

# CLIMATE-FRAGILITY RISKS IN ASIA: THE DEVELOPMENT NEXUS

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*Climate-fragility risks are on the rise globally and developmental paths taken by countries can shape these risks. To understand the link between development and climate-fragility risks in Asia, this brief presents the findings of a survey conducted with development practitioners and experts from a range of developing and developed countries. To explain the differences in survey findings, this brief also outlines a Climate-Fragility Risk Index (CFRI) that provides a systematic presentation and analysis of various climate-fragility indicators. This brief provides an evidence for the nexus between development and climate-fragility risks and, as a way forward, advises countries to formulate and implement well-coordinated and evidence-based policies in the increasingly integrating world.*

## Background

Climate change is one of the key global security challenges of the 21st century. Its impacts are ‘threat multipliers’ that will increase state fragility, fuel social unrest and potentially result in violent conflict. Existing state fragility is simultaneously hampering efforts at adaptation, particularly among vulnerable populations. This threatens to lock many societies into ‘fragility traps’.

Japan as part of the Group of 7 (G7) has recognized the resulting challenges for sustainable economic development, peace and stability. In April 2016, under the Japanese G7 presidency and following up to the independent report “A New Climate for Peace: Taking Action on Climate and Fragility Risks” commissioned by G7 members, the foreign ministers of the G7 reiterated their commitment to prioritize prevention of climate and fragility risks including taking steps to integrate climate-fragility considerations across their national governments.

Against this background, adelphi has partnered with the Institute for Global Environmental Strategies (IGES) to facilitate a broader discussion on climate-fragility risks in Japan and reflect and discuss the findings of the G7 report and its implications and relevance for Japan. As a first step, adelphi and IGES jointly organized two expert workshops in June 2016. The first workshop took place on 14.6.2016 and brought together 31 Japanese and international experts as well as government representatives.

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It was followed by a workshop on 16.06.2016 with 15 participants from Japanese civil society. Both workshops focused on identifying climate-fragility risks for Japan and the region and ways to address these risks.

In addition, adelphi and IGES have jointly published a series of five policy papers to foster the debate on climate-fragility risks in Japan and in Asia. These policy papers focus on different topics of relevance in the political discourse in Japan to contextualize the global discourse on the topic and show its relevance for Japan. The papers are available in English and Japanese.

This briefing paper, in particular, starts by outlining some of the most important climate-fragility risks in Asia. Against this backdrop, the results of an online survey of stakeholders in Asia are presented to provide some understanding and a snapshot of how these stakeholders perceive and understand climate-fragility risks. Subsequently, the paper presents a Climate-Fragility Risk Index as a means of comprehensively presenting various climate-fragility risk indicators that help compare countries and understand factors behind their fragility state.

## **Climate-fragility risks are significant in Asia**

Globally, climate-fragility risks are growing albeit more rapidly in some regions than in others. Several climate-fragility risks have come to the fore that are important to be addressed in order to achieve sustainable development and prevent conflict and fragility. The most important climate-fragility risks for Asia include the a) strong nexus between development and disaster impacts, b) migration and related conflicts, c) food price volatility, d) transboundary resource conflicts including around water, e) unintended effects of policies that can increase vulnerability, f) sea level rise and g) competition for local resources (based on Ruttinger et al., 2015).

The strong nexus between development and disaster impacts is emerging as an important issue. In particular, developing regions are highly exposed to and disproportionately impacted by natural disasters. As a result of natural disasters and other reasons such as the lack of livelihood options and public services as well as conflict, internal displacement and migration are on the rise. Globally, natural disasters displace more people than conflicts. Internal displacement in South and East Asia is mainly due to natural disasters, while in West Asia it is due to conflict situations. Despite the importance of internal displacement, countries in these regions have not done well in addressing these issues proactively and strategically (IDMC, 2015).

Connected to this context is the issue of price instability of food and other resources in the region. Several countries were severely impacted by the 2008 and 2011 rise in food prices, which disproportionately impacted the urban poor. Instances of decline in food consumption and increase in food expenditure among poor households in Afghanistan, Cambodia, Nepal and Pakistan were observed in the aftermath of the 2008 food price crisis (Brinkman et al., 2010).

Fears related to food riots and impacts on poverty were also reported in some Asian countries, including Bangladesh, India and Pakistan (Reuters, 2008; The Trumpet, 2008; The Independent, 2009). Governments were not well prepared to deal with this situation, leading to significant impacts on food security, poverty and livelihoods. Reports also linked the high food prices with some of the political unrest of the Arab spring (Guardian, 2011).

Transboundary rivers play an important role in the wellbeing of whole regions as big river basins harbour millions of people. Despite the importance of these water resources and the density of populations and possible risks to their wellbeing, countries often have failed to reach agreement on

how best to use these water resources, leading to conflict especially in South and East Asian countries (Langton and Prasai, 2012).

Most countries in Asia have not signed or ratified international treaties on the use of transboundary water resources. Only Vietnam has acceded to the UN Watercourses Convention (since its inception in 1997, only 38 countries have either ratified/signed/approved the convention text and the convention). The UN Convention on the Protection and Use of Transboundary Watercourses and International Lakes brought in 1992 has been ratified by only 41 countries, none from South and East Asia that have significant transboundary rivers (United Nations, 2016). Regional processes such as SAARC are far from being successful in addressing these issues. The water and energy nexus, in particular, is an important issue that has led to tensions among Central Asian countries. For example in 2012, a major dispute developed over water allocation and management among the Central Asian countries of Tajikistan, Kyrgyzstan and Uzbekistan.

In April 2012, Tajikistan protested that Uzbekistan had stopped the supply of natural gas because of disagreement over a hydropower dam (Gelick and Heberger, 2013). In addition to these transboundary tensions, disputes over water within countries are also a cause of concern. For example, the Indian rivers Kaveri and Krishna, shared between the states of Tamil Nadu, Karnataka and Andhra Pradesh, have been the cause for conflict for several years and these disputes are expected to exacerbate as climate change impacts increase (Taenzler et al., 2011).

Other climate-fragility risks include negative impacts of policies that can increase the vulnerability of societies or states to these risks. For example, policies to promote the use of groundwater in western Bangladesh have led to overexploitation of groundwater and severe water shortages (Shahid et al., 2016). In the context of climate change, implementation of such policies without considering their long-term impacts can have serious consequences. Taking the importance of these climate-fragility risks in Asia as a starting point, an online survey was carried out to better understand the perceptions of stakeholders engaged in development, disaster risk reduction and climate change adaptation, which are discussed in the subsequent sections of this brief.

## Stakeholder perspectives on climate-fragility risks

An online survey with experts and practitioners engaged in disaster risk reduction, climate change adaptation and related fields, including peace and security, was conducted in 2016. The aim was to understand the stakeholders' current state of knowledge on climate-fragility risks and policy issues to address climate-fragility risks. The questionnaire consisted of both multiple choice and open-ended questions divided into three sections. The first section consisted of questions to assess the awareness of the respondents regarding climate-fragility risks and the impact of climate change on the fragility state of the country the respondents were based in. The second section consisted of questions related to current actions taken to address climate-fragility risks and to identify ways forward in terms of specific policy recommendations. The last section comprised questions related to the background of the respondent in terms of expertise, experience and demographic details.

A total of 179 responses were obtained from developing (largely from India, the Philippines, Bangladesh, Vietnam, Thailand, Indonesia, China, Malaysia, Nepal, Pakistan and Sri Lanka) and developed countries (from Japan, Australia, United Kingdom, Germany and USA) to understand and compare responses between two economic groups. For the purpose of this brief, only responses from Asia are presented while the responses from outside Asia helped in building overall understanding on this issue and in identifying the appropriate indicators for developing the Climate-Fragility Risk Index

(see later sections of this brief). All the responses were analysed and presented as a percentage of total responses.

The occupational background of respondents includes universities, NGOs, governmental bodies and think tanks. Most have expertise in climate change adaptation, disaster risk reduction, environment and sustainable development and have worked at community and national levels (developing Asia) or at national and international levels (Japan). Most were in the age group of 30-40 (56%, developing Asia) and 50-60 (28%, Japan), most respondents were male (68% developing Asia, 73% Japan).

The survey indicated that there is a high urgency for addressing climate change related threats: A majority of respondents viewed climate change either as an imminent (42% and 43% from developing Asia and Japan respectively) or near-future threat (34% and 33% from developing Asia and Japan respectively), while others considered it to already be a threat (Figure 1). However, a marginally higher number of respondents from Japan (6% as opposed to 3% from developing Asia) viewed it as already existing or imminent threat and a higher number from developing Asia viewed it as a long-term threat than the respondents from Japan.

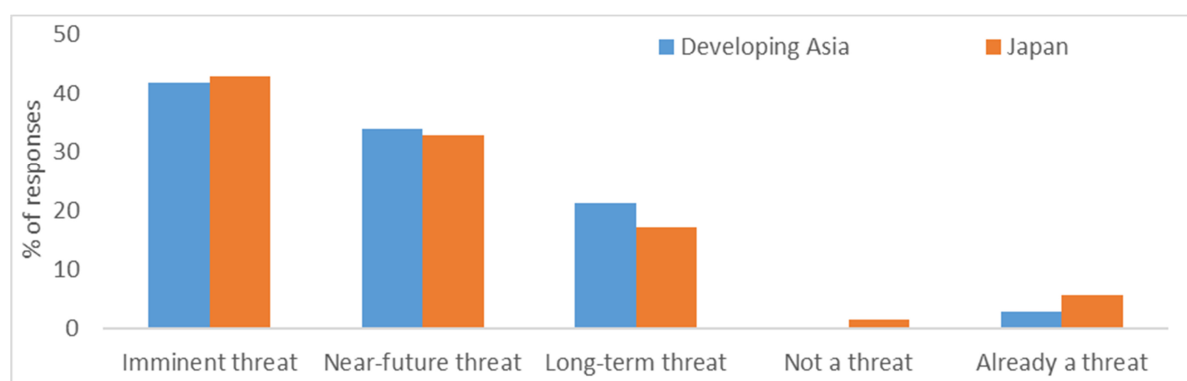


Figure 1. The urgency of climate change as a threat

In terms of awareness regarding climate-fragility risks among the respondents, 25% of the respondents from developing Asia indicated climate-fragility risks as those emerging from the interaction of climate change with developmental pressures, and 33% reported it as being additional to the current disaster risks, implying that stakeholders working in the area of disaster risk reduction are not considering fragility risks as a part of their portfolio. Almost no respondents from Japan thought climate-fragility risks can undermine the peace and stability of countries, the number is marginally higher among responses from the developing Asia (3%). This implies that while there is an overall awareness of climate-fragility risks, these seem to be not understood as security or conflict risks.

The understanding of climate-fragility risks at the policy level varied among respondents from developing Asia and Japan. Relatively fewer respondents from Japan (14% compared to 21% from developing Asia) reported very low understanding among policy makers on the issue of climate-fragility risks, even though a relatively large number of respondents from Japan (37% compared to 30% from developing Asia) reported low understanding among their policy makers. Overall, these findings underline a greater need for awareness raising and capacity building among policy makers and experts on issues related to climate-fragility risks in Asia.

The survey showed that climate change has a significant influence on fragility risks even though these risks differ between developing Asia and Japan. For example, respondents from developing Asia thought that climate change can aggravate fragility risks by impacting livelihoods, as indicated by the higher weighted average given to livelihood impacts (2.3 compared to 1.8 by respondents from Japan),

while respondents from Japan gave higher weighted average to natural disasters (2.5 compared to 2.1 by developing Asia) having fragility implications.<sup>1</sup>

Developing Asia could also experience fragile conditions through aggravated resource scarcity and impacts on state sovereignty. Migration and internal displacement also received higher weightage as important issues while demographic stress such as aging population received significant attention among respondents from Japan.

The survey respondents found that policy domains differ in their potential to address climate-fragility risks. In developing Asia, agriculture and water, climate change adaptation and disaster risk reduction policies were seen to have more potential to address fragility risks than measures related to internal security or peacebuilding (Figure 2). The potential to address climate-fragility risks is rather equally distributed among policies areas for Japan. However, respondents from Japan reported least potential for internal security policies compared to other policy domains.

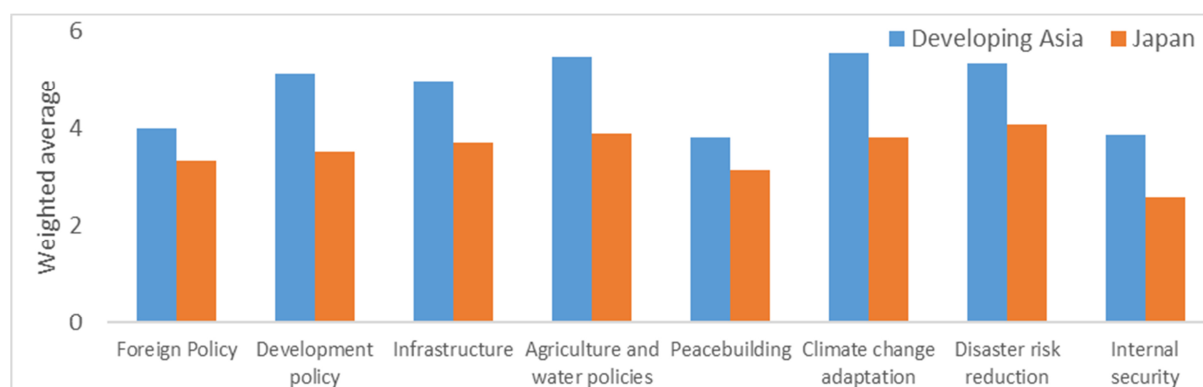


Figure 2. Expected potential of different policy domains to address climate-fragility risks<sup>2</sup>

Judging the current performance of policy domains, the respondents from developing Asia rated the current performance of agriculture and water, climate change adaptation and disaster risk reduction policies (on an average 3.7 weightage for all these policy domains in both developing Asia and Japan) higher than internal security policies and peacebuilding.

31 % of respondents from developing Asia rated their current policies as 'good' (in comparison, 32% of respondents from Japan rated the performance of their policies as very good).<sup>3</sup> However, the responses varied among countries. For example, a significant number of respondents from Bangladesh (35%), Malaysia (33%), Nepal (25%), China (25%) and Japan (18%) rated their policies as 'excellent', while only 6% from Indonesia, Philippines and Vietnam rated their policies 'excellent'. 33% responses from Nepal rated the current performance of their policies as 'poor'.

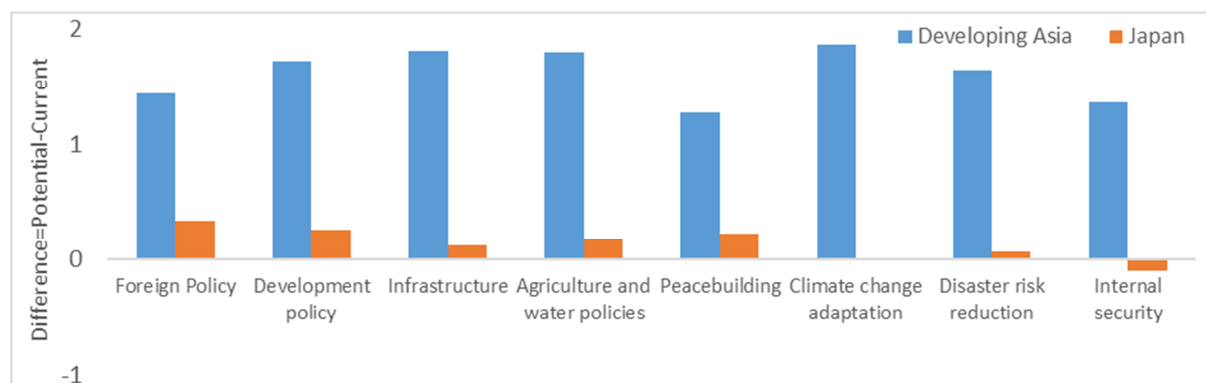
Comparing the potential and current performance of policy areas provided an interesting insight. Ratings from Japan showed the least difference between the potential and the current performance of

<sup>1</sup> Respondents ranked top three fragility implications of climate change on 1-3 scale and ranks were converted into weighted averages. Option receiving highest weightage represents the most important option.

<sup>2</sup> Weighted averages are the numerical representation of the qualitative scale used for assessing the policy domains for calculating averages across response groups. Respondents rated the expected potential of policies on the scale of no potential, very low potential, low potential, moderate potential, high potential and very high potential, which were transformed into numerical values from 1 to 6.

<sup>3</sup> For the current performance, policies were rated poor, fair, good, very good and excellent.

policies (Figure 3). In fact, respondents were of the view that the current internal security policies are doing better than the potential they thought these policies had. On the other hand, respondents from developing Asia opined that most policy domains are not able to achieve what they could achieve at the given awareness and capacity levels.

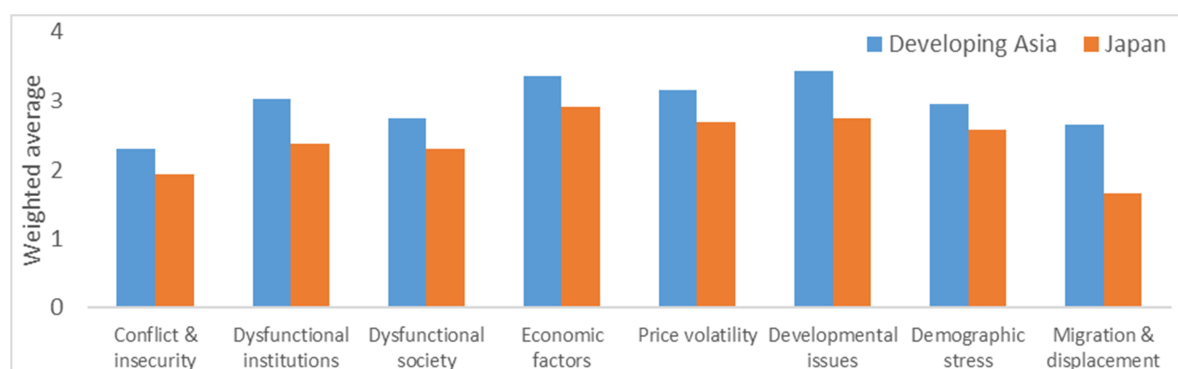


**Figure 3. Difference between the expected potential and current performance of policy domains to address climate-fragility risks in developing Asia and Japan**

Respondents from developing Asia rated policies higher for addressing developmental issues and economic factors than policies for addressing other fragility related issues (Figure 4). Developing Asia rated policies for addressing conflict and insecurity as less effective, while policies in Japan were rated low for addressing migration and internal displacement-related issues.

Overall, the policies from Japan received a lower rating for their current performance of addressing specific fragility related issues than policies in developing Asia (Figure 4). This seems to be in line with respondents in Japan seeing a lower potential for policy areas to address climate-fragility risks (Figure 2) than respondents from developing Asia. Respondents from Japan seem to either think that Japanese policies don't have much more potential to improve or that the current policies are not able to address climate-fragility risks (Figure 3).

This might mean that the policies in Japan may need to transform to a higher level of innovation and effectiveness in order to fully address specific climate-fragility related issues identified in the survey.

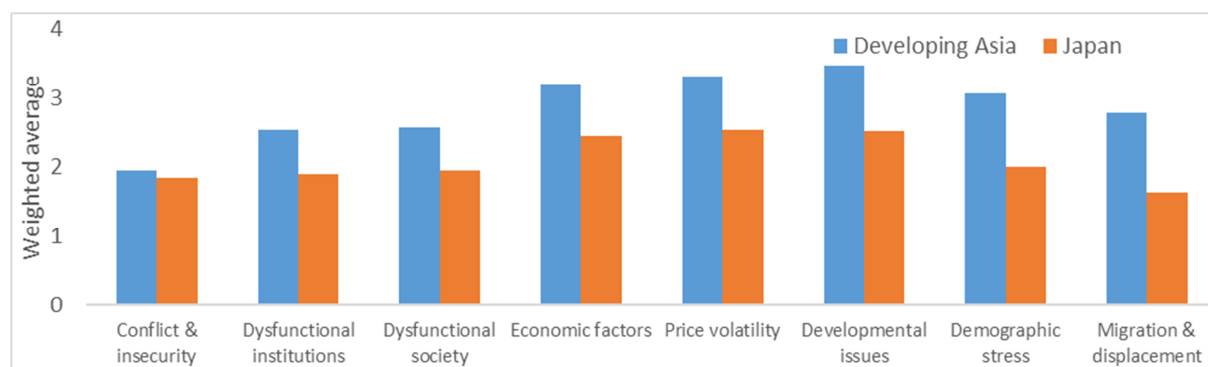


**Figure 4. Current performance of policies for addressing specific climate-fragility related issues in developing Asia and Japan<sup>3</sup>**

<sup>3</sup> Weighted averages are the numerical representation of the qualitative scale used for assessing the current performance of policies for calculating averages across response groups. Respondents rated

Given that several countries have already put in place climate change policies and have started integrating climate change issues into development policies and programmes, respondents from developing Asia reported that current climate change policies have integrated developmental issues, price volatility and economic issues relatively well, while issues such as conflict and security and migration and internal displacement have not been integrated well (Figure 5).

The same trend could be observed in responses from Japan. This brings to the fore the need to recognize conflict and migration issues within the climate change domain equally in all countries irrespective of their developmental status.



**Figure 5. Extent of integration of climate-fragility risks in climate change policies of developing Asia and Japan<sup>4</sup>**

In order to address climate-fragility risks in general and current policy ineffectiveness specifically, respondents regarded the highest priority interventions to be investment in collecting and sharing better data, analysis and use of the same in policy decision making for providing better guidance in designing and implementing integrated programmes that foster climate resilience, and investment in research and development efforts to better understand the drivers behind climate-fragility risks in developing Asia (Figure 6).

Japanese respondents also underlined the need for collecting and sharing data and information and investing in integrated programmes. In addition, they saw a greater need for more policy coherence and improving in-country collaboration. Interestingly, participants from both developing Asia and Japan gave least weightage to human resources and finances.

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the current performance of policies on the scale of poor, fair, good, very good and excellent, which were transformed into numerical values ranging from 1 to 5.

<sup>4</sup> Weighted averages are the numerical representation of the qualitative scale used for assessing the current performance of policies for calculating averages across response groups. Respondents rated the policies on the scale of no integration, very low integration, low integration, moderate integration, high integration and very high integration, which were transformed into numerical values ranging from 1 to 6.

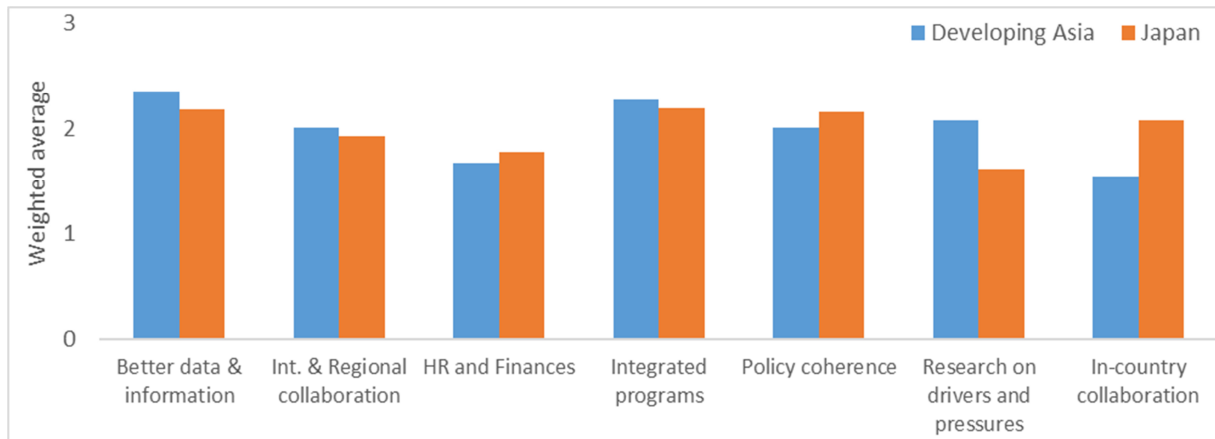


Figure 6. Priority interventions for addressing climate-fragility risks in developing Asia and Japan<sup>5</sup>

Respondents from most countries chose better data collection (on an average 59%). However, sub-regional differences exist. Respondents from China (25%), Malaysia (40%) and Nepal (50%) stressed more investments in research and development to better understand climate-fragility risks. Respondents from India (17%), Philippines (26%) and Thailand (14%) found the need for providing better guidance in designing and implementing integrated programmes that foster climate resilience as a means of addressing climate-fragility risks. A significant number of responses from Sri Lanka (33%) and Thailand (29%) also prioritized the need for policy coherence to address climate-fragility risks.

### Developing a Climate-Fragility Risk Index

In the previous section, responses from developing Asia and Japan have shown differences in the nature of climate-fragility risks and level of policy effectiveness. A Climate-Fragility Risk Index (CFRI) was computed to better understand how different countries in Asia perform when compared along a set of common indicators. For this purpose, the number of developed countries was expanded beyond Japan to also include Australia and South Korea.

Comparing climate-fragility risks in developing and developed countries can help us to understand where countries stand in terms of specific fragility risks and if the developmental status of a country has any influence on the level of climate-fragility risks. For cross-comparison purposes, indicators related to specific climate-fragility risks were identified based on inputs from the online-survey (as discussed in the previous section).

These indicators formed the basis to develop the Climate-Fragility Risk Index and are presented in Table 1 along with their rationale and limitations. For building the CFRI, the following countries were chosen based on the availability of data: Australia, Bangladesh, Cambodia, China, India, Indonesia, Japan, Korea, Lao PDR, Malaysia, Myanmar, Pakistan, Philippines, Sri Lanka, Thailand and Vietnam.

<sup>5</sup> Weighted averages are the numerical representation of the qualitative scale used for choosing the three most urgent actions for calculating averages across response groups. Respondents ranked the three most urgent actions on a scale of 1 to 3, 1 being the most urgent.

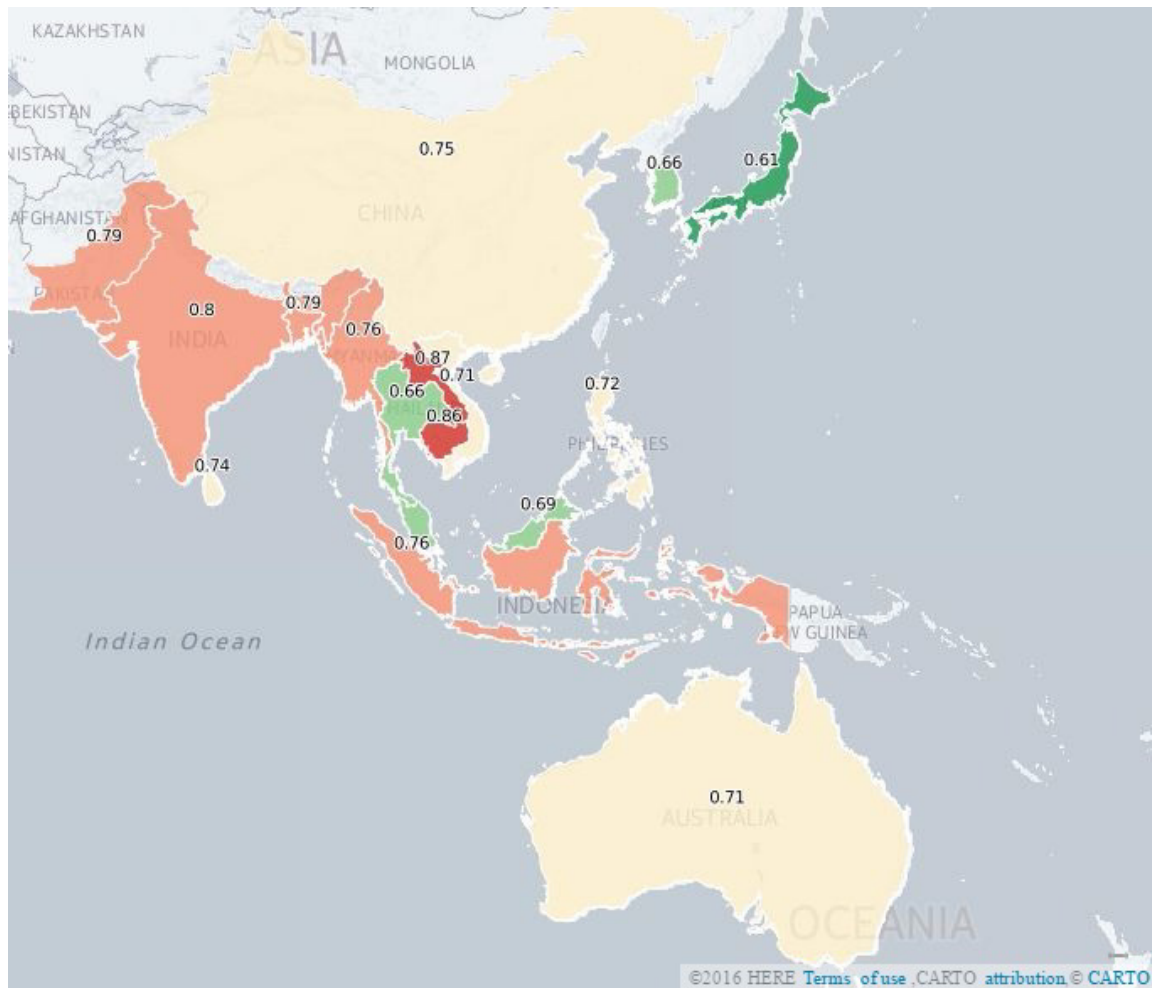


**Table 1. List of indicators used in developing the Climate-Fragility Risk Index (CFRI)**

Indicator	Proxy indicator	Rationale and limitations	Source of the data
<b>Local competition for water</b>	Baseline water stress	The higher the water stress the higher the competition around water. However, water stress may not always lead to tensions and conflict depending on the local governance and social systems which are represented by the governance indicator of the World Bank.	WRI, 2016
<b>Extreme weather events</b>	Climate risk index	Climate risk index is the most comprehensive risk index covering climatic hazards and has been regularly produced for most countries.	Germanwatch, 2016
<b>Migration and internal displacement</b>	% of population affected by migration and internal displacement	The data provided by the Internal Displacement Monitoring Centre gives a clear picture of the number of internally displaced and migrants. These numbers were converted into % of population.	IDMC, 2015
<b>Food price volatility</b>		Food price volatility was calculated as a standard deviation of principal food crop prices in the past decade in local currency.	FAOSTAT, 2016
<b>Sea level rise (SLR)</b>	% of population affected by SLR	% of population affected by SLR reflects social and economic impacts better than the mere change in SLR.	Climate Central, 2015
<b>Unintended effects of policies</b>	World Bank Regulatory Quality indicator	There are no verifiable measures for unintended effects of policies yet; however, the World Bank Regulatory Quality indicator provides a close assessment for policy effectiveness, assuming that least unintended effects of policies are expected with higher regulatory quality	World Bank, 2016

These indicators were transformed using linear normalization with adjusted saturation levels. Saturation levels were either adjusted to full (i.e. wherever published saturation levels are not available) or adjusted to the published maximum and minimum levels (as in the case of Climate Risk Index). All the transformed indicator values were added without weightages i.e. all indicators have equal weightage in the final Climate-Fragility Risk Index value. This is to avoid the ambiguity in applying weightages which may vary from one expert to another and from one context to another. The results were shown as a heat map using a web-based choropleth tool Carto.<sup>6</sup>

<sup>6</sup> Available at <https://carto.com/>



**Figure 7: Climate-fragility of selected countries in Asia and Oceania**

The Climate-Fragility Risk Index (CFRI) that compared major countries in Asia and Oceania clearly shows that countries differ in the extent and nature of climate-fragility risks (Figure 7). This underlines the need for country-specific solutions. The average CFRI for developing countries comprising Bangladesh, Cambodia, China, India, Indonesia, Lao PDR, Malaysia, Myanmar, Pakistan, Sri Lanka, Thailand and Vietnam stood at 0.76 while it was 0.66 for the developed countries comprising Australia, Japan, South Korea.

The differences between countries were largely due to variations in exposure to sea level rise (where Vietnam and Thailand are highly vulnerable) and food price volatility (where Pakistan scored highest). There was much less diversity regarding the indicators of internal displacement and regulatory quality of country governance systems. Among the developed countries, Australia showed a relatively high CFRI because of its high exposure to water stress and high food price volatility.

Furthermore, the analysis indicated a reasonably close association between CFRI with the per capita GDP of countries. The power relationship between these two seem to suggest a critical threshold level of per capita income below which countries tend to have higher climate-fragility risks. The relationship between the CFRI and per capita GDP strengthened with the inclusion of more developed countries in the analysis (Figure 8). This linkage between the developmental status of countries and climate risks has already been well recognized (Hallegatte, 2013).

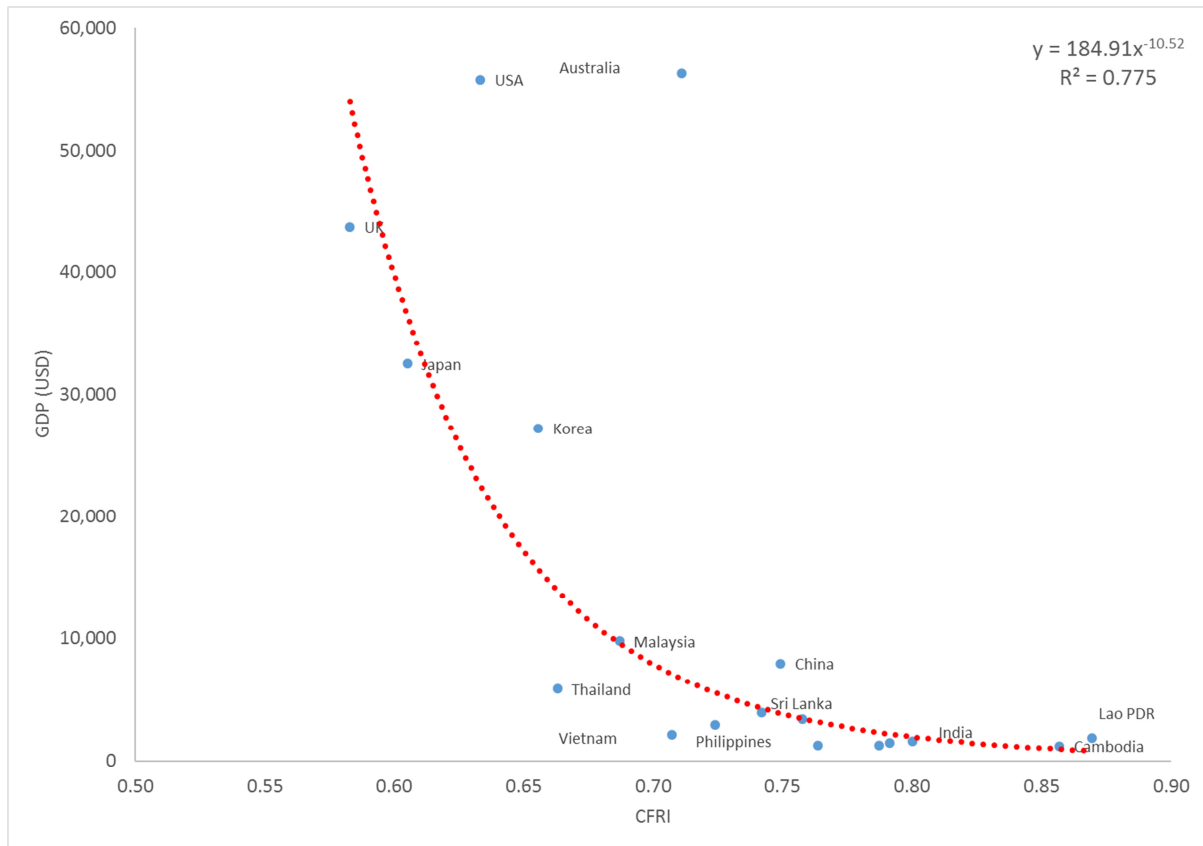


Figure 8. The relationship between GDP and CFRI of selected developing and developed countries

## Conclusions

We are already experiencing intense signs of climate-fragility risks in several areas as discussed in this paper. The results show important differences between developing and developed countries in Asia. For example, fewer respondents from developing Asia felt that climate change is an immediate threat while more respondents from Japan viewed it as an immediate threat. These differences in opinions could influence the nature and urgency with which countries pursue policies to address climate-fragility risks.

The survey underlines that both developing and developed countries are facing significant challenges. While respondents from developing Asia thought climate change to impact fragility mainly by undermining livelihoods, respondents from Japan identified extreme events as a greater risk. Strikingly, almost no respondents from Japan and only a few from the developing Asia thought climate-fragility risks can undermine the peace and stability of countries.

Thus, even though there seems to be an overall awareness of climate-fragility risks, these seem not to be understood as security or conflict risks. This underlines the need for further awareness raising and capacity building, in particular regarding the links between climate change and conflict.

The Climate-Fragility Risk Index (CFRI) clearly shows that countries differ in the extent and nature of climate-fragility risks. The close relationship between CFRI and per capita GDP reconfirms the importance of ODA to help developing countries address environmental, security and developmental issues in an integrated manner. Looking at the region as a whole and the multiple interdependencies

between countries shows that risks are shared across countries, for example through integrated supply chains or the movement of people.

Policies in developing countries need improvement in the areas of conflict and insecurity, dysfunctional society and dysfunctional institutions. Information exchange through key channels of government and the introduction of coherent policies, for example, are necessary. There are complementarities between developed and developing countries in how to address climate-fragility risks. Both have to better coordinate their policies at a national level, while at the same time improve coordination among themselves as a group.

They could, for example, share integrated risk assessments among countries and design policies that can deliver benefits for all, e.g. as in the case of immigration policies. For this to happen, there is a need that the countries in the region collaborate and cooperate at various levels, including through agreements, treaties and platforms. They must develop coordinated policies that take into account cause and effect relations of factors that may be geographically placed in different countries but are very much connected in their pathways.

In this respect, third party or multilateral mechanisms could play an important role, though existing ones are not working very well at present. Regional mechanisms such as SAARC, ASEAN etc. could take the lead, in particular by providing a platform for the exchange of experiences and building trust.

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