

Policies and Institutions Shaping Human Security: Climate Security Implications of External Emergency Assistance

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Outline

- ▶ Understanding the complexity of issues
 - ▶ Transboundary risks (global), climate fragility risks (Japan), food security (India), and external assistance (all countries)
- ▶ Climate security as an all-encompassing concept
- ▶ Operationalizing climate security for decision making
 - ▶ Climate Fragility Index (CFI) concept
 - ▶ Critical threshold concept
- ▶ Conclusions

Objective of the Research

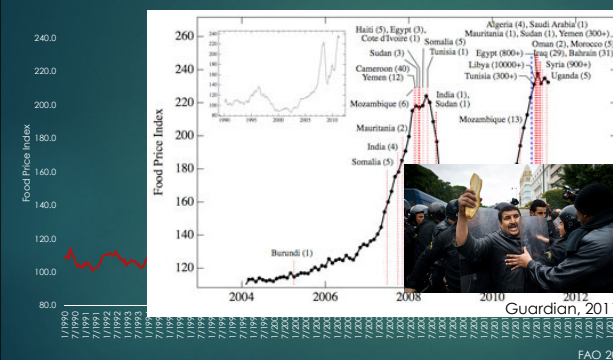
- ▶ To establish a means of operationalizing the climate security concept for decision making related to external emergency assistance.

Methodology

- ▶ Mixed methods approach
 - ▶ Expert consultations
 - ▶ Systematic literature review
 - ▶ Case study approach
 - ▶ Statistical techniques (Principal Component Analysis, multiple regression etc)

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Case 1: Climate change as a threat multiplier: 2008 food price, food security, and transboundary crisis



- ▶ Global rice prices had risen 10 percent in just 2 months.
- ▶ Rice prices increased when India, Vietnam, Cambodia and Egypt imposed export restrictions.
- ▶ Thailand's long-grain rice prices exceeded \$1,000 per ton in late April 2008, more than double of prices in early February and **triple** of prices in November 2007.

Need to forecast such global price fluctuations and their impact on a country's food security

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Impacts on food security and livelihoods

1. Food security impacts:

- **10-15% decline in food consumption** (15-20% increase in food expenditure) in 50-70% of poor households from 2007 to 2008 (WFP 2009), food riots and poverty.
- Poorer section of the **urban population** (casual and unskilled labourers) were disproportionately affected

2. Livelihood impacts: petty traders, labourers and peri-urban agriculturists.

USDA 2009

A culmination of spatio-temporal factors

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► Short-term factors for price rise:

- **temporary export bans** and restrictions implemented by several major and mid-level rice exporters (India, Vietnam, Cambodia, Egypt)
- **panic buying** by several large rice importers
- **weather-related problems** in specific growing areas (e.g. drought in Australia)
- a sharp decline in the value of dollar in fall 2007 and winter 2008, and
- a shift of **funds into commodities** from stocks and real estate in 2007 and early 2008 that added to price volatility and may have temporarily boosted prices.

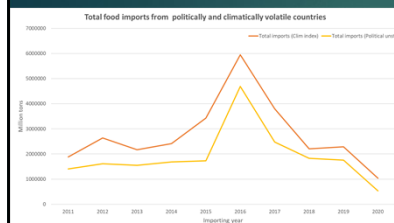
► Long-term factors

- sharply **rising incomes** in developing Asian countries
- very **high prices** for other foods
- extremely high nominal **fuel and fertilizer prices**
- the elimination of excess **global rice stocks**
- **negligible yield growth for rice** over the past decade
- a massive increase in the **production of biofuels** in recent years

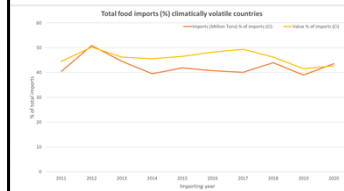
USDA 2009

Case 2: India's Food Import Dependency on Fragile Countries

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- India imported food from **23** of top 30 climatically and 11 politically unstable/vulnerable countries during 2011-2020.
- During 2011-2020, **42%** of total food imports came from climatically vulnerable countries, and **29%** from politically unstable countries.
- The nexus between political stability and climate change is well recognized globally. This puts India's food imports at risk (Ukraine-Russia war?)

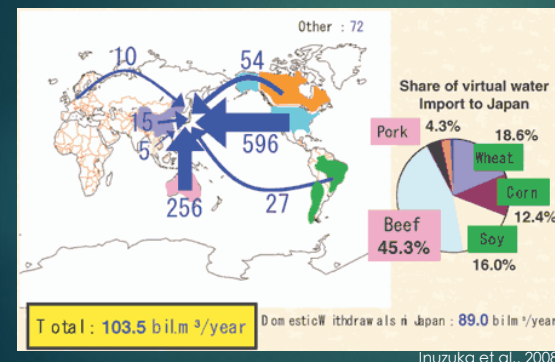


India also exports food to several of these countries in significant quantities.

Source: data from APEDA and Germanwatch, 2021

Case 3: Climate Security is a Concern for Developed Countries as Well: Japan

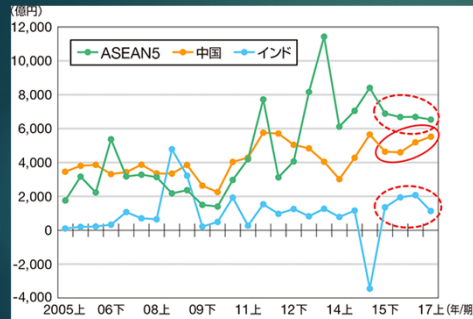
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- Japan's climate security concerns originate both from within and across its borders.
- **Food and water:** Japan imports more freshwater than the water withdrawn within its borders.
- Japan saves nearly **20 km³** of water by importing food per annum.
- Climate change impacts on countries from where Japan imports food means food and water insecurity for Japan.

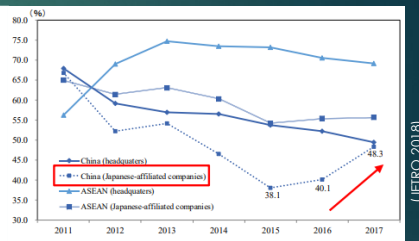
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Japan's FDIs have been increasing in the ASEAN Region and will increase in the future



(注) 1. アジアの中から、ASEAN5・中国・インドを抽出。
2. データは、四半期統計の2期合算。
(資料) 日本銀行「国際収支統計」

Source: MOF, 2018

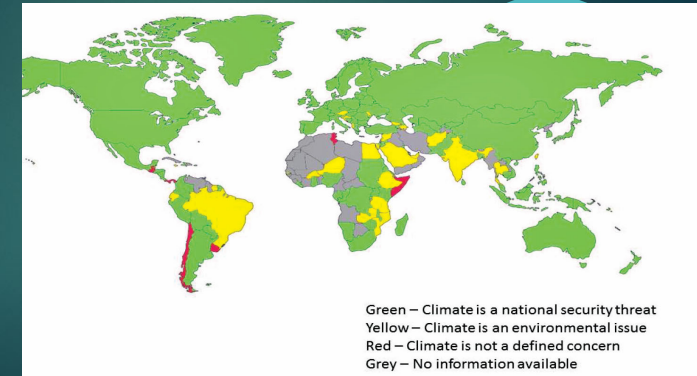


- ▶ Japan's FDI outflows to Asian countries have been increasing in the past decade. FDI have increased especially in Thailand after a brief decline aftermath 2011 floods.
- ▶ There are projections for more Japanese companies to increase investments in ASEAN and China (JETRO 2018).

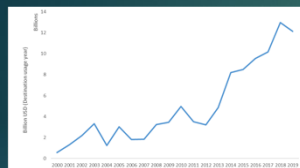
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Case 4: How Climate Change Threatens National Security?

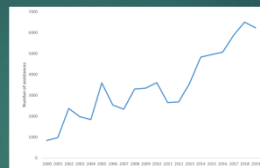
- ▶ More than 70% of countries' militaries have humanitarian assistance and relief as a critical mission.



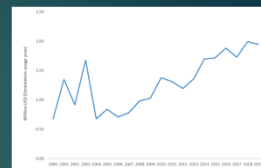
Case 5: External Emergency Assistance Trends in Asia¹¹



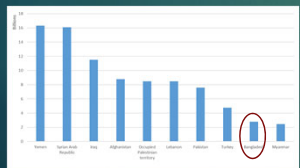
1. Total external assistance amount on the rise



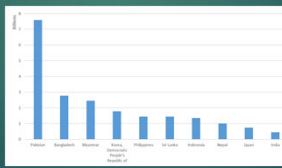
2. Total assistance events on the rise



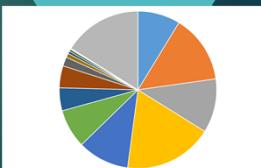
3. Assistance per event on the rise



Top 10 Asian countries received 87 billion USD during 2000-2019

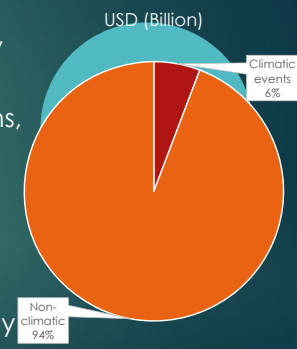


Top 10 South & South East Asian countries received 21 billion USD during 2000-2019



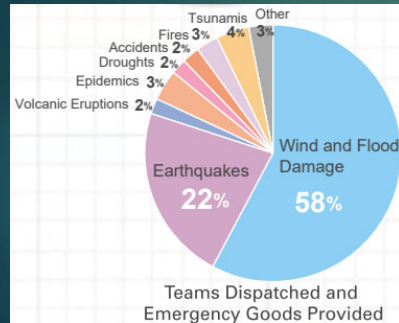
Emergency Assistance in Asia

- ▶ Asian countries received a total of 100 billion USD during 2000-2019 as external emergency assistance.
- ▶ Out of this, climatic events including typhoons, floods, and extreme temperature events accounted for 5.8 billion USD.
- ▶ However, 75% of all emergency events were triggered by climatic disasters.
- ▶ Multiple climatic events in a single or subsequent years have made countries highly vulnerable to external emergency assistance.



Japan's External Emergency Relief Burden Can Grow in the Future

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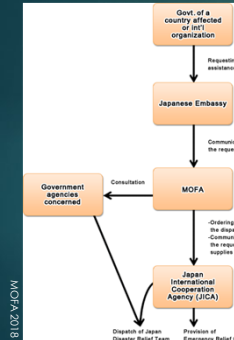
JICA, 2017

- ▶ Overall losses due to extratropical cyclones will increase, with possible decreases or no change in some areas (**medium confidence**)
- ▶ Likely increase in average tropical cyclone maximum wind speed
- ▶ Future flood losses in many locations will increase (**high agreement**)

IPCC SREX 2012, IPCC 2015

Institutional Costs of External Emergency Assistance

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- ▶ In addition to the direct costs of deploying the relief assistance, several arms of the Government of Japan are involved from the time the external emergency assistance request is received to the time the assistance is delivered.
- ▶ These costs are often not accounted into the cost of EEA deployment which could be significant.
- ▶ These costs are accrued both on the recipient side and on the donor side.

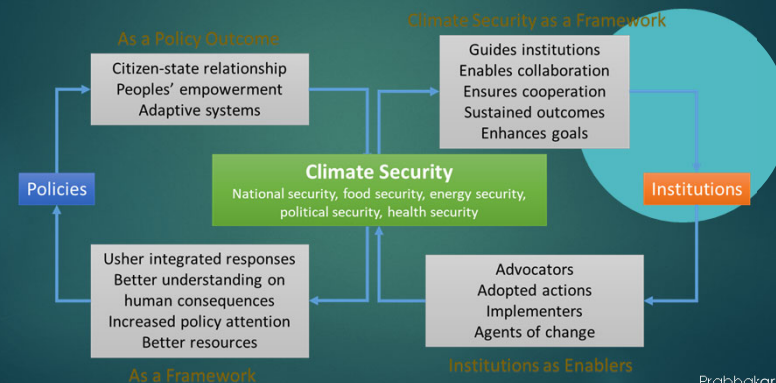
Climate Security as an Unified Framework

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- ▶ The concept and practice of **climate security** is expected to provide a unified framework to address these complex issues
- ▶ **Security** refers to the political, institutional and social environment where individuals, societies and countries have **freedom to decide their current and future wellbeing**.
- ▶ **Climate security** refers to the threats posed by the climate change to the security of individual human beings, societies and countries.
- ▶ Climate security is an important issue for both the developed and developing countries.

Climate Security is double-edged sword: Is a Framework for decision making and an Outcome

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Prabhakar, 2019

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Operationalizing CS

1. Climate Fragility Index

- ▶ A country's dependency on external assistance also depends on the climate security and fragility state of the country.
- ▶ Fragile state of country is defined as lack of
 - ▶ **Capacity** to deliver basic governance functions
 - ▶ **Legitimacy**: ability to develop mutually constructive relations, and
 - ▶ **Authority**: ability to provide basic security to its people



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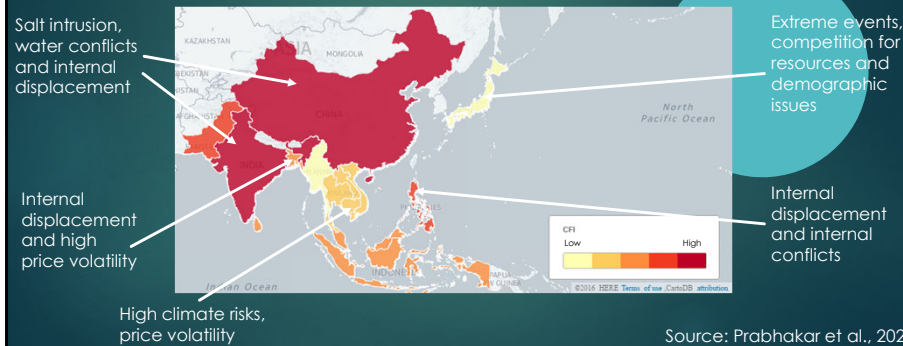
Climate Fragility Index

Indicator	Proxy indicator	Rationale and limitations	Source
Local competition for water	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
Extreme weather events	Climate risk index	Most comprehensive risk index covering climatic hazards and has been regularly produced for most countries.	Germanwatch, 2016
Migration and internal displacement	% 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
Food volatility	price	Food price volatility was calculated as a standard deviation of principal food crop prices in the past decade in local currency.	FAOSTAT, 2016
Sea level rise (SLR)	% 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
Unintended effects of policies	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

Source: Prabhakar et al., 2020

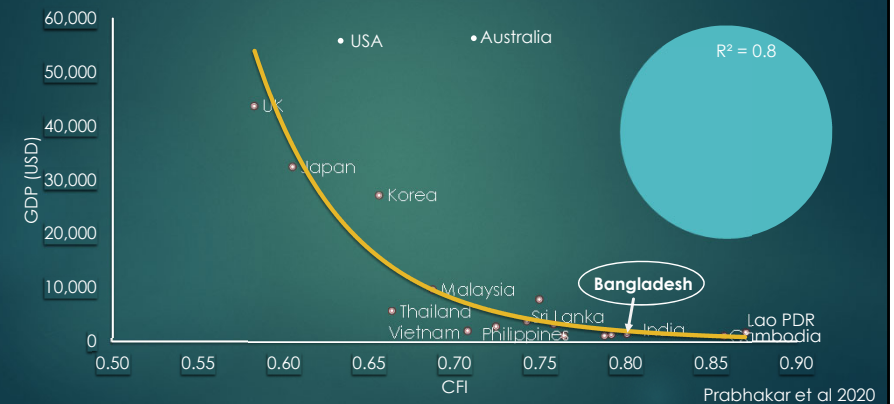
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Comparison of Countries on CFI



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The Development and Fragility Nexus



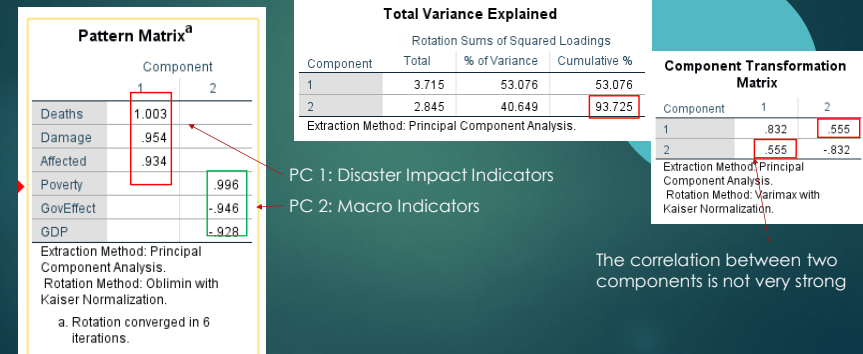
What Determines Country's Dependency on External Assistance? Principal Component Analysis

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- ▶ Dependent Variable: External Emergency Assistance (USD)
- ▶ Independent variables: Deaths, number of people affected, damage, GDP, Governance effectiveness, and poverty
- ▶ Principal component analysis design:
 - ▶ Rotation: Oblimin rotation (assumption: Principal components/factors are correlated)
 - ▶ Reduction of factor numbers: Eigenvalue < 1

PCA Analysis Results: E.g. Philippines

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Identifying the Critical Threshold Value for The Philippines: Regression Analysis

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- ▶ The two principal components generated were used to develop a new variable. The Principal 1 is called Disaster Impact and PC 2 can be called Macro Economic

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.511E+17	2	2.256E+17	31.592	.000 ^b
	Residual	1.214E+17	17	7.140E+15		
	Total	5.725E+17	19			

a. Dependent Variable: Assistance
b. Predictors: (Constant), Macro economic indicators, Impact of disaster

Only disaster impact indicators show significant regression

VIF < 3, hence no multicollinearity problem

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients		t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta	Partial			Tolerance	VIF
1	(Constant)	58522475.43	121286572.6			.483	.636		
	Impact of disaster	.948	.129	.930	.7359	.000	.780	.1282	
	Macro economic indicators	-.002	.002	-.101	-.797	.437	.780	.1282	

a. Dependent Variable: Assistance

Ext. Em. Assist. = $0.948 \cdot PC1 - 0.002 \cdot PC2 + 58522475$

The Philippines tend to ask for Assistance when the PC1 reaches a value of **58522475**

Critical thresholds for Major Asian Countries

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- ▶ Afghanistan = $-0.007 \cdot PC1 - 25555 \cdot PC2 + 38020265$
- ▶ **Bangladesh = $0.000 \cdot PC1 + 7.058 \cdot PC2 + 19520455$**
- ▶ China = $0.008 \cdot PC1 - 2.50 \cdot PC2 + 20740127$
- ▶ India = $-8.55 \cdot PC1 + 0.000 \cdot PC2 + 38072756$
- ▶ Indonesia = $4.48 \cdot PC1 + 50.46 \cdot PC2 - 9700875$
- ▶ Pakistan = $0.04 \cdot PC1 + 112 \cdot PC2 - 1305814894$
- ▶ Sri Lanka = $0.001 \cdot PC1 + 57.2 \cdot PC2 - 19513408$
- ▶ Vietnam = $0.000 \cdot PC1 + 3.421 \cdot PC2 - 2977399$

Principal Components Vary for Each Country with Some Commonalities

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Country	Principal Component 1	% σ^2	Principal Component 2	% σ^2
Afghanistan	GDP, poverty, affected	42	Dead, governance	29
Bangladesh	Poverty, GDP, governance	50	Affected, dead	23
China	Damage, dead, governance	47	Poverty, GDP, affected	26
India	Poverty, GDP, affected, dead	39	Damage, governance	21
Indonesia	GDP, poverty, governance	59	Affected, dead	28
Pakistan	Poverty, governance, GDP, affected	58	Dead	24
Philippines	Death, damage, affected	63	Poverty, governance, GDP	32
Sri Lanka	GDP, poverty	41	Dead, affected, governance	26
Vietnam	Governance, GDP, damage, poverty	58	Affected, dead	25

3. Connect Short-term EEA Engagements with Long-term Risk Reduction

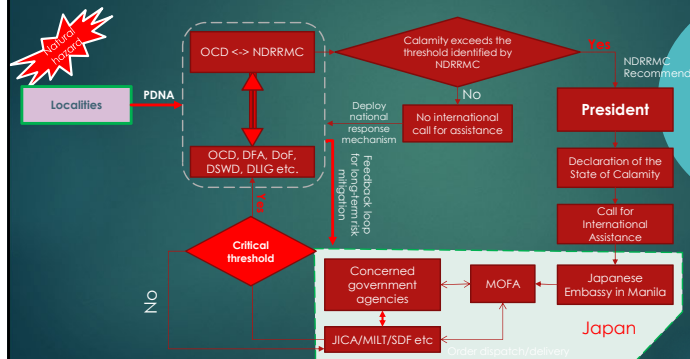
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- R&R is constituted of short period of time where large sums of resources will be spent.
- Much of these expenditures may not lead to long-term risk mitigation benefits.
- Linking experiences and lessons from engagements related to EEA and ploughing back into other phases of DRR spiral could enhance the value of resources employed during the emergency phase.

The Operational Framework of the External Emergency Assistance between Japan & the Philippines

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- NDRRMC plays a crucial role in recommending declaration of calamity in the Philippines.
- Japan always send emergency assistance only upon request
- Critical threshold concept works best for voluntary deployment of assistance

Conclusions

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- **Conclusions:**
- Higher the CFI higher the dependency on external emergency assistance.
- Countries on the lower development spectrum exhibited higher CFI. Using CFI, such behavior of countries can be easily explained.
- The critical threshold concept can be applied for understanding the assistance requirements of countries.
- **Limitations and future work:**
- These thresholds are developed based on the past experience of disasters and there is a need to develop it for the future climate and disaster impacts as well.
- Limited data and limited indicators. Expanding the number of indicators can make these concepts robust.

Acknowledgements & Publications

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Publications:

- ▶ 2019. Globalization of local risks through international investments and businesses: A case for Risk Communication and Climate Fragility Reduction (UNISDR GAR18 Contributing Paper)
- ▶ 2020. State Fragility and Human Security in Asia in the Context of Climate and Disaster Risks (Springer, In Print, Book chapter)
- ▶ 2020. Policies and Institutions Shaping Human Security in an Era of Changing Climate and Increasing Disasters (Springer, In Print, Book chapter)
- ▶ 2021. Climate change and human security in the context of global pandemic: Responses to maximize synergies (Springer Nature, In Print, Book chapter)
- ▶ 2021. International investments and businesses as enablers of globalization of local risks: A case for risk communication and climate fragility reduction (Progress in Disaster Science, 2021, Journal Paper)
- ▶ 2021. Strengthening External Emergency Assistance (EEA) for Managing Extreme Events, Systemic, and Transboundary Risks (Journal of Politics and Governance, Journal Paper)
- ▶ 2021. Critical thresholds of external emergency assistance of selected Asian countries: Concepts and evidence (Progress in Disaster Science, Journal Paper)