Environmental Science
Lecture 23

Nodal Agencies for Disaster Management

The agencies in the government who are the first to rescue us from any disastrous situation across the country, you have for floods, the ministry of water resources; for cyclones you have the Indian Meteorological department, Earthquakes you have the Indian Meteorological department again, Epidemics; Ministry of Health and Family Welfare, Avian Flu - Ministry of Health as well as the Ministry of Environment, Ministry of Agriculture and Animal Husbandry.

Some of these department have an interrelationship as well because some disasters or some natural epidemics are a product of a natural disaster that primarily occurs. For example, a series of floods could have affected a particular area, as a result of which they would have stagnant waters in different parts of the city. As a result of that, there would be mosquito breeding and other sanitation problems and because of these issues there could be an epidemic in that area like dengue, malaria, cholera, etc. When such instances occur in higher percentages in such areas, the Ministry of Health and Family Welfare as well as the Ministry of water resources will have to be in cohesion to ensure that these incidences can be reduced or avoided. The health in family welfare will ensure that the governmental hospitals will have a sufficient backup with respect to the number of doctors, nursing staff, medical aid, as well as medicines that are available; all of these have to be ensured. At the same time the ministry of Water Resources, will constantly have to ensure that flooding related activities and relief work has to go on side by side. A number of these agencies have to work parallely or sometimes in cohesion to ensure a smooth relief process.

Other disastrous elements like Chemical disasters, you have Ministry of environment and forests, Industrial disasters - Ministry of Labour, Rail Accidents: Ministry of Railways, Air accidents - Ministry of Civil aviation, Fire - Ministry of Home affairs, Nuclear incidents is Department of Atomic Energy; Mine Disasters - Department of Mines. New directions for Disaster Management in India, the National Disaster Management Authority or the NDMA has actually been set up as the primary apex body for Disaster Management in India,with the Prime Minister as its Chairman. Disaster Management Authorities will be set up at the State and District levels to be headed by the Chief ministers and collectors/ Zilla Parishad Chairman respectively. The new directions that have been given for disaster management; a National disaster Mitigation fund will be administered by NDMA, states and districts will administer mitigation funds. A National Disaster Response Fund will be administered by NDMA through the National Executive Committee. States and Districts will administer state Disaster Response Fund and Disaster Response Fund respectively. What actually happens is, the national bodies will

administer certain amount of funds depending on the budget to that particular state and then the State besides the National fund will have its own funds allocated for the same and cohesively they will disperse these funds to the public. Simultaneously, there are a number of NGOs who are constantly running who collect funds from other private individuals who are interested in contributing and relief funds will be collected from across the country and globe to ensure that relief material either in cash or in kind reaches the people who are in need. Besides these, you have 8 Battalions of National Disaster Response Force (NDRF) are being trained and deployed with CSSR and MFR equipments and tools in eight strategic locations. A National Disaster Management Policy and National Disaster Response Plan will also be drawn up. A management policy also gives us the direction of how things need to be done vs a response plan is more immediate. Right after the impact, the next few days and the week is very crucial. The immediate relief that doesn't reach, if that does not happen then the repercussions are far more severe and massive. Instead, if an impact is felt and the next 24 hours to 48 hours which is the golden period, if the response plan is suitable and adequate and if immediate relief reaches all the victims and people around, then the disaster management policy can smoothly shift in and ensure there is no hindrance in the manifestation of the fund or in the relief procedures.

Future directions - We need to encourage and consolidate knowledge networks. Mobilise and train disaster volunteers for more effective preparedness, mitigation and response. The typical volunteers are NSS, NCC, Scouts and Guides, NYK, Civil defence and Homeguards. Increased capacity building leads to faster vulnerability reduction. Learn from best practices in disaster preparedness, mitigation and disaster response.

Another important thing here comes into public education. If a particular area is constantly impacted by floods and earthquakes, then, right from the level of schools, colleges and even offices, frequent drills have to be incorporated such that the students, the general public do not face the situation with fear in the first second itself. They have some basic idea about how to deal with it. If it is a man made disaster which cannot be predicted or cannot be prepared for, is a different scenario. But certain natural disasters occur again and again in the same area. For instance, it could be the floods in Mumbai after every monsoon or the floods in Andhra Pradesh and Orissa. All of these are typical events that happen once in a year at least. If the general public is made aware and taught of what needs to be done immediately if there is a problem like this, say evacuation plan or if there is a plan where they have to somewhere for safety reasons and assembly point, those drills have to be conducted in schools, offices and even people in homes have to be taught that these are the ways you can prepare yourself and keep yourself and your family safe at least before immediate relief reaches your place.

Another important thing is to learn from surrounding disastrous areas, let it be across the globe. With today's technology we know what is happening across the country within a span of few seconds. When we see how they are getting prepared for a tsunami or an earthquake, we too can learn from them and incorporate these methodologies. Let it be governmental level or at a non-governmental agency level, even at a community level. Invest in Preparedness and prevention that mitigation will yield sustainable results, rather than spending money on relief after a disaster. Most disasters are predictable especially in their seasonality and the disaster-prone areas which are vulnerable. Communities must be involved in disaster preparedness.

Best Practices - On November 12, 1970, a major cyclone hit the coastal belt of Bangladesh. At 223 km per hour with a storm surge of 6 to 9 meters in height, killing an estimated 5,00,000 people. Due to the Cyclone Preparedness Program, the April 1991 cyclone with the wind speed of 225 km/hr killed only 1,38,000 people even though the coastal population had doubled by that time.
Just because they were prepared, evacuation methods were swifter and the apple was definitely less.

In May 1994, in a similar cyclone with a wind speed of 250 km/hr, only 127 people lost their lives. In May 1997, in a cyclone with a wind speed of 200 km/hr, only 111 people lost their lives. In 1997, in a cyclone with a wind speed of 200 km/hr, only 111 people lost their lives. Of Course it might seem wrong to say that this loss of life should have been stopped but at least there is a decrease in the number of people losing their lives, which means the cyclone preparedness program or the disaster management plan is working at a level definitely. Of Course, the effectiveness of it, depends on the way people follow it, people might decide to head back to get their things. So many factors are also involved.

If the program is prepared in a stipulated fashion and if it is followed religiously by everyone, then there will be minimal impact to the loss of life. Thing and everything like that can be recovered based on time. There are certain things for which we cannot put a value to vs when you have a certain amount of property that is damaged. That can have an assigned value to it and it can be refurbished in no time.

Future Directions - We need to mobilize stakeholder participation of self help groups, women's groups, Youth groups, Panchayati Raj institutions. Anticipatory Governance - Simulation exercises, Mock drills and scenario analysis. Indigenous knowledge systems and coping practices. Living with Risk - Community Based Disaster Risk Management. New possibilities; National Urban Renewal Mission for 70 cities, recent experience of 'unprecedented' extreme weather conditions in a few major metros and megacities. 100,000 Rural Knowledge Centre or

IT Kiosks, these are a need for spatial e-Governance for informed decision making in disaster-prone areas; before, during and after disasters.

Disaster Nursing - This can actually be defined as the adaptation of professional nursing skills in recognizing and meeting the nursing, physical and emotional needs resulting from a disaster. In a disaster prone area, what can be done to be prepared is recruiting certain volunteers who can be taught basic first aid, basic CPR, life revival skills and certain drills can be taught to certain volunteers so that in times of emergency they too can help these people till they relieve the NDRF and other people can join in to help the victims of the particular disaster. It is very crucial that the communities are involved in every level. Because when a particular impact or a disaster hits a particular place, it takes at least a couple of hours to mobilize any movement or activity and those hours can actually be quite crucial in a person's life. If we have volunteers, doctors, nurses and besides them, general people could help with basic first aid or certain measures, it is going to be very crucial as well as essential.

River Ganga's Pollution

If you actually about the river Ganga, it is considered one of the most sacred river to Hindus and it is also a major lifeline to millions of Indians who live along its banks and depend on it for their everyday needs. Ganga is a trans boundary river of India and Bangladesh. It is obviously the longest river in India. They are 2525 km long rivers that rise in the Western Himalayas in India and flows south and east through the Gangetic plain of north India into the Bay of Bengal. The Ganga basin is the most populated river basin in the world, with more than 400 million people and a population density of 1000 inhabitants per sq mile. You can see the pressure that is there on this river.

The qualities of the Ganges. According to Hindu mythology, the Ganges river has great medicinal qualities. A Ganges river present is an ideal biodiversity area, it has more than 140 fish species, 90 amphibian species and 5 area hit support birds which is found nowhere else in the world. They come across during migratory and hibernatory phases. The Ganga river produces top soil and fertile soil. According to study reports by environmental engineers of IIT Roorkee, the Ganga decomposed the organic waste, 15 to 25 times faster than any other river. The Ganges river has medicinal qualities as compared to other Himalayan rivers. According to NBRI, the National Botanical Research Institute, the Ganga water has anti bacterial quality as well. If found in research the E.COLI lives only 3 days in the Ganga water due to its bacteriophage quality's of the water.

Facts about River Ganga Pollution; it is considered one of the most polluted rivers, deadly poisonous water in some areas, toxins are found in water and some has turned into a sewer in certain parts. The Present State of the Ganges, at the time the holy Ganga became polluted.

They are 29 cities, 70 towns and thousands of villages along the Ganga bank. The Ganga was ranked among the five most polluted rivers of the world in 2007. It is found in research that the Faecal Coliform levels in the river near Varanasi is more than a 100 times than official government limit.

One of the main causes of this is the rights that is performed in the Ganges river. Many people believe that the ashes if deposited in the river as a part of the religious belief. Besides the ashes, many people directly throw the dead bodies into this river, which causes a lot of problem especially when the passage of the river is very slow. When the passage of the river is very slow, it leads to sudden decomposition, foul smell, other disease penetrating bacteria and general pollution is caused in the river banks. As and when the population density increases, the pressure that is felt in that part of the river, is far more than in the other parts of the river.

When we talk about its length in its entirety, the entire river is obviously not polluted. In a span of 2500 odd kms, there are portions of it because there are about 29 major cities along the banks, there are portions of it that are polluted. But there is also a state in many people's mind that Ganges is one of the most polluted rivers in the world which is true to a certain extent, because we consider it one of the annual rivers in our country. It is a perennial river, it constantly has water but because of certain man induced activities, this condition is drastically changing. You can see in the image here, it doesn't look like a river rather more like a sludgy pond. That is because of the affluence of the river.

The best part about having a river is, it is constantly moves and therefore should not have any stagnant mosquitoes or any such breeding properties, but in such cities when the water is so slow and the impurities are so high. It no longer remains a river, rather a sluggish pond like body and a lot of infestation, let it be bacterial, viral, so many other properties come into being.

The toxic cocktails in Ganga and throughout the entire Indian river system are ghastly. Heavy metals include chromium. You have toxic acids like arsenic and plutonium. Human and animal excrement. In many places the river is hardly more than a sewer.

Main sources of Ganga pollution - Industrial drains, City drains, Religious tourist activities in Varanasi especially, Construction activities along the coast of this river, Agriculture auto flow like when there's too much pesticide, fungicides, all of that also adds to the pollution and this actually kills the fish in the water body and the other marine life and in the end, once the marine life dies, the impurities never go away. Fish is the main consumer of most of the impurities. Once the fish start dying, then the impurities remain forever. Domestic activities like those of washer men, cremation related like rituals and miscellaneous like vehicular washing, dumping the solid waste, etc.

Industries are a main source of pollution to the Ganges. You can see the dark black effluents that are filled with chemicals getting poured into the pure Ganges at this point. Here, you can see that the river is actually not polluted. There are these sources at many parts of the river, that add on to the pollution and these factories don't exist near the city or anything. It could be on the outskirts of the city and cannot be monitored well. According to the data, out of 146 industries along the river Ganges between Rishikesh and Prayagraj, in this 146, 144 are present in U.P and only two in Uttrakhand. The major pollution industries along the Ganges are the leather industries near Kanpur. Other industries like tanning industries, pharmaceutical companies, electronic plants, textiles, paper industries, fertilizers' discharge, different types of chemical and organic effluents into the river. This is a particular channel which shows the tannery effluents at Kanpur. The river here as you can see, there is a drastic change in colour as well as the quality of flowing water. It is pretty much stagnant in this portion, this is like a channel from the factory vs the river over here.

Certain other alarming facts - Every year millions of Indians are affected by waterborne diseases like diarrhea, viral hepatitis, dysentery, typhoid, cholera and gastroenteritis. People are blinded by trachoma because they can't bathe in clean water. One person in the Ganga basin dies every 60 seconds because of diarrhea and 8 out of 10 Indians suffer from dysentery each year. 80% of all health problems in India and 1/3rd of all deaths are said to be attributed to river Ganga and its pollution. River contamination leaches into the groundwater system, affecting water supplies and agriculture as well.

Effects of Ganga Pollution - Effect of the pollution in the river directly observed in fish. Certain fish have actually become extinct. Due to the pollution in Ganga, the Ganga Dolphin population of only 2000 and is now considered endangered species. The effect of pollution increases the organic matter in the river water. Presence of toxic chemicals in water, impairs light penetration due to the oil spill. The effect of water pollution strongly impacts the balance of nature which ultimately impacts humans. Harms the food chain i.e breaks the link of food chain, spread of diseases, causes cholera, typhoid infection, diarrhea, etc. Affects body organs, the consummation of highly contaminated water can cause injury to the heart and kidney.

What steps have been taken until now? In 1985, the Government launched the Ganges Action Plan in 29 cities in Uttar Pradesh and Bihar. As a result of the Public Interest Litigation filed by Eco-Friends in 1997, several landmark orders have been assessed to address critical issues of Ganga pollution, including closure of 200 odd polluting industries and initiation of actions to address the limitations of this action plan.

Some other measures that have been taken; Deep water wells have been drilled to provide fresh water for villages where Ganga contamination has entered the groundwater system, causing skin diseases and other ailments. Public awareness drives are underway both in Varanasi and Kanpur dealing with the root causes of pollution and the lack of fresh drinking water. Conducting workshops by NGO in the Ganges basin cities, dialoguing with local council people and other groups about their rights under the 74th Amendment to the Indian constitution. This enables local councils to themselves decide what sort of environmental actions they want to take. But besides the Govt and the NGOs, it is very crucial that a lot of money as well as time is invested in public awareness and education because any number of things that can be done by the government can be done for the industries to ensure that their effluence are reduced. What about the increasing number in population and the people who are directly polluting the river? that can only happen through education and public awareness, strict legal action can also be taken against people who are found polluting the river.