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Disaster Risk Reduction 2013

**Exploring Existing Methodologies for Allocating and Tracking Disaster Risk
Reduction in National Public Investment**

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EXPLORING EXISTING METHODOLOGIES
FOR ALLOCATING AND TRACKING
DISASTER RISK REDUCTION
IN NATIONAL PUBLIC INVESTMENT.

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1.0. Introduction

In the same way that the risks that threaten countries and the populations that inhabit them, are complex, diverse and intertwined, so are the measures and mechanisms that governments at all levels adopt in seeking to manage them more effectively. Few more so than the myriad means by which public institutions seek to integrate, systematize, and regularize disaster risk management (DRM) within public investment strategies, in a bid to minimize losses and maximize returns on public expenditure.

The array of protocols, procedures and mechanisms that exist are a testament to the growing commitment of governments to managing evolving disaster risk; this despite the dearth of adequate fiscal revenues that is so often cited as an impediment to accelerated action in reducing disaster risk and in implementing the Hyogo Framework for Action 2005-2015ⁱ (HFA). However, relatively little research has been undertaken in unpacking and comparing national investment planning, budgetary and accounting methodologies employed by governments as part of broader risk management approaches.

This paper examines the findings of recent analyses undertaken by inter alia the United Nations Office for Disaster Risk Reduction (UNISDR)ⁱⁱ and the Asian Development Bank (ADB)ⁱⁱⁱ, the World Bank (WB) and the Organisation for Economic Cooperation and Development (OECD). Prompted by the growing interest of Ministries of Finance and Planning, these studies have explored how national governments seek to incorporate DRM considerations into public investment portfolios and formulate strategies for disaster risk management as an integral part of more comprehensive fiscal risk management policies, and in so doing:

- better understand how national budgets are allocated (and ultimately expended) in respect of exogenous shocks or endogenous risks,
- contribute to reinforcing the politico-economic case for disaster prevention, mitigation, preparedness, recovery and reconstruction,
- examine where investment should be concentrated (and ultimately on what and how much), not least through linkage to the HFA,
- facilitate coordination and complementarity within and between entities of the national institutional architecture, and
- assist governments increase the return on investment for both individual line ministries and the public sector as a whole.

2.0. Nurturing national public investment for effective DRM – the international lens.

2.1. *The Hyogo Framework for Action 2005-2015 (HFA)*

The World Conference on Disaster Reduction (Japan, 2005), wherein the HFA was adopted by 168 governments, represented a watershed in worldwide recognition and commitment to the DRR agenda. In adopting the HFA, states demanded that its implementation “will be appropriately reviewed” and requests the UNISDR to “prepare periodic reviews on progress towards achieving [its] objectives and priorities....and provide reports and summaries to the [General] Assembly and other United Nations bodies...based on information from national platforms, regional and international organisations and other stakeholders...”. This is supported by the HFA Review Process¹ and the tool specifically developed for this purpose, the HFA Monitor, which is employed

¹ <http://www.preventionweb.net/english/hyogo/hfa-monitoring/?pid:73&pil:1>

by governments to facilitate a multi-stakeholder review process at national and regional level.

At the midpoint of the HFA, the Mid-Term Review (MTR) was produced for consideration at the Third Session of the Global Platform for Disaster Risk Reduction (GP) in 2011. It found that progress has been made in reducing disaster risk, especially from an institutional point of view, but that this progress is uneven, with a prevailing need to develop and improve synergies to ensure coordinated and coherent action on DRR across different sectors of government. It finds that a senior, over-arching authority is required, where responsibility, and with it accountability, rests for setting policies, driving processes, and ensuring budget allocations for different aspects of DRR.

2.2. *The UN General Assembly*

In the context of the review of efforts by Governments and other stakeholders to implement the HFA, the spending on measures to reduce risk, by national and local Governments, remains insufficiently understood, both in scale and in effectiveness. In the Report of the Secretary General to the General Assembly (A/62/320) para 79, 'the Secretary-General encourages Governments, donors and funding institutions to increase substantially their investment in disaster risk reduction, as an integral component of all programmes for humanitarian action, economic and social development, and environmental protection, *as well as to improve the coordination and tracking of these investments*. Governments should also consider setting targets for public spending on multi-year DRR programmes at national and local levels.' These studies form part of UNISDR's contribution to this end.

2.3. *The Global Assessment Report on Disaster Risk Reduction (GAR)*

The Global Assessment Report 2011 (UNISDR 2011^{iv}) identified that whereas DRM has conventionally been delivered through stand-alone projects and programmes, a number of governments are now adapting development mechanisms and instruments designed to reduce risks and strengthen resilience, including through public investment planning. While country feedback in 2011 identified that this remained the minority, with only 38 percent of all countries and territories systematically incorporating risk reduction into national and sector-level public investment systems (Ibid), in the current 2011-2013 HFA Progress Review cycle, a small majority (52 percent) now report systematic incorporation. Furthermore, 56 percent of countries state that the costs and benefits of DRR are incorporated into the planning of public investment.

Stand alone disaster reducing investments related to early warning systems and preparedness measures have benefitted from some initial work, including the findings captured in the WB/UN Study, 'Natural Hazards UnNatural Disasters' (World Bank, 2010). Identifying risk-reducing measures embedded in infrastructure and development sectors like transport, health, education and agriculture remains a challenge, both with regard to the investments required to reduce existing risk in these sectors and related infrastructure, as well as defining the minimum costs required to avoid new sectoral development and infrastructure from increasing risk further.

2.4. *The G20 and the OECD*

That being said, the imperative for societies that are more resilient through more effective DRM has continued to gain political currency; not least, following a succession of mega-disasters that struck industrialized, high income societies particularly hard.

"We recognize the value of DRM tools and strategies to better prevent disasters, protect populations and assets, and financially manage their economic impacts", said G20 Leaders at the

Los Cabos Summit in June 2012 as they instructed G20 Finance Ministers and Central Bank Governors to initiate a body of work led by the OECD and the WB with the support of the UN.

They recognized that financial strategies for DRM should ensure that individuals, businesses and governments have the resources necessary to manage the adverse financial and economic consequences of disasters, and that these need to be understood and assessed by Finance Ministries as a basis for developing financial and fiscal management strategies (OECD 2012^v).

The Mexican Presidency, through the Mexican Ministry of Finance and Public Credit then initiated a programme of work that was intended for use by both G20 countries, and a wider group of countries for which growth and development is regularly threatened by the impact of natural hazards. By securing this initiative in the Finance Track of the G20's work, it encouraged previously reticent Ministries of Finance to explore fiscal risk to disasters and makes a crucial contribution to promoting whole of government approaches for prospective management of disaster risk.

Box 1. The Responsibilities of Ministries of Finance for Disaster Risk Management

Finance Ministries and other relevant financial authorities play a pivotal role in DRM strategies given their responsibilities for economic, financial, fiscal and budget policymaking, planning of public investment and coordinating public expenditures. These responsibilities include:

- Ensuring that *financial vulnerabilities within the economy* are addressed through private markets, government-backed schemes or other instruments in order to promote financial resilience, and ensuring the *availability and efficiency of compensation mechanisms*, whether private or public
- Ensuring proper *fiscal management* of disaster risks by anticipating potential budgetary impacts and planning ahead to ensure adequate financial capacity and rapid release of funds, thus enabling emergency response, reconstruction of public assets and infrastructure, and targeted financial assistance
- Ensuring that *clear rules regarding post-disaster financial compensation* are established to enable rapid compensation, demonstrate solidarity and clarify the allocation of disaster costs, thereby promoting public confidence in country financial strategies while aligning incentives and reducing moral hazard
- Ensuring the *soundness and resilience of the financial sector* with respect to disaster risks, including through proper regulation, business continuity planning, and stress testing
- Ensuring the *optimal allocation of resources for DRM*, including assessment of the *cost-effectiveness of major public financial investments in disaster risk reduction projects*

(OECD 2012)

The methodological framework that was developed sought to assist the elaboration of specific country approaches and methodologies intended to strengthen physical and financial resilience to natural and man-made risks.

3.0. DRR in national public investment – the national perspective.

In 2011 and 2012, the ADB and the UNISDR initiated preliminary studies of national budgetary and planning processes for DRR in three countries in Asia (India, Indonesia and the Philippines) and five countries in Latin America (Costa Rica, Guatemala, Mexico, Panama and Peru). Although different in methodology², the eight studies followed a similar rationale; the Asian studies in particular had a greater focus on understanding the existing systems of classification, measurement and accounting of public investments in DRR. On completion of these studies, state officials and experts from both regions met in September 2012 at the Consultation Forum “Understanding Public Investment for DRR” in Mexico to review findings, exchange experiences and discuss potential collaborative actions in advancing risk-sensitive public investment.

Summary

Both regional trends and national variation were identified. Regional trends towards budgetary and planning policies that seek to increase, improve and quantify public investment for DRR, and DRM were observable in all the three Asian pilot countries as they were in those in Latin America. The latter displayed a more evident alignment of the HFA goals with their national public finances; this was less evident in the three Asian countries.

There is great diversity in the policies and instruments developed and in use at the national level. The principal characteristics prevalent in Asia and Latin America case studies have been identified; although it was recognized that in Latin America in particular, as such processes have only recently been established, their impact on public finance systems is thus far limited (Orihuela 2012).

- Mexico has made great progress in developing a financial protection strategy, which entails developing a financial market for disaster risk, but it is yet to incorporate DRR criteria in its federal investment planning system.
- Peru and Costa Rica have developed sophisticated methodologies and comprehensive risk analysis toolkits to serve their national systems of public investment planning. They have not pursued the financial management track.
- Guatemala and Panama have made preliminary attempts to design DRR tracking methodologies (Peru is a nuanced third case), propelled by the intention of their respective finance bureaucracies to advance on public investment planning and financial management strategies.

In Asia:

- Facilitated by legislative and institutional developments, India requires DRR to be integrated within the federal investment planning process, while financing for disaster response, relief and rehabilitation rests largely at state level.
- Indonesia has developed a budget classification for stand-alone DRR which facilitates the monitoring of expenditure and outcomes of investments developed by both national and regional planning systems.
- The Philippines has developed enabling policies and frameworks in which a system for the integration of DRR in national development planning has been developed. It has yet to develop accounting methodologies for DRR expenditure within relevant programmes.

² not all country studies examined disaster relief, early recovery and reconstruction expenditure in addition to DRR

Although countries persistently identify the lack of resources over the long term as a major impediment to effectively reduce disaster risk in public investment (National Governments, 2012³), there is evidence from these preliminary studies that public investment allocations for DRR are growing; a development that can also be observed in other countries (Ibid).

Despite notable exceptions, in prioritizing ex post investment governments still tend towards the management of disasters as exogenous shocks rather than endogenous risks. In other words, treating disasters as unpredictable events to be managed in a reactive manner as opposed to proactively addressing vulnerability as a controllable factor. Where national planning and finance institutions have been able to successfully integrate or embed DRR within (sectoral) development strategies, they have found it extremely challenging to effectively track investments. For many, accounting for DRR investments is only possible with stand-alone disaster investments (commonly found in ex post response and reconstruction expenditure).

³ <http://www.preventionweb.net/english/hyogo/progress/?pid:3&pil:1>

4.0. Mechanisms for Classifying, Allocating and Tracking DRR in Public Investment

The following section summarises, analyses and compares the eight studies completed in Asia and Latin America in 2012 examining a) existing methodologies for allocating and tracking DRR resources in national public investment, and b) existing budgetary commitments to disaster risk management (where available). The three preliminary Asia studies in India (Dhar Chakrabarti, 2012), Indonesia (Darwanto, 2012) and the Philippines (Jose, 2012), the first commissioned by the UNISDR and the latter two by the Asian Development Bank, were undertaken over a longer period of time and provided more in depth analysis, particularly of budgetary tracking methodologies. The five initial studies in Costa Rica, Guatemala, Mexico, Panama and Peru (Orihuela, 2012) commissioned by the UNISDR, were primers in advance of more detailed research to come; analysis was less detailed and tended to focus on mechanisms and systems for DRR budget allocations. The mechanisms and systems developed by governments are defined by the specificities of individual country contexts; as these vary significantly, the findings of individual studies, particularly with respect to estimated budgetary allocations for DRR (when available), are not necessarily commensurable. While this limits in-depth comparative analysis, it has provided the basis for comparison and exchange within and between countries.

Of the countries reviewed, the public finance systems of Guatemala and Peru have produced the most systematized mechanisms for allocating and tracking DRR expenditure, with India presenting financing and planning protocols at varying degrees of maturity. Although Mexico has thus far elected not to pursue the same approach, it has initiated the development of a systematic DRR accounting methodology together with the World Bank. Costa Rica and Panama have incorporated risk analysis criteria within their investment planning systems, such that a future systematization of DRR investments should be possible. Indonesia and the Philippines present well established mechanisms, with multiple entry points for the integration of DRR in investment planning.

To contextualise the analysis of DRR in public investment portfolios, where relevant, comparative information of modelled annual average loss and probable maximum loss from earthquake and cyclonic wind is also provided for specific countries. This allows comparison of current estimated DRM investment against current estimated losses⁴ for two modelled hazards – this can be indicative of the priority accorded to disaster risk management in public investment portfolios. In theory, if annual investment in DRM negates or at least mitigates modelled annual average loss for all hazards, it can be said that disaster risk is being adequately addressed. That being said, it should not be concluded that annual DRM investment should equate to annual average loss⁵, not least as data does not estimate losses for all hazards. Probable maximum loss has also been included to further illustrate the financial challenges that governments face when confronted with intensive disaster and the uncertainty of its occurrence within a given budgetary period.

⁴ sourced from the Global Risk Model of the Global Assessment Report on Disaster Risk Reduction 2013

⁵ If the ratio of benefit (avoided loss) to cost is higher than 1, in other words, investment is made in cost-efficient way, then, the investment can be less than average annual loss, and vice versa. When annual average loss is exceptionally high, a political decision is then required to determine the proportion of the risk to be retained instead of assuring full coverage of expected loss.

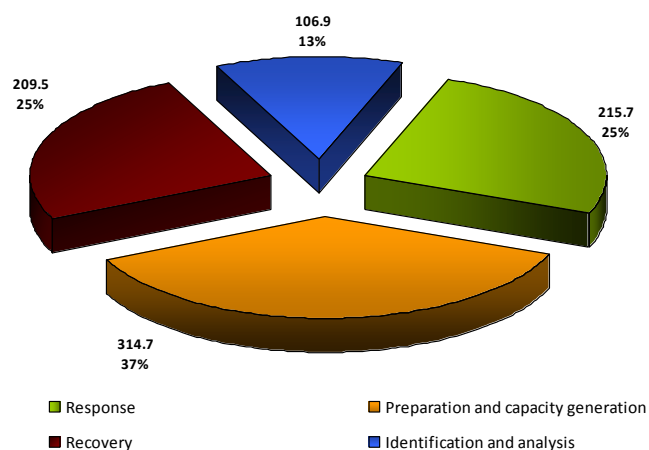
4.1. Guatemala

Promoted by the Planning and Programming Secretariat (SEGEPLAN)⁶, all public investment projects submitted via the National Public Investment System (SNIP) of Guatemala require DRM to be considered. The SNIP offers DRR criteria and tools to guide the formulation and evaluation of public investment projects considering hazard exposure, vulnerability and methods to reduce risk. In addition, the Technical Budget Directorate (DTP)⁷ of the Ministry of Finance (MINFIN) incorporates risk analysis both in the formulation of General Budget Revenues and Expenditures of the State, and in financial regulation to be followed by public institutions.

The *National Coordinator for Disaster Reduction Law* (Decree 109-96) assigns the responsibility for the prevention, mitigation, care and rehabilitation / reconstruction to the National Coordinator for Disaster Reduction (CONRED). Subsequently, with Decree 42-2001, the Social Development Act of 2001 included two articles (37/38) on disaster reduction which established an intrinsic relationship between development planning and reducing vulnerability to threats. CONRED defines its specific objectives as: a) the strengthening of capacities for systemic monitoring, b) building capacity of key civil society actors, c) mainstreaming disaster risk analysis in public and private investments, and d) planning and implementation of post-disaster remedial actions. The upper body of CONRED, the National Disaster Reduction Council, is responsible for approving policy and regulation.

MINFIN has developed a comprehensive set of indicators for DRR expenditure encapsulated in the tool, the *etiquetador* (“label maker”) for Disaster Assistance and Risk Management. Items accounted for by the tool are proposed by financial administration and planning units of each spending agency for MINFIN review, and then subjected to an iterative process until formal classification is reached. The *etiquetador* can be assigned for four dimensions of DRM expenditure: (i) identification and analysis, (ii) preparedness and capacity building, (iii) disaster response, and (iv) disaster recovery. Expenditure coding follows a three-level budgetary system from *purpose* through *function* to *division*, from the generic to the specific.

Figure 1. Guatemala: Expenditure in DRR Management, Year 2010 (USD millions)



Source: Technical Budget Directorate (DTP), Vice Ministry of Financial Management, Ministry of Finance, Guatemala.

⁶ housed in the Office of the President

⁷ part of the Vice Ministry of Financial Management, together with the National Treasury, Assistance to Municipal Financial Management, Accounting and Public Credit State

With the establishment of the *etiquetador*, in 2010 it was possible to calculate expenditure on DRR management at more than Quetzals 6.7 billion equivalent to USD 800 million. In absolute terms, this compares favourably with modelled annual average losses for earthquake and cyclonic wind - USD 156 million and USD 18 million respectively (UNISDR 2013^{vi}). However, as Figure 1 shows, at least 50 percent of total expenditure was assigned to responding to disaster events; the classification does not allow an estimation of corrective and prospective risk reducing investment, although USD 155 million was allocated to the National Program for Prevention and Disaster Mitigation 2009-2011, in which the Ministry of Communications, Infrastructure and Housing sought to mitigate the impact of disasters in vulnerable areas.

Comparison against modelled probable maximum loss for the two hazards⁸, at USD 2.3 billion and USD 0.7 billion for earthquake and cyclonic wind respectively (UNISDR 2013), makes for more sobering reading. Furthermore, per capita investment in DRM as measured by the *etiquetador* is somewhat on the low-side at approximately USD 1.8 per capita.

4.2. India

The Disaster Management Act 2005⁹ stipulates that it is the responsibility of every ministry / department to integrate measures for prevention or mitigation of disasters into its development plans and projects and allocate funds accordingly. The National Policy on Disaster Management 2009 requires every ministry / department to prepare a disaster management plan and make provisions for its financing. However, progress remains limited in most sectoral institutions.

The Finance Commission, which has ultimate responsibility for the distribution of the national budget, recommends that specific amounts be allocated by the Union government to States for disaster management; however, neither the central nor the state finance commissions make such a recommendation for local governments. Most disaster management expenditure in India, and particularly that *ex post*, is incurred by the States, and as budgetary allocations follow the recommendations of the state finance commissions, the latter have had a large hand in shaping how disaster management is currently financed in India.

The Ministry of Finance has recently developed regulations that require any project above approximately USD 20 million to be reviewed by the Expenditure Finance Committee (EFC) prior to approval. Every project proposal must have completed the *Check List for Natural Disaster Impact Assessment*. This would include not only the probable effects of natural disasters on the project but also the possible impacts of the project in creating new risks of disasters. The costs involved in the prevention and mitigation of both types of impacts are built into the project costs and so viability can be determined.

⁸ for a 250 year return period

⁹ The overarching term used in India and in many countries of South and South East Asia is *disaster management*. The Indian Disaster Management Act defines this as “a continuous and integrated process of planning, organising, coordinating and implementing measures which are necessary or expedient for: a) prevention of danger or threat of any disaster; b) mitigation or reduction of risk of any disaster or its severity or consequences; c) capacity building; d) preparedness to deal with any disaster; e) prompt response to any threatening disaster situation or disaster; f) assessing the severity or magnitude of effects of any disaster; g) evacuation, rescue and relief; and h) rehabilitation and reconstruction.”

Being responsible for inter alia, formulating plans for the most effective utilisation of the resources for growth and development, the Planning Commission of India is the government entity that has focused most effort on integrating DRR in public investment. In the Eleventh Five Year Plan (2007-2012), ministries / departments were instructed to critically examine vulnerability and risk creation potential of planned activities, and ensure that every development plan incorporated impact assessment, risk reduction, and the 'do no harm' approach.

Despite the fact that every new development project must have elements of risk reduction built into the costs and the financial viability of the project, with the cost-benefit ratio and the internal rate of return calculated, there is limited evidence that this has had a significant influence on sectoral development schemes and programmes. The development of sector specific guidelines to assist DRR integration in all sectors of development at all levels is encouraged (Dhar Chakrabarti 2012).

As is the case in many other budgetary systems, allocations for disaster relief and rehabilitation are explicitly coded. DRR investments however, are not classified in the same way, rather they are dispersed and integrated, thus preventing an exact quantification of allocations and expenditure.

Recognizing that the accurate identification of total DRR allocations would only be possible if a detailed sectoral analysis was undertaken, for the purposes of his study, Dhar Chakrabarti (2012) determined two generic classifications, one empirical and the other intuitive:

- A. *dedicated schemes on disaster management* – 100 percent of the allocations are earmarked for disaster management.
- B. *embedded schemes on DRR* – no direct objective for DRR, but are assessed to contribute to reduce disaster risk¹⁰.

Total budget allocations of the Union Government budget to Dedicated Schemes on Disaster Management have almost doubled in absolute terms since 2005, when measured in Indian rupees, increasing year on year (excluding 2007). When analysing this in constant USD prices, the allocation to dedicated disaster management schemes has remained relatively stable between 2005 and 2011, with an average expenditure of USD 5.14 billion per year (2009 PPP). Inflation and exchange rate fluctuations account for the USD decrease in 2011 shown in Table 1 below.

Table 1. Total and per capita budget allocations to Dedicated Schemes for Disaster Management 2005-2011 (in USD 2009 PPP)

	2005	2006	2007	2008	2009	2010	2011
Total budget allocation for disaster management (USD billions)	5.09	5.55	4.53	4.89	5.42	5.52	4.96
Per Capita DRR Budget Allocation (USD)	4.7	5.1	4.0	4.3	4.6	4.7	4.2

Source: Dhar Chakrabarti, 2012, and UNISDR, 2012

¹⁰ Using the following criteria: i) promote research and provide services for assessment, analysis and early warning of hazards and risks in different sectors; ii) seek to provide education and skill and enhance information and awareness to promote a culture of resilience among communities; iii) have objectives to mitigate the risks of disasters; iv) are directly targeted to reduce social and economic vulnerabilities; v) reduce the burden of payment on producers and consumers in certain sectors, which include a large sections of vulnerable population.

Compared against modelled annual average losses for earthquake and cyclonic wind of USD 524 million and USD 230 million respectively, dedicated DM investments compare favourably; but these are exceeded when considering modelled probable maximum loss for the two hazards, USD 5.9 billion and USD 9.5 billion respectively (UNISDR 2013). With static growth in dedicated DM allocations and an increasing population, a slight downward trend in per capita USD allocations is observed.

Although higher in 2005-2006, the proportion of dedicated disaster management allocations as a percentage of the Union Budget also remains relatively stable (see Table 2), declining slightly from 2005 / 2006 levels to 0.95 per cent of total budget allocations in 2011. As a percentage of GDP, allocations have remained stable around an average of 0.15 per cent.

Table 2. Dedicated disaster management allocations as a percentage of total budget allocations and GDP

	2005	2006	2007	2008	2009	2010	2011
Total budget allocations (plan and non-plan)↔	1.13	1.22	0.92	0.94	0.94	1.03	0.95
GDP ¹¹	0.16	0.16	0.13	0.13	0.15	0.14	

Source: Dhar Chakrabarti, 2012, and UNISDR, 2012

The 37 dedicated schemes on disaster management tracked in the 2011-12 budget were implemented by only eight of the seventy-five ministries/ departments of the Union government, and focused overwhelmingly on disaster response, recovery and reconstruction – principally via the State Disaster Response Fund and National Disaster Response Fund¹². At USD 4.96 billion (2009 PPP), they constitute 80.5% of the total allocations for dedicated schemes.

By means of comparison, employing the intuitive criteria developed for the purposes of the study (see above), Dhar Chakrabarti (2012) identified 85 Embedded schemes within the programmes of the ministries / departments of the Government of India, i.e. that contained components that could reduce disaster risk. Total estimated allocations to embedded schemes amounted to 32 percent of the 2011-2012 budget of Government of India.

At the sub-national level, few state and local governments were found to be able to allocate budgetary resources for disaster management over and above the contributions to central schemes and programmes. Worse, states were frequently required to divert funds from unrelated schemes to finance long term reconstruction and recovery, as central financing often proved inadequate.

While tracking investments of the national budget (including to States) is possible, this is not the case for investments from sub-State level. The new Central Plan Assistance Monitoring System (CPSMS) is in pilot testing, which when integrated with the Central Banking System (CBS) will enable precise tracking of all public investments of the central plan; it will not, however, track results nor will it capture DRR and other cross-cutting themes. In his 2012 study, Dhar Chakrabarti proposes a basic framework and methodology for the classification, allocation and tracking of government expenditure on disaster management, which it is proposed would inform investment planning and evaluation processes.

¹¹ Handbook of Statistics on Indian Economy, 2011, Reserve Bank of India

¹² formerly the Calamity Relief Fund and the National Calamity Contingency Fund

4.3. Mexico

Equivalent protocols for risk-sensitive investment planning or budgetary management at the federal level do not exist to the same degree in Mexico. Instead its focus has been on the development of elaborate strategies for financial protection, including the development of a financial market for disaster risk. To address disaster risk at the federal level, the Mexican Ministry of Finance and Public Credit (SHCP) has established a financial protection strategy that encompasses: (a) risk retention through the creation of budgetary instruments to restore damaged assets, principally the *Natural Disaster Fund - FONDEN* (see Box 2.), and, (b) risk transfer, in which the government transfers potential future losses to the financial markets, primarily through *reinsurance* schemes and *catastrophe bonds*.

Box 2. FONDEN – Building back better in the State of Tabasco, Mexico

Although the FONDEN is principally a reactive instrument, it also invests to reduce future vulnerability during the reconstruction phase. It is estimated that on average 25% to 30% of its resources (of approximately USD 800 million in 2011) are dedicated to *build back better* approaches. The benefits of this approach were clearly demonstrated in the State of Tabasco. In 2007, it suffered the worst floods in its history, with 61.7% of its territory affected, and damage and losses surpassing USD 2.48 billion (an amount equivalent to 30% of the State GDP for 2007). In the aftermath, FONDEN supported a range of actions which resulted in an integrated suite of risk reduction investments. When in 2010, precipitation and river discharge exceeded 2007 levels, the value of these investments was borne out in dramatic fashion with State-wide damage and losses only one fifth of those in 2007.

Source: FONDEN

Having recognized the need to promote greater investment in proactive risk management *ex ante*, the Government of Mexico allocates resources specifically for disaster prevention activities. These resources are principally channelled through the Fund for the Prevention of Natural Disasters Program (FOPREDEN), for which the 2011 budgetary allocation was approximately USD 25 million. Conditional financing is available for prevention actions within public investment projects.

The SHCP also sponsors studies of risk to federal infrastructure and has built an inventory of key public goods, housing and replacement value by geographical location. This is supplemented by the *National Risk Atlas*, managed by the National Disaster Prevention Centre (CENAPRED), which is the closest thing to a DRR planning tool for decision-makers seeking to develop effective prevention and mitigation measures. It is a comprehensive information system which enables the overlay of multiple data sets and facilitates analysis of risk and vulnerability at national, regional, state and municipal levels, it also simulates disaster scenarios. With modelled average annual losses for earthquake and cyclonic wind of USD 1.6 billion and USD 3.5 billion respectively (UNISDR 2013), the measures that the Government of Mexico is currently undertaking are imperative.

Without indicators for the identification of DRR expenditure, Mexico has limited capability to track DRR expenditure at either the federal or state levels. However, in a new initiative with the World Bank, the Government of Mexico will: i) analyse DRR investments (including source, mechanisms of financing and volume), ii) appraise the use of hazard risk information in federal investment decision-making, iii) analyse the impact of these investments through sectoral case studies, iv) design a mechanism for follow-up and monitoring of future DRR investments (Ishizawa, 2012^{vii}).

4.4. Peru

The incorporation of risk analysis in the national system of public investment (SNIP) of Peru is led by the Directorate of Investment Policy (Dirección General de Política de Inversiones – DGIP) of the Ministry of Economy and Finance (MEF) in a process similar to that of Costa Rica, Guatemala and Panama. The methodology developed by the MEF for disaster risk analysis comprises 6 interrelated aspects: hazard analysis, vulnerability analysis, risk estimation, cost estimates for alternative risk reduction schemes, evaluation of alternatives and best option selection. It is currently only applied in the pre-investment, project formulation stage¹³, although it can and eventually should also be used in the investment and post investment stages of the investment cycle (Lavell 2012^{viii}).

Ultimately, it will be possible to track DRR investment via the SNIP. Currently DRR tracking is undertaken by another branch of the MEF, the Directorate of the National Public Budget (DNPP). Despite belonging to the same ministry, coordination with DGIP is limited and so linkage between the budget system and planning system is inadequate. In 2012, the DNPP introduced a new *budget category* for disaster prevention (Reduction of the Disaster Vulnerability and Emergency Assistance)¹⁴, estimated at approximately USD 70 million for the year (equivalent to less than 0.2% of the total public budget and approximately USD 2.3 per capita). As officials from spending units are yet to systematically classify budgets accordingly, this should not be considered definitive. Although not directly comparable, the preceding budget category - Program 16: Risk and Emergency Management – allocated approximately USD 120 million to disaster prevention¹⁵ in 2011¹⁶. Allocations for both years could be considered a concern, when observing that modelled average annual losses and probable maximum loss¹⁷ to earthquake stand at USD 447 million and USD 9.5 billion respectively (UNISDR 2013).

Although not without limitations, the statistics generated by budget classification allow a useful analysis of public expenditure; for example, that the most significant component is the reinforcement of river basins, and that DRR expenditure by regional governments and municipalities is either non-existent or not reported.

Each *budget category* of the national budget contains a set of *projects* (investment expenditure), and *activities* (current expenditure), essentially equating to capital and recurrent expenditure. A *project* is a new, time-bound state action and in budgetary terms, public investment does not include expenditure on *activities* - so in the case of public works, maintenance is accounted as an activity and not as a project, only new infrastructure qualifies as a project. This budgetary distinction allows an approximation of investment in physical infrastructure, but it does less well for human capital. Education and training provided by government staff is commonly accounted as activities (not as projects), when it could be argued that a number of activities create new capital and should be considered an investment. If public investment is defined only as the expenditure on projects, leaving activities aside, the 2012 total shrinks to some US\$ 6 million

¹³ covering the profiling, prefeasibility and feasibility study processes

¹⁴ Categoría Presupuestal 68: Reducción de Vulnerabilidad y Atención de Emergencias por Desastres.

¹⁵ Sub-Program 35

¹⁶ Source: MEF, Portal de Transparencia (accessed on 20 August 2012).

¹⁷ for a 250 year return period

4.5. Costa Rica

Driven by the Ministry of Planning and Economic Policy (MIDEPLAN) and following new planning regulation¹⁸, all projects of the National Public Investment System (SNIP) of Costa Rica are required to undertake risk analysis for all stages of pre-investment (profile, pre-feasibility and feasibility). If effectively implemented, this will enable the calculation of a DRR coefficient by project.

The adoption of the National Emergency and Risk Prevention Law (N° 8488) resulted in the National Risk Management Policy and the organization of the National System of Risk Management; risk management was henceforth considered a transversal axis of public policy and the obligation of the State, and enshrined in the National Development Plan.

With the finalization of the National Risk Management Plan (PNGR) 2010-2015, provisions for prospective risk analysis in public investment planning seek to improve the location of public infrastructure, construction quality, as well as the identification of financial protection strategies (including risk transfer instruments).

Although criteria and mechanisms for allocating DRR investment are yet to be developed, MIDEPLAN is updating guidance for disaster risk analysis with guidelines for the incorporation of DRR in specific sectoral investment (with support from the Inter-American Development Bank - IDB). The Natural Hazard Risk Estimation Methodology for Projects in the Profile Stage is being upgraded, and MIDEPLAN is also developing sector-specific guidance for the application of the risk assessment methodology together with a system of indicators to monitor application (with support from the World Bank).

If new regulations are effective in making disaster risk analysis an integral part of investment planning, and the budgetary system is effectively linked to the planning system, a mechanism for tracking DRR investments in Costa Rica will be a reality.

¹⁸ Executive Decree 36721 of 2011 and Executive Decree 35374-PLAN

4.6. Indonesia

Following the adoption of the Disaster Management Law (No 24/2007) and the revision of other laws to accommodate the principles of DRR, the National Agency for Disaster Management (BNPB) was established in 2008. A set of government regulations was then developed to implement the instructions of the Disaster Law. DRR was integrated into the policy framework of national and regional governments for preparedness, emergency response and post-disaster recovery (including *building back better* policy). Disaster management and DRR have been integrated in the 2004-2009 and 2010-2014 Medium Term and Annual Development Plans (see Table 3 below).

Table 3. DRR in Indonesian Planning Mechanisms

Medium Term National Development Plan 2010-2014:

- DRR mainstreaming is a national priority
- Instructions to strengthen capacity at national and local level
- DRR is to be considered in spatial management
- Promote community participation in DM and DRR

Government Working Plan 2007-2012:

- DRR is one of nine national development priorities since 2007

National Action Plan on DRR 2010-2012:

- DRR activities for 2010, 2011 and 2012 covering 24 central government institutions.

National Disaster Management Plan (BNPB):

- General Overview of Disaster, Problems, Challenges & Opportunities; Disaster Management Policy, Program, Budget & Financing, Monitoring, Evaluation & Reporting

Planning and budgeting procedures subject budget data to intensive scrutiny by the Planning Bureau, the Ministry of Finance (MOF) and the Parliament. Once approved and issued by the President (in a Presidential Decree), the MOF then disburses budget allocations to all working units within central and regional governments.

Indonesia has a well elaborated budget classification system for disaster management. Defined in the Disaster Management Law (27/2007), '*DRR is every effort to reduce the potential loss due to the occurrence of a natural disaster in a certain place and time, in the form of death, sickness, loss of security, damage or loss of property, or other life disturbances*'. DRR efforts have been classified by seven programs and 33 activities (Government Regulation of 21/2008 on the Implementation of Disaster Management); the classification is based on the HFA. Any activity in the budget data that has the same meaning as the above definition and classification is reviewed and accounted as a DRR investment. The primary source of data used by Darwanto (2012) to track DRR investments was the annual government budget data (APBN) of the MOF, which is detailed, time series, and well structured, especially since 2011, when a new budget data system was established.

Table 4. shows that government allocations to DRR (excluding rehabilitation and reconstruction) has been increasing significantly year on year¹⁹. Actual DRR investments are greater as this does not track DRR activities embedded in other actions. As compared with international investments in

¹⁹ Investment in DRR in Indonesian Rupiah increased in 2012; inflation and exchange rate fluctuations account for the USD decrease

DRR, the total of USD 6.4 billion allocated for the period 2006-2012 is approximately 25 times greater than total international commitments to DRR in Indonesia in the 30 years from 1980 (UNISDR and Disaster Aid Tracking, World Bank 2012^{ix}). Loans or grants sourced internationally accounted for approximately 14 percent of the total DRR budget in 2011, with projections for 2012 around 9 percent.

Table 4. Total and per capita budget allocations for Disaster Management 2006-2012 (in USD, 2009 prices)

	2006	2007	2008	2009	2010	2011	2012
Total budget allocation for disaster management (USD billions)	0.77	0.89	0.89	0.65	0.79	1.24	1.19
Per Capita DRR Budget Allocation (USD)	3.1	3.8	3.7	2.7	3.3	5.0	4.8

Source: Darwanto, 2012 and UNISDR, 2012

The general upwards trend in budgetary allocations for DRM is encouraging, particularly when comparing with modelled losses. The 2012 budget of USD 1.19 billion for Disaster Management slightly exceeds the estimate of average annual losses to the single hazard of earthquake of USD 1.0 billion; however, with the Global Risk Model 2013 estimating probable maximum loss for earthquake and cyclonic wind²⁰ of USD 9.7 billion and USD 2.1 billion respectively, there is a strong case for investments in reducing risk to be further scaled-up.

As identified in Table 5, DRM funding as a percentage of the national budget has almost doubled from 2006 to 2012. Throughout this period, approximately 75 percent was allocated to disaster mitigation and prevention activities²¹, 13 percent to disaster preparedness activities, around 6 percent to research, education, and training, and a little over 3 percent to early warning systems (Darwanto, 2012).

Table 5. Disaster management allocation as a percentage of the National/Central Governments budget and GDP

	2006	2007	2008	2009	2010	2011	2012
National budget	0.38	0.47	0.44	0.41	0.49	0.68	0.69
Central government budget	0.58	0.71	0.63	0.61	0.74	0.99	1.02
GDP ²²	0.08	0.09	0.09	0.07	0.08	0.12	0.12

Source: Darwanto, 2012.

The budget for central government authority showed a doubling of financial commitments as the allocations grew from 0.58 per cent to 1.02 percent during the same period (Table 5), and at 0.12 in 2012, the projected ratio of the budget for DRR to GDP is up from the 0.08 percent in 2006.

²⁰ for a 250 year return period

²¹ This program includes identification and monitoring of disaster risks, physical and non-physical disaster management actions, flood and lava control, hazard assessment, coastal defences, etc.

²² GDP for 2011 and 2012 is based on government projections

Of the 22 central government institutions that implement DRR actions, the Ministry of Public Works invests the largest amount in DRR activities – accounting for approximately 50 percent of the total DRR budget of all institutions in 2012. Most of the budget is used for physical disaster mitigation. The second largest investor is Ministry of Forestry (26%), mainly for forest and land rehabilitation to prevent flooding.

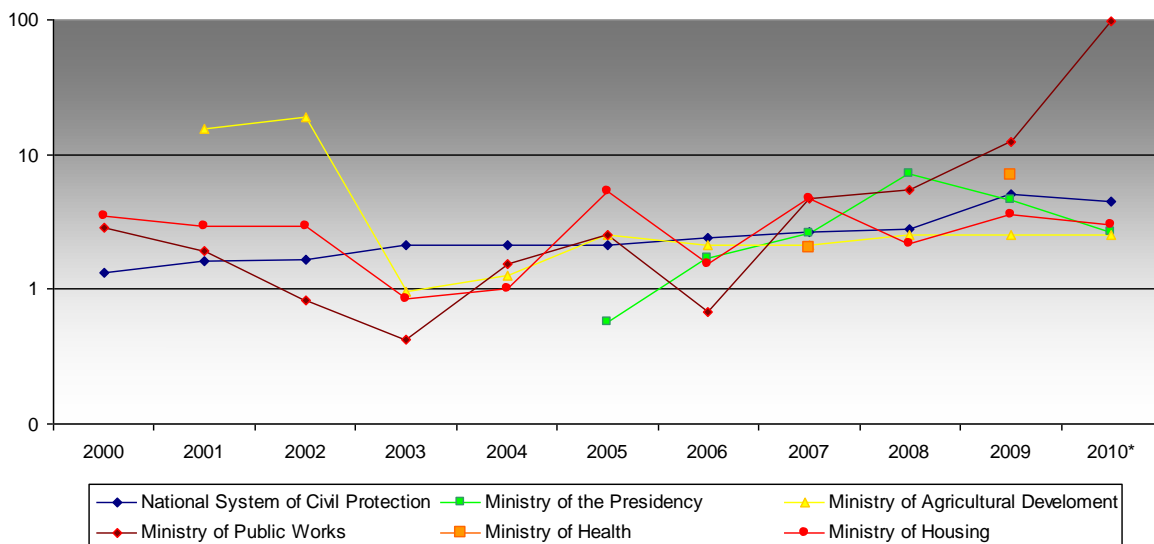
Of the 28 regional governments surveyed in Indonesia, average DRR investment is less than 1% of total regional budgets, with the majority investing less than 0.5%. Such investments are used mainly for capacity building/training, campaign/dissemination, coordination/consultation, regulations drafting, etc. In some regions, investment is dominated by high cost physical mitigation measures, such as the construction of flood control structures (Darwanto, 2012).

4.7. Panama

The implementation of DRR initiatives in Panama is closely related to the national system of public investment (SINIP) and the financial management system (SIAFPA), and guided by the Comprehensive National DRM Policy (PNGIR). Responsibility lies principally with the Ministry of Economy and Finance (MEF) and its Directorate of Investment Planning (DPI). MEF is charged with the development of criteria for the integration of DRR in the public investment planning process, as well as tools for financial protection against disasters²³, and the design of approved methods of economic evaluation for the inclusion of risk management in public investment. DPI runs the computational tool, the “Comprehensive System of Planning, Monitoring and Evaluation of Projects” (SIPMEP), which incorporates DRR at the pre-investment stage.

A DRR tracking and accounting exercise took place in 2010 as a requirement in the negotiation of a line of disaster credit (CAT-DDO) with the World Bank. Using the same categories as those employed by Guatemala, the DPI used the *clasificador presupuestario*, which estimated investment allocations to be approximately US\$ 200 million from 2000-2010 (see Figure 2).

Figure 2. Panama: Disaster Management Budget (USD millions)



Source: Bernal, 2012 and the Ministry of Economy and Finance.

²³ including insurance and protection subsidiary and solidarity mechanisms that cover uninsurable groups

The accounting exercise was not without its shortcomings. As the budgetary system provides little in the identification and classification of prevention and mitigation activities, tracking DRR expenditure was extremely difficult. MEF officials were required to hand-hold sectoral officials through a manual identification of DRR expenditure – this was compounded by staff turnover rates. Traditionally the best documented information related to unplanned response and reconstruction expenditure, when a disaster demanded an addendum of the budget. Consequently, MEF officials question the relevance of the allocation estimate. However, it is clear that with annual average losses and probable maximum loss for a single hazard (earthquake) modelled at USD 44 million and USD 869 million respectively (UNISDR 2013), an average annual allocation of USD 24.5 million to the Disaster Management Budget for the period 2000-2010, can be considered inadequate.

Via the Budget Directorate (DIPRENA), the MEF is designing an expenditure object that allows it to assign budgets to specific DRR activities, and thereby service the National DRM Plan. This is the first step in the development of a budget classifier that allows resources allocated to DRR to be identified. The Guatemalan experience is being examined closely in this respect.

4.2.4. The Philippines

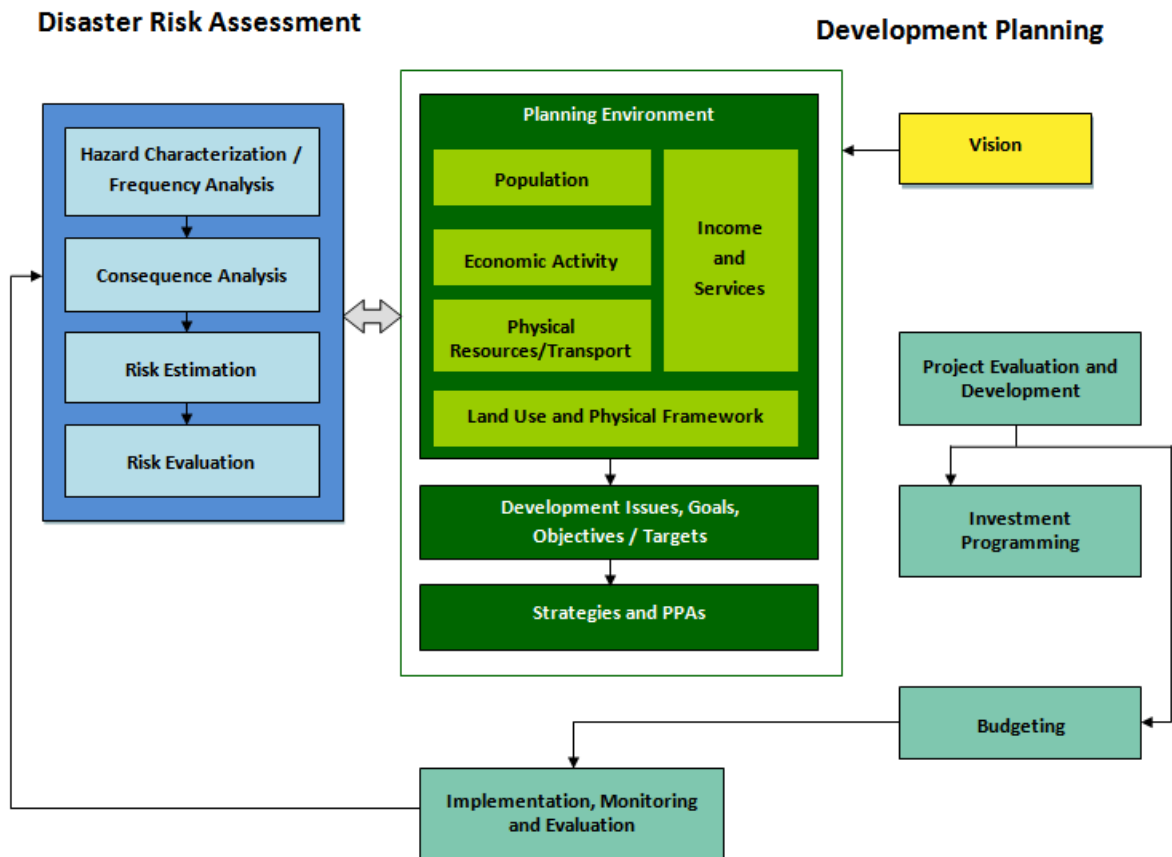
As Jose (2012) identifies, the Philippines has made progress in raising the consciousness of the adverse impact of disaster on the population and the economy, integrating natural hazard risks in plans, strengthening institutions, and implementing DRR-specific projects. However, disaster damage and loss remains high and recovery and reconstruction slow in affected areas, suggesting that financing for DRM remains inadequate. Quantifying it, and thus appraising the effectiveness of existing investments can contribute to strengthening policy for investment in DRR within the context of public expenditure management.

The annual budget formulation process in the Philippines is divided into three phases: *Phase 1 – Setting budget parameters*, *Phase 2 – Allocating resources*, and *Phase 3 – Congressional deliberations and approval*. It is through the development planning process, from *planning to investment programming to budgeting*, that DRR is mainstreamed; the 2011-2016 Philippine Development Plan (PDP) is the principal entry point. Once the socioeconomic agenda is set in the *plan*, the *investment program* translates the goals, objectives, and targets of the plan into specific programs and projects, and the *annual budget* is the instrument through which the investment program is implemented; with implementation proceeding after budget approval.

Adopted in June 2011, the *National DRR and Management Framework* (NDRRMF) details the strategies along four lines: a) *preparedness*, b) *prevention and mitigation*, c) *response*, and d) *rehabilitation and recovery*. It emphasizes investment in disaster mitigation and prevention and disaster preparedness, and promotes multi-stakeholder and multi-sectoral participation. The NDRRMF guides the work of the National DRR Management Council (and its counterparts at the regional and local levels), a body which includes the private sector, CSOs, government financial institutions, and other concerned agencies.

The National Economic and Development Authority (NEDA) has developed a framework wherein the results of a four-step disaster risk assessment process are mainstreamed into planning (see Figure 3).

Figure 3. Framework for Mainstreaming Disaster Risk Reduction in the Development Planning Process in the Philippines



Source: 2008 NEDA-UNDP-EU, Guidelines on Mainstreaming Disaster Risk Reduction in Sub-national Development and Land Use / Physical Planning in the Philippines

The methodology provides an organized and systematic approach to characterizing hazards in a planning unit, estimating risks in terms of fatality and property damage, evaluating vulnerability of the population and the economy and determining risk management options that become part of the programs and projects emanating from the plan that is passed on to the investment programming process.

Administrative Order No. 1, issued by the President in September 2010, directs all provinces to use the Guidelines on Mainstreaming DRR in Sub-national Development and Land Use / Physical Framework Plans (which embodies the mainstreaming framework), and NEDA to strengthen the capacity of government planners on the use of the Guidelines. The Guidelines are being updated to incorporate climate change adaptation (CCA).

DRR and CCA are specifically incorporated into the 2011-2016 PDP and are recognized in the formulation of macroeconomic policies, notably:

- the impact of disasters on overall growth prospects;
- in economic sector policies as they affect livelihood and disrupt productive activities;
- in social development policies as they affect achievement of the Millennium Development Goals (MDGs);

- in infrastructure development policies incorporating disaster resilience, and
- in the environment sector and the management and use of the natural resource regime.

The government also prepares specific sector plans and policies, including that for DRR, as inputs to the PDP. The *Strategic National Action Plan (SNAP) for DRR: 2010-2019* was adopted in 2010 to define priority programs and projects towards building resilience of communities and risk reduction.

Although lacking an official methodology for calculating DRR budget allocations, the government of the Philippines has adopted a reporting system for budget allocations and expenditure in support of the MDGs which may prove useful in the development of DRR tracking in future. For the purposes of the study, Jose (2012) classified DRR expenditure under three main categories: a) risk assessment, b) reducing exposure and c) relief, recovery and reconstruction.

The classification used by Jose (2012) was developed following a review of existing development expenditure tracking systems, and reconciles these with existing programs and projects of relevant government agencies as presented in the General Appropriations Act (GAA) or the approved budget. Spending on social infrastructure and services on improving health and wellbeing, social protection and sustainable livelihood, among others are not part of DRR budget allocation analysis, for two reasons: a) as the emphasis on social services is as a basic government function, and b) these are part of the Philippine government commitment to meet the MDGs. Analysis of DRR budget allocations follows scrutiny of the GAA for the years 2009, 2010, 2011.

Table 6. Total and per capita budget allocation for Disaster Risk Reduction, 2009-2011 (in USD 2009 PPP)

	2009	2010	2011
Total DRR Budget Allocation (USD billions)	0.71	0.66	1.02
Per Capita DRR Budget Allocation (USD)	7.7	7.0	10.6

Source: Jose (2012) and UNISDR (2012).

As Table 6 shows, total DRR budget allocations have increased by just over 44 percent in constant USD prices for the period 2009-2011, due primarily to additional investment in rehabilitation and reconstruction following two major cyclones (typhoons) in 2011. USD prices mask the fact that budget allocations in Pesos grew marginally in 2010 also; inflation and exchange rate fluctuations accounting for the USD decrease in 2010 shown in Table 6 above. Greatest growth was observed in budgets for the construction of flood controls, seawalls and drainage projects, as well as sustainable recovery. 62% of the 2011 DRR budget (equivalent to USD 635 million in 2009 PPP), focused on Programs, Activities and Projects (PAPs) that minimize exposure of the population and the economy to the consequences of hazard events.

Per capita allocations to DRR are significantly higher than those identified in other country case studies; at USD 7 per capita in 2009 and 2010 this outstrips most, and with the budget increase in 2011, per capita allocations are almost double those of India and Indonesia. Such investment is to be encouraged when compared against modelled annual average losses for earthquake and cyclonic wind of USD 5.0 billion and USD 2.05 billion respectively (UNISDR 2013).

As Table 7 shows, the Philippines shows positive growth from 1.43 percent to 2.12 percent of the national budget over the period 2009 – 2011, and although higher than in other countries for

which data was available, allocations represent only 0.21 percent of GDP in 2009 rising to 0.28 percent in 2011.

Table 7. DRR budget allocations as a percentage of Total National Budget and GDP

	2009	2010	2011
Total National Budget (Net of Debt Service)	1.43	1.34	2.12
GDP	0.21	0.19	0.28

Source: Jose (2012).

For the period 2009-2011, almost 75 percent of the total DRR budget allocation is for capital investments. As Jose (2012) identifies, this is indicative of the priority accorded by the government of the Philippines for long-term capital formation in reducing disaster risk – although this must be supported by accompanying investments in maintenance (currently only 7 percent is directed to maintenance, repair and rehabilitation of existing facilities).

Proposal for DRR Budget Allocation Tracking System

The regular tracking of DRR budget allocation in the national budget supports the implementation of the Philippine Disaster Risk Reduction Act 2010, which prioritises mainstreaming DRR in development processes (including policy formulation, socioeconomic development planning, budgeting and governance). It will also serve as a starting point for assessing government actions with respect to the implementation of the national DRR and management framework which focuses on increased investment to reduce loss of lives and damage to assets.

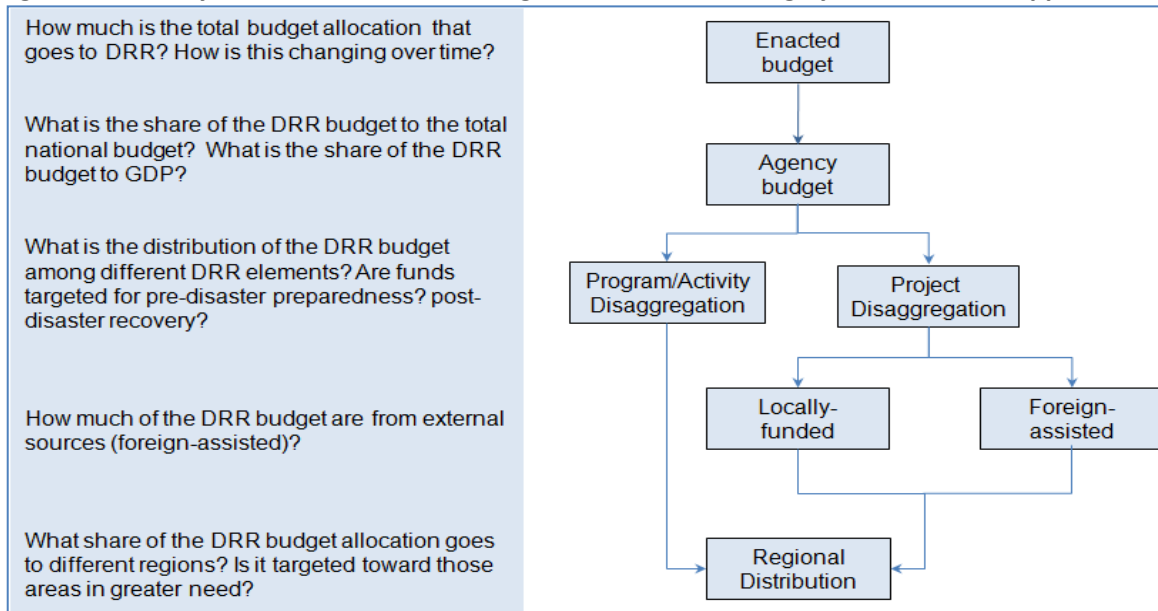
Jose (2012) proposes a DRR Budget Allocation Tracking System (DRRBATS) to:

- a. inform stakeholders of government action with respect to allocating resources to programs, activities and projects that lead to DRR;
- b. improve government policies related to continuing budget appropriations on DRR; and
- c. influence decisions of agencies permissible by law during budget implementation especially in considering DRR in the allocation of lumpsum and nationwide programs, activities and projects (PAPs).

The proposed form for monitoring DRR budget allocations is shown in Annex Table 1. sourced principally from the GAA, and from concerned agencies where GAA budget data is not provided.

The analytical flow of the proposed tracking system is presented in Figure 4 and provides a guide on how to navigate the GAA. For the tracking exercise to be successful, familiarity with the structure of the GAA in general and individual agency budgets, particularly on the specific programs, activities and projects (PAPs), is essential. Reports generated from the tracking system will allow government officials to determine the volume of DRR investment, on what it is being spent and where.

Figure 4. Analytical Flow of the DRR Budget Allocation Tracking System in the Philippines



Source: Jose, 2012.

4.9. Pacific Islands.

The tendency towards prioritizing traditional emergency management and response actions is particularly pronounced where deficits in institutional and human resource capability and capacity reinforce government view of disasters as exogenous.

The Cook Islands and Vanuatu

In 2011, the Applied Geoscience and Technology Division (SOPAC) of the Secretariat of the Pacific Community, completed two studies^x which analysed investment in DRM in the Cook Islands and Vanuatu through an analysis of National Government Funding.

The study of Vanuatu found that although the cost of disaster has regularly exceeded the annual allocations for DRM - principally through the Disaster Relief Fund²⁴ managed by the Ministry of Finance and Economic Management (MFEM)²⁵, the government continues to regard DRM solely through the lens of response, relief, mitigation, and recovery. Investment in risk reduction measures were not recognised as part of DRM and were thus invisible in the annual budgets at the sectoral level. Other allocations to the Vanuatu National Disaster Management Office (NDMO) amount to only 0.16 per cent of total expenditure.

In the study of the Cook Islands, as a function of the output-based accounting methodology of the budget process which omits detailed expenditure in budget lines, total Government expenditure on DRM was once again invisible. The report examined two departments with direct responsibility for DRM, Emergency Management Cook Islands (EMCI) and the Meteorological Services – the budget allocation for both accounts for less than 1 percent of the total gross annual expenditure. Responsibility for supporting DRR measures lies with EMCI, which receives less than one third of the budget allocated to the Meteorological Service.

²⁴ which stands at VT25 million p.a.

²⁵ modelled average annual losses from earthquake alone were some 37 times greater

5.0. Findings.

5.1. Robust national planning mechanisms.

If robust national planning mechanisms are in place, determining DRR investment and its integration in development investments is greatly facilitated. This was particularly notable in Panama, Costa Rica and Peru where enhanced planning protocols prompted improved DRR practices.

Of the countries participating in the HFA Review Process in the 2011-2013 cycle, 53 percent report the presence of national and sectoral public investment systems incorporating DRR, and 57 percent report that the costs and benefits of DRR are incorporated into the planning of public investment. Of the eight countries included in the studies above, seven are incorporating risk analysis within national systems of investment planning (Mexico being the exception).

As Orihuela (2012) identifies, governments that have been able to establish systematised national procedures for integrated DRR, commonly feature, (i) the development of methodological manuals and training workshops to disseminate and promulgate the practice of pre-investment risk analysis, and (ii) the passing of new regulation that mandates disaster risk assessment for new public investment projects²⁶.

Where countries have developed disaster risk maps, constructed risk inventories, and better, models of probabilistic evaluation of the risk to principle public and private assets, estimates of expected losses at the local, regional and national levels are possible. This has proved fundamental in engineering the enabling environment for disaster risk-sensitive public investment. For those countries that have favoured the development of strategies for financial protection, including the development of a financial market for disaster risk (see Mexico), the generation of such datasets over time facilitates the development of financial instruments for risk management, including risk transfer and the evaluation of the economic consequences of disasters (for example, Costa Rica).

As with any reform process, institutional and staff continuity is essential for national public investment systems to fully adopt and systematize DRR protocols. Major developments in DRR have been reported to correspond to periods of continuity of actors and goals in the public finance system.

5.2. Budget labelling - measuring DRR investment.

The manner in which governments define, classify, track and interpret DRM data varies greatly between and within countries and institutions. While rarely the case for 'dedicated' or 'stand-alone' investments, many countries are confronted with the methodological / accounting quandary of how to unravel the often ill-defined 'embedded' or mainstreamed investments in risk management.

Planning or accounting mechanisms for ex post investments in relief and reconstruction are relatively common and generally better understood²⁷. Few are those countries that have established equivalent mechanisms for quantifying and monitoring embedded investments for

²⁶ Examples from the Ministry of Economy and Finance in Peru are available via http://www.mef.gob.pe/index.php?option=com_content&view=article&id=945&Itemid=100900&lang=es.

²⁷ although not without challenges of their own, for example: substantial reallocations may not be accurately captured, particularly when occurring within sectoral budgets; the complexity of tracking reconstruction expenditure within capital reconstruction without appropriate labelling or direction from the line agency.

prospective DRR ex ante, and where these do exist there is little commonality between countries. Country feedback from the interim phase of the 2011-2013 HFA Progress Review provides little reliable information in this respect. Although over 90 per cent of countries report an integration of disaster risk considerations into public investment and planning decisions, only 11 per cent were able to report budget figures allocated to hazard proofing sectoral development investments (e.g. transport, agriculture, infrastructure).

Governments find i) determining embedded DRR investments, and ii) ensuring tracking DRR becomes a recurrent and standardized governmental practice, hugely problematic. Public finance officials are largely unfamiliar with prevailing DRR coding and classification systems defined by spending units, and even more so when it comes to identifying embedded DRR expenditure.

Embedded Investment

As governments are fundamentally challenged in the identification and quantification of embedded DRR investments and expenditure, this is commonly poorly reported. However, when methodologies and criteria are applied to analysis of budgetary allocations beyond programmes with a stated objective of DRR, to analyse embedded schemes with critical elements that may promote DRM, the story is quite different.

- The focus of dedicated disaster management schemes in India is overwhelmingly on relief²⁸, however, this amount was dwarfed by the allocations on embedded schemes²⁹, constituting more than 30 percent of the total Union budget and almost 5 percent of GDP.
- In the Philippines, it is programmes related to Minimizing Exposure of Population and Assets (principally structural mitigation measures and forest management) that dominate the DRR budget at 62 percent in 2011 (Jose, 2012), with disaster response, sustainable recovery and risk financing accounting absorbing 33 percent³⁰.
- Under the Indonesian government's classification of disaster management, it is Program D: Disaster Mitigation and Prevention which accounts for 80 percent of DRM investments in 2012, implemented principally by the Ministry of Public Works and the Ministry of Forestry (53 and 26 percent respectively). By contrast the National Search and Rescue (SAR) Agency and the National Disaster Management Agency (BNPB) pale in comparison (7 and 6 percent respectively²⁸), and neither the Ministry of Public Housing nor the Ministry of Education invest in DRR.

Distinguishing between stand-alone and mainstreamed DRR investment, and accurately capturing embedded investment is challenging. Panama's exercise in tracking DRR expenditure for the period 2000-2010, which involved both planning and budget officials working at MEF, illustrates this well.

Opinion is divided as to how DRM allocations can be accurately measured in public investment portfolios. Some studies urge the establishment of a DRR 'marker' to flag those investments for which the outcome is not explicitly DRR but which through implementation will contribute to reduced disaster risk. As this is the approach that the climate change adaptation (CCA) community is moving towards, and given the nature of the interface between DRR and CCA, there may be

²⁸ 80.5% of the budgetary allocations of dedicated disaster management schemes in 2011-2012 were for the State Disaster Response Fund and National Disaster Response Fund

²⁹ as per the criteria developed by Chakrabarti (2012) which considered the total cost of the project wherein DRR was embedded.

³⁰ Note: estimates of disaster response may under-report expenditure on long-term reconstruction.

merit in exploring a synchronised approach. However, the adoption of a marker has not proved particularly successful in all mechanisms to track cross-cutting themes, gender-reporting in ODA, for example. Others consider that accurate measurement will only ever be possible with the establishment of a specific budget code(s) for DRR, so as to be able to identify that a component of an activity of the budget document is only for DRR purposes; but this fails to capture embedded investment

The ministries of finance in Guatemala, India, Indonesia, Peru, and the Philippines are at differing stages of maturity in investment labelling and analysis. In all cases, the effectiveness of the instrument depends on its methodical use, evaluation and upgrade by respective national public investment systems.

In the studies of India, Indonesia and the Philippines, the majority of embedded investment in DRR is made by those ministries responsible for developing and managing a country's infrastructure and natural capital. It may therefore prove that developing a more representative estimation of public investment in DRR may be best pursued, by mobilizing not only the ministries of finance (which allocates budget but may lack the capability for detailed appraisal of programme / project design and cost), but also ministries responsible for infrastructure development and management³¹. These institutions often have strong incentives to assure an appropriate consideration of disaster risk throughout the cycle of design, investment and evaluation

DRR classification and coding

Budgetary classification and coding is an important prerequisite, and is an approach that has been adopted by a number of countries with varying degrees of sophistication. However, many more adopt only the default budgetary classification for emergency management and disaster reconstruction, and thus significant proportions of national DRR investment are overlooked. Orihuela (2012) proposes that public finance authorities could establish base budgetary codes for (i) prevention, (ii) adaptation, (iii) response, and (iv) reconstruction – categories that are not uncommon at the national level, and to some degree, in the international development context.

The integration of planning and budgetary offices would address the disconnect between planning and budgetary functions that is frequently cited as a divisive element in risk-sensitive programme design and evaluation. While planning offices regularly conduct ex-ante evaluation (often equipped with sectoral expertise), budgetary offices eventually conduct ex-post evaluation. Revisiting such arrangements to favour collective evaluation of expenditure, and DRR investment within it, is recommended; thereby allowing planning officials to support the continuous improvement of budgetary coding (Orihuela 2012).

Improved regulatory conditions, including for example a clearer distinction between corrective disaster management investments ex post, from prospective DRM investments ex ante, would certainly facilitate improved tracking of budgetary allocations and expenditure in DRR, indeed the development of systematized disaster risk-sensitive public investment as a whole.

Only through sustained and systematic effort within existing budgeting and public investment planning practice, will it be possible to see DRM effectively integrated throughout the cycle of pre-investment, investment, expenditure tracking and impact/outcome review.

³¹ for instance, public works, transport, agriculture, forestry

The bottom line, however, is to be able to measure whether risks have been reduced, and to what extent DRM budget allocations are correlated to this reduction, and the time lag for impacts. This is rarely, if ever, undertaken and would require more sophisticated tools in econometrics. Nevertheless, once a sufficient time series of the DRM budget allocation is established through an adequate tracking system, all of this information can be generated (Jose 2012).

5.3. The political environment for DRR-sensitive public investment

The tendency is to evaluate the efficacy of public finance systems in terms of DRM through the criteria of what normative standards have been established by planning and budgetary offices. As the HFA identifies, establishing an enabling regulatory and policy environment is essential, but it does not guarantee execution of regulatory mandates. As the Government of Pakistan states³², 'political will and continuity in policies is key for the successful implementation of national policies and strategies for DRR. The major challenge....[is] to secure consistent support from the National Government to treat DRR as a prioritized item on the agenda of national priorities'. As Orihuela (2012) states, without political commitment, technical success is limited; and political commitment is not necessarily continuous.

As identified by Lavell (2012), the pressure to take decisions can lead to the bypassing of norms and requires greater consciousness-raising efforts and consensus among local actors. However, the reality of political imperative often demands accelerated public investment, circumnavigating accurate project analysis or the application of methodologies being fostered by the technical units of ministries of finance. Ministries of finance are identified as crucial in overseeing sustained commitment, not least as they are seen to have support from the political system and thus commonly have stronger capacities and mandates.

Put in the context of the Panama SNIP or the Indian EFC, where only medium to large scale projects are subjected to risk analysis, appraisal and review (respectively those projects over USD 10 or 20 million in value), the temptation is to 'engineer' the project to fall below this threshold and avoid scrutiny. Thus policy improvements struggle to impact small-scale interventions, or indeed the local level for that matter (see Costa Rica, where municipalities are excluded from the SNIP).

By their very nature, cross-sectoral programmes (and DRM is no exception), are especially in need of enabling policy instruction and follow-up (preferably at the high level), accompanied by clear implementation regulations and capacity strengthening of institutions and officials. This can be further strengthened if high quality partnerships exist between government politicians and government technicians. The lack of trained evaluators and project formulators in sectoral (planning) bureau and at the local level in particular slows down the decision-making process.

³² in its Interim National HFA Report 2011-2013,
<http://www.preventionweb.net/english/hyogo/progress/reports/v.php?id=28894&pid:223>

5.4. Macro-economic stability.

Sustained periods of macro-economic stability facilitate governments' ability to effectively address basic economic stability issues, thereby affording economic authorities the luxury to pursue more sophisticated planning policies. Conversely, and as observed by numerous governments in the 2011-2013 HFA Review, 'the unstable economic situation leaves the Government with little fiscal space to spare reasonable funds for DRR programmes' (Government of Pakistan, 2012).

The sustained periods of political stability and economic growth that case study countries have enjoyed, have facilitated an improved enabling environment for proactive consideration of disaster risk. Further momentum has been generated by the succession of highly visible examples of public and private asset vulnerability.

5.5. Thresholds for prospective investment in DRM.

Although annual growth rates in DRM budget allocations are trending upwards (both in absolute terms as well as a percentage of the national budget) this is commonly only a small proportion of GDP, particularly in larger economies. However, despite notable exceptions, and a growing body of evidence that highlights the cost-effectiveness of risk reduction, public investment has remained disproportionately concentrated in responding to disasters. This is as much a feature of high-income countries as it is of middle and low income countries.

As the OECD Council on Good Practices for Mitigating and Financing Catastrophic Risks identified, if actors know in advance that the government (or international donors) will provide ample financial assistance after hardship to those who were not protected, the economic incentive for those in hazard prone areas either to engage in loss reduction measures prior to a disaster or to purchase adequate insurance coverage, when available, will be less (OECD 2010^{xi}).

Many countries, including some OECD countries, rely almost exclusively on ex post approaches³³, whereas other countries use ad hoc ex post compensation as a complement to other funding mechanisms, such as structural disaster funds or disaster insurance. Governments are under strong pressure, or sometimes even under a legal duty, to provide assistance and some degree of compensation to affected parties. In times of constrained public budgets, planning ahead for the financial coverage of future disaster costs becomes, therefore, a necessary component of sound DRM strategies in both emerging and developed economies worldwide (G20 Presidency & World Bank 2012^{xii}).

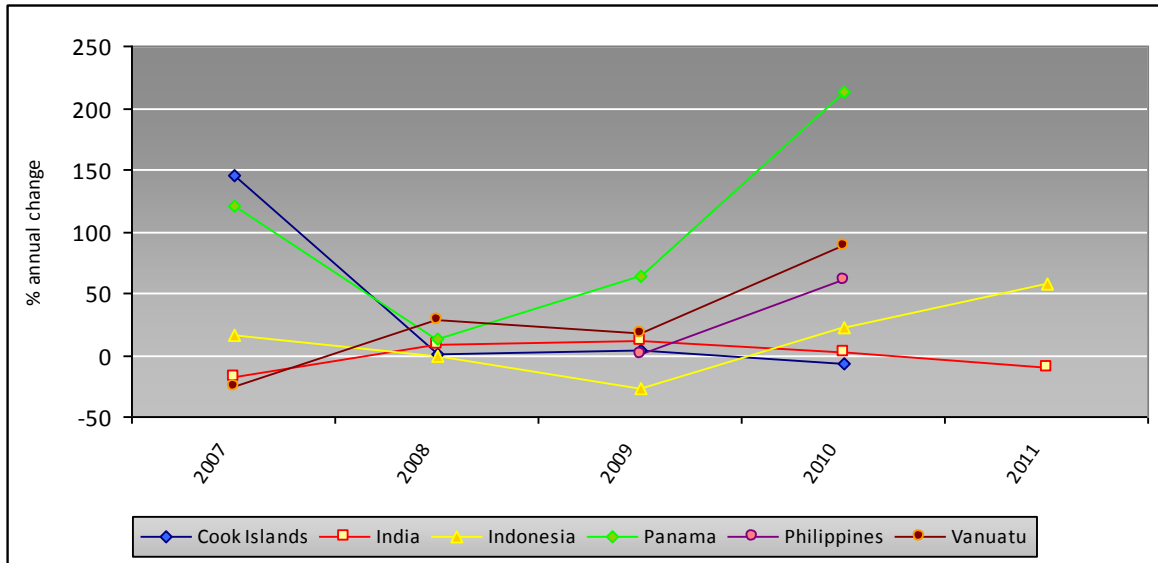
If countries are to engineer a paradigmatic change to proactive risk management, a better understanding of what losses governments, and particularly ministries of finance (as the institution with overall fiduciary responsibility for the determination, distribution and evaluation of the national budget), are willing and able to bear, is required. Efforts to seek an increase in investment in prospective risk reduction would be greatly enhanced if it was clearly understood at what threshold – or put crudely, at what percentage of GDP lost to disaster – does DRR become a priority for governments and particularly ministries of finance. Clearly this varies significantly, not least given wide variations in fiscal and institutional resilience, but preliminary conversations indicate that this could be as little as 1 percent in at-risk middle income countries, and 1.5-2 percent in high income countries.

³³ For example Mexico, which follows an innovative dual risk financing strategy via, (i) the establishment of contingent accounts for disaster response & rehabilitation (FONDEN), and (ii) the transfer of risk of potential disaster losses to the financial market, with insurance policies & the issue of catastrophic bonds.

5.6. Growing national DRR investment but sub-national governments (SNGs) overlooked

Despite a general paucity of budgetary and expenditure data, allocations for DRR in national budgets for the period 2007 – 2011 have seen positive growth in all countries for which data was available (see Figure 5), except India and the Cook Islands.

Figure 5. Trends in national DRM allocations in six sample countries year on year, 2007 – 2011 (percent change)



Source: Official government statistics^{xiii}

Although trending upwards, the proportion of the total national budget made up by DRR schemes generally remains small, according to the preliminary analysis presented in this report – around 1% and stable (for dedicated disaster management schemes) in India, a marginal increase to 0.7% in Indonesia, 0.7% in the Cook Islands, 0.4% in Mexico³⁴, and less than 0.2% in Peru³⁵. As a percentage of GDP, DRR investments feature less prominently, remaining more or less constant at 0.15% in India, and rising but still small in Indonesia (0.12%) – even in the Philippines, where DRM budget allocations account for 2.1% of the total national budget, this accounts for only 0.28% of GDP,

If knowledge of national budget allocation is limited, visibility of DRR budget allocations and expenditure at the sub-national level, let alone the local level, is lesser still. This would seem to be a crucial area for further development, not least in middle, upper middle and high income countries, where sub-national governments (SNGs) have traditionally played a large role in public investment - SNGs are responsible on average for 66% of total OECD investment spending. In light of this, some countries - for example Australia, Germany, Korea, Spain, and the United States - specifically targeted their fiscal recovery packages towards sustaining public investment for SNGs (OECD 2011)^{xiv}.

³⁴ for the Natural Disaster Fund (FONDEN), the Natural Disaster Prevention Fund (FOPREDEN) and the farming fund for natural disasters.

³⁵ for respectively, Budget Category 68: Reduction of the Vulnerability and Disaster Emergency Attention, Year 2012, and Program 16: Risk and Emergency Management, Year 2011

Despite the prominence of investment by SNGs in public accounts, and the trend for the decentralisation of responsibility for DRM, only 55 percent of countries report³⁶ regular / systematic budget allocations for DRR to local governments. For SNGs seeking to secure more significant and reliable budget commitments for DRM, an improved understanding of current DRM investment at the sub-national level may prove valuable. Again, as infrastructure project financing is commonly sourced from both local as well as national government contributions, not to mention private finance initiatives, a deeper understanding of infrastructure financing would allow a preliminary insight into the contribution of sub-national governments and private investment to prospective DRM.

5.7. International enabling factors.

The development of the HFA has also positively impacted upon national processes of public finance, and spurred international cooperation partners, including the World Bank, regional development banks, the OECD, and bilateral development partners, to assist finance ministries, planning bureau and sub-national levels of government to introduce DRR criteria for investment planning and budgeting.

In his study of Latin American case study countries, Orihuela (2012) found that international cooperation can continue contributing to this process with the provision of public goods: (i) the establishment and promotion of a network of practitioners and researchers; (ii) the diffusion via open-access platforms of guidelines, methodologies, case studies and comparative studies; and (iii) the supply of financial, technical and organizational resources for public awareness and debate.

As for the provision of international financial resources in support of DRR, in most middle-income countries, national public investment dwarfs international assistance.³⁷ International assistance (including Overseas Development Assistance - ODA) can however, play a pivotal role in financing disaster risk reduction in low-income countries, despite a significant bias to emergency response. This can have undesired consequences, as illustrated by Niue, which relies so heavily on donor support for DRM activities that it is now not required of government sectors. The experience in Niue is symptomatic of many SIDs and low income countries, where capacity constraints mean that DRM is frequently de-prioritised or even neglected as a specific task or activity across sectors and not budgeted for explicitly.

³⁶ in the 2011-2013 HFA Progress Review,
<http://www.preventionweb.net/english/hyogo/hfa-monitoring/national/?pid:73&pih:2>

³⁷ for example, between 2006 and 2012 the international commitment to DRR in the Philippines was one fifth of the amount budgeted by the government in 2011 (Jose, 2012). See also Indonesia in Section 4.6.

6.0. Recommendations.

- Budget allocation tracking should be a precursor to impact assessment, a detailed analysis of outputs and outcomes and to what extent these have been achieved through the budget.
- Compare allocations with actual expenditures, and against targets and actual accomplishments.
- Reinforce risk governance arrangements to promote consistency and continuity in the application of DRR approaches at national and sub-national levels.
- Support long-term processes of training and capacity building with methodological guidelines for officials from individual spending units / planning bureau in the classification of DRM expenditure (particularly for embedded investment), introduction to probabilistic risk assessment tools that give simple quantifiable indicators showing fiscal impacts, and incidence (sectors / social groups at risk).
- Cost-benefit analysis at the pre-investment stage that incorporates disaster risk analysis³⁸, and to the degree possible, incorporates probabilistic risk in the conceptual and design phases of public investment planning.
- Complement project by project-based risk analysis, with more comprehensive, multi-sector, territorial based planning and information gathering approaches (Lavell, 2012).
- Pursue improved budgetary allocations for DRR within existing government structures, processes and outputs.
- Replicate the budget allocation tracking system at the local level to examine DRR resource availability and use.
- Off-budget expenditure, for example grants from development partners, should be documented to assist the government ensure pertinence in investment planning.
- Encourage all government agencies to include DRM principles in their short, medium and long term strategic plans to facilitate the budget proposal process.
- Together with ministries of finance from different income groups, investigate thresholds of average annual loss, and at what percentage of GDP lost, would prospective DRR be considered a priority in national public investment.
- Explore standards for DRR and response³⁹ for funds, projects, and determine which institutions bear the responsibility, the impact of standards on national accounts, and the relationship of standards to results-based budgeting.
- For ministries of finance having initiated the labelling of DRR in the budget, conduct ex-post evaluations (including simple assessment of budget execution to more sophisticated program evaluation studies).

³⁸ as national public investment planning systems in a number of Latin American countries now require

³⁹ recognising that the fiduciary trend is to separate prevention, response and recovery.

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ANNEX.

Annex Table 1. Proposed DRR Budget Allocation Tracking System Form

	DRR Budget Items	Location	Agency	(Year)			
				PS	MOOE	CO	Total
	Total DRR Expenditures						
	1 Understanding hazards						
	1.1 Hazard Identification, Mapping and Assessment						
	Atmospheric-geophysical, astronomical hazard identification, mapping and assessment		PAGASA				
	Volcanic and earthquake hazard identification, mapping and assessment		PHIVOLCS				
	Geohazard identification, mapping and assessment		MGB				
	Geohazard identification, mapping and assessment		NAMRIA				
	Others						
	1.2 Hazard monitoring, forecasting and warning						
	Flood forecasting, monitoring and warning		PAGASA				
	Volcano and earthquake hazard monitoring, forecasting and warning		PHIVOLCS				
	Construction, rehabilitation and maintenance of operations of Seismic Stations						
	Others						
	1.3 Research and Development						
	Atmospheric-geophysical, astronomical and space sciences research		PAGASA				
	Agro-climactic research and farm weather services and climate variability and climate change studies		PAGASA				
	Volcano eruption prediction research and development of active volcanoes and investigations of other volcano emergencies		PHIVOLCS				
	Earthquake prediction studies		PHIVOLCS				
	Others						
	2 Minimizing Exposure						
	2.1 Structural/Physical Measures						
	Construction of Flood Control/Seawall and Drainage Projects		DPWH, MMDA, PRRC				
	Maintenance, Repair and Rehabilitation of Flood Control and Drainage Systems, Structures and Related Facilities		DPWH, MMDA, PRRC				
	Forest Management		DENR				
	National Arterial and Secondary National/Local Roads and Bridges (DRR critical infrastructure components)		DPWH				
	Various Infrastructure including Local Projects (DRR critical infrastructure components)		DPWH				
	Schoolbuilding program (DRR component)		DepEd				
	Priority Development Assistance Fund (Flood control component)		Various agencies				
	Others						
	2.2 Technical Measures/Non-structural						
	Risk mitigation services		PAGASA, PHIVOLCS				
	Resettlement Program (DRR component)		NHA				
	Land Use Planning Assistance (DRR component)		HLURB				
	Development of the Crops Sector (El Nino/La Nina mitigation component)		DA				
	Others						

	DRR Budget Items	Location	Agency	(Year)			
				PS	MOOE	CO	Total
2.3	Preliminary and Detailed Engineering of Disaster Countermeasures						
	Detailed engineering of disaster countermeasures such as roads, bridges and flood control projects		DPWH				
	Conduct of hydrological surveys		DPWH				
	Feasibility study/master planning of river basins for purposes of flood control mitigation		DPWH				
	Health Facilities Enhancement (DRR component)		DOH				
	Formulation of policies, standards, and plans for hospital and other health facilities (DRR component)		DOH				
3	Lessening vulnerability/building resilience						
3.1	Preparedness						
	Planning and policy formulation		Various agencies				
	Planning, direction and coordination for civil defense		OCD				
	Barangay/community early warning		DILG				
	Others						
3.2	Disaster Response						
	Response, Rescue and Relief Operations		DILG, PAF, PA, PN, DND				
	Assistance to victims of disasters and natural calamities including handling and hauling of commodity donations		DSWD				
	Quick Response Fund		DepEd				
	Calamity Fund: Aid, Relief and Rehabilitation Services to Communities/Areas Affected by Calamities, including Training of Personnel, and Other Pre-disaster Activities.		DBM				
	Others						
3.3	Sustainable Recovery						
	Calamity Fund: Repair and Reconstruction of Permanent Structures, including Capital Expenditures for Pre-disaster Operations, Rehabilitation and Other Related Activities		DBM				
	Disaster Related Rehabilitation Projects		DPWH, other agencies				
	Others						
3.3	Risk Financing						
	Insurance Coverage for School Buildings		DepEd				
	National government subsidy for crop insurance premium of subsistence farmers under the Crop Insurance Program		PCIC				
	Expansion of Crop Insurance Program		PCIC				
	Others						