

Quarterly
Newsletter

पुनर्जन्म

...bouncing back to life again and again...



बिहार राज्य आपदा प्रबंधन प्राधिकरण
(आपदा प्रबंधन विभाग, बिहार सरकार)



आपदा नहीं हो भारी यदि पूरी हो तैयारी...



माननीय मुख्यमंत्री श्री नीतीश कुमार द्वारा "मुख्यमंत्री स्कूल
सुरक्षा पखवाड़ा 2015" का उद्घाटन एवं घोषणा

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प्रधान संपादक : श्री अनिल कुमार सिन्हा, उपाध्यक्ष, भा०प्र०से० (से०नि०)

संपादन परामर्शी: प्रो० ए० एस० आर्या, सदस्य एवं डॉ० यू० के० मिश्र, सदस्य (बि०श०आ०प्र०प्रा०)

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सु

रक्षित बिहार के लिए हमें मजबूती से काम करना होगा। इसी में बिहार की सुरक्षा है। बच्चे ही हमारा भविष्य है। इसी को लेकर

बिहार में मुख्यमंत्री विद्यालय सुरक्षा योजना के तहत राज्य के सभी सरकारी एवं निजी विद्यालयों में भूकंप एवं आग से बच्चों की सुरक्षा जागरूकता परखवाड़ा का आयोजन किया गया। इसके अंतर्गत एक जुलाई से १५ जुलाई तक स्कूलों में सुरक्षा परखवाड़ा

त्रैमासिक अंतराल में स्कूल सुरक्षा एवं अन्य भागीदारों के क्षमतावर्धन की दिशा में विभिन्न प्रयास किए गए और हमारे प्रयास भविष्य में भी निरंतर जारी रहेंगे।

उन्हें विद्यालय स्तर पर जागरूकता टीम, आपदा अलार्म टीम, निकासी टीम खोज व बचाव टीम, प्राथमिक उपचार टीम, अग्नि सुरक्षा टीम, स्थल सुरक्षा टीम, यातायात टीम व मीडिया टीम गठित करने को कहा गया। साथ ही प्रत्येक वर्ष चार जुलाई को विद्यालयों में आपदा व बचाव का मॉक ड्रिल करने पर जोर दिया गया। स्कूलों की बुनियाद विकास की जाएगी स्कूल भवन की मरम्मत एवं प्राकृतिक आपदा से निपटने के उपाय सतकर्तामूलक व्यवस्था समेत विभिन्न काम किये जा रहे हैं। स्कूल के बच्चों को प्राकृतिक आपदा से निपटने के लिए प्रशिक्षण दिया जा रहा है। इस परियोजना के तहत सिर्फ विद्यार्थियों को ही नहीं बल्कि शिक्षक व शिक्षा कर्मचारियों को भी प्रशिक्षण दिया जाएगा। प्रशिक्षण प्राप्त शिक्षक अपने अपने स्कूलों की सुरक्षा के लिए काम करेंगे। इस परियोजना का वास्तविक आकार देने के लिए हाल ही में जिलों के ब्लॉक व मुख्यालय स्तर पर विभिन्न विद्यालय के शिक्षक व शिक्षा कर्मियों को प्रशिक्षण देने का काम शुरू हो गया है। इस परियोजना के तहत विद्यालय में अग्निशमन व्यवस्था के साथ विपत्ति के दौरान स्कूल से बाहर निकलने के सारे रास्ते खुले रखने होंगे। समय समय पर अग्निशमन यंत्रों की जांच करनी होगी। राज्य सरकार के आपदा प्रबंधन विभाग भी इस परियोजना में काम कर रहा है। प्रशिक्षण की सुविधा के लिए एक पुस्तिका भी प्रकाशित की गयी गई है। बिहार राज्य आपदा प्रबंधन प्राधिकरण ने एक दिवसीय कार्यशाला का आयोजन कर बिहार प्रशासनिक सेवा के पदाधिकारियों को भी आपदा से बचाव के लिए प्रशिक्षित किया। इस त्रैमासिक अंतराल में स्कूल सुरक्षा एवं अन्य भागीदारों के क्षमतावर्धन की दिशा में विभिन्न प्रयास किए गए और हमारे प्रयास भविष्य में भी निरंतर जारी रहेंगे। सुरक्षित एवं आपदा मुक्त बिहार के भविष्य के प्रति कृत संकल्प।

संपादकीय

अनिल कुमार सिंह

उपाध्यक्ष, भा०प्र०से० (लेनलिन)

प्रधान संपादक

पुनर्नवा के इस अंक से हम कुछ नया करने का प्रयास कर रहे हैं जिसके तहत अंक में एक नई श्रृंखला को जोड़ा जा रहा है।

मनाया जा रहा है। इस कार्यक्रम के तहत ही पटना के गांधी मैदान में विशाल मॉक डील का आयोजन किया गया जिसमें कई विद्यालयों के हजारों बच्चों ने भाग लिया। इस कार्यक्रम में बच्चों को आपदा की स्थिति में क्या करें और क्या नहीं करें, इस विषय पर विस्तार से चर्चा की गई और प्रयोगिक तौर पर आपदा से निबटने के गुर सिखाये गए। इस आयोजन में बिहार सरकार के पदाधिकारियों को प्रशिक्षित किया जा चुका है जो किसी भी आपदा के समय महत्वपूर्ण भागेदारी निभाते हैं। आपदा सुरक्षा परखवाड़ा के तहत प्रदेश के हर विद्यालय के शिक्षकों को एक दिवसीय ट्रेनिंग का भी आयोजन किया गया। इसमें शिक्षकों को मुख्यमंत्री विद्यालय आपदा प्रबंधन योजना की विस्तृत जानकारी दी गई।



नई
शुरुआत

दूसरी पारी



बि

हार राज्य आपदा प्रबंधन प्राधिकरण के माननीय उपाध्यक्ष के तौर पर श्री अनिल कुमार सिन्हा

भा0प्र0से0(से0नि0), ने दिनांक 2

अगस्त, 2015 को पुनः तीन वर्षों की अवधि के लिए योगदान दिया है। यह इनकी दूसरी पारी है इसके पूर्व इन्होंने 2 अगस्त, 2010 से 1 अगस्त, 2015 तक उपाध्यक्ष के तौर पर कार्य किया है। श्री सिन्हा भारतीय प्रसाशनिक सेवा 1974 बैच के पदाधिकारी हैं जिन्हें देश-विदेश में विभिन्न संस्थाओं में कार्य करने का व्यापक अनुभव है। ये मूलतः बिहार कैडर के पदाधिकारी रहे हैं। इनके कुशल नेतृत्व में प्राधिकरण ने विगत पाँच वर्षों में अनेकों विशिष्ट कार्यक्रमों को अंजाम दिया है। इनमें से कुछ प्रमुख कार्यक्रम कार्यालय आपदा प्रबंधन योजना (ODMP), मुख्यमंत्री स्कूल सुरक्षा योजना (MSSP), जिला आपदा प्रबंधन योजना (DDMP), नगरीय आपदा प्रबंधन योजना (CDMP) है। प्राधिकरण ने इस दौरान आपदा प्रबंधन के विभिन्न आयामों को छुआ है जिससे आपदा मुक्त बिहार की अवधारण को बल मिला है। बाढ़, सुखाड़, अग्नि सुरक्षा इत्यादि क्षेत्रों में विशेषकर जन-जगरुकता में उल्लेखनीय सफलता प्राप्त हुई है, जिसके लिए प्राधिकरण सतत प्रयासरत रहा है। आशा है कि माननीय श्री अनिल कुमार सिन्हा के द्वितीय कार्यकाल में प्राधिकरण आपदा प्रबंधन एवं आपदा से सुरक्षा के क्षेत्र में और भी सफलता प्राप्त कर सकेगा। नए कार्यकाल की पूरे प्राधिकरण परिवार की तरफ से ढेरों शुभकामनाएँ।

मोनीषा दूबे
वरीय संपादक



151000

Nodal Teachers Trained
on School Safety

76000

Government Schools
Covered



Training of Trainers at State Level (400 Master Trainers trained at State Level): Bihar has more than 76000 government schools including primary, upper primary, middle and high schools. Owing to such a large number of schools in the state, it became practically

Mukhya Mantri School Safety Programme...

very challenging to create a pool of Master Trainers who can trickle down the School Mock Drill

training programme from State level to District level to Block level to village level. Considering this chal-

lenge as an opportunity, the Bihar State Disaster Management Authority and Education



Implementation of the Mukhyamantri School Safety Program (MSSP) in Bihar:

- i. Training of Trainers at State Level
- ii. Training of Master Trainers cum Nodal Teachers at District and Block Level
- iii. Launch of the Mega Mock Drill Fortnight Exercise by the H. Chief Minister, Bihar

Departments initiated this process on cascade model. Under this process more than 400 master trainers from Education Department, Bihar Police and Home Guards, who were representing each of the thirty eight districts of Bihar, were given quality training on the processes of School

Mock Drill Exercise, by the personnel of 9, National Disaster Response Force (NDRF), Bihta, Patna. Training of Master Trainers cum Nodal Teachers at District and Block Level (151000 Teachers trained across the state) : The above mentioned 400 Master

Trainers, who were capacitated in Training of the Trainers (ToT), Programme at state level become the Master Trainers at District and Block level. The program aims to create and promote an environment in every school conducive for the children to learn, implement and make

other learn about safety measures before, during and after disasters. Since the majority of the program is within the school campus, the program will help the schools nurture a culture of prevention amongst the children.

By Dr. Anand Bijeta,
Project Officer

Children are among the most vulnerable to natural disasters.

The physical and emotional development of children, coupled with their lack of awareness and practical skill, leaves them at high risk and without appropriate response measures.



Baingra Middle School Madhubani, Bihar

Every Monday to Saturday, a courtyard in the Bisfi block of Madhubani is enveloped by smoke. The smoke passes over a broken hand pump, absorbing into wet mud from which the pump stands. It creeps into dirty bathrooms, no doors to impede its drift. It issues fervently out of a window of the building encircling this space, announcing the approach of the mid-day meal. The children inside are learning arithmetic, and once their lessons are over they will spill into this courtyard, just like the smoke, jumping from the school's terrace into the mud. They will not think to wash their hands, and will not think about the smoke. If a child hurts themselves attempting to jump, because there are no stairs to walk down, there is no first aid kit to treat their injury. If a child gets sick from the

lack of cleanliness, the disrepair of neither the bathrooms nor the washing stations will come into question.

And if a flood or earthquake strikes, none of children will know what to do. These were the conditions of the Baingra Middle School in Madhubani, Bihar, before UNICEF implemented its School Safety Programme (SSP). Four years have passed now since the plan's integration, painting a very different picture of the learning environment of the school.

Children are among the most vulnerable to natural disasters. The physical and emotional development of children, coupled with their lack of awareness and practical skill, leaves them at high risk and without appropriate response measures.

This vulnerability increases exponentially when children are away

from the supervision of their parents or guardians, as is the case for much of the day when they are at school. This highlights the importance of initiating measures that reduce existing risks while increasing the sensitivity of children towards disasters. In this pursuit, UNICEF initiated its programme on School Safety Programme (SSP) in 2011. The pilot project was accepted by the Education Department with the support of a local partner, Bihar Sewa Samiti (BSS), in the Madhubani district of Bihar. Situated in the Bisfi

block of Madhubani, Bihar, the Baingra Utkramit Madhya Vidyalaya (Baingra Middle School) is highly vulnerable to multiple hazards. The school is located within the seismic zone V as well as a highly prone flood zone, making it highly susceptible to both high

intensity earthquakes and flooding from the River Dhous. Floods submerge the roads leading to the school, cutting off access. During such events, the school either closes for days at a time or the children are necessitated to reach class by boat.

Furthermore, many of the students already walk or cycle for half an hour to reach school, and flooding endangers this transit. These factors combine to increase the infrastructural vulnerability of the school, and it is this enhanced vulnerability that prompted a response plan through the SSP. The intervention began through the formation of a School Disaster Management Committee (SDMC). This committee required the involvement of members from pre-existing institutions, which included Bal-Sansad, a children's parliament; Meena Manch, a group promoting leadership in



What students learned from the School Safety Program

1. Do's and don'ts of disasters
2. First aid knowledge
3. How to make school disaster plan
4. Health & hygiene knowledge
5. How to identify risks in schools & communities
6. School-level mitigation measures necessary for minimizing risk
7. The importance of disaster preparedness

girls; and Vidyalaya Shiksha Samiti, the School Education Committee. Peer Educators (PEs) and a Focal Point Teacher (FPT) had to be additionally selected so that the initiative could be driven forward. These individuals were chosen by the headmaster from inputs by the teachers. Mr. Suresh Singh, an English teacher, was chosen as the FPT after the first teacher selected demonstrated he was not up to the task.

While hesitant at first, Singh quickly warmed to the role and found it a rewarding endeavour. The SDMC was formed on February 12, 2013, with the School Disaster Management Plan (SDMP) begun on April 12, 2013. An orientation regarding hazard hunts was given to the FPT and the PEs by a BSS resource staff member. In these exercises, the FPT and PEs were divided into groups and instructed to identify risks. There were no limitations placed on the students by UNICEF or BSS. The idea was to facilitate creative solutions by and autonomy for the students. Through these collaborative hazard hunts, a risk profile was drawn up for Baingra. The students found many danger zones within the school, both structural and non-structural.

After the FPT was tasked with developing strategies for mitigating these risks, the SDMC innovatively addressed many of these concerns. First, a cleanliness fund, a Swachhta Kosh, was established in the school. Voluntary donations of Rs. 1 were provided by students so that buckets,

soaps, detergents, phenyl, and medicines for the first aid box could be bought. Thanks to this fund, the school now has a first aid kit containing basic medicines, ointments, bandages, and other items to meet basic health needs. These items are encouraging sanitary practices, as does the concrete platforms that have been constructed at the base of the pumps.

The fund that the students created can also be used for funding minor repairs within the school. To combat the smoke produced by the stoves, smokeless chulhas were installed in the kitchen. This has not only improved the working conditions of the kitchen workers, but everyone who had been coming into contact with the smoke before these new chulhas were installed. The SDMC tackled the safety concerns regarding accessibility. A stairway was constructed to join the unlevel elevations, and stoppers were provided for the classroom doors. The most pervasive contribution of the SSP was its dissemination of knowledge and awareness to students. Awareness

through capacity-building is the core of the SSP, with mock drills and trainings are a central tenet of the programme. The most encouraging impacts of the programme have been the behavioural changes in the children. The children have more confidence now after participating in these activities and being made to feel their inputs have value. The leadership potential of these students has thus expanded. Knowing what to do in the event of a natural calamity reduces not only the vulnerability of the child, but also of that child's community.

The Baingra Middle School has achieved considerable success in a short period of time since the SSP's implementation. The school is able to showcase both structural and non-structural upgrading, and the benefits of these changes are already making an impact for the stakeholders concerned. Cleanliness has improved exponentially, smoke no longer permeates the school yard, and structural hazards within the school have been significantly reduced. More importantly, the capacities of the students have expanded.

As it offers important learning lessons, Baingra can now serve as a model for other schools to replicate, and is an example for why Bihar's schools need continued support from the SSP. Schools have the capacity to help themselves if they have the resources and know-how. Investing in prevention mitigates the human and economic costs post-disaster.



हर साल ४ जुलाई को मनाया जायेगा विद्यालय सुरक्षा जागरूकता दिवस: मुख्यमंत्री



सभी सीखेंगे आपदा से बचने के उपाय

सीएम बोले

विद्यालय सुरक्षा जागरूकता परखवाड़ा कार्यक्रम का शुभारंभ करते हुए माननीय मुख्यमंत्री नीतीश कुमार ने कहा कि हर साल 4 जुलाई को विद्यालय सुरक्षा जागरूकता दिवस के रूप में मनाया जाएगा। इस कार्यक्रम का मुख्य उद्देश्य है, आपदाओं के बारे में जानकारी देना। आपदा अगर आ जाये तो क्या करना है, इसे समझ लेना है। आपदा के बारे में बिहार के सभी नागरिकों को जागरूक करना है। यह अभियान तभी कारगर साबित हो सकता है, जब हम सरकारी एवं गैर सरकारी सभी स्कूली बच्चों को जागरूक कर सकें। कम उम्र में बच्चों को जो सिखाया जाता है, उन्हें जीवन भर याद रहता है। आपदा से किस प्रकार बचना है, भूकम्प आने पर क्या करना है, यह जानने के बाद बच्चे न सिर्फ अपनी रक्षा कर सकते हैं बल्कि वे दूसरों को भी बतायेंगे कि आपदा से कैसे बचा जा सकता है।

दो करोड़ से ज्यादा बच्चे स्कूल में पढ़ रहे हैं। इतने लोगों को आपदा से बचने का उपाय सीखा दें तो राज्य को बहुत अधिक लाभ होगा।

इस मुहिम में सभी सरकारी एवं गैर सरकारी विद्यालयों के बच्चों को शामिल किया है। राज्य के एक लाख पन्द्रह हजार शिक्षकों को प्रशिक्षण देकर मास्टर ट्रेनर बनाया गया है। ये मास्टर ट्रेनर दो करोड़ से ज्यादा बच्चों को आपदा से बचाव की जानकारी देगे। राज्य, जिला एवं प्रखंड स्तर पर प्रशिक्षण कार्यक्रम का आयोजन कर इन्हें प्रशिक्षित किया गया है।

पूरे बिहार में यह कार्यक्रम हो रहा है। दो करोड़ से ज्यादा बच्चे स्कूल में पढ़ रहे हैं। इतने लोगों को आपदा से बचने का उपाय सीखा दें तो राज्य को बहुत अधिक लाभ होगा। उन्होंने कहा कि हमारे बिहार में 28 जिले बाढ़ प्रवण हैं। सोलह जिले पूर्णतः बाढ़ से प्रभावित हैं। आज पूरे देश में मानसून की स्थिति अच्छी है लेकिन बिहार में मानसून कमजोर पड़ा हुआ है। कभी बारिश हो रही है, कभी बारिश नहीं हो रही है। बिहार अदभूत राज्य है, जहां हमें बाढ़ और सुखाड़ दोनों का सामना एक साथ करना पड़ता है।

मुख्यमंत्री ने कहा कि नेपाल में बारिश होती है तो बिहार में बाढ़ आ जाती है। बाढ़ एवं सुखाड़ के

साथ-साथ बिहार को अति वृष्टि ओलावृष्टि, तूफान, चक्रवाती तूफान एवं बवंडर का भी सामना करना पड़ता है। आज से चार साल पूर्व बिहार के पूर्वोत्तर इलाके पूर्णिया में बवंडर आया। 180 किलोमीटर प्रतिघंटा की रफ्तार से ज्यादा तेज हवायें चली। हमारे यहां बवंडर से बचाव के लिये तैयारी नहीं थी। मई महीने में अग्निकाण्डों का सामना करना पड़ता है। उन्होंने कहा कि बिहार का पूरा का पूरा इलाका सर्वाधिक संवेदनशील इलाका है।

प्रदेश का उत्तरी भाग जोन-4 में जबकि दक्षिणी भाग जोन-5 में आता है। हमने गंगा नदी के उस पार के जाने को भी जोन 4 मानकर उसके बचाव की तैयारी शुरू की है। इस साल 25 अप्रैल, 26 अप्रैल एवं 12 मई को बिहार के लोगों को भूकंप के झटकों का सामना करना पड़ा। लोग सजग एवं सचेत थे, जिसके कारण बहुत अधिक नुकसान का सामना नहीं करना पड़ा। उन्होंने कहा कि बिहार में भूकंपरोधी मकान बनना चाहिये। सरकारी भवनों को भूकंपरोधी बनाया जा रहा है। अगर सरकारी मकान भूकंपरोधी नहीं

बना है तो उसमें रेक्ट्रोफीटिंग की जायेगी। निजी एवं बहुमंजिला मकान भी भूकंपरोधी मकान बने।

हम लोगों ने इंजीनियरों एवं विशेषज्ञों की एक टीम बनायी, जिसने दीवार में दरार को जांचकर अपना प्रतिवेदन दिया। पक्के एवं बहुमंजिले मकान जो क्षतिग्रस्त हुए थे या जिनके भवनों की दीवारों एवं छतों में दरार आ गयी थी, ऐसे भवनों का सर्वेक्षण इंजीनियरों की सिविल टीम ने किया था। ऐसे भवनों को जी-1, जी-2, जी-3, जी-4, जी-5 श्रेणी में चिह्नित किया गया। जी-1, जी-2 श्रेणी के मकानों में लोग रह सकते हैं। जी-3, जी-4, एवं जी-5 के मकानों से कुछ सामान निकालना था, लोगों ने निकाला, ऐसे भवनों को नहीं रहने लायक घोषित किया गया।

आपदा से बचाव की तैयारी अगर पूर्व से की गई है तो आपदा से बचाव करने में कठिनाई नहीं होती है। विद्यालय सुरक्षा व राज्य के खजाने पर पहला अधिकार आपदा पीड़ितों का, राहत के लिए तय की गई है।

Each panelist will refer to difficulties with respect to the following components, and try to identify up to 3-5 information handling capabilities/solutions that, if available, would make a transformative impact on performance:



AUGUST
13-14, 2014

ITRA-MOBILE FEEDBACK WORKSHOP

Panelists

1. Shri Arjun Katoch
2. Shri Kamal Kishore, Member National Disaster Management Authority
3. Shri Rajesh Kishore, Ex Secretary Gujarat State Disaster Management Authority
4. Shri A. K. Sinha, Vice Chairman, Bihar State Disaster Management Authority
5. Dr. R. K. Dave, Head, Government Initiatives, ITRA

Structure

The panelists articulated challenges faced by those engaged in disaster management. They will simply list the difficulties, whether or not they think there is a technology solution for them. It is hoped that this may lead to ideas for solutions in

the ITRA-Mobile teams.

1. The panelists will address the following four aspects of Disaster Management:
 - a. Challenges to Prevention and Early Warning in India
 - b. Challenges to Preparedness and Resilient Continuity
 - c. Challenges to (Short and Long Term) Recovery
 - d. International Perspectives on 1(a-c)

2. Each panelist will refer to difficulties with respect to the following components, and try to identify up to 3-5 information handling capabilities/solutions that, if available, would make a transformative impact on performance:

- a. Sensing
- b. Communication
- c. Analysis
- d. Action
- e. Any others, not included in (a-d)
3. For each challenge in 1(a-d) and/or difficulty in 2(a-e), each panellist will also embed in their discussion answers to the following questions, whenever relevant:
 - a. Who are the Stakeholders?
 - b. Is a large R&D Effort relevant/desired?
 - c. Will someone sponsor/support the R&D effort?
 - d. If so, who, and how to such an effort?

4. The discussion of each of 1(a-d) will begin with an opening 7-min statement by one of the panellists. It will then be

followed by a 15-min an interactive session of discussion among the panellists and the floor, with a strong focus/attention to questions/comments from the floor (the audience is ITRA-Mobile teams, including PhD students, and it is hoped that this panel will help form/develop ideas about possible problems/solutions that they may take back with them and work on as a part or basis of their research.) A tentative list of opening statement panellists is as follows:

- 1a: Anil Sinha
- 1b: Rajesh Kishore
- 1c: Kamal Kishore
- 1d: Arjun Katoch

5. Dr. Dave will moderate and develop a summary of the panel proceedings.



ALLAHABAD RAILWAY STATION

Stampedes have been common to populous India, with most occurring during religious gatherings. New studies in 'pedestrian dynamics' now say that to prevent a stampede, one needs to spot the building of pressure in a dense moving crowd.

Dirk Helbing of Swiss Federal Institute of Technology, Zurich, and Anders Johansson of the Centre for Advanced Spatial Analysis, University College, London, found that the decisive factor leading to a stampede was not average or local crowd density but pressure, which is speed variance multiplied by density.

Replying to an e-mail query, Johansson said: "For planned mass gatherings like pilgrimages, sports and political

How to stop stampedes

LESSONS FOR INDIA

events, a set of measures should be taken in order to minimise the risk of a crowd crush or other types of disasters.

"Firstly, one has to make sure that the infrastructure (roads, corridors, open spaces, entrances and exits) is suitable for the mass gathering so that there is enough capacity and there are no bottlenecks or other compression points.

"Secondly, there

should be a good crowd-management plan that is followed, which includes crowd monitoring, scheduling and control. Thirdly, one must have good contingency plans (e.g. evacuation) in case anything goes wrong."

"On top of this, it is advisable to make use of modern technology such as computer simulation of crowds, to test the suitability of a venue virtually in a computer, before the gathering,

and also to use any mean of real-time crowd counting during the event, to be able to take action in case the event does not unfold according to plan," he said.

India has a long history of stampede tragedies.

On November 8, nearly 20 people were trampled to death in Haridwar, Uttarakhand, during a yagna. On January 14, over 102 people were killed in a stampede near the shrine of Sabarimala in Kerala. This was the second accident there since 1999. On March 4, 2010, 63 deaths occurred at Ram Janki Temple in Kunda, Uttar Pradesh.

On September 30, 2008, at the Chamunda Devi temple in Jodhpur, Rajasthan, 249 people



DURGA PUJA, 2013 GANDHI MAIDAN

were killed. On August 3 the same year, 163 were crushed to death along the path leading to the Naina Devi Temple in Himachal Pradesh. There have been stampedes at recruitment drives of the Army and at various other types of gatherings.

Helbing and Johansson made their discovery while studying the stampede during the Haj in Mecca-Medina on January 12, 2006 - how propulsion force of people increased in areas of extreme densities. The next year, implementing their suggestions for corrections, the Saudi Arabian government organised a safe Haj.

The two scientists had mathematically analysed the video recordings of the stoning ritual, and seen how,

unlike vehicle traffic, even at extreme densities people never stopped moving. This led to self-generated deadly waves or "turbulence" and an inevitable stampede. Scientifically, this was a new understanding and applicable to other mass gatherings.

Physicists until then had identified only two forms of dense crowd movements - laminar or streamlined flow (smooth, without hindrances) and stop-and-go flow (like movement of vehicular traffic) using models such as "directional segregation" and "cellular automata".

A study of the Haj stampede showed that when people are so close to one another that it becomes unbearable and asphyxiating, the

pressure makes them push out to gain space, leading the crowd to the state of "turbulence". Then the crowd, carrying up to nine people per square metre, resembling a fluid mass, begins to sway like a wave and finally "ruptures", leading to "crowd panic".

Like tremors of an earthquake, the situation becomes uncontrollable, moves beyond the power of security forces, if any. The mass splits up into clusters, spreading with strong velocity in all possible directions. People are pushed around, some stumble and fall and, if they cannot get up fast, are trampled upon. Soon, the area of trampled people becomes larger and larger as they become obstacles to others. The

crowd has unknowingly self-destructed itself.

To stop the crowd from reaching this stage, we need advance warning signals of "critical crowd conditions". The signals can be evaluated online by an automated video analysis system and directions can be sent out to control the crowd.

This can be through crowd flow control, pressure relief strategies or separation of people into blocks to stop the spreading of shock waves.

Pedestrian dynamics as a field came into being in 1995 and physicists since then have contributed to the understanding of crowd disasters, each moving closer to the heart of the imminent tragedy but not quite reaching it.



The millions of people must perform a litany of rituals in five days, including the symbolic stoning of the devil in Mina, about 2 miles away from the Mecca holy site. That's where the deadly stampede took place. At 9 a.m. there was a "sudden

2. Extreme heat and exhaustion:

The journey is physically grueling enough on its own. But with temperatures soaring over 43 degrees Celsius, anyone who succumbs to the elements might collapse and never recover. But regardless, people were still continuing to their ritual, where the stampede happened.

3. Inexperience and confusion:

Even though Saudi officials are extremely versed in hosting Hajj crowds, many of the pilgrims are making the journey for the first time and might not be prepared to follow all directions or handle the chaos. If any mistake happens, if a group makes the wrong turn, that will cause a disaster. These new pilgrims might try to go on their own, or try to take a shortcut.

Maj. Gen. Mansour Al-Turki, the Saudi Interior Ministry's security spokesman, hinted that the problem may have stemmed from some pil-

HAJJ STAMPEDE UNFOLDED

More recently, in 2004, an early morning stampede killed 251 pilgrims and injured another 244.

grims not following established guidelines.

4. A deadly history:

Hundreds of other pilgrims have been killed during the same ceremony in years past. But this recent stampede was the deadliest at Mina since 1990, when 1,426 people died.

More recently, in 2004, an early morning stampede killed 251 pilgrims and injured another 244. It lasted 27 minutes before being brought under control. In 2006, a particularly lethal stampede there killed at least 363 people. That time, pieces of luggage spilled from moving buses in front of the entrances to a bridge, causing people to trip. After a stampede during Hajj killed 363 people in 2006, the Saudi government erected three massive pillars and completed a \$1.2 billion, five-story bridge near the site where pilgrims can toss stones. The latest calamity also came 13 days after a

crane collapse killed more than 100 people at another major Islamic holy site, the Grand Mosque in Mecca.

How to prevent another stampede is a very delicate question for the Saudis, and this is a very sensitive question for the kingdom, because the kingdom wants to come across as the custodian of Mecca and Medina, to provide security and safety. Although the Saudis have been enlarging the space in Mina where pilgrims gather for the stone throwing ritual, the latest tragedy proves they need to go further. The Saudi Government needs a significant infrastructure in terms of police, support, space. Imagine if you have 2 million people in a relatively small town. Mecca is a small town, in particular the sacred sites of Mecca. The extra measures, the technology, the crowd control, trying to find ways and means to prevent such catastrophes.



Mecca's Hajj stampede death toll has surpassed 1,450 people, from 19 of the nations affected, and making it the deadliest-ever incident during the annual pilgrimage. The deadly stampede occurred on September 24 near an exit from a monorail train station that was close to the tent camps accommodating thousands of pilgrims who had come for the five-day celebration of Islam's second-biggest holiday, Eid Al-Ahda. The Hajj draws roughly 2 million pilgrims to Mecca each year, an observance that lends its host, Saudi Arabia,

unrivalled prestige across the Muslim world. It also saddles the kingdom with billions of dollars of costs and logistical considerations.

Over the course of the past 40 years, several of the pilgrimages have been killed by stampedes, the collapse of infrastructure, violence, and fires.

Event: On the day, groups of pilgrims were moving from early morning towards Jamarat Bridge for the last of three stoning days. The interior ministry, Saudi Arabia has assigned 100,000 police to secure the

Hajj and manage crowds. But pilgrims have blamed the stampede on police road closures and poor management of the flow of hundreds of thousands of pilgrims in searing temperatures.

Among the suggested causes: pilgrims rushing to complete the rituals, heat, masses of faithful pushing against each other in opposite directions, even confusion among the many first-timers on the annual Islamic pilgrimage to Mecca and Mina.

By Vishal Vasvani,
Project Officer

Iran: 465 killed
Egypt: 148 killed
Indonesia: 120 killed
India: 101 killed
Nigeria: 99 killed
Pakistan: 93 killed
Mali: 70 killed
Bangladesh: 63 killed
Senegal: 54 killed
Benin: 51 killed
Cameroon: 42 killed
Ethiopia: 31 killed
Sudan: 30 killed
Morocco: 27 killed
Algeria: 25 killed
Ghana: 12 killed
Chad: 11 killed
Kenya: 8 killed
Turkey: 3 killed

एन०डी०एम०ए० के सदस्य श्री कमल किशोर ने बताया कि भारत के कुल ६७५ जिलों में से ५१० ब्लॉक में जिला प्रबंधन योजना बनायी गयी है और १०-१२ सालों में कई प्रयास भी हुए हैं किन्तु वे खास-खास आपदाओं के लिए केन्द्रित हैं।



बिहार राज्य आपदा प्रबंधन प्राधिकरण द्वारा गुरुवार 30 जुलाई को जिला आपदा प्रबंधन योजना का Inception Workshop का आयोजन किया गया। आपदा प्रबंधन नियमावली 2005 के सेक्शन 31(1) के आलोक में बिहार के 38 जिलों में बहु आपदा जिला प्रबंधन योजना को तैयार करने का कार्य बिहार राज्य आपदा प्रबंधन प्राधिकरण के नेतृत्व में 9 विभिन्न एजेन्सियों के द्वारा प्रारंभ किया गया है। इसी संबंध में सभी एजेन्सियों द्वारा तैयार किए गए प्रारंभिक रिपोर्ट की प्रस्तुति से संबंधित कार्यशाला का आयोजन आज दिनांक 30 जुलाई, 2015 को किया गया।

इस कार्यशाला में राष्ट्रीय आपदा प्रबंधन प्राधिकरण के सदस्य श्री कमल किशोर, निर्देशक, श्री आर० के० सिंह, श्री पी० एन० राय, महानिदेशक पुलिस (अग्निशामन एवं गृह सुरक्षा वाहिनी) ने भाग लिया। कार्यशाला का उद्घाटन श्री अनिल कुमार सिन्हा, उपाध्यक्ष बिहार राज्य आपदा प्रबंधन प्राधिकरण, पटना ने करते हुए प्रस्तावित बहु आपदा जिला प्रबंधन योजना के महत्व पर प्रकाश डालते हुए कहा कि

जिला आपदा प्रबंधन योजना का Inception Workshop

सभी आपदा स्थानीय होती है जिसमें स्थानीय प्रशासन की भूमिका आपदा के वक्त First Responder की होती है। इसलिए सभी जिला आपदा प्रबंधन प्राधिकरणों को सुदृढ़ करने की आवश्यकता है। पिछले 10-15 सालों से जिला आपदा प्रबंधन योजना में कई प्रकार के कार्य हो रहे हैं लेकिन इसके बावजूद इसका स्कोप और इस विषय की समझ स्पष्ट नहीं है।

इसलिए आवश्यकता है कि हमें जिला आपदा प्रबंधन योजना को सुदृढ़ करना होगा और एक सुदृढ़ संरचना बनाना होगा।

एन०डी०एम०ए० के सदस्य श्री कमल किशोर ने बताया कि भारत के कुल 675 जिलों में से 510 ब्लॉक में जिला प्रबंधन योजना बनायी गई हैं और 10-12 सालों में कई प्रयास भी हुए हैं किन्तु वे खास-खास आपदाओं के लिए केन्द्रित हैं। अभी बिहार में 38 जिलों का

बहु आपदा जिला प्रबंधन योजना बनाने का कार्य प्रारंभ हुआ है वह स्वागत योग्य है।

इसके पूर्व श्री पी० एन० राय, महानिदेशक (अग्निशामन सेवा) एवं महासमादेष्टा (गृह सुरक्षा वाहिनी) ने कहा कि जिला आपदा प्रबंधन योजना में व्यावहारिक योजनाएं बननी चाहिए जिससे कि किसी भी आपदा के वक्त उन्हें उपयोग में लाया जा सके।

श्री आर० के० सिंह, निदेशक एन० डी० एम० ए० ने भी अपने संबोधन में जिला आपदा प्रबंधन योजना महत्व पर प्रकाश डाला।

कार्यशाला की शुरुआत जिला आपदा प्रबंधन योजना के नोडल पदाधिकारी एवं वरीय सलाहकार, बिहार राज्य आपदा प्रबंधन प्राधिकरण, श्री अनुज तिवारी ने प्रस्तुतीकरण से किया तथा कार्यक्रम का संचालन परियोजना पदाधिकारी, डा० मधुबाला ने किया। गौरतलब है कि जिला आपदा प्रबंधन

योजना बनाने का कार्य अवधि छः महीने का है जिसमें कि राज्य के चिन्हित 38 जिलों का उनके एजेन्सियों द्वारा प्रस्तुतीकरण कर उनके जिलों के खतरा न्यूनीकरण एवं जोखिम न्यूनीकरण को समाहित कर जिला आपदा प्रबंधन योजना बनाने का कार्य दिया गया है।

एजेन्सियों के पास पूर्व से बनाए गए जिला आपदा प्रबंधन योजना से नई बहु आपदा जिला आपदा प्रबंधन योजना बनाने में मदद मिलेगी। कार्यक्रम में बिहार राज्य आपदा प्रबंधन प्राधिकरण के सदस्य, श्री उदय कांत मिश्र, उपाध्यक्ष के विशेष कार्य पदाधिकारी, श्री अनिल सिन्हा, वरीय सलाहकार, वरुण कांत मिश्र, अजित समैयार तथा राज्य 38 जिलों आपदा प्रबंधन के पदाधिकारी, चयनित एजेन्सियों के सदस्यों के अतिरिक्त बिहार राज्य आपदा प्रबंधन प्राधिकरण के अन्य पदाधिकारी मौजूद थे।



PREPARATION OF DDMPs IN BIHAR, 2015

The All India Disaster Mitigation Institute (AIDMI) is invited by the Bihar State Disaster Management

Authority to facilitate the making of District Disaster Management Plans (DDMPs) of 5 districts within the state.

The five districts are: Muzaffarpur, Sheohar, Sitamarhi, East Champaran, and West Champaran.

As Bihar is one of the most vulnerable states to natural disasters in India, suffering mainly from floods and its adverse impacts to the local population, the primary objective is to minimize potential damage and loss due to disasters and develop measures to strengthen both community and administration to effectively deal with these events.

In order to achieve that, the planning process was built upon state, national, and international policies and guidelines, such as the recently-agreed Sendai Framework for Disaster Risk Reduction. Integrating disaster resilience and risk reduction to every aspect of the plans is a priority, and there must be consonance between disaster management and district's

development plan. Relating previous experiences, the approach to this project incorporates important cross-cutting issues often missed out in DDMPs such as Children's vulnerabilities and Gender vulnerabilities. In view of this, a key concern is to engage the community in the process of plans preparation, taking into account their needs and feedback. Also worth mentioning is that the special focus on climate change adaptation is given, as the economy in Bihar is highly based on the agricultural sector and the increase on weather-related disasters poses a serious threat to the state.

The DDMP making process is owned by the District Disaster Management Authority of all 5 districts. The

consultations with line departments, community consultations, BDO consultations have been chaired by respected District Magistrate in each district, who Chairs the District Disaster Management Authority (DDMA) in each district. Community perspectives are key in order to know existing risks and hazards and vulnerabilities. Community perspectives are also considered to identify local solutions cum adaptation strategies based on indigenous knowledge of the community to minimise the impact of existing risks.

Each line department in all districts is consulted to discuss roles and responsibilities during disasters and what are the challenges faced by department to deal with

disasters. School Safety Audit and Fire Safety Audit in each district are conducted in order to identify the risks and vulnerability aspects at school and hospitals. A possible mitigation measures are also discussed with schools as well as hospitals in order to strengthen the existing capacity.

It is the first time in India when all the government schools and government hospitals of district headquarters have been covered for safety audits under the leadership of District Administration.

Soon, the outcome will be comprehensive, action-oriented DDMPs so those five districts thrive in their endeavour of pursuing an integrated development, reducing disasters' vulnerability and improving people's lives.

Note on Summer Internship with BSDMA

In the first instance, I would like to thank Bihar State Disaster Management Authority (BSDMA) for having provided me with a meaningful and unique opportunity to take part in their internship program.

Interns are generally looked upon as a source for new ideas and skill-sets with which one can look at systems and processes from a different perspective.

Organizations do benefit by tapping such sources. My participation as an intern at BSDMA coincided with the year 2015 which marks a significant milestone as the UN General Assembly is expected to arrive at a set of Sustainable Development Goals (SDGs) for the global community as a whole. I have come to the understanding that without planning comprehensively for Global Disaster Management, SDGs will not look complete.

Incorporating disaster aspects in to planning is the key. In other words, Risk-informed sustainable development planning is vital. This internship program was as a unique learning opportunity for me to understand procedural and practical aspects, proceedings, systems and processes, multi-stakeholder consultative approach, giving exposure to the

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**Machane Daniel,
School of Ecology and Environment Studies | Nalanda University**



understanding of the functioning of BSDMA under India's Disaster Management framework. As an intern, I was entitled to an exclusive opportunity to listen to and interact with Disaster Management Professionals, Sr. Policy and Technical Advisors, Projects Officers, Academicians, Subject Matter Experts, UN Agencies and NGOs working in the field of Disaster Management. This opportunity has equipped me with knowledge cutting-across varied aspects of disaster management and its other allied disciplines. Apart from being a great

learning experience, it was a good opportunity to network with professionals engaged in disaster preparedness and emergency operations. This enables one to use, promote reflection, dialogue and exploration to understand issues, differences and values of paradoxes and not rush to find a single problem solution to burning issues.

It was a meaningful platform for me to engage in the ongoing effort of BSDMA towards bringing back better, safer and disaster-resilient Bihar. This internship opportunity provided me with practical learning environment to understand

multi-hazard approach and actions that promote a culture of prevention, mitigation and preparedness.

Exposure to training, workshops and field visits during my internship period enabled me to understand (a) varied risk perceptions, actual disaster preparedness and communication among communities, and (b) linkage between climate change and disaster risk reduction and its mitigation and adaptation strategies which is key to sustainable development and eradication of poverty in the region. Understanding varied issues related to disaster management, its institutional framework at national, state and district level and its related models has shaped my interdisciplinary approach towards the subject. Bringing together trainings, workshops, seminars, conferences, intra and inter-departmental dialogues and fieldwork at a time to my internship plan under a common forum was the defining moment of the internship program.



Due to the failure of the monsoon, some parts of Bihar and Jharkhand along with Punjab and Haryana were also affected by drought.

MAJOR DROUGHT PRONE REGIONS OF INDIA

Odisha famine of 1866, Bengal famine of 1943 and Bihar famine of 1873-1874.

Jalna-Beed

The Marathwada region of Maharashtra states is facing severe water scarcity. Drought affected region in Marathwada includes Eight districts Aurangabad, Nanded, Latur, Jalna, Beed, Parbhani, Osmanabad, and Hingoli. Jalna is the most affected district among others in the region.

India has suffered major and worst drought over the 18th and 19th centuries, resulted millions of deaths and led to major Indian famines such as Odisha famine of 1866, Bengal famine of 1943 and Bihar famine of 1873-1874. States affected by drought in India are Maharashtra, Karnataka, Andhra Pradesh, Orissa, Gujarat and Rajasthan, Major population of these region depended on the rice crop of the winter season. Due to the failure of the monsoon, some parts of Bihar and Jharkhand along with Punjab and Haryana were also affected by drought.

Saurashtra-Kutch

Saurashtra region of Gujarat state is consists of 7 districts is one of the drought-prone region, Kutch region being other. Kutch region is famous as dead land and one of the hottest place in the country.

Mayurbhanj-Balasore

Mayurbhanj-Balasore region of Orissa, 30 districts were identified as drought-hit due to the short rainfall. Mayurbhanj district was the worst-hit and Balasore has a worst history of Orissa famine of 1866.

Mahbubnagar-Khammam

The Mahbubnagar-Khammam district of Andhra Pradesh state were declared drought-hit in 2002. Poor and delayed monsoon affected its number of mandals which are declared as drought prone area.

Chitradurga-Bijapur

The Chitradurga district of Karnataka state is among the talukas which are reeling under drought and North Karnataka is worst hit. Area of bijapur, Dharwad, Hubli and Bagalkot are always the most affected when there is a drought in northern part of Karnataka.

Bikaner-Jaisalmer

Bikaner and Jaisalmer districts are the major tourist attraction of great Thar desert and known for its golden sand dunes and camel safari. They both fall in the drought Prone area of Rajasthan along with jodhpur, Nagaur and Barmer.

Wiping out portions of the populations in these unfortunate areas, the worst droughts and famines in history date

tive a bit more, the deaths from the worst famine in history greatly exceed all the deaths in the worst earthquakes of

The Worst Droughts and Famines in History

As sad as it is, if nothing else, this history of famine and drought has brought awareness to the ongoing issues of malnutrition and starvation.

back several centuries and chronicle some of the worst natural disasters on record. What are the worst droughts in history? Sadly, droughts and famines still occur to this day with starvation and malnutrition an unfavorable reality in many parts of the world.

What are the worst famines of all time? Famine and drought differ from other devastating natural disasters like the worst earthquakes and the most destructive tornadoes in the length of time of the suffering. Tornadoes, earthquakes, and tsunamis last a matter of minutes, while famine and drought can last years at a time. Similarly, as many other natural disasters are considered acts of God, many of these historical famines were party caused by poor policies by local governments.

To put things in perspec-

the 21st century combined. Affecting China from 1958 to 1961, the recent Great Chinese Famine claimed an estimated 43 million lives. That is more than the entire modern population of Canada.

As sad as it is, if nothing else, this history of famine and drought has brought awareness to the ongoing issues of malnutrition and starvation. While both continue to this day, there are also organizations and charities trying their best to end this unfortunate reality.

Great Chinese Famine

Lasting three years from 1958 to 1961, the Great Chinese Famine is the worst on record. While statistics of the loss of life are disputed, as few as 15 million and as many as 43 million were killed as a result.



Chinese Famine of 1907

Coming in second, a brief but deadly famine hit China in 1907 and is accordingly known as the Chinese Famine of 1907. In a matter of months an estimated 24 million people were killed.

Indian Famine

Affecting the presidencies and provinces of British India, the Indian Famine was a six-year event that took place between 1896 and 1902. One of many famines to hit India throughout the years, this one was the worst, claiming an estimated 19 million lives.

Bengal Famine of 1770

Killing one-third of the population of Bengal over a five-year period, the Bengal Famine of 1770 took place between 1769 and 1773 in what is now parts of Bangladesh. An estimated 15 million perished in the famine, which was blamed on greedy principles from the British East India Company's rule.

Northern Chinese Famine

As the name suggests, the Northern Chinese Famine affected the northern portion of the



country of China. As the fifth-worst famine in history, this disaster lasted from 1876 to 1879 and is believed to have killed 13 million people.

Indian Great Famine of 1876--78

Known simply as the Great Famine of 1876-78, this tragedy that took the lives of as many as 10.3 million, affected over 250,000 square miles in India. The two-year famine also distressed over 58 million in the Madras, Mysore, Hyderabad and Bombay areas.

Great European Famine

Creating the worst famine ever seen in Europe, the Great Famine of 1315-1317, also known as the Great European Famine, was actually a series of crises. The tragedy, that killed an estimated 7.5 million people, was caused by strange weather and unrelenting rains.

Soviet Famine of 1932--33

Affecting the top grain-producing areas of the Soviet Union over several months, the Soviet famine of 1932-1933 is remembered by some as the Holodomor, a term that translates to "hungry

mass death." Between seven and 10 million were killed in the area, which is now part of the Ukraine and Siberia, among other areas.

Chinese Famine of 1936

Hitting China over a few months in 1936, the Asian country lost an estimated five million people during the Chinese Famine of 1936. This incident was one of several to affect China during the first part of the 20th century.

Russian Famine of 1921

Though it may have killed as many as 10 million, the Russian Famine of 1921 is considered to have resulted in five million deaths. This disaster affected the Volga-Ural region and was believed to be as a result of hard times during World War I.

Chinese Drought 1941

The worst disaster on this list completely attributed to a drought, or lack of rainfall, the Chinese Drought 1941 prevented millions from growing and consuming crops in China that year. As a result, an estimated three million perished.

Chinese Famine of 1928--30

Adding to the list of disasters in China during

the first half of the 20th century, the Chinese Famine of 1928-1930 killed an estimated three million people over the three-year span.

Russian Famine of 1601--03

Killing one-third of the population, the Russian Famine of 1601-03 is the worst to hit the country in terms of fatalities, killing as many as two million. A combination of a crop disruption from the erupting volcano of Huaynaputina in Peru and record cold weather was believed to be the cause.

Vietnamese Famine of 1945

Taking place from October 1944 to May 1945 during World War II, the Vietnamese Famine of 1945 occurred from a combination of the war, poor government management, floods and droughts. Overall, between 400,000 and two million perished as a result.

Deccan Famine of 1630--32

Occurring after three consecutive crop failures, the Deccan Famine of 1630-32 was one of the worst to take place in India. Over the three-year period, an estimated two million perished, mainly in the Deccan region of Central India.

Bengal Famine of 1943

Killing between 1.4 and 4 million people, the Bengal Famine of 1943 was one of the deadliest times for the region, which is part of India. Several factors created the tragic event, including war and policy issues by the government.

North Korean Famine

Also called the Arduous March or the March of Tribulation, the North Korean Famine started in the early 1990s and killed as many as 3.5 million by 1997. As one of the most recent famines, it killed as much as 15% of the 22 million people in the region.

Great Irish Famine

Known also as the Irish Potato Famine, the Great Irish Famine took place between 1845 and 1852 in the country of Ireland. The rough period, caused by a potato disease that ravaged crops, caused the area to lose as much as 25% of its population with one million in fatalities and another one million in residents who emigrated as a result.

1984--85 Famine in Ethiopia

Affecting what is now Eritrea and Ethiopia, the 1984-85 Famine in Ethiopia killed an estimated one mil-

lion people in the region. Low rainfall, combined with poor government management, is believed to be the cause.

Horn of Africa Famine

Just as the region is experiencing a devastating famine in the 21st century, the Horn of Africa area experienced a deadly famine in 1888. Over one million report-

edly died during that time in the areas of Ethiopia, Sudan and Somalia.

Finnish Famine of 1866--68

Affecting Finland and Northern Sweden, the Finnish Famine of 1866-68 killed between 15 and 20 percent of the population in the area or roughly 150,000 people. A combination of weather and poor handling of the crisis by the Finnish

government were believed to have been to blame.

Bangladesh Famine of 1974

The Bangladesh Famine of 1974 actually started in 1973 and ended in December of 1974. While details of the famine are disputed, estimates state between 26,000 and one million perished in the disaster.



Japan INTERNATIONAL Cooperation Agency

Japan International Cooperation Agency (JICA) India Office has taken an initiative to collaborate with BSDMA for intervening in Bihar and in other states of India in an attempt to understand the current situation and identify areas that may require further assistance or strengthening to have a robust disaster prevention/ management system in India. JICA India Office has appointed Yachiyo Engineering Co., Ltd., (YEC) to conduct a "Data Collection Survey for Disaster Prevention in India" through a set of questionnaire, field visits and consulting all other organizations that are directly or indirectly involved with disaster prevention/management in India for exchanging views and gather relevant information for the survey. The objective of the



Survey for Disaster Prevention of JICA is to collect a wide range of information regarding the disaster risk reduction (DRR) in India, and to analyze the necessary assistance for the DRR in India considering the current situation, issues and assistance needs in the policy, regulatory and institutional aspects of risk control and risk finance. In this backdrop, a series of visits took place from Yachiyo Engineering Co., Ltd. to BSDMA office. The visits of the delegation from YEC resulted into comprehensively discuss about the proposed plan of YEC in general and in particular

BSDMA officials made PowerPoint presentations giving precise information to the Yachiyo Engineering Co., Ltd.

Data Collection

informing YEC about the institutional and financial aspects of the disaster management in Bihar State which covered the task allocation between BSDMA, State Departments and Agencies, past efforts and future plan regarding mainstreaming the disaster management in development plans in Bihar, Communication between state, districts and villages. As a next step and in proportion to the questionnaire, BSDMA provided necessary information in the survey related to State Policy and Plans for Disaster Management, Legal Framework for Disaster Management.

By Asif Shahab, Project Officer

बिहार राज्य आपदा प्रबंधन प्राधिकरण तथा राष्ट्रीय आपदा प्रबंधन संस्थान, नई दिल्ली ने संयुक्त रूप से " India Disaster Resource Network"

(IDRN) पर दो दिवसीय कार्यशाला का आयोजन किया गया। दो दिवसीय प्रशिक्षण के पहले दिन कार्यक्रम की शुरुआत में पूर्व राष्ट्रपति डॉ० ए.पी.जे० अब्दुल कलाम को दो मिनट मौन रख कर श्रद्धांजलि अर्पित की गई। अपने उद्घाटन संबोधन में बिहार राज्य आपदा प्रबंधन प्राधिकरण के उपाध्यक्ष श्री अनिल कुमार सिन्हा ने कहा कि सभी आपदा स्थानीय होती हैं जिसमें कि स्थानीय प्रशासन की भूमिका बहुत महत्वपूर्ण होती है। स्थानीय प्रशासन की भूमिका आपदा के वक्त फर्स्ट रेस्पॉन्डर की होती है। इसलिए क्षमता का विकास होना अतिआवश्यक हो जाता है। आईडीआरएन के तहत संसाधनों की मैपिंग शृंखलाबद्ध रूप से किया जाना आवश्यक है। श्री पी एन राय, महानिदेशक (अग्निशाम सेवा) एवं महासमादेष्टा (गृहस्था वाहिनी) ने अपने संबोधन में कहा की 2006 से 2009 में "India Disaster Resource Network" (IDRN) पर कुछ कार्य हुआ है लेकिन विगत कुछ वर्षों से कोई आंकड़ा अपडेट नहीं किया गया है जबकि किसी भी आपदा के वक्त

आईडीआरएन पर दो दिवसीय कार्यशाला



त्वरित रेस्पॉन्स के में " India Disaster Resource Network" (IDRN) की भूमिका बहुत अधिक होती है। NIDM से आर्यी प्रशिक्षक अनुपमा सेठ ने IDRN के बारे में बताते हुए कहा कि यह एक ऐसी सुविधा है जिसके तहत हम किसी भी राज्य एवं जिले के बारे में अद्यतन जानकारी प्राप्त कर सकते है जिससे किसी भी आपदा के समय राज्य एवं जिले के संसाधनों को तुरंत उपयोग में ला सकते हैं। उन्होंने कहा कि पिछले 2009 के बाद कोई

आंकड़े अपडेट नहीं हुआ है। IDRN को सफल बनाने के लिए राज्य आपदा प्रबंधन प्राधिकरण एवं जिला प्रशासन को एक जुट हो कर IDRN के तहत संसाधनों का प्रबंधन सिलसिलेवार रूप से करना होगा। IDRN में अबतक 178016 आंकड़े दर्ज हुए हैं। इसके पूर्व कार्यक्रम की नोडल पदाधिकारी एवं प्राधिकरण की वरीय तकनीकी सहायक सुंब. ल अफरोज ने IDRN के महत्व एवं इसकी जानकारियों की प्रस्तुति दी।

बिहार राज्य आपदा प्रबंधन प्राधिकरण की ओर से बिहार प्रशासनिक सेवा के अधिकारियों के लिए आपदा जोखिम न्यूनीकरण के लिए 8 वें प्रशिक्षण कार्यक्रम एवं मॉक ड्रिल का आयोजन बिपार्ड भवन में किया गया। एक दिवसीय कार्यशाला का उद्घाटन बिहार राज्य आपदा प्रबंधन प्राधिकरण के उपाध्यक्ष श्री अनिल कुमार सिन्हा, भा0प्रा0से0 (से0नि0) तथा सदस्य श्री उदय कांत मिश्र ने दीप प्रज्ज्वलित कर किया। बिहार प्रशासनिक सेवा के अधिकारियों के लिए एक दिवसीय कार्यशाला की भूमिका पर प्रकाश डालते हुए कहा कि बिहार को अगर सुरक्षित बिहार की ओर ले जाना है तो हमें पहले उसकी जड़ को सिंचित करना होगा, जड़ को मजबूत करना होगा। बच्चे हमारे समाज के भविष्य एवं नींव है। इसके मद्देनजर 1 से 15 जुलाई तक विद्यालय सुरक्षा पखवाड़ा मनाया जा रहा है। मुख्यमंत्री विद्यालय सुरक्षा योजना के तहत इस पखवाड़ा मनाया जा रहा है। मुख्यमंत्री विद्यालय सुरक्षा योजना के तहत इस पखवाड़ा में शुक्रवार को गांधी मैदान में विशाल मॉक ड्रिल होगा जिसमें स्कूल के बच्चों को आपदा के समय क्या करें, क्या न करें प्रदर्शित करके दिखया जाएगा। उन्होंने कहा की बिहार प्रशासनिक सेवा के अधिकारी बिहार प्रशासन की रीढ़ की हड्डी होते हैं। आपदा जोखिम में कमी और क्षमता निर्माण पर जागरूकता का बहुत योगदान होता है। 12 सौ प्रशासनिक अधिकारियों में अबतक एक चौथाई अधिकारियों का आपदा जोखिम न्यूनीकरण प्रशिक्षण किया गया है। जिससे की किसी भी आपदा के समय वे तत्परता से से राहत और बचाव



आपदा जोखिम न्यूनीकरण के लिए ८ वां प्रशिक्षण कार्यक्रम एवं मॉक ड्रिल

एक दिवसीय प्रशिक्षण कार्यक्रम सह मॉक ड्रिल

कर सकेंगे। प्राधिकरण के सदस्य श्री उदय कांत मिश्र ने एक प्रस्तुति के माध्यम से आपदा के संबन्ध में तीन महत्वपूर्ण बातों पर प्रकाश डालते हुए कहा कि जानकारी, क्षमता और किसी आपदा के वक्त नियंत्रण महत्वपूर्ण है। उन्होंने दो प्रकार की परिस्थितियों की चर्चा की। एक जब परिस्थितियाँ हमारे नियंत्रण में नहीं होती और एक जब आपदा का पूर्वानुमान संभव हो और स्थितियाँ नियंत्रण में हों। जागरूकता पर बल देते हुए कहा कि हमें लोगों को जागरूक बनाने के साथ-साथ किसी भी आपदा के समय में पहले से अपने आप को तैयार कर के रखना होगा। यह किसी भी आपदा के समय में एक जीवन रक्षक साबित होता है। आखिर में



महात्मा गांधी की पंक्तिओं को दुहराते कहा कि हमें अपने ग्राहकों की इज्जत करनी चाहिए क्योंकि वे हमेशा सही होते हैं। इस प्रशिक्षण कार्यक्रम के दौरान बिहार प्रशासनिक सेवा के करीब चालीस अधिकारी आपदा जोखिम न्यूनीकरण से संबंधित विभिन्न मुद्दों से अवगत हुए। विभिन्न विभाग और संवर्ग से संबंधित

अधिकारियों को भी प्रस्तुतियों और मामले के अध्ययन की मदद से किसी भी आपदा के दौरान कैसे प्रबंधित किया जाये इसका भी प्रशिक्षण दिया गया। एनडीआरएफ कर्मियों द्वारा एक मॉक ड्रिल भी अधिकारियों के विशेष मांग पर आयोजित किया गया,

राष्ट्रीय आपदा प्रबंधन संस्थान (NIDM) एवं बिहार राज्य आपदा प्रबंधन प्राधिकरण के संयुक्त तत्त्वावधान में Post Disaster Needs Assessment

(PDNA) Tools for India विषय पर तीन दिवसीय प्रथम प्रशिक्षण कार्यक्रम का आयोजन पटना में किया गया। 21-23 सितम्बर को आयोजित प्रशिक्षण कार्यक्रम का उद्घाटन बिहार राज्य आपदा प्रबंधन प्राधिकरण के उपाध्यक्ष श्री अनिल कुमार सिन्हा ने किया। इस प्रशिक्षण कार्यक्रम में बैंकाक स्थित एशियन डिजास्टर प्रिपेयर्डनेस सेंटर (ADPC) के विशेषज्ञों की एक

टीम द्वारा आपदा के पश्चात होने वाली हानियों, क्षतियों एवं आवश्यकताओं के आकलन संबंधी तकनीकों पर प्रशिक्षण प्रदान किया गया। इस टीम में श्री इमैनुएल टॉरेन्ट, सुश्री थिटिफॉन सिंसुपान, श्री असलम परवेज, श्री सुधीर कुमार एवं श्री तारिक शामिल हैं। इनके अतिरिक्त NIDM से श्री प्रियंक जिन्दल एवं सुश्री लक्षिता बालानी भी इस प्रशिक्षण के लिए नई दिल्ली से पधारे हैं। इस प्रशिक्षण कार्यक्रम में राज्य सरकारों के विभिन्न विभागों के पदाधिकारी, BSDMA के पदाधिकारीगण, राष्ट्रीय एवं अन्तरराष्ट्रीय गैर सरकारी संगठनों के प्रतिनिधिगण, अन्य राज्यों के प्रतिनिधि आदि प्रतिभागियों के रूप में शामिल हुए। कार्यक्रम का उद्घाटन करते हुए बिहार राज्य आपदा प्रबंधन प्राधिकरण के उपाध्यक्ष श्री अनिल कुमार सिन्हा ने इस विषय के महत्व पर प्रकाश डालते हुए कहा कि आपदा के पश्चात का समय सबसे महत्वपूर्ण होता है। आपदा प्रभावितों को उनकी जरूरत के अनुरूप राहत सामग्रियों की आपूर्ति करना। आपदा के पश्चात् जीवन को पुनः सुचारु रूप से चलाने हेतु



Training for Post-Disaster Needs Assessment (PDNA) in India

आपदा पीड़ितों की अल्प, मध्यम एवं दीर्घकालीन आवश्यकताओं के आकलन की आवश्यकता होती है। आपदा के पश्चात पीड़ितों की समस्याओं को अविश्लेष्य हल के लिए आवश्यकताओं का त्वरित एवं प्रभावशाली आकलन बहुत महत्वपूर्ण है। उन्होंने अपने गुजरात, उड़ीसा एवं अन्य आपदाओं के अनुभवों को भी प्रतिभागियों के साथ साझा किया। एशियन डिजास्टर प्रिपेयर्डनेस सेंटर (ADPC) के विशेषज्ञों ने आपदा पश्चात हानियों, क्षतियों के आकलन तथा उसके पश्चात उत्पन्न होने वाली आवश्यकताओं एवं प्राथमिकताओं की निर्धारण के बारे में प्रयोग होने वाली विधियों से प्रतिभागियों को लेक्चर, प्रस्तुतिकरण, फिल्मों एवं

अभ्यास के द्वारा परिचय कराया। प्रशिक्षण के अन्तिम दिन 23 सितम्बर को पुलिस महानिदेशक (अग्निशाम सेवा एवं होमगार्ड्स) श्री पी0 एन0 राय ने कोशी आपदा संबंधी अपने अनुभवों को साझा करते हुए स्थानीय परिस्थितियों एवं स्थानीय आवश्यकताओं पर विशेष बल दिया। कार्यक्रम के अन्तिम सत्र में प्राधिकरण के उपाध्यक्ष श्री अनिल कुमार सिन्हा ने कहा कि Post Disaster Needs Assessment (PDNA) दीर्घकालीन क्षमतावर्धन की दृष्टिकोण से अत्यंत महत्वपूर्ण है। श्री सिन्हा ने ADPC एवं BSDMA के बीच एक समझौते (MOU) का प्रस्ताव रखा जिसे ADPC की ओर से सिद्धांत रूप से स्वीकार कर लिया गया। श्री

सिन्हा ने इस प्रशिक्षण कार्यक्रम को जिला स्तर पर भी आयोजित करने की सलाह दी। प्रशिक्षण कार्यक्रम का संचालन वरीय सलाहकार श्री अनुज तिवारी, परियोजना पदाधिकारी डॉ0 मधुबाला एवं ADPC के विशेषज्ञ श्री सुधीर कुमार ने किया। कार्यक्रम के अंत में सभी प्रतिभागियों को प्रशिक्षण प्रमाण-पत्र प्रदान किया गया। इस अवसर पर BSDMA के उपाध्यक्ष के विशेष कार्य पदाधिकारी श्री अनिल सिन्हा, विपार्ड के सहायक निदेशक श्री खगेश चन्द्र झा, आपदा प्रबंधन विभाग से श्री श्रीनिवास सिंह एवं श्री अजय कुमार के अतिरिक्त अन्य विशेषज्ञ भी उपस्थित थे।

Currently serving as Head of Disaster Risk Management Systems (DRMS) in Asian

FACE TO FACE

A team of professionals from Asian Disaster Preparedness (ADPC), Bangkok conducted training programme on PDNA. Here's an Interview of the ADPC members.



Aslam
Perwaiz



Disaster Preparedness Center (ADPC), Aslam has more than 22 years of experience in development field including 13 years of work in Disaster Risk Management in South Asia and South East Asia.

Aslam is involved in DRR program development and implementation with strong focus on community base aspects and integration of DRR into socio economic planning process. His expertise are on community based disaster risk reduction (CBDRR), Post Disaster Needs Assessment (PDNA)

and Private Sector engagement in DRR.

2. What are recent international developments in the field of disaster risk reduction? What is their relevance for India?

The Sendai Framework for Disaster Risk Reduction 2015-2030 adopted by more than 187 countries in Sendai, Japan, on March 18, 2015 is the latest development in disaster risk reduction. The Sendai Framework is the successor instrument to the Hyogo Framework for Action (HFA) 2005-2015: Building the

Resilience of Nations and Communities to Disasters. It introduces a number of innovations. The most significant shifts as a strong emphasis on disaster risk management as opposed to disaster management, the definition of seven global targets, the reduction of disaster risk as an expected outcome, a goal focused on preventing new risk, reducing existing risk and strengthening resilience, as well as a set of guiding principles, including primary responsibility of states to prevent and reduce disaster risk, all-of-

society and all-of-State institutions engagement. In addition, the scope of disaster risk reduction has been broadened significantly to focus on both natural and man-made hazards and related environmental, technological and biological hazards and risks. Health resilience is strongly promoted throughout.

India having a strong focus on disaster preparedness and mitigation would require greater engagement of state and local governments and other stakeholders such as the civil society, private sector, parliamentarian,





local governments, academic and research organizations in promoting inclusive DRR approaches. It is an opportunity for India to lead and support vulnerable countries in developing system, science and application based approaches in line with the Sendai Framework.

3. What is your knowledge and understanding about initiatives being taken up in India and Bihar?

Over the past couple of years, the Government of India has brought about a paradigm shift in the approach to disaster

management. The new approach proceeds from the conviction that development cannot be sustainable unless disaster mitigation is built into the development process. Another corner stone of the approach is that mitigation has to be multi-disciplinary spanning across all sectors of development. The new DM policy (2009) also emanates from the belief that investments in mitigation are much more cost effective than expenditure on relief and rehabilitation.

At the State level, several States including Bihar has created

better institutional arrangement, capacity to deal with emergency situation. The Bihar Government has made significant accomplishments for disaster risk management since 2005 and currently developing 15-year DRR Roadmap.

4. How do you rate India in international context in terms of its preparedness for disasters?

In recent years, Government of India has shown its interest and willingness to share its expertise and help other nations in disaster response and capacity building and

asked the international community to strengthen support mechanisms. This is a positive change but much more is needed to put in place a culture of preparedness within India.

5. What is Post Disaster Needs Assessment (PDNA) and why is it important in Indian context?

The Post Disaster Needs Assessment (PDNA) is a process through which affected countries collect information on economic damages and losses, and the recovery priorities - including the human development needs of the affected population - into a single consolidated assessment report. This information is used as a basis for developing a comprehensive recovery framework, which will guide the design and implementation of early and long-term recovery programmes and to help determine international development assistance needs.

The existing system of post-disaster assessments in India is designed to estimate disaster relief response from the Central and State government

exclusively, and only very partial needs of assistance for recovery. The current practice of conducting post disaster assessment in India follows the provisions and norms in the manual of National Disaster Response Fund/State Disaster Response Fund. The Disaster Management/ Revenue Department of each State is mandated to collect information on damage and losses after any disaster and to provide the required disaster response thereafter.

It is important that India adopts more sci-

entific and internationally accepted to enable a full analysis of disaster impact on social, economic and environmental conditions as well as the comprehensive estimation of post-disaster recovery and reconstruction needs.

6. What are your suggestions on DRR Planning for India and Bihar?

Bihar have taken important baby steps towards a comprehensive disaster risk reduction approach. Building on the commitments and enthusiasm by many stakeholders, it is important that the DRR

Roadmap of Bihar for next 15 years be all inclusive, addressed concerns of communities in program and project, links disaster risk reduction to improve governance, better living conditions and a safer world. Specific suggestions are;

1. Mainstreaming of DRR in the routine activities and agenda of all departments
2. Better utilization of existing institutions (ATI, SIRD, State Remote Sensing agencies, Universities etc) is needed.

3. DM plans to be user friendly, scientifically correct and implementable
4. Link up DDMA's with Fire services and Civil Defence, support their strengthening and revitalization
5. A new personnel structure is needed; building on the success of volunteerism, a State level Corps of Young DRR Professionals needed to support the Bihar DRR mission

I am a Filipino international consultant working on DRRM particularly on PDNA and post-disaster recovery over the last several years in the Philippines, Laos, Vietnam, Myanmar and India. I have also worked as a resource person on PDNA for UN on several occasions.

2. What are recent international developments in the field of disaster risk reduction? What is their relevance for India?

Weather forecasting are more accurate now and with GIS, natural hazards are easily analyzed and maps are easily produced. For India, adopting such technology and disseminating them to State and local governments will enable the sub-nation-

Emmanuel Torrente



al levels of governance to prepare DRRM plans and work for their implementation. However, this initiative must be supported by the Central Government.

3. What is your knowledge and understanding about initiatives being taken up in India and Bihar?

I am not familiar with the current initiatives in India but i understand that weather forecasting is being continuously

improved. For Bihar, I understand that disaster awareness raising activities are regularly undertaken by the State government.

4. How do you rate India in international context in terms of its preparedness for disasters?

I don't think i have the necessary information to assess the disaster preparedness status of India.

5. What is Post Disaster Needs Assessment (PDNA) and why is it important in Indian context?

The PDNA is a scientific and inclusive process of assessing disaster effects, impacts, and post-disaster needs incor-

Weather forecasting are more accurate now and with GIS, natural hazards are easily analyzed and maps are easily produced. For India, adopting such technology and disseminating them to State and local governments will enable the sub-national levels of governance to prepare DRRM plans and work for their implementation.

porating the build-back-better principle. Since India is now having the tools to adopt the internationally-accepted PDNA, the more scientific approach required in the PDNA should give rise to

the more effective process on how post-disaster recovery should be approached.

6. What are your suggestions on DRR Planning for India and

Bihar?

For DRR to be effective, I believe that India and Bihar should start mainstreaming DRRM in development planning. By integrating DRRM in

development and sector plans, the national and state governments as well as local communities will develop awareness and consciousness on the importance of DRRM.

This, along with climate change adaptation mainstreaming, is the current practice right now in the international community.

What are recent international developments in the field of disaster risk reduction? What is their relevance for India?

Some of the recent developments in the field of DRR includes

A. Adoption of the Sendai Framework for DRR (2015-30) in March this year;

B. Creating systems/framework for Disaster recovery ex-ante and this year a guideline has been developed by the World Bank and partners

C. Increased linkages between DRR and Climate Change as DRR is seen as the first line of defence against impact of climate change

D. Increased awareness on DRR an integral part of sustainable development and the recent 17 Sustainable Development Goals being agreed/approved by UN is another step in this direction.

The above-mentioned issues are highly relevant to India as India is hosting the First Asian Ministerial Conference on DRR after adoption of SFDRR and this conference will set the tone towards implementation of the SFDRR. Also, India being highly vulnerable to climate change and also it has undertaken some path breaking work in this field and it can share it through south-south cooperation. Also, India is eyeing very high economic growth in the

SUDHIR KUMAR

Recovery and Disaster Risk Management Consultant

I think it will be difficult for me to rate India in international context as it requires identification of some credible indicators and then rate the countries. However, in generic terms I can mention that the DRR procedures and systems of India are highly appreciated and used as reference. Also, early warning systems especially warning generation is quite state-of-the-art.



coming years/ decades and a development will not be sustainable without DRR elements and it includes Smart cities vision of India.

3. What is your knowledge and understanding about initiatives being taken up in Indian and Bihar?

I have some understanding of DRR interventions in India/ Bihar especially of initiatives in the recent years, also it is difficult to have comprehensive understanding of DRR works in India as it is a big country and states are a major player in DRR. Though I try to keep track of DRR in India through regional meetings, literature and news. Also, I worked in India on DRR from 2002 to 2008.

4. How do you rate India in international context in terms of its preparedness for disasters?

I think it will be difficult for me to rate India in international context as it requires identification of some credible indicators and then rate the countries. However, in generic terms I can mention that the DRR procedures and systems of India are highly appreciated and used as reference. Also, early warning systems especially warning generation is quite state-of-the-art.

5. What is Post Disaster Needs Assessment (PDNA) and why is it important in Indian context?

PDNA is important to India as well as other countries as it provides credible, transparent and comprehensive information on damage, loss and needs related to a disaster. Also, it helps in wiser allocation of resources for recovery. This process also brings out long-term impact of disaster not only on economic but also on

social and environmental sector and it can help in planning recovery measures beyond the immediate needs.

6. What are your suggestions on DRR Planning for India and Bihar?

India and Bihar are already taking a number of measures on DRR and recently Bihar undertook a comprehensive School safety drive or India is developing its PDNA, etc. However just to reinforce, I can mention that DRR should be seen as well as implemented as integral part of development. Also, one of DRR projects for a couple of years will help in creating awareness as well as creating systems but in order to reduce risk a sustained effort is important. Also, I think there is a need to create 'demand-driven DRR' and not only 'supply-driven' so that limited DRR public resources can be targeted towards the poorest of the poor and who are most vulnerable too.

The Koshi or Kosi River drains the northern slopes of the Himalayas in the Tibet Autonomous Region and the southern slopes in Nepal. From

Katihar district.

The Saptakoshi is 720 km (450 mi) long and drains an area of about 61,000 km² (24,000 sq mi) in Tibet, Nepal and

KOSI RIVER SORROW OF BIHAR

Koshi River is also known as Saptakoshi for its seven upper tributaries.

a major confluence of tributaries north of the Chatra Gorge onwards, the Koshi River is also known as Saptakoshi for its seven upper tributaries. These include the Tamur Koshi originating from the Kanchenjunga area in the east, Arun River from Tibet and Sun Koshi from the Gosainthan area farther west. The Sun Koshi's tributaries from east to west are Dudh Koshi, Bhote Koshi, Tamba Koshi and Indravati Koshi. The Saptakoshi crosses into northern Bihar where it branches into distributaries before joining the Ganges near Kursela in

Bihar. In the past, several authors proposed that the river has shifted its course for more than 133 km (83 mi) from east to west during the last 200 years. But a review of 28 historical maps dating 1760 to 1960 revealed a slight eastward shift for a long duration, and that the shifting was random and oscillating in nature.

The river basin is surrounded by ridges which separate it from the Yarlung Tsangpo River in the north, the Gandaki in the west and the Mahananda in the east. The river is joined by major tributaries in the Mahabharat Range



The Kosi's alluvial fan has fertile soil and abundant land is in great demand. Subsistence farmers ba

approximately 48 km (30 mi) north of the Indo-Nepal border. Below the Siwaliks, the river has built up a megafan some 15,000 km² (5,800 sq mi) in extent, breaking into more than twelve distinct channels, all with shifting courses due to flooding. Kamala, Bagmati (Kareh) and Budhi Gandak are major tributaries of Koshi in India, besides minor tributaries such as Bhutahi Balan.

Its unstable nature

has been attributed to the heavy silt it carries during the monsoon season and flooding in India has extreme effects. Fishing is an important enterprise on the river but fishing resources are being depleted and youth are leaving for other areas of work.

The Kosi River catchment covers six geological and climatic belts varying in altitude from above 8,000 m (26,000 ft) to 95 m (312 ft) comprising the



का खतरा आकी है!

groundwater in a part of the world where agricultural
balance the threat of starvation with that of floods.

Tibetan plateau, the Himalayas, the Himalayan mid-hill belt, the Mahabharat Range, the Siwalik Hills and the Terai. The Dudh-Kosi sub-basin alone consists of 36 glaciers and 296 glacier lakes. The Kosi River basin borders the Tsangpo River basin in the north, the Mahananda River basin in the east, the Ganges Basin in the south and the Gandaki River basin in the west. The

eight tributaries of the basin upstream the Chatra Gorge include from east to west:

"Tamur River with an area of 6,053 km² (2,337 sq mi) in eastern Nepal;

"Arun River with an area of 33,500 km² (12,900 sq mi), most of which is in Tibet;

"Sun Kosi with an area of 4,285 km² (1,654 sq mi) in Nepal and its northern tributaries Dudh Kosi, Likhu Khola, Tama Koshi, Bhote Koshi

and Indravati.

The three major tributaries meet at Triveni, from where they are called Sapta Kosi meaning Seven Rivers. After flowing through the Chatra Gorge the Sapta Kosi is controlled by the

Barahksetra across Nepalese territory, covering northeast Bihar and eastern Mithila to the Ganges, 180 km (110 mi) long and 150 km (93 mi) wide. It shows evidence of lateral channel shifting exceeding

Conti...

Koshi Barrage before it drains into the Gangetic plain.

Peaks located in the basin include Mount Everest, Kangchenjunga, Lhotse, Makalu, Cho Oyu and Shishapangma. The Bagmati river sub-basin forms the southwestern portion of the overall Koshi basin.

The Dudh Kosi joins the Sun Kosi near the Nepalese village of Harkapur. At Barahksetra in Nepal it emerges from the mountains and becomes the Koshi. After flowing another 58 km (36 mi) it crosses into Bihar, India, near Bhimnagar and after another 260 km (160 mi) joins the Ganges near Kursela.

The Kosi alluvial fan is one of the largest in the world, and extends from

120 km (75 mi) during the past 250 years, via at least twelve major channels. The river, which flowed near Purnea in the 18th century, now flows west of Saharsa. A satellite image shows old channels with a confluence before 1731 with the Mahananda River north of Lava.

The Kosi River is known as the "Sorrow of Bihar" as the annual floods affect about 21,000 km² (8,100 sq mi) of fertile agricultural lands thereby disturbing the rural economy.

The Koshi has an average water flow (discharge) of 2,166 cubic metres per second (76,500 cu ft/s). During floods, it increases to as much as 18 times the average. The greatest recorded flood was

24,200 m³/s (850,000 cu ft/s) on 24 August 1954. The Kosi Barrage has been designed for a peak flood of 27,014 m³/s (954,000 cu ft/s)(2).

Extensive soil erosion and landslides in

km². This fan extends some 180 km from its apex where it leaves the foothills, across the international border into Bihar state and on to the Ganges. The river has numerous interlacing chan-

Conti...

its upper catchment have produced a silt yield of about 19 m³/ha/year (10 cu yd/acre/yr), one of the highest in the world. Of major tributaries, the Arun brings the greatest amount of coarse silt in proportion to its total sediment load. The river transports sediment down the steep gradients and narrow gorges in the mountains and foothills where the gradient is at least ten metres per km. On the plains beyond Chatra, the gradient falls below one metre per km to as little as 6 cm per km as the river approaches the Ganges. Current slows and the sediment load settles out of the water and is deposited on an immense alluvial fan that has grown to an area of about 15 000

nelms that shift laterally over the fan from time to time. Without channelization, floods spread out vary widely. The record flow of 24 200 m³/s is equivalent to water a metre deep and more than 24 km wide, flowing at one metre per second.

The Kosi's alluvial fan has fertile soil and abundant groundwater in a part of the world where agricultural land is in great demand. Subsistence farmers balance the threat of starvation with that of floods. As a result, the flood-prone area is densely populated and subject to heavy loss of life. India has more flood deaths than any country except Bangladesh.

2008 flood in Bihar Koshi before flood (upper image), and flooded in August 2008.

Courtesy: NASA



Satellites (USA).

On 18 August 2008, the Kosi river picked up an old channel it had abandoned over 100 years previously near the border with Nepal and India. Approximately 2.7 million people were affected as the river broke its embankment at Kusaha in Nepal, submerging several districts of Nepal and India. 95% of the Koshi's total flowed through the new course.[18][19] The worst affected districts

included Supaul, Araria, Saharsa, Madhepura, Purnia, Katihar, parts of Khagaria and northern parts of Bhagalpur, as well as adjoining regions of Nepal. Relief work was carried out with Indian Air Force helicopters by dropping relief materials from Purnia in the worst hit districts where nearly two million persons were trapped. The magnitude of deaths or destruction were hard to estimate, as the



affected areas were inaccessible. 150 people were reported washed away in a single incident. Another news item stated that 42 people had died.

The Government of Bihar convened a technical committee, headed by a retired engineer-in-chief of the water resource department to supervise the restoration work and close the breach in the East Kosi afflux embankment. Indian authorities worked to prevent

widening of the breach, and channels were to be dug to direct the water back to the main river bed.

The fury of the Koshi River left at least 2.5 million people marooned in eight districts and inundated 650 km². The prime Minister of India declared it a national calamity. The Indian Army, National Disaster Response Force (NDRF) and non-government organizations operated the biggest flood

rescue operation in India in more than 50 years.

Glaciers, glacier lakes and outburst floods

In the Himalayas, glaciers are melting and retreating, which

seriousness of such events and the studies to assess the glaciers, glacier lakes and GLOF followed.

Studies of the glaciers and glacier lakes were carried out in 1988 by a joint Sino-

Conti...

produces lakes insecurely dammed by ice or moraines. These dams are at risk of breaking, causing a Glacial Lake Outburst Flood (GLOF) with flows as great as 10,000 cubic metres a second.

In the past two decades GLOF has become a topic of intense discussion within the development community in Nepal. The Dig Tsho GLOF on 4 August 1985, completely destroyed the nearly completed Namche hydropower plant and all bridges, trails, cultivation fields, houses and livestock along its path to the confluence of the Dudh-Koshi and the Sun-Koshi rivers over 90 km (56 mi). The Dig Tsho glacier is on the terminus of the Langmoche Glacier. This event brought into focus the

Nepalese team. The Arun-Koshi river basin hosts 737 glaciers and 229 glacier lakes, out of which 24 lakes are potentially dangerous. The Sun-Koshi basin is home to 45 glacier lakes, of which 10 are potentially dangerous. According to a Sino-Nepalese study, since the 1940s on at least 10 occasions, glacier lakes burst their dams. Among them were five bursts in three glacier lakes in the Arun River Basin and four in three glacier lakes of the Sun Koshi River Basin.

Protected areas

In Nepal two protected areas are located in the Koshi River basin.

Sagarmatha National Park

The Sagarmatha National Park encompasses the upper catchments of the Dudh Kosi River sys-

tem. The park covers an area of 1,148 km² (443 sq mi) and ranges in elevation from 2,845 m (9,334 ft) to 8,848 m (29,029 ft) at the summit of Mount Everest.

Established in 1976 the park was declared a UNESCO World Heritage Site in 1979. The landscape in the park is rugged consisting of mountain peaks, glaciers, rivers, lakes, forests, alpine scrubs and meadows.

The forests comprise stands of oak, blue pine, fir, birch, juniper and rhododendron. The park provides habitat for snow leopards, red pandas, musk deer, Himalayan tahrs, and 208 bird species including impeyan pheasant, bearded vulture, snow cock, and the yellow-billed chough.

About 3500 Sherpa people live in villages and seasonal settlements situated along the main tourist trails. Tourism to the region began in the early 1960s. In 2003, about 19,000 tourists arrived in the area. The park's southern entrance is a few hundred metres north of Mondzo at 2,835 m (9,301 ft), a one-day



The Bagmati river sub-basin forms the south-western portion of the overall Koshi basin. The Dudh Kosi joins the Sun Kosi near the Nepalese village of Harkapur. At Barahksetra in Nepal it emerges from the mountains and becomes the Koshi. After flowing another 58 km (36 mi) it crosses into Bihar, India, near Bhimnagar and after another 260 km (160 mi) joins the Ganges near Kursela.

hike from Lukla. A visitor centre is located at the top of a hill in Namche Bazaar.

Koshi Tappu Wildlife Reserve

The Koshi Tappu Wildlife Reserve is situated in the flood plains of the Saptkoshi River in the eastern Terai. It covers an area of 175 km² (68 sq mi) comprising grasslands and khair-sissoo riverine forests. It was established in 1976 and was declared a

Ramsar site in 1987. The reserve provides habitat for hog deer, spotted deer, wild pig, blue bull, gaur, smooth-coated otter, jackal, 485 bird species including 114 water bird species, 200 fish species, 24 reptile and 11 amphibian species.

The last surviving population of wild water buffalo in Nepal is found in the reserve, as well as gharial, Gangetic dolphin, swamp francolin

and rufous-vented prinia.

A small population of the critically endangered Bengal florican is present along the Koshi River. There are also records of white-throated bush chat and Finn's weaver. The bristled grassbird breeds in the reserve. The reserve together with the Koshi Barrage was identified as one of 27 Important Bird Areas of Nepal.



National Disaster Management Authority (NDMA) observed its 11th Formation Day on 28 Sep, 2015 at Vigyan Bhawan in New Delhi.

The programme was inaugurated by the Hon'ble Minister of State (Home) Shri Kiren Rijju. BSDMA was represented by Mr. Anuj Tiwari, Senior Advisor. This Formation Day event was divided into four sessions relating to different hazards and disasters.

First session was on Cyclone and NCRP.

This session was chaired by Shri R K Jain, Member Secretary, NDMA, co-chair for the session was Shri B. K. Prasad, Additional Secretary, MHA, Gol.

11th Formation Day of NDMA

Event was divided into four sessions relating to different hazards and disasters

Presentations were made by Joint Secretary and Project Director (NCRMP), Governments of Odisha and Andhra Pradesh, IMD and representative of the World Bank. Second session was on Earthquake, chaired by Shri Kamal Kishore, Member, NDMA. Prof. C V R Murthy, Director, IIT Jodhpur was co-chair for session. Presentations were made by Senior Consultant

(Earthquake), NDMA, Governments of Sikkim\Gujarat and Ministry of Earthquake Sciences, Gol etc.

Third session was on Floods, chaired by Dr. D. N. Sharma, Member, NDMA. This session was co-chaired by Prof. Rajiv Sinha, from IIT Kanpur. Presentations were made by Joint Secretary (PP), NDMA, Governments of Assam & Bihar, and Central Water Commission (CWC).

Fourth session was on Landslides. Session was chaired by Lt. Gen. (Retd.) N. C. Marwah, Member, NDMA and Shri R. K. Bhandari, Geohazard Specialist was co-chair for session. Presentations were made by Joint Secretary (Mitigation), NDMA, Governments of Uttarakhand and West Bengal and Geological Survey of India (GSI).

By Anuj Tiwari
Sr. Advisor



Conference and EXHIBITION

Secure Cities 2015, Conference and Exhibition, held on 9th September 2015 at Le Meridien, New Delhi. Security Watch India

Useful and productive participation from Ministry of Home Affairs, Department of Electronics and IT, Ministry of Communications, Government of India, National Disaster Management Authority, Paramilitary Forces and State Police forces along with other relevant Ministries and Government agencies from across India.

(SWI) organised the 07th edition of its annual flagship initiative - Secure Cities 2015:

Conference & Exhibition on 09th September 2015 at Hotel Le-Meridien, New Delhi. The event is supported by Department of Electronics and IT (DeitY) and National e-Governance Plan, Ministry of communication and Information Technology, Government of India and PwC is the knowledge partner for the event. The objective of Secure Cities 2015 is to create a platform to discuss various initiatives through which security of our cities can be enhanced wherein they will be prepared to handle any kind of security threat worldwide.

The three key themes to be discussed at the conference are:

- . Intelligent Security and Resilience in Urban Ecosystems . Security Risk Management and Critical Infrastructure Protection . Disaster Management and Emergency Response

Through this event SWI is also set to recognize and salute the excellence, competence and contribution of our security personnel to make our cities and nation safe through its "Innovation & Excellence Awards for Security & Policing 2015" which are being organized on the



Secure Cities 2015

Security Watch India (SWI) organised the 07th edition of its annual flagship initiative - Secure Cities 2015, on 9th September 2015

same day from 1900 hrs onwards at the same venue. The awards honour law enforcement agencies for projects/ initiatives, which are exemplary and innovative whilst contributing to making our cities and nation, secure. The last edition of Secure Cities in September 2014, saw useful and productive participation from Ministry of Home Affairs, Department of Electronics and IT, Ministry of Communications, Government of India, National Disaster Management Authority, Paramilitary Forces and State Police forces along with other relevant Ministries and Government agencies from across India. Some of the speakers at Secure Cities 2014

included Shri. BS Bassi, IPS, commissioner Delhi Police, Shri. Rakesh Asthana, IPS, Commissioner of Police, Surat City Police, Shri. Muktesh Chander IPS, Special Commissioner Police, Delhi Police, Shri. Braj Kishore Prasad, IAS, Additional Secretary Foreigners and Police Modernisation, MHA, Government of India, Shri. Pavan Kumar Jain, IPS, Addl. DG (Planning & Provisioning), MP Police, Shri Sachin Burman, Director, National Critical Information Infrastructure Protection Centre (NCIIPC), Shri. G. Narendra Nath, Deputy Director General Security, Department of Telecommunications, Govt. of India,

Shri. Anand Swaroop, IPS, IG (Security), UP Police, Shri. Ashit Mohan Prasad, IPS, ADGP Intelligence, Karnataka Police, Shri. Loknath Behera, IPS, Addl. DG (Modernization), Kerala Police, Dr. Ish Kumar, IPS, ADGP Technical Services, Andhra Pradesh Police, Shri B.J. Mahanta, IPS, Addl. DG (Admin), Assam Police, Shri. Arvind Ranjan, IPS, Director General, CISF (Central Industrial Security Force), Shri. Ashok Dohare, IPS, Additional Director General of Police, Cyber Police, MP Police, Shri. S.N. Pradhan, IPS, Addl. DG (CID), Jharkhand Police among others.

सड़क सुरक्षा सप्ताह

11-17
जनवरी
2015

सड़क सुरक्षा के लिए मेरी शपथ

शराब पीकर गाड़ी
न चलायेंगाड़ी चलाते समय
मोबाईल का प्रयोग
न करेंदुपहिया वाहन
चलाते समय हेलमेट
अवश्य लगावेंसीट बेल्ट का
प्रयोग करें।धीमे चलें-संयम
से चलें

यातायात नियमों का पालन करें।

सड़क सुरक्षा न हो केवल नारा।
बना लो इसको जीवन धारा ॥परिवहन विभाग
TRANSPORT DEPARTMENT, GOVT. OF BIHAR

पाठकों से अनुरोध है कि इस विज्ञापन की उपयोगिता को ध्यान में रखकर इसे घर/विद्यालय या कार्यालय की दीवार पर अवश्य लगायें.

इस शराब
की बोतल की
कीमत जिंदगी
हो सकती है।

शराब पीकर गाड़ी न चलायें

मानव कृत्रिम अंग
गाड़ियों के स्पेयर
पार्ट्स की तरह असली
नहीं होते

सड़क सुरक्षा सप्ताह

परिवहन विभाग
TRANSPORT DEPARTMENT, GOVT. OF BIHAR

11-17 जनवरी 2015



बिहार की समृद्ध गौरवशाली सांस्कृतिक परम्परा का द्योतक छठ पर्व प्रत्येक वर्ष पूरी परम्परा और आस्था के साथ मनाया जाता है। पटना और आस-पास के क्षेत्र के निवासी लाखों की संख्या में गंगा किनारे घाटों पर एकत्र हो सूर्य भगवान को अर्घ्य देते हुए छठ माता की आराधना करते हैं। इतनी बड़ी संख्या में एकत्र हुए भक्तों को बिना किसी बाधा एवं कश्ट के छठ पर्व सम्पन्न कराने हेतु बि.रा.आ.प्र.प्रा. राज्य सरकार एवं जिला प्रशासन के साथ पूर्ण सहयोग करते हुए प्रत्येक वर्ष निस्तर प्रयासरत है। छठ पर्व के अवसर पर प्रति. नियुक्त दण्डाधिकारियों एवं पुलिस पदाधिकारियों को दी गयी भीड़ प्रबन्धन एवं विधि व्यवस्था संधारण के संबन्ध में सचिवालय स्थित अधिवेशन भवन में संयुक्त ब्रीफिंग दी गयी। बिहार राज्य आपदा प्रबन्धन प्राधिकरण एवं जिला प्रशासन द्वारा संयुक्त रूप से यह आयोजन किया गया।



छठ पर्व पर भीड़ प्रबंधन



- ▶▶ सचिवालय स्थित अधिवेशन भवन में छठ पर्व 2015 के अवसर पर प्रति. नियुक्त दण्डाधिकारियों, पुलिस पदाधिकारियों, विभिन्न तकनीकी विभागों के अभियन्ताओं, प्रतिनियुक्त चिकित्सकों, एन0डी0आर0एफ0 के पदाधिकारी एवं कर्मियों के साथ संयुक्त ब्रीफिंग की गई जहां सभी पदाधिकारियों को अपने आवंटित कार्यों को सही तरीके से ससमय सुनिश्चित करने का निदेश दिया गया।
- ▶▶ बिहार राज्य आपदा प्रबन्धन प्राधिकरण के उपाध्यक्ष श्री अनिल कुमार सिन्हा, सदस्य, श्री यू0के0 मिश्रा तथा परियोजना पदाधिकारी श्री विशाल वासवानी द्वारा पूर्व में घटित घटनाओं का अध्ययन पत्र के साथ-साथ भीड़ प्रबन्धन के विन्दुओं पर की जानेवाली अपेक्षित कार्यों के संबन्ध में विस्तार से जानकारी दी गयी।
- ▶▶ श्री पी0एन0 राय, महानिदेशक, होमगार्ड द्वारा भीड़ प्रबन्धन एवं विधि व्यवस्था संधारण में पुलिस के द्वारा अपेक्षित कार्यों के संबन्ध में विस्तार से जानकारी दी गई।

- ▶▶ आयुक्त, पटना प्रमण्डल, पटना द्वारा उपस्थित पदाधिकारियों को एक्शन प्वाइंट विन्दुवार समझाए गये। वही अपर समाहर्ता श्री उमाशंकर मंडल एवं महाप्रबन्धक, पेसु को यह निदेश दिया गया कि प्रत्येक घाट में लटके हुए विद्युत एवं अन्य तारों को टाईट कराना सुनिश्चित करेंगे।
- ▶▶ सभी पूजा समिति का सक्रिय सहयोग प्राप्त करने एवं उनकी पहचान हेतु पहचान पत्र निर्गत करने एवं उन्हें कैप उपलब्ध कराने का निदेश संबंधित सेक्टर पदाधिकारी को दिया गया।
- ▶▶ किसी भी घाट पर बांस की बैरिकेटिंग नहीं होनी है तथा पानी के अन्दर अनिवार्य रूप से बल्ले की तीन लेयर की बैरिकेटिंग की जानी है। उचित पहचान हेतु प्रतिनियुक्त दण्डाधिकारी को नीला रंग का जैकेट, नगर निगम के कर्मियों को हरा तथा पुलिस कर्मियों को लाल रंग का चमकिला जैकेट उपलब्ध कराया जाएगा ताकि श्रद्धालु आवश्यकतानुसार इन कर्मियों को पहचान सकें। सभी घाटों पर नदी

- में नाव में एन0डी0आर0एफ0/एस0डी0आर0एफ0 के दल के साथ पदाधिकारी भी प्रतिनियुक्त रहेंगे जो नदी की ओर से लोगों पर ध्यान रखेंगे एवं आवश्यकता पड़ने पर उन्हें आगे आने से रोकेंगे। इस के लिए उनके पास माईक की व्यवस्था रहेगी।
- ▶▶ सुरक्षा की दृष्टिकोण से 15 नवम्बर से छठ की समाप्ति तक सभी घाटों पर निजी नावों का परिचालन पूर्ण रूप से प्रतिबंधित रहेगा।
- ▶▶ नदी में वाटर एम्बुलेंस की व्यवस्था रखने का निर्णय लिया गया है जिसके माध्यम से आकस्मिकता की स्थिति में आपदा प्रभावित लोगों को त्वरित गति से नदी मार्ग से पी0एम0सी0एच0 पहुंचाया जा सके।
- ▶▶ सभी महत्वपूर्ण नम्बर सभी घाटों पर सुदृष्टिगोचर स्थल पर प्रदर्शित किये जायेंगे।
- ▶▶ छठ पर्व के अवसर पर प्रतिनियुक्त दण्डाधिकारी, पुलिस पदाधिकारी, चिकित्सक, गोताखोर, नगर निगम के कर्मी एवं अन्य तकनीकी विभागों

- के कर्मियों/पदाधिकारियों का वाट्सएप ग्रुप बनाया जायेगा ताकि सूचनाओं का त्वरित गति से आदान-प्रदान हो सके। एन0डी0आर0एफ0 द्वारा दीघा, गांधी घाट एवं गाय घाट में कैम्प रखते हुए नासरीगंज से भद्र घाट के बीच 50 नावों से नदी गश्ती सतत् की जाती रहेगी।
- ▶▶ आज की बैठक में बिहार राज्य आपदा प्रबन्धन प्राधिकरण के उपाध्यक्ष श्री अनिल कुमार सिन्हा, सदस्य, श्री यू0के0 सिन्हा तथा परियोजना पदाधिकारी श्री विशाल वैष्णवी, आयुक्त पटना प्रमण्डल, पटना श्री आनन्द किशोर, पुलिस महानिरीक्षक, श्री कुन्दन कृष्णन, पुलिस उप महानिरीक्षक श्री शालिन, जिलाधिकारी डॉ0 प्रतिमा, वरीय पुलिस अधीक्षक श्री विकास वैभव, नगर आयुक्त श्री जय सिंह, बुडको के एम0डी0 सहित सभी वरीय पुलिस पदाधिकारी/प्रशास. निक पदाधिकारी एवं प्रतिनियुक्त पदाधिकारीगण उपस्थित थे।



आपातकालीन सम्पर्क सूत्र EMERGENCY NUMBERS

- जिला नियंत्रण कक्ष, पटना
- District Control Room, Patna

0612-2219810/2219234

- पुलिस नियंत्रण सेवा, पटना
- Police

100,0612-2201977-78

- अग्निशमन सेवा, पटना
- Fire Brigade, Patna

101,0612-2222223

- एम्बुलेन्स
- Ambulance

108,102

- राज्य आपदा नियंत्रण कक्ष
- State Control Room

0612-2217305

- जिज्ञासा बिहार सरकार सामान्य जानकारी काल सेन्टर
- Jigyasa (General Information Call Center Govt. of Bihar)

0612-2233333

पुनर्नवा

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(आपदा प्रबंधन विभाग, बिहार सरकार)

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आपदा नहीं हो भारी यदि पूरी हो तैयारी ।।