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## Education For Sustainable Development And Disaster Management: The Gujarat Experiences Of India

### BACKGROUND

The paradigm shift in the disaster management has changed the focus on preparedness and mitigation mode from the response and recovery mode. Measures undertaken for preparedness and mitigation can be broadly categorized under two heads namely structural and non-structural measures. The structural measures include construction of disaster resistant buildings, construction of embankments, etc. The non-structural measures include awareness creation, capacity building of different stakeholders, insurance, etc. The non-structural measures are in other words education of the community and all other stakeholders regarding all aspects of disaster management with a special focus on reduction and preparedness.

The target group covered under non-structural measures can be broadly categorized into two namely General public/Mass and Government/Non-government employees & Volunteers. The former group is being reached through mass media and their capacity building covers awareness, Do's & Don'ts, etc while the capacity building of later group cover specialized training and skill enhancement.

### OBJECTIVE

This paper is an attempt to capture some of the major non-structural initiatives undertaken by the Gujarat State Disaster Management Authority [GSDMA] for disaster preparedness and mitigation. The Gujarat State Disaster Management Authority is the apex body of Gujarat State, India for disaster management. Since its inception 8th February 2001, it has won several international awards such as the UN Sasakawa Award, 2003; Green Award of the World Bank; CAPAM Award [Gold Medal] 2004

### ACTIVITIES

■ **Shake-table demonstrations:** In order to imbibe the currency of seismic features, shake-table demonstrations were held at different locations in the earthquake-affected area by UNCRD. In this demonstration, two similar type of houses are constructed of which one had seismic features like lintel band, gable band, etc while in other these are missing. A tractor hits these houses and the house without non-seismic features caves in while other remains intact. These live demonstrations helped in inculcating the importance of seismic features among masses. Videography of these demonstrations was done and the video-film was shown in approximately 3,000 villages.

■ **Community based disaster management program:** Community is the first responder in any disaster hence, GSDMA has initiated a community based disaster management program with UNDP in nearly 4170 villages, which have been identified on the basis of the vulnerability to different types of

disasters. The program focuses on the capacity building of community through awareness, training and institutional arrangements. The program is based on large-scale involvement of village youth. It involves identification of youth volunteers from the village and preparation of different teams for community level disaster response. These teams viz., Early Warning Group, First Aid & Medical Group, Evacuation Group, Rescue Group, Shelter Management Group, shall be responsible for different tasks assigned to them for disaster preparedness. The youth of all the group are imparted with the specific training as required for carrying out the role assigned to their respective groups. They are provided with the necessary material support. The goal of the program is long-term capacity building of the community and reduction of dependence on any external source.

■ **Owner-driven reconstruction- learning by doing:** In order to inculcate the importance of seismic features among people, the housing reconstruction program undertaken in the aftermath of the Kachchh earthquake was mainly owner-driven. Under owner-driven philosophy, onus of reconstruction is on the owner and hence his continuous involvement in the reconstruction process is ensured. Retrofitting, gable band, lintel bar, etc are now part of their day-to-day gossip and discussion in the earthquake affected area and involvement of owner in the process, per se, is the major factor for this awareness.

■ **Special campaigns:** GSDMA carry out a special campaign before Diwali, a major festival of India in which people fire crackers, for reducing accidents. This campaign focuses on Do's & Don'ts pertinent to this festival spread through mass media like radio, newspaper, etc. During Uttarayan, a festival of Gujarat-India in which people fly kite, a number people gets minor to fatal injury due to various reasons. Just before this festival a massive campaign is being carried to create awareness.

■ **Plain Truth:** GSDMA publishes a monthly newsletter named 'Plain Truth' for information dissemination related to the ongoing rehabilitation and reconstruction program as well as the long term disaster management measures and technological developments in the field of disaster management. This newsletter is circulated free of cost to different stakeholders including government departments, NGOs, etc. These newsletter are also uploaded on the website of GSDMA.

■ **Awareness through Audio-visual Media:** Folk songs, folk dance, street plays, Video-shows, etc are being used for awareness creation. Some of these are: Street-plays titled 'Maro Ghar Panki No Maalo' (means my house is as vulnerable as bird's nest) is being played for awareness creation and opinion building on urban reconstruction process. These plays are based on the themes on the importance of seismic resistant construction, implications of violating the Gujarat Development Control Regulations (GDCR), etc.

A cassette 'Maare Chhhe Imarat' (means 'I own a house') was prepared in association with a local NGO.

The film uses traditional folk music form to communicate the concept in the simplest manner to rural audiences.

A audio/videocassette/CD in the form of jokes, involving the popular regional artist was prepared and widely distributed

■ **Exhibitions/Fairs:** During exhibitions/fairs, stalls on different themes of disaster management are being put up by GSDMA. Literature such as Do's & Don'ts related to specific disasters, general awareness on disasters, etc is being distributed to visitors.

■ **Home owners' guide for earthquake safety:** This booklet is a handy guide to those who are going to buy a house as it has consolidated checklist of issues pertaining to it.

■ **Disaster Management-an agenda of Gram Sabha:** During gram sabha (meeting) villagers discuss the various facets of disaster management. A Gram Sabha is body of adult members (above 18 years) of village in which different issues are discussed.

■ **Calendar on Disaster:** A calendar depicting different disasters and Do's & Don'ts related to each has been prepared and circulated among different stakeholders

■ **Children-catch them young:** In order to usher the culture of disaster preparedness and mitigation, special attention has been given to children. Essay writing competition, painting competition on various themes of disaster management has been organized. A painting book on disaster theme has been prepared for children.

■ **Advertisement panels on buses:** Panels on different themes of disaster management were put on the government buses.

## **INVITATIONS FOR CAPACITY BUILDING OF OTHER STAKEHOLDERS**

■ **Masons' Certification Program:** In rural areas of India, masons design and construct houses and they learn this trade from hands-on experience. Most of the masons lack information related to the seismic features. In order to inculcate these skills, GSDMA launched Masons' Certification Program. Masons would have to take a pre-test in which they will be evaluated on ten skills. If a mason passes all the ten skills, he would be certified as trained mason. Rest will be trained on skills in which they were not able to pass the pre-test. Once masons are confident of the clearing test of skills which he was not able to clear during the pre-test, test will be conducted. On successful completion of all ten skills, mason will be awarded certificate. NGOs or any other agency can train the masons in skills which he lacked in the pre-test. GSDMA will make payment to the NGO/agency for training masons.

■ **Continuous training & skill updating program:** To train government officials, NGOs and communities on ongoing basis, an institute named Gujarat Institute of Disaster Management [GIDM] has been established by GSDMA. More than twenty training programs have been organized by GIDM, providing training to over 500 persons including, Collectors/district officials, government and municipal engineers, firemen and fire officers etc in

the areas of Disaster Management, search and rescue, seismic engineering, and other disaster related fields.

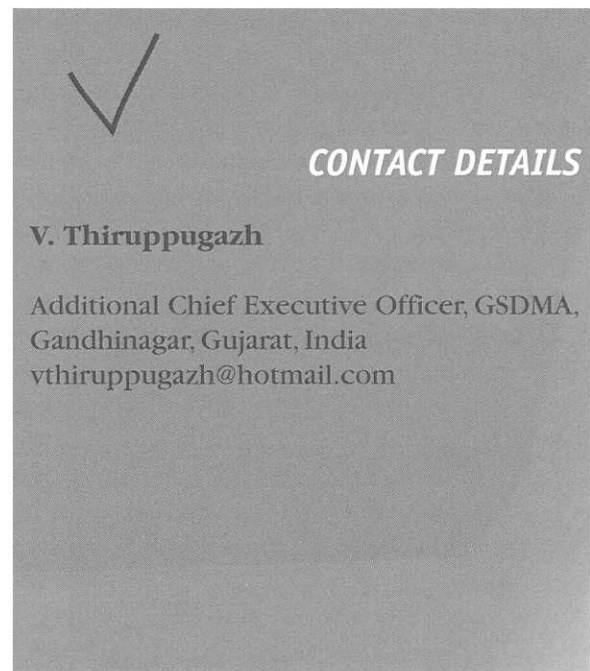
■ **Advanced level emergency response and rescue training:** Multi-disciplinary teams of 49 personnel have been given advance training in emergency response at the specialized institutes in Netherlands and Germany. In addition, these people have trained 163 more fire personnel in search & rescue. Training in Flood Rescue was organized by Nauka Talim Kendra (Montors) Vadodara for 90 Firemen /Fire Officers. In addition, 100 employees of a state enterprise (GNFC) have been trained in search and rescue

■ **Masons training:** Training modules and material (which included both theoretical and practical components) were prepared for imparting training to masons. Trainings were arranged at villages and taluka headquarters to facilitate easy access to masons for attending these programs. Considering the loss of income to the masons during the training period, arranged food, travel expenses, and daily per diem allowance to compensate their loss of wages were taken care of. Approximately 29,000 masons have been trained under this program.

■ **Engineers training:** Specialised training was provided to the government engineers, private practitioners, and for engineers working with NGOs. Training programs were conducted at various places involving reputed institutes in the field such as Indian Institute of Technology, Kanpur and Mumbai. Approximately 6,000 engineers have been trained under this program.

■ **Information exchange and sharing programs:** Disaster management is a dynamic field as new technology, best practices, etc are emerging. Hence, to acquaint the different stakeholders with these developments, workshops, seminars, etc are being organised and documented

■ **Revision in syllabus of civil engineering:** The syllabus of civil engineering has been revised to incorporate seismic engineering.



**CONTACT DETAILS**

**V. Thiruppugazh**

Additional Chief Executive Officer, GSDMA,  
Gandhinagar, Gujarat, India  
vthiruppugazh@hotmail.com

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## Mr. Mason: Transformation Of Informal Construction Workers To Respected Certified Masons

### **BACKGROUND**

The devastating earthquake in Gujarat, India, on 26 January 2001 started it all. As the initial euphoria of extending relief waned, and media attention shifted elsewhere, the survivors were stranded with no homes, dwindling aid flow, and a severe drought. Most families had no capital to reconstruct their homes and restart their lives. Few NGOs had stayed on to assist with rehabilitation, and rehabilitation schemes offered by the government were taking ages to get finalized.

### **OBJECTIVES**

This was when PNY happened. PNY (Patanka Navjivan Yojna), which means new life scheme for the village Patanka, was a collaborative effort of the national NGO SEEDS and a large number of national and international organizations to establish a model of self reliance in an earthquake affected community.

### **ACTIVITIES**

PNY, by the time of its completion, had accomplished the reconstruction and retrofitting of about two hundred houses, community buildings and infrastructure, all carried out by local people. The project merely provided orientation and training support, with limited material inputs to enable the addition of earthquake resistant features. A team of five project personnel worked with two hundred families and their hired masons to recreate the village. Many farmers out of work due to the drought got trained as masons in the process. The masons who were involved picked up special skills of earthquake resistant construction using the same old traditional material and design. The village, which originally had two or three masons, soon had a team of thirty well trained masons. Skills and confidence soared, but construction work in the village soon got over. What next?

■ **Shamta: Moving from response to resilience**

Based on the success of PNY, the initiative

spread out to cover areas on the fringe of the earthquake devastation zone. The team moved to Porbandar, in southern Gujarat, and with active participation of trained masons from Patanka, set up the Shamta (capacity) project in the local community. This was an initiative with wider targeting, covering mitigation and preparedness issues with a range of stakeholders including women, children, fishermen, farmers, and government officials. Mason training of course remained a central theme. The value the Patanka masons could infuse was immense, with people taking the advice of fellow Gujarati masons very seriously, particularly since they came from the heart of the earthquake affected zone. The talk this time was not about reconstruction of houses, but was more focused on making existing houses stronger, and creating water harvesting features to fight the drought.

In Gujarat the focus was shifting from response to mitigation and preparedness. However, other than in Gujarat there were millions of people living in vulnerable areas that had not been hit by an earthquake in recent times. What about them?

■ **Parvat Yatra: Learning from others' experiences**

It was time for the Gujaratis to step out of their state and teach their countrymen living in similar earthquake zones the lessons they had learnt the hard way. The destination was Himachal Pradesh, a Himalayan hill state in the northern part of India. Himachal had been hit by a devastating earthquake way back in 1905. There was no living memory of it. The upcoming centenary of the quake in 2005 presented a window of opportunity to create awareness around the issue. The SEEDS team and the trained masons from Gujarat launched Parvat Yatra (mountain journey), a campaign to demonstrate the importance of earthquake resistant construction in the region. Shake table demonstration, retrofitting activities, training workshops and community forums were organized under the campaign.

The local mason was emerging as the key to the safety of houses, schools and community centers. Yet he was neither educated, nor trained nor recognized. How to change that?

## **ACHIEVEMENTS**

### **■Mason Association: Trained, certified, recognized and federated**

Thinking started back home in Gujarat. A mason training program had been going on since the very first day of the whole process. Now it was time to add value to it. The state government recognized the need, and supported a mason testing and certification program launched by SEEDS. The local mason now had a chance to appear for a test, get graded, clear an examination and finally be certified as a trained mason and equipped with a very official looking identity card. A mason association was thus formed, with more members joining each day.

The local construction worker had become a respected Mr Mason.



## **LESSONS**

The biggest lesson learned was that given appropriate education and encouragement, invisible local workers can become the most effective and motivated disaster reduction workforce. This approach is far more cost effective and fruitful than heavily loaded mega projects involving mass construction and mass awareness components. It is definitely challenging as it involves a slow process of one on one interaction, and is difficult and time consuming to upscale. However, its inherent sustainability potential makes the challenges worth taking on.

## **FUTURE**

Stakeholders working in the development sector at field level should be targeted in education and training programs. The most important steps for this are to make such programs accessible and affordable for field workers.



### **CONTACT DETAILS**

**Anshu Sharma and Manu Gupta**

SEEDS, 315 Tower I, Mount Kailash, New Delhi - 110065, INDIA

Tel: (91-11) 30994155, 26498371

Fax: (91-11) 26498372

info@seedsindia.org

www.seedsindia.org