
Charles Darwin University

Good enough today is not enough tomorrow

Challenges of increasing investments in disaster risk reduction and climate change adaptation

Ishiwatari, Mikio; Surjan, Akhilesh

Published in:
Progress in Disaster Science

DOI:
[10.1016/j.pdisas.2019.100007](https://doi.org/10.1016/j.pdisas.2019.100007)

Published: 01/05/2019

Document Version
Publisher's PDF, also known as Version of record

[Link to publication](#)

Citation for published version (APA):

Ishiwatari, M., & Surjan, A. (2019). Good enough today is not enough tomorrow: Challenges of increasing investments in disaster risk reduction and climate change adaptation. *Progress in Disaster Science*, 1, 1-3. [100007]. <https://doi.org/10.1016/j.pdisas.2019.100007>

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

Take down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.



Invited ViewPoint

Good enough today is not enough tomorrow: Challenges of increasing investments in disaster risk reduction and climate change adaptation



Mikio Ishiwatari ^{a,*}, Akhilesh Surjan ^b

^a International Cooperation Agency, Japan

^b Charles Darwin University, Australia

ARTICLE INFO

Keywords:

DRR finance
Development assistance
National development plan
Private sector

ABSTRACT

As population is growing and urbanization is progressing, higher numbers of people are exposed to disaster risks, especially in developing countries. Climate change is further worsening impacts of existing risks and introducing new risks in the form of heat stress, water scarcity, water and vector borne diseases and extreme events. There is no doubt that countries need to invest more in disaster risk reduction (DRR) together with climate change adaptation (CCA) not only to minimize impacts but also build resilience. Sadly, investment in DRR and CCA is far behind compared with investments in expansion of human settlements, infrastructure and services development. This paper examines existing practices of investment and investigates challenges in increasing investments in reduction of water-related disaster risks. It concludes that in the first place, DRR needs to be integrated in national development plans. In addition, formulating sectoral long-term plans proved helpful to secure commitment of investment.

© 2019 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

Contents

1. Introduction	1
2. Practices of securing finance in DRR.	2
2.1. Integrating DRR into national development plans and formulating long-term DRR plans	2
2.2. Stand-alone DRR finance mechanisms	2
2.3. Sharing costs with local governments and communities	2
3. Challenges	2
4. Conclusion.	3
Disclaimer	3
Conflict of interest	3
References	3

1. Introduction

Growth of population coupled with urbanization, especially in developing countries, is resulting in increased exposure to risk from hazards of all kind. Climate change is exacerbating known risks and rearing unknown complications experienced through heat stress, water scarcity, water and vector borne diseases and even extreme events. Increased investment in disaster risk reduction (DRR) and climate change adaptation (CCA) is

required from global actors, regional and national governments as well as local actors including corporates, non-profits, municipalities and individuals.

The Sendai Framework for Disaster Risk Reduction, adopted in 2015, stresses that proactive investment in DRR is highly cost-effective in protecting human lives and preventing economic damage and can save recovery costs [1]. Later in December-2017, *Third Asia-Pacific Water Summit* adapted 'The Yangon Declaration: The Pathway Forward'. One of the key declarations of this Summit was doubling investments to address water-related disasters and increase water security in the Asia-Pacific region [2]. High-Level Panel on Water (HLPW), established jointly by the United

* Corresponding author.
E-mail address: ishiwatari.mikio@jica.go.jp. (M. Ishiwatari).

Nations and the World Bank, recommends doubling investment in water-related DRR within the next 5 years in the Outcome Document published in March-2018 [3]. Key measures for investment includes (i) reducing risk to acceptable levels through structural and nonstructural investments; and (ii) managing the residual risk through disaster preparedness measures, such as early warning systems and financing arrangements for disaster relief and recovery [4].

Despite recent global, multilateral and regional impetus, most countries are not able to proactively investment enough in DRR. In contrast, investment in DRR and CCA is far behind compared with investments in expansion of human settlements and development of infrastructure and services.

This paper looks at current investment trends while aiming at identifying challenges in increasing investment in reduction of water-related disaster risks and making a case for enhanced DRR and CCA investments. Additionally, policies and approaches to sustainably progress towards resilient future are also recommended.

2. Practices of securing finance in DRR

In most developing countries, main financial source of DRR is national, provincial and local government's investment in public services [5]. A number of countries have mobilized their own DRR finance, which is often more important than development assistance [6]. Development assistance in DRR of USD13.5 billion from 1991 until 2010 accounts for miniscule 0.4% of the total amount of development assistance [7]. Kellet et al. analyzed DRR financing in five countries and stressed that even relatively poor countries can manage dedicated financing by prioritizing DRR in national budgets [8]. This section examines three broad categories of DRR financing secured through government resources.

2.1. Integrating DRR into national development plans and formulating long-term DRR plans

A number of countries have started integrating DRR into national development plans. Some countries also formulated long-term plans that cover targets, policies, projects, and other related issues pertinent of DRR [9]. These approaches are helpful in promoting DRR in some of the major disaster-prone countries in the Asian region as detailed below through selected cases.

China has increased flood prevention budget from the late 2000s and also integrated DRR into the national five-year plans of economic and social development. Five-year sector-wide plans of disaster reduction and water resource development comprises detailed development guidelines, main tasks, major projects and targets to be achieved. In India, two major events - Orissa Super-Cyclone of 1999 and the Gujarat Earthquake of 2001 triggered mainstreaming DRR at various levels. For the first time ever, blueprint for DRR was included in five-year plan (2002–2007) and the subsequent eleventh and twelfth plans have taken a step further by listing projects and interventions [10].

Korea has promoted construction of water-related infrastructure from the 1960s based on ten or twenty year national water resource development plans [11].¹ From the 1970s, budget is allocated for flood prevention in Malaysia's five-year development plans [12]. Philippines development plans mention DRR policies and approaches. Indonesia's national development plans have included DRR approaches and major projects. Vietnam adopted National Strategy for Natural Disaster Prevention, Response and Mitigation (2007–2020) comprising necessary approaches for DRR to minimize human losses and economic damage.

Since 1960s, Japan's Comprehensive National Development Plans integrated DRR covering infrastructure development to manage the national

land from a long-term perspective. For over one hundred years, Japan had formulated the long-term plans of flood prevention. A unique aspect of these plans is inclusion of required costs during the plan period. The Japanese government formulated first long-term plan in 1911 following series of flood disasters. This plan covered works in 50 major river basins for 18 years with the cost of 1.7% of the national budget [13]. The government created a special account to manage financing that included shares by local government, and loan programs from postal savings. Continuing this trend, three long-term plans were formulated before the World War-II, followed by nine more plans post-war until year 2000. Over the years, impressively, Japan's flood prevention infrastructure reached the value of JPY78 trillion, or US\$710 billion, amounting to 10% of government infrastructure stock, in 2014 [14].

While the long-term plans were useful in securing investment during the development stage of the country, there are some disadvantages, such as limited coordination among sectors, inflexibility of budget allocation, and demotivation due to decreasing budget. To respond to needs at the stabilized stage of economic growth in the 2000s, the Japanese government abolished sector specific plans since year 2005 and integrated all sectors into the infrastructure development plan without mentioning necessary costs [15].

2.2. Stand-alone DRR finance mechanisms

The Philippines and Mexico established stand-alone DRR finance mechanisms. The Philippine government's national disaster risk reduction and management fund is specifically used for mitigation, prevention, and preparedness activities. 30% fund is marked as quick response fund, a stand-by fund for relief and recovery programs. Local governments are also required to dedicate 5% revenue as the local disaster risk reduction and management fund and used to support pre-disaster and preparedness activities. In the fund also, 30% budget is kept aside for relief and recovery programs [16].

Mexico established FONDEN, natural disasters fund, in 1996 to support rapid rehabilitation of federal and state infrastructure and low-income housing affected by natural events. The financing mechanism of FONDEN is evolving to use a reinsurance scheme in the international capital market [17].

2.3. Sharing costs with local governments and communities

Historically, local communities in Japan and the Netherlands have been responsible for local flood prevention. Even now in the Netherlands, water boards finance their activities of regional and local flood prevention almost entirely from their own individual taxes - the water board charges and the pollution levy. The water boards are decentralized governmental institutions responsible for regional and local flood prevention, and have history from the 13th century [18]. In Japan, local governments share some one third of costs for national flood prevention projects.

Other developed countries also have cost sharing mechanisms for flood prevention. In US, state and local governments share 35% of costs of federal flood prevention projects conducted by US Army Corps of Engineers. In England, central government covers some 90% of costs of flood and coastal erosion risk management. Remaining 10% comes from a number of funding sources, such as local levy, drainage charges, or partnership funding [19].

3. Challenges

As countries develop and climate changes, the needs for DRR investment increase. A World Bank report estimates annual needs of flood protection and coastal protection at USD104.32 billion, and in addition climate change adaptation costs at USD17.85–54.90 billion every year [20].

DRR investment is cost-effective. UN estimates suggest that annual investments of USD6 billion in DRR could generate total risk reduction benefits of USD360 billion until 2030 [21]. Investing in DRR contributes to economic growth at normal times as well as decreases economic losses when disasters strike [22]. Private sector exhibits confidence in investing more in commercial and industrial activities in areas protected with flood

¹ These plans are Ten-Year Comprehensive Water Resource Development Plan (1966–1975), Four Major River Basin Comprehensive Development Plan (1971–1981), Comprehensive Long-term Water Resource Development Plan (1981–2001), new Long-term Comprehensive Water Resource Development Plan (1991–2011), and Water Vision 2020 (2001–2020).

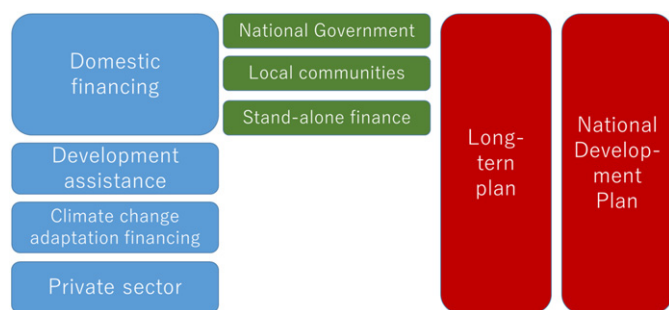


Fig. 1. Concept of DRR investment.
(Source: Authors' elaboration.)

prevention facilities. These facilities often improves environment along rivers and coasts, while also catalyzing tourism investment.

In addition to government finance and development assistance, monetary resources from risk-management instruments, carbon markets, and private sector are also available. Financing for climate change and DRR requires exploration of all possible traditional and innovative resources, while ensuring maximum synergies and complementarities. By mobilizing multi-sectoral financing sources, manifold benefits can be reaped from DRR, urban, water and other relevant areas [23]. Finance for climate change adaptation can be used for reducing risks of extreme climate disasters. Between 2002 and 2014, some 13% of total multilateral adaptation finance flowed towards DRR activities [24]. UNESCAP recommends to establish direct or dedicated public and private investments, or to modify the existing development schemes in different sectors to include DRR [25].

Encouraging private sector to invest in DRR remains a key challenge. There are issues to mobilize private capital in investing in urban resilience. Local governments have limited technical and financial capacity of formulating and promoting policies and projects that are attractive to the private sector [26].

Considering vulnerable groups, such as poor or marginalized communities, in DRR activities is crucial from a development perspective. Otherwise, cost-effective projects will concentrate only in wealthier areas [27]. The poor suffer the most from disasters. It was found from household survey and hydrological data in 52 countries that poor people are disproportionately exposed to floods and droughts in 52 countries, in particular African countries [28]. This makes a solid case of equitable distribution of resources in DRR and CCA.

4. Conclusion

The practices show that integrating DRR in national development plans and formulating sectoral long-term plans are effective to secure commitment of investment (Fig. 1). Establishing legally mandated mechanisms is crucial in providing sustainable resources for risk reduction and in creating financial flows from national to local levels [29]. Beneficiaries of national or federal projects should bear some costs to ensure fairness with other areas where the projects do not cover.

Disclaimer

This paper has been prepared as part of the research project “Demand estimate on social and disaster prevention infrastructure in Asia” for the JICA Research Institute. The views expressed in this paper are those of the author(s) and do not necessarily represent the official positions of JICA.

Conflict of interest

The authors declare that no conflict of interest exists.

References^{*,**}

- [1] UNISDR. Sendai framework for disaster risk reduction 2015–2030. Geneva: UNISDR; 2015.
- [2] Asia-Pacific Water Forum. Yangon declaration: the pathway forward. Tokyo: Japan Water Forum; 2017.
- [3] High-Level Panel on Water. Outcome document: making every drop count. New York: United Nations; 2018.
- [4] Asian Development Bank (ADB). Understanding disaster risk for advancing resilient development: knowledge note. Mandaluyong: ADB; 2018.
- [5] Twigg J. Disaster risk reduction. London: ODI; 2015.
- [6] Watson C, Caravani A, Mitchell T, Kellett J, Peters K. Finance for reducing disaster risk: 10 things to know. London: ODI; 2015.
- [7] Kellett J, Caravani A. Financing disaster risk reduction: a 20 year story of international aid. London: ODI; 2013.
- [8] Kellett J, Caravani A, Pichon F. Financing disaster risk reduction: towards a coherent and comprehensive approach. London: ODI; 2014.
- [9] Prabhakar SV, Abu-Bakar A, Becker S, Pereira JJ, Solomon DS. Insurance for disaster risk reduction and climate change adaptation—an overview. In: Prabhakar SV, Pereira JJ, Pulhin JM, Rao GS, Scheyvens H, Cummins J, editors. Effectiveness of insurance, effectiveness of insurance for disaster risk reduction and climate change adaptation: challenges and opportunities. Hayama: IGES; 2015.
- [10] Planning Commission. Report of the working group on disaster management for the twelfth five-year plan. New Delhi: Planning Commission; 2011.
- [11] Choi IC, Shin HJ, Nguyen TT, Tenhunen J. Water policy reforms in South Korea: a historical review and ongoing challenges for sustainable water governance and management. Water 2017;9(9):717.
- [12] Shah AMH, Mustaffa Z, Yusof KW. Disasters worldwide and floods in the Malaysian Region: a brief review. Indian J Sci Technol 2017;10(2):1–9.
- [13] Matsuura S. The history of making long-term plan flood control program and the transition of its basic concept (in Japanese, Chisuiyoukikakuno Sakuteino Keiito Sonokihontekikangaekatanosen). Proceedings of 6th Conference for History of Japanese Civil Engineering; 1986.
- [14] Cabinet Office. Measuring infrastructure in Japan (in Japanese, Nihonno Syakaisihon). Tokyo: Cabinet Office; 2017.
- [15] Kamei K. Reduction and effects of public works (in Japanese, Kokyojigyono sakugen to sonoikiyo). , 55(1)The Reference; 2005; 9–28.
- [16] Government of the Philippines. Philippine Disaster Risk Reduction and Management Act. Republic Act No. 10121. Manila; 2010.
- [17] World Bank. FONDEN: Mexico's natural disaster fund—a review. Washington, DC: World Bank; 2012.
- [18] Kamperman H, Biesbroek R. Measuring progress on climate change adaptation policy by Dutch water boards. Water Resour Manage 2017;31(14):4557–70.
- [19] Department for Environment, Food and Rural Affairs. Central government funding for flood and coastal erosion risk management in England. London: DEFRA; 2015.
- [20] Blankespoor B, Dasgupta S, Laplante B, Wheeler D. The economics of adaptation to extreme weather events in developing countries. Development and climate change discussion paper; no. 1. Washington, DC: World Bank; 2010.
- [21] UNISDR. Global assessment report on disaster risk reduction. Making development sustainable: the future of disaster risk management. Geneva: United Nations Office for Disaster Risk Reduction (UNISDR); 2015.
- [22] Tanner TM, Rentschler J. Unlocking the ‘triple dividend’ of resilience: why investing in disaster risk management pays off. Interim Policy Note. Washington D.C.: GFDRR; 2015 [ODI: London].
- [23] Baker JL, editor. Climate change, disaster risk, and the urban poor: cities building resilience for a changing world. The World Bank; 2012.
- [24] Caravani A. Does adaptation finance invest in disaster risk reduction? London: ODI; 2015.
- [25] UNESCAP. Mainstreaming disaster risk reduction for sustainable development: a guidebook for the Asia-Pacific. Bangkok: UNESCAP; 2017.
- [26] World Bank Group. Investing in urban resilience: protecting and promoting development in a changing world. Washington, DC: World Bank; 2016. This report explains how shocks and stresses disproportionately affect the urban poor, and identifies financing needs and obstacles to be overcome. Furthermore, it describe approaches of the World Bank Group to facilitate public and private sector investment in urban resilience.
- [27] Hallegatte S, Bangalore M, Bonzanigo L, Fay M, Kane T, Narloch U, et al. Shock waves: managing the impacts of climate change on poverty. Climate change and development. Washington, DC: World Bank; 2016. The report examines the potential impact of climate change and climate policies on poverty reduction, in major sectors of disaster, health, agriculture, labor productivity. It stresses that rapid, inclusive, and climate-informed development can prevent most climate change impacts on poverty. Also, emissions-reduction policies are required to remove the long-term threat from climate change.
- [28] Winsemius Hessel C, Brenden Jongman, Veldkamp Ted IE, Stephane Hallegatte, Mook Bangalore, Ward Philip J. Disaster risk, climate change, and poverty: assessing the global exposure of poor people to floods and droughts. Environ Dev Econ 2018 (ISSN 1355-770X). This paper analyses exposure of poor people to floods and droughts. It was found that poor people are often disproportionately exposed to droughts and floods, particularly in urban areas and in Africa.
- [29] Kellett J, Caravani A, Pichon F. op. cit; 2014.

* of special interest.

** of outstanding interest.