

4.3 Recent initiatives of local government

Recognizing these difficulties, the Municipal Disaster Preparedness Plan was drafted in 2002, with participation of representatives from NGOs, civic organizations and business operators. The plan detailed prevention, mitigation, preparedness, emergency relief and rehabilitation activities.

Disaster prevention, mitigation and preparedness activities are increasingly being given the same importance as emergency relief, rehabilitation and reconstruction. This can be seen in a comparison of budget appropriations for different development activities in the municipality from 2001 until 2003, as shown in Table 12.

Livelihood programmes, started in 2002, take into consideration the potential for natural hazards. For instance, a swine-raising project is set up with the government giving a family one hog to raise and multiply with the understanding that the family will give two piglets back to the programme for distribution to other families. The hogs can be evacuated more easily than chickens and ducks in case of flooding.

4.3.1 Use of Climate Information

Realizing the benefits of issuing climate information with sufficient lead time to allow contingency planning, in November 2002 the municipal government established an agromet station to provide local weather and climatic data. Technical support is provided by PAGASA. With daily observation of climatic parameters (e.g. rainfall) undertaken by trained municipal employees, data are transmitted to the PAGASA central office in Manila for interpretation and then back to the agromet station for dissemination. Agencies such as the municipal agriculture and irrigation offices use this information in formulating response strategies.

For example, when below normal rain was forecast for Dumangas for the dry season from November 2002 till March 2003, the agriculture office prepared an impact outlook which revealed that farmers at the end of the small-scale irrigation system would not receive enough water for cultivating rice crop. As a result, the office immediately prepared an advisory, informing farmers of the impending water scarcity during the critical stages of rice growth, and advised them to plant alternate drought-resistant or short-duration crops (e.g. watermelon, vegetable, etc.) and to concentrate on mango production. Advisories were relayed through the Punong *barangays* during their weekly meeting with the Municipal Mayor, and were repeated during the nightly radio programme of the Punong *barangays* using the handheld radios available in each *barangay*.

Table 17 shows the increased area planted with watermelon and mung bean, and the value of crops harvested. Had the farmers planted rice, they would have lost the crop and not realize this benefit.

Table 17. Crops planted during the dry season 2002-2003 in anticipation of below normal rains based on the climate forecast information provided to farmers

Crop	Area planted, 1998 (ha)	Area harvested, 2003 (ha)	Total value of production (PHP'000)
Watermelon	199	1 284	192 600
Mango	6	500	450 000
Mung beans	70	1 130	38 420
Fruits and vegetables		300	72 000
Total			753 020

Encouraged by the success of the 2003 experience, the municipal government appropriated funds for the operation of the agromet station and to support climate forecast information application. This climate forecast information application programme, implemented by the Asian Disaster Preparedness Centre, allows farmers, the agriculture and irrigation offices and PAGASA, the climate forecast provider, to seize the opportunity provided by advance climate information to mitigate the impacts of disasters. Advance information on the onset of the rainy season and the characteristic of rainfall, for example, can guide farmers' decisions on when and what to plant, reducing risk of crop loss.

A regular consultative meeting, facilitated by the municipal mayor, brings together representatives of farmers' groups, FARMC, the municipal agriculture office, municipal irrigation office, and, when necessary, the provincial agriculture office and the regional irrigation office, to discuss needs for information and technical assistance among other issues.

4.3.2 Community-based Flood Forecasting and Warning

Efforts are underway to establish a community-based flood forecasting and warning system at the Jalaur River Basin, in collaboration with PAGASA and with funding support from the 4th District of Iloilo Province. Community involvement will be sought in identifying risks and measures to reduce them. Community recommendations in other pilot locations include the installation of flood markers and a network of rainfall stations for monitoring. A simple correlation model that the local government can use to forecast flood will be developed by PAGASA.

4.3.3 Public Awareness

Pulong-Pulong sa barangay were started in June 2000 to empower people by increasing their understanding of their responsibilities and rights during emergencies and orient them to agencies they can ask for assistance in times of need. These meetings also provide opportunities for dialogue between the community and the municipal government.

In addition, with an aim to empower the people through information dissemination, the municipal government has planned to set up a community radio station to broadcast time-relevant and accurate information and advisories during emergencies, as well as informative/educational programmes for public education and awareness raising. Also included in the planned programming are programmes on farming techniques and new technologies, health care, livelihoods, and an interactive programme that would serve as a

platform for community-local government dialogue. Financial assistance has been sought from and committed by the district congressman.

4.3.4 Mitigation and prevention

Infrastructure

The 7 km Balabag-Maquina-Balud-Compayan-Bantud Fabrica Dike was constructed to block floodwaters from the Jalaur River and protect the crops of 740 farmers in Balabag, Maquina, Balud, Compayan and Bantud Fabrica whose main source of income is farming. In addition, a network of farm-to-market *barangay* roads allows transport of farm implements, supplies and produce between the farms and the market.

Ongoing projects

- River Control Project, Jalaur River
- Diversion canal for floodwaters from Jalaur River to the sea

4.4 Constraints to undertaking prevention and mitigation measures

Recognizing the need for an integrated approach to manage disaster risks and avert their negative impact on development, the local government's efforts currently are focused on prevention, mitigation and preparedness activities. However, national government policies are yet to incorporate these concerns. The funding mechanisms for calamity management needs reappraisal. Resource constraint has proven to be a formidable barrier for local governments that want to integrate disaster prevention and mitigation measures into development planning.

An examination of government finance as per the Local Government Code of 1991 reveals that the national government has to transfer 40 percent of internal revenue collections and, since 1994, at least 10 percent of total expenditures to local governments to meet the costs of devolved responsibilities. The Code has also given LGUs some fiscal responsibilities.

The Philippines contains considerable economic, social and physical diversity. In terms of devolution, this means that some types of services can be better provided by local authorities who can adjust them to local needs and preferences than by the national government. The allocation of national government resources to LGUs is determined by a formula awarding 50 percent of the resources according to population size, 25 percent by land area and 25 percent divided equally between all local governments of the same category (i.e. provinces, cities and municipalities). This formula effectively aims to improve the quality of life in the least densely populated areas (World Bank, 1995b).

However, the World Bank argues that "the amounts transferred bear no necessary relationship to the actual cost implications of devolved functions. Nor do they take into account the capacity of local governments to raise their own resources or to carry out devolved functions" (World Bank, 1995a:43). Indeed, the Bank reports that, in practice, resources appear to have been channelled particularly to those LGUs that already have more fiscal resources and that, in this way, the system is doing little to help reduce regional inequalities.

Regional differences in the nature and rate of incidence of natural hazards also have implications for the equity of this division of resources. Devolved responsibilities include a number of duties directly or indirectly related to disaster prevention, mitigation, preparedness and response. For example, responsibility for infrastructure projects entailing the construction of seawalls, dikes, drainage and sewerage, flood control, communal irrigation and small-scale water impounding projects which serve the needs of local residents of either *barangays* or provinces, cities and municipalities has been devolved to LGUs.

Social welfare services, including the post-disaster relief activities of the Department of Social Welfare and Development, have also been devolved.¹ Meanwhile, local governments are further obliged under the 1991 Local Government Code to set aside 5 percent of their estimated revenue from regular sources as an annual lump sum appropriation for use in meeting unforeseen expenditures arising as a consequence of natural disasters. However, varying levels of funding are actually drawn down depending on the incidence of disasters in a particular year.²

Clearly, different LGUs face varying expenditure demands with regard to natural disasters at particular points in time, depending on their vulnerability to disasters and need for prevention and mitigation projects, and on the actual incidence and severity of disasters. Yet these differences are not taken into account in the allocation of national resources to LGUs. Moreover, the consequences of this shortcoming could be increasingly felt in the future as LGUs take over more responsibilities and, thus, face increasing financial constraints.³

Although external grant assistance could potentially play a role in alleviating regional disparities, the national government is often only willing to forward external assistance to LGUs on a loan basis, with LGUs paying for the loan even if the national government originally received the assistance on a grant basis. This effectively means that LGUs feel obliged to use such funding in full cost-recovery projects, a practice that could discriminate against investment in disaster prevention and mitigation projects.

Natural disasters also have implications in terms of the revenue-generating capacity of LGUs, again raising questions of equity in the regional allocation of national government resources. Provinces, municipalities, cities and *barangays* are allowed to levy certain taxes, fees and other charges for their own use, including business and real property taxes. Such taxes should be equitable and based, as far as possible, on ability to pay.

LGUs can also grant tax exemptions, relief and incentive privileges as they deem fit. In consequence, natural disasters can lead to a decline in revenue both via their potentially dampening impact on economic activities and also via the introduction of disaster-related tax exemptions. For example, land can be exempted from land taxes which accrue to LGUs

¹ Other devolved responsibilities with indirect implications for disaster prevention and mitigation include agricultural extension and on-site research and community-based forestry projects (of areas not exceeding 50 km²). LGUs are also responsible for enforcing environmental protection laws and for preparing extensive land-use plans.

² This reserve had originally been set at 2 percent under Presidential Decree 477 (which pre-dates Presidential Decree 1566 of 1987 [see below]).

³ To date, the World Bank (1995a) reports that total transfers to LGUs have exceeded the cost of devolved functions although some LGUs have received insufficient resources.

if natural disasters legally or physically prevent improvement, use or cultivation of that land. In addition, both LGUs, acting on the recommendation of the local disaster coordinating council (DCC), and the President have the power to reduce or cancel property taxes following a general crop failure or natural disaster (Nolledo, 1991) Such cuts can help alleviate financial difficulties experienced by households and the private sector but also represent an additional financial disadvantage for more disaster-prone regions of the country.

To help alleviate disaster-related pressures on LGUs, restrictions on rates of disbursement of LGU revenues can be lifted in the event of a natural disaster.⁴ However, disbursements can only be made for purposes and amounts included in the approved annual budget, implying little flexibility in the reallocation of resources to reflect changes in expenditure priorities. Furthermore, any overdraft outstanding at the end of a fiscal year must be met from the first collections of the following year's revenue, implying that the local fiscal implications of a natural disaster may be carried through to the following year if, for example, a disaster reduces revenue and thus results in a negative end-of-year balance (Nolledo, 1991).

In summary, there are clear disaster-related inequalities in the availability of LGU resources that could ultimately impinge on the overall standard and level of provision of services and infrastructure in more hazard-prone areas of the country.

⁴ Under nominal circumstances, total disbursements must not exceed 50 percent of the uncollected estimated revenue for that year.

CONCLUSIONS AND LESSONS LEARNED

Based on information gathered during the course of this study, the following conclusions and recommendations are offered concerning the role of local institutions in reducing vulnerability to recurrent natural disasters and in sustainable livelihoods development.

Local institutions demonstrated an efficient disaster preparedness and response delivery through measurable indicators:

The establishment of a triple sourced early warning and communication system with a feedback arrangement enabled communities to undertake pre-disaster preparatory activities. The early warning system is based on information from i) PAGASA, the national forecast agency on weather parameters, ii) local irrigation authorities on hydrological parameters and iii) communities on actual river level positions based on their observation and experience. This information flow provides site-specific disaster warnings.

The early warning system works through a communications specialized NGO to various users, providing communities at least 24 to 48 hours lead-time. This lead-time saves lives and preserves livestock and household assets. Relief assistance can reach affected people in designated evacuation centres within six hours of evacuation. Due to the better early warning system in place the expenditure on relief assistance has come down significantly in recent years.

The empowerment of local institutions through national policies promoted the establishment of an on-site disaster management system:

The adoption of local government code 1991 gave local institutions greater decision-making powers at the local levels and provided opportunities to search and apply localized solutions to problems posed by natural disasters. Disaster happens at the community level and local governments, being closer to the communities, can tailor national norms and plans to match community needs. During the 2000 typhoon-related floods and 2001 flooding, the disaster management experiences of Dumangas municipality plus its local support organizations, such as communications specialist NGOs, search and rescue NGOs, the Economic Council, the private sector consortium and the BDCs of affected *barangays*, managed to carry out the following without outside interventions:

- search and rescue
- survey, assessment and reporting
- first aid
- mobile medical assistance
- evacuation
- emergency welfare (e.g. mass feeding programmes)
- emergency shelter (e.g. set up tents, emergency building repairs)
- emergency logistics
- staffing of emergency operations centres (EOCs), including mobile ones
- information management

The role of local government in ensuring on-site disaster management capability freed national and sectoral agencies from these essential response functions. The role of national agencies were restricted to coordination and information-sharing activities.

Local institutions succeeded in building up experiences from previous disasters and refined locally sustainable disaster management systems:

Over the years, communities have evolved their own coping mechanisms to manage disaster situations. The accumulated experiences of the communities and the resilience that experience brings are valuable assets in disaster reduction and management. The local institutions, being closer to communities, make use of these experiences and strengthen them by supportive and empowering measures. For example, the evolution of institutional management systems in Dumangas illustrates how it drew from the experiences of Disaster Brigades and Mountain Tigers to establish DREAM volunteers. The DREAM volunteers received specialized training in search and rescue from the 505th Search and Rescue Group of the 502nd Search and Rescue Squadron of the Philippine Air Force. As these trained personnel are part of the community, their services are available continuously without any additional costs to the local government and hence sustainable.

Local institutions demonstrated a creative use of local resources and hence operated cost effective:

The entire disaster management system is built on local resources. The trust and motivation of participating communities endow it with a high level of social capital. Hence, large-scale interventions from centralized agencies are not called for. In fact, in recent times the local governments have provided services for rescue operations. In addition, the decentralized Economic Councils can provide relief assistance to affected populations, obviating the need for centrally managed, high-cost relief procurement storage and delivery systems.

The local government was creative in using the fund for disaster preparedness to human-made threats (made available by the Memorandum Circular issued by the DILG and DBM). It integrated disaster management into the training programme for *barangay tanods* and the national police to counter crime and terrorism.

Locally available, but nationally controlled, expertise was used for training communication and DREAM NGOs. The municipal government equipped the team and provided honoraria to team members. It also provided opportunities to involve the team in disaster prevention activities, such as river and coastal cleanup, during non-disaster times.

Local institutions created and sustained an inclusive participatory institutional system for effective disaster management:

The establishment of specialized task forces to carry out warning, communication, transport, rescue, evacuation, supply, relief, medical, fire damage assistance, security and overall damage control at the *barangays* level under the overall coordination of *barangay* captain ensured inclusion of the total community in disaster management. Each taskforce had 15-20 members and all the households of the *barangays* had a membership in one of the task units. Almost all of the households participated in at least one of the specialized functions and thus the system involved the entire community in disaster management activities. The all-inclusive and community participatory system, with its high level of social capital, ensured the functioning of community-based disaster management systems.

The local institutions have stepped into active mediating roles with national agencies to bring in locally relevant scientific advancements for effective disaster management:

PAGASA provides climate forecast information year round for the entire country. This climate forecast information is specific enough for use at the local level. Recognizing the

frequency of crop failures due to climate hazards, the local Dumangas government approached PAGASA to provide localized forecast information. PAGASA expressed inability to provide such information due to its limited observation system in the country and limited resources for establishing local observation systems.

Considering recurring losses and the value of climate information in minimizing climate risks and maximizing potential benefits of climate resources, the local government offered to provide space and initial investment for establishing agromet stations. PAGASA and ADPC agreed to provide technical expertise for establishing a climate forecast application system. Now, the local agromet stations greatly enhanced lead-time and it have potential to be applied to disaster management in Dumangas.

The local institutions have established a system to respond to highly localized but locally devastating disasters, to which national institutions do not respond:

The management experiences of the May 2003 flooding in Dumangas illustrated how localized disasters can undermine livelihood systems of communities and, when recurrent, how they can cause accumulation of community risks. National agencies are not sensitive to this kind of locally devastating development. Effective management of the May 2003 floods by the local institutions greatly helped minimize the disaster impacts.

The informal social networks provided mechanisms to take care of most vulnerable households:

Conversations with the most vulnerable households in Maquina and Balud indicate that the 2003 relief assistance was distributed equally. The 11 Maquina households and seven Balud households that were the most vulnerable and deserved a higher allocation of relief assistance were actually treated correctly. Discussions with the vulnerable households revealed that because of kinship relations, the well-off households that received assistance handed over part of what they received to vulnerable households. While formal local institutions could not evolve a mechanism to provide relief assistance according to vulnerability, the informal social network addressed the gap.

Despite considerable achievement there were also limitations of informal social networks:

The traditional social security system depends the communities' "social capital and the natural resource base" to provide assistance to most vulnerable households. The gradual depletion of natural resources through pressure on land and natural resources, change of traditional occupations, and commercialization of labour and tenancy systems has caused a shrinkage of the community abilities for independent self help. During severe disaster events, erosion of the "social and natural resource base" combined with competitive market relationships enhances the collective risks of vulnerable households. However, minimal social assistance to tide over vulnerable households in a crisis situation is still available. There is a need to understand the role of traditional mutual mechanisms in the redistribution of relief assistance during disasters.

Gaps existed in addressing different vulnerabilities:

Relief assistance for rehabilitation of agriculture is given to the farmers who own the affected land in the form of seeds. As most of the farmers are tenants, they do not have access to the kind of relief assistance that would enable them to recover faster from disaster impacts. The rehabilitation assistance is calculated and provided according to absolute, and

not relative, loss due to disasters. The poor households incur disproportionately greater losses when compared to losses suffered by wealthier households. Hence, there is a need to evolve a mechanism to provide rehabilitation assistance that considers capacity to recover rather than total loss incurred by households. The local institutions could articulate this requirement of poor and vulnerable household and provide a livelihood package in accordance with households needs.

The vulnerable households have devised various strategies to reduce risks. These risk management strategies entail adoption of hazard risk minimization rather than income maximization strategies. Thus, these strategies render vulnerable households unable to exploit potentially income enhancing opportunities. In the aftermath of disasters, even if credit facilities are available, the poor households cannot take advantage because of the need for collateral. These factors cause delay in recovery of affected vulnerable households. Any subsequent disasters then compel them to borrow from informal credit markets with high monthly interest rates of 20 to 30 percent. This has resulted in accumulation of debts, moving into a debt spiral. The local institutions could act as intermediary institutions between banks and the vulnerable households to evolve a credit delivery mechanism to suit the livelihood needs of vulnerable households.

Natural disasters have implications for the relative revenue-raising capacity and pattern of expenditure of different local government units. In 1991, the Philippine Government introduced a gradual programme of devolution, transferring responsibility for some taxation and a number of duties, directly or indirectly related to disaster prevention, mitigation, preparedness and response. Local governments also are obliged to set aside 5 percent of their revenue for use in the event of a disaster.

Clearly, individual LGUs face varying disaster-related expenditure demands and revenue-raising capacities depending on the incidence and severity of hazards. Yet these differences are not taken into account in the allocation of national government resources. Ultimately, inequalities in the availability of resources among LGUs, arising as a consequence of natural disasters, could impinge on the overall standard and level of provision of services and infrastructure in more hazard-prone areas of the country.

Local institutions established successfully a mechanism for contingency funding for reconstruction recovery:

The damage to bridges, roads, irrigation systems, schools, health clinics, communication facilities, etc., seriously impairs the recovery of affected population. Swift reconstruction of basic infrastructure following disasters has immediate social benefits. However, the national and sectoral agencies responsible for maintenance and upkeep of physical infrastructure do not undertake immediate repair and restoration because of procedural and resource constraints.

The local institutions could be entrusted with restoration of these infrastructure with participation of communities. Discussions with affected household revealed that they were willing to contribute labour and local materials. In addition, the local government could provide some resources and supervision and the national government could provide financial and technical resources. These participatory arrangements, with contingency funding for reconstruction recovery spearheaded by local institutions, could promote speedier reconstruction recovery processes.

Local institutions mediated between local communities and national governments for policy changes to take care of locally relevant development measures:

Not all local government units are equally disaster prone. Some local governments are in highly disaster-prone areas and recurring disasters have serious impact on local government finances. However, national policies for devolution of finances do not recognize these differential vulnerabilities. Also the reconstruction of damaged infrastructure requires reappraisal of national policies. The local institutions can articulate these nuances and help national governments evolve appropriate policies to address varying vulnerabilities.

The study confirmed that natural hazard risk must be treated as a continuous threat and a holistic approach needs to be evolved to minimize these risks and promote sustainable development:

The production environment before and after a disaster has a large impact on the capacity of people to recover. Various emergency efforts could contribute to improving ability to cope immediately after a disaster. However, the risk of severe damage to household livelihood conditions constrains the recovery process. In 2000, floods in the affected areas were followed by heavy rains in September 2001 during the first crop season, droughts during the 2002 first crop season, and flooding in May 2003. Having disasters repeat three years in a row seriously affected recovery of households. Climate risk is a continuous threat and, thus, a holistic approach is needed to treat disaster management as a continuum from preparedness to emergency response to recovery, reconstruction, mitigation and prevention. The local governments have already evolved an integrated disaster management and development plan covering all cases of disasters. National policies are yet to recognize and factor this approach of integrated disaster management into development planning. The initiatives taken by the local governments could motivate national policy-makers to evolve and implement a holistic disaster management policy.

The role of local institutions in reducing vulnerability to recurrent natural disasters and in sustainable livelihoods development

Philippines

This case study was commissioned by the FAO Rural Institutions and Participation Service. Its in-depth look at the situation in a disaster-prone area of the Philippines contributes to the understanding of the impact of local institutions on the design and implementation of disaster risk management strategies, as well as the role of local authorities in building community social capital for disaster prevention and preparedness. This understanding will provide insight and guidance on how disaster risk management at local level can be strengthened and integrated better into development strategies.

