

Global Assessment Report  
on Disaster Risk Reduction



Addressing the Grand Challenges of Disaster  
Risk: A Systems Approach to Disaster Risk  
Management

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**Addressing the Grand Challenges of Disaster Risk:  
A Systems Approach to Disaster Risk Management**

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One of our greatest strengths as people is our capacity for problem solving. Even on the largest scales, we have been able to innovate and work together toward tremendous achievements particularly in agriculture, engineering, construction, transportation, computing.

Yet we live in a time when some of the greatest challenges that we face have yet to be solved – including those related to the risks from climate change and other natural hazards. In fact each year more and more people are at risk to natural hazards, as a result of climate change, urbanization, and increases in the number of poor among other factors.

This paper will (i) look briefly at progress to date in establishing robust enabling environments for disaster risk management, (ii) propose a model for aligning decision-making at national, local, business, and individual/household levels under a systems approach, and (iii) outline a series of areas in which systems-based multi-level approaches have significant potential to bind together individual interventions and galvanize broader change.

### **Progress to date**

GAR 2009 highlighted both the progress and the many challenges in our ongoing global efforts to address the need for disaster risk reduction around the world. Many countries have established national platforms for disaster risk reduction, started to put in place policy and regulatory frameworks, etc. There has also been tremendous progress within communities in increasing awareness, identifying vulnerabilities and initiating grassroots action.

Progress in disaster risk management in general is challenging and typically requires (i) action across multiple sectors or areas of expertise, (ii) broad collaboration among diverse stakeholders, and (iii) often a multi-year investment of time and financial and material resources. Achieving and sustaining success is often a matter of making and securing incremental gains and building on past progress to produce larger and more expansive impacts.

While the technical solutions for reducing risk are often known, it is the building of political and social will that tends to be the missing piece of the puzzle. Blueprints like the Hyogo Framework for Action have outlined – at least at a conceptual level – the steps that ultimately need to be taken. Yet while progress in implementing many of these steps has been steady, the gap between a safe future and the unsafe present may in fact be widening.

Much of the reason for this is that we still treat disaster risk separately from development, as something that should be included ideally, but which must unfortunately be traded off against the need for other development priorities given limited budgets, tight deadlines, and complex programming environments. Taking our chances on the assumption that we will deal with the consequences later has unfortunately then become our strategy of choice. Reliance on the safety provided by international assistance and charity has only further discouraged investment in proactive risk reduction.

As is often noted, the alternative is to address risk in the context of development and directly factor risk reduction into development decision-making and investments. However, this is not an approach that lends itself to discrete implementation activities. Unfortunately most of our disaster risk management activities to date have been managed as stand-alone interventions, usually as a result of budget and program restrictions and efforts to simplify interventions as an organizing strategy for making incremental progress. These efforts have delivered steady, small wins but

they have not been sufficient to galvanize the broader change that needs to occur, at least not in a reasonable time frame. Instead the opportunity cost of continuing to build and rebuild vulnerability increases.

To better link these incremental efforts and catalyze broader change, we need to look to systems approaches that help us align interventions at different levels – national, local, private sector, and individual households – in order to bring disaster risk management fully into development decision-making in these different spheres on a consistent basis.

### Specific challenges

In particular there exist a number of challenges in DRM on which we have yet to make significant progress and where dangerous gaps still exist. These challenges are especially complex in that they require a number of interlocking and simultaneous changes in different parts of our governance, social and economic systems.

Prominent among these challenges are the following:

<b>Grand challenges</b>	<b>Change elements needed</b>	<b>Obstacles</b>
<u>Unbuilding risk</u> in terms of both ensuring that new buildings / settlements are safe and retrofitting existing settlements	<ul style="list-style-type: none"> <li>▪ Effective enforcement of building codes</li> <li>▪ Creation of urban redevelopment plans</li> <li>▪ Establishment / adjustment of incentives to encourage safe building</li> <li>▪ Integration of DRM into household and private sector decision-making</li> </ul>	<ul style="list-style-type: none"> <li>▪ Lack of priority (not a priority usually until it's too late)</li> <li>▪ Short political cycles which lead to focus on short-term goals</li> <li>▪ Disincentives for prevention from current response assistance systems</li> </ul>
<u>Anticipating new risk patterns</u> to advance scenario and intervention planning	<ul style="list-style-type: none"> <li>▪ Identification of potential hazard scenarios</li> <li>▪ Extrapolation of secondary effects and needs</li> <li>▪ Reiteration of process</li> </ul>	<ul style="list-style-type: none"> <li>▪ Continuing separation of the research work taking place among the hard and soft sciences</li> <li>▪ Tendency to filter planning through lens of last disaster</li> </ul>
<u>Sustaining change</u> in normal development dynamics by maintaining attention, capacity and continued action toward resilience	<ul style="list-style-type: none"> <li>▪ Maintenance of effective incentives to influence household and private sector decision-making</li> <li>▪ Allocation of funds for DRM through (national and local) development budgets</li> <li>▪ Maintenance of DRM capacities within relevant organizations</li> </ul>	<ul style="list-style-type: none"> <li>▪ Competing priorities</li> <li>▪ Long lag times in achieving some DRM goals</li> <li>▪ Lack of rigorous monitoring and evaluation to capture lessons learned and replicate good practices</li> </ul>

Ultimately effective solutions to these challenges will need to recognize and address the interdependence of disaster risk management, sustainability, and economic development. (DfID; Bieri) However the project-based approaches that are typically used often come up short in addressing this interdependence. In order to develop projects that can more easily be pitched to donors and more easily fit within institutional program portfolios, organizations often focus on discrete areas of intervention with the goal to achieve incremental gains in those areas. This makes pragmatic sense from the point of view of organizing the project, yet it ignores the interdependence between different areas and the implication that the whole may be

greater than the sum of its parts. Focusing on specific parts of the problem does produce progress, and changing enough of the parts may also lead to broader moderate change in the whole. However this is often not enough to change the overall system dynamics.

Unfortunately monitoring and evaluation also tend to be project-oriented with progress being measured through the lens of the project activities with too much attention to correlating outputs with impacts and not enough attention to causality. This ultimately means that often the real drivers of change are not identified, and continued investments in incremental progress are made blindly without adequate attention to efficiency and impact.

### **Systems approach to disaster risk management**

An alternative is to utilize a systems approach to designing, implementing, and evaluating DRM interventions. Many often call for more systematic effort on DRM, by which they mean being more comprehensive and consistent in applying our interventions. However a systems approach also requires a different type of intervention – one that intentionally targets a combination of leverage points to overcome constraints related to complexity and stimulate broader change within the system. In the case of DRM it is the development system that is the focus.

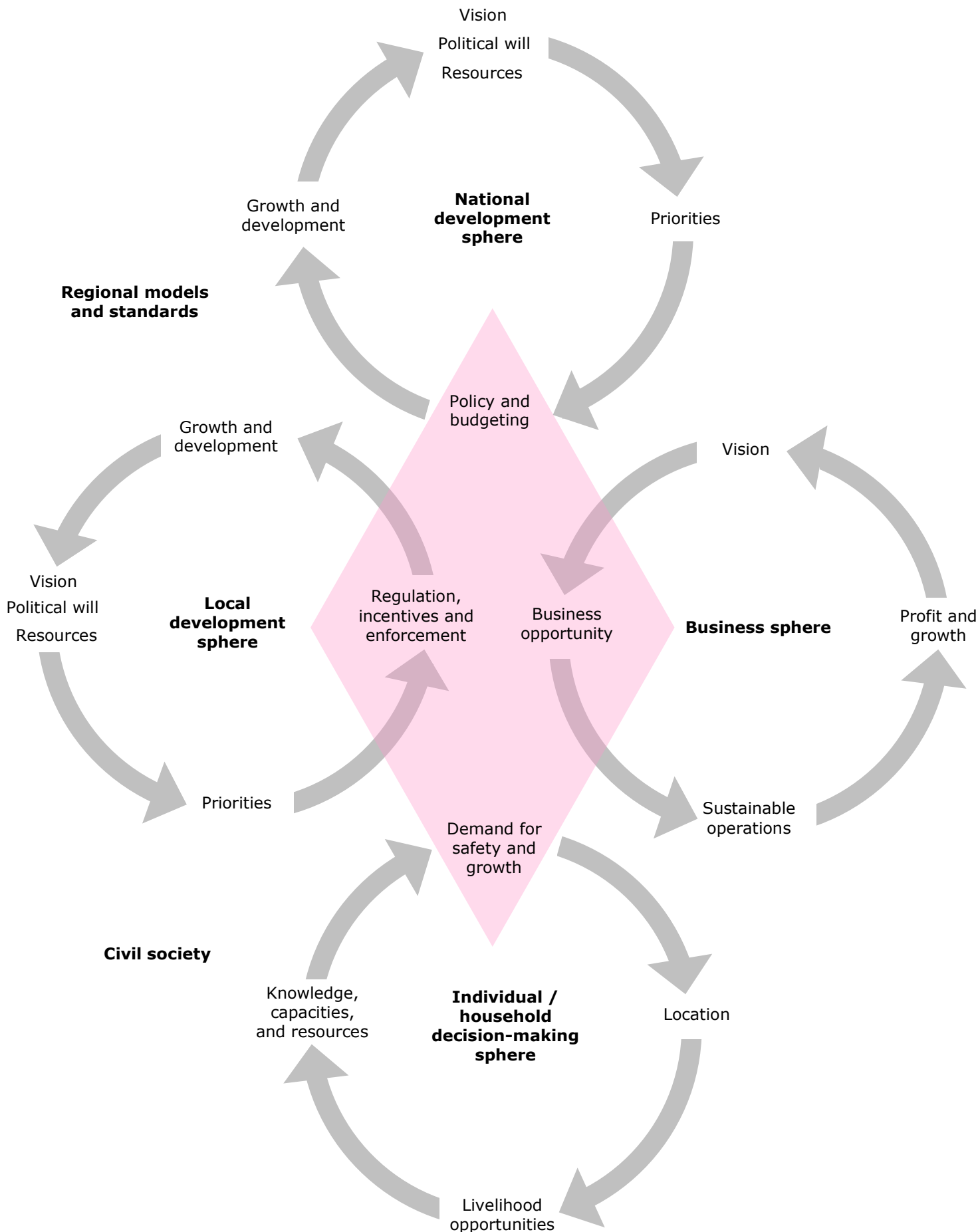
The goal in a systems approach to DRM is to identify and develop interventions and solutions that are embedded within existing development spheres and that are implemented through the course of daily decision-making within these spheres. These spheres occur at variety of levels but the most important for DRM are those at the national, local, private sector, and individual/household levels.

For these interventions to successfully trigger systems change they must be

- multi-faceted – addressing needs across multiple sectors at the same time
- adaptive – accommodating change and responding to feedback over time
- boot strappable – multi-part yet able to be initiated across the system at one time
- self-replicating – embedded into the context of other decision-making so that they are reinforced through that decision-making

Figure 1 outlines a model for the spheres of decision-making occurring at national, local, business, and individual/household levels. Typical project-based interventions tend to operate within one sphere or separately within several spheres. What is needed in a systems approach however is a set of interventions targeting action in all of the spheres and aligned so as to shift the dynamics of the system toward reduced risk and greater resilience. By aligning interventions in each sphere so that they best support change in the other spheres, a compounding effect can be established within the larger system that can lock in progress in each of the spheres as complementary actions happen in the other spheres. The goal is to use a systems approach to speed progress that admittedly might also happen ultimately through other means, albeit more slowly, less assuredly, and with tremendous opportunity cost in terms ongoing damage and loss in the meantime.

The remainder of this paper will explore a set of specific opportunities for applying systems-based DRM interventions – essentially a toolkit for a systems approach to DRM. The paper looks in particular at the combination of policy, demand, incentives, and business opportunity (shown by the diamond in the middle of Figure 1) as perhaps the most effective leverage points for aligning change through these different decision-making spheres.



**Figure 1. Linkages among the spheres of decision-making**

## Opportunities for applying a systems approach

While it would be ideal to say that a systems approach should “systematically” address all of the decision-making occurring at national, local, business, and individual/household levels, this would be difficult to achieve in reality as we must choose carefully where to invest time and energy. The leverage points of policy, demand, incentives, and business opportunity represent a critical subset of the national, local, business, and individual/household spheres that each have the potential for (i) driving change within their sphere and (ii) compounding progress achieved in the other spheres.

This section explores several specific opportunities for applying a systems approach to DRM and for targeting these leverage points in particular. Table 1 shows how strongly these opportunities contribute to the leverage points for aligning decision-making as outlined in Figure 1.

Opportunities	Leverage points for alignment			
	Policy	Demand	Incentives	Business opportunity
Campaigns	+	++	+	++
Regional networks	++	+	+	++
Territorial management	++	++	++	++
Urban redevelopment	++	++	++	++
Development credit	+	++	++	++
Response context	+	++	++	++

**Table. 1 Specific opportunities for leveraging greater systems alignment on DRM**

### ***Campaigns***

Campaigns have been recognized in a variety of fields as a means for raising awareness and generating collective action and public demand. Past global campaigns such as the International Decade for Natural Disaster Reduction, have raised attention to the need for disaster risk management, particularly among international organizations. Yet, in terms of social mobilization, the overall impact of such global campaigns related to disaster risk management has been relatively indirect, only minimally tapping the full potential of campaigns as a tool.

Nationally and locally campaigns have played important roles in wide-spread disaster risk management initiatives, particularly building on the heels of past disasters and the conviction that communities should “never again” let themselves be exposed to such risks. The 1995 Kobe earthquake in Japan, the series of catastrophic typhoons in the 1970s in Bangladesh, San Fernando Earthquake in 1971 in the United States – all of these disaster events galvanized broad systems change in DRM.

Campaigns can also mobilize action within governance, social, and economic systems event even without a direct past catastrophic disaster event as a trigger. The Kobe Earthquake has served as a model for other countries to explore similar scenarios and mobilize national and local planning and action. In New Zealand learning from Kobe has helped to strengthen planning and capacity building which have lead to reduced damage and losses in the earthquakes in Christchurch in September 2010 and February 2011.

In many areas private sector and civil society have also led the establishment of campaign-based public-private partnerships. For example, the Committee for

Melbourne has worked since 1985 to bring together businesses and civic organizations to work collaboratively to support local development – economically, socially and environmentally. Building on the experience in Melbourne and elsewhere, the UN Global Compact Cities Programme (the Cities Programme) offers a framework for building task forces between business, government and civil society, to produce practical responses in sustainable development waste management, water and sanitation, poverty alleviation, traffic safety and housing re-developments.

Similar initiatives have also been undertaken at regional levels. In 1999 the Circum-Pacific Council for Energy and Mineral Resources together with the American Red Cross, the United States Geological Society and Stanford University formed Crowding the Rim, an international, public-private partnership to address the regional consequences of natural hazards in the Pacific Rim. Crowding the Rim produced an innovative regional simulation that was the basis for an international summit, the HAZPAC GIS database, and a teachers institute that brought together educators from around the Pacific Rim.

To be effective campaigns need inclusive themes that capture a range of related issues and allow concerted efforts among a broad set of stakeholders (essentially covering all of the development spheres). One of the challenges currently is the proliferation of campaigns on different, although often related, topics that vie for attention and lead to disparate, isolated impacts. An effective approach may be combination with other campaign efforts to maximize impact and minimize the diffusion of attention, especially among national and local leaders who are being lobbied on a number of fronts. Mass communications also play a key role in galvanizing public interest and demand for change. Too often development campaigns are established on a narrow programmatic footing and not created with the marketing splash that would be invested in the roll-out of even a simple consumer good.

### ***Regional networks***

There exist a range of climate and disaster risk challenges that are best addressed at regional levels through the provision of regional public goods. Crises like the SARS and Avian Flu outbreaks and potential rice shortages due to storm impacts in exporting countries have shown the regional nature of health and food security threats and the need for regional contingency planning. Similarly, the scaling up of access to technical and educational resources can be significantly facilitated through regional sharing mechanisms. Such resources are particularly important for scaling out bottom-up approaches, such as microinsurance or community-based disaster risk management, where the institutions involved may benefit significantly from lateral sharing to compensate for resource challenges within their own institutions.

Regional networks in particular are starting play a significant role in strengthening policy and increasing demand by raising standards and strengthening capacities among their members. Especially by engaging multiple stakeholder groups, these networks can catalyze DRM action across the various spheres of decision-making outlined in Figure 1.

The Association of Southeast Asian Nations (ASEAN) has launched the Agreement on Disaster Management and Emergency Response (AADMER) to promote regional cooperation on risk identification and analysis, early warning systems, and technology and scientific research for disaster risk management. In addition to the formal ASEAN mechanisms, ASEAN hosts a number of related groups such as the ASEAN University Network, ASEAN Business Forum, and the ASEAN Insurance Council, which brings together private sector insurance companies. This broad engagement of different stakeholders offers tremendous potential to catalyze action on DRM among these different stakeholders in concerted ways that yield broad systems gains. So far this potential is mostly unrealized as ASEAN contemplates the alternatives of creating (i) a variety of separate, focused initiatives for each constituent group or (ii) a strategic set of cohesive campaigns on which to focus the energies of its constituent groups.



There are also a number of regional networking initiatives that have developed around more narrow themes but are expanding in scope as their member countries see the potential benefits from such networking and opportunities for hosting related networking activities among a wider variety of stakeholder groups. Among others these include regional network initiatives focused on:

- Risk identification      The Central American Probabilistic Risk Assessment (CAPRA) Initiative has started with a more specific goal to support decision-makers to better analyze risk information in the process of land use planning, estimating loss scenarios for emergency response, building early warning systems, and measuring progress in disaster risk management. CAPRA is at its core a platform for collecting and sharing risk data, but it is also a partnership of national government agencies and international organizations to leverage regional investments in risk profiling and risk modeling. CAPRA is designed to be extensible and open so that a wide range of collaborators can contribute and use the CAPRA data and to enable the shared development among CAPRA members of decision-support applications including a risk map tool, cost-benefit analysis tools for evaluating risk reduction investments, and models to aid the design of disaster risk financing strategies. (GFDRR, undated)
- Disaster risk financing      A similar initiative specifically focused on disaster risk financing is the Caribbean Catastrophe Risk Insurance Facility (CCRIF). The CCRIF is the first multi-country risk pool in the world and provides hurricane and earthquake coverage (soon to augmented with excess rainfall coverage as well) to 16 member countries throughout the Caribbean. In addition to the risk pooling activities, CCRIF has also taken on a wider range of technical assistance programs and research studies within the region, particularly focusing on better understanding the likely impacts of climate change on the Caribbean.
- Regional health security      There is also growing interest on the topic of regional health security, sparked in large part by the experiences from the SARS and Avian Flu outbreaks. The Asian Development Bank is currently working with several partners to establish a regional health security network that would engage both national governments and private sector companies in regional contingency planning. Private sector companies in particular are increasingly interested in the implications of regional health risks for trade with the potential for import and export restrictions, border closures, and reduced travel.

***Territorial management***

There are a wide range of issues related to disaster risks that stretch beyond the scope of local governance processes and require broader territorial or district attention. Some of the issues have a base in natural catchment areas, such as river basins, which cross local government and sometimes even national boundaries. The spread of urban areas is also leading to the creation of city clusters as cities merge along transportation and economic development routes and urban areas stretch across local political boundaries. (Asian Development Bank 2010)

In either case there is growing need for territorial cooperation that is sub-national but also supra-local. Even in countries where there are state and provincial governance structures, these political layers may not precisely match the natural or economic catchment areas in which an increasing proportion of risk decision-making must be made. Organizations like PREDECAN, a program for prevention of disasters among the Andean nations in Latin America, have recognized the strong need for territorial approaches and started to develop guidance for territorial strategies and planning on DRM. (Lavell 2009) There is also a rich history of experience in other fields, particularly water resource management, for establishing territorial governance and deliberation processes.

PREDECAN's approach is based around shared set of territorial development plans and collaboration and cooperation among local governments to align these territorial plans with local development plans. Even among the Andean countries there is tremendous diversity in how political layers between national and local are divided and named. So the emphasis is on matching the territorial needs with the closest relevant political layer and then promoting close coordination with the layers above and below.

Ultimately by moving to a territorial approach, decision-makers can begin to address the full set of risk issues facing communities in that territory. The territory itself needs to be broad enough that there are no critical externalities to local decision-making.

In 2007 CARE initiated a broad multi-stakeholder analysis of the dynamics of poverty to develop a shared strategy for promoting self-determination among stakeholders within a watershed in the Coatan region of Guatemala. Building on earlier work done with CARE partners at a national level, the process started with the collective creation of a systems map that integrated different stakeholder perspectives. This work has focused on highlighting the dynamics that reinforce poverty and identified leverage points for different stakeholder groups to target. The end result has been the development of a strategy to develop economic opportunities and the social structures and processes that support access to these economic opportunities and strengthen the individual's and community's fundamental ability to self-sustain. (Ritchie-Dunham 2007)

### ***Urban redevelopment***

Urban sprawl and the lack of land tenure mean that the poor often live in informal unplanned settlements in the most hazard-prone areas of cities. Climate change and the continued future growth of cities will exacerbate these trends even further.

Effective policy and regulatory frameworks are essential for guiding future development toward resilience and safety. Yet the stock of existing buildings and infrastructure at risk to natural hazards means that there will always be a significant portion of structures – and people living and working in those structures – which are still at risk even as our policies and regulatory frameworks improve. In the long-run redevelopment will be just as great a need as development, and in fact the processes are significantly intertwined.

The building stock is not as static as it appears and in most cities buildings and infrastructure are actually rebuilt at some point, typically within 30-40 years. In theory this means that effective policies and enforcement should, within a generation or two, significantly reduce the risk facing most urban environments. However the opportunity costs of waiting – in terms of disaster damage and losses incurred in the meantime – are significant.

Instead this constant state of building and rebuilding should be seen as an opportunity to redevelop and resettle at-risk areas. Traditionally resettlement has implied relocation, yet experience has shown that relocation threatens livelihood options and provides a disincentive for families to support resettlement. Instead options are needed for redevelopment of existing settlement locations, using inclusive redevelopment strategies to develop higher density housing and business sites while

at the same time providing buffers around hazard areas and greater access for infrastructure and community services. In many cities the decision to provide multi-family, walk-up apartments provides options for low-income families to remain in town, closer to work. Such redevelopment also targets the medium-rise densities that will be necessary to respond to climate change by reducing the carbon footprint of cities as an alternative to urban sprawl.

Financing systems constitute the core of such urban redevelopment interventions, and innovative approaches are needed to align investments by businesses and households with community redevelopment goals. A range of solutions will be needed including onlending<sup>1</sup> to community finance institutions to increase access to loans and credit, improved access to bond markets to tap commercial funding, targeted tax and fee mechanisms to share costs among stakeholders, and access to start-up capital to initiate preliminary planning and studies to bring the necessary pieces into play.

Ultimately inclusive urban redevelopment is about establishing effective public private partnership strategies that marry public planning and governance processes to private sector decision-making (of both businesses and households) through regulation and incentives but also through processes of public deliberation and engagement of a full spectrum of community leaders.

### ***Development credit***

In seeking to address DRM needs in the context of development, prioritization of DRM investments within development budgets is essential. Yet even if we are able to ensure that all new development is risk sensitive, we still have a tremendous backlog of past development investments – whether in infrastructure, community facilities, places of work, or housing – that will need to be upgraded and retrofitted. As mentioned in the urban redevelopment section, development renewal processes can be created to address these residual needs over time. Yet this approach does incur a substantial opportunity cost in terms of the continued exposure of communities to risk in the meantime.

Development credit financing can be used as an enabling instrument for advancing the flow of services and benefits from both public and private investments. Thus development credit represents an opportunity to advance progress within development decision-making spheres and lock-in the stream of resilience benefits at an earlier stage.

Development credit can come through a variety of mechanisms – direct project lending, lines of credit to local finance institutions, or the issuance of bonds. (African Union et al. 2010) Development credit is also increasingly being accessed by development actors other than national governments, which have been the traditional development borrowers.

Ahmedabad, Tirupur, and Bangalore in India have all developed and implemented infrastructure improvement projects funded through the Indian bond market. Technical assistance grants from USAID assisted the local government staff to broker relationships with the investment community. Tapping domestic credit markets, Ahmedabad was able to raised \$89.5 million in four municipal bond issues between 1998 and 2006. Similarly the Greater Bangalore Facility raised over \$23 million for an infrastructure bond with a USAID partial credit guarantee amounting to \$780,000. (Baker and McClain 2009)

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<sup>1</sup> Onlending is a process in which national governments borrow funds from either development or commercial banks and in turn extend those loans to local governments or the private sector. Onlending is used in countries where local governments or the private sector may be restricted from certain kinds of lending by national legislation or local governments or private sector companies do not have sufficient credit standing to borrow directly.

Innovative instruments have also been developed for using municipal bonds to fund individual and household development investments. For example, Property Assessed Clean Energy (PACE) bonds have been used, primarily in the United States, to raise funds to loan to consumers and businesses for energy retrofits of existing homes and businesses. The loan is then paid back through a property tax assessment over a longer period of time. Like many financing instruments this allows property owners to begin saving on energy costs while they are paying for their retrofit investments. In a sense this is a variation of the special development districts used by many municipalities to fund local development. While this specific example has primarily been applied to clean energy projects, a similar mechanism could also be used to provide credit to households and businesses for risk reduction and adaptation investments.

Microfinance has also been an essential tool for helping the poor to access development credit in a more meaningful manner. (African Union et al, 2010) While the basic microfinance approaches are now well known, there are innovative variations that hold particular promise for DRM, especially in combining business opportunity with consumer demand for safety and growth. In Mexico CEMEX through its *Patrimonio Hoy* program has linked the purchase of cement by poor households with the provision of microfinance and technical assistance to help families build or add to their homes in a more sustainable manner. While not specifically targeted at disaster risk, this type of program could easily be extended to address safe-building.

Finally risk transfer tools like insurance or catastrophe bonds also play an important role in comprehensive risk financing strategies, particularly in providing a mechanism for pricing risk and spreading risk exposure more smoothly over longer time periods and more robustly across wider markets. For further reference on this topic, see Suarez and Linnerooth-Bayer 2011.

### **Response context**

A systems approach is also essential to address critical challenges that arise in responding to disasters. While many roles have been established for different organizations in response, significant gap areas often still remain. For example, the response to the earthquake in Haiti highlighted two critical gap areas: sanitation infrastructure and debris removal. Traditionally infrastructure rehabilitation and debris removal have been viewed as part of the longer-term recovery process and coordinated by the national government with bi-lateral or multi-lateral donors. However, in Haiti the lack of sanitation infrastructure and the slow pace of debris removal exacerbated immediate relief challenges and created new ones (such as vulnerability to the cholera outbreak which started in October 2010).

On the sanitation side, numerous humanitarian agencies were providing assistance for small scale sanitation interventions – e.g. building latrines near emergency camps and transitional settlement areas. However in the dense environment in Port au Prince and with more than 1 million people displaced, disposal of waste was a significant challenge. Humanitarian organizations had the experience and resources to pump out latrines, but there was nowhere to treat or hold the waste. Development agencies had the experience and resources to assist in rehabilitating or developing new waste treatment infrastructure on municipal scales, yet their timeframes were organized toward longer-term recovery rather than short-term or medium term needs. A systems approach would focus on bridging across the traditional roles to recognize both the inevitable need to provide sanitation infrastructure solutions and the significant relief gains to be had by accelerating the rehabilitation of sanitation infrastructure or developing interim infrastructure solutions.

In each case innovative partnerships were needed that would bring together government and both humanitarian and development organizations to identify such gap areas that were significantly affecting relief efforts and develop interim solutions that merged both relief and recovery approaches to effectively fill the gaps. Instead of

looking broadly across needs and resources within the entire system, agencies have tended to focus on their niche areas, leaving these two gaps intact.

## **Conclusion**

In much of our collective work to date on DRM we have achieved progress by breaking challenges down into constituent elements, encouraging specialization among agencies and organizing a task-division of labor. Unfortunately, even with all of the progress we have made to date on highlighting the issues of risk in development, at an intrinsic level we still have not shifted the development dynamics that are busily continuing to construct risk even as we work.

This paper has argued that a broader holistic systems approach is needed to help address these remaining DRM challenges. A systems approach can link interventions across the spheres of national, local, business, and individual/household decision-making and help to set in motion dynamics within each of those spheres that will sustain progress within the myriad daily decisions that make up our development processes. To achieve this effect we must choose interventions and use leverage points in each of the spheres with the intent to catalyze broader and continued change. This paper has suggested policy, demand, incentives, and business opportunity as a preliminary set of leverage points to ground our interventions solidly in strategies that target impacts in each of the spheres of national, local, business, and individual/household decision-making.

Without this concerted attention to system-wide dynamics, there will likely always be a set of challenges that remain outside of the reach of pragmatic, incremental approaches, no matter the wealth of small and moderate successes those may deliver. We may also hope that we might indirectly trigger system-wide effects, however we would do better to target our planning and performance monitoring mechanisms to this systems level in the first place.

The activities under a systems approach may not be radically different from what we have been doing so far. Instead the difference will be in how we undertake these activities – focusing on strategies and interventions to simultaneously maximize impact across the spheres of national, local, business, and individual/household decision-making.

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