



# Bridging the gaps: stakeholder-based strategies for risk reduction and financing for the urban poor

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**ABSTRACT** This paper explores the options that can be used by aid organizations working in human settlement development to more effectively address disaster risk management. Qualitative research was carried out in El Salvador at both the household and institutional levels – to analyze the needs, capacities and perspectives of slum dwellers and aid organizations. A clearer understanding of the gaps between what households need and undertake to deal with disasters and risk, and how organizations support them, yields important insights for the restructuring of development aid. At the household level, the research reveals a huge variety of crucial but somewhat weak coping strategies. At the institutional level, organizational structures and mechanisms for social housing provision and financing offer a potentially powerful platform for tackling disaster risk. However, current project measures are insufficient. Support for and scaling up of selected household coping strategies, combined with the expansion of social housing funding mechanisms for risk reduction and financing, are some of the options proposed for targeting aid.

**KEYWORDS** development assistance / disaster risk management / El Salvador / insurance / risk financing / risk reduction / settlement development / slum / social housing

## I. INTRODUCTION

### a. Background

Over the past decades, the frequency of so-called natural disasters has increased worldwide, resulting in growing human and economic losses. In 2005 alone, more than 360 disasters were reported, with around 92,000 people killed and another 160 million suffering adverse impacts. Direct material losses were about US\$ 160 billion. Low- and middle-income nations bear the highest burden in terms of the human lives and proportion of gross domestic product (GDP) lost as a result of disaster.<sup>(1)</sup>

Slum dwellers are particularly vulnerable to natural disasters. Low-income human settlements are often located on marginal land near rivers or on steep slopes; housing and infrastructure are sub-standard. Among other problems are leaking sewage pipes from better-off settlements that pass through slum areas to discharge into nearby rivers, a lack of water and waste management services, limited access to information, and overcrowding. Disasters make the already precarious economic, social and environmental conditions of slum dwellers worse, creating a vicious circle.

Currently, more than one billion people worldwide live in slums and are forced to accept inhuman and dangerous living conditions. It is estimated that their number will double over the next 24 years.<sup>(2)</sup>

In recent years, increasing attention has been given to the need to reduce disaster risk within the context of development work. The stated aim of the Millennium Declaration to achieve a significant improvement in the lives of at least 100 million slum dwellers by 2020 alludes to this need;<sup>(3)</sup> and the Hyogo Framework for Action 2005–2015 urges governments to address the issue of disaster risk in their sector development planning and programmes.<sup>(4)</sup> Nevertheless, aid organizations working in human settlement development still struggle to sustainably reduce existing disaster risk in their everyday work.

This paper reports on case studies carried out in El Salvador, which is located in one of the most disaster-prone regions in the world.<sup>(5)</sup> Its objective is to explore and develop stakeholder-based options for aid organizations to more effectively integrate disaster risk management (i.e. risk reduction and financing) into their core project work. The focus is on non-government aid organizations working, inter alia, in the field of settlement development planning for the urban poor. The term “social housing organizations” will be used to describe this type of organization.

## b. Methodology and outline

Case studies were carried out at the household and institutional levels in El Salvador in 2005/6 to determine the existing perceptions, needs and capacities of both the urban poor and the national organizations servicing slum communities.

The research at the household level included semi-structured interviews with people living in 15 disaster-prone slum communities,<sup>(6)</sup> as well as walk-through analyses, observation and a literature review. Sixty-two households, comprising 331 persons, in high-risk areas were interviewed. The emphasis was on analyzing:

- existing disaster risk, its causes and the resulting local needs;
- local capacities for risk reduction and their financial implications for residents' livelihoods; and
- local capacities for risk financing, including formal and informal insurance mechanisms.

At the institutional level the research included a text review, workshops, group discussions and semi-structured interviews with a total of 22 representatives of social housing organizations and other non-government organizations (NGOs), housing finance institutions or departments, government housing bodies and insurance companies.<sup>(7)</sup> The focus was on analyzing the provision of social housing projects and the related mechanisms for risk reduction and financing. A range of different projects was reviewed, and in-depth evaluations were also carried out of four of the projects that were implemented in the above-mentioned 15 slum communities.

The challenges and gaps identified among the perspectives, needs and capacities at the household and institutional level were used as the basis for exploring, together with the stakeholders, options for assisting in targeting aid. A literature review was carried out to complement and

**organizations FUSAI and UN-HABITAT-ROLAC (Regional Office for Latin America and the Caribbean). The Swedish International Development Cooperation Agency (Sida) and the German Advisory Council on Global Change (WBGU) provided financial support for this research.**

1. UNISDR (2006), “Disaster statistics 1991–2005”, accessed at [www.unisdr.org/disaster-statistics/introduction.htm](http://www.unisdr.org/disaster-statistics/introduction.htm), 7 June 2006.

2. UN-HABITAT (2003), *The Challenge of Slums*, Global Report on human settlements, Earthscan, London.

3. See [www.unmillenniumproject.org](http://www.unmillenniumproject.org).

4. UNISDR (2005), “Hyogo framework for action 2005–2015: building the resilience of nations and communities to disasters”, accessed at [www.unisdr.org/wcdr/intergov-official-doc/L-docs/Hyogo-framework-for-action-english.pdf](http://www.unisdr.org/wcdr/intergov-official-doc/L-docs/Hyogo-framework-for-action-english.pdf), 5 June 2006.

5. Lavell, Allan (1994), “Prevention and mitigation of disasters in Central America: vulnerability to disasters at the local level”, in Ann Varley (editor), *Disasters, Development and Environment*, John Wiley & Sons, Chichester, pages 49–64.

6. The communities analyzed during research in 2005 and 2006 were: La Chacra, Llanos de la Chacra, Quiñones Privado, Quiñones Municipal, San Martín Privado, San Martín Municipal, Casitas del Coro, Coro Nuevo, San Luis Portales, Bolívar, Granjero II and Nueva Esperanza (forming the slum area called Los Manantiales, situated in San Salvador); José Cecilio del Valle and Divina Providencia (also situated in San Salvador); and Refugio (situated in and made up of people from the slums of the Bálsamo region).

7. The organizations interviewed were: ACSA (Asociación Salvadoreña de Empresas de Seguros);

CEPRODE (Centro de Protección para Desastres); CHF (Cooperative Housing Foundation International); Sistema Cooperativo Financiero FEDECACES; FEDECREDITO (Federación de Cajas de Crédito); FONAVIPO (Fondo Nacional de Vivienda Popular); Fundación Habitat; FUNDASAL (Fundación Salvadoreña de Desarrollo y Vivienda Mínima); FUSAI (Fundación Salvadoreña de Apoyo Integral); HFH (Habitat for Humanity); IDB (Inter-American Development Bank); INTEGRAL; national Red Cross; Seguros Futuros; UCA (University José Simeón Cañas, Department of Architecture); SISA (Seguros e Inversiones SA); VMVDU (Vice-Ministerio de Vivienda y Desarrollo Urbano); and different municipalities. All organizations were selected through snowball and purposeful sampling. CEPRODE, FUNDASAL and FUSAI were operating in the 15 slum communities analyzed.

8. Glaser, Barney G and Anselm L Strauss (1967), *The Discovery of Grounded Theory – Strategies for Qualitative Research*, Aldine Publishing Company, Chicago.

9. Haraldsson, Hördur V (2004), "Introduction to system thinking and causal loop diagrams", Reports on Ecology and Environmental Engineering 2004, Vol 1, Institute of Chemical Engineering, Lund University; also Sterman, John D (2000), *Business Dynamics: Systems Thinking and Modelling for a Complex World*, Irwin/McGraw-Hill, New York.

10. Thompson, Michael, Richard Ellis and Aaron Wildavsky (1990), *Cultural Theory*, Westview Press Inc, Oxford.

11. The word "risk" is in quotation marks as, in this paper, the term generally refers to risk associated with natural disasters and/or hazards and not to socioeconomic hazards. However, as slum dwellers mentioned such hazards as part of the risk they face, some of the main related aspects have been mentioned here. Note, however, that – in keeping with the focus

validate different options. For the data analysis, a combination of grounded theory,<sup>(8)</sup> systems analysis<sup>(9)</sup> and cultural theory<sup>(10)</sup> was applied.

Analyses of the current situation in El Salvador are now presented, providing two "snapshots", one from the household level and one from the institutional level. The gaps, challenges and potential solutions are discussed on this basis, and the main outcomes are summarized.

## II. FIRST "SNAPSHOT": HOUSEHOLD-LEVEL CASE STUDIES

### a. Existing needs: understanding disasters

In the slums analyzed, flooding and landslides, which affect many slum dwellers annually, and usually during the winter, were generally seen as the main risk to lives and livelihoods. Earthquakes and windstorms ranked next in importance. The lack of job opportunities and water provision, as well as insecurity due to violent juvenile gangs (*maras*) were also seen as substantial "risks".<sup>(11)</sup>

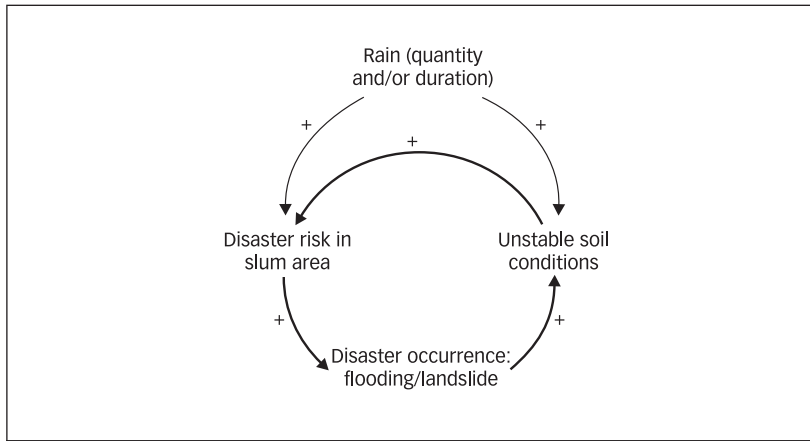
To analyze the existing local problems and the measures needed to address them, slum dwellers were asked for their views on the underlying drivers of disasters and disaster risk in slums. Interviewees reported on:

- neighbours downhill felling trees or excavating the slopes below their houses;
- neighbours uphill building latrines close to the declivity and allowing waste and storm water to flow onto their land;
- people from outside the settlement tipping solid waste down their hills or into the nearby rivers; and
- other residents not knowing how to improve their situation.

As there is not only little sense of mutual rights and obligations in slum communities, but also a lack and unequal distribution of information on risk reduction, the asymmetric disaster risk that inhabitants incur is growing,<sup>(12)</sup> creating increased tension among neighbours. Other key aspects (driving disasters and disaster risk) mentioned in the interviews were:

- insecure tenure resulting in slum dwellers being unwilling to invest in reducing risk;
- increases in the area of the built environment and overcrowding caused by growing households;
- inadequate housing construction and technical infrastructure;
- space restrictions;
- a shortage of financial resources due to unemployment; and
- little outside help.

Furthermore, national and municipal governments were often seen by slum dwellers as unhelpful, and even a hindrance, to their efforts. In fact, the actions taken by planning authorities, and the information obtained by them with respect to the development and legalization of planned settlements, were viewed as contradictory and often unreliable. In some communities, local community cohesion and organization was affected by mistrust, mainly related to corruption and political factionalism. In Wamsler,<sup>(13)</sup> the key variables and causal loops underlying the complex system of risk and disaster occurrence in slum areas are described more in detail and illustrated in so-called causal loop diagrams, a systems analysis tool (Figure 1).<sup>(14)</sup>



**FIGURE 1**  
**Example of a basic causal loop diagram showing some natural key variables underlying risk and disaster occurrence as regards flooding and landslides**

**b. Existing capacities: coping with disasters**

*“We are always trying to improve, little by little, step by step, in order to become more secure.”* This statement by a slum dweller living in San Salvador illustrates the constant efforts that are put into coping with disasters and disaster risk. Key literature on disaster risk management commonly makes use of the term “coping strategy”<sup>(15)</sup> – usually, however, without defining it. Based on household-level research, the following definition of coping strategy is proposed: “constantly changing and adapting cognitive and behavioural efforts to manage disaster risk or disaster impacts”. These efforts influence the key variables and causal loops underlying the complex system of risk and disaster occurrence in specific slum areas.

The research reveals three types of coping strategies employed by slum dwellers living at risk. These are:

- strategies to reduce existing risk;
- strategies to insure themselves informally or formally against possible disasters; and
- strategies to recover from disaster impacts.

Within each strategy – risk reduction, self-insurance and recovery – different thematic foci and underlying social patterns were identified. The thematic foci are physical/technological, environmental, economic, social/cultural, organizational and institutional.<sup>(16)</sup> The social patterns, which have been established by “cultural theory”,<sup>(17)</sup> are individualistic, communitarian, hierarchical and fatalist. Within this research context, individualistic behaviour is characterized by the use of self-help to fix things without help from people outside one’s own household. Communitarian behaviour is based on the belief that everybody sinks or swims together; it is hence characterized by community efforts. Hierarchical patterns relate to the belief in authority structures for assistance, control and organization, including strong prescriptions. Fatalist behaviour is a non-strategy

of this research – these were of secondary consideration to slum dwellers compared with the risk caused by natural hazards.

12. Asymmetric disaster risk is the unequal distribution of the level of disaster risk experienced by people living close to and within a specific area. Hence, the asymmetric disaster risk of slum inhabitants refers to the fact that the level of disaster risk within a given slum is not constant across the entire community.

13. Wamsler, Christine (2006), “Understanding disasters from a local perspective: insights into improving assistance for social housing and settlement development”, *TRIALOG* (Journal for Planning and Building in the Third World) No 91, December, special issue on “Building on disasters”.

14. Causal loop diagrams portray a causal relation between two variables (e.g. A and B) by an arrow with a plus (+) or minus (-). A plus (+) or minus (-) indicates the type of change that occurs if variable A, at the beginning of the arrow, increases: A positive symbol (+) shows that the increase in variable A affects the increase in B. However, a negative symbol (-) means that the increase in A results in a decrease in B. The inclusion of non-linear relationships is one of the most important advantages of causal loop diagrams compared to conventional models such as flow charts. Causal loop diagrams usually have at least one closed loop, representing feedback. Figure 1 illustrates how the identified key variables “rain” and “unstable soil conditions” relate to risk and disaster occurrence. As can be seen, an increase in the amount of rain or in its duration could increase disaster risk and hence the occurrence of flooding and landslides. In turn, flooding and landslides can make unstable soil conditions worse, resulting in a further exacerbation of disaster risk. In addition, more rainfall further destabilizes unstable soil conditions, which again

influences the occurrence of risk and disaster.

15. For example, UNISDR (2004), *Living with Risk: A Global Review of Disaster Reduction Initiatives*, Inter-Agency Secretariat of UNISDR, accessed at [www.unisdr.org/eng/about\\_isdr/bd-lwr-2004-eng.htm](http://www.unisdr.org/eng/about_isdr/bd-lwr-2004-eng.htm); also Twigg, John (2004), *Disaster Risk Reduction: Mitigation and Preparedness in Development and Emergency Programming*, Good Practice Review, Number 9, March, Overseas Development Institute (ODI), London.

16. Note that many coping strategies involve elements from different categories. However, such categories are helpful for viewing and analyzing strategies, thereby ensuring that no household measures are overlooked.

17. See reference 10.

18. See reference 15, Twigg (2004), page 139.

19. SELA (Latin American Economic System) (2005), *Migrations and Remittances in Latin America and the Caribbean: Intra-Regional Flows and Macroeconomic Determinants*, XXXI Regular Meeting of the Latin American Council, 21–23 November 2005, Caracas, Venezuela.

for survival based on the idea that taking action or not taking action has the same (negative) result.

### c. Coping strategies for risk reduction

Risk reduction includes prevention (to minimize or avoid hazards), mitigation (to reduce vulnerabilities) and preparedness (to improve people's capacities to ensure effective response as soon as disaster strikes). Slum dwellers use risk reduction mainly during "normal" times (i.e. pre-disaster) so as to be less affected by future small-scale or exceptionally large-scale disasters. In an ideal case, risk reduction leads to an absence of disasters (as hazard impact will be minimal).

Household strategies to reduce risk are diverse, and include physical/technological, environmental, economic, social/cultural, organizational and institutional measures (Tables 1–4). El Salvadoran slum dwellers, for instance, build retaining walls or embankments with old car tyres, stones, bricks or nylon bags filled with soil and cement; they plant palm trees; remove blockages from rivers and open water channels; take jobs outside their own settlement so as to be unaffected by local disasters; temporarily move their families to the highest rooms in their dwellings if floods are forecast; and create information structures. They may also adopt more emotionally oriented strategies, such as relying on their faith or simply accepting their high risk. Answers such as "*I just sit with my Bible and pray*" were common. However, unbearable needs push most of the dwellers to actively adopt individualistic behaviour for survival. In fact, this research supports Twigg,<sup>(18)</sup> who states that expressions of belief in divine power are not incompatible with taking actions to reduce risk.

Physical or technological risk reduction was identified as including structural and non-structural improvements of dwellings and their surroundings, mostly carried out on an individual basis (Table 1). Environmental risk reduction includes the use and removal of natural resources as well as the "clean-up" of the natural environment (Table 2). These measures are carried out individually, and to some extent in cooperation with neighbours, the whole community and the local or national government. Economic and social/cultural risk reduction strategies are predominantly individualistic and were shown to include both behavioural and cognitive measures (Table 3). Economic diversification in households is a common strategy for reducing vulnerabilities. Household members furthermore engage in low-risk activities or activities with differing risk profiles. If one family member temporarily becomes jobless because, for instance, the local *tortillería* or the corn mill is destroyed by a disaster, other income sources can absorb the losses and help bridge the income shortage. Increased household income (for vulnerability reduction) is sometimes also achieved through the migration of family members to the United States. In 2004, more than one million Salvadorans were resident in the United States, and family remittances have become a major income source for El Salvador since the 1990s.<sup>(19)</sup> Organizational and institutional risk reduction comprises the creation of organized structures to reduce risk as well as strategies to access related services/assistance offered by different institutions, thereby tapping into formal or informal structures or networks. It is often closely related to kinship networks, mutual aid and self-help, as well as to formal and hierarchical structures for disaster risk management. However, some strategies are also carried out individually (Table 4).



**TABLE 1**  
**Physical/technological risk reduction**

Focus/aim	Activities identified
Constructive/ structural house improvements	<ul style="list-style-type: none"> <li>• Increasing inclination of roofs (for better run-off without damaging roof constructions)</li> <li>• Prolonging roof projections/eaves (to protect houses and pathways from damage/erosion)</li> <li>• Changing direction of roof inclination (so rainwater is discharged without causing damage/landslides)</li> <li>• Installing provisional gutters as roof eaves (so rainwater is discharged without causing damage/landslides)</li> <li>• Replacing mud walls with brick walls, wooden pillars with metallic ones, and corrugated iron with more durable materials (e.g. <i>duralita</i>) (to better withstand earthquakes, rain and/or floodwater)</li> <li>• Improving electricity installations by covering cables and putting electric connections higher up, out of reach of expected flood levels</li> <li>• Regularly replacing corrugated iron, wooden pillars and beams (to better withstand rain or earthquake impacts)</li> <li>• Improving roof fixing (to better withstand earthquakes and windstorms)</li> <li>• Regularly covering walls and floors with (additional) cement (for better run-off without causing damage/erosion)</li> <li>• Filling of cracks with cement (for better run-off without causing damage/erosion)</li> <li>• Closing holes in corrugated iron sheets using special fillings or patches on top of or under sheets (to prevent water entering the house)</li> <li>• Changing the locations of latrines and wash places (to mitigate landslides)</li> </ul>
Non-constructive/ non-structural house improvements	<ul style="list-style-type: none"> <li>• Blocking wastewater pipes with stones and other objects when river levels rise (to avoid flooding and/or related contamination)</li> <li>• Putting wood or bricks on the roof (to hold it in place during windstorms)</li> <li>• Putting plastic sheets on the roof, on the inside walls or over the bed (to prevent water entering or damaging the house)</li> <li>• Building water barriers in front of the house (to prevent water entering the house)</li> <li>• Digging water channels in earth floors inside the house (for better run-off without causing damage/erosion)</li> <li>• Putting pots under roofs with holes (to catch water, preventing damage/erosion)</li> </ul>
Constructive/ structural im- provement of the surrounding living environment	<ul style="list-style-type: none"> <li>• Strengthening pathways by covering them with (additional) cement and filling in cracks (to mitigate landslides and minimize damage caused by rain and earthquakes)</li> <li>• Filling in former latrine holes with earth, stones and/or cement (to mitigate landslides and minimize damage caused by rain and earthquakes)</li> <li>• Repairing public infrastructure that passes through the settlement, such as wastewater pipes (to avoid flooding and related contamination)</li> <li>• Building provisional water channels with corrugated iron or cement (to discharge rainwater without causing damage/landslides)</li> <li>• Building fences to hold back soil (mitigating landslides) and/or to prevent children from falling (fences are made of corrugated iron, mattress springs, wooden pillars and wire netting)</li> <li>• Compacting soil (to mitigate landslides and minimize damage caused by rain and earthquakes)</li> <li>• Building retaining walls or embankments from: old tyres, stones and cement; old tyres and soil; bricks and cement; stones only; nylon bags filled with soil and cement; and other materials (to mitigate landslides and minimize damage caused by earthquakes)</li> </ul>
Non-constructive/ non-structural improvement of the surrounding living environment	<ul style="list-style-type: none"> <li>• Putting plastic sheets on slopes, often during entire year (to mitigate landslides)</li> <li>• Digging water channels in earth outside the house (to discharge rainwater without causing damage/landslides)</li> <li>• Avoiding obvious flood- or landslide-prone locations for house expansion</li> <li>• Replacing eroded earth with new earth (to mitigate landslides and minimize damage caused by rain and earthquakes)</li> <li>• Cleaning water gutters (to mitigate flooding)</li> </ul>

**TABLE 2**  
**Environmental risk reduction**

<b>Focus/aim</b>	<b>Activities identified</b>
Use of natural resources to reduce risk	<ul style="list-style-type: none"> <li>• Planting to prevent landslides</li> <li>• Planting to create windbreaks</li> <li>• Using the natural environment as an information source to analyze risk situations (river level, clouds)</li> </ul>
Removal of natural resources that represent risk	<ul style="list-style-type: none"> <li>• Cutting down bigger branches and trees located close to houses (to minimize the risk of them falling down and causing damage during earthquakes and landslides)</li> </ul>
Clean-up of natural environment	<ul style="list-style-type: none"> <li>• Cleaning waste from slopes (to mitigate flooding caused by blocked water gutters)</li> <li>• Clearing objects blocking the flow of rivers, such as tyres, plastic sheets, mattresses and branches (to mitigate flooding)</li> </ul>

**TABLE 3**  
**Economic and social/cultural risk reduction**

<b>Focus/aim</b>	<b>Activities identified</b>
Economic diversification of individuals or families to increase overall income, which reduces economic impacts after disasters and/or the dependency on the income of specific sources or family members	<ul style="list-style-type: none"> <li>• Carrying out different jobs simultaneously</li> <li>• If possible, all family members working</li> </ul>
Taking on income activities with differing risk profiles and/or low-risk activities (i.e. jobs unaffected by local disasters)	<ul style="list-style-type: none"> <li>• Taking (additional) jobs outside own settlement</li> </ul>
Geographic diversification of families' income	<ul style="list-style-type: none"> <li>• Taking jobs located in different geographic areas within and/or outside the country</li> </ul>
Reduction of household expenses to increase disposable income	<ul style="list-style-type: none"> <li>• Cutting down firewood instead of using gas ovens</li> </ul>
Learning from friends, neighbours and project measures	<ul style="list-style-type: none"> <li>• Being involved in self-help measures</li> <li>• Copying construction types and/or economic risk reduction strategies from neighbours</li> </ul>
Trust in outside help	<ul style="list-style-type: none"> <li>• Relying on labour and/or income of family members (e.g. regular "income" through remittances)</li> <li>• Relying on a hierarchical system to supply help for risk reduction</li> </ul>
Psychological acceptance of risk situation	<ul style="list-style-type: none"> <li>• Having religious beliefs</li> <li>• Downplaying the existing level of risk</li> <li>• Deciding not to invest too heavily in housing or infrastructure, as losses can be replaced more cheaply and easily</li> </ul>

**TABLE 4**  
**Organizational and institutional risk reduction**

Focus/aim	Activities identified
Creation of structures/mechanisms to access information on existing risk level and weather forecasts	<ul style="list-style-type: none"> <li>• Going to church (priests are a source of information)</li> <li>• Asking neighbours</li> <li>• Getting information from government organizations (at local, municipal and national level)</li> <li>• Listening to radio and watching television</li> <li>• Monitoring disaster-related changes (e.g. level of river, clouds) and establishing related information structures</li> </ul>
Creation of organizational community structures for risk reduction	<ul style="list-style-type: none"> <li>• Establishing local committees for risk reduction</li> <li>• Including risk reduction activities in the work portfolio of the local executive committee, for example, monitoring of risk situation, distribution of plastic sheets, information on evacuation, clearing of waste from slopes, accessing help from government</li> </ul>
Accessing help for risk reduction	<ul style="list-style-type: none"> <li>• Asking for help (mostly for construction materials) from different organizations, political parties and/or the municipality</li> </ul>
Taking organizational precautions to protect family members and reduce damage to belongings	<ul style="list-style-type: none"> <li>• Preparing food in advance for the children so that, if need be, they can eat and then quickly be sent to neighbours or family members in more secure areas</li> <li>• Temporarily moving to the highest room, another house or tents</li> <li>• Regularly observing and monitoring cracks in cement surfaces (if flooding is expected)</li> <li>• Taking belongings to another location (within the house, for example, storing them on a bunk bed, or on a higher platform outside the house (if flooding is expected)</li> </ul>
Organized and coordinated community work	<ul style="list-style-type: none"> <li>• Guarding empty houses and evacuated people who are asleep during preventive evacuation</li> <li>• Transportation of people's belongings to higher-level streets (if flooding is expected)</li> <li>• Clearing waste and other sources of risk from slopes, rivers and streets</li> <li>• Cementing of streets so that children, in the case of flooding, do not sink into the mud</li> <li>• Moving to refuges (neighbours' private houses) in anticipation of a disaster</li> </ul>

#### d. Coping strategies for risk financing: self-insurance

The term "risk financing" is mainly used at the institutional level and usually describes only formal financing measures to transfer or share risk. The broader term "self-insurance" was selected for the household level to include formal *and* informal, and monetary *and* non-monetary mechanisms. The literature on disaster risk management generally uses the terms "informal insurance", "self-insurance" or "informal self-insurance" synonymously and – as in "coping strategy" – without definition.<sup>(20)</sup> Based on the research outcomes, self-insurance is defined here as "the creation or maintenance of formal or informal security systems that help people access financing sources or mutual social help in the event of a disaster". Financing sources are, for instance, informal and formal credits, donations, additional income, the selling price of assets and monetary compensation. Mutual help can include offering refuge, temporary custody of children, fostering a child, labour work for reconstruction, or washing and cleaning. In other words, to insure themselves, slum dwellers take pre-disaster action in the hope of obtaining direct or indirect compensation if a hazard leads to death, injury or loss of property or income. They thus ensure that they can bounce back faster – than if they do not have self-insurance – to their former standard of living, or an even higher one.

20. See reference 15,



Self-insurance strategies were identified as including economic, social/cultural, organizational and institutional measures (Tables 5 and 6). An example of the former is the acquisition and maintenance of physical assets, such as construction materials, which can easily be sold if need be. To alleviate financial distress, one of the slum dwellers interviewed sold seven roofing sheets of corrugated iron, and then re-roofed his home with an old car body. Not nailing down the corrugated iron allows it to be resold at a higher price. Further examples of self-insurance reported by the slum dwellers were savings, the creation of reciprocally dependent relationships and the encouragement of reciprocal dependents to achieve improved economic status. Economic and social/cultural self-insurance is mainly applied on an individual basis (Table 5).

Organizational and institutional self-insurance strategies comprise the creation of organized structures to insure oneself, as well as related strategies to access services/assistance offered by different institutions, thereby tapping into formal or informal structures or networks. It includes, for instance, accessing community emergency funds, creating linkages with government and (mostly) non-government institutions, such as religious bodies (which offer help after disasters), and illegally accessing formal insurance mechanisms (Table 6). In fact, while slum dwellers are not generally believed to have a culture of insurance, in two cases residents had illegally obtained employment certificates enabling them to pay into the social security system, even though they were not formally employed. In addition, 26 of the 331 people interviewed had health insurance as they work in the formal market. One-third of the interviewees were interested in acquiring property disaster insurance (the other two-thirds had no opinion on the subject).

**TABLE 5**  
**Economic and social/cultural self-insurance**

Focus/aim	Activities identified
Creation of extensive reciprocal and dependent relationships	<ul style="list-style-type: none"> <li>• Having many children</li> <li>• Creating a large and good family network</li> </ul>
Encouragement of dependents and other family members to achieve improved economic status	<ul style="list-style-type: none"> <li>• Encouraging dependents to study</li> <li>• Encouraging dependents to migrate to the United States or other foreign countries</li> <li>• Supporting dependents to obtain a formal job</li> </ul>
Increase of job capacities of individuals for different sources of income	<ul style="list-style-type: none"> <li>• Being able to change job sectors from one where demand decreases after a disaster (e.g. clothes vending) to one where demand rises after a disaster (e.g. the construction sector)</li> </ul>
Acquiring/maintaining assets that can serve as collateral for formal credits	<ul style="list-style-type: none"> <li>• Taking on a formal job</li> <li>• Accessing legal tenure</li> <li>• Owning a legal and permanent dwelling</li> </ul>
Saving for a "rainy day"	<ul style="list-style-type: none"> <li>• Individually accumulating money "under the mattress" (not regularly, for instance monthly, but based on irregular income)</li> </ul>
Acquiring/maintaining physical assets that can be easily sold if need be	<ul style="list-style-type: none"> <li>• Using reusable construction materials for own shelter</li> <li>• Owning land</li> <li>• Owning a home</li> </ul>

**TABLE 6**  
**Organizational and institutional self-insurance**

Focus/aim	Activities identified
Participation in informal community insurance schemes	<ul style="list-style-type: none"> <li>• Paying social fees for community emergency funds</li> </ul>
Creation of cohesion, solidarity and/or reciprocal relationships with neighbours and/or other community members	<ul style="list-style-type: none"> <li>• Knowing well and interacting with people from the neighbourhood (e.g. buying from local shops, offering labour when needed)</li> <li>• Employing community members for small jobs</li> <li>• Engaging in community matters</li> </ul>
Creation of linkages/ relationships with institutions at different levels (government and non-government)	<ul style="list-style-type: none"> <li>• Participating in the local executive committee</li> <li>• Becoming a member of a political party</li> <li>• Becoming a member of a religious group</li> <li>• Staying in contact with NGOs that carried out projects within the settlement</li> <li>• Maintaining good contact with the local government (municipality) and national government organizations (mostly through the local executive committee)</li> </ul>
Creation of illegal access to formal insurance mechanisms	<ul style="list-style-type: none"> <li>• Paying into the public social security system through deals with entrepreneurs who certify the employment of the respective person</li> </ul>
Improved possibility of accessing post-disaster assistance (partly through intentional increase of risk)	<ul style="list-style-type: none"> <li>• Renting in a high-risk area</li> <li>• Renting in risk areas where infrastructure projects or aid projects are planned</li> </ul>

### e. Coping strategies for recovery

Directly interlinked with self-insurance approaches are coping strategies for disaster recovery. However, not all recovery strategies are initiated in a pre-disaster context; they can also be ad hoc. Based on the household level “snapshot”, recovery strategies were defined as “actions taken in a post-disaster situation to recover as fast as possible from disaster impacts, that is, to regain the former status quo or become even better-off than before”.

Economic and social/cultural recovery aim at loss “financing”, that is, obtaining financial or material resources for recovery. Examples are borrowing money, using credit or savings, increasing income and reducing expenses (Table 7). The strategies identified are mainly carried out individually at the household level. However, the lack of solidarity among members of some households occasionally erodes such efforts: complaints about family members with regard to financial help were more frequent than accolades. Nevertheless, the interviews and literature confirm that remittances from abroad play an important role in recovery. According to Agunias, remittances rise when an economy suffers a downturn or macro-economic shocks due to a natural disaster.<sup>(21)</sup> Following the 2001 earthquakes, the Central Reserve Bank of El Salvador estimated that Salvadorans living abroad sent home US\$ 1.9 billion in remittances.<sup>(22)</sup> As of 2004, remittances totalled US\$ 2.5 billion<sup>(23)</sup> and assisted more than one-fifth of all households.<sup>(24)</sup> While organizational and institutional recovery are for the most part related to kinship networks, mutual aid and self-help, they also include assistance from NGOs and government organizations (Table 8).

21. Agunias, Dovelyn (2006), “Remittance trends in Central America”, *Migration Information Source* (MFI), April 1. See [www.migrationinformation.net/pdf/Migration\\_Information\\_Source-Central\\_America.pdf](http://www.migrationinformation.net/pdf/Migration_Information_Source-Central_America.pdf).

22. UNDP (2004), *Reducing Disaster Risk: A Challenge for Development*, UNDP, New York.

23. See reference 19.

24. UNDP (2005), *Informe Sobre Desarrollo Humano El Salvador 2005: Una Mirada al Nuevo Nosotros. El Impacto de las Migraciones, San Salvador*, UNDP, San Salvador.

**TABLE 7**  
**Economic and social/cultural recovery strategies**

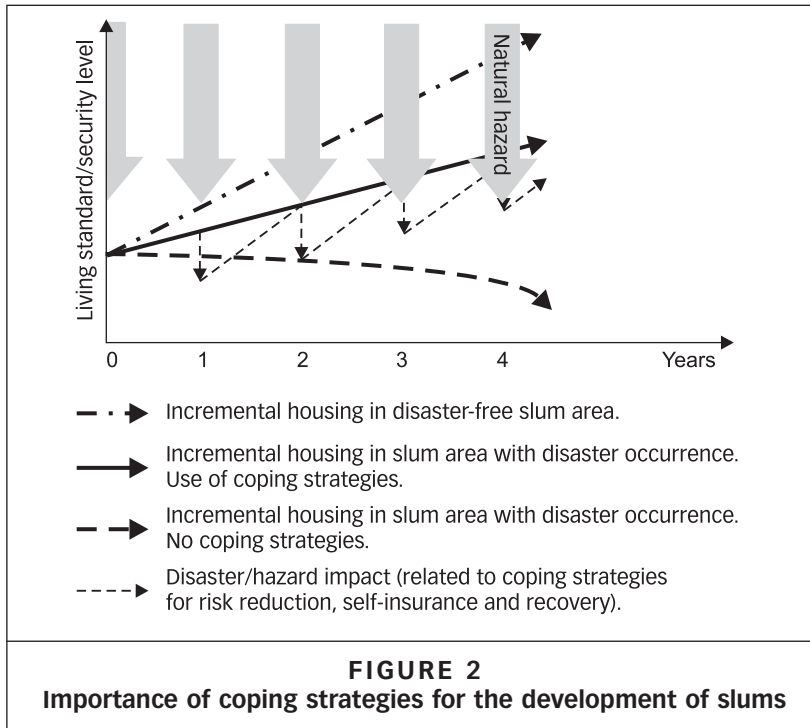
<b>Focus/aim</b>	<b>Activities identified</b>
Access to credits/loans	<ul style="list-style-type: none"> <li>• Borrowing money from family members</li> <li>• Taking bank credits (directly or through family members)</li> <li>• Taking credits from employers (directly as the employee or indirectly through family members)</li> <li>• Taking credits from aid institutions (e.g. religious institutions, social housing organizations)</li> <li>• Borrowing money from informal lenders (of own profession, for example, market lenders for vendors)</li> </ul>
Use of savings	<ul style="list-style-type: none"> <li>• Use of money that was accumulated at home, “under the mattress” (not in saving accounts)</li> </ul>
Trade of assets	<ul style="list-style-type: none"> <li>• Selling construction materials and replacing these with other objects (e.g. corrugated iron roofing being replaced by a car body)</li> </ul>
Reduction of expenses	<ul style="list-style-type: none"> <li>• Less consumption where possible (e.g. food)</li> </ul>
Increased income	<ul style="list-style-type: none"> <li>• Taking on an extra job (e.g. in the construction sector)</li> <li>• Changing to a more profitable job</li> <li>• Working longer hours</li> </ul>
Receipt of solidarity/help from family and/or neighbours	<ul style="list-style-type: none"> <li>• Receiving remittances from family members</li> <li>• Obtaining food, construction materials or other support, such as taking in foster children</li> </ul>

**TABLE 8**  
**Organizational and institutional recovery strategies**

<b>Focus/aim</b>	<b>Activities identified</b>
Coordination with neighbours to recover	<ul style="list-style-type: none"> <li>• Mutual employment of people in the community for reconstruction work</li> <li>• Mutual guarding of damaged houses and affected people who have to stay/sleep in insecure places</li> <li>• Cleaning up disaster impacts (washing away soil, washing clothes, cleaning streets)</li> </ul>
Creation of access to humanitarian and development assistance (food, clothes, construction materials, recovery projects)	<ul style="list-style-type: none"> <li>• Receiving humanitarian assistance from non-government institutions</li> <li>• Accessing help from government institutions</li> <li>• Moving swiftly to an even more affected area, where more help is available</li> </ul>

## **f. Coping strategies and incremental urban housing**

Slums are generally improved incrementally, usually by self-help and mutual help. The coping strategies identified are crucial for their continuous development, to ensure an improvement in the standard of living and security (Figure 2). Assuming that the continuous arrow shown in Figure 2 indicates the relative and average development of a slum situated in a disaster-prone area, the fine and dashed arrows show how coping strategies work together to “buffer” disaster impact and reduce recovery time.



This research indicates that some of the various coping strategies identified are weak and deficient. In fact, backsliding is frequent. Slum dwellers reported that it can take them several years to recover from single events and that they are mostly dependent on outside help. If a gradual slum development process cannot keep pace with the frequency of disaster impacts, then increased insecurity and “poverty traps” can result. Although more evidence is needed, the coping strategies of urban – as compared to rural – slum dwellers appear not only to be weaker (i.e. less effective) but also less deliberate and more individualistic (as opposed to communitarian), with a stronger focus on housing construction and land issues, and less emphasis on productive sources of livelihood.

Weak and more individualistic coping can occur for a variety of reasons: According to Morduch, solidarity and reciprocity work best in:

- settlements where people have family members living close by;
- where there is not too great a disparity in residents’ income levels;
- where family members or other dependents are not simultaneously affected by disaster impacts; and
- where disasters happen repeatedly, but not too frequently, and have mostly short-term impacts.<sup>(25)</sup>

However, within the urban slums studied, few of these conditions apply. First, the data gathered suggest that urbanization and the increasing ease of mobility related to it can enable households to “default” on their obligations to relatives and neighbours. Second, different income levels (ranging between US\$ 120–750 per household and US\$ 30–500 per worker)

25. Morduch, Jonathan (1999), “Between the state and the market: can informal insurance patch the safety net?”, *The World Bank Research Observer* Vol 14, No 2, August, pages 187–207.

foster individualistic behaviour, with the better-off households opting out of mutual and hierarchical arrangements. In addition, slum dwellers have little to sell (e.g. no livestock or agricultural products) to help themselves or others in need. Third, slum dwellers simultaneously and persistently experience bad conditions over a period of years, with floods and landslides causing adverse environmental changes (runoff, poor soil), the effects of which continue even after the weather has returned to normal. Finally, the lost trust in both community solidarity and hierarchical structures, as well as the fear of being hoodwinked by the authorities, further promotes a dominant sense of individual responsibility and ownership at the household level, as well as a determination to “fix” things without assistance.

Incremental housing improvements – and related coping strategies – could be seen as equivalent to vulnerability reduction, with people replacing cardboard walls with brickwork or temporary retaining walls of loose tyres with cement ones. However, the research – through interviews and expert observation – revealed cases where, from a certain point onwards, increased household prosperity and the concomitant housing “improvements” did not lead to decreased disaster risk. Households, for instance, increased the height of retention walls or enlarged their houses, which in both cases led to decreased structural integrity. In other cases, wealthier household members withdrew from community involvement, again increasing their vulnerability, as social cohesion usually enhances resilience.<sup>(26)</sup> Professional specialization (as opposed to livelihood diversification) provides another example. In fact, coping capacity can be reduced by the need to compete economically, which at present rewards (productive) specialization and intensification more than diversity and sustainability.<sup>(27)</sup>

### g. Financial capacity to cope with disasters

The research revealed that, on average, households spend 9.2 per cent (ranging from 0 to 75 per cent) of their income on reducing disaster risk and preparing for the following winter, that is US\$ 26 out of an average monthly household income of US\$ 284. This figure is even more intriguing if one considers that it excludes construction materials that are obtained for free (such as stones and sand from riverbeds or old tyres from friends), family members’ free labour, the opportunity costs of the considerable amount of time spent on risk reduction, and the negative impacts of some coping strategies (e.g. high interest paid to money lenders, or financial losses due to adjustments in assets and activities due to risk exposure<sup>(28)</sup>). There are hardly any similar studies to allow comparisons or a broader view of the expenses in question. An exception is Walker and Ryan, who state that in risk-prone areas of India, households may sacrifice as much as 25 per cent of their average income to reduce exposure to shocks.<sup>(29)</sup>

Even if risk reduction incurs a large cost, there are also substantial post-disaster expenses, amongst others, for the replacement of belongings washed away during floods and landslides; recovery efforts; temporary income losses; and the gradual loss of investments made in the incremental building of housing and community infrastructure.

26. IFRC/RCC (International Federation of Red Cross and Red Crescent Societies) (2004), *World Disasters Report 2004*, IFRC/RCC, Geneva.

27. See reference 22.

28. See also Dercon, Stefan (2003), “Poverty traps and development: the equity efficiency trade-off revisited”, Agence Française de Développement (AFD) and the European Development Research Network (EUDN), Paper presented at the conference on Poverty, Inequalities and Growth: What’s at Stake for Development Aid?, 13–15 November 2003, Paris.

29. Walker, Thomas S and James G Ryan (1990), *Village and Household Economies in India’s Semi-arid Tropics*, Johns Hopkins University Press, Baltimore.

### III. SECOND "SNAPSHOT": INSTITUTIONAL-LEVEL CASE STUDIES

#### a. Existing capacities: dealing with slums

In terms of their capacity to deal with the needs of the poor, social housing organizations use different approaches, such as new settlement developments, in situ house improvements and settlement upgrading. Based on lessons learned during the last decades, these kinds of projects in El Salvador have been reducing their one-sided focus on construction-related work and are adopting, step-by-step, a broader approach, including non-constructive risk reduction measures (see also Section III.d).<sup>(30)</sup>

While representatives from social housing organizations report that they struggle to reach the poorest of the poor, the slum dwellers that *are* included in their projects experience a rapid improvement in living standards and security levels (Figure 3). Better housing and infrastructure, combined with other risk reduction measures, result in reduced vulnerability and hence reduced disaster impact. This is shown in Figure 3 where the lengths of the vertical thick arrows are reduced compared with those of the vertical fine and dashed ones.

However, this research reveals that projects have little impact on people's self-insurance and recovery capacities/strategies, which are usually not targeted within project implementation. This is illustrated in Figure 3 where the inclined fine and dashed arrows show no influence (i.e. they are of the same length and inclination as before). Gathered data also indicate that, in the long run, projects are not always as successful as the organizations expect them to be since:

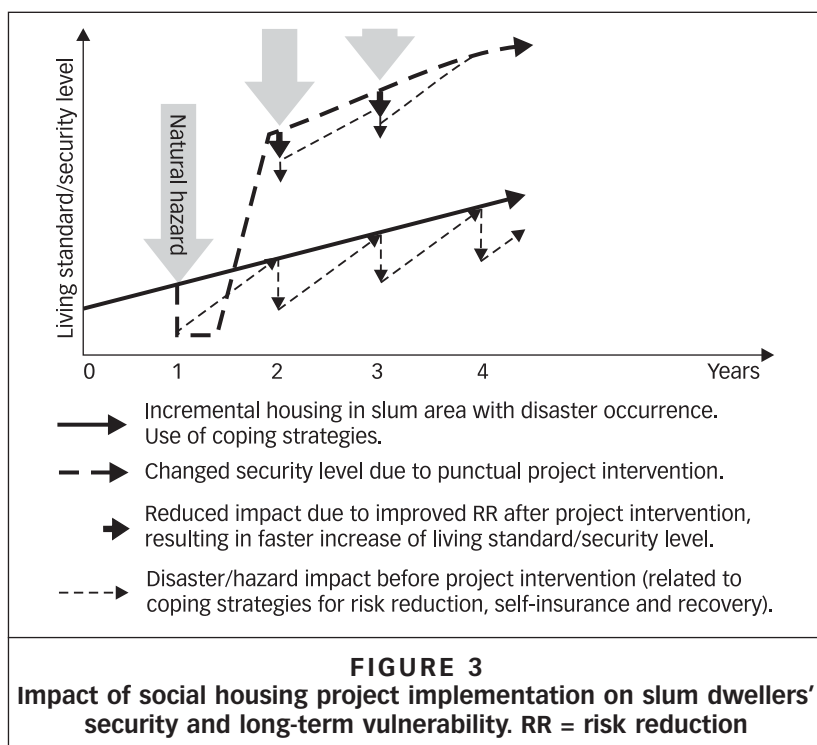
- established hierarchical and/or community structures disappear over time (such as cooperative early-warning mechanisms and risk reduction committees);
- physical mitigation work is not maintained and is therefore not functional after the life of the project;
- slum dwellers continue to use deficient coping strategies; these were not influenced by the project measures and thus remain identical to those that existed before the project started; and
- the incremental construction process is "built on" to the help received (e.g. the height of retention walls increased, an additional floor added to the house), thus undermining the effects of aid.

Furthermore, support structures for risk financing, continuous risk reduction and incremental housing improvements are absent. The result is a slowdown in the development process, or even a decline in the security levels already achieved (Figure 3). This phenomenon is further related to transitions within the low-income bracket. In slum communities, there are the relatively well-off (the "rich poor"), a large middle segment (the "poor poor") and the relatively poor (the "destitute").<sup>(31)</sup> Through project implementation, the relatively poor (having accessed full subsidies if these are available) and the large middle segment (having obtained combined credits/subsidies) can become part of the relatively rich poor. However, these improvements refer mainly to the physical/construction conditions rather than to the economic, social, organizational and institutional aspects needed to assure a consistent improvement in people's security, such as access to credit for incremental housing and risk reduction.

30. Wamsler, Christine (2006), "Integrating risk reduction, urban planning and housing: lessons from El Salvador", *Open House International* (OHI) Vol 31, No 1, pages 71–83; also Wamsler, Christine (2007), "Integrando la gestión del riesgo, planificación urbana y vivienda social: lecciones de El Salvador", *INVI* (Revista Internacional del Instituto de la Vivienda de la Facultad de Arquitectura y Urbanismo de la Universidad de Chile), May (forthcoming).

31. Please note that Steve Rayner is the originator of the idea of varying vulnerability of the "destitute", "poor poor" and "rich poor" (information obtained orally through a discussion with Michael Thompson).



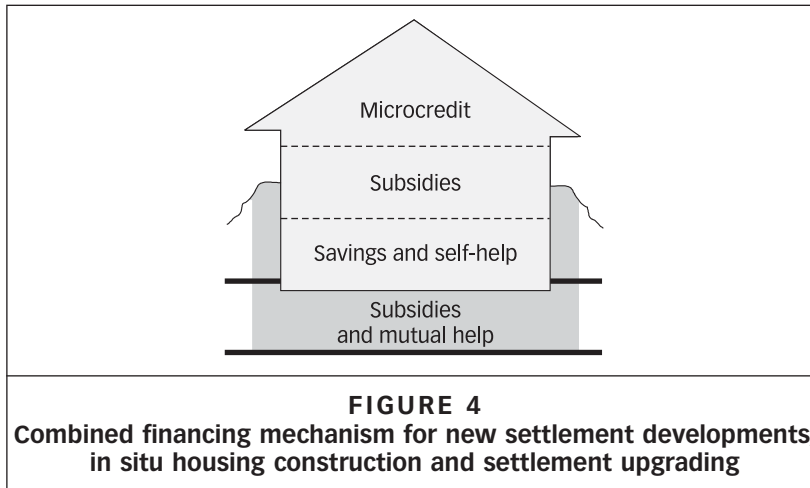


### b. Provision and financing of social housing

Projects carried out by social housing organizations were described as being divided into three main phases: preparation and community organization, construction through mutual and self-help, and credit repayment (at times combined with further community development). The time frame of the different phases varies considerably. Projects take 1–12 years to complete, not including the repayment phase.

Infrastructure, social housing and housing improvements are financed by a combination of government and non-government subsidies, micro-credits, family savings, and mutual or self-help labour efforts (Figure 4). The percentage of resources allocated to the different mechanisms differs from organization to organization and from project to project. The average cost of a new slum dwelling is around US\$ 4,000–5,000, including land and basic services.

To provide *microcredits*, social housing organizations often use seed capital from donor organizations to create so-called revolving or rotating funds; as these must maintain their original value, recovered credits are reinvested in new loans to families in the same income bracket. Interest rates range between 5–23 per cent and repayment periods between 4–10 years, during which time clients are carefully monitored. Detailed loan analyses are carried out to screen the capacity of credit beneficiaries to repay, and the clients' ability to afford credit (i.e. the amount of credit should be within 15–25 per cent of clients' secure income level) and their payment behaviour are checked regularly. Regarding the latter, potential project beneficiaries usually have to save a specific amount of money



over a period of 6–18 months, and these savings are then used as a credit down payment. Apart from housing microcredits, smaller sums of between US\$ 1,500–2,000 are loaned for housing improvements, micro-enterprise development, land purchase and legalization.

A specialized finance department within the social housing organization generally manages the housing loan portfolios and subsidies, or they are coordinated with, and sold to, private microfinancing institutions (MFIs), which are then responsible for credit repayment. So far, Salvadoran social housing organizations have not worked through financing cooperatives.

Only one of the social housing organizations analyzed, FUSAI, works with *government subsidies and credits* from the National Public Housing Fund FONAVIPO (as opposed to donations and own credit funds). FUSAI uses its revolving fund as bridging finance until financial resources from the national system can be accessed.

As far as completed social housing projects are concerned, none of the organizations analyzed has a mechanism in place to offer their former project beneficiaries microcredits for future risk reduction, housing improvements or housing enlargements. Furthermore, families wishing to obtain such credits from other institutions cannot use the project houses as collateral, as assisted housing cannot become bank property in the event of default. This may have a negative impact on future developments, as project beneficiaries are unable to use their assets effectively.

Specialized financing departments within social housing organizations, and also cooperating MFIs, asserted that they are currently developing or outsourcing a wider range of financial services for the poor. Some MFIs, for instance, are developing additional savings schemes and consumer loans based on remittances paid by family members living in the United States. Neither type of scheme, however, is related to social housing projects.

### c. Risk and loss financing in social housing provision

It was ascertained that credits for social housing provision generally include compulsory *life insurance* to cover the debts. The insurance fees are

included in the monthly credit repayment, and are calculated on the basis of the loan balance (around one per cent per year), or on the basis of the total credit amount (around 0.005 per cent). Hence, monthly costs are either fixed or decreasing, and generally range between US\$ 0.25–0.80. Depending on the insurance policy, the credit is either completely or partly cancelled if the borrower dies. Three social housing organizations have included life insurance as part of their credits only in the last three years, after recent disasters. One of them is Habitat for Humanity, which has adopted life insurance directly in combination with disaster property insurance. This policy package costs around US\$ 2.20 per month, a price negotiated based on the organization's yearly construction work in El Salvador of around 600 housing units.

None of the other social housing organizations has yet added disaster property insurance to their housing credit schemes. However, interest in risk financing is slowly growing. In fact, Hurricane Stan in 2005 led to ongoing negotiations among several social housing organizations and national insurance companies. The insurance companies that were interviewed offer *disaster property insurance* for social housing with premium rates of 0.034 per cent of the house value plus administration fees, or rates of a total of around US\$ 2 per month. Damage from all types of natural disasters is covered, as is damage related to construction errors. However, representatives of insurance companies admit that the impact of such an insurance policy on promoting risk reduction is poor, as mere compliance with formal construction procedures is seen as a sufficient basis for buying insurance.

After repayment, the insurance included in the housing credit scheme is cancelled and is not replaced by any mechanism for financing future damage. This is despite the fact that some representatives of the organizations reported that around 4–5 per cent of their project houses, as well as the organizations themselves (for instance, their private access roads), have been affected by disasters.

Social housing organizations further provide *special funds for non-recoverable credits*, by including a small percentage in the housing credit (i.e. 0.5 per cent annually during the life of the debt, or a certain percentage included in the interest charges). Such funds are seldom used to ease disaster-affected slum dwellers. An exception is the case of Habitat for Humanity, which, after hurricane Stan, used its fund to amortize the outstanding credits of six project beneficiaries living in a location that was officially declared uninhabitable. None of the organizations provides a financing mechanism that could finance the relocation of affected former project beneficiaries.

*Subsidies* from national and international organizations are not usually conditional upon an insurance policy being bundled with accompanying credits.

With regard to *informal risk and loss financing*, local mechanisms for self-insurance and recovery are generally little supported and analyzed within the framework of the projects.

#### **d. Provision and financing of risk reduction measures**

The social housing organizations interviewed stated that resources that are earmarked for housing frequently cannot be used for risk reduction

measures. This legal constraint occasionally results in help being denied to the most vulnerable slum dwellers, as their inclusion in projects would require supplementary mitigation work. It was reported that, generally, the resources available can only be allocated to construction and design improvements that entail little or no extra cost. These costs, in turn, are included in the individual credits of the project beneficiaries. Increased costs are partly also compensated for by longer repayment periods. Existing government funds for settlement upgrading, which were accessed by the Salvadoran Vice-Ministry of Housing through the Inter-American Development Bank, allow some flexibility with regard to the integration of risk reduction, and can be obtained by participating in bidding processes. However, according to social housing organizations, projects that include risk reduction are difficult to get through such bidding procedures, as they often involve higher project costs. This situation did not seem to concern the representatives of donor and national government institutions, who reported that risk reduction is sufficiently supported and guaranteed through: market forces, existing formal construction procedures, project work through local municipalities, and the participation of project beneficiaries.

Thus, organizations willing to integrate risk reduction measures into their project design are working increasingly with municipalities and a range of other additional financial partners. "Soft" risk reduction measures, such as risk analyses, the elaboration of mitigation plans and maps, or capacity building for reducing economic, social, organizational and institutional vulnerabilities included in the project design, are generally fully paid for by international, often post-disaster, donations. Only some large-scale physical mitigation work is financed using subsidies from national and municipal governments, usually through matching funds combined with help from project beneficiaries.

Neither social housing organizations nor cooperating MFIs offer credits for risk reduction, even though some reported a demand for these from communities. Nationally, there is no established formal mechanism for financing risk reduction. Funds are available only sporadically. For instance, after Hurricane Stan in 2005, a temporary risk reduction fund was established by FONAVIPO, offering individual subsidies of up to US\$ 2,200.

Coping strategies for risk reduction are not generally supported by the projects, (i.e. risk is generally reduced through alternative arrangements). Only some coping efforts are fostered, and often only temporarily, for instance through established institutional relations between the local and national authorities. Furthermore, only a few mechanisms, such as participatory work with beneficiaries, are in place to guarantee the long-term maintenance or continuation of the risk reduction measures implemented.

### **e. The institutional landscape: the right to secure housing versus market forces?**

Widely differing organizational philosophies drive social housing projects. At one extreme are organizations, such as FUSAI, which design housing financing mechanisms that are as close as possible to market structures. Credits and revolving funds have to be financially sustainable and competitive, and housing donations are only exceptionally used for project implementation. Formal insurance, being a market instrument,

is seen as an important future and complementary mechanism. The integration of risk reduction into project design is criticized by some, as increasing implementation periods and costs ultimately endanger organizations' financial sustainability. However, risk reduction is also identified as an upcoming market, resulting in strategic engagement by these institutional actors.

At the other extreme are organizations, such as FUNDASAL, which see housing first and foremost as a human right, and who work primarily with subsidies from donor organizations and less with microcredits. Formal insurance is seen as an inadequate mechanism for the low-income sectors that would only increase costs and endanger the access to housing of the poorest people. Increasingly, integral and comprehensive projects are the aim, including risk reduction. The increased duration of projects and the expenses involved are seen not in terms of cost but, rather, of having the working focus right, that is, being dedicated to the urban poor.

While organizational philosophies differ strongly, focusing on social patterns with either an individualistic or a communitarian bias, the working approach for project implementation is not as diverse, and tends to be based on community action and the establishment of hierarchical structures. In fact, participation, mutual help and the establishment of community structures were identified as being among the most fundamental principles of project implementation.

#### **IV. GAPS AND CHALLENGES: HOUSEHOLD-LEVEL REALITY VERSUS INSTITUTIONAL INTERVENTIONS**

An understanding of the gaps between what households actually undertake to reduce and finance their disaster risk, and the endeavours supported by social housing organizations, yields important insights for reforming social housing assistance to address disaster risk more effectively. The challenges arising at the household and institutional levels, and the gaps between them, can be summarized as follows:

- People cope with disasters and risk through risk reduction, self-insurance and recovery strategies, while social housing organizations mainly look at how to reduce risk, with a focus on physical risk and, increasingly, also other types of risk. In this context, organizations rarely analyze the key variables and causal loops underlying the complex system of risk and disaster occurrence in a particular project area, or consider existing local risk reduction strategies. Hence, after project implementation, people usually continue to cope – as before – without having obtained better structures for carrying out and financing their own efforts for risk reduction, self-insurance or recovery (Sections II.a–f and III.a–e).
- While people's strategies for coping with disasters are heterogeneous, continuous and based mainly on individualistic behaviour, organizations focus more on providing uniform, short-term and community-based measures to tackle housing deficits and disaster risk, while struggling to make the projects accessible to the poorest (Sections II.b–f and III.a–e).
- Local coping strategies are diverse and crucial for the incremental development of slum areas; they influence the key variables and causal loops underlying the complex system of risk and disaster

occurrence in slum areas. Nevertheless, the strategies are insufficient to keep pace with disaster impacts (Section II.a–g).

- There is an indication that incremental slum development does not always correlate with reduced vulnerability, especially once people are in transition to being relatively well-off (becoming part of the “rich poor”). This is related to local processes and – in areas where projects have been carried out – to the nature of project interventions (Sections II.f and III.a).
- Risk and loss financing is usually not integrated into housing finance mechanisms (i.e. government and non-government subsidies, micro-credits, family savings, and mutual or self-help) (Section III.c).
- Risk reduction measures are increasingly included in project design; however, they are not financially sustainable and depend strongly on donations, which are rarely available during “normal” times (Section III.a and d).

While the list of gaps and challenges is long, there are also opportunities. Existing institutions and structures of housing provision and financing provide a promising platform for supporting disaster risk management. There is ample scope for potentially beneficial interventions that transcend purely constructive measures, leading to more sustainable housing provision.

## V. BRIDGING THE GAPS

The research revealed a demand for improvements from both the household and institutional levels in current approaches to risk reduction and related practices. To address the challenges and gaps identified in El Salvador, possible stakeholder-based options for social housing organizations were developed. These reflect the analyses of the perceptions, needs and capacities of the different stakeholder groups. As far as possible, they were discussed with both the implementing organizations and the slum dwellers. A review of practical experiences from other countries was carried out to analyze, validate and complement the options identified for El Salvador. The following sections provide an overview of practical measures.

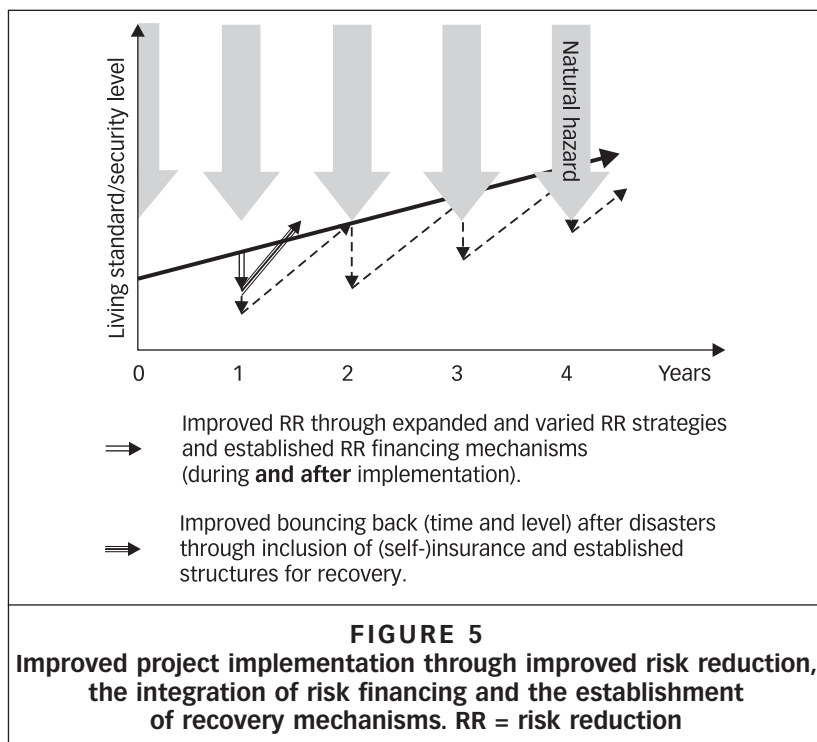
### a. Framework for analyzing and supporting coping strategies

Since coping strategies were identified as crucial, although deficient, it is essential within development efforts to consider encouraging and scaling up selected strategies, as well as offering better alternative strategies where needed. As shown in Figure 5, this could help achieve reduced disaster impact through:

- improved risk reduction; and
- better “bouncing back” (in time and level) through adequate self-insurance and recovery mechanisms.

To support coping strategies, the organizations interviewed indicated that they would first need an adequate framework for viewing and analyzing them. In Section II.c–e, a framework for analyzing coping strategies was elaborated that provides a first indication as to how project measures could





be designed to constructively match up with the efforts of slum dwellers. Coping strategies were, first, divided – based on their respective objectives – into risk reduction, self-insurance and recovery; and second, grouped – related to their thematic foci – into physical/technological, environmental, economic, social/cultural, organizational and institutional aspects. Then, within each of the thematic foci, they were classified into sub-groups that express the more specific aims of the different measures (see left-hand columns of Tables 1–8). Finally, based on the social patterns underlying the different coping strategies, they were categorized as individualistic, communitarian, hierarchical or fatalist.

Naturally, not all commonplace household measures can or should be supported. Careful attention should be given to the cost-effectiveness and sustainability of assistance. With regard to the latter, for operational purposes, additional typologies are needed. Based on the research outcomes, it is proposed to divide coping strategies into:

- those that can increase the capacity of slum communities to manage urban disasters and disaster risk in both the short and long terms;
- those that increase capacities in the short term but decrease them in the long term; and
- those that decrease capacities in both the short and long terms.

The focus of this division is not on individual, but on community, gains. In fact, local communities or regions may be stuck in “poverty traps” linked to individualistic social patterns and rational coping behaviour, such as overexploitation of natural and other resources (e.g. excavating slopes; cutting down trees; and removing stones from river beds to build

retention walls), or high population growth. However, such actions may harm each person individually in the long run and/or contribute to the greater impoverishment of the whole community. Identifying which coping strategies are sustainable or do not work well, and why, is a major challenge. Causal loop diagrams of different levels of detail can help in this process, providing an understanding of the local context, local needs, and people's interrelated coping efforts (Section II.a).

Examples of coping strategies that, in the slum areas analyzed, proved to be effective in the short term but might be ineffective in the long term are: borrowing from money lenders at high interest rates; selling assets off cheaply during the post-disaster period; spending money on temporary arrangements (e.g. short-lived water barriers and channels); cutting down trees to prevent them falling on nearby houses or to use as firewood to save money; covering slopes with plastic sheets that pollute the environment, blow into rivers and block them up; and the "production" of many children to provide informal social security. Parents do not always take into account child-related costs (e.g. for education) or, where overcrowding occurs, related negative externalities, such as congestion and environmental degradation.<sup>(32)</sup>

Examples of coping strategies that might be ineffective in both the short and long terms are, for instance: passive behaviour (owing to lost trust in planning authorities or to the belief in divine forces); dysfunctional arrangements such as using corrugated iron as retention walls, or roofing houses with loose corrugated iron weighted with heavy objects that endanger neighbours during windstorms; and full dependence on family members' labour or outside help. Examples of coping strategies that might be effective in both the short and long terms are: encouraging children to study; cooperating with neighbours and the local executive committee (e.g. for savings, mutual help or early warning); learning from friends and others; accumulating assets for use as collateral or for sale in post-disaster times without making a loss; reduction of unnecessary expenses; safe and convenient saving arrangements; and accessing loans with favourable conditions.

## b. Scaling up (and down) of coping strategies

Based on the framework presented, social housing organizations and cooperating MFIs can support or even scale up effective coping strategies through formal and informal structures. Possible examples could be the assistance for, or insurance of, local saving schemes; the establishment of linkages between formal and informal early warning systems to ensure that the clients are informed in a timely fashion about potential disasters; and professional training for slum dwellers in low-budget structural risk reduction.<sup>(33)</sup> Being able to use project housing as collateral when applying for credit would be another means of reducing barriers to coping among slum dwellers.

In addition to support for effective coping strategies, ineffective strategies could be scaled down and alternatives offered.<sup>(34)</sup> In this context, the creation of alternative formal or informal self-insurance mechanisms is of prime importance. Remittance-transfer schemes could be offered for financing new housing and housing improvements, including disaster insurance for property. A borrower living in the United States could pay an intermediary agent located in the United States who, in turn, would

32. See reference 25. Note that "short term" refers here to a longer period compared to the other listed examples, since even in communities where children's labour is accepted and relied on, it takes several years before the initial "investment" of time and expense eventually pays off.

33. See reference 25; also see reference 15, Twigg (2004).

34. Note that the result of new structures should be that people are better off than under the current situation. If they only replace what is there, it is not a great help. Some of the most telling evidence on crowding out comes from South Africa (1993), when the government extended basic pension benefits to black South Africans, replacing informal means of coping with aging and economic downturns. See reference 25.

35. In contrast to related suggestions by Woo, the responsible credit organization would have their seat in El Salvador, not in the United States. See Woo, Gordon (2001), "Risk acceptance as a charitable donation", Proceedings of the First Annual IIASA-DPRI Meeting on Integrated Disaster Risk Management: Reducing Socioeconomic Vulnerability, 1-4 August 2001, Laxenburg, Austria.

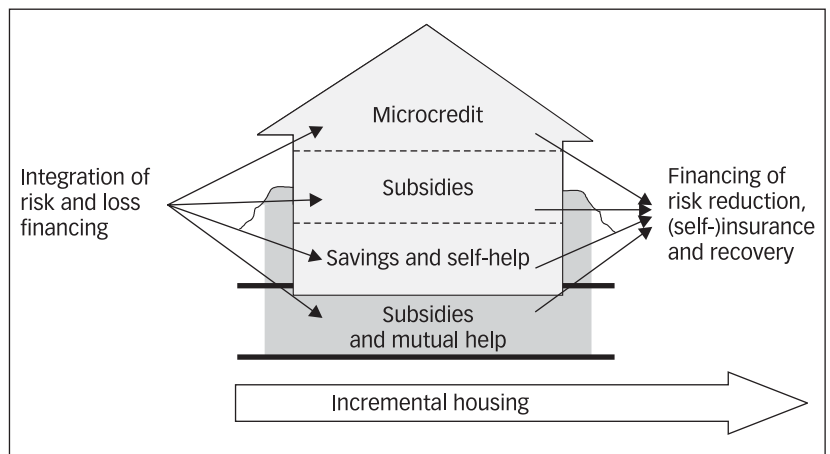
36. Cox, Donald and Emmanuel Jimenez (1997), "Coping with apartheid: inter-household transfers over the lifecycle in South Africa", Working Paper, Boston College and World Bank.

transfer the money to a social housing organization or cooperating MFI in El Salvador.<sup>(35)</sup> It must be emphasized that formal insurance represents an alternative to supporting informal self-insurance and recovery mechanisms only when these are very weak or expensive. To scale down related self-insurance mechanisms, formal money-transfer systems, which may be more efficiently delivered than private transfers, could be offered,<sup>(36)</sup> as well as capacity building for family planning. Further related examples are presented in the following section.

**c. Extending social housing financing mechanisms for risk reduction and financing**

The research indicates that the institutional and structural platform of housing provision and financing can be used to foster disaster risk management and overcome the gaps between the household and institutional levels through, first, integrating risk and loss financing into existing housing financing mechanisms (i.e. microcredit, subsidies and savings), and second, expanding those mechanisms to finance risk reduction, (self-) insurance and recovery for the urban poor (Figure 6). Such mechanisms are needed not only during, but also after, project implementation, to support incremental housing processes. Hence, it is crucial that social housing organizations provide related regulatory and institutional frameworks to improve households' access to microcredits, subsidies, safe and convenient savings opportunities, self- or micro-insurance and, where possible, employment opportunities. These will be discussed now.

With institutional structures in place, additional *microcredits* for emergencies, housing improvements and/or risk reduction could be offered during and after project implementation. These could be monetary or in the form of construction materials. Interviewees stated that adequate credit portfolios for risk reduction need to be developed by social housing organizations or their cooperating MFIs, not only for individuals but also for communities, to reduce default risk. Furthermore, if social housing



**FIGURE 6**  
**Extending social housing financing mechanisms to further support disaster risk management**

organizations use revolving funds for housing credits, it was suggested that these could be used as bridging funds for risk reduction until government subsidies were accessible. Alternatively, seed funds could be provided by donor organizations to create complementary revolving funds for risk reduction and emergency loans. With regard to *subsidies*, both government and non-government donors could make access to housing subsidies conditional upon accompanying microcredits being bundled with property disaster insurance and life insurance.<sup>(37)</sup>

There is widespread positive experience with *saving arrangements* in Asia, for instance in Bangladesh, India and Indonesia.<sup>(38)</sup> However, the present research supports Morduch, who indicates that in Latin America there has also been an overhaul of savings-related programmes.<sup>(39)</sup> "Compulsory savings" are already included within the framework of social housing projects to evaluate potential borrowers' payment behaviour. Regular deposits are made to build up collateral against loans, which cannot normally be withdrawn while loan repayments are outstanding (Section III.b). These existing saving mechanisms could, interviewees confirmed, be expanded to offer independent emergency savings schemes during and after project implementation. Such schemes, combined with contingency credit facilities, could meet the immediate post-disaster needs of slum dwellers in terms of replacing or repairing lost assets. So-called crisis credits are, for instance, being used successfully by urban poor federations.<sup>(40)</sup> Furthermore, social housing organizations or their cooperating MFIs could insure the compulsory savings. Alternatively, a certain percentage of beneficiaries' savings could be put into an emergency fund, which could be made available quickly to disaster-affected borrowers in the form of emergency loans.<sup>(41)</sup> Such funds could also be created through housing microcredit instalments. At the institutional level, organizational emergency reserves could be created, eventually backed by international donors.

The institutional level "snapshot" revealed that *micro-insurance* can be included in housing microcredits, if additional costs can be accepted by project beneficiaries or be compensated by other means. The work through MFIs or financing cooperatives could allow the establishment of insurance solidarity schemes, through which policies for the poor are subsidized or fully paid from policies sold to people in higher-income groups.<sup>(42)</sup> Such schemes can even be legislated for, as in India.<sup>(43)</sup> Increasing experience and lessons learned by social housing organizations and cooperating MFIs regarding microcredits can be partly translated into micro-insurance, for instance, the selection of applicants, payment mechanisms, follow-up and reduction of transaction costs. Independent insurance policies could thus be offered after credit repayment, and eventually even to poor slum dwellers who cannot access housing credits. In general, insurance companies indicated that they cover only stochastic and unpredictable (i.e. highly uncertain) events. Hence, community insurance policies (as opposed to individual policies aimed only at slum dwellers living in high-risk areas) might be a solution.

In contrast with existing insurance arrangements in El Salvador, careful attention should be given to encouraging risk reduction rather than "moral hazard".<sup>(44)</sup> Insurance should not discourage people from taking steps to reduce physical risk, nor encourage them to take even greater risk. This can be achieved by means of:

- index-based insurance schemes where claims are independent of losses;<sup>(45)</sup>

37. Note that conditionality on the part of international donor agencies has to be considered carefully so as not to hinder successful partnerships for poverty reduction. See DFID (2005), "Partnerships for poverty reduction: rethinking conditionality", UK Policy Paper, DFID, UK.

38. For example, Rutherford, Stuart (1999), "*The poor and their money*", Finance and Development Research Programme Working Paper Series 3/1999, University of Manchester, Institute for Development Policy and Management, Manchester.

39. See reference 25.

40. D'Cruz, Celine and David Satterthwaite (2005), "Building homes, changing official approaches: the work of urban poor organizations and their federations and their contributions to meeting the Millennium Development Goals in urban areas", Working Paper on Poverty Reduction in Urban Areas Series, Number 16, July, IIED, London. See [www.iied.org/pubs/pdf/full/9547IIED.pdf](http://www.iied.org/pubs/pdf/full/9547IIED.pdf).

41. See reference 15, Twigg (2004).

42. In Manizales, Colombia, the city has made an agreement with an insurance company to allow any resident to purchase insurance coverage through the municipal tax collection system. Once 30 per cent of the insurable buildings in the metropolitan area participate in the plan, the insurance coverage extends to the properties of the poorest population sectors that are exempt from property tax. See The World Bank (Marianne Fey editor) (2005), *The Urban Poor in Latin America*, Directions in Development, Washington DC. See <http://siteresources.worldbank.org/INTLACREGTOPURBDEV/Home/20843636/UrbanPoorinLA.pdf>.

43. Mechler, Reinhard and Joanne Bayer (2006), *Disaster Insurance for the Poor? A Review of Microinsurance*

for *Natural Disaster Risks in Developing Countries*, Provention Consortium/IIASA Study, July 2006.

44. The term “moral hazard” is generally used to describe the situation in which someone insured against disaster risk will ignore disaster risk, or even purposely engage in risky behaviour, knowing that any costs incurred will be compensated by the insurer.

45. Linnerooth-Bayer, Joanne, Reinhard Mechler and Georg Pflug (2005), “Refocusing disaster aid”, Viewpoint, *Science* Vol 309, pages 1044–1046.

46. See reference 15, Twigg (2004).

47. Sinha, S (2002), *Strength in Solidarity: Insurance for Women Workers in the Informal Economy*, Self-Employed Women’s Association (SEWA), Ahmedabad, India.

48. Obermayer, Bastian and Marc Baumann (2006), “Lebensversicherung für 80 cent”, *GDV Position* Vol 48, May, Gesamtverband der Deutschen Versicherungswirtschaft (GDV).

49. In India, the NGO SEWA provides street vendors with umbrellas, based on its life insurance data that the sun could be increasing their risk of illness. See reference 47. See also Brown, Warren and Craig F Churchill (2000), *Insurance Provision in Low-income Communities, Part II: Initial Lessons from Micro-insurance Experiments for the Poor*, Development Alternatives, Microenterprise Best Practices Project, USA.

50. See reference 28; also see reference 25.

51. See reference 10.

52. Thompson, Michael and Aaron Wildavsky (1986), “A poverty of distinction: from economic homogeneity to cultural heterogeneity in the classification of poor people”, *Policy Science* Vol 19, pages 163–199.

- schemes where people who have carried out constructive mitigation work pay lower premiums than those taking no measures to reduce risk; and
- insurance policies which make access conditional on risk reduction.

With regard to the latter, in Fiji a structural engineer must certify that houses have certain cyclone-resistant features before owners can access disaster property insurance.<sup>(46)</sup> International donors could provide support regarding technical and administrative aspects of insurance schemes.<sup>(47)</sup> They could also offer community insurance policies or reinsurance in cooperation with national NGOs and national or international insurers.<sup>(48)</sup> Even if organizations decide not to include disaster property insurance in social housing credits, they could lobby governments or commercial insurance firms to cover at least schools, bridges and hospitals that serve the poor.

Based on experience in the health sector, it is clear that, in order to become successful, micro-insurance needs to be complemented by non-financial preventive measures.<sup>(49)</sup> In the housing sector, for instance, disaster property insurance could be linked to preventive construction programmes that involve training of community construction workers, or the establishment of village advisory services. Ideally, social housing organizations or housing financing MFIs would offer risk reduction measures to ensure that credits are paid back and no insurance claims become necessary.

Finally, *targeted transfers* could provide a kind of self-insurance for the poor (e.g. workfare programmes and employment guarantee schemes).<sup>(50)</sup> For instance, programmes for individuals or communities affected by disasters, offered by social housing organizations and/or governments, could provide contingent transfers to finance labour for reconstruction.

#### d. Matching heterogeneity

This research demonstrates that coping strategies are not homogeneous but, rather, are distinct with regard to their objectives, thematic foci, underlying patterns of social relations, sustainability and effectiveness. In Section V.b, it was argued that it is important and possible to take advantage of this heterogeneity to design projects that appeal to the various perspectives and efforts of the related stakeholders. But this is only the start. People do not just have strategies. As identified by “cultural theory”,<sup>(51)</sup> under certain conditions they can move from the underlying social pattern of one strategy to another pattern.<sup>(52)</sup> Projects can help or hinder such transitions. Hence, in selecting project measures, development organizations should be sensitive to the social forms of behaviour identified in a specific slum, so that the social patterns can be matched or, where needed, channelled.

Introducing systems of mutual rights, accountability and community organization to support a shift in social patterns could be an important step in overcoming asymmetric risk (Section II.a). However, this needs to be followed up over time (i.e. after project implementation) and needs to be complemented by further strategies, such as trying to ease people away from fatalism and offering solutions for improved individual coping. Improved local coping strategies are crucial for the process of incremental housing and security, particularly after project implementation. Section V.c provided a variety of related measures for achieving this.

The philosophies, which drive the social housing organizations that service slum dwellers, differ greatly (Section III.e). However, project measures are quite uniform and uni-dimensional, with development aid generally being understood as assistance for mutual community help. A greater variety of project measures is needed to also take into account the strategizing heterogeneity of slum dwellers' efforts. Moreover, where predominantly commercial mechanisms, such as formal insurance, are inappropriate, alternative informal structures, such as those described in Section II.d, could be considered.

## VI. CONCLUSIONS

The research shows how dwellers living in 15 slum communities in El Salvador cope with disasters and disaster risk, and reveals the variety of strategies, tactics and mechanisms they have elaborated to reduce risk, to insure themselves and to recover fast if disasters occur. The strategies are based on different patterns of social behaviour, with a strong focus on individualistic behaviour for survival. Coping strategies are crucial for the incremental, step-by-step development of slums, and influence the key variables and causal loops underlying the complex system of risk and disaster occurrence. However, although they entail considerable costs for the poor – on average 9.2 per cent of their income – they are not always sufficient to keep pace with the frequency of disasters.

Until recently, social housing organizations paid little attention to disasters and disaster risk. This is unfortunate as “pro-poor” housing and settlement development is not necessarily synonymous with vulnerability reduction. Greater wealth and better living standards may not themselves reduce risk. While increasing efforts are made to mainstream risk reduction in both project design and implementation, there are hardly any mechanisms for financing risk, loss, and risk reduction. The lack of such mechanisms is unfortunate as there is increasing evidence that risk and disaster shocks are a major cause of lower growth, reduce poor people's income growth, and possibly cause “poverty traps”.<sup>(53)</sup>

This research indicates that social housing organizations and co-operating MFIs have the potential to provide a powerful platform to support disaster risk management. For improved project design and implementation, first, risk reduction needs to be improved to reduce disaster impact, and second, adequate (self-) insurance and recovery mechanisms need to be integrated to improve people's chances of “bouncing back” quickly and to a reasonable level after a disaster. These objectives can be achieved by:

- gaining a better understanding of what urban dwellers perceive as disasters and disaster risk as well as their underlying drivers;<sup>(54)</sup>
- encouraging and scaling up effective (i.e. sustainable) coping strategies;<sup>(55)</sup>
- crowding out of unsustainable coping strategies by offering alternative formal *or* informal mechanisms;
- reducing barriers to coping;
- integrating risk and loss financing into existing social housing financing mechanisms (i.e. microcredits, government and non-government subsidies, and family savings);

53. See reference 28; also Mechler, Reinhard (2004), *Natural Disaster Risk Management and Financing Disaster Losses in Developing Countries*, Verlag für Versicherungswissenschaft, Karlsruhe.

54. Related studies can be supported by systems analysis and its causal loop diagrams. See references 13 and 14.

55. Their identification is possible through the presented analysis framework.



- expanding existing social housing financing mechanisms to finance risk reduction, (self-) insurance and recovery for the urban poor;
- offering multi-dimensional measures to match and, where needed, channel the patterns of social behaviour that underlie people's ways of coping;
- given incremental development processes in slums, offering mechanisms that work or come into effect after project implementation; and
- improving trust and relations between national, municipal and local authorities and the slum dwellers (e.g. through improved communication structures and the creation of community rights and obligations).

In the El Salvador case studies, the emphasis was on developing a grounded theory on the existing situation, and options as to how it could be improved. The generalization of the outcomes will be validated in a subsequent study.

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