



Good enough today is not enough tomorrow

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

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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. Article 100007. <https://doi.org/10.1016/j.pdisas.2019.100007>

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Invited ViewPoint

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

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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.

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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

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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 invest 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).

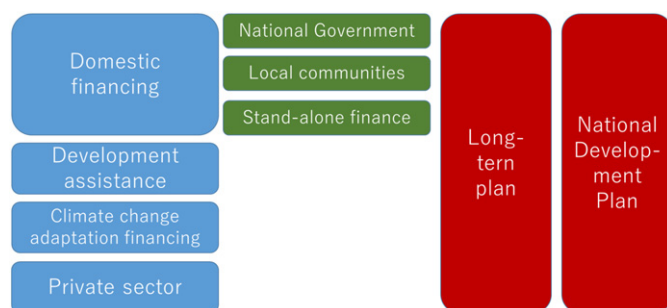


Fig. 1. Concept of DRR investment.
(Source: Authors' elaboration.)

prevention facilities. These facilities often improve 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.

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