

# CLIMATE FRAGILITY RISKS IN JAPAN: SOME INITIAL REFLECTIONS

RAJIB SHAW, SVRK PRABHAKAR AND HIDEYUKI MORI, JANUARY 2017

## Background

Climate change is one of the key global security challenges of the 21st century. Its impacts are a 'threat multiplier' 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 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 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 Studies (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 June 14, 2016 and brought together 31 Japanese and international experts as well as government representatives. It was followed by a workshop on June 16, 2016 with 15 participants from Japanese civil society and a symposium at the 8th International Forum for Sustainable Asia and the Pacific in Yokohama on July 12, 2016 with over 100 participants. These events focused on identifying climate-fragility risks for Japan and the region and ways to address these risks.

In addition, adelphi and IGES are jointly publishing a series of five policy papers on climate-fragility risks in Japan. These short papers focus on different issues to contextualize the global discourse on the topic and show its relevance for Japan. The papers are available in English and Japanese.

This paper provides some initial reflections on climate-fragility risks for Japan. To complement this analysis, the paper also presents findings from a perception survey on climate-fragility risk conducted among Japanese professionals and practitioners outlining observations regarding the level of awareness around climate-fragility risks and the efficacy of policies to address climate-fragility risks.

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## Climate fragility in the Japanese context

Globally, the most important climate-fragility risks include the a) strong nexus between development and disasters, b) migration and related conflicts, c) food price volatility, d) trans-boundary resource conflicts including those over water, e) unintended effects of policies with vulnerability consequences, f) sea level rise and g) competition for local resources (based on Ruettinger et al. 2015). In the case of Japan, the climate-fragility risks need to be seen in both the internal and external context.

Internal climate-fragility risks are mostly related to weather-induced disaster events in Japan. One of the key issues for Japan is its demographic context, especially high age population and the high rate of depopulation in rural areas. Small and medium sized towns and villages in the rural areas can be considered highly vulnerable to disasters. As an example, in the year 2011, the city of Nachikatsuura in Wakayama prefecture was affected strongly by Typhoon No. 12. Due to severe landslides and mudflows, several areas became uninhabitable and a new zoning map was issued based on technical studies. Some areas were denoted vulnerable, and people had to move out of these areas. One third of the population had to move out of the neighbourhood. This was a significant loss for a small and already depopulated and aged community, and it created pressure on the social cohesion of the community. The regular social events and traditional seasonal festivals almost disappeared. Thus, the disaster here not only triggered migration but also strongly impacted the local culture and community cohesion. Although not a climate-induced event, the Great East Japan Earthquake and tsunami and the nuclear meltdown also prompted a major 'in-country', 'out-prefecture' migration, which was the largest in terms of numbers after World War II. This caused not only economic and social pressure on the surrounding cities and prefectures, but the uncertainty of reconstruction and recovery of the affected areas became a major issue.

The other internal climate-fragility risks in Japan are heat and cold waves and drastic seasonal changes. The 2007 heat wave was the most severe in recorded history, with the largest number of casualties in Japan and serious impacts on the health of the aged population. In general, heat strokes have been becoming more common and increasing during the harsh summers in the central and western parts of Japan. Expansion of the distribution area of the Asian tiger mosquito transmitting dengue fever and other diseases has also been observed in recent years. New invasions of mosquitoes transmitting Japanese encephalitis from Southeast Asia are also reported (IEDM 2013).

Heat waves also affected the quality of rice production. A survey by the IEDM (2013) shows that rice farmers see increasing temperature and prolonged hot days as the most serious threat for rice cultivation. Introduction of heat tolerant rice varieties has been found to be one of the most urgent needs of the farmers. Heat waves mainly affect the quality of rice and food prices. Hirota et al. (2006) have mentioned that warming temperatures will have a substantial effect on Japan's agriculture industries. In Hokkaido, the northern island of Japan, which is usually a less rice producing area, the study of Case and Tidwell (2009) has pointed out that higher temperatures have led to increased rice production, while fruit quality has decreased. The impact of climate change on fruit quality has also been confirmed by an IEDM study (2014). An analysis of apple and orange production in Aomori and Wakayama prefectures shows increasing impacts on the fruit quality in terms of texture and size, which also affects the taste of the fruit. Larger fruit and juice producers might possibly be able to adapt to the shifting of temperature zones in Japan by moving production to different parts of Japan. However, small fruit farmers will have difficulties in adapting to the changing climate and maintaining their income sources. The WWF study by Case and Tidwell (2009) also suggests that climate change will affect fisheries production in Japan, with impact on both freshwater and salt-water fish. This may have an impact on Japanese food habits and cuisines.

The main external climate-fragility risk is related to Japan's dependency on food imports. Although Japan's self-sufficiency rate for rice, eggs, whale meat and mandarin oranges exceeds 90%, the rate for essential ingredients of Japanese cuisine, including soy beans, is a mere 5%, and just 13% for daily necessities like cooking oil. A recent report by the Nikkei Asian Review (2016) shows that in spite of the strong Japanese Yen, imported food is becoming costlier. This is because of changing import scenarios. While Japan used to get most of its shrimps from Thailand and bananas from the Philippines, the impacts of drought and diseases have affected the quality of food production in these two countries. Climate change issues are one of the key factors for the drought and diseases (Nikkei Asian Review, 2016). The report also stated that it has resulted in a shift of imports: to India for shrimp and Ecuador for banana. Thus, the cost incurred to import the same commodity is becoming higher, with more food miles per kg. Moreover, the shrimp demand in some countries like China is increasing due to its higher number of wealthier people. And, Japanese exporters are increasingly facing challenges and price competition. The complex interplay of these factors contributes to the increase in food prices in Japan.

Other complex and external climate-related risks have a deep impact on Japan's fishing industries, especially in international waters. Nishimura (2016) has emphasized that fish movements are changing due to climate change and associated ocean temperature, currents and nutrient changes. Therefore, Japanese fishermen need to travel long distances to catch fish, which increases their fuel cost and ultimately increases fish prices. This issue becomes more complex due to the increasing demand for fish in neighbouring countries like China, Korea and Taiwan, where greater numbers of fishermen and fishing boats are competing with Japanese fishing boats. This makes this issue a regional one and the solutions more complex.

## Survey responses on climate-fragility risks in japan

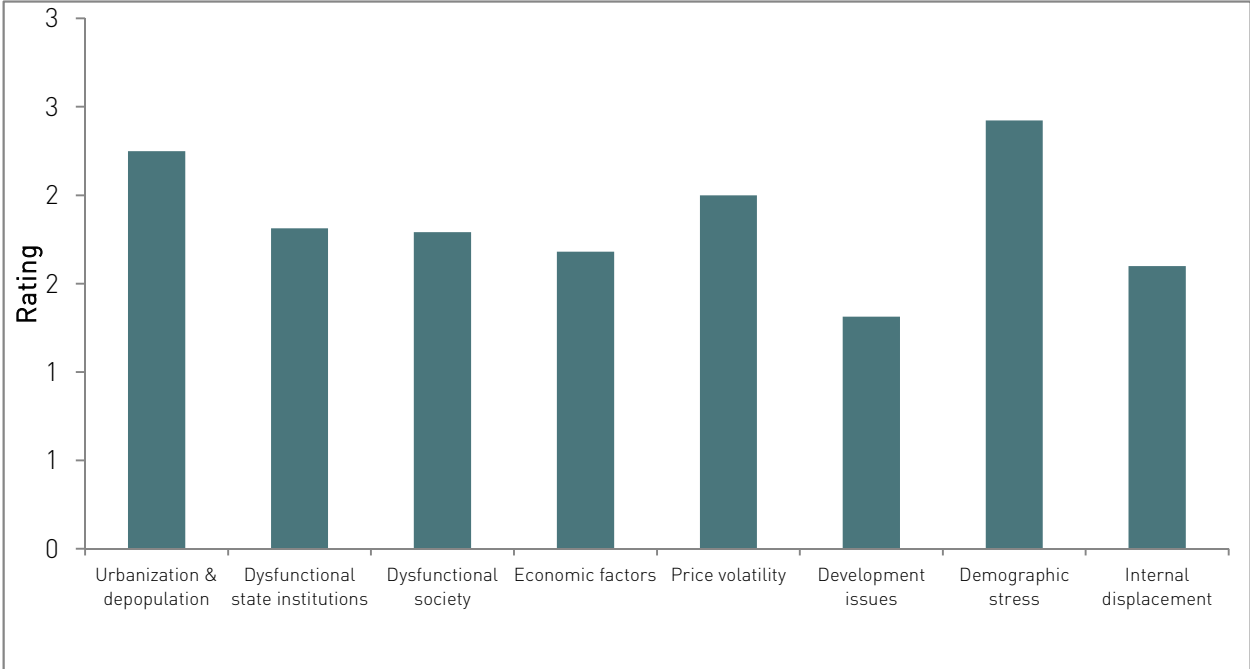
### Methodology

In order to understand the current level of awareness on the subject of climate-fragility risks in Japan and the level of satisfaction on the efficacy of ongoing policy interventions to address climate-fragility risks, an online survey was conducted eliciting responses from experts and practitioners engaged in disaster risk reduction, climate change adaptation and related fields including peace and security. The questionnaire survey consisted of both multiple choice and open-ended questions divided into three sections. The first section consisted of questions to assess the awareness of respondents regarding climate-fragility risks and implications of climate change on the fragility state of the country the respondents was based in. The second section consisted of questions related to the current status of actions to address climate-fragility risks and to identify ways forward in terms of specific policy suggestions. The last section comprised questions related to the background of the respondents in terms of expertise, experience and demographic details. The survey was posted on [www.surveymonkey.com](http://www.surveymonkey.com) and the invitations to participate were sent to professional contacts and networks. The results were tabulated and presented in percentage and weighted ranks wherever necessary. No statistical significance tests for differences between response groups were conducted.

### Results

A total number of 63 responses were received in response to the survey from Japan, out of which 71% were males and 26% were in the age group of 50-60 years. 26% of the respondents had specialization in environmental management and 24% in disaster risk reduction with 60% having experience of more than 7 years in their field of specialization. Most have worked either at the international level (26%) or at the national level (25%) in their professional careers. None expressed that they did not have knowledge in the field of climate-fragility risk, while 29% came to know about the subject by reading a report followed by attending an expert workshop (21%).

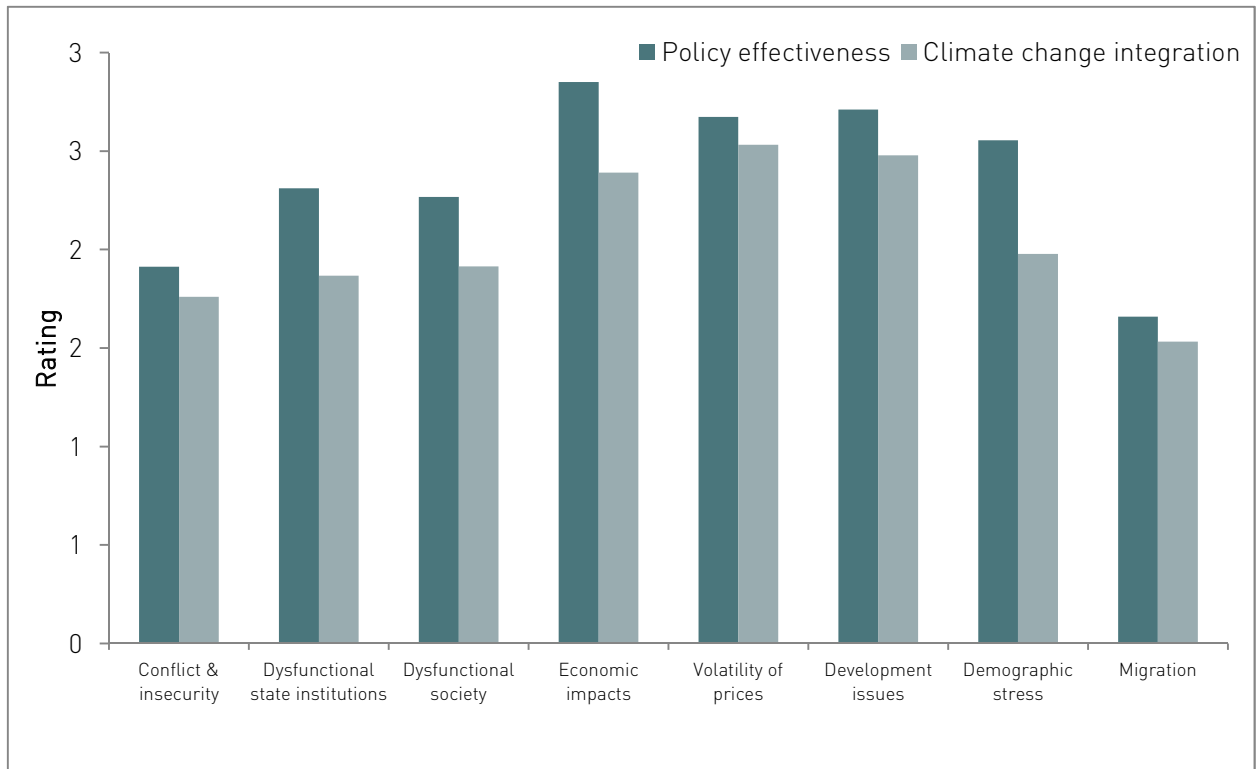
Climate change is an imminent threat to Japan (48% of responses) or it is already experiencing the impacts of climate change (3%). As a result, the country is facing challenges such as increased intensity of weather-related natural disasters impacting the food security and energy security of the country. These impacts are affecting risk factors contributing to fragility in the areas of urbanization and depopulation in rural areas as well as food, water and energy price volatility (Figure 1). Most respondents (89%) thought that climate change influences the fragility state of the country and it does so by impacting natural disasters, undermining livelihoods and contributing to resource conflicts.



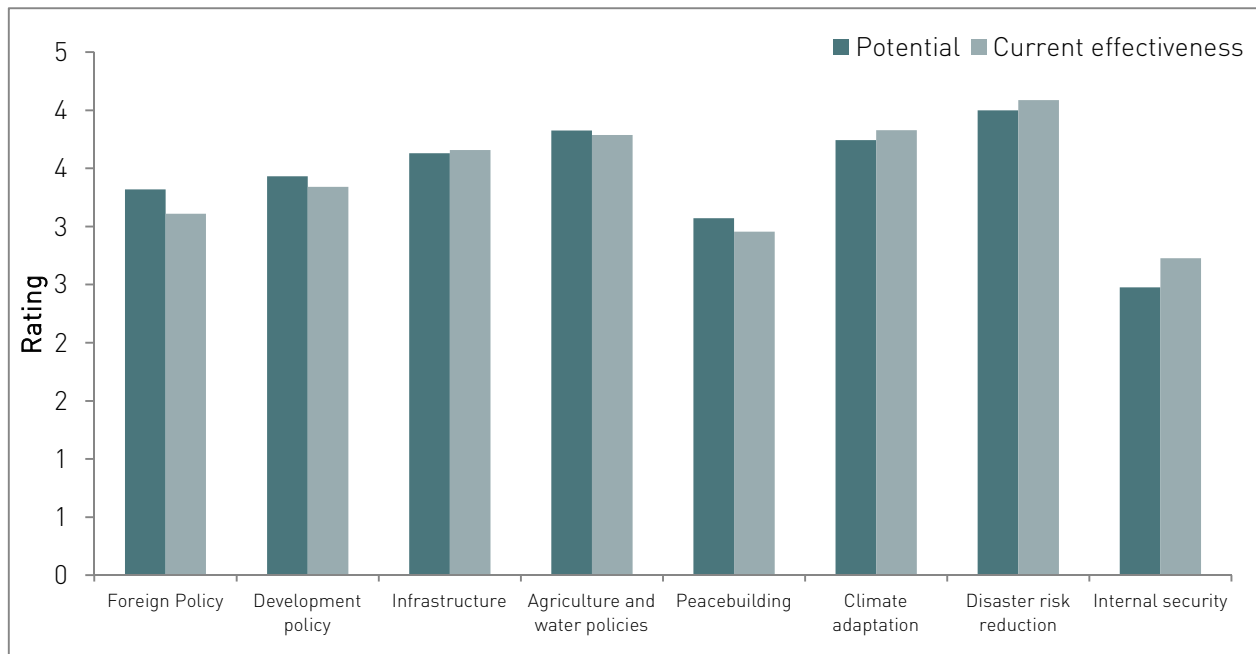
**Figure 1. Top factors contributing to fragility risks in Japan**

Overall, most respondents were either low (38%) or moderately (43%) satisfied in the way national policies are addressing climate-fragility related issues in the country. In terms of interventions in specific policy areas, most policy areas received similar ratings in terms of the extent to which they are addressing climate-fragility related issues (Figure 2). However, issues such as the economy, development and price volatility received a relatively better rating than internal displacement and conflict and security. Respondents opined that price volatility and economic and developmental issues fare better in terms of integrating climate change concerns than the other policy areas.

In terms of specific policy areas with high potential to address fragility risks, respondents felt there is high potential to address fragility risks through interventions in disaster risk reduction and the agriculture and water sectors followed by climate change adaptation. The current effectiveness of policy areas such as climate change adaptation, internal security and disaster risk reduction was rated better than their perceived potential, while foreign policy and development policy are perceived as having greater potential (Figure 3). There is a need to address this policy gap by investing in research and development, human resource development and fostering regional and international collaboration. 30% of respondents thought that these measures should be implemented at the national level while 27% thought this should happen at all levels.



**Figure 2. Effectiveness of policies in specific fragility risk areas and the extent of integration of climate change aspects into these policies.**



**Figure 3. Potential of different policy domains to address climate-fragility risks and their current performance compared to the perceived potential.**

## Conclusion

Japan's main internal climate-fragility risks are the increasing number and intensity of disaster events, Japan's demographic developments (like ageing population and de-population), and impacts of heat and cold waves on certain vulnerable groups as well as on specific sectors like agriculture, fisheries etc. The external climate-fragility risks are more complex and related to Japan's high dependency on food imports and related costs, and also to foreign policy issues, especially in East and Southeast Asia.

In case of policy options, the internal and external climate-fragility risks need to be addressed in a holistic way taking into account the inter-dependency of water, agriculture and fisheries sectors as well as their links to foreign policy. While disaster risk reduction and climate change adaptation approaches are more internal to Japan's own policies, the country also needs to look in more synergistic ways at how to link these to different specific sectors like food, agriculture, fisheries, health etc. National adaptation planning covers climate change impacts on all the above-mentioned sectors. Natural disasters and coastal areas have specific provisions in the national adaptation plan. Thus, interlinking different sectoral policies is an entry point.

The other important issue is to bring the policy to the local level and implement it as part of local governance. As mentioned in the examples above, local governments are the first responders during disasters. Most of the local governments have their disaster preparedness plans. Integration of climate change adaptation planning in the local disaster preparedness plans is very important. Fujii (2016) pointed out that the Ministry of Environment (MOE) of Japan has started the formulation of local adaptation plans in nine prefectures and two cities from 2015. It will be important to replicate those in other smaller cities and towns as well, where disaster and adaptation related problems are quite distinct from that of the larger cities.

Finally, linking the sectoral policies, disaster risk reduction policies and climate change adaptation policies together with foreign policy is the most important issue, which is key to addressing climate-fragility risk in this inter-connected world.

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Authors: Rajib Shaw, Svrk Prabhakar and Hideyuki Mori

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adelphi

Alt-Moabit 91

10559 Berlin

Germany

T: + 49 30 89 000 68-0

F: + 49 30 89 000 68-10

E: [office@adelphi.de](mailto:office@adelphi.de)

I: [www.adelphi.de](http://www.adelphi.de)

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