

Innovation in Environment and Disaster Risk Reduction



Table of Contents

Smart and Participatory Water Solution in Bangladesh	1
Reaching the Unreachable with Disaster Risk Reduction Knowledge in Myanmar	5
Experiential Learning Through Climate School in India	9
Eco-transit Home in Malaysia	13
Epi-Nurse Nepal: Participatory Monitoring of Health Security on Disaster.....	17
eBayanihan: Web based participatory disaster management system in the Philippines.....	21
Earthquake Safe House in Nepal	25
Community-based Malnutrition Prevention in India	28
Legal Document Protection in the Philippines	31
Sustainable Plastic Use in Nepal	34
Refugee Assets in Australia	36
Climate Adaptive Farming in Indonesia	39

Smart and Participatory Water Solution in Bangladesh

About the case study:

The case study describes innovative technical and social solutions for safe drinking water in coastal Bangladesh, which is faced with salinity in surface water and Arsenic contaminated underground water. This project worked effectively to develop disaster resilience in rural communities by providing a cyclone-resistant house, safe and clean water as well as livelihood through vegetable cultivation. Precisely, these results and achievements contributed to the capacity development in the fields of DRR (cyclone risk reduction), health (reducing risks of diarrhea by clean water), safety and security (avoiding for women to go for a long walk for getting drawing water), food security (harvesting vegetable) and sustainable livelihood (obtaining cash income by selling vegetable). The project was implemented by Concern Worldwide in Bangladesh. This case study is an excerpt from an earlier study conducted by Takako Izumi, Rajib Shaw and Saroj Dash.

Reference paper: Izumi T., Dash S. and Shaw R. (2015): Experience of Bangladesh: Focus on Innovative Models of Private Sector Engagement in Risk Reduction, in Disaster management and private sector, Izumi T. and Shaw R. (eds), Springer Publisher, 247-264.

Introduction

Bangladesh's geographical location and land characteristics make it one of most hazard-prone countries in the world. Bangladesh primarily consists of low and flat land with some hilly areas in the northeast and southeast and is one of the most climate vulnerable countries in the world. The country has been frequented by a range of natural hazards throughout its history, including cyclones, floods, droughts, tornadoes, river bank erosion, earthquakes, tsunamis, high arsenic contents in ground water, water logging and salinity, etc.

In Bangladesh, the government, international agencies and NGOs are considered as primary actors in disaster management although the responsibility for providing a framework of legal and institutional structures still remains the government. Over the years, especially the roles of NGOs and donor communities have increased significantly. In addition, private sector involvement has a potential for undertaking activities that would combine business interests and broader social concerns and needs. In this section, the roles and activities of each stakeholder are examined on how they have been involved in disaster management and what are their major contributions.

Concern Worldwide is an international NGO and has been working in Bangladesh for many years in various areas such as climate change, health, livelihood, education as well as emergency response. It has been also collaborating with the private sector in project planning and implementation processes. A rainwater-harvesting project managed by Concern Worldwide is introduced in the next section as a business model of private sector partnership. In Bangladesh,

the roles and activities of national and local NGOs are also crucial especially in rural areas to strengthen advocacy, public education campaigns and training programs for personnel involved in disaster management from the national down to the union or community level.

Problem

The impacts of climate change are observed in different aspects in Bangladesh, starting from temperature, precipitation change, sea level change, and changes in cyclone or tornado intensity, time and path. For Bangladesh, intensified and frequent natural disasters and climate variability are the key impact of climate change. Hence, reducing disaster risk is the most effective strategy for climate change adaptation.

During past several cyclones, the huge storm surges have affected the surface water by making them saline, and thereby posing a serious threat to the drinking water. This is also aggravated by constant use of aquaculture, and pumping a huge amount of underground water and by depleting water table. Above this, there is a perennial threat of Arsenic contamination in the underground water. As a result, it strongly affects agriculture, food production systems and water sources especially due to rising sea level and salinity in soil and water. The scarcity of fresh water availability and saline inundation in coastal areas have severely impacted the primary source of livelihood and supplementary income of rural household such as homestead gardening, poultry and animal husbandry.

Approach / Stakeholder participation

Concern Worldwide initiated a rain water harvesting project in collaboration with a private company – the Gazi Tank Company (GTC) to reduce risks to natural disasters and climate change as well as provide vulnerable households with a storm-resilient house, a rainwater harvesting system as well as vegetable cultivation to maintain livelihood and their won food security. The rainwater harvesting model has been identified as a potential and effective mode of water supply for drinking and homestead vegetable gardening based on the meteorological data in the areas. Bangladesh has a relatively higher amount of rainfall, with annual average is close to 2,000 mm per year. Most of the rain is concentrate during the months of May to September. Rainwater availability in the months of April, May, September and October are also sufficient for cultivation and other needs. Farmers are in need of water for cultivation for the months of November to March. Soil moisture in November is sufficient for cultivation; hence require less water. Water requirement for vegetable cultivation in December and January are high and the model has been designed to store the water for the crisis period and promote a crop cycle. This project consists of three key components:

1. Rainwater harvesting system (Figure 1) supports the family to store water for the dry season and promote drip irrigation for homestead vegetable cultivation (Figure 2);
2. Improved access to safe drinking water and enhanced nutritional security especially for women and children;
3. Salt tolerant vegetable cultivation on poly-bed with moisture retention capacity provides with higher yield.



Figure 1. Water tank to collect rainwater Figure 2. Vegetable cultivation using rainwater.

Innovation

Concern Worldwide started this project from negotiation with a private polymer tank company on the supply deal of polymer tank with accessories at community level. The company agreed to supply a minimum of 2000 tanks at 30% subsidized rate inclusive of transportation with soft-term repayment mechanism at community level. The user set up the integrated “Rainwater Harvesting System (RWHS) for safe water & improved agriculture” models with technical support from Concern Worldwide and other partners. The user would adopt home consumptions and marketing strategy to ensure “food and income security”. The ‘income’ was targeted to enable for the investment of private sector to be recovered within a maximum time period of three years. The company was allowed to advertising their CSR compliances and also explore opportunities to get involved in for developing a “resilient community”. The company also did some technical innovation to use a specific material in the inner wall of the tank, which allows some air circulation, and thereby providing an atmosphere to keep the water for a longer period of time.

The assessment depicts that the “RWHS for safe water & improved agriculture” requires an initial investment of Tk. 21,000 of which system installation (polymer tank-2000 litre, accessories, brick platform and setting) cost is Tk. 18,280 and agricultural input & labour (polythene, seeds, fertilizer and labour) cost is Tk. 2720. GTC has agreed to cover the system

installation cost (Tk.18280), while Concern is providing the agricultural input & labour cost (Tk.2720). The above cost-benefit analysis depicts that at the end of each year a household can gain benefit from the model in three ways:

- 1) “Cash income” from vegetable marketing which is obviously the most and it has multiplying effect on overall family livelihoods and adaptation choices,
- 2) Safe water, nutrition & food security which has high significance in maintaining health concerns as well as increasing human asset;
- 3) Provision of seed storage that helps the family to mitigate crisis during lean periods.

The pre-research and analysis conducted before this project started presented that each household can meet their annual consumption needs with additional income TK 5000-6000 out of TK 9500 total cash income from vegetable sale. The additional income, therefore, used to pay for the investment cost by GTC. Hence, the total time requires to complete repayment is estimated to be around 3 years.

Conclusion

This is a successful model both in creating business opportunity for the private sector and in contributing to establishing community resilience. The project demonstrated that the investment made by GTC for this project can be returned in three years, however, GTC still needed to compromise the subsidies given through a reduced price when they sold a tank to NGOs and communities. Two major reasons that GTC accepted such compromise were observed: 1) Strong intention and aspiration to contribute to changing local situation and improving living standard of local and vulnerable citizens, and 2) Increasing a publicity and visibility of the name and brand “GTC” and its contribution. Concern Worldwide considers the private sector as an important partner of its project planning and implementation and the private sector should also gain benefits by participating in its project. As such, Concern Worldwide offered GTC to put its name on all the tanks to increase its visibility and promote its name and contribution. GTC has already 75% of the domestic market share of water tanks and 100% of the NGOs market share. The name of GTC has been already well-known and maintained a large market while its major market was still in urban areas, not in rural areas. The collaboration and project with NGOs for rural communities expanded the GTC’s market further beyond urban communities.

Reaching the Unreachable with Disaster Risk Reduction Knowledge in Myanmar

About the case study:

The case study describes a unique disaster education initiative through development of Mobile Knowledge Resource Center (MKRC) in Myanmar, which is a disaster related knowledge center, mounted on a truck. This project was implemented by a Kobe based NGO called SEEDS Asia (www.seedsasia.org), in cooperation with Myanmar Engineering Society (MES), with support from CWS Asia Pacific, at the aftermath of the cyclone Nargis, which hit Myanmar in 2008 with a large number of casualty and infrastructure damages in the coastal communities.

Reference paper: Ueda Y., Shikada M., Matsumoto E., Nakagawa Y. and Shaw R. (2014): Knowledge, education and training for risk reduction: specific case of Myanmar, Vietnam and Japan, in Civil society Organization and disaster risk reduction: the Asian Dilemma, Shaw R. and Izumi T. [eds], 135-158, Springer Publisher

Introduction

Myanmar has approximately 2,000km coastline, and is prone to natural disasters such as tsunamis, storm surges, and floods, as well as cyclones and earthquakes, since the country has many active faults. In particular, the Cyclone Nargis of 2008, with wind speed of 250kph, caused massive storm surge, left 138,373 deaths and missing as official record.

DRR education was not carried out sufficiently even at schools in the cities due to lack of resources and materials, and the situation was worse at schools in farming or fishing villages, far from the cities without access to such information or assistances. Thus, MKRC was developed by SEEDS Asia and Myanmar Engineering Society (MES), the group of local engineers in 2009 to provide one- or two-day training on DRR knowledge with catchphrase “Reaching the unreachable.” The project was supported by CWS (Church World Services) Asia Pacific office, based in Bangkok. MKRC is the customized-truck with participatory DRR learning facilities with DRR models, posters, and card games for children to learn DRR with fun by looking or touching such materials. Afterword, the customized-ship, Water Knowledge Resource Center (WKRC) was developed in 2010, in order to reach to the coastal areas in delta region, where are not accessible by cars from the capital city of Yangon. Some of the areas were devastated by the Cyclone Nargis, and have high demand of DRR education.

Problem

After the Cyclone Nargis, DRR (disaster risk reduction) countermeasures have been initiated by the national government in Myanmar, particularly DRR education was started as one of the life skill classes in school curriculum in 2010. However, the problem was that basic knowledge of teachers on DRR was insufficient to conduct the class especially in rural area. According to

investigation of 2010 by SEEDS Asia to 234 teachers in five townships in delta region, about quarter of teachers answered “No” to the following question “Can you explain mechanism of causing disasters and countermeasures against ones?” Actually, more than 90% of the teachers were not able to explain accurately in oral when its question was asked. Moreover, it was found that most the 90% of the teachers had never been received DRR training.

Approach / Stakeholder participation

To address the above issue, MKRC was conceptualized, so that on-site disaster risk reduction training can be provided to the students, teachers and local communities. These MKRC and WKRC were equipped to provide learning opportunity on cyclones, floods, earthquakes and tsunamis, began the journey for conducting DRR in disaster prone area in Myanmar. Learning materials for landslides, tornados and thunder/lightening were also added in order to respond to the needs from community in 2012 and fire in 2013. Moreover, the DRR training in Teachers Training College (TTC) were focused since 2012 to enable every junior teacher who graduated from the college to disseminate DRR knowledge. MKRC and WKRC have reached out to over 227 schools in the regions of Ayeyarwady, Yangon, Bago, Rakhine, Sagaing and Mandalay. In total, 22,280 participants including teachers, students and community people received training by MKRC or WKRC as of the end of February 2013. Figure 1 shows the MKRC/WKRC (truck and the ship) and the models. Training of teachers (ToT) program is also shown in the right hand side photo.



Figure 1. MKRC/WKRC and the models (left), TOT in right (both top and bottom)

Innovation

The key innovation in the DRR education in MKRC/WKRC is the development of the educational

tools with the KIDA (Knowledge-Interest-Desire-Action) model. The KIDA model was proposed by the team of researcher in Kyoto University¹, which is a step-wise method from knowing to taking action in case of disaster risk reduction. Knowing part was more on understanding the mechanism, taking interest and desire are experiential learning, and taking action is the final goal of disaster education. The models and the related education program in MKRC/WKRC was designed based on these steps, and specific and customized education programs were suggested.

The KIDA tree model is used in this short-term training program to effectively raise interest in DRR and put it into action. In particular, the program consists of the following: making teaching materials as posters, card games, and models to learn mechanism of disasters and methods of securing safety; making life-saving device made of plastic-bottles and hazard maps; and practical workshops including DRR activity plan making or evacuation routes confirmation. In particular, MKRC has been highly evaluated by the participants for providing DRR knowledge in an enjoyable format with games and practice using characters from a popular local cartoon for exterior of the MKRC truck and in the teaching materials, while resolving lack of transportation and time for people in the remote areas by using the truck as a mobile resource center. Posters and machines are also considered to attract people to enjoy learning, and to achieve a strong impact in reminding them with messages. These are considered as very important points to disseminate and cultivate the culture of preparedness.



Figure 2. Staff of SEEDS Asia explaining a safer village with a model on WKRC to teachers (right) and a trained teacher teaching disaster mechanism utilizing a poster in MKRC

One of the specialties of MKRC training is ToT, which is a type of training that teachers receive DRR training first, and then students and community people get same training by those teachers. Through the process, DRR education skills are learnt by the teachers, as well as DRR knowledge are obtained by other teachers, students, and community people (see Figure 2).

¹ 1-2-3 of disaster education by Kyoto University

SEEDS Asia conducted DRR training in nine TTC in Myanmar from March 2012 to February 2013. The project received 1,696 beneficiaries; 371 teachers in TTC and its attached middle schools, 452 students who were going to be teachers after graduating the TTC, 480 students from the attached middle schools, 393 people from the surrounding community. In order to evaluate the training, pre-test and post-test which were created to measure the level of DRR knowledge were conducted to these participants. The result shows the average of the overall marks was 72% before the training and increased to 94% after the training (see Table 1). It indicates that even one- or two-day training utilizing MKRC and WKRC were useful and effective for raising knowledge on DRR.

Table 1. Comparison between results of pre-test and post-test

Participants	N*	Before	After
Teachers of TTC and its attached middle school	371	75%	96%
Students in TTC and Students in the middle school	932	73%	95%
Community people	393	69%	92%
Overall	1,696	72%	94%

*those who answered to the test during training. number may differ slightly from the number of attendance

Conclusion

Visible and touchable education materials make it easy for training participants to understand mechanisms and risks of natural hazards as well as the way to respond and undertake preparedness measures at community/school/individual level. The materials are in different forms such as miniature models, card games, picture-story show, posters, videos and exercise books, which are engineering technologies or hydrological/meteorological information but transferred into a form which enable small children to understand and take action. For example, a poster explains the mechanism of cyclone and then a miniature model able to provide a small blow demonstrates how cyclone actually can blow off a house roof and how to mitigate the risk by introducing locally applicable methods. Furthermore, another miniature model of housing structure teaches how to make housing safer against the cyclone. Thus, even though the contents of the training are sometimes technical and scientific, the combination of those materials makes it possible to provide DRR education in easy, enjoyable and effective manners.

Experiential Learning Through Climate School in India

About the case study:

The case study describes a unique disaster education initiative through development of climate school and involving students, teachers and communities in monitoring daily weather and environmental data and taking decisive actions of different types of climate related hazards and environmental problems in Varanasi, India. This project is implemented by a Kobe based NGO called SEEDS Asia (www.seedsasia.org), in cooperation with Benaras Hindu University (BHU), with support from Ministry of Foreign Affairs, Government of Japan under the Kyoto Varanasi Partnership Agreement intention.

Reference paper: Otsuyama M., Kakuchi S., Hayashi S., Nakagawa Y and Shaw R. (2017): Enhancing evidenced based action through informed decision: example of “Climate School” in Varanasi, India, in Shaw R., Chan E., Fang L., Lu L., Shi P., Yang S., Chan G., Wong J. (2017): Co-designing DRR Solutions: Towards participatory action and communication in science, technology and academia, ASTAAG, IRDR and CCOUC, Hong Kong, China, 6-7.

Introduction

The trends of increase in number of extreme and disastrous weather events have been observed globally. In May 2016, the highest ever temperature was recorded in India with 51 degree Celsius, furthermore, the country faced floods in the rainy season. City of Varanasi with the population of 1.75 million in Uttar Pradesh State also recorded higher than normal temperature² in May and experienced severe floods in August 2016. Although Indian Meteorology Department is forecasting weather information broadly on daily basis, there is no timely information on torrential rains and measures of rainfalls in micromesh of the city.

Indian Prime Minister HE Narendra Modi Visited Japan in 2014, and started his visit with Kyoto. That time, Japanese Prime Minister HE Shizo Abe went to Kyoto to receive him. In their presence, Kyoto Varanasi partnership agreement intention was signed between the city of Kyoto and city of Varanasi. Both the cities are old cities, and have lots of similarities in terms of cultural context. As a part of the agreement intention, different levels of cooperation started between the two cities, and SEEDS Asia started a community based learning program along with its counterpart Benaras Hindu University.

Problem

² Average of temperature in Varanasi in May is 40 Celsius degree (1998 to 2012 base)

<https://weatherspark.com/averages/33932/5/Varanasi-Uttar-Pradesh-India>

The city of Varanasi has different disaster and environment related issues. The city faces traffic paralysis because of the unexpected torrential downpours which fell in stuffed and poor drainage system in the city (Figure1)³. The pupils are being in trouble due to the blockage of the roads by inundation, and the parents are having no choice but to wait without any information. Since schools are also supposed not to keep their students till night time, it has been a major challenges for all the schools to decide when to flee their students before the accessibility is limited. Besides, the city also has differential pollution level, which increases during the winter season. Therefore, it is important to have daily check on the environment and disaster related issues in the city.



Figure 1. Flood in Varanasi in 2016

Approach / Stakeholder participation

In order to facilitate to solve the issues above, SEEDS Asia in partnership with Banaras Hindu University launched a three years project (October 2015 - September 2018), “Participatory Community Based Disaster Risk Reduction Approaches in Varanasi” through establishment of Climate Schools (CSs) with the equipment to obtain scientific data on weather in order to build capacity on Disaster Risk Reduction of Varanasi and activating the citizen’s DRR activities.

The key partner was the five climate schools in Varanasi, which, in turn will have three each outreach schools. The teachers and students of these schools are the core project partners. In addition, the local



Figure 2. Climate school and community facility center

³ According the data accumulation and observation, if rainfall 20mm per hour continues for two hours, the urban flood would occur in the city.

communities, especially the resident welfare association are also involved along with the schools (Figure 2).

Innovation

For data collection and risk management activities on climate disaster in schools and the residential community nearby, five CSs⁴ are selected from five zones, and five Citizen Forums (CFs) are organized by formulating representatives from the surrounding community. Each CS is equipped with weather observatory devices such as CCD camera and automatic weather station (AWS) (Figure 3) which can measure wind speed, wind direction, humidity, temperature and rainfall as well as derived readings include wind chill, heat index, dew point, etc. The members of CFs from the residential area became focal persons to receive the weather information from the CS nearby and to lead community based activities for disaster risk reduction in respective area. The observatory



Figure 3. Automated weather station

data are accumulated and recorded in CSs, being in a manner accessible to or observable for 24 hours to any by minutely, hourly, monthly and yearly basis through internet with application⁵. Also, there were environmental monitoring equipment installed in each school.

Collection, evaluation and analysis of the data which are being obtained from the CS are beneficial to the academic community especially to the field of meteorological and disaster risk reduction in Varanasi. These researches are important for decision making at different level from individual to the planning of the city. The project focus at the grassroots level as initial stage, thus a series of trainings on understanding on weather and climates risk such as understanding of geographical features, rainfalls, town watching program to understand the risk and resources of neighborhood are conducted for each CS and CF. Based on their findings, mitigation measure are discussed and planned at community and school basis, then each school has identified the certain

⁴ The selected five CS are 1. Central Hindu Boys School, 2. Rajghat Besant School 3. Sant Atulanand Convent School, Shri Agrasen Inter College for girls, 5. The Aryan International School in the city.

level of rainfalls when they decide to flee their students to home or to announce the cancellation of class in associated with the bad weather so that pupils would not be facing the flood unnecessarily. The accumulation of data will contribute to research outcomes, and mobile application made easy to anyone to access the timely and handy weather information, which enables them to take early decision and action.

Conclusion

One of the best outcomes of this project are the students of CSs who are aware of the risk of climate and taking initiatives to cope with. They are the main ambassadors to the people of the city and for the next generation. They publish “*Praharī*” Student Climate Newspaper (Figure 4) to raise awareness on climate issues and promote DRR activities by sharing the collected data from AWS from CS, writing poems, quiz and reports on weather, introducing activities of CFs, etc.



Figure 4: Launching ceremony of *Praharī*, attended by government officials, university, schools and community

By engaging the school and students of CSs, the information reach out to their parents, and by involving CFs, tangible actions are also taken for improvement in their community, which are found in their active partition and relief activities during the flood in 2016. The outcomes shows that the project for Participatory Community Based Disaster Risk Reduction Approaches in Varanasi contributes Priority 1 of SFDRR (Sendai Framework for Disaster Risk Reduction): Understanding the disaster risk, through collecting of scientific data on weather and promoting of understanding the risk for enhancing disaster preparedness though participatory approach in school and community. This is a case how scientific evidenced data made people move into actions for enhancing the community resilience.

Eco-transit Home in Malaysia

About the case study:

The case study describes a unique method of developing an eco-transit home, by using local agriculture products. These transit homes can be made quickly by DIY (Do-It-Yourself) with minimum level of outside interventions, and can have good thermal comforts. The materials being light enough, can be transported easily to remote mountain areas. Through crowd sourcing and CSR (Corporate Social Responsibility) funding, this method can be promoted in different parts of the world.

Reference paper: Sivapalan Kathiravale (2016): Eco Transit Homes for Disaster Relief, in Shaw R., Izumi T., Shi P., Lu L., Yang S., Ye Q. (2016): Asia Science Technology Status for Disaster Risk Reduction, published by IRDR, Future Earth and ASTAAG, Beijing, China, 73-74.

Introduction

MIGHT which stands for Malaysian Industry-Government Group for High Technology is an independent, industry-driven, and non-profit organization that drives the advancement of high technology competency and capacity in Malaysia. It is a consensus-building platform based on a public-private partnership that develops strategies and pursues implementation through its numerous centers of excellence and partner organizations.

MIGHT was established on 22nd February 1993 and subsequently incorporated as a company limited by guarantee on 15th October 1994. It is placed in the Prime Minister's Department to support the Science Advisor to the Prime Minister and leverage on the multi-disciplinary and inter-ministerial synergies from both the industry and Government. It is a membership organization that draws intellectual, financial and other resources support from selected Lead and ordinary members involved in the high technology development. The mission was: *To serve the nation in advancing competency in high technology through partnership towards sustainable development*⁶.

The main function is to advice the Prime Minister on all matters relating to Science, Technology and Innovation (STI) by undertaking the following tasks, among others: 1) Prioritizing the role of STI for national development, 2) Strengthening the Investment for R&D, 3) Reinforcing the human capital for STI, 4) Encouraging STI based innovation in business, and 5) Promoting Science Diplomacy. Science to Action (S2A)⁷ is an existing

⁶ Source: MIGHT website (www.might.org.my/).

⁷ The future of invention in Malaysia, MIGHT, 2016

initiative to ensure that Malaysia moves ahead as a developed country by 2020. The working framework is based on three thrusts, Science for Governance, Science for Well-Being and Science for Industry. Science for Governance is strategically centred on the intensification of Science, Technology and Innovation (STI) capacity of the nation and will take continued focus through the likes of Economic Transformation Program (ETP) and the Government Transformation Program (GTP). Under the thrust of Science for Governance, a policy review on the current level of R&D and innovation capabilities was undertaken by OECD as part of the S2A initiative. Through its wealth of information on a broad range of topics, OECD has helped governments foster economic growth and financial stability by analysing statistical, economic and social data. OECD has been continuously monitoring the S2A initiative, where recommendations for policy changes are made at the committee level and may subsequently evolve into discussions to implement the recommended steps for economic developments.

Problem

Terminologies such as “Transitional shelter”, “Progressive shelter” and “Core shelter” are often used for shelter after disasters and as a result of conflicts. Most terminologies relate to an approach rather than a phase of response, recognizing that post-disaster shelter is often built, upgraded and maintained by the affected populations themselves, and this self-management should be supported⁸. A successful shelter needs a good balance of several points like time, cost, availability of materials, thermal comfort, people’s lifestyles etc.

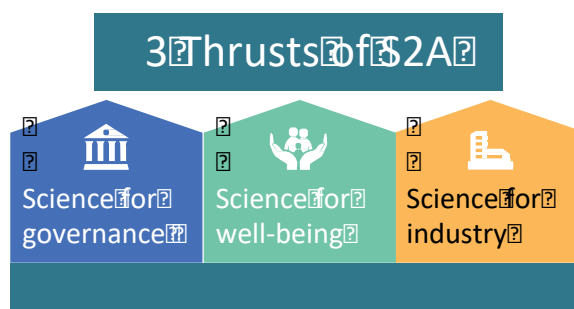


Figure1. Thrust areas of S2A

Disaster victims are currently supplied with temporary tented shelter but in some cases victims may continue to live in these conditions for up to 6 months or even several years. Science and Technology is needed to find a solution that will provide improved living conditions with lasting structure that can be deployed easily and quick to be put up at an affordable price.

In most cases, especially in remote mountain areas, shelter construction becomes quite difficult, because of lack of available materials, difficulties in transport of materials, and

⁸ Post disaster shelter: ten designs, IFRC, 2013

its cost related issues.

Approach / Stakeholder participation

Eco Transit Homes are resilient and eco-friendly houses that can be built quickly by volunteers in disaster and crisis affected areas. Eco Transit Homes are built mainly from waste agricultural materials but can accommodate waste material from disaster zones, thereby resolving the issue of debris build-up. The Do-it-Yourself (DIY) concept of Eco Transit Homes enables volunteers to be trained quickly to assemble or disassemble these homes in disaster areas.

MIGHT offers a platform for collaboration between the public and private sectors in driving the nation's high technology industry by providing a network of local and global linkages for members to capitalize on through synergistic partnerships. It serves as an autonomous consultative stage for members to mobilize and manage joint partnership, which are beyond the resources of an individual organization. MIGHT members are from various fields, including key government ministries and agencies, public listed companies, small and medium enterprises (SMEs), universities, research institutions, non-governmental organization (NGOs) and multinational corporations (MNCs).

Innovation

Science and technology was the foundation for converting waste agricultural material into building material. The engineered wood is made of paddy plantation waste and plastic waste, which are recycled, ground and compressed into any shape and length required for construction purposes. The resulting engineered wood is heat resistant for up to 2 hours, water resistant and termite proof.



Figure 2. Eco-transit home construction

Eco Transit Homes are designed to be built on a ‘Do It Yourself’ (DIY) concept and can be pre-manufactured into compact collapsible pallets (similar to the IKEA concept). They can be mass pre-manufactured and stored; ready for easy deployment to disaster areas as they are light and compact. Training can be conducted to volunteers across the world who can then assemble the houses in disaster areas. Science and technology has created high quality engineered wood that gives long

term quality shelter to disaster victims, which can be easily be deployed and put up in disaster areas by trained volunteers including youths.

The of the Eco Transit Homes concept is the ability to pre manufacture, light weight so as to facilitate easy deployment and quick build concept for easy assembly at disaster sites by volunteers. Engineered wood from agriculture waste used in the manufacturing also helps paddy farmers in gaining a small income from their waste material, which would otherwise have been burnt openly contributing to air pollution. Eco Transit Homes can even accommodate material extracted from disaster zones, thereby reducing environmental strain on the area while resolving the issue of debris build-up in disaster zones. A key success factor will be the proposed financing of the Eco Transit Homes, which is to be done based on crowd sourcing and CSR funding. This can be done based via international foundations that will use Eco Transit Homes when providing disaster relief.

The technology used in producing the engineered wood, the design of Eco Transit Homes and the financing scheme for such homes are well established models that are currently employed in many other sectors. Thus, duplicating such a system is easy in many countries. It is envisaged that the funding for the Eco Transit Homes can be obtained from international corporate sponsors as well as government and non-government sources.

Conclusion

The case study shows a unique way to solve the temporary housing issue, especially in the remote mountain areas, using local agriculture products. The Do-It-Yourself (DIY) way needs some basic training, and the local people will be able to make this by themselves. This is important to find appropriate schemes to disseminate this widely.

Epi-Nurse Nepal: Participatory Monitoring of Health Security on Disaster

About the case study:

The role of local nurse and National Nursing Association, in disaster management after the devastating earthquake in April 25, 2015 shows how nurses supported a technological innovation in managing health information in the country during and after the disaster. Nurses were trained on rapid health assessment and use of open source mapping and referral system and a surveillance system to help in gathering information on the ground to inform health interventions. This result shows one of the ways practical and solution oriented research can challenge the conventional public health security monitoring systems which require near real-time, population-based, statistical alarms to alert to unusual activity. The potential of this collaboration is not only to produce innovative research outcomes involving the improvement or optimization of services utilizing ICT, but also to promote research knowledge and idea exchange regarding social issues and challenges in the field of emergency preparedness and response.

Reference Paper: Kanbara Sakiko (2016): Participatory Surveillance on evacuation site by local nurses and ICT in Nepal in Shaw R., Izumi T., Shi P., Lu L., Yang S., Ye Q. (2016): Asia Science Technology Status for Disaster Risk Reduction, published by IRDR, Future Earth and ASTAAG, Beijing, China, p. 83

Introduction

Nepal is situated in one of the most seismically active regions of the world. Historical data show that it has experienced a number of devastating earthquakes. Nepal earthquake, also known as the Gorkha earthquake killed over 8,600 people and affected more than 5.6 million individuals; with damage estimates exceeding 3.9 billion US dollars (CRED, 2015). The affected areas include densely populated regions of greater Kathmandu as well as mountainous areas in which rural populations are dispersed. The Ministry of Health and Population in Nepal identified 14 districts severely affected: Gorkha, Dhading, Rasuwa, Sindhupalchok, Kavre, Nuwakot, Dolakha, Kathmandu, Lalitpur, Bhaktapur, Ramechhap, Sindhuli, Okhaldhunga and Makwanpu districts; including Dolakha and Sindhupalchok which were severely affected by the second earthquake (WHO Nepal, 2015).

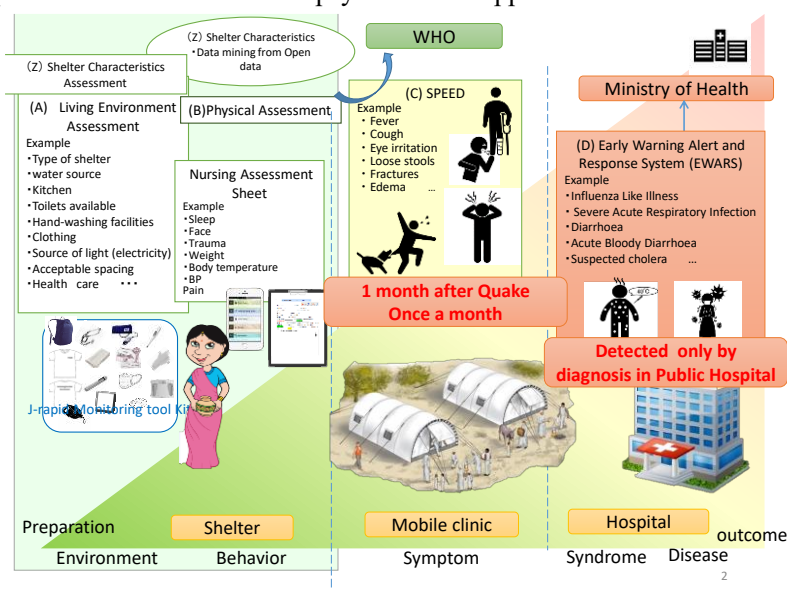
Problem

Initial public health concerns were caring for the survivors with wounds and injuries; majority with minor cuts and bruises, fractures and with some number requiring surgery and blood transfusion. Provision of emergency medical and surgical cares was an immediate priority including giving tetanus vaccination to patients. Communicable and infectious diseases related to water, sanitation and hygiene were also priorities after the earthquake given the reduced access to safe water and sanitation systems

and damaged sewage infrastructures. Other endemic communicable diseases such as Hepatitis and Cholera and diseases associated with overcrowding such as Measles, Diphtheria, Pertussis and Acute Respiratory Infections were all major concerns. Priority interventions for the control and management of communicable diseases include provision of safe drinking water, shelter and site planning, surveillance and early warning and response system, immunization, standard treatment, and public health communication (WHO Nepal, 2015).

Reduced access to health facilities and medications also endangered people suffering from chronic non-communicable diseases. Management of acute life threatening conditions and minimizing treatment interruptions was imperative. Mental health and psychosocial support was also needed to care for survivors showing a wide range of symptoms of normal distress caused by severe loss, trauma, continuing danger, and constrained social and living conditions. Environmental risks were also assessed to protect people from possible harmful exposures.

Approach / Stakeholder participation



Two days after the earthquake, an immediate concern was how to care for people in the open field and how to reach out to populations in need. One crucial factor was how to get information to help communities recover from the impact of the earthquake and prevent possible epidemics. NAN also continue monitoring with Global collaborated research team funded by Japan Science Technology so that reached out to NAN to help set up information systems to make rapid health assessment and gather more information to prevent outbreaks. To collaborate in real time with Nepali nurses who conduct the surveillance, the Tool kit is customized for health coordination mechanism/development by incorporating the WHO guidelines and application. The most critical challenge is data collection to generate reasonable information that can be used in predicting whether something is likely to occur. Our interest lies in collecting information on the items from the view of public health and nursing including culture, lifestyle and perception. It is developed as an open tool kit that can easily provide APIs (application programming interface) for integration with others as well as provide APIs for data integration and data sharing with other health sectors, MoHP and WHO.

Nursing Association of Nepal (NAN) sent nurse teams to affected areas such as: Sindhupalchowk (Thulobhotang, Chautara, Melamchi), Jiri, Dhading, Nuwakot, Sankhu, Bhaktapur, Harishiddhi, Sitapaila, Ramkot, Macchegaon, and White Gumba to bring medicine, rice, food, clothes, water, soup and distributed these to the affected areas.

The study drew on a combination of quantitative and qualitative data supported by case study. Traditional paper and telephone method for data collection took more time than the smartphone application due to accessibility. To solve this problem, we developed new application collaborated with the local NPO and company. As a result, it enables communication in real time and supplies relevant information. The mobile application collected data and shelter information such as location and timestamps, geo-tagged photos, and specific questionnaire with location information by the geotagging function. The Cloud service works as a one-stop platform at which all of the data and information of the epidemiological data can be accessed. The Cloud infrastructure with flexible extensibility, within the provided financial resources and further development and expansion along social change, should be used. This system development and action engagement process was designed to engage local nurse in the quality improvement process.

Through engaging practitioners in research, care improved, the quality of reporting changed, nurses response flexibly and nursing association was provided with information. This study showed that identifying shared information and engaging domestic community nurses and stakeholders in practical activity to achieve this goal can bring about sustained community health improvement. The government and donor who supported and guided the study as partners now have a basis to apply reconstruction of the results. They are closer to their goals of consolidating data into one database where data can be analyzed automatically. Meanwhile, this study shows the needs for domestic health professionals like community health nurses to take urgent steps to make available information more intelligible and develop a sustainable network to ensure that no one is left behind in disaster risk reduction.

Initially, there was a relatively low commitment among the participating local nurses to continuous monitoring. But the use of Apps increased the health professionals' sense of responsibility towards the care they provided. To change societal behavior reforms in institutional policies and procedures must co-evolve with health environment changes related to people's beliefs, norms and values that provide a motivating force for a particular type of behavior.

Conclusion

1) Routine health security monitoring and emergency report based on public health: Resources are often limited and do not allow monitoring tool to incorporate all of the reporting sources. It is required for government to coordinate the interoperability of rapid assessment with other data services for further cooperation with other sectors, such as infrastructure, energy, transport, and water, and close

partnerships with local volunteer. These team responsible for rapid assessing each emergency should exist in sustainable community for health security. Routine monitoring and communication is essential in ensuring to adapt over time to changing social context, environments systems and technology. At a minimum communication and regular social capital evaluation should be undertaken. This trajectory may later result in a mode of transferring guidance to first responders and civilian populations regarding DRR and behavior and also as a way to reach large populations.

2) Capacity building including human and technology in sustainable community: With formal education and drilling as well as ICT utility, competency can be developed in public health. It may enable for local nurses to make decision to create a system that would allow smooth cooperation among stakeholders. In local communities, nurses collect information about and mitigate communicable diseases risks. Effective leadership might be also necessary to manage improvement in reconstruction settings. By position, being member of every part of the health care system, they can become critically needed leaders in emergency management and disaster preparedness. Nurses may manage community setting as well as hospital ward. They can play vital role in restoration of public health under disaster condition (water, sanitation, food, and shelter) and identification of high risk and vulnerable population including unique needs of children in disaster.

This project has explored how the data collected by local nurses could become the basis of the daily community health information system, which could be the monitoring model and benchmark of Nepal toward SFDRR from the point of view of nursing science. The Nepali local nurses gather first-hand information from evacuees in shelters and transmit data in near real-time communication to other health organizations, who would make informed decisions for prevention of communicable diseases before an outbreak, and enhance organizational development through teamwork around data collection, and to improve the quality of care by linking community and government surveillance records.

Acknowledgement: This project was funded by Japan-Nepal Urgent Collaborative Projects Regarding the April 2015 Nepal Earthquake within the J-RAPID Program

eBayanihan: Web based participatory disaster management system⁹ in the Philippines

About the case study

This case study provides a technology inclusive platform that allows the public to report disaster related information using a bottom up approach. The system includes a volunteer management system to address the need to provide information on various types of services and skills needed during the response phase of a disaster. This becomes a good community interface with the local government.

Reference Paper:

Regina M., Estuar J., Kaibara S. (2016): eBayanihan: Web based participatory disaster management system in Shaw R., Izumi T., Shi P., Lu L., Yang S., Ye Q. (2016): Asia Science Technology Status for Disaster Risk Reduction, published by IRDR, Future Earth and ASTAAG, Beijing, China, p. 86-87

Introduction

It is argued in substantive literatures that Disaster Risk Reduction [DRR] is important and essential in local level. Almost 25 years back, Maskrey (1989)¹⁰ made strong arguments for community based approach in disaster management. After that, different literatures and cases of disasters documented, argued and advocated for risk management at the local level (Shaw 2012¹¹). However, the definition of local varies from authors, context and countries. Some people argue that anything below national can be termed as local, however, in some cases, it is the local level governments where the focus should be, and in other cases, it is the sub-city or village or community level, where the emphasis of the risk management should be. While policies can be made in the government level [at administrative level: either province or city], the practices need to be taken at the community and household levels. Thus, in defining the local DRM (disaster risk management), there needs to be a clear link between the local governments and local communities, irrespective of the country and context.

Problem

⁹ Maria Regina, Justina E. Estuar, Ateneo de Manila University, Manila, Philippines and Sakiko Kanbara, University of Kochi, Kochi, Japan

¹⁰ Maskrey A. (1989): Disaster Mitigation: A Community-based Approach. Oxfam, Oxford

¹¹ Shaw, R. (2012a): Community Based Disaster Risk Reduction, Emerald Publisher, UK, 402 pages

Participatory methods (RRA: Rapid Rural Appraisal, PRA: Participatory Rural Appraisal, PLA: Participatory Learning and Action, etc.) have been developed and used for a wide range of purposes during the last few decades. Many participatory methods have been adapted to local situations and used according to local needs. PCVA (Participatory Capacity and Vulnerability Assessment) has been a common practice in different parts of the world to facilitate the views of local communities. Some of the key tools are: Resource Map/ Hazard Map and Transect Walk; Historical Timeline and Long Term Trend Analysis etc.

Although the PCVA is intended as a community- based exercise, in many places it can be difficult to carry out the work without the approval of local government authorities. While this can present a challenge, it can also be an opportunity. Firstly, local officials can be useful key informants and can contribute to the PCVA sessions on Governance Analysis and other local knowledge. Secondly, it may help to increase government understanding of local issues and create better linkages between the community to the government for support in implementation of community action plans. Thus, for any sustainable community based initiatives, be it before, during or after a disaster, there is a strong need to community local government collaboration. Often, the local NGO (non government organization), local universities or local private sectors bridge this gap.

Approach / Stakeholder participation

In 2014, *eBayanihan* (ebayanihan.ateneo.edu), a web and mobile nationwide participatory disaster management system funded by the Philippine Council for Industry, Energy and Emerging Technologies Research and Development (PCIEERD), Department of Science and Technology (DOST), Philippines, and *SHEREPO*, a web and mobile based application shelter reporting system which captures and maps human security variables began with feasibility study of integrating human dimension and human security in a disaster management system, merging the two systems through the JRAPID Program, through the Japan Science and Technology Agency (JST).

eBayanihan provides a technology inclusive platform that allows the public to report disaster related information using a bottom up approach. The system includes a volunteer management system to address the need to provide information on various types of services and skills needed during the response phase of a disaster.

eBayanihan changes the way we respond to disasters by letting our voices be heard by the ones who can truly help. The eBayanihan system serves as framework for posting, processing, modeling, analyzing, visualizing and curating information related to disaster. **eBayanihan** empowers every citizen towards a more resilient community. Following are the key features of **eBayanihan**.



Figure Key features of **eBayanihan** (source: <http://ebayanihan.ateneo.edu/#features>)

The system has embedded **SHEREPO** to add the needed additional feature of providing near real time information on the human security variables, namely: food, water, clothing, shelter, sanitation and safety. The system has a notification feature that provides direct notification to persons and agencies managing the response clusters.

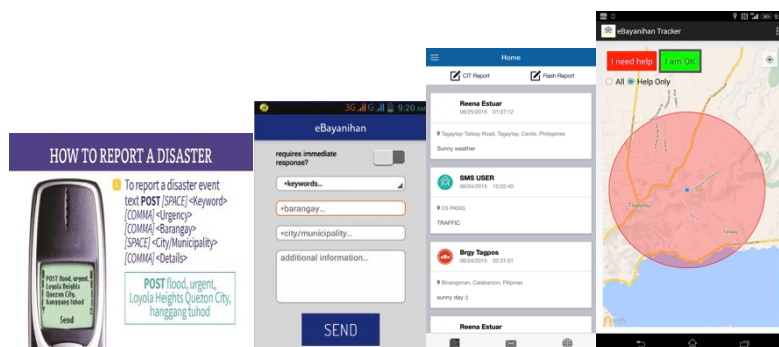


Figure. Screenshots on how to report a disaster

The system has been developed using an agile approach, incorporating features through modules and web services. The system serves as a base platform or an engine that can be modified to integrate or work with other similar systems, as tested during the 2015 Typhoon Lando (Koppu) where it has been made interoperable with Project AGOS of Rappler. Aside from data capture, the system also uses statistical and machine learning algorithms in modeling validation of crowd sourced reports, thematizing, visualization and reporting. The system is developed using open source technologies.

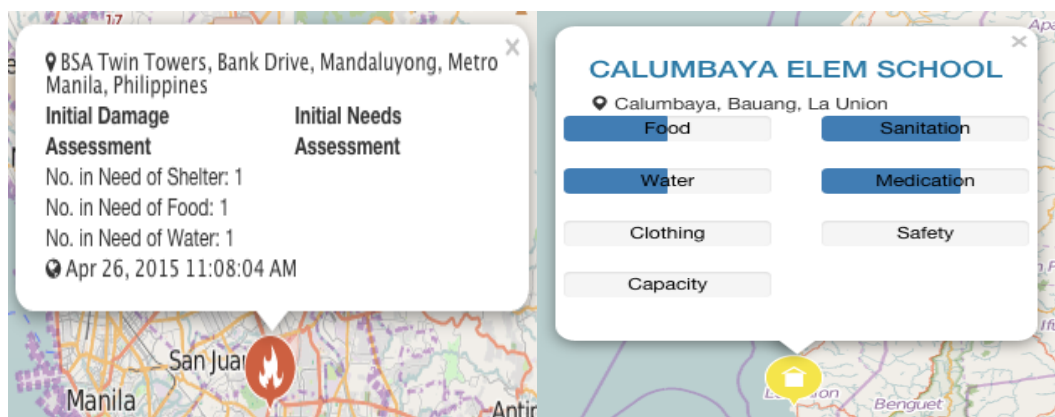


Figure. Screenshots of usage of eBayanihan

Innovation

The project is an example of a multidisciplinary approach in solving a very complex problem such as disaster management. Initial approaches in disaster mitigation are single dimension, e.g. based on hazards. Inclusion of human dimension and human security provides information on resiliency or vulnerability status of a certain location. This integrated approach strengthens disaster management and mitigation as it provides a system that facilitates a two- way approach in the flow of disaster information. The system, designed as a social networking platform specifically for disaster, is designed to be dynamic, sustainable and scalable.

Conclusion

This case provides a unique participatory platform for sharing local information from the communities, which can be used in different ways of decision-making: during, before or after a disaster.

Earthquake Safe House in Nepal

About the case study

This study was conducted based on an interview as well as the project site visit with National Society for Earthquake Technology (NSET).

Introduction

On 25th April, 2015, at 11:56 local time, a massive 7.6 magnitude earthquake struck Nepal, with the epicenter in Gorkha District (north-west) of Kathmandu and south of the China border. Dozens of aftershocks followed, including a 6.7 magnitude earthquake on 26th April 2015 at 12:54 local time. The earthquake has been found with a maximum Mercalli Intensity of IX (Violent). Epicenter of main shock is approximately 34 km (21 mi) east-southeast of Lamjung, Nepal, and its hypocenter at the depth of approximately 15 km (9.3 mi). It is the most powerful disaster to strike Nepal since the 1934 Nepal-Bihar earthquake. These areas are densely populated, including remote villages perched on hilly areas.

National Society for Earthquake Technology (NSET), founded in 1993, aims to foster the advancement of science and practice of earthquake engineering and technology for mitigating the earthquake risk and increasing the seismic safety, to enhance professionalism, professional engineering and scientific ethics and to further the objectives of the International Association for Earthquake Engineering as applicable to Nepal.

Problem

Nepal is vulnerable to earthquakes in multiple reasons: geographical condition, building structure, economic condition, and awareness of people. In case of the earthquakes in 2015, over 755,000 houses were damaged or destroyed. These were mostly traditional stone-mud and brick-mud structures built and occupied by the rural poor. The majority of these houses were non-engineered, constructed instead by home owners and with little consideration of seismic risks or building codes. The immense structural damage to housing after the earthquake highlighted many areas of vulnerability. These include construction workers' and homeowners' lack of awareness and training in earthquake-safe construction – especially in rural areas, as well as the absence of a national curricula, standards, guidelines and manuals for training individuals involved in housing construction. Inadequate compliance with building codes also contributed to the scale of the damage.

Approach / Stakeholder participation

The five-year, \$10.3 million Baliyo Ghar project, implemented by the National Society for

Earthquake Technology-Nepal (NSET), is a key part of USAID/Nepal's reconstruction portfolio. Designed to help homeowners and communities rebuild in a way that increases their resilience to future disasters, Baliyo Ghar is closely aligned with the Government of Nepal (GON) owner-driven housing reconstruction project which empowers and supports homeowners, allowing them to build back safer. Baliyo Ghar established district- and local-level reconstruction technology centers, construction models, and demonstration homes. Project mobile units provide technical assistance to homeowners at the household and community level. At the national level, Baliyo Ghar supports the GON in developing improved and standardized training curricula and procedures to be used during masons and engineers training and while orienting homeowners.

Develop Improved and Standardized Training Curricula and Procedures:

Baliyo Ghar works closely with GON counterparts – such as the Department of Urban Development and Building Construction and the Council for Technical Education and Vocational Training – to integrate earthquake-safe construction principles and technology into existing training materials. The project is improving and standardizing the training curricula for masons and other construction workers country wide. With GON counterparts, Baliyo Ghar is working to establish a formal system for skills testing and mason certification – both critical to professionalizing the field of masonry.

Train Masons & Engineers on Disaster-Resilient Construction Technology:

A key component of Baliyo Ghar is the training of masons, engineers, and other building tradespeople in earthquake-resistant construction technology and techniques. Courses are conducted at district and local levels for both existing and new construction workers. With a larger and better trained cadre of construction professionals, earthquake-affected households will have access to the human resources they need to rebuild safer homes.

Enhance Public Awareness & Adopt Disaster-Resilient Reconstruction:

Baliyo Ghar deployed mobile teams to conduct orientation sessions for homeowners at the local level as well as to provide technical assistance to masons and homeowners during the reconstruction process, which is expected to take several years and will require sustained technical support. Each household receives on average 10 direct one-on-one interactions with a mobile team before and during construction. District and local resource centers and demonstration housing provide technical assistance and support for affected communities. The project is producing a variety of tools for education and outreach on safer construction practices, including mass media public awareness campaigns via radio, television, social and print media.

Innovation

The feature of the program can be illustrated by its tag line 'Blanket technical support to every household.' The program was aiming at ensuring build back safer in earthquake reconstruction by

scaling up awareness on disaster resilient construction. It did not only provide training to masons but also to households by providing training to 1468 masons, and reaching 30152 people through 1074 Orientations for awareness.

More than 2,500 homes have been built to modern safety standards through Baliyo Ghar technical assistance. 9 Reconstruction Resource Centers established to provide training and technical assistance support for housing reconstruction. 3,800 masons and other building tradespeople trained on disaster-resilient building construction. 2,200 GON engineers orientated on disaster-resilient construction technology to improve their ability to inspect homes. 37,996 homeowners and other affected people provided critical information on the importance of disaster-resilient construction.



Conclusion

More than 70% of reconstructed houses at program are will compliance to the NBC. (This is good opportunity to build safer houses at rural areas in huge numbers with in certain time period) . At least one trained masons will be involved in housing construction to ensure safer construction. House owner will be aware about the safer construction practices. □ Awareness on disaster resilient construction will scale up. Policy and guidelines will be developed for safer construction and submit to the Government.

Community-based Malnutrition Prevention in India

About the case study:

With the support of the European Commission Humanitarian Office (ECHO) and in partnership with the Asia Disaster Reduction and Response Network (ADRRN), Elrha's Humanitarian Innovation Fund hosted an innovation capacity-building workshop in Jakarta, Indonesia, during the week commencing 29 May 2017 for organizations working in the Asia-Pacific region. The HIF and ADRRN invited newly formed and early stage partnerships, with the lead organization based in the region. This case study was developed based on the workshop.

Introduction

After any humanitarian crisis women and young children are most vulnerable and suffer lots in terms of morbidity and mortality post-disasters. Malnutrition among pregnant-lactating women and young children further increase this many folds. Malnutrition increase the chance of death among children by 4 times. Even a healthy child became malnourished in 2 weeks under humanitarian crisis situation, our intervention starts both before crisis and immediately after crisis which will reduce the chances of child becoming malnourished post crisis in areas know to affected regularly by disasters. Healthy body with healthy mind is the first prerequisite for achieving long term goal of making a community resilient, our project is very well alined with this objective of making communities more resilient in long term as per Sendai Framework for DRR. Our 1000Days Food bank is most useful in the disaster zones/states which is frequently affected by annual natural disasters like floods or cyclones and in man-made conflict zones as well. This community-based Food Bank can establish and offer the social storage of food to the people in need, who can't afford to keep enough food storage in case of disasters.

Problem

First 1000 days from conception till 2yrs of age are most critical for child brain development and overall growth. Any malnourishment during this phase of life causes irreversible damage to brain. Unfortunately, even normal child became malnourished within 2weeks under humanitarian crisis situation due to poor nutrition to lactating mothers and children under 2yrs of age.

Existing malnutrition program don't target much on Maternal nutrition except nutritional counselling. Latest evidence shows that one third burden of malnutrition can be reduced by proving nutrition to mothers during her pregnancy. our program targets both pregnant-lactating mothers and children upto 2yrs.

Approach / Stakeholder participation

To provide additional nutritional supplements to all Pregnant women & children upto 2yrs of age before, during and after disasters in areas known for frequent disruptions due to natural or man made calamities

1. Implementing partners- Organisations working at grassroots level in different areas frequently affected by floods or cyclones or other disasters
2. Organisations who can bring different stakeholders to support this 1000Days food bank
3. Local government bodies or disaster management authorities from implementing area's
4. Corporates who can support this program under their CSR scheme. Material companies can provide the best food preserving and packaging technology, and food companies can provide them suitable food in terms of both nutrition and preservation, etc.
5. Experienced mothers in local communities can give their advice about the best food for storage in terms of local context, culture, and cost.
6. Doctors can suggest the best food for storage from the medical point of view.

Innovation

The project aims to establish community based Food bank (1000Days Food Bank) for pregnant and lactating mothers & children under 2yrs to provide protein energy rich, locally made nutritious food items on a sustainable basis involving various stakeholders in the regions frequently affected by Natural & Man made calamities.

It can realize systematic storage of nutritious food by taking advantage of the community based micro-insurance platform, which help communities especially when disasters hit. And the food storage is protected by respective cutting edge technologies like earthquake resistant structure, effective food preserving technology and so on.

-1000Days Food Bank will be disaster resilient (including earthquake) and can withstand flood, cyclone and fire easily.

-The project will exclusively target pregnant-lactating mothers & children upto 2yrs i.e 1000Days. Currently humanitarian organisation starts their response towards malnutrition only when malnutrition already starts in the relief camps

-This project has a plan of introducing the most effective inventory management system by information technology. It can help to maintain the best balance of the food inventories, as well as can control the whole Food Banks in an area and even nation totally.

-It also has the total delivery system using the special food trucks designed for

Conclusion

This idea of 1000Days Food bank can easily be established in areas frequently affected by disasters

like floods, earthquakes & cyclones across globe and can significantly improve the maternal & child health outcomes under humanitarian crisis if implemented well.

It can improve the following health indicators

1. Maternal Malnutrition which ultimately leads to Low birth weight babies
2. It will increase birth weight of new born babies born under humanitarian crisis or inside relief camps
3. It will also create a good incentive for pregnant mothers to get themselves registered early during ANC period
4. It will increase Institutional delivery and subsequently reduce many Infant and maternal mortality.
5. If implemented properly it can significantly reduce the number of severe malnourished children under 2yrs of age in relief camp setting.

Legal Document Protection in the Philippines

About the case study:

With the support of the European Commission Humanitarian Office (ECHO) and in partnership with the Asia Disaster Reduction and Response Network (ADRRN), Elrha's Humanitarian Innovation Fund hosted an innovation capacity-building workshop in Jakarta, Indonesia, during the week commencing 29 May 2017 for organizations working in the Asia-Pacific region. The HIF and ADRRN invited newly formed and early stage partnerships, with the lead organization based in the region. This case study was developed based on the workshop.

Introduction

The project aims to address the common problem of affected households after big disaster where their entitlements as affected households and their efforts to rebuild their homes and their livelihoods are hampered by lack of or destruction of documents on legal identity, household assets and participation in social protection systems. We see the problem as three-fold: 1) Acquiring the needed legal identity documents and other important legal documents such as tenurial rights and household assets 2) Enrollment and participating in social protection systems (such as the Government Social Insurance System for government employees, Social Security System for employees and selfemployed persons, insurance plans and micro-insurance schemes, PHILHEALTH, HMOs) 3) Securing these documents on legal identity, household assets and participation in social security system.

Problem

At present, the requests of these legal documents is done at an individual level based on need or required by an agency or government unit. The requests also involves payment from the end of the person requesting thus it is not part of the priority of the urban poor communities to obtain. In time that a disaster strikes access to services can become a challenge to the vulnerable sector such as that of the urban poor communities.

Requesting the legal documents in one bulk; as an expressed need of an organized community is also a challenge since the agencies usually entertains requests at an individual rather than community level.

Approach / Stakeholder participation

The project is considered as an innovation since access to legal documents/identification is seldom readily compiled by an individual or a community, it is usually requested by the individual if needed and if he/she can provide the necessary payments needed to secure the documents. The

process of collecting the necessary documents at the community level, digitizing and storing the data in cloud storage for the purposes of accessibility so that in the event that a disaster strikes such as flood or fire the members of the community can readily access and present their documents needed to avail of government services that can assist them in coping in the stress brought about by the experienced disaster.

These will help affected families cope with their damages, losses and needs by: • Facilitating entitlements such as relief assistance from government agencies and other donors • Assisting in rehabilitation and recovery efforts in terms of housing and livelihoods

The project will be implemented in through partnership with the community and Non-Government Organizations that provides legal assistance and capacity building for communities in the areas of disaster preparedness and response.

The project aims to document the process and learnings in the implementation to a pilot community, the experience will then be shared to the local government and if it will be possible to be replicated in a barangay level.

Community Organizing – The Foundation for the Development of the Urban Poor (FDUP) will work closely with the pilot community association, assisting in the data gathering and identification of legal documents that needs to be gathered.

Legal expertise – The Initiatives for Dialogue and Empowerment Through Alternative Legal Services Inc. (IDEALS) will work closely with the National Government Agencies to provide assistance to the community on how to request for the legal documents. The organization will also provide to the community the importance of requesting and obtaining a copy of the identified documents.

Linkaging – working with Information Technology experts in ensuring that the process of digitizing the obtained legal documents will be accessible to the community as well as not compromising the said documents.

Innovation

The project will address all three concerns through two main strategies: 1) Linking up with proper government office and conducting community roadshows/ missions to facilitate the acquisition of needed documents for legal identity, tenurial rights and household assets, and participation in social protection systems. 2) Securing the documents by digitizing them and storage in multiple sites (including cloud storage) so that even if the original documents are destroyed by disaster, it would be easier to reconstitute these documents with available digital copies

Conclusion

A possible challenge that can be faced in this innovation is the acceptability of government agencies in the process of saving the digitized copies of the legal documents. Questions that can be posed by this innovation is the security of the documents being stored in a cloud storage, the security features that will be used. These questions can be addressed by working closely and conducting dialogues with IT experts as well as the National and Local Government units.

Another possible issue is the process of requesting legal documents in bulk (a community association requesting documents rather than an individual filing a request); these issues can be worked out once the pilot community as an organized group will conduct a series of dialogue as to how their requests can be worked out.

Sustainable Plastic Use in Nepal

About the case study:

With the support of the European Commission Humanitarian Office (ECHO) and in partnership with the Asia Disaster Reduction and Response Network (ADRRN), Elrha's Humanitarian Innovation Fund hosted an innovation capacity-building workshop in Jakarta, Indonesia, during the week commencing 29 May 2017 for organizations working in the Asia-Pacific region. The HIF and ADRRN invited newly formed and early stage partnerships, with the lead organization based in the region. This case study was developed based on the workshop.

Introduction

Polyfloss insulation can be deployed as a process or as a product used in the erection of temporary shelters or to retrofit/winterise those shelters. The tech for the process is easily deployed and uses locally-sourced waste plastics, cutting supply chains and costs, contributing to local livelihoods. This innovation focuses on the application of the insulation in a response and recovery context and would be tested and developed for the winterisation of temporary/IDP shelters specifically. The testing and exploration of the versatile Polyfloss wool would also extend to those winterisation products distributed to individuals, including jackets and blankets

Problem

Existing solutions to insulating temporary shelters depend on bringing materials (e.g. insulating boards or foams) to an area and distributing them as per any other product, thus adding to local waste.

Approach / Stakeholder participation

Field Ready brings a wealth of expertise in innovation in international emergency response, supply chain analysis and innovating for efficiency, especially in a humanitarian context. Field Ready also brings practical skills in humanitarian making and significant national and international connections in design and manufacturing. Nepal Innovation Lab has experience incubating and supporting small organisations innovating in the international humanitarian and development space. The Lab uses a unique support model to guide incubated organisations to make the most from opportunities like this capacity building workshop. Rural Development Initiative also brings in technical expertise in engineering field, namely shelter construction, electronics and electrical engineering. The organization members also have experience in disaster response especially in construction of temporary shelters for survivors as well as educational institutions.

Post-disaster, or in a time of disrupted supply chains and challenges to distribution, the Polyfloss process uses waste plastics from the target area to create a product that can be processed with minimal technology and training and used in insulation with comparable results to the best performing glass fibre insulation on the wider market. The process tackles both waste and supply-chain challenges as well as efficiently meeting immediate needs in post disaster and winterisation contexts. Polyfloss can be used to produce a number of insulation products including; wall insulation boards and rolls, self-contained insulating pillows for use in roof or wall cavities, compressed blocks for underfloor insulation, roof tiles and loose wool for enclosed cavity insulation. The flexibility, versatility and environmental benefits of this product means it is in a different class to other insulation products.

Innovation

The Innovation is the use of a novel plastics recycling process for building insulation and other relevant applications in post-disaster and shelter contexts. The solution uses the Polyfloss plastics recycling process to turn locally-sourced waste thermoplastics into a reusable and versatile insulating wool. Compared to glass fibre, the Polyfloss wool is more energy efficient in production, with a lower carbon footprint, not harmful to those working with it and can be adapted to be used in many more applications. For instance the wool can be used in building-scale insulation, rigid plastics production, compression moulding(eg. tiles for floors and roofs), production of string and fibre and even stuffing for padded jackets in winterisation contexts.

Conclusion

Winterisation and shelter needs of displaced people will be met using a cheap and immediate process that at once meets the need for insulation and also provides livelihoods, environmental benefits and potential future business opportunities for affected communities. The product can be reused. For instance, if the insulation is used in a temporary shelter it can be repurposed when the shelter is moved or a permanent shelter is erected. Because the plastics used for Polyfloss are thermoplastics they are easily reused in other ways too, for instance through heated compression moulding to make rigid plastic objects like floor tiles, roof tiles or rudimentary wall boards

The challenge facing the project is about gaining test evidence (i.e. data logged performance of the insulation) and illustrative case studies that can act as proof of concept to enable investment from the humanitarian and business community. The establishment of a viable and sustainable business model is also a key concern.

Refugee Assets in Australia

About the case study:

With the support of the European Commission Humanitarian Office (ECHO) and in partnership with the Asia Disaster Reduction and Response Network (ADRRN), Elrha's Humanitarian Innovation Fund hosted an innovation capacity-building workshop in Jakarta, Indonesia, during the week commencing 29 May 2017 for organizations working in the Asia-Pacific region. The HIF and ADRRN invited newly formed and early stage partnerships, with the lead organization based in the region. This case study was developed based on the workshop.

Introduction

Large numbers of refugees are educated and held skilled and professional jobs before fleeing. This talent pool is currently hidden from global employers that need to fill talent gaps. Although labor mobility as a potential path for refugees has been the subject of academic writing for years, Refugee Talent is an entity currently working to establish this. The goal is to place refugees in jobs in countries around the world where they can regain their self-reliance through private sector employment. Refugee Talent has developed an online “talent catalog” where refugees enter information about their work experience, education, and skills. Host International (HI) aims to extend the pilot project to Nauru and the Asia Pacific region, in partnership with Refugee Talent with a goal of identifying practical and replicable solutions to the barriers that have previously prevented labor mobility for refugees in the region.

Problem

Many current host governments prohibit the displaced from working or moving freely outside camps established to temporarily house them. The consequences of long term displacement include aid dependence, stagnation of skills and professions, violence and exploitation, which devastates lives and leads to conflicts between the host communities and the displaced. Most host countries are developing nations with their own infrastructure, health and sanitation needs – they have a responsibility to their own citizens that they may struggle to fulfill. Some countries have the will but not the capacity to improve the conditions of the displaced. While this partnership is being implemented initially in Nauru, there is a desire to apply the model in other regions of the Asia Pacific and beyond. Traditional resettlement pathways are not sustainable and solutions are needed in places where refugees are and employment is a key factor in improving well-being and independence. Providing new opportunities to people who have been forced to flee their homes to find safety, employment and independence, provides humanitarian relief to both the displaced and their host countries.

Approach / Stakeholder participation

Refugee Talent brings expertise in: -IT entrepreneurship -Leading research and policy in labor mobility for refugees -International refugee advocacy and human rights law -International corporate and strategic partnership development and outreach.

HOST International brings expertise in: -Employment Services supporting economic independence for refugees via job placement, career planning, access to vocational training and self-employment support. -Individualized casework and support services for refugees with temporary, ongoing or complex needs, using strengths-based and trauma informed practice and focusing on community integration. -Capacity building to improve host country ability to support and understand refugee needs, and for refugees to develop independence and personal agency. - Strategic community and corporate partnerships with a focus on expansion within the Asia Pacific and experience working closely with other stakeholders to achieve community outcomes. -Staff with 20+ years' experience working directly with vulnerable populations, including refugees. - flexible and agile.

Innovation

More than 40% of employers worldwide reported difficulty finding skilled workers, while refugees with these skills languish in exile. TBB is creating a private sector solution to this challenge by linking skilled refugees with employers with skill gaps. While there are organizations working to match skilled refugees with employment locally, TBB is the only organization seeking to establish international labor mobility as a new pathway for refugees. The partnership between TBB and HI will change the image of refugees in the region and provide the first opportunity to use labor mobility as a tool to restore self-reliance to these refugees. TBB working with HI will provide a genuine alternative to traditional and unsustainable resettlement pathways. The model covers the 4 Ps of innovation: -Product innovation: introducing a new product to allow refugee communities to access the international job market through skilled migration pathways. -Process innovation: establishing global partnership networks comprised of employers, NGOs, research and policy professionals, refugee support services, legal professionals and the UNHCR to support the process of refugees applying for skilled migration opportunities. -Position innovation: shifting the position of skilled migration as an option for refugees and giving the international private sector access to this hidden market. -Paradigm innovation: shifts the paradigm of settlement options for refugees to include skilled migration.

Conclusion

Providing talented and skilled refugees with global employment will enable refugees to provide for

themselves and their families. Humanitarian assistance can be better focused on those who are unable to support themselves. Employers with hard-to-fill jobs will benefit from an untapped talent pool. Communities in the receiving countries will gain talented workers who contribute to the completion of essential development projects, bring diverse skills to the workforce, and bolster local economies. Through international employment, refugees can continue to enhance their careers and gain new skills that are valuable for post-conflict economic recovery in source countries. Labor migration can be a crucial element of the comprehensive approach to supporting and empowering refugees. The goal is to create a viable private sector solution for refugees around the globe and improve attitudes about refugees. The plan is to scale up to connect tens of thousands of displaced people to international employment around the world via an online platform. Once established, this approach can be used to provide employment opportunities and improve the plight of uprooted people in a variety of global settings by generating economic independence.

Climate Adaptive Farming in Indonesia

About the case study:

With the support of the European Commission Humanitarian Office (ECHO) and in partnership with the Asia Disaster Reduction and Response Network (ADRRN), Elrha's Humanitarian Innovation Fund hosted an innovation capacity-building workshop in Jakarta, Indonesia, during the week commencing 29 May 2017 for organizations working in the Asia-Pacific region. The HIF and ADRRN invited newly formed and early stage partnerships, with the lead organization based in the region. This case study was developed based on the workshop.

Introduction

Approx. 133,682.4 hectares (90%) of total agricultural land in Gunungkidul District are rain-fed dry land with high dependence on the precipitation (Muazam, 2015). Irrigated land is very limited. Rain-fed rice fields are categorized as sub-optimal with low fertility soil and limited water availability (Prihasto, 2013). According to Agricultural Research and Development Agency in 2013, the rice production for the whole district was relatively low at the range of 3 to 3.5 tonnes per hectare and was very likely to be improved.

Problem

The pattern shifting of rainfall and dry seasons, as the direct impact of global climate change, has caused the exposure of extreme conditions towards population in Gunungkidul District. For illustration the high evaporation rate which resulted in more communal ponds to dry up in alarming speed, and have forced the people to buy water for household and agricultural purposes. Another threat would be on high occurrences of crops failures mainly due to failure to predict the seasonal change. The use of chemical fertilizer such as pesticides and others chemical substances help grow the plants. But, in other hand its also drained the soil nutrients in the long run.

Approach / Stakeholder participation

The daptation program in 4 villages in Gunungkidul district of Yogyakarta was designed to accommodate conservation of an artificial lake as source of water during long dry season and to create pilot on climate adaptive farming which combines organic farming, biological pest control and drought resistant seeds from local variety. The program was carried out in collaboration with LGUs in Gunungkidul (such as Public Work Agency, Food and Agriculture Agency, Food Crops and Horticulture Agency, and District Disaster Management Agency), the Institute of Agriculture, Fisheries and Forestry in the sub-district level, local authorities, and farmers' groups. This year the farmers are not suffering from crop failure nor pests attack, evenmore the harvest is higher

than the previous traditional farming technique and those using non-organic fertilizer.

Innovation

YEU facilitates farmers in climate adaptive farming which combines organic farming, biological pest control and drought resistant seeds from local variety to reduce the risks of crop failure and pests attack, evenmore the harvest result is higher than the traditional farming practices. The biological pesticides and drough resistant seeds are available locally which allo for replication in other areas in Gunung Kidul.

This innovation is not only maintaining local wisdom (through preservation of local variety) but also improving famers' traditional techniques (in pest controls, organic farming). The farmers can reduced the risk of crop failure and pests attack so that it can improve their livelihood condition. The farmers also can reduce the cost for farming for buying fertilizer, pesticides or seedlings since they can make it by them selves

Conclusion

By applying this innovation on climate adaptive farming the farmers will be able to reduce the risks of crop failure and pest attack. The climate adaptive farming will allow the farmers to use local variety with optimum result, the use of organic fertilizer and biological pesticide are also environmentally friendly. As a result, it improves the livelihood of the farmers and gradually restore the soil conditions. The challenge we face during the development of innovation is deciding which local variety are suitable for the specific farmland for demonstration plot. So far YEU has identified two local varieties that are suitable for dry areas because each has different characteristic. It is also challenging to find farmland that meets the requirement for organic demonstration plot, because it should be isolated (not contaminated from non-organic farming). Therefore, thorough field checking is needed to select the demonstration plot.

In the beginning, the farmers are also hesitant to provide wide farmland for organic farming demonstration plot because they are worried that the harvest results are very low compared to their practices with chemical fertilizer. Therefore, peer sharing with farmers groups that have practising organic farming and committment from farmers are strongly encourage.

To ensure sustainability, farmers are also need to be capacitated to be able to transfer the knowledge and skills gained throughout the process to other farmers' groups. Therefore it requires support to make materials that are famers friendly (in terms of language, terminology and visualization).