Building a Culture of Disaster Preparedness for the Philippines

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Abstract

A culture of disaster preparedness needs to be reinforced in all sectors of society. This paper focuses on the investments needed for disaster preparedness, referred to as the state by which an entity is ready for the vagaries of disaster. This presupposes that steps needed to prevent or ward off the occurrence of a disaster have been observed, that the capabilities for emergency preparedness as well as those needed to minimize damage resulting from the disaster have been mastered, and that such mastery provides the ability to respond fully to the different phases of the disaster process in a calm, controlled manner.

To reach a level of mastery, disaster preparedness must be well ingrained into the culture of a given society. For it to be part of a country's fabric, it must be inculcated at an early age and nurtured through adulthood. The educational system therefore plays a key role in the transformation. Then, as more and more people become better educated in disaster preparedness, communities become more aware of how to protect themselves from potential damage due to disaster. In this way, individuals become more empowered and less traumatized when faced with danger. Implementing strategies from all sectors of society are explicated for disaster preparedness to be a way of life and to be the responsibility of individuals to do their share in disaster mitigation efforts as part of that preparedness.

Key Words- Culture of disaster preparedness, investments needed, inculcated early, implementing strategies, key role in the transformation, disaster mitigation, more empowered.

Introduction

No nation is truly ready to grapple with the physical, financial, and psychological damage brought by natural catastrophes. Within a ten-year period, disasters such as hurricane Katrina, Fukushima earthquake, Aceh tsunami, as well as typhoon Haiyan, jolted the whole world. All of a sudden, people are confronted with calamities previously unimagined, making any disaster risk management plan appear inadequate. Todhunter (2011) attributes this to the mentality of preparing for disasters based on the likelihood it will happen rather than preparing for disasters that may possibly happen.

Countries with greater resources are able to prepare for disasters in a more systematic manner as compared with those with less resources (Cuevas, 2011). Developing countries, precisely because they are trying to grow their economy, are at odds on where to allocate limited financial resources. With the onslaught of more frequent and intense disasters, there is pressure to channel resources to disaster risk and reduction management (DRRM). Evidently, not all are able to prepare their DRRM plans especially at

the local level. It comes to no surprise therefore that damage to lives and properties are greater in these areas. Consequently, these countries would have to rely on the assistance of more affluent nations (United Nations Human Settlements Programme, 2011; Becker, 2012).

The Asian Development Bank (2013) concluded that disaster losses readily outstrip investments in economic expansion. In fact, Kristalina Georgieva, European Commissioner for International Cooperation, reported that disaster cost has quadrupled over the last three decades, 90% of which is spent on disaster response. This prompted the recommendation for governments to invest more in disaster preparedness (Associated Press, 2014). If the European Union Commissioner is right in that every dollar investment in preparedness results in four dollars of savings in damage, then it makes economic sense to make that investment. Thus, rather than viewing disaster risk management as a cost, it should be viewed as a necessary investment for the protection of lives, properties, and livelihoods (Thomas *et al.*, 2013; Kellett and Peters, 2014).

Discussion

This paper focuses on the investments needed for disaster preparedness, referred to as the state by which an entity is ready for the vagaries of disaster. This presupposes that steps needed to prevent or ward off the occurrence of a disaster has been observed, that the capabilities for emergency preparedness as well as those needed to minimize damage resulting from the disaster has been mastered, and that such mastery provides the ability to respond fully to the different phases of the disaster process in a calm, controlled manner. Our definition suggests that to reach a level of mastery, disaster preparedness must be well ingrained into the culture of a given society.

Physical Investments for Disaster Preparedness

The fundamental requirement of a disaster-ready city is that the infrastructures had been constructed according to specifications so that these are not easily destroyed by a disaster. This point stresses the importance of city planners and building inspectors who must take their jobs seriously (Anthopoulos, *et al.*, 2013). In Japan, structural defenses have minimized risks due to cyclones and even earthquakes (United Nations Human Settlements Programme, 2011). Thus, flood prone areas would need a flood control system that can minimize potential physical and social damages, including threats to health (Bosher *et al.*, 2009). In coastal areas, structures such as seawalls, dykes, and water pumps, help mitigate the effects of sudden downpour. In hilly areas, trees must be abundant to protect plains from landslides. If these are not present, disaster preparedness calls for investments in this area.

Stringent standards should also be set for hospitals (Geroy and Pesigan, 2011). While taking into account the proximity of patients to the hospital, it is important that these hospitals are located in the least disaster-prone area that can be accessed immediately for emergency purposes. Disaster preparedness

requires that these hospitals should be equipped with well-maintained generators to account for electricity outages during a disaster. Moreover, a system should be developed so that supplies are properly stocked and can be replenished as the need arises.

The installation of an early warning system is probably one of the best investments for a DRRM program for it has been proven to minimize damage to lives and properties. In the Philippines, warnings to families sent two days before the landfall of typhoon Yolanda resulted in fewer casualties and even saved an entire coastal community of 1,000 from the strong rains and winds that obliterated their town (Malig, 2013; Oxfam, as cited in Larkin, 2014).

For a small village, early warning systems need not be complex and expensive. Abon *et al.* (2012) relate how manual rain gauges installed in 20 volunteer homes could warn families against impending floods.

Another sign of disaster preparedness is the access to communication equipment to serve as stop-gap measures should catastrophic disasters result in the collapse of communication networks. In the aftermath of typhoon Yolanda, the Philippine president expressed his inclination to invest in emergency communication equipment that can readily be transported to a disaster area (*Development Asia*, 2014). That said, access to vehicles that can be mobilized for emergency response falls part of the physical investments for preparedness.

The establishment of evacuation centers is primary to any DRRM plan. Most often, churches, gymnasiums, and schools are used for this purpose even if these were not designed for evacuation. In selecting areas to establish evacuation centers, it is imperative that health and safety considerations are taken into account, for these centers serve as temporary havens in the immediate period before and after a disaster. These evacuation centers should be equipped with emergency supplies and must have access to water for sanitation purposes. Portable toilets should be part of the implements needed because most places are not equipped to handle large volumes of people. Consequently, preparedness dictates that investments be made in these areas as well.

Deconstruction is a post disaster activity that is taken for granted in poorer countries. It is not simply removing debris from a disaster site. There are specific skills attached to this activity as well as specific equipment need that take into account the effects on the environment, the economy, and society (Denhart, 2010). Access to the vehicles that transport debris outside the disaster area as well as to the equipment used for hauling, compacting, and excavating is an investment that should be made before a disaster.

In normal circumstances, purchases of capital assets or infrastructure projects require a procurement process that follows a system that calls for bidding before funds are released. In emergency situations, the imbalance between supply and demand, the need for expediency and controls serve as roadblocks to

the efficient delivery of a recovery and rehabilitation service (Chang *et al.*, 2011). These should be taken into account when preparing a DRRM plan.

Disaster Preparedness: The Human Element

A culture of preparedness warrants that each member of society be clear about his or her role and has the capacity to perform such roles before, during, and after a disaster. The main actors in a disaster situation are national leaders, local leaders, humanitarian aid, deputized disaster response teams, affected community, socio-civic organizations, individual volunteers and certainly experts in special fields such as medicine, forensics, firefighting, security, deconstruction, and reconstruction, among others. Confusion in roles does nothing to control panic and can result in ineffective use of resources. For instance, Fortun (in Acuña, 2014) lamented how inter-agency politics between the Department of Health and the Bureau of Investigation led to wasted efforts in identifying and disposing of dead bodies resulting from typhoon Yolanda in the Philippines. With 6,000 bodies lying on the roadside decomposing at a very fast rate due to exposure to weather, it was a race against time that did not need the drama.

In hierarchical fashion, DRRM plans are prepared at the national level and brought down to the lower levels for contextualization. Disaster mitigation and adaption is not a one-size-fits all for risks and demographics vary (Cuevas, 2011; United Nations Human Settlements Programme, 2011). Thus, any DRRM plan should be holistic and grounded on local knowledge of the peculiarities in each area (Izumi and Shaw, 2012; Malick *et al.*, 2011). Kusumasari and Alam (2012) suggest the establishment of protocols on how the DRRM is to be implemented, such as the coordination of disaster recovery activities, the creation of a command post, and the provision of temporary housing, all based on local wisdom.

Any DRRM is dependent on the quality of local governance as well as institutional networks that coordinate with one another (Roosli and O'Brien, 2011; United Nations Human Settlements Programme, 2011). Hence, there is great pressure on local leaders to prepare their own DRRMs and be prepared to implement them. Not all local leaders, however, are equipped to do just that. Co (2010) forwards that in the Philippines, a good number of local leaders are capable of managing the relief process only.

Planning may appear lacking in disaster situations, but it is a skill that can be learned especially by local leaders. Immediately, local leaders can prepare manuals and guidelines specifying steps to be followed for the early warning system or the creation, maintenance, and dismantling of evacuation centers (Said *et al.*, 2011).

Mass evacuation is not simply about moving people to sturdier structures. It involves a series of steps as impending disaster approaches (Hissel *et al*, 2013). People should know how to respond to calls for evacuation depending on the warning level, including what to bring, and to contend with in the limited time. For larger cities where private transport is available, evacuation plans include traffic management

(UNESCO IOC, 2012). And in evacuation centers, people should know where to gather, where to get information, how to get food and medicines, and how to keep clean and sanitized.

The relief distribution process can likewise be placed in a manual and disseminated to the community before a disaster takes place, as well as guidelines on how to dispose of waste. Pre-planning of supply requisition such as the purchase of sand bags, though simple, is important to take place before a disaster (Newton, 2013). Things like these relieve the pressure during and after disasters when attention of the local leader is needed most. At the height of any crisis, a top-down approach is more effective (Imelda and Zubair, as cited in Jahangiri et al., 2011). Thus, analytical and critical skills are needed for sound, non-partisan, evidence-based decision making to take place (Wiek *et al.*, 2010).

Local leaders should also assess their preparedness and must be able to manage the entire supply chain of bringing equipment and supplies into the disaster area, and moving out dead bodies and patients outside the area (Brandon, 2011; Chou and Chen, 2013). Special attention should be given to guidelines on how to manage human and animal carcasses because some communities may have special rituals (Ekici *et al.*, 2009).

Local leaders should be able to mobilize medical teams, disaster experts, communities, and volunteers. Each of the groups must be trained for emergency response for urgency is essential. DRRM plans should incorporate training programs so that individuals, depending on their expertise, can be readily and strategically deployed with lower risks at a time of crisis. There would be great demands for medical attention, for food, water, clothes, toiletries, and other supplies. Emotions would be tested for there will be calls from all sides asking for immediate and special attention, all within a limited amount of time and space.

Inasmuch as the responsibilities of local leaders are vast, it would help them tremendously if their communities are prepared to face the challenges of disaster management. Literature shows that the more successful DRRM programs involve the community in a truly inclusive manner (Izadkhah and Hosseini, 2010; Mallick *et al.*, 2011). Ideally, community based disaster management programs ensure greater success in the implementation of customized disaster plan (Gaillard *et al.*, 2008; Izumi and Shaw, 2012; United Nations Human Settlements Programme, 2011). This presumes that members of the community have the requisite skills and the motivation to undertake adaptive measures to the level of professionals (Lettieri *et al.*, 2009; Surjan and Shaw, 2009). Households should be trained in disaster preparedness too so that they do not become an additional burden (Lettieri *et al.*, 2009). Disaster accounts show that disaster response teams spend an inordinate amount of resources rescuing people who do not heed early warning to evacuate either because they do not feel they will be harmed or they would like to protect their property. Conversely, those who recognize their vulnerability to hazards are most likely to cooperate (Paton *et al.*, as cited in Allen, 2006).

However, early warning systems have proven to be very effective in minimizing damage to lives and properties (Hissel *et al.*, 2013). Exposure to such systems in a drill or simulation, make response of households instinctive. This is similar to the earthquake drills periodically conducted in Japan, where disaster preparedness is national and local priority (Matsuoka and Shaw, 2012). Deeply inculcated in their culture since 1961, the orderliness of disaster and post-disaster response of the Japanese, as seen in the 2011 earthquake, is laudable (Nogra, 2013).

Volunteers should also be properly trained even as tasks assigned to them can be as simple as packing and distributing relief goods (Izumi and Shaw, 2012). Volunteers can also help uplift the spirits within evacuation centers, especially for the children and elderly.

Managing the transition phase is also part of DRRM. Temporary housing, as different from evacuation shelters, is required while infrastructures are being re-established (Abulnour, 2013; Félix *et al.*, 2013). Post recovery requires that a disrupted area is returned to an improved state (Fan, 2013; Kennedy *et al.*, 2008; Manyena *et al.*, 2011; Sudmeier-Rieux, 2014).

At the aftermath of a disaster is rebuilding the town or city. Families with a network system can live with friends and relatives temporarily; thereby, lessen the responsibilities of local government units. Those who remain can be asked to help rebuild structures but must be trained to do so (Félix *et al;* Branco, and Feio; Larkin, 2014; Wiek *et al.*, 2010). For instance, it is estimated that about five people are needed to rebuild a house (World Bank, 2014). Hence, employing some of the victims is one strategy to help those affected earn a little cash while livelihood is being restored.

Prior to reconstruction, deconstruction takes place; however, this takes time especially when private property is involved (Denhart, 2009, 2010; Moe, 2010). Destroyed infrastructures have to be dismantled and disaster debris would have to be collected, separated, and hazardous waste either buried or burnt and non-hazardous waste salvaged re-used, or recycled (Ekici, McEntire, and Afedzie, 2009). In New Orleans, for instance, debris collected covering 93,000 square miles, amounted to 110 million cubic yards, almost thrice the amount collected after a hurricane in 1992. It was estimated that 40% of the disaster costs were attributable to the clean-up efforts (Moe).

While Rubin (cited in Kim and Choi, 2013) relays the expectation for quick response to reconstruction, researchers forewarn of delays in the reconstruction phase resulting from design work phase, budget allocations, and sourcing of materials (Chang *et al.*, 2011; Kim and Choi). Consequently, Kim and Choi report that Korea passed enabling laws to facilitate faster recovery. Although drills are still mechanistic, Korea hopes to perfect their simulation exercises (Kim, 2013). And other local and national leaders should consider the importance of such preparations.

Face lifting after a natural disaster is a superficial response but is used to manage the impatience of residents who want to return to their homes. Simply bringing back things to the way they were does not

address the need to live in sustainable communities. Wiek *et al.* (2010) note how many reconstruction activities fail to take advantage of advance technologies to make cities more sustainable. Especially in disaster-prone areas, reconstructing without sustainability in mind just makes the community susceptible to another disaster and often leads to the irresponsible management of financial aid.

Kusumasari and Alam (2012) support a sustainable development approach to reconstruction. For this to happen, architects, urban planners, and engineers must be familiar with balancing the economic, social, and environment needs of the community using sustainable technologies in the reconstruction effort.

Local leaders need to be trained is in financial management too. It would have to be clear as well at this stage how reconstruction funds should be allocated among the various priorities of an affected area. A more accurate assessment of the damage to lives and properties can be gathered within weeks from a disaster, depending on its magnitude. Similarly, financial pledges from local, national, and international communities can be determined almost at the same time. The financial picture allows local government units to prioritize the disbursements of funds. Thus, an allocation system must be developed.

Finally, any disaster risk management program must consider the lasting effects to physical and mental health (Moniruzzaman, 2010). There is so much trauma attached to disasters not only due to direct loss of life and property but also due to the indirect loss in economy (Denhart, 2009; Wiek, 2010). Gunderson *et al.* (2012) suggest outreach and networking strategies to reb uild hope and connectedness. There should be standardized training in the area and trained individuals, certified.

The Philippines and Disaster Preparedness

The Philippines is one of the most disaster-prone areas in the world (Thomas, Albert, and Perez, 2013, p. 20). Located within the Pacific ring of fire, its island-based structure makes it susceptible to earthquakes as well as to typhoons, tsunamis, storm surges, and concomitantly to flooding (Co, 2010; Gaillard *et al.*, 2008; Iuchi and Esnard, 2008; Luna, 2001; Peñalba *et al.*, 2012; Victoria, 2002). It has experienced the worst droughts and the worst rains. In November 2013, typhoon Yolanda (internationally known as Haiyan) slammed against the central group of islands at a wind velocity of 315 kilometers per hour, practically wiping out towns and cities along its path (NDRRMC, 2014). Total damage to the economy was placed at $12 billion, most of which was shouldered by the private sector.

Typhoon Yolanda was said to be the first real test of the National Disaster Risk Reduction Management Council (NDRRMC) that released its 18-year plan three years earlier (Rufo, 2013a, 2013b). To be fair, no one could have predicted the magnitude of the disaster with experts as dumbstruck as everyone else (Enriquez, 2013). Amidst the confusion as to whose authority should take precedence, compounded by the temporary shutdown of communication networks, the Philippine president created within a month, the Office of the Presidential Assistant for Rehabilitation and Recovery, designating a "rehabilitation czar" as the primary coordinator for disaster recovery and rehabilitation (Enriquez).

By itself, the National Disaster Risk Reduction Management Plan (NDRRMP) shows some promise especially when taken side-by-side the National Climate Change Adaption Plan (NCCAP) of the Climate Change Commission. With both supporting the Philippine Development Plan 2011-2016, there is agreement that the country must take a more proactive stance in protecting the environment as well as protecting the country from the environment, in a manner that maximizes limited financial resources. Thus, it is expected that much of the financial resources dedicated to disaster risk reduction management, would be channeled to disaster preparedness instead of the current equal proportions for prevention, recovery, and rehabilitation (NDRRMP, 2011).

The success, however, of the national plans lies in the implementation at the local government unit (LGU). The LGUs were instructed to base their local DRRM plans on the national plans incorporating their Comprehensive Development Plans as well as their Comprehensive Land Use Plan. To the uninitiated such a task can be overwhelming. Perhaps the lack of planning capacity as well as lack of knowledge of DRRM explains why only the cities and municipalities directly affected by typhoon Yolanda did not all have their local DRRMs.

Recommendations for Philippine Disaster Preparedness

The Philippines is a predominantly Catholic country; many have subscribes to fatalistic attitudes. McEntire (2012) believes that such perspectives deter some from taking the initiative to minimize disaster risks. Other attitudes include self-entitlement as well as overconfidence in one's ability to protect oneself (Gaillard *et al.*, 2008). These attitudes are reinforced by government leaders who take a laid-back attitude towards disasters. After all, there is always the national government to run to or socio-civic organizations that will provide assistance. With the daily tasks of running a city or municipality, disaster is not given much attention until it knocks on the door. Consequently, many are unprepared when disaster strikes.

A culture of disaster preparedness can be achieved if efforts are done today to reorient mindsets and if these are reinforced in society. Education is the means to do just that (Gwee *et al.*, 201; Shiwaku, 2011). This is the intent of Goal 3 of the Strategic Framework for Conservation, Protection, and Rehabilitation of the Environment and Natural Resources under the Philippine Development Plan (PDP) 2011-2016, precisely to integrate Climate Change Adaptation and Disaster Risk Reduction Management in all educational levels (NEDA, 2011, p. 332).

Education and training have been acknowledged as key elements that will drive attitude and behavioral change towards sustainable development in general and disaster management in particular (NEDA, 2011; Said *et al.*, 2011; Striessnig, Lutz, and Patt, 2013). The change in the Philippine education system from a 10-year basic education curriculum to a 12-year curriculum is an opportunity to incorporate disaster risk and reduction modules in the revised curriculum of basic and higher education curriculum. The higher

education curriculum is affected by the change from 10 to 12 years because subjects that were previously part of a general curriculum have been moved down to the senior high school level. This frees up units in the higher education program. (The senior high school is in being offered for the first time this2016).

A review of the revised basic education curriculum, however, seems to downgrade the importance of disaster readiness and risk reduction by making it a core course only for grades 11 or 12 (http://www.deped.gov.ph/index.php/resources/curriculum-guides/shs-core-subjects). It is a weak step forward because all students are exposed to the subject matter only four hours a week for 20 weeks. Hence education in disaster readiness stops here for there is no subject in the nine core courses in the new general education curriculum for higher education on disaster readiness (Pazzbugan, 2013).

The core curricula at the basic and higher education levels are deficient as far as institutionalizing an orientation towards disaster readiness. Following the Japanese model, exposure to disaster knowledge should start at the kindergarten level and reinforced every year thereafter until a student graduates from basic education (Matsuoka and Shaw, 2012; Nogra, 2013). Inasmuch as the Philippine basic core curriculum has been set, although not yet fully implemented, it recommended that at least once a month disaster training and environment protection be part of the physical education course at all levels. Using spiral progression, students can learn emergency response skills such as administering first aid, putting out fires, building habitats, basic rescue operations, and the like. Shiwaku *et al.* (2011) maintains that that there are creative ways of teaching youngsters, such as collages, online games, competitions, and debates. Considering that there are about 21 million Filipinos enrolled in the basic education system, such a step will have tremendous impact (www.deped.gov.ph).

At the collegiate level, all Filipino students are required to undertake the National Service Training Program (NSTP) under Republic Act No 9163. As part of the NSTP, students have the option to participate in a reserve officers training, literacy training, or civic welfare training. The Act should be amended to include disaster training as a necessary module so that a reserve team can be formed and tapped in times of disasters. The trickle effect of having tens of thousands of students a year, trained for basic emergency response at the very least, will have greater impact. For there are about three million college students enrolled each year (www.ched.gov.ph).

Also at the tertiary level, colleges and universities can offer courses as well as degree programs in DRRM, similar to course offerings disclosed by Takara (2011) at Kyoto University. This can be offered at the baccalaureate, masters, or doctoral level as stand-alone offerings or as an area of specialization. Universities can also offer courses on sustainable development as the main field of study. For instance, sustainable architecture or sustainable urbanization can be required subjects for those taking engineering, fine arts, architecture, and urban planning. In the United States, more and more universities are offering degrees in Emergency Management, Crisis and Disaster Management, to mention a few. Some of these are the University of Chicago, University of Colorado, and University of Maryland. In Asia, there are Beijing Normal University, Chualongkorn University, National University of Malaysia, University of Madras,

Tata Institute of Social Sciences, to name a few (Andharia and Sunil, 2009; Mallick and Rahman, 2009). In all disaster programs, the ethics in disaster management should be a core course (Geale, 2012).

In the vocational and technical programs of the Technical Education and Skills Development Authority (TESDA), a certificate course on disaster training still has to be offered. This programcourse may focus on emergency and response, debris segregation. Following TESDA rules, those who graduate from such a program can later serve as trainers in schools or community organizations. Indeed, incorporating disaster training in the curriculum there will redound to a high demand for these certificate holders.

Similarly for profit, community based organizations, and non-profit organizations can offer training programs to communities and office employees (Luna, 2001). Already the Philippine National Red Cross has integrated its operations with community-based disaster preparedness (Allen, 2006; Victoria, 2002). Hence, community members were formed and trained to be part of disaster response teams that meet periodically to share experiences (Allen, 2006).

Besides courses and programs for disaster management, there can also be training for specialized marginalized groups. For instance, there can be a program targeted to farmers to teach them about organic farming and intercropping. Those who live in the mountains can be taught how to respond to forest fires, landslides, and earthquakes, besides safeguarding themselves against these potential disasters (Fujita, Takeuchi, and Shaw, 2011).

Current studies show that the sector that needs the most training is local government. The slow buy-in of the Local Climate Change Adaptation plan as well as the Local Disaster Risk Reduction plan may be a function of ability, not unwillingness. Thus, increasing the competence of local leaders would facilitate the design and implementation of required disaster plans that will, in turn, reinforce attitude and behavior of the community towards disaster management (Llanto, 2011). This training can be incorporated in governance modules of the Institute for Solidarity in Asia, for instance, and perhaps serve as a platform for electoral campaigns. Consequently, local leaders who are unable to produce DRRMs should be accountable to their electorate,

A culture of disaster preparedness needs to be reinforced in all sectors of society. In industry, one strategy that would further strengthen an attitude towards climate adaptation and disaster management is to make organizations more conscious. To do this, each organization should have a resident disaster expert. The task of the disaster expert can be to ensure that the organization is safe and that office workers are equipped to survive in a disaster situation. The disaster expert can likewise post disaster recovery programs for the organization and for the community. Office buildings as well as vertical and horizontal housing communities can also post their own disaster experts.

The various media must play an important role not only in the coverage of disaster situation (Kuppuswam,, 2012; Lettieri *et al.,* 2009; Nirupama and Etkin, 2012; UNESCO IOC, 2012). While on field

they should be trained to cover crisis events responsibly and ensure their own safety. But more than coverage, media can play a role in creating greater awareness about disaster prevention and preparedness.

Sector	Implementing Strategy
Basic Education	• Integrate, using spiral progression environment protection and disaster training in Physical Education course at least once a month for all 12 levels • Continue proposal to offer a 80-hour Disaster Readiness and Risk Reduction at grade 11 or 12
Higher Education	• Incorporate Disaster Training as part of the National Service Training Program (NSTP) • Offer core courses or electives in DRRM for regular programs as well as degree programs in Sustainable Development • Offer degree programs in DRRM at the undergraduate and graduate level • Offer certificate programs in: emergency management and leadership hazard assessment
Technical Education	• Offer Disaster Training Modules as part of TESDA offering
Community, office workers	• Offer certificate courses and/or associate degrees • Train for basic skills of evacuation preparedness, proper debris collection and segregation, rebuilding homes
Local government leaders	• Course offering target on disaster leadership that include modules on risk assessment, crisis management
Specialized Groups	• Farmer training on organic agriculture, inter-cropping • Foresters can be trained on extinguishing forest fires, and how to respond to landslides, droughts, and earthquakes • Fishermen can be taught to respond to tsunamis or storm surges
Organizations	• Employ resident disaster management expert
Communities, office and residential buildings	• Require a resident disaster management expert
General public	• Informational campaign in print, radio, TV, and internet

Conclusion

Disaster preparedness needs planning for the worst case (Clarke, as cited in Todhunter, 2011). The last decade has shown the fierceness of natural disasters. It appears that the scenario will remain for some time to come. Lacking the ability to predict the scale and intensity of disasters with precision, comunities must have an effective defense system to build resilience through disaster preparedness.

The most recent catastrophic event that befell the Philippines was that of typhoon Yolanda. This was in November 2013, four years after the CCC released its Local Climate Change Action Plans and three years after the re-establishment of the NDRRMC that released its Local Disaster Risk Reduction Management Plans. Despite the appointment of a rehabilitation czar, there appears to be no plan in sight for a sustainable reconstruction. Evidently, there is a wide gap between what government has envisioned as an

adaptive response that minimizes the costs and risks to the future generations and what is actually happening at the local government level.

Investments in disaster prevention may be very expensive for developing countries like the Philippines where poverty incidence is high (Aquino, as cited in Development Asia, 2014). The toss is between moving backward to make the country more resilient and possibly reducing carbon footprint or moving forward toward economic progress whilst contributing more to greenhouse gas emissions. The second best thing, therefore, is disaster preparedness.

Disaster preparedness should be a way of life and it is the responsibility of individuals to do their share in disaster mitigation efforts as part of that preparedness. The Japanese have shown that this philosophy works (Iwata, Ito, and Managi, 2014; Matsuoka and Shaw, 2012). For it to be part of a country's fabric, it must be inculcated at an early age and nurtured through adulthood. In this way, individuals become more empowered and less traumatized when faced with danger. Clearly, pockets of intervention will not bring about any real change. Neither will awareness campaigns result in behavioral changes (Kreibich, 2011). Thus, the educational system plays a key role in the transformation.

Employment opportunities in disaster preparedness as trainers, educators, and corporate executives as well as the stimulation of a consumer goods market for equipment needed for disaster prevention, rescue, and recovery creates a whole new industry that does not discriminate with respect to economic background, age or gender. As more and more local government officials become better educated in disaster preparedness, then, a community is encouraged to better protect themselves from potential damage due to disaster. Such knowledge and empowerment eventually leads to an attitude of disaster prevention. Consequently the need for oversight mechanisms to ensure for instance that building codes are met or that homes and offices are free from hazards, are minimized. The integration into society's fabric can be achieved within a 20-year period when we are able to witness the first kindergarten student exposed to disaster preparedness turn into a young adult whose instinct is to avert and, if confronted, respond to disaster threats.

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