early action systems is problematic. A decrease in mortality, affected populations, or financial costs may indicate that systems are improving and effective at reducing risks, or simply that the period saw fewer or less damaging natural events. Improved data may come from upcoming renditions of reporting under the Sendai Framework for Disaster Risk Reduction, although those will not resolve the challenges of self-reporting. As more countries participate in regional efforts, aggregated third party data may also improve. Despite these limitations, preliminary data gathered in this baseline study illustrates opportunities for countries to build resilience through improved early warning-early action systems.

## **IV. Pillar 2: Absorb**

### **A. Overview**

Climate change impacts have resulted in significant financial losses to countries, adversely impacting lives and productive assets. Swiss Re (2013), a leading international insurance entity, has estimated that global disasters caused approximately USD 126 billion in insured losses in 2011 and USD 186 billion in 2012. It is important to note that these totals do not distinguish natural catastrophes from man-made disasters and do not identify how much of that amount is attributable to climate change. Still, the costs to the insurance industry are significant and rising, and those increases are at least in part related to climate change. The relative ability of a country to absorb these shocks is an essential component of overall climate resilience. Two dimensions of this pillar inform the data collected in this section: climate risk transfer pools and broader social protection mechanisms.

Risk transfer as understood here is a process through which the burden of financial loss or responsibility for risk financing is shifted to another entity given an extreme climate event. By aggregating individual country processes into risk transfer pools, those countries can spread their risks geographically and access insurance on better terms from a larger pool. Climate risk insurance is broadly divisible into direct and indirect insurance. Direct insurance schemes help vulnerable people reduce disaster-related setbacks, such as using savings and taking children out of school, in the face of unexpected climate extremes. Indirect insurance schemes provide country payouts after an event, often in addition to providing technical support that identifies and prices risks, building risk management into national planning, and contributing to contingency plans that protect the poor (MCII, 2015).

Climate risk transfer tools assist vulnerable countries and communities by providing them with financial leverage to cope with losses from climate change. While these tools play an important role for susceptible communities in the event of a specific, time-limited, and localized loss, there are important limits. Risk pooled insurance schemes are not appropriate or feasible for insuring against high frequency or slow onset risks like sea-level rise or desertification since these processes occur with high certainty and impact large areas. On-going work suggests that risk transfer tools could be expanded to include a wider range of impacts. For example, the African Risk Capacity Insurance Company has expanded its scope to apply to long-term droughts (Durand, 2016).

While insurance schemes can go a long way toward improving community, there is also widespread agreement among practitioners that social protection mechanisms more broadly are also critical for building capacity to absorb shocks. Beyond traditional safety nets, social protection mechanisms encompass initiatives that protect the vulnerable against risks to their livelihood. These might include wealth transfer mechanisms and enhanced legal rights for marginalized groups (World Bank, 2011). For example, some countries provide support for families in the case of maternity, disability, or injury. Others have tax-supported programs that ensure a fundamental level of income security for all residents. So intertwined are these tools with climate resilience that many international aid organizations now frame their

work as the integration of social protection, climate change adaptation, and disaster risk reduction efforts. Addressing only one in isolation is not likely to be as effective as a synergistic approach.

## **B. Research**

Information on climate risk insurance availability, coverage, and reach is relatively accessible, although effectiveness is more difficult to assess since it is challenging to monitor how indirect climate related insurance payouts are utilized. According to InsuResilience, a G7 climate risk insurance initiative, market research and expert opinion on global insurance penetration suggest that only about 100 million people of the poor and vulnerable in Africa, Asia, and Latin America are covered by direct (55 million) or indirect (45 million) insurance schemes against climate risks (GIZ & KfW Development Bank, 2015). As this information could not be accessed in a format that disaggregates by country, it could not be included as a data source for analysis. It does, however, provide contextual information for establishing a baseline of climate risk insurance coverage. The World Bank Financial Inclusion Database (World Bank, 2011) provides a further data source. According to this data, only 6.2% of farming, fishing or forestry workers worldwide have purchased crop, rainfall, or livestock insurance. In sub-Saharan Africa the coverage is 6.5%, while in developing East Asian and Pacific countries it is 6.4% and in South Asia 5.7%.

Social protection programs include a wide range of national efforts to improve health, broaden access to education, reduce poverty, protect residents from losses, enhance food security, address inequalities, and implement other such policies. In the context of the A2R initiative, it is challenging to definitively connect the entirety of these programs with climate resilience. Instead, we looked at two variables from the World Bank ASPIRE portal, which uses officially recognized national household surveys from 120 countries to better understand levels of participation (inputs) and measure effectiveness (outcomes): (1) Do at least 50% of the country's most vulnerable population participate in social protection programs? and (2) What is the percentage reduction in poverty levels as a result of targeted social protection programs? These data were selected to assess both the reach and impact of social protection schemes as a proxy for better understanding adaptive capacity.

## **C. Findings**

Results show that insurance markets to reduce climate change risks are still nascent. The first criterion is whether climate insurance schemes cover a wide range of assets, and data suggests there is only limited progress. Only 40 countries report the option to insure crop and property against climate impacts. Micro-insurance schemes exist but are not prevalent, with only 34 countries reporting access. Catastrophe bond options are even less common, in part because they are often only available to institutional investors. Only 11 countries report their use. The scarcity of these bonds is likely due in part to their higher fixed costs and institutional complexity. Only countries with strong financial market structures and stable policy frameworks can offer them.

The second measure explores whether climate insurance schemes are accessible at multiple levels. Data show that reinsurance facilities are in place in only 32 countries,



highlighting a relatively weak link between local, national, and international climate insurance pools. Africa and the Caribbean appear to be the only two regions in this study that have a large-scale regional insurance pool in place. The Africa Risk Capacity initiative (ARC) and the Caribbean Catastrophic Risk Insurance Facility (CCRIF) are the two most prominent examples. Of 54 total African nations, 32 have signed the Establishment Agreement for participation in ARC. 17 Caribbean countries have joined the CCRIF. A pilot project through the smaller Pacific Catastrophe Risk Assessment and Financing Initiative has provided risk-pooling support to five Pacific Island countries (PCRAFI, 2013). Through these various institutions, 48 of our countries of interest are part of a regional pool. One advantage of regional insurance pools is that they allow individual countries to access collective reserves in addition to their own; however, these examples demonstrate that even in areas with growing institutional attention to risk reduction through insurance, not all countries have benefited. Arrangements between some of the countries of interest and multilateral development banks have also begun and may help address these gaps as they continue to mature.

Social protection mechanisms are found to have limited reach in the countries of interest. Only 12 report that more than 50% of their most vulnerable population participates in social protection mechanisms. It is worth noting that countries report a wide range of participation, from Botswana with 91.6% of the most vulnerable participating in social protection programs, to Laos reporting only 0.3%. One explanation for this might be that different countries have varying participation terms for their social protection programs. Similarly, countries offer variable estimates of the percent reduction in poverty levels that can be attributed to social protection programs. See Appendix A for more detailed data.

#### **D. Data gaps**

As with the first pillar, research in this section was hampered by data gaps in HFA reporting. Similarly, the World Bank's ASPIRE platform also has a widespread pattern of non-reporting, with only between 47-60 countries reporting on data of interest. Multilateral development banks have not released comprehensive summary data on participation in their insurance programs to date, and private institutions may be unlikely to do so. If the role of private insurance mechanisms increases over time, there may be new opportunities to incentivize the publication of datasets.

Data on social protection efforts are more available but not directly tied to climate resilience. For the purposes of this study, we chose to access only macro-scale data to capture participation levels and poverty reduction. Future research might dig more deeply into the connections between individual indicators of social protection and broader climate resilience capacity.

### **V. Pillar 3: Reshape**

#### **A. Overview**

The third pillar of A2R, Reshape, focuses on national efforts to adopt climate-resilient development pathways. The creation of a climate-resilient pathway is a

process that often includes reforming institutions to better manage change within complex socio-economic systems. These changes may be incremental or transformational and should align with broader efforts to integrate sustainable development into national priorities. With both planning and financial dimensions, reshaping development here means integrating climate resilience into building and zoning codes, shifting funding priorities, updating national planning strategies, and building partnerships with the private sector. For this pillar, it is especially important to separate inputs, such as new funding, from outputs, such as the implementation of stated funding priorities. Even more critical is moving beyond outputs to outcomes, where the effectiveness of those measures can be assessed. Given the significant data gaps encountered, we have primarily focused our analysis on inputs and policy outputs.

National planning for climate resilience varies widely in reach and scope. The existence of a national climate resiliency development plan or the inclusion of climate change as part of an existing national development plan may reveal little about a country's progress toward implementation but does indicate that it has begun to incorporate climate resilience into its planning process. Scope and effectiveness is especially difficult to quantify. In certain cases, even detailed plans may not be well implemented due to limitations in capacity.

Evaluating national budget allocations to climate resilience is similarly challenging, in part because climate finance reporting can vary significantly based on key methodological questions including how to count, weigh, analyze, and differentiate line items. Additionally, because many resilience measures are implemented locally, reports on national budget allocations may be limited in their ability to assess impacts on individual communities and residents. Ultimately, reshaping development pathways means investing in adaptive capacity on multiple scales.

## **B. Research**

Under the UNFCCC's 2015 Paris Agreement, of the 114 countries of interest, 59 submitted Nationally Determined Contributions (NDC) by January 2017, and 95% of those NDCs included an adaptation component (UNFCCC, 2016). Designed as a complement to the broader NDCs, the National Adaptation Plan (NAP) process was created by the UNFCCC to enable developing countries to identify medium- and long-term adaptation needs and generate related strategies. NAPs are intended as national documents, endorsed and approved by an appropriate national body. To date, NAPs have only been submitted by three countries of interest; therefore, individual country development plans were found through Internet searches.

## **C. Findings**

The first criterion is whether climate resilience is incorporated into national development and contains both finance and planning indicators. Of the 66 countries with accessible national development plans, 49 have incorporated climate change, although the implementation and effectiveness of these measures remains unknown. An additional 7 countries' plans incorporate climate change to a limited extent, and 10 do not include it at all. Some development plans dedicate entire chapters to climate, and others only note the need for climate change to be considered in future

planning efforts. Despite this range, the widespread inclusion of climate change in national development plans indicates a positive trend as countries begin to normalize planning for global warming. We were able to locate reports detailing climate-related public-sector expenditures for only 12 countries. With such limited data, no analysis of overarching trends was conducted.

Research on policy development was more fruitful, and the second criterion relied on data from HFA reports to indicate whether national policies and regulations contribute to furthering climate resilience. Data revealed that of 76 countries with available data, 58 report the use of integrated planning in which elements of climate resilience capacity are included. Half of the 66 countries with available data point to their use of risk sensitive regulation in land zoning and private real estate development. Even more – 60 out of 76 – report that that impacts of disaster risk are taken into account in Environmental Impact Assessments. 56 nations report that impacts of disaster risk created by major development projects are assessed, while 39 of 65 countries report that costs and benefits of disaster risk are considered in the design and operation of major development projects. Indicators encompass all forms of disaster risk, including non-climate disasters. These data capture baseline inputs and outputs, but do not reveal outcomes. For example, a country that has high marks on all four indicators profiled here may still find that despite thoughtful planning and zoning, their infrastructure does not survive a catastrophic climate-related disaster. More research is needed to assess whether existing tools are effective in promoting climate resilience.

#### **D. Data gaps**

Without detailed climate change expenditure data for the majority of countries, it is impossible to know to what extent countries are funding inputs that might then become meaningful outputs and outcomes. But new research is underway. The United Nations Development Program is facilitating detailed Climate Public Expenditure and Institutional Review (CPEIR) studies, and those have been completed in 17 countries so far. A consortium of non-governmental organizations including the Overseas Development Institute, Oxfam, and the World Resources Institute have partnered with civil society groups in four pilot countries – Nepal, Uganda, Zambia, and the Philippines – to launch the Adaptation Finance Accountability Initiative (AFAI). AFAI aims to create frameworks for tracking national climate finance in developing countries.

### **VI. Conclusions**

Capacity limitations may result from insufficient public funds, weak institutions, and dispersed populations. These factors among others have rendered many countries unable to tackle the urgent tasks they face at the necessary pace and scale. At the same time, data limitations create research challenges and result in an incomplete picture of current situations in many at-risk nations. Evolving metrics and a focus on improved reporting will significantly improve the data landscape. Still, and despite the information gaps described in the analysis here, we can make preliminary observations. The majority of vulnerable countries do not yet have a comprehensive,

multi-hazard, inclusive, people-centered early warning – early action system in place. Components of this, however, are in place in certain areas, and regional partnerships offer a promising strategy for strengthening infrastructure. Climate risk insurance pools have been established in two critical at-risk regions: Africa and the Caribbean. They are also beginning to appear elsewhere. As data emerges that enables an assessment of effectiveness, these new systems may provide replicable lessons for other vulnerable regions, enabling them to better absorb climate-related costs. Finally, consideration for climate-resilient development pathways is increasingly integrated into national budgets and planning documents, although the implementation of policies remains inconsistent.

Vulnerable countries will experience the brunt of climate-related shocks as impacts intensify (UNFCCC, 2015). Within those vulnerable countries are sections of the population – particularly women and girls – whose needs must be specifically identified and addressed to ensure balanced, inclusive, rights-based strategic planning that serves the entire population. Building resilience to climate-related hazards is vital, not only to protect communities and individuals but also to facilitate broader sustainable development goals. Cross-cutting synergies with the UNFCCC and the Sendai Framework for Disaster Risk Reduction offer a platform to catalyze global action. Small Island Developing States, Least Developed States, and African nations face an arduous task as they work to remap their development pathways to promote climate resilience. Research presented here to determine baseline levels for the United Nations Secretary-General’s Climate Resilience Initiative (A2R) suggests that there is significant opportunity for further action.

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**Appendix A****Anticipate**

<b>Criteria</b>	<b>Indicators</b>	<b>Source</b>	<b>Total # Countries with Data</b>	<b>Findings</b>
<u>Criteria 1:</u> Country has a comprehensive national early warning system	<u>Indicator 1:</u> Country has a <i>multi-hazard</i> and <i>integrated</i> early warning system.	HFA Report, priority for action 2, core indicator 3	81	Yes: 2 Limited: 77 No: 2
	<u>Indicator 2:</u> Country has national multi-hazard risk assessment with a common methodology to inform planning and development decisions.	HFA Report, priority for action 2, core indicator 1	81	Yes: 45 Limited: 3 No: 33
	<u>Indicator 3:</u> Country has declared a national platform for Disaster Risk Reduction	Prevention Web, national platforms	114	Yes: 31 No: 83
	<u>Indicator 4:</u> Country is part of a regional or sub-regional early warning system.	HFA Report, priority for action 2, core indicator 4	81	Yes: 57 No: 20 Other*: 4
<u>Criteria 2:</u> Early warning system is people-centered.	<u>Indicator 1:</u> Programs account for the most vulnerable populations.	HFA Report, drivers of progress D	81	Yes: 58 Limited: 11 No: 12
	<u>Indicator 2:</u> Programs take into account local or traditional knowledge.	HFA Report, section 8e	81	Yes: 57 No: 5 Other: 19
	<u>Indicator 3:</u> Programs are gender-responsive / sensitive.	HFA Report, section 8b	81	Yes: 51 No: 21 Other: 10

	<u>Indicator 4</u> : Disaster information is disseminated through multiple, appropriate channels.	HFA Report, established mechanisms for action	81	Yes: 52 No: 16 Other: 13
<u>Criteria 3</u> : Country has comprehensive early action approach.	<u>Indicator 1</u> : Communication and education on disaster risk is emphasized.	HFA Report, priority for action 3, core indicator 4	81	Yes: 65 No: 12 Other: 4
	<u>Indicator 2</u> : Ratio of national budget allocation for risk reduction vs disaster relief / reconstruction reflects investment in early action.	HFA Report, priority for action 1, core indicator 2	81	Ratios vary
	<u>Indicator 3</u> : Climate risks are incorporated in disaster management.	HFA Report, priority for action 5, core indicator 1	81	Yes: 30 No: 29 Other: 13
<u>Criteria 4</u> : Country has effective early warning – early action system.	<u>Indicator 1</u> : Early warnings are timely and reach at-risk populations.	HFA Report, priority for action 2, core indicator 3	81	Yes: 59 No: 16 Other: 5
	<u>Indicator 2</u> : Total damage from climate-related disasters decreases from period 1995-2004 to period 2005-2014.	EM-DAT, International Disaster Database	75	Yes: 42 No: 33
	<u>Indicator 3</u> : Total number of people reported killed by disasters decreases from period 1995-2004 to period 2005-2014.	EM-DAT, International Disaster Database	95	Yes: 50 No: 45
	<u>Indicator 4</u> : Total number of people reported affected by disasters decreases from period 1995-2004 to period 2005-2014.	EM-DAT, International Disaster Database	95	Yes: 40 No: 55

\*Note: A response categorized as “other” can mean one of several things: the question may have been left off the questionnaire for some countries, or the country may have responded with “in progress” or “incomplete.”

**Absorb**

<b>Criteria</b>	<b>Indicators</b>	<b>Source</b>	<b>Total # Countries with Data</b>	<b>Findings</b>
<u>Criteria 1:</u> Climate insurance schemes cover a wide range of assets.	<u>Indicator 1:</u> Option to insure crop and property against climate impacts exist.	HFA Report, priority action 4, core indicator 2.	76	Yes: 40 No: 37
	<u>Indicator 2:</u> Micro insurance schemes for climate risk are offered to at-risk communities.	HFA Report, priority action 4, core indicator 2.	81	Yes: 34 No: 43
	<u>Indicator 3:</u> Government and/or non-government actors offer catastrophic bonds and other market mechanisms.	HFA Report, priority action 5, core indicator 3.	81	Yes: 11 No: 66
<u>Criteria 2:</u> Climate insurance schemes are accessible at multiple levels.	<u>Indicator 1:</u> Insurance and reinsurance facilities are in place at local and/or national levels to deal with major climate disasters.	HFA Report, priority action 5, core indicator 3.	80	Yes: 32 No: 41
	<u>Indicator 2:</u> Country is part of a regional or international climate risk insurance pool.	1) Oxfam America; 2) African Risk Capacity; 3) Caribbean Catastrophic Risk Insurance Facility	114	Yes: 48 No: 66

<u>Criteria 3:</u> Social protection programs are well targeted.	<u>Indicator 1:</u> High proportion (>50%) of most vulnerable population participates in social protection programs.	World Bank Atlas of Social Protection	60	Yes: 12 No: 49
	<u>Indicator 2:</u> Percentage reduction in poverty gap levels as a result of targeted social protection programs.	World Bank Atlas of Social Protection	47	Answers range from 0.02%-38.66%

**Reshape**

<b>Criteria</b>	<b>Indicators</b>	<b>Source</b>	<b>Total # Countries with Data</b>	<b>Findings</b>
<u>Criteria 1:</u> Climate resilience is incorporated into national development.	<u>Indicator 1:</u> National public-sector climate-related expenditures have been calculated and data is publicly available.	1) Governance of Climate Change Finance to Benefit the Poor and Vulnerable in Asia Pacific; 2) Overseas Development Institute	12	Yes: 12 Unavailable: 102
	<u>Indicator 2:</u> Climate change is incorporated into the most recently available National Development Plan.	Country-specific sources.	66	Yes: 49 Limited: 7 No: 10
<u>Criteria 2:</u> National policies and regulations contribute to furthering climate resilience.	<u>Indicator 1:</u> Integrated planning is used.	HFA Report, priority for action 4, core indicator 1.	76	Yes: 58 No: 18

	<u>Indicator 2:</u> Risk sensitive regulation in land zoning and private real estate development is in place.	HFA Report, priority for action 4, core indicator 4.	66	Yes: 33 No: 33
	<u>Indicator 3:</u> Impacts of disaster risk are taken into account in Environmental Impact Assessments.	HFA Report, priority for action 4, core indicator 6.	76	Yes: 60 No: 16
	<u>Indicator 4:</u> Impacts of disaster risk created by major development projects are assessed.	HFA Report, priority for action 4, core indicator 6.	76	Yes: 56 No: 20
	<u>Indicator 5:</u> Cost/benefits of disaster risk are taken into account in the design and operation of major development projects.	HFA Report: priority for action 4, core indicator 6.	65	Yes: 39 No: 26

**Appendix B: Countries Selected**

Afghanistan	Ghana	Samoa
Algeria	Grenada	Sao Tome and Principe
American Samoa	Guadeloupe	Senegal
Angola	Guam	Seychelles
Anguilla	Guinea	Sierra Leone
Antigua and Barbuda	Guinea-Bissau	Singapore
Aruba	Guyana	St Maarten
Bahamas	Haiti	Solomon Islands
Bangladesh	Jamaica	Somalia
Barbados	Kenya	South Africa
Belize	Kiribati	South Sudan
Benin	Lao People's Democratic Republic	Sudan
Bermuda	Lesotho	Suriname
Bhutan	Liberia	Swaziland
Botswana	Libya	Timor-Leste
British Virgin Islands	Madagascar	Togo
Burkina Faso	Malawi	Tokelau
Burundi	Maldives	Tonga
Cambodia	Mali	Trinidad and Tobago
Cameroon	Marshall Islands	Tunisia
Cape Verde	Martinique	Turks and Caicos Islands
Cayman Islands	Mauritania	Tuvalu
Central African Republic	Mauritius	United States
Chad	Micronesia, Federated States of	Virgin Islands
U.S. Commonwealth of the Northern Mariana Islands	Montserrat	Uganda
Comoros	Morocco	Tanzania
Cook Islands	Mozambique	Vanuatu
Cote d'Ivoire	Myanmar	Yemen
Cuba	Namibia	Zambia
Curacao	Nauru	Zimbabwe
Democratic Republic of the Congo	Nepal	
Djibouti	New Caledonia	
Dominica	Niger	
Dominican Republic	Nigeria	
Egypt	Niue	
Equatorial Guinea	Palau	
Eritrea	Papua New Guinea	
Ethiopia	Puerto Rico	
Fiji	Congo, Republic of the Rwanda	
French Polynesia	Saint Kitts and Nevis	
Gabon	Saint Lucia	
Gambia	Saint Vincent and the Grenadines	