

# Smart Citizens Smart Habitat

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# कृषि क्षेत्र में आपदा प्रबंधन

**आ**पदाएं वास्तव में विकास से जुड़ा मुद्दा है। आपदायें विकास की प्रक्रिया एवं विशेषकर खाद्य सुरक्षा से संबंधित विकास कार्यों को सर्वाधिक प्रभावित करती हैं। आपदाओं के कारण लोग विकास के परिणामों से वंचित रह जाते हैं तथा गरीबी एवं लाचारी का जीवन यह सत्य है कि आपदायों को पूर्णतया नहीं रोका जा सकता, लेकिन उचित आपदा प्रबंधन के माध्यम से आपदाओं से होने वाले नुकसान को कम अवश्य किया जा सकता है। अभी फिलहाल पिछले कुछ वर्षों में आपदाओं की तीव्रता एवं संख्या में अप्रत्याशित वृद्धि हुई है, जिसका एक मुख्य कारण जलवायु परिवर्तन है। जलवायु परिवर्तन के कारण आपदाओं, विशेषकर, मौसम एवं जल संबंधित (hydro&meterological) आपदाओं से होने वाले नुकसान में लगातार वृद्धि हो रही है। आपदाओं की बढ़ती प्रवृत्ति के कारण जहां एक ओर विकास के कार्यों को गहरा धक्का लगा है, वहीं दूसरी ओर विश्व स्तर पर खाद्य सुरक्षा का खतरा भी गहरा गया है।

कृषि एवं खाद्य सुरक्षा पर आपदाओं के प्रभावों के विषय में अभी फिलहाल संयुक्त राष्ट्र संघ के खाद्य एवं कृषि संगठन (FAO&UN) द्वारा अड़तालीस विकासशील देशों में अठ्तर बड़ी आपदाओं का अध्ययन किया गया। शंझाई जापान में मार्च 2015 को विमोचित इस अध्ययन रिपोर्ट के अनुसार 48 देशों में आपदाओं ने वर्ष 2003 एवं 2013 के मध्य कृषि क्षेत्र को बहुत अधिक हानि पहुंचाई। इन आपदाओं के कारण कुल नुकसान का एक चौथाई नुकसान कृषि के क्षेत्र में हुआ। आपदाओं के प्रकार की यदि बात करें, तो सूखे से कृषि क्षेत्र सर्वाधिक प्रभावित हुआ। सूखे के कारण हुए कुल नुकसान का 84: प्रतिशत कृषि क्षेत्र को झेलना पड़ा। आपदाओं का सर्वाधिक प्रभाव फसलों पर हुआ तथा दूसरे क्रम पर पशुधन इनसे प्रभावित हुआ। कृषिक्षेत्र पर आपदाओं के कुप्रभाव के ये आंकड़े केवल तत्कालीन प्रभाव को दर्शाते हैं, उल्लेखनीय है कि आपदाओं के कारण कृषि क्षेत्र पर आगे लंबे समय तक प्रभाव पड़ता है, जिसके कारण कृषि उत्पादन का लगातार ह्रास होता है। FAO की रिपोर्ट के अनुसार 48 विकासशील देशों में दस वर्षों के दौरान 78 बड़ी आपदाओं से कुल मिलाकर तत्कालीन एवं दीर्घकालीन सत्तर अरब यूएस, डॉलर की हानि कृषि क्षेत्र में हुई।

कृषि क्षेत्र पर आपदाओं के कुप्रभाव के ये आंकड़े, जहां एक ओर बेहद चिंता का विषय हैं, वहीं दूसरी ओर ये कृषि क्षेत्र में आपदा प्रबंधन को प्राथमिकता के तौर पर लिए जाने की आवश्यकता को दर्शाते हैं। भारत जैसे देश में जो अपनी भौगोलिक अवस्थिति, जलवायु तथा अन्य कारणों से

आपदाओं के प्रति बेहद संवेदनशील है, तथा जहां कुल आबादी का एक बड़ा भाग अपनी जीविका के लिए कृषि पर निर्भर करता है, कृषि आपदा प्रबंधन कर कारगर कार्यवाही करना बेहद प्रासंगिक हो जाता है। इसके अतिरिक्त भारत में बढ़ती आबादी एवं अन्य कारणों से किसानों को बाढ़ग्रस्त एवं सूखा प्रवण क्षेत्रों में कृषि कार्य करने के लिए विवश किया है, जिससे कृषि जैसा आरंभ में इंगित किया गया है, आपदाओं को पूर्णतया रोका नहीं जा सकता लेकिन उनके प्रभावों को गारगर आपदा प्रबंधन कार्य योजना के माध्यम से कम अवश्य किया जा सकता है। कृषि क्षेत्र में आपदाओं के कुप्रभावों को न्यून करने के लिए आवश्यक है कि समस्त स्तरों पर (राष्ट्रीय से ग्रामीण स्तर तक) कृषि संगठन अपने सभी कार्यकलापों में आपदा प्रबंधन की कार्ययोजना को बनाकर उसे भली भांति कार्यान्वित करें। कृषि क्षेत्र में आपदा प्रबंधन योजना में जिन पांच अवयवों पर कार्य करने की आवश्यकता है, वे हैं—

(1) सभी स्तरों पर कृषि संगठन के संस्थागत ढांचों में आपदा प्रबंधन का समायोजन करना,

(2) आपदा प्रवण क्षेत्रों की पहचान एवं उन पर आपदाओं के प्रभावों का आकलन कर एक प्रभावी एवं क्षेत्रीय योजना का निर्माण करना, जिसमें आपदा प्रतिक्रिया (response) के साथ-साथ आपदा शमन (mitigation), निवारण (prevention), एवं तैयारी (preparedness) का सही-सही समायोजन हो,

(3) प्रशिक्षण एवं जन जागरूकता के द्वारा कृषि क्षेत्र में कार्यरत सभी हितधारकों (stake holders) की आपदा प्रबंधन में क्षमता को बढ़ाना,

(4) कृषि क्षेत्र की आपदाओं के प्रभावों को न्यून करने की नयी एवं उपलब्ध तकनीकों की जानकारी क्षेत्रों में कार्यरत कृषि कर्मचारियों एवं कृषकों को उपलब्ध करा उन पर कार्य करना एवं

(5) आपदा प्रवण क्षेत्रों में आपदाओं से प्रभावी ढंग से निबटने के लिए पूर्ण तैयारी कर रखना, ताकि आपदा के तुरंत पश्चात कृषि क्षेत्र में हुए नुकसान की भरपाई करते हुए प्रभावी उपर्युक्त कार्य योजना को तैयार करने से लेकर उसको कार्यान्वित करने तक सभी चरणों पर विभिन्न हितधारकों को शामिल करना अति आवश्यक है, ताकि कार्य योजना पूर्ण व्यावहारिक एवं कार्यान्वयन करने योग्य हो। जनभागीदारी द्वारा तैयार ऐसी प्रभावी कार्य योजना को तैयार कर उस पर सही-सही कार्यान्वयन करने से जहां एक ओर कृषि क्षेत्र में आपदाओं से होने वाले नुकसान को कम किया जा सकेगा, वहीं दूसरी ओर देश में खाद्य सुरक्षा की गारंटी भी दी जा सकेगी।



**डा. सतेंद्र**

डा. सतेंद्र भारतीय वन सेवा 1986 बैच के अधिकारी हैं। दिल्ली विश्वविद्यालय से स्वर्ण पदक प्राप्त एवं इंग्लैंड से आपदा प्रबंधन में एम.बी. ए. शिक्षित, डा. सतेंद्र लगभग पिछले तीस साल से संयुक्त राष्ट्र संघ (UNO) समेत विभिन्न राष्ट्रीय एवं अंतरराष्ट्रीय संगठनों में कार्यरत हैं। इनके द्वारा आपदा प्रबंधन, ग्रामीण विकास जैसे विषयों पर दस पुस्तकें, कई शोधपत्र एवं लेख प्रकाशित किए जा चुके हैं। संप्रति: डा. सतेंद्र खाद्य एवं कृषि संगठन, संयुक्त राष्ट्र संघ (FAO\_UN) में मुख्य तकनीकी सलाहकार एवं आपदा प्रबंधन विशेषज्ञ के रूप में प्रतिनियुक्ति पर हैं।



Picture : Internet



# Earthquake Preparedness and Implementation Drive Has to Come Within

**T**he buildings, mostly in Nepal, Manipur and other areas in the NE, India have not broken by fighting with "earthquake" shaking in real sense, because, they are constructed "genetically" rather wrong coded by people who have no regards for those expertises in terms of earthquake resistant measures as per Codes/guidelines. Even after first seismic code published in 1962, hardly any municipality passes building Plan along with structural drawing. Even if structural drawing is included, interpretation of the same in the real site has been out of context to the Master builders of the country. More so, majority of the constructions taking place in the country are not routinely monitored to ensure that atleast beam-column joint

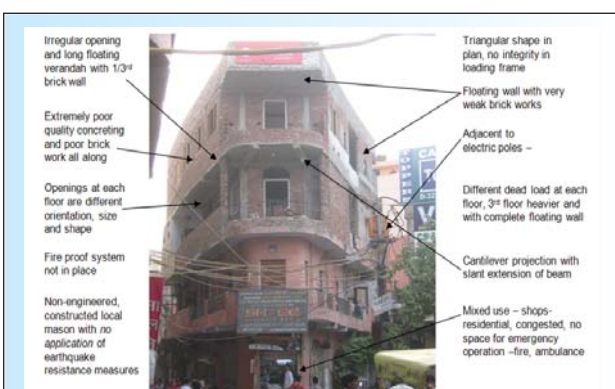
has to have proper bonding and quality of concrete has to be minimum M20. There are few other basic outlines, which if enforced through construction workers of the country, our buildings will be worth to fight earthquake shaking in the manner and spirit defined in the building codes. It may be noted that building plans are issued by authorised bodies, mostly without having any structural drawings or details and there is no check on the field by qualified professionals. Building materials available from the authorised sources are not checked with the standards defined in the building codes. Therefore, construction activities using unqualified building materials bear no authenticity in their resilience against earthquakes as per code. The



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compliance issues mainly evolve in the organisation of certificates by architects, contractors, engineers and many others as defined in the building bye laws. Mere certification without proof check in the field carries no technical sense. Hence, earthquake resilient building construction in the seismic prone areas of the country has to be undertaken more cautiously than ever. Some of the important yet simple steps to ensure good performance of the stilt floor are elucidated below:



**Fig. 1:** Building as shown above has been marked with several indicative defects, which are not suggested in the Indian Standard Codes of practices first published in 1962. Questions are raised why IS:1893 has not been revised after 5th revision in 2002, but we have to realise that conditions, such as shear stirrup at 135o at the ends, mentioned in 1962 and subsequent revisions are yet to be seen in majority of the building constructions. Therefore, buildings codes are a sort of advisory documents and community have to take care of such things more importantly than the regulation/implementation drive to start through designated agencies of the country



**Fig. 2:** If cars are found crashed in this manner under stilt floor for the very simple yet important lacuna in building construction, it's high time to adopt correction measures as per expert advice. The construction of buildings with "soft storey" for the urgently needed parking space at the ground floor can be facilitated following simple retrofitting as envisaged in this note.

Identify the soft storey in building (Fig. 3) and retrofit them at least to some extent by filling up some of the selected open frames with full width brick walls or bracings (Fig. 3) that might not disturb parking facilities.



**Fig. 3:** Soft storey buildings as above are dotting everywhere as a mark of modern development. But their performance during Bhuj (2001) earthquake and many other countries, including Japan, Taiwan; signify that these are deficient structures. The importance of retrofitting them has appealed many to go ahead but experiences show that in the name of "jacketing" ground floor columns only, proper engineering is not ensured. It is rather better to go for selective "filling up" of open frame/bay at such floors by simple full width brick walls that may not obstruct parking or other functionalities.

**Fig. 4:** Measures, such as cross bracings, taken in this building in Guwahati city has no doubt demonstrated a significant step, which is required to be documented and advertised for others to follow. Though, there are many other defects (cf. Fig. 2) seen in the building, the measure taken here is an eye opener for the earthquake resilient construction. In some cases, expert agencies are luring the common people to go for jacketing of ground floor column, which is not technically satisfying. One of simplest ways is to fill up some of open areas by full width brick walls that would not deter the parking movements.



**Latest advancement in the earthquake detection sensors, which are implemented in several countries including Japan, Taiwan, if they are deployed in our country, we would have received early warning time at Delhi more than 2 minutes in advance. Now time will tell when our own seismic network become operative to this extent, rather than looking after some implausible mind game on the prediction part of the same. We cannot prevent natural earthquakes from occurring specially at places where they have taken place years ago but we can significantly mitigate their effects by identifying hazards, building safer structures as per codes/guidelines, and providing mass education on earthquake awareness through safety drills and exercises.**



# Does India Need to Revamp Its Disaster Management?

There are two quotes fundamentally and well reinforced in many social and political talks, I find important for disaster risk management in India. Mahatma Gandhi said “Earth Has Enough to Satisfy Human Need, But Not Human Greed”. Second, “God Helps Those Who Help Themselves”. Be it Delhi, Mumbai, Dhaka, Islamabad, Rawalpindi, Surat, Hyderabad, Bangalore, Kolkata – the metro cities, or the several hundred to a thousand small cities and towns in South Asia invited the menace of urban flooding to gravely disrupt fully or at least partially almost every year. We talk high on disaster management, as having as said to complied well to country’s own resolutions and international ones – the Yokohama Strategy, the HFA, and we gave leaders to world DRR mission aloud but the fears remain and shudder. We stood in legal and institutional frameworks, we could raise flag in disaster response with organized force, using tax payers money and at cost of roles local preparedness, home guards, police and paramilitary, and much low on ‘Disaster Prevention – Risk Mitigation’ on ground despite of figuring in the national policy (2009) and national plan (2013) of Disaster Management.

There is great willingness at local level in Tamil Nadu for climate change adaptation and disaster prevention, as are directly related to their livelihood, health and wellbeing. The NIDM-GIZ AdaptCAP-DRR programme shown to way of participatory planning village disaster management keeping climate risk at centre, and taking the lessons along infrastructure pilots to district level provisions and State plans/policies. However, it needs a change in cultural set up of governance and society so as to bring ‘disaster prevention’ into ground action. This calls for greater awareness.

With a number of documents as guidelines and policy statements concerning aspects of disasters, by NDMA, excellent contributions, remain un-audited on their plan of actions against timelines and targets,

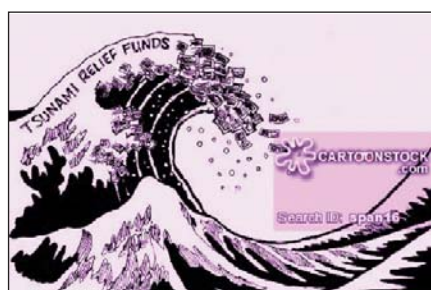
like the once in capacity building for disaster management – National Human Resource Plan for Disaster Management (2012) and NIDM’s Perspective Plan (2014), unimplemented/unaudited (Quote – CAG Audit Report on DM Performance Audit 2013 reiterated). Diverted from the original concept the High Power Committee and the DM Bill had NDMA like a full time operational 24x7 hours Crisis Management Headquarters, and NIDM as a professionally equipped academic think tank. State is primarily responsible (DM, water - interpreted state subjects) and need to exchange their learning and progress (and failures also) as is fundamental to self-auditing the journey on DRR.

**Fig. 3. Urban context interrelations of climate risk, disasters and social vulnerability**

It has already been reported that the unplanned and often illegal urban developments in Chennai has led to many wetlands and natural sinks being built over; this, along with ageing civic infrastructure and poorly designed drainage systems, resulted in an increased frequency of severe flooding. It is quite usual to blame so-called unprecedented



**Fig. 1. Newly built up housing, wrongly located: caused both ecosystem loss and disaster risk**



**Fig. 2. State of Tamil Nadu/ Chennai received huge international programme on disaster risk management after 2004, why cut a sorry figure in 10 years – health menace – dengue, chikengunia and the devastating city flood 2015.**



**Fig. 4. Flood affected areas in Chennai. Almost three fourth of the city.**



**Dr. Anil K Gupta**

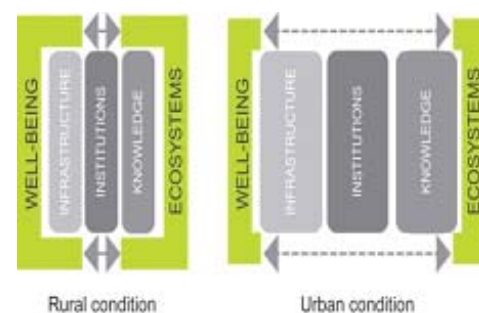
Associate Professor and Head of Policy Planning Division at National Institute of Disaster Management in Govt. of India, since inception in 2006. Previously he served as Director of Bundelkhand University Institute of Environment and Development Studies, Jhansi.

rains for the civic and humanitarian crisis each monsoon brings, and decouple development from disaster. But unprecedented rains occur quite regularly in Chennai. As a city on the high-energy coast facing the Bay of Bengal, Chennai is no stranger to heavy rains and cyclonic storms. Chennai has experienced particularly heavy rains roughly once every 10 years—1969, 1976, 1985, 1996, 1998, 2005, 2015.

NIDM has undertaken a study of Urban Flooding in 8 major cities of India during year 2007-08 (following Mumbai and Delhi floods) and the report indicated flaws on three major aspects: environmental and ecology, urban planning and civil engineering. There are no simple solutions to the problems of flooding in the city of Chennai which have been allowed to develop over the period of many decades. Instead of overlooking the wrong doings of the past and throwing blame on heavy rainfall, the political masters, bureaucrats, professionals, the civic officials should come out of the denial mode, own the responsibility and concede with humility that they have failed to walk the talk.

However, Chennai is one of grave devastations India has seen in the recent years. The contexts of Bangkok Declaration on DRR in Asia-Pacific 2014, now superseded by Sendai Framework, is still relevant as it focussed more on challenges and issues of countries like India and others in South Asia. “Preventive Disaster Management” as critical to DRR is agreed but far from operationalized at district and local levels, is a worry. A mechanism and nationwide system which can pervade through the state and local administration and social aspirations to install and pulse the pace for ‘need’ over ‘greed’ and ‘self reliance in emergency preparedness’ appears to be, therefore imperative, to overtake the existing one, also to learn from international transition from UN-IDNDR to HFA and now to SFA which calls greater focus on underlying factors of vulnerability. Convergence of environmental, livelihood and social aspiration for disaster management is, thus, fundamental for human security and peace not only in our villages but more so in cities and towns, which have grown on villages.

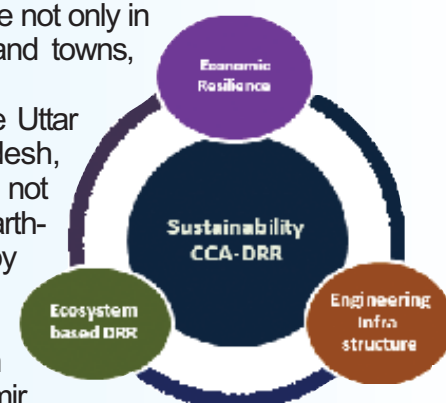
How other vulnerable states like Uttar Pradesh, Delhi, Madhya Pradesh, Rajasthan, which are challenged not only by the natural hazards like earthquake, floods, drought, but equally by industrial-chemical and disease epidemic hazards along serious levels of pollution in their air and water, learn from disasters of Kedarnath, Kashmir, Chennai, Malimgaon and the Gorkha earthquake to gear up a mission for cause of public safety? Is the real question.



**Fig. 5. How we grasp on Rural – Urban Difference: Governance and Gaps**



**Fig. 6. NIDM Publication on Chennai Flood and Land Use Context**



**Fig. 7. Resilience of ecosystems, infrastructure and economics go hand in hand in urban systems**



# Inaccessible infrastructure and urban sprawl hamper families: women and children the most

## Inclusion in the Urban Century

**O**ver the next 40 years, cities will shape virtually every aspect of global development, including the manner in which rights to housing, health, and education are won or wasted, implemented or ignored. The urban century can transform the productive capacity and outcomes of estimated 400-600 million urban citizens who live with disabilities. Well-planned cities can empower people who may have difficulty seeing, hearing, or moving around without assistance. Such cities can also improve outcomes for entire households by eliminating unnecessary physical or social barriers that deprive them of basic right to have adequate housing.

By 2050, 66% of the global population will be living in cities. The projected increase of 2.5 billion urban dwellers<sup>1</sup> will include between 15-20% of whom are expected to be persons with disabilities. Today many of these cities are already under immense pressure to fix the failures of unplanned urban development. How can governments, businesses and civic leaders in these six mega cities, and the thousands of other smaller cities, ensure that their communities are inclusive and barrier-free and uphold the rights and dignities of persons with disabilities?

**Voices: An accessible city is a matter of right and do not just benefit people with disabilities but elderly and children also.**

The City is an enabling Force  
With user experience and also as an



accessibility and walkability auditor<sup>2</sup>, I found that not only the metropolitan cities in India such as Delhi, Mumbai, Chennai, Kolkata etc. have been excluding its citizens from accessing the outdoor and indoor paraphernalia; but also discriminating them on basis of their age, disability and gender. Undoubtedly poorly planned cities, or cities without strong governance or enforcement mechanisms, directly lower mobility options, increase transaction costs, propagate environmental hazards, or deny people the right to live in their own homes<sup>3</sup>.

Barriers in external and internal environment deters mobility and opportuni-



ties to access facilities and services.

Urban Centers struggle to control the expansion of informal and inaccessible housing with consequences of limited access to latrines, water and sanitation, inaccessible or unaffordable transportation, crowding and restricted mobility, and ensure that energy and power reaches the most marginalized. These

**Voices: A world without barriers: on foot, by cycle or while using public transport system.**

very urban issues are also the main factors that deprive persons with disabilities and those with reduced mobility well being, dignity, live quality life and the capabilities to exercise their human agency on an equal basis with others.

Disability inclusive urbanization has the potential to transform geographies of exclusion, dependence, isolation, and despair<sup>4</sup> into thriving active com-



*Executive  
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**Anjee Agarwal**

munities that according to Nobel Laureate Amartya Sen, afford disabled citizens the "capabilities to live the type of lives they have reason to value<sup>5</sup>." More inclusive communities are forming at global, regional, national and local levels. Capability enhancing communities demonstrate how cities, town, and villages incorporate principles of universal design to operationalize the United Nations Convention on the Rights of Persons with Disabilities (CRPD) in urban policy, planning and development.<sup>6</sup> Civil society, led primarily by disabled persons organizations (DPOs) are paving the way to broader urban reforms by overturning municipal ordinances to expanding civil rights into spatial rights. Samarthyam, National Centre for Accessible Environments have been advocating to include universal design and accessibility in Smart Cities to achieve Smart Habitat. We have proved that unnecessary barriers can be identified and eliminated through innovative and cooperative approaches with stakeholders and service providers. For example, right to vote can only be uphold if the polling booths are accessible. A user perspective clubbed with accessibility standards can help achieve this. Efforts such as Accessible India Campaign are further enforcing the right to access and mandate more inclusive cities and urban infrastructure, not just for people with disabilities, but for everyone.

**Voices: The criteria of inclusive Smart cities should be built in the curricula of education and training of architects, planners, engineers, leaders, economists, and trainers.**

Only a comprehensive, universal and inclusive approach to urban development can address the ills that confront cities, ills that continue to marginalize, stigmatize, and disenfranchise millions of people.

1- The proportion of the world's urban population is expected to increase to approximately 57% by 2050. African Development Bank, <http://www.afdb.org/en/blogs/afdb-championing-inclusive-growth-across-africa/post/urbanization-in-africa-10143/>.

2- Samarthyam team undertake accessibility and walkability audits to assess sites for access, safety and usage.

3- Victor Pineda, President & Founder, World Enabled

4- Likewise, in developed countries, rapid urbanization can result segregation ordinances, privatized spaces, and exclusions of undesirable or destabilizing social groups. Cities will increasingly be looking for ways to turn the tide on increasing concentrations of poverty, inequality, and social marginalization.

5- Amartya Sen. 1999.

6- The United Nations, and other organizations such as the World Bank, UNICEF, UNDP, WHO, UNDESA have undertaken important work in the area of disability inclusive development.



# Our Life and Our Nature

## Environmental Consciousness as Reflected in ancient Indian Culture

**T**he Power of Nature is clearly known to the whole world through earth quake, tsunami and storms.

**Can we restore Cosmic Harmony to avoid all disasters?**

The development of our planet began some 4.6 billion years ago, and the Earth has gone through staggering geological changes since that time. Simultaneously, the ways in which man has used and treated the Earth has also undergone drastic changes. Our heritage and traditions inculcated values and respect for nature in our minds but over time, we have lost the way- resorting instead to destroying our habitat in order to lead an increasingly lavish and technology dependant life.

**prthivyanariksam dyaurdiso' vantaradisah.**

**Agnirvayuradityascandrama naksatrani.**

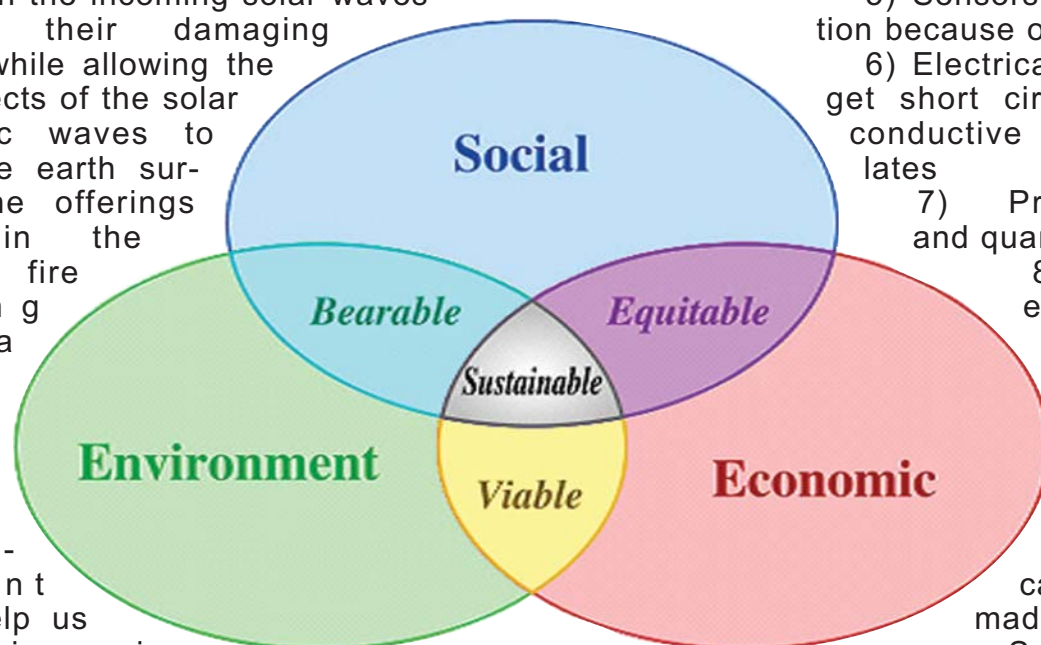
**Apa osadhayo vanaspataya akasa atma. Ityadhibhutam. Are Slokas Myth or Science?**

Our ancestors used to give full respect to the five elements of nature. As given in the four thousand year old spiritual text, Veda, they used to meditate upon: The earth, the intermediate space between the earth and the heaven, the sky, major and minor points of the compass, fire, air, sun, moon, stars, water, herbs, large trees, space and one's soul. There are deep scientific justifications to most of the rituals and incantations given in the Vedas. While we are struggling to attain new ways of tackling the effects of global climate change, the answers might lie in the ancient spiritual texts.

Environment purification in the vedic way takes place through chanting of slokas properly in Sanskrit language and performing yajna as per the directions given in the veda.

Energy transmission in the cosmos is through waves. Solar energy reaches us through the solar waves. Rhythmic Chanting of Vedic Slokas in sanskrit as well as universal sound of the auspicious Conch Shell, Bell, Drum etc. create waves of different patterns so as to intercept the bad effects / waves in the incoming solar waves

blocking their damaging effects, while allowing the good effects of the solar / cosmic waves to reach the earth surface. The offerings made in the sacred fire during yajna creates antiseptic atmosphere in the environment which help us in breathing purified healthy air. The design of the kunda / fire place as reverse pyramid inside the earth surface is made in such a way that the requirement of oxygen is minimum so as to minimise the production of carbon dioxide and the fire remains alive for a longer period. Ghee offered in the sacred fire vaporises immediately spreading very fine particles in the surrounding environment (spinning at very high speed) which work as god particles agglomerating all the toxic gases and dust particles in the surrounding environment so as to bring them down to earth by gravity.



Mantras and Rites framed and prescribed by sages of the past were not born of amateur enthusiasm. They are the results of wisdom and actual experience.

### Sustainability of the developments

Growth and development are the key words of modern civilization.

Sustainability of the developments takes the central stage once some developments are achieved.

Any development achieved violating the requirements of the nature and the balance of the natural conditions makes the developments unsustainable. The net results of the industrial growth without considering proper air pollution control systems are:

- 1) Deterioration of health of the men and the machines
  - 2) Reduction in the output efficiency of the men and the machines
  - 3) Frequent breakdown of machines
  - 4) Rotary machines are jammed by penetration of dust particulates
  - 5) Sensors start malfunction because of dust coating
  - 6) Electrical connections get short circuited due to conductive dust particulates
  - 7) Product quality and quantity deteriorates
  - 8) Maintenance expenses increase uncontrollably
  - 9) All the above effects of air pollution make the development unsustainable.
- Proper system design and installation of suitable equipment can control air pollution problems of the industries.
- In general, true sustainable development can be achieved only when investments are made to meet the following requirements:
- a. Social
  - b. Environmental
  - c. Economic

Through my four decades of experience in this field I have found that investments made for installation of new air pollution control plants or modernization of old plants are recovered in many folds in no time by solving the problems as listed above, followed by improvement in quality as well as decrease in production cost mainly responsible for sustainability. I have experienced this at various industries in different parts of the world.



**Shyamal Ghosh**

*An Electrical Engineer with four decades of experience in the field of Industrial Air Pollution Control Technology in India and abroad. Technology is available to control Industrial Air Pollution at the source of generation with optimum investment so as to achieve sustainable growth of the industries. The investments made also come back directly or indirectly in no time. He has already proved this in some industries of India and Thailand. Jindal Steel & Power Ltd., India and The phosphates division of Aditya Birla Chemicals, Thailand are just two examples.*



# Early Warning System for Risk Reduction

### Introduction

Disasters can be broadly classified into three types – Natural disaster, Accidental disaster and Intentional threats. Disasters of any type cause loss of lives and properties. The objective of this article is to highlight the importance of predicting the disasters in advance, accurately and communicate it to the masses to adopt preventive measure so as to minimise the losses. The approach for disaster management has shifted from reactive to proactive action. More priority investments are now being made in Planning, Preparedness and Prevention (Mitigation) activities through procurement and usage of latest tools and techniques so that in the pre-disaster stages adequate measures are taken to mitigate the effects. The fact is that most disasters are predictable, especially in their seasonality and in the disaster-prone areas which are vulnerable. The overall goal is to minimize the disaster risk and losses.

### What is Early Warning System?

Early warning is a major element of disaster risk reduction. The term “Early” refers to relative indication of time. It ranges from couple of minutes to couple of hours. The term

“Warning” is a ‘Precautionary Statement’ used to inform someone in advance of a possible danger, problem, or other unpleasant situation. Normally classified as Watch, Alert and Warning, these are issued by the competent agencies based on

degree of danger to the stakeholders. The term “System” is a set of interacting or inter-dependent components forming an integrated whole. The whole objective of the Early warning system is to capture the data through various sensors, process those through appropriate analysis models and communicate the results to the target community, at large.

### Background

The ancient practice in Hindu culture of

hanging the bells in the temples is not just spiritual but also has scientific reasons. It helps in detecting the tremors in the earth resulting into automatic ringing of temple bells thereby alerting the people. The blowing of the Conch is an integral part of religious ritual and often practiced by the community ladies, during earthquakes. The early culture in jungles used drums as a means of long distance communication in an event of unprecedented danger or urgency. Military and para military bugle calls are still in practice, originating as a signal announcing scheduled and certain non-

Table1: Responsibility of the Nodal Ministries	
Hazard Type	Nodal Ministry of Central Government
Air Accidents	Ministry of Civil Aviation
Avian Flu with Ministry of Health	Ministry of Agriculture in coordination and Family Welfare
Chemical Disasters	Ministry of Environment and Forests
Cyclones	Indian Meteorological Department
Drought	Ministry of Agriculture
Earthquakes	Ministry of Earth Sciences (Indian Meteorological Department)
Epidemics	Ministry of Health and Family Welfare
Fire	Ministry of Home Affairs
Floods Water Commission)	Ministry of Water Resources (Central
Industrial Disasters	Ministry of Labour
Landslides India)	Ministry of Mines (Geological Survey of
Mine Disasters	Ministry of Mines
Nuclear Incidents	Department of Atomic Energy
Rail Accidents	Ministry of Railways



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## Hydro-Meteorological EWS

According to the World Health Organization (WHO) 85% of all natural disaster-related fatalities occur in Asia. Studies and analysis by International Centre for Water Hazard and Risk Management (ICHARM) shows that of the one thousand most fatal natural disasters between 1900 and 2006, about 90% are water-related disasters, which means that water-related disasters are more frequent and more hazardous. Among non-water-related disasters, earthquakes, famines and extreme temperatures are most frequent. Hydro-Meteorological hazards are more frequent in India.

As weather, climate and the water cycle know no administrative/ national boundaries, international cooperation at a global scale is essential and Indian government is actively working with World Meteorological Organisation (WMO) which provides the framework for such international cooperation. The National Centre for Medium Range Weather Forecasting (NCMRWF) located in Noida is a Centre of Excellence in Weather and Climate Modelling under the Ministry of Earth Sciences and is a part of Indian Meteorological Department (IMD).

Over the years, people ridiculed the forecasting capabilities of the weathermen worldwide. The Fig. 1 illustrates on a lighter note the perception of the weatherman’s forecasting are popular topic in social media. But now, worldwide, there are more than 200 private agencies are doing serious business in weather forecasting.

Modern Early warning system follows three primary stages, Gather data, Process data and Disseminate data. In the context of the hydro-meteorological studies these can be described broadly as

I. Gather Data– Satellite data, field sensors like Automatic

weather stations (measuring wind, temperature, dew point, humidity, solar ray incidence etc.) lightning sensors, Doppler Radar etc.

II. Process Data - Modelling with Numerical Weather Prediction (NMP), GIS etc.

III. Disseminate Data - Mobile and Web technologies besides traditional techniques

The Weather Research and Forecasting (WRF) model broadly use short-range weather forecast and are adopted in mesoscale model studies. Lot of good research is happening in both civilian and Defense sectors. Nearly 70% of the cost of setting up of the infrastructure for early warning system in the Data centre facilities remains the same as the cost of the building, servers, networking



equipment, power consumption and disseminating techniques are more or less same. Only the sensors for collecting the data from the field differ from one hazard type to another. Also, the modelling software required to do analysis are specialised for each hazard type. The data dissemination techniques have advanced a lot in recent times. Usage of smart phones enables the users to get quick alerts.



scheduled events. In industrial sites and towns, Sirens (a loud noise making devise) are still being used to communicate the time of specific schedule or shifts. During emergencies, the siren signals are changed to shorter notes by the civil defence agencies.

Lessons Learnt

India has learnt big lessons from two major disasters that shook the country namely, Orissa Super Cyclone (1999) and Tsunami (2004) wherein more than 10,000 people were killed in each of the event. Thereafter, Ministry of Earth Sciences enabled Tsunami early warning system ( developed by INCOIS, Hyderabad) to help mitigate the threat posed by oceanic disasters tonearly 400 million population residing along the Indian Ocean’s coastal belt,. The advent and inclusion of the state-of-the-art modern tools like Automatic Weather Stations and Doppler Radars by Indian Meteorological Department

(IMD) to collect and monitor the weather parameters through systematic scientific studies has led to accurate prediction of the Cyclone Phailin (Oct, 2013) and Cyclone Hudhud (Oct, 2014) which mainly struck Odisha and Andhra Pradesh on the country’s eastern coast. Millions of people were evacuated prior to the event and moved to safer areas which minimised the loss. Both these cyclonic events attracted widespread media attention, public awareness and goodwill. However for Uttarakhand cloudburst (June, 2013) and subsequent flash floods, the predictions were not focussed and actions were not prompt on the ground due to lack of proper warning systems and communication. Subsequently, State Government is working in a very active mode bringing positive results in planning, rehabilitation and reconstruction operation front.

Roles and Responsibilities

Early warning technologies are now available for almost all types of hazards worldwide. The effective early warning system can be developed for hydro-meteorological hazards (severe weather, cloud burst, storms, lightnings, and tropical cyclones, floods, desertification, dust storms, droughts), geological hazards (earthquakes, tsunamis, volcanic eruptions, landslides), epidemics, air quality, wild forest fires, nuclear and chemical accidents etc.

Government of India under the Ministry of Home affairs which is the nodal ministry for Disaster management is coordinating with various departments of different ministries to effectively work out the mitigation measures. Table. 1 shows the responsibility of the respective ministryfor managing specific disaster. However, the action on the ground is coordinated by the district disaster management Authority of the concerned state (s).

Table 2: Key Players in Early Warning System (EWS)

Sl. No.	Key Players	Role
1	Scientific Community	Designs the hazard monitoring systems
2	National/Local governments countries	Own and operate the EWS overall; Issue warnings within
3	International Bodies	Provide financial and technical support; Facilitate cross border information sharing/ interoperability, provide expertise
4	Regional Disaster Management Institutions	Provide expertise; advise governments; facilitate networking among Disaster management practitioners
5	NGOs	Create awareness; Coordinate and train community people
6	Private Sector	Implements and maintains systems
7	The Media	Create awareness; Play a role in training; link communities to practitioners
8	Communities	Central to people-oriented EWS.

Current situation and Recommendations:-

- Scientific researches on Early warning systems are being carried out for landslide studies by the CSIR laboratories like CBRI, Roorkee and CRRI, New Delhi and DRDO laboratories
  - Ministry of Earth Sciences is working towards micro-seismic zonation of about 30 cities of India to understand the geotechnical and geophysical characteristics of the in-situ materials and it will provide good insight for
- Earthquake EWS

  - State Governments and Urban local bodies are working towards mapping of the cities in higher scales like 1:5000 scale. It is recommended to use Aerial LiDAR technologies so as to have accurate Digital Elevation models ( less than 50 cm accuracy) of the Cities to simulate and convey in advance the areas to be inundated (urban deluge), a typical problems recently noted in Chennai.
- It is shocking to note that thunderstorms and lightning kills more people in India than any other hazards and any technology which can detect and predict the lightning’s even 15 to 30 minutes before it strikes the ground needs to be adopted by the state disaster management authorities.
  - Civil defense sirens are mounted in fixed locations of many cities for warning people during natural dis-
- asters but are not maintained across the country. Standard operating procedures for operating sirens to alert people should be initiated in cities of high risk. Mock drills to be done.

  - Industry collaborations are required to be done by the Government to expedite the speed of installation of Early warning systems in the country in coordination with organizations like NDMA, NIDM and NDRF and FICCI.

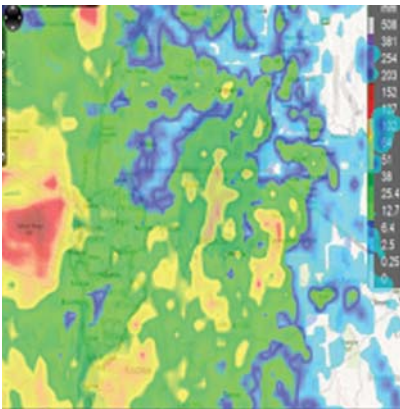


Fig. 2 Estimate of Rainfall  
Courtesy: Earth Networks, USA

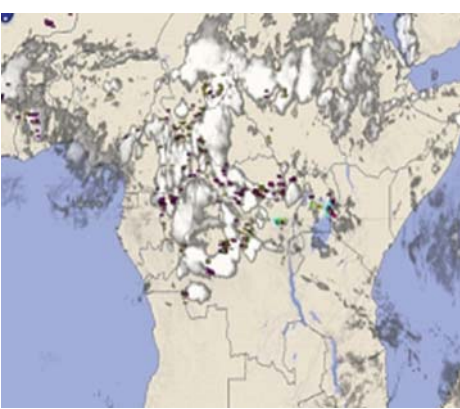


Fig. 3 Global Lightning Detection  
Courtesy: Earth Networks, USA

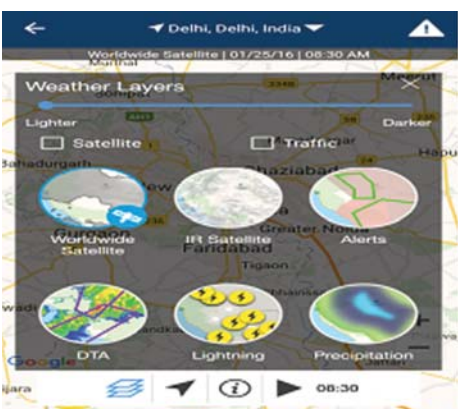


Fig. 4 Mobile App “weatherbug”  
Courtesy: Earth Networks, USA



Fig. 5 Mobile based app on Lightning Alert  
Courtesy: Earth Networks, USA



# Safety tools for empowering Women in Metropolitans

**I**n India even in the 21st century, women cannot step out of their house at any given time, be assured of her physical and sexual safety. Hundreds and thousands of incidents of physical / sexual abuse and culturally justified violence happens every day to women in this country. The fear of violence and teasing restricts a woman's anatomy, curtails her mobility, her ability to work more efficiently and participate in social activities. Women can't move at night in secluded places. Rape is the fastest growing crime in the country today and as many as 18 women are assaulted in some form or the other every hour across India. Over



the years cases of rapes and assault have made it to the headlines with alarming frequency. It is an ordeal simply to file a police report and the investigations thereafter have been stories of apathy and down right humilia-

tion meted out to the victims. Equally horrific are news reports of foreign tourists being sexually assaulted. It looks like that India as a nation has ceased to know, how to treat women as human beings who have a right to dignity and safety. The crime against tourists is against our culture of 'atithi devo bhava'.

Society is changing and government is forced to take action. Govt made some policy, generated fund to create awareness and provide support in all ways. Now we the women are the agents of change. Let's not remain silent. Let's not give up. Every woman who is silent is with a voice unheard. So please speak out. And that will bring the change. Bring an end to this bloodshed and humiliations. We are born to live, in peace, unity, justice and make lives real winners of this world. To face these crisis women are requested not to depend on others or government, they need to empower her self by some app, some ideas, some tools and some protective measures.

### Make mobile a real friend

Now a days every one keep mobile phone. Women are requested to keep smart phone

and download some app which help them to overcome in emergency. Always keep data pack and that should be on, keep phone on hand or keep it handy where you can dial it quickly. Always inform about location in loud and clear voice, keep Police help line number, Family members no and close friend's number on Speed dial or make a short cut on screen. There is some app which needs to be downloaded and keep it active on mobile. Some are listed below

### 1-Nirbhaya: Be Fearless©

This app has been launched after 16 December 2012. Its interface and special features make it different from others. Special features are

■ **Geo Fence** : Through this feature one can mark regular area. Moment you will out from mark area message will go to your select-



**Dr. Mukta Girdhar**  
Asstt. professor, GGSIP  
University

### 1- womens-self-defense-instruction-online.com

Self-defence Instruction for women online aims is to acquaint girls with basic self-defence moves that will help them when in trouble. Log on to this site to learn these easy moves and stay safe.

### 2- kevincoffee.com

This website detective Kevin Coffey, an expert in travel safety and other crime avoidance advice, lists important safety measures that women should take in their daily lives.

### 3- self-defense-mind

The safety tips given on this website provide you with common day to day measures that you can take to protect yourself against criminal activity. Each of the articles listing safety tips give information on real life threatening scenarios and how you can prepare yourself to ensure your safety.

### 4- suite101.com

This website has a feature "woman's must-check list". There are a wide range of topics on women safety that are covered here.

### 5- women-in-charge.net

This site deal how to stay safe at night. It also provides you with tactics to deal with burglars.

### 6- Safetyforwomen.com

A comprehensive women safety website that gives out self-defence tips and tricks for women. It encourages readers to share their stories and ways through which they got out of a dangerous situation. It also has pictures showing self-defence methods when one is attacked.

### 7- crime-safety-security.com

The website has put up life-saving lessons taken from real life interactions with children's groups, college students, civic groups, corporations, rape survivors, and veteran cops at police academies.

### 8- lawisgreek.com

Women-related laws and women-centric issues are tackled in detail in this resourceful website.

### 9- autos.aol.com

This site deals with the safety measures of women drivers.

### 10- myproperty.ph

This website gives practical and helpful tips to women who are living alone or are planning to live alone for the first time.



ed group of people.

■ **Stamp**: With this feature one can mark safe and unsafe area in different color. When person will move on unsafe area tracking will be on automatically.

■ **Shake to Alert**: If phone is lock and person will shake phone fastly message will go on few selected numbers.

■ **Size**:- 3 MB cost:- 60-70 Rupess, Platform Android or IOS

### 2- Raksha - Women Safety Alert

This app can be easily downloaded even in old phone. User interface is easy and simple. Special features are :-

■ **Request location** : Person can share location and can ask location of friend. If permission is on person can see location of other person. Alerts can reach to your closed circle through SMS and without Internet on. Information about your lost location can reach to your registered circle, Even your phone is switch off and disabled.

Size:- 2.5 MB, Cost:- free, Platform:- Android and IOS

### 3- Woman Safety Shield Protection

This app help to support safety for own and others. Special features are :-

■ **Take a picture** : The moment you take a photo, it reaches immediately to your registered email list along with location. You can document any incidence which is happening around you. Internet connection is must to work on this app.

■ **Walk with me** : Wherever you go, If GPS tracker is on your location reach to a registered number. Even information about location of nearest hospital, Police station can be easily seen

Size : 1.9 MB, Cost-Free platform ; -Android Some websites are listed below to empower women to headon challenges and avoid emergency situation

## Action to be taken during Emergency situation

Inspite of taking all the precaution if a person caught by an emergency situation then first off all women has to be



calm so that brain should work in a right direction for taking action according to situation. If your car has been stopped then never came down always closed your car window, stay alert use apps. Dial hundred number. If some one is following you then press horn continuously. If you are on road then spray Deodrant, perfume etc on eyes, you will get some time to escape. Keep paper sparay in your press. You can attack by nail cutter, filer, paper cutter safety pins, safety clips, nails etc. Learn some self defense techniques and get equipped your self to move safely and confidently.



# CHENNAI FLOODS

Natural disasters are extreme. They are sudden events caused by environmental factors that injure people and damage property. Earthquakes, windstorms, floods and diseases strike anywhere on earth, often without warning. Floods are one of the leading causes of death from natural disasters. A flood is an overflow of water that "submerges" land. Flooding is extremely dangerous and has the potential to wipe away an entire city, coastline or area and cause extensive damage to life and property. It also has great erosive power and can be extremely destructive, even if it is a foot high.

All the reservoirs that cater to Chennai and its suburbs were empty before Diwali. Consistent rains started on November 8, lasting a week, and were followed by another spell on November 23, which was not forecasted. By the end of November, the water in the reservoir had reached its limit. It started raining again on December 1 which continued for the next day as well. By the afternoon of December 1, the water in Chembarambakkam had swollen to 3,396 million cubic feet — almost its full capacity.

Chennai received 200 mm rainfall for over 14 hours. Following an increased outflow from Chembarambakkam Lake and from over 40 tanks in its catchment area, low-lying areas in the city were already swollen. After more than 48 hours of downpour, flood waters finally started receding.

These floods affected the Coromandel Coast region of the South Indian states of Tamil Nadu and Andhra Pradesh, and the union territory of Puducherry, with Tamil Nadu and the city of Chennai particularly hard-hit. More than 500 people were killed and over 18 lakh (1.8 million) people were displaced. These floods were the costliest to have occurred in 2015 with the estimates of damages and losses up to INR 100000 crore.

Traditionally, the water in Chennai was allowed to spread into fields and thousands of smaller ponds. The entire region acted as a 'sponge' to absorb the excess water. All this supported paddy fields and fish farming. Finally, the water found its way to lakes and the rivers that surrounded Chennai city.

The present day industrialisation and urbanisation has ravaged these watershed areas. In the past two decades, all the major industries, new educational institutions, housing

estates, etc. have been constructed in the area. The construction has filled up thousands of smaller ponds and streams, increasing the surface water flow manifold. All the major tanks are silted, but the amount of water flowing into them has increased. This increased rainfall run-off has found its way into the Chennai city. Unprecedented rain, induced by climate change compounded the problem. While the disaster has been caused by nature, the impact would not have been so severe but for the man-made factors.

The Chennai floods have also thrown light on the flaws in our system of urban planning. Across India,

bed, leading to increased flooding, and damaged Chennai's technology nerve centres and put millions of residents in danger.

Thus the flooding of Chennai in November 2015 is a candid and disreputable account of all the ills that plague



experienced floods. The Chennai

floods show all these problems can surface in other Indian cities as well. In the past three decades, massive housing, planned and unplanned, has cannibalized the river

tional interests are in full play in Chennai. The global economy driven by speculative finance and limitless consumerism wants the land for towns, highways, mining and industry. The commodification of land has fuelled the corporate land grab in India, both by the creation of Special Economic Zones and through foreign direct investment in real estate.

Let's prepare a scientific watershed management plan, a disaster warning system, draining system, rain water harvesting system, desilting and afforestation for all river basins in India. These methods will help in managing the natural disasters like floods in future. People should follow the safety tips avoid building in a flood plain, preparation during flood including packing of essentials with money and medicines, turning off of main switches and utilities and evacuation, avoiding floodwaters as the water may be contaminated by oil, gasoline, or raw sewage or may also be electrically charged from underground or downed power lines, being vigilant to all reports, etc. Full cooperation should be given to rescue teams.



By Keshav Sharma  
7th C  
Tagore International School



## Natural disasters : Manipur Earthquake

**N**atural disasters affect millions of people globally every day. Earthquakes are one of the most powerful natural disasters that damage our environment and in turn cost huge amount of money. It is the result of shaking or trembling of the crust of the earth caused by underground volcanic actions or by the breaking and shifting of rocks beneath the earth's surface.

January 4, 2016, Monday morning's tremor, measuring 6.7 on the Richter scale, rocked the whole of north-eastern India and claimed at least eight lives. People were jolted out of their sleep in northeastern and eastern states including, Assam, Tripura, West Bengal, Odisha and Jharkhand and many of them scampered out of their homes.

Earthquake in Manipur, near India's border with Myanmar, occurred in an area where the Indian and Eurasian tectonic plates — the slabs of planet that created the highest mountains in the world — collided. On the surface, the boundary between the plates is marked by the foothills of the

Sulaiman Range in the west, the Indo-Burmese Arc in the east and the part of the Himalaya Front in the north of India.

The earthquake has once again brought into focus the high seismicity of the region which is even otherwise highly prone to various kinds of natural calamities including floods, river-bank erosion, landslides and forest fires. The North-east is located in Zone V — “very severe intensity zone” — and covers about 12 per cent of the country's total geographical area and about 11 per cent of the population. With the adjoining countries of Nepal, Bangladesh, Bhutan, China and Bangladesh sharing space in Zone V, what the North-east requires is a very well-drawn up disaster preparedness plan, apart from a detailed disaster mitigation policy comprising very strict construction by-laws.

The region has experienced at least 18 severe earthquakes, measuring above 7 on the Richter scale, in the last 100 years. These include the ones that struck Shillong (1897) and Assam-Arunachal-Tibet (1950), with

the latter changing the course of many rivers including the Brahmaputra.

The quake damaged few buildings, residential units and Government offices. It included damage to a six storey building in Imphal. The power supply to Imphal city remained disrupted and some power installations suffered damage. Several buildings in Imphal, including the market complex, and roads developed cracks while walls of some school buildings collapsed.

National Disaster Management Authority (NDMA) in the year 2007 had released its comprehensive guidelines on management of earthquakes on ‘six pillars of seismic safety’ — earthquake-resistant constructions, retrofitting of lifeline structures, regulation and enforcement, awareness and preparedness, capacity development and response. The activities were supposed to be implemented in two phases but none of

these have been completed even remotely.

The tremor that shook the Northeastern states and West Bengal on January 4 must be treated as an urgent wake-up call. It must push the state governments, the NDMA, the ministry of home affairs and the ministry for development of North Eastern Region to implement ‘six pillars of seismic safety’ at the earliest so as to reduce the havoc that can take place if quake of 8+ shakes the earth.



**Devishi Shah**

VIIC, Tagore International School

East of Kailash

New Delhi

Earthquake Manipur

Jan 4, 2016





# “Adhunik Vishwakarma”™ Campaign

With the launch of the “Adhunik Vishwakarma”™ campaign at the holy city “Prayag” (Allahabad) in Uttar Pradesh on 14th Oct 2015, “Global Academy of Public Safety & Habitat Management” (GAPSHAM) embarked upon to shoulder the responsibility of enhancing skills of the masons in our country towards constructing earthquake resistant houses and buildings.

India's approx 60% of land area is earthquake prone. As is said “Earthquake Never Kills; Buildings Do!” highlights the importance of the construction of houses in line with the standards. Economic loss can be regained over the period but the loss of precious lives cannot be supplemented through any rehabilitation or re-construction activity.

The regular training of masons started at Allahabad in the month of November 2015 at the initiative of the District

Magistrate of Allahabad Sh Sanjay Kumar and later it was started in 4 other districts of the Uttar Pradesh namely Bareilly, Pilibhit, Badaun and Shahjahanpur.

During the period of approx 3 months, GAPSHAM trained approx 1500 masons on earthquake resistant masonry construction through 3 days training program. Approx 80% of the total training duration was focused on practical skill development with construction of mock structure using construction material at the training site. The batch size was kept at a 20 to 25 masons per batch so as to ensure the quality of the training. The training programs was coupled with a very intensive evaluation system also which tested various skills of the masons during the training and included even a written test as well. The curriculum was designed based upon the training program developed by Ministry of Home

Affairs, Govt of India for the masons. All trained masons were provided with the stipend at the end of the training (to compensate their wages loss of 3 days) along with daily lunch & tea/snacks arrangement at the site.

This campaign in 5 districts was spearheaded by Dainik Jagran and District Administration of the respective districts. District Administration even extended on-site labour card registration facilities for the masons as per their ongoing schemes/drive which entitles masons for various welfare benefits. All trained masons shall be provided with a certificate which will give them a distinct identity in the form of Adhunik Vishwakarma™.

GAPSHAM plan to train approx 1 Lac masons in Uttar Pradesh covering all 31 districts falling under zone-IV during the next one year.



अभी तक कोई भूकंपरोधी भवन बनाने के लिए कहता था तो मन में हीन भावना आती थी कि हमें यह तकनीक नहीं आती। अब तो बहुत आसान लगने लगा है यह प्रशिक्षण अतुलनीय है।  
बेचन राम, देवहता



कमाल का प्रशिक्षण मिला है हमें यह वही मालूम था कि मोटा सरिया के बजाए पतले सरिया को मजबूत और भूकंपरोधी बनाया जा सकता है।  
महेश कुमार बिंद, मनूक पुरा



प्रशिक्षण में सब कुछ करके सीखा यह नहीं कि सिर्फ बता दिया गया और हमने सुन लिया। प्रशिक्षण दे रहे इंजीनियरों ने एक-एक बिंदु पर नजर रखी और कराकर समझाया और कि भूकंपरोधी भवन का निर्माण कैसे होगा।  
मिथिलेश कुमार, उपरौड़ा



भवन निर्माण के लिए भूमि का परीक्षण करना सिखाना गया यह भी बताया गया कि भूमि कठोर है वहां किस तरह पिलर का निर्माण लोक भवन को टिकाऊ और मजबूत बनाया जा सकता है।  
राजू कांत, पट्टोनाथ राव



भूकंप के झटके आए दिन महसूस किए जाने लगे हैं इसलिए भूकंपरोधी मकान जरूरी हो गया है। आधुनिक विश्वकर्मा के नाम से राजमिस्त्रियों को प्रशिक्षण देने को जो पहल की है वह अतुलनीय है।  
रामअवतार, चमराहा, नेवदिया



शाहजहांपुर

बरेली

इलाहाबाद

पीलीभीत

शाहजहांपुर

