

Generating multiple disaster resilience dividends

Narrative, evidence, and tools

Summary

Investing in disaster-risk resilience brings ample direct benefits but for decision-makers, making the case for investments in disaster risk reduction (DRR) can be challenging. The multiple resilience-dividends narrative supports a broader business case for DRR investment.

Investing in resilience can generate a wide range of benefits: protecting lives, loss reduction, and wider development, social, and environmental co-benefits. Highlighting the multiple benefits of resilience can increase buy-in, acceptability, and overall support for resilience-enhancing measures.

Decision-support tools are useful for identifying and communicating these multiple dividends. Making the case now is important in the context of climate change, which is increasing risks, and at a time of massive global investment in infrastructure that needs to be made disaster-proof and climate-smart.



*Escaping floods in Tikapur, Nepal.
Practical Action*

Recommendations

- Jointly communicating the benefits of reducing disaster and the co-benefits of integrating the management of disaster and climate risks with development addresses the multiple priorities of decision-makers and motivates investment in building disaster resilience and climate-smart development.
- Using the triple resilience dividend approach systematically assesses the benefits of reducing disaster losses (1st dividend), unlocking development potential (2nd dividend), and fostering wider social and environmental co-benefits (3rd dividend).
- Existing and novel decision-support tools can be employed for generating resilience dividends. Proper care should be taken assessing hard and, particularly, softer resilience-type interventions, such as ecosystem-based measures.
- National-level resilience-dividend assessments can build on the precedent set by some donors and NGOs that have started to embrace the resilience dividends narrative.

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The large benefits of DRR investment

Investing in disaster risk resilience pays, not just to avoid or reduce losses, but as part of a climate-smart sustainable development approach that builds resilience overall. There are ample direct monetary benefits of reducing risk, ranging across all hazards, from €4 to €11 for every euro invested (MMC, 2005, 2018). For many decision-makers, these figures alone tend to be not enough to counter the pressure to favour more visible and certain investments over reducing risk. This policy brief advocates a shift in the narrative towards highlighting the broader set of resilience dividends from DRR investment. We present new insight on how to communicate and make the case for increased and sustained DRR investment.

The triple dividends: a broader DRR narrative

The three major global agreements of 2015 (Sendai Framework, Paris Agreement, the Sustainable Development Goals) have all emphasized the need for integrating disaster and climate risks with sustainable development concerns; thus promoting approaches that concurrently generate multiple disaster risk reduction, climate adaptation, and development dividends. The 'Triple Resilience Dividend Framework' (Surminski and Tanner, 2016), presents three types of resilience dividends:

- reducing and avoiding losses to lives, livelihoods, and assets (1st dividend);
- unlocking development potential by stimulating forward-looking planning, long-term capital investments, and entrepreneurship (2nd dividend);
- garnering wider social and environmental co-benefits (3rd dividend).

National policy to pick up on the discourse

Presenting evidence of additional dividends to policymakers and investors informs the resilience narrative reconciling short- and long-term objectives to improve the acceptability and feasibility of DRR investments (Poljanšek et al., 2017). As highlighted in a 2017 EU review on DRR science and practice, 'identifying suitable investments' alone often is not enough to drive action to reduce risks.

While the multiple dividends narrative is increasingly embraced in international frameworks, there is still room for national policy to pick up on the discourse. Surprisingly little information on appropriate spending is available and only little evidence on dividends created has been generated, particularly at national levels. In the context of disaster and climate resilience,

there are key challenges in identifying and quantifying these multiple dividends. In recent discussions about innovative resilience finance tools, such as resilience bonds, the lack of clear methods for quantifying resilience impacts has become a barrier for investors and bond issuers.

Generating evidence

Initial mapping of resilience impacts and dividends



Multipurpose flood shelter provides crop storage and acts as community centre, Tikapur, Nepal. Practical Action

The first step in quantifying resilience impacts is a mapping exercise of what possible costs and benefits could arise from a resilience intervention. For example, the Nepal Flood Resilience Project (NFRP) implemented by Practical Action from 2013 to 2018 used the Flood Resilience Measurement for Community (FRMC) framework and tool developed by the Zurich Flood Resilience Alliance (Keating et al., 2016) to help communities holistically plan resilience-building activities for the vulnerable people of the Karnali floodplains in western Nepal (Regan, 2018).

Flooding occurs every year with frequent catastrophic floods resulting in huge losses of property, resources, and human lives. In 2017 nationwide extreme flooding disrupted the livelihoods of over 150,000 persons and claimed the lives of five. By investing in effective early warning systems combined with nature-based mitigation measures in the Karnali, resilience was built and the immediate loss and damage (1st dividend) was reduced. Second dividend impacts were achieved by off- and on-farm skill development training, increasing incomes and thereby motivating new investment in resilience building activities. As a 3rd dividend, many households invested in improved and elevated grain storage, which better preserves staple food even at times without flooding.

From identification to quantification: decision-support tools

Clear guidance on how to holistically appraise the various resilience benefits is needed. The Sendai Framework monitoring system for self-reporting prioritizes the quantitative enumeration of disaster losses, mortality, and people affected, rather than the 2nd and 3rd dividends. Below, we present two types of decision-support tools for option selection and evaluation, and resilience capital measurement.

Option selection and evaluation. Cost-benefit analysis (CBA) is a tool used by governments and donors for ex-ante option selection and ex-post evaluation of DRR investment options. While CBA has been used for understanding the 1st dividend, it has not frequently been applied explicitly to consider other dividends (Mechler, 2016). Examining a global database of 65 CBA studies on DRR investment (many on flood risk), we identify 15 analyses, conducted largely in a development context, where multiple resilience dividends have been assessed (only one assessment explicitly built on the multiple dividend framework). Table 1 presents three examples for flood risk where substantial dividends, presented as benefit–cost ratios, have been gauged.

Resilience capital measurement. CBA traditionally struggles to recognize intangible outcomes, such as recreational, ecological, and social benefits. Other decision tools can be used to complement CBA,

such as multi-criteria analysis or cost-effectiveness assessment (Zurich Flood Resilience Alliance, 2014). The Sendai Framework also requires tracking of progress in resilience building. This involves a systematically established baseline on resilience, for which resilience measurement approaches are the method of choice. One such approach is the FRMC, which is a decision-support tool for organizations working with communities to understand flood resilience strengths and weaknesses, gauge resilience outcomes after events, and support communities in crafting resilience-building actions.

The FRMC considers communities’ assets, interactions, and interconnections across the so-called ‘five capitals’ (or capacities): human, natural, social, physical, and financial. Four data collection methods are employed: household surveys, focus group discussions, key informant interviews, and third-party sources.

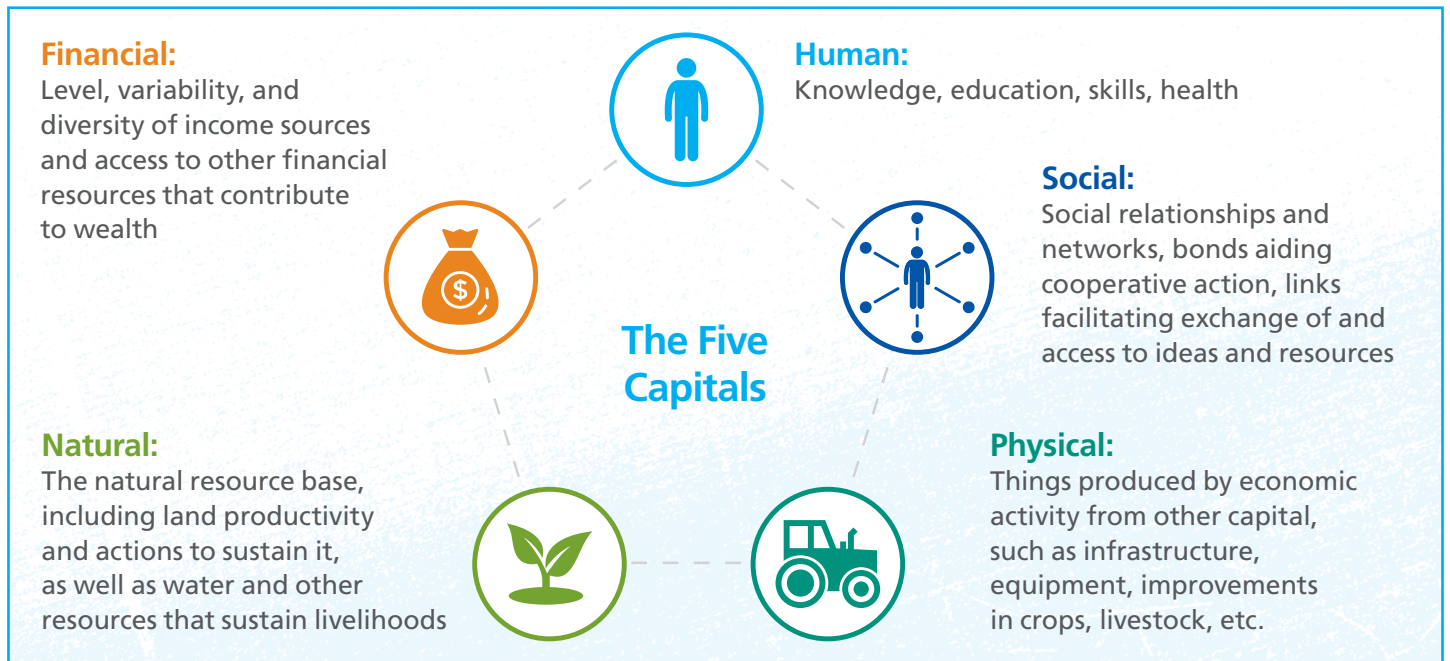
The FRMC creates evidence on communities’ resilience and can help decision-makers to prioritize interventions, as well as track impact. The FRMC’s five capitals of resilience align with the triple dividend framework as they allow a focus on direct (1st dividend) DRR impact as well as on the more indirect (2nd and 3rd) development dividends. This tool for tracking change over time thus complements other decision-support tools that help to select and evaluate interventions at specific points in time.

Table 1 Reported resilience dividends in CBA studies following the three dividends framework

Risk management intervention	Dividend 1: Losses and damages avoided and reduced	Dividend 2: Unlocking development	Dividend 3: Co-benefits	Benefit–Cost ratio
Mangrove afforestation against coastal flooding in Indonesia (IFRC, 2011)	Avoided direct and indirect flood damages	Economic benefits to planters’ income, increased yields	Ecological benefits (carbon value, nutrient retention, sediment retention, biodiversity habitat)	3.1–18.6
Flood management under climate change in Nepal (Kull et al., 2013)	Reduction in damages to crops, livestock, housing, assets, public infrastructure, health and wages, co-costs from waterlogging	Agricultural productivity enhanced generally	Community grain and seed bank	2.0–4.5
Community infrastructure, livelihood capacity building, and flood response training in Myanmar (Yaron, 2017)	Avoided mortality and morbidity, reduced direct flood damages	–	Benefits from self-help group investments (profits), home gardening, pig breeding	5.5

Note: Projects have positive dividends if benefits exceed costs (the benefit–cost ratio is larger than 1).
 Source: Mechler and Hochrainer-Stigler (2019)

Figure 1 Schematic of the FRMC



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The Zurich Flood Resilience Alliance is a multi-sectoral partnership which brings together community programmes, new research, shared knowledge, and evidence-based influencing to build community flood resilience in developed and developing countries.

We help people measure their resilience to floods and identify appropriate solutions before disaster strikes.

Our vision is that floods should have no negative impact on people’s ability to thrive. To achieve this we are working to increase funding for flood resilience; strengthen global, national and subnational policies; and improve flood resilience practice.

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