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Resilient India - Disaster Free India

Consultative Workshop on
Capacity building for Animal inclusive Disaster Risk Reduction (AiDRR)

9th January 2020

The Ambassador
IHCL SELEQTIONS
NEW DELHI

PROCEEDINGS

NATIONAL INSTITUTE OF DISASTER MANAGEMENT
(Ministry of Home Affairs, Govt. of India)

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Rapporteurs of Session

Inaugural Session

Dr. Shweta Baidya

Technical Session-I

Ms. Aradhna Moktan

Technical Session-II

Ms. Shilky

Technical Session-III

Mr. Karpooram Pandian & Ms. Anuradha Maurya

Valedictory Session

Dr. Anjali Barwal



BACKGROUND

India is a hot-spot for biodiversity with its various ecosystems. Rich in wildlife, as of 2014-15, India has 668 Protected Areas including 102 National Parks, 515 Wildlife Sanctuaries, 47 Conservation Reserves and 4 Community Reserves covering a total of 1,61,221.57 km^2 of geographical area which is approximately 4.90% of the country. In addition there are 47 Tiger Reserves, 18 Biosphere Reserves, 25 Elephant Reserves, 5 Natural World Heritage sites and 25 Ramsar Wetland sites in India. India Forest lands nurture about 400 species of mammals and 2000+ species of birds. As per livestock population of different species in India, 2012, we have 512.1 million populations of them in our country. It includes cattle, buffalo, sheep, horse, mule, goat, camels, pigs, donkeys, yak, mithun etc. Apart from the poultry population that stands at 729.2 million including Chicken, ducks, turkey and other birds.

Natural disasters are one source of animal harm that wild animals are particularly vulnerable to. Earthquakes, hurricanes, volcanic eruptions, tsunamis, and natural forest fires have devastating impacts on them. In general, animals affected by natural disasters are left to die or to endure incapacitating injuries that could have been healed with due medical care. Like wild animals, domesticated animals can also be harmed by natural disasters; however, they have more chances of being rescued. Manmade disasters may not harm the animal directly but may definitely threaten their lives in situations like bomb explosion, pollution, industrial hazardous waste, road accidents or destruction of their natural habitat. Further, any form of disaster impacts the weaker section of the society especially in developing countries due to their dependency on animals for their livelihoods. During disasters, humans are generally the only ones taken care of. This mindset needs to be changed. Sometimes the needs of wild animals are neglected because they are out of sight and out of mind. Often it is felt that what happens to animals living in the wild is none of our business and we should not "interfere with nature". Further, sometimes only members of certain species that are considered valuable because they are scarce or for some other reason are rescued, but not other animals.

In order to achieve sustainable human development that works for both people and our planet, we need to recognize the relevance of animal issues. Healthy and well cared-for animals as well as ecosystems support both the agricultural and natural processes that promote food security and mitigate global hunger (SDG 2 - Zero Hunger). Hence, understanding the role of animals in agriculture, as well as improving animal welfare and conserving wildlife, are critical to efforts to reduce global hunger. Animal welfare also helps support long-term human health, which is integral to both the physical and psychological health of communities. Conservation and protection of animals, treating them as one among equals, is the ultimate insurance policy against individual and large-scale disasters.

In this context, National Institute of Disaster Management (NIDM) organized a consultative workshop on Capacity Building for Animal inclusive Disaster Risk Reduction (AiDRR) on 9th January, 2020 at The Ambassador Hotel, New Delhi.

OBJECTIVE

The main objective of this consultative meeting was:-

- to brainstorm on the existing negligence of animals during disasters, issues pertaining to the look-after and take-care of the Animals during disasters,
- to study the existing policies in this regard, identify gap areas and to arrive at a framework for an effective Disaster Risk Reduction mechanism for Animals during disasters,

- to identify stakeholders who require training and capacity building in this regard and initiate the process of building suitable training modules for different target groups,
- to identify possible areas of research and policy papers as per the requirement on a project mode.

Participation

The workshop had a participation of about 90 people from across the country. Prof. V. K. Sharma VC, Sikkim Disaster Management Authority chaired the inaugural session of the workshop. Dignitaries from Department of Animal Husbandry and Dairying (DoAH&D), Ministries of Environment Forest and Climate Change (MoEF&CC), National Disaster Management Authority (NDMA), Delhi Disaster Management Authority (DDMA) and Central Zoo Authority (CZA) also attended the inaugural session of the workshop. Besides this, delegates from several Non-governmental organizations like Gesellschaft fur Insternationale Zusammenarbeit (GIZ), Wildlife Trust of India (WTI), World Health Organisation, India and Indian Red Cross Society, India and many other organizations also participated in the workshop.

Key Discussion Points

- Role of communities and local networks in Animal care during and after the disasters.
- Impact of various disasters on Animals (wildlife, zoo, livestock and stray animals).
- Protective Measures for Wildlife and livestock during Disasters.
- Challenges and gaps with respect to Disaster Risk Reduction for livestock, wildlife, stray and zoo animals.
- Experiences of different states in managing animals during disasters (Kerala and Karnataka).
- Increasing livestock vulnerability with respect to climate factors and aridity

INAUGURAL SESSION



From left to right**: Mr. Ashish K. Panda** Consultant, NIDM**, Prof. Anil Kumar Gupta,** Professor NIDM**,** **Maj. Gen. Manoj Kumar Bindal,** ED, NIDM, **Prof. V.K. Sharma,** VC, Sikkim Disaster Management Authority, **Shri Upmanyu Basu,** JS, DoAHD, **Ms. Bharati,** IG Forests, **MoEF&CC** during inaugural session

The Inaugural session was chaired by Prof. V.K. Sharma, VC, Sikkim Disaster Management Authority. Shri Upmanyu Basu, JS, Department of Animal Husbandry and Dairying (DoAHD), Ms. Bharati, IG Forests, Ministry of Environment, Forest and Climate Change (MoEF&CC) and Maj. Gen. Manoj Kumar Bindal, ED, NIDM were other dignitaries present on the dais.



Prof. Anil Kumar Gupta, Professor NIDM in his introductory speech mentioned that Disaster Management is an interdisciplinary subject in which inputs from all the other related disciplines are imperative. He also emphasized that other than the wild animals, we should also be concerned about the livestock animals and animals which are in captivity. While giving an example for the ideal situation, which we should achieve in future, he mentioned that it should be the survival of the fit not the fittest. He also mentioned that historically hunting of animals was a matter of prestige, but that has brought us to a situation where we need to think of saving animal species to maintain the balanced ecosystem. Since, now we have realized the value of animals, we should consider maintaining a harmony between humans and animals. Earlier we were interested in building Disaster Risk Reduction (DRR) only for human beings, but now, it has become animal inclusive DRR. He reminded that for past few years economic slowdown has been observed that is linked to the ecological slowdown. Ecological slowdown impacts the availability of resources for production and consumption and hence, is contributing to the economic slowdown. After setting up the context for the programme, he invited all the distinguished guests of the inaugural session to give their invaluable views.



Major General Manoj Kumar Bindal, Executive Director, NIDM welcomed everyone on behalf of NIDM for participating in this program. He expressed his concern regarding the safety of the animals as both the wild animal and livestock become prey of disasters. He mentioned that normally least importance is given to the animals during the rescue operation during any disaster. Coexistence of human and animals are needed for building disaster resilient ecosystem and Sustainable Development Goals (SDGs) also emphasize on including the safety of the animals. He discussed about the recent forest fire in Australia and brought to light the fact that only 0.1% of the animals were rescued. Normally during the disaster situation handling of the wild and stray animals becomes difficult due to the lack of proper training of the rescuers. He explained the objectives of the workshop as identifying the gap areas and formulating training modules and propagating research and documentation in this area. A major concern area for many parts of India is flooding and water logging during the flood situation becomes a big problem to save the animals. Therefore, we need to identify the safe and unsafe areas and move the animals to some upper areas during flood situation. Creation of food stocks is needed to provide food to the animals in captivity like zoo etc. during the disaster. Saving the animals in urban areas becomes even more difficult as there is no open safe space for them. Normally disease outbreak from animals becomes common during the disasters which complicate the situation even for human being. To resist this type of disease

outbreak prior preparation is needed. He concluded by giving example of Odisha which has done good work in mainstreaming disaster risk resilience and making it inclusive for animals.



Shri Upmanyu Basu, JS, DoAHD opined that the disaster management approach has improved over the years in our country. However we are not considering the animals which are proven to be the important part of our life, and unfortunately the livestock issues are not addressed. While stating about the problem he explained that disasters do not differentiate among the ministries, therefore, all the ministries have to work in coordination. Earlier only the Department of animal husbandry realized the importance of problems related to the animal security but now all the ministries are aware about the loss of animals during disasters. Farmers who do not have enough land could manage their livelihood with the help of the livestock in case of crop loss during a disaster. Livestock resource is a low input cost income generating activity. The statistics say that most of the farmers who committed suicide were not having livestock back up. Effective communication during the disaster situation is of utmost importance for smooth functioning of the early response system. Animals' Disaster Risk Reduction may include zoonotic diseases such as bird flu, swine flu etc. as many of the animal diseases are communicable to the humans as well. He put forth an example of the mismanagement during the disaster situation as; ten thousand camels which were procured by Australia from Afghanistan and India are going to be shot dead due to the drinking water scarcity. He suggested that if in case it is not possible to shift the animals to a safer place during a disaster it is always better to free them, so that they can find a safe place on their own. On a concluding note, he emphasized that as a part of capacity building, fresh water availability has to be made for the animals as they even can survive without food for few days but not without water.



Ms. Bharati, IG Forests, MoEF&CC reiterated that the disasters affect everyone, be it animal or human being. It is quiet an apt time for organizing the AiDRR workshop when a grim situation of Australian bush fire is ongoing. Now more climate related disasters are surfacing. She also mentioned that the Sendai Framework is the finest agreement, (which is nonbinding and voluntary in nature) that has taken place ever but the responsibilities have to be shared among the ministries and departments. Our Govt. system is there to deal with the disasters. 18% of the world's total cattle population belongs to India. One third population of India partly or fully depends on the forests. Therefore, saving forest and its animals are necessary. February to June is the peak time for forest fires; even then we do not face significant loss due to the well managed preparedness system in place. Only 2.5 % of all the Indian forest fires are severe forest fire incidences. In general only natural resources are given all the importance but animals are neglected. As a capacity building measures local communities and the front line staffs have to be trained. There is well built forest fire alarm system which sends information to the ground staffs. Sometimes false alarms are also there but nevertheless it helps in saving the forests from bigger disasters. Traditional methods are proven to be helpful in extinguishing the forest fire. As a closing remark she quoted a Norwegian phrase "There's no such

thing as bad weather, only bad clothes" which means that no disaster can harm us if we are well prepared.



Prof. V.K. Sharma, VC, Sikkim, Disaster Management Authority and Hon'ble Chairperson of the Inaugural Session said in his inaugural speech that the frequency of the forest fire has increased in last few years which have led to increased animal suffering. In Australia as per the official figure 5.3 million animals are suffering from the ongoing forest fire which is expected to be much more in reality. He expressed his concern about our normal tendency of ignoring the animals during the disasters. As an example he gave an instance of the Odisha Super Cyclone 1999, where animals were ignored. Since floods and droughts have become common disasters for India, therefore, we need to include animal rescue plans for future disaster management strategies. Animals are themselves good whistleblowers for the upcoming disasters as they can sense it before happening. We should arrange for a secure place for the animals otherwise the concept of sustainability will not possibly be achieved. Forest Fire trainings must therefore include the precautionary measures for animal's safety. We should think of separate corridors for animals and humans. He was of the opinion that Climate change is bringing more disasters as 220 yaks died of starvation due to heavy snowfall in the Himalayan region as there was no grass for them to eat. Due to climate change the increased number of flood occurrences is giving rise to the animal deaths. Animals have to be included in every cycle of disaster management plan including the Panchayat level plan as they are the people who are ultimately going to implement it. He concluded that the Guidelines for animal safety must be included in the State and Panchayat level plans.



The inaugural session concluded with vote of thanks by Mr. Ashish K. Pnada, Consultant & Faculty Member, Centre for Forestry, Biodiversity and Wildlife,ECDRM, NIDM. He thanked the participations of the conferenc from across the country for taking time out of their busy schedules for participating in the workshop. He quoted Mahatma Gandhi by saying that, "If you want to judge the real growth and progress of any society, it can be judged by seeing how animals are treated in that society."

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TECHNICAL SESSION-I: Challenges and Gaps with respect to DRR for Wildlife & Zoo Animals.



From left to right: **Mr. Ashish K. Panda** Consultant, NIDM, **Prof. Santosh Kumar,** NIDM, **Dr. A.M. Pawde,** IVRI, Ijjatnagar, **Dr. Sonali Ghosh,** DIG, Central Zoo Authority, **Prof.V.K. Sharma,** Vice-Chairman, Sikkim Disaster Management Authority, **Maj. Gen. Manoj K. Bindal,** ED, NIDM, **Dr. Satendra,** IFS, Sr. Consultant, BSDMA, **Prof. Anil K Gupta,** NIDM, **Shri. Abhishek Narayan ,** Division Head , WTI, **Dr, Lalit Sharma,** Zoological Survey of India, Kolkata.

Brief of Session (Content background): The session focused on challenges and gaps with respect to the DRR for Wildlife & Zoo Animals. Often animals are neglected and seen as secondary priority during disasters, domesticated animals which are seen as assets for people turn to be a liability during disasters let alone the animals in wildlife. The highlight of the session was to identify challenges, obstacle and barrier related to DRR for Wildlife & Zoo Animals, like there is no advance research regarding the subject matter, lack of knowledge management centre for planning and capacity building, lack of bio-security and bio-safety measures which are not strictly implemented, how Disaster Management Planning in Zoos needs to be more systematic and Comprehensive, Monitoring, Evaluation and Updating the DM Plan, organizing training and workshop programme on national and district level, providing opportunities to the state actors, particularly the management of protected area to use ECO-DRR as a tool for its survival and continuity in the overall interest of the local ecosystem. The major topics covered in this session were animal care with reference to Human Health (Zoonosis), understanding the Impact of Forest Fire on Fauna Resources for Conservation and Management, harnessing the potential of local networks to achieve DRR for animals, Zoo specific DM Plan, protective Measures for wild life during disaster, traditional knowledge for wildlife and protected areas strategies to include in ECO-DRR which all the speakers have spoken about vividly.

Chair: Prof. V.K. Sharma, Vice-Chairman, Sikkim Disaster Management Authority.

Speakers: Dr. Jugal Kishore, Director, Professor and Principal, VMMC and Safdarjung Hospital, New Delhi, Dr, Lalit Sharma, Zoological Survey of India, Kolkata, Shri. Abhishek Narayan , Division Head , WTI ,Noida,

Dr. Satendra, IFS, Sr. Consultant, BSDMA, Dr. A.M. Pawde, IVRI, Ijjatnagar, Dr. Sonali Ghosh, DIG, Central Zoo Authority, Delhi, Professor Amita Singh, CSLG, JNU.



Dr. Jugal Kishore, Director, professor and Principal, VMMC & Safdarjung Hospital, New Delhi explained animal care with reference to Human Health (Zoonosis). Zoonotic means infectious diseases that are spread between animals and humans. As these diseases can cause sickness or death in people, Centers for Disease Control (CDC) is always tracking and reporting them. Zoonotic diseases are caused by harmful germs like viruses, bacteria, parasites, and fungi. These germs can cause many different types of illnesses in people and animals ranging from mild to serious illness and even death. Some animals can appear healthy even when they are carrying germs that can make people sick. A zoonotic disease is defined as a disease that can be transmitted from animals to people under natural conditions. Zoonosis is a problem that can affect all people, however those people at a higher risk include children, elderly, pregnant women, and immuno-compromised individuals, i.e. those with Human Immunodeficiency Virus (HIV), organ transplant recipients, and those undergoing chemotherapy. He also discussed Burden of Zoonosis, Zoonotic Disease, Zoonosis On the basis of Etiological agent, Factor Responsible and Prevention & Control etc.



Dr Lalit Sharma, Zoological Survey of India, Kolkata discussed on understanding the impact of Forest Fire on Fauna Resources for Conservation and Management. Forest fires are a natural and necessary part of the ecosystem. Even healthy forests contain dead trees and decaying plant matter; when a fire turns them to ashes, nutrients return to the soil instead of remaining captive in old vegetation. He explained the causes of Forest Fires as anthropogenic, carelessness, NTFP Collection, new flush of grasses, destroyed stumps of illegal felling, accidental spread during controlled burning, poaching, revenge, natural, lightning, rolling stones, friction in leaves, bamboo, low humidity & high temperature etc. He thoroughly pointed out the issues and concerns of forest fire like lack of scientific information with respect to cause and effects of forest fire on ecosystem, strengthening of institutional arrangements required, insufficient capacity to combat fire disaster etc.



Shri. Abhishek Narayan, Division, Head, WTI, NOIDA discussed regarding harnessing the potential of local networks to achieve DRR for animals. Animals are sentient beings. They suffer in similar ways to humans, and depend on us for protection when disasters strike. The suffering and loss of animals in disasters affect our emotional wellbeing, and even cultural identities. They are our companions, and play a major role in the lives and social structures of communities. The loss of livestock, a key productive asset, jeopardizes food security, sustainable economic growth and incomes. Over a third of the total economic loss caused by disasters impacts the agricultural sector, with 40% of this loss affecting the

livestock sector. DRR strategies must include protection of animals, as well as data systems to measure the vulnerability of animals in disasters and its impact on livelihoods. Clear and standardized tracking of animals impacts for better policy and practical decisions, and further understanding of the disasters with respect to their effect on the livestock sector. DRR strategies contribute to better animal welfare and strengthen the resilience of persons, businesses, communities and countries after disasters strike.



Dr. A. M. Pawde, IVRI, Ijjatnagar discussed the mandates of the Centre for Wildlife ICAR-Indian Veterinary Research Institute, Ijjatnagar. Health monitoring, disease diagnosis / surveillance in free and captive wildlife, and development of feeding standards for captive wild animals are two major mandates of the institute. He said that India is highly vulnerable to the disasters and ranks among the top 10 high-risk countries. This is due to the geographical location of India as it is in the warmer regions of the planet. As per the data from Indian Institute of Tropical Meteorology, the mean annual surface-air temperature has risen by an average of 0.4°C in the last 50 years. One-third of the geographical area is either drought or flood prone. The magnitude of flooding has increased in recent decades with 19 million hectares affected 50 years ago and 40 million hectares in 2003. Vulnerability to climate has a strong linkage with poverty. Around 60% of the population lives in rural areas and derives its livelihood from agriculture. Increased exposure to severe droughts, intense storms, devastating floods and lasting livelihood insecurity is proving to be a major roadblock in the field of Disaster Management. He mentioned the Assam floods, 2019 where 70% of Kaziranga National Park and 95 camps submerged and caused havoc to the wildlife. He said that during the time of such disasters even the good swimmers like Rhinos can also not thrive for so long if there is no food. There is a need of proper approach for flood prone National Parks in such cases. He also discussed the recent Avian Botulism causing death of migratory birds at Sambhar Lake, new castle disease outbreak in Peacocks at Haryana and Delhi, New strain of Avian influenza (H5N8) at National Zoological Park and Gwalior Zoo, H5N1 in Mysore and Patna Zoo etc. which indicates the crucial need for DM plan for Zoological parks. He concluded with the remarks that it is essential to save the wild animals in disasters and veterinarian, forest officials and NGOs have a key role during the disasters in saving animals. He said there is a need of action plan guidelines for wild animals, Separate wildlife expert team on disaster management and training of officials.



Dr. Satendra, IFS, Sr. Consultant BSDMA, focused on Zoo specific DM planning and how DM plan is required to be reviewed/monitored regularly for effectiveness. Regular drills/exercise are needed to test efficacy of the plan. He suggested recommendations like checking efficacy of the plan after major disaster, training & orientation of officials responsible for plan implementation, updation of available disaster resource inventory including human resource inventory, Emergency Operation Centre (EOC)/Control room to keep plan updated and collecting, collating and processing the information, sharing with main stake holders and role and responsibilities for DM activities at their levels. He also emphasized on the vitality of E- Plan. Whole plan or the important portion/ information of the plan may be developed as E- plan and should be made available at internet. He also gave an insight on detailed outline on the framework for such disaster management planning.



Dr. Sonali Ghosh, DIG, Central Zoo Authority, Delhi discussed on traditional ecological knowledge in wildlife and protected areas. Traditional ecological knowledge has been a widespread approach focusing management actions on maintaining a healthy, productive and resilient ecosystem, particularly in protected areas which emerged as a response to natural resource management practices that achieve sustainability and demonstrate its relevance in a community. She discussed major highlights like DRR in context of Asia-Pacific region and Protected Areas, examples of recent disasters, traditional ecological knowledge, Manas case study etc. She highlighted the output of the case study as how traditional water management practises are unique but not uncommon, they are often combined with existing Forest ecosystems and protection regimes as in the vicinity of Protected areas (TRADITIONAL ECO-DRR), continuance of such practices shaped through a mechanism of social participation often guided by harsh economic realities and near absence of an overpowering state, fear of losing such traditional knowledge to modern technology, lack of capacity to articulate the continuation of such practises, opportunities to the state actors, management of protected area to use ECO-DRR as a tool for its survival and continuity in the overall interest of the local ecosystem etc.



Professor Amita Singh, CSLG, JNU, spoke very precisely about animal rights and how animal in urban area are treated during disaster. She was of the firm opinion that the research regarding Animal-DRR is very limited and no proper infrastructure or policies have been made for them. She also emphasised on how community mobilization is best for animal welfare. Cow Management Board should be set up and proper shelter home should be provided for the pigs. She highlighted how budget should be passed at Panchayat level for animal health care and formation of separate ministry for animal welfare. She categorically spoke about limiting the population of animals as the pressure on natural resources is ever increasing.

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TECHNICAL SESSION II: Challenges and Gaps with respect to DRR for Livestock and Stray Animals



From left to right: **Mr. Ashish K. Panda** Consultant, NIDM, **Dr. P. Bishnoi,** Asst. Prof. RAJVASU, **Maj. Gen. Manoj K. Bindal,** ED, NIDM, **Dr. Kailash Chandra,** Director, ZSI**, Dr. S. M. Sabu,** J.D., AHD, Kerala, **Dr. Manjunath,** Director, AHD, Karnataka.

Chair: Dr. Kailash Chandra, Director, Zoological Survey of India

Speakers: Dr. Kirtiman Awasthi, Technical advisor, GIZ, Dr. Praveen Bishnoi, Principal Investigator, DM, Bikaner Veterinary University, Dr. S. M. Sabu, Animal Husbandry Department, Kerala, Dr. Manjunath, Director, AHD, Karnataka Govt.

Brief of the Session (Content Background): Session focused on the Challenges and Gaps with respect to DRR for Livestock and Stray Animals. During the time of disasters not only humans but pet and stray animals also get affected, however, during the time of Rescue operations they are often neglected or given second priority. Animals that are used by humans for food, labor, or other purposes are usually either abandoned or killed to avoid the burden of taking care of them or to prevent disease transmission. In some cases, authorities force people to leave the animals behind during rescue operations, even if the people desperately want to rescue them. During disasters, most evacuation centers do not accept animals in the absence of guidelines/laws for that or for the reason of scarce resources/infrastructure. This session focused on capacity building through learning from the experiences of the states like Kerala and Karnataka which faced major loss of livestock as well as stray animals in recent disasters.

Dr. Kirtiman Awasthi, Technical advisor, the Gesellschaft fur Insternationale Zusammenarbeit (GIZ) discussed about the Livestock vulnerability with respect to climate factors and aridity- case study through his presentation "Towards Climate Resilient Livestock Production System in Punjab". He informed about the project that GIZ started in collaboration with Punjab State Council for Science and Technology, towards Climate resilient livestock production system, primarily because the importance of dairy farming in the overall Gross Domestic Product (GDP) in the state's economy. He said that the future projections of climate change shown an average 1.8 degree centigrade increase in the temperature. Climate Change alters the

frequency of occurrence and intensity of severe climate events such as drought, flooding, and heat waves. These events have several impacts on livestock for example, when temperature increased beyond the tolerance level, it resulted in reduced milk yields, lower conceiving rates and shorter lactation periods, more pronounced in higher-yielding varieties of buffaloes and cross-bred varieties of cows compared to the indigenous varieties. In some cases disease incidences may also increase.



In a state like Punjab where livestock is the main pillar of the economy this is very important to adapt a climate resilient livestock system. In this project, they ensured sustainable livestock productions under heat stress conditions and also co-benefitting the stray animals by developing climate smart Gaushalas, stray cattle sheds, and revive them for productivity. Despite all this measures, there are still the residual impacts of heat stress on animals which will be manifested in terms of diseases or decrease in milk yields. This is where the project is compensating dairy farmers with the weather linked insurance scheme. The project supported the capacity building through awareness. While the first two components looked at the designing of the climate smart animal sheds which reduces the temperature inside by 2 degrees or Temperature-Heat Index up to 2-4 level in small sheds. In bigger animal sheds the system is automated, i.e., whenever the temperature rises beyond certain level, the system is triggered and it starts cooler/fans to reduce the temperature. Similar system has also been applied for stray animals. He said about the key learning of the project that it provided scientific evidence on climate risks (for e.g., heat stress) to enable informed decision-making on adaptation needs and actions (for e.g., climate sheds). It took a loss and damage perspective, first of its own kind. Established technical validity of the adverse effects of heat stress on milk yields especially those of cross-bred cows and high-yielding buffaloes with the engagement of research institutions, like Guru Angad Dev Veterinary and Animal Science University (GADVASU). By engaging with key stakeholders (dairy farmers, insurance agencies, research institutions), it fostered participatory approach and provided opportunity for building awareness around climate risk like heat stress and how to address them.



Dr. Praveen Bishnoi, Principal Investigator, DM, Bikaner Veterinary University talked about "*A step ladder approach in Animal Disaster Management*". He dedicated his presentation to a half billion animals those died in the Australia Bushfire. He stated a misbelieve that the 'animals can fend for themselves' and that's why animal issues are usually overlooked in planning for emergencies. He said that this is not true at all because they also need assistance during the disasters; they too need to be rescued. Recently the frequency of disasters has been increased. The growing interdependence between humans, animals and the environment in which they live is causing global health problems whose resolution requires a more holistic approach. Veterinarians have obligations, opportunities and contributions crucial to improving public health, detecting and halting the spread of zoonotic diseases, preserving the quality of food and water resources and promoting the health of wildlife and ecosystems. He added, stating that care of domesticated animals is primarily the responsibility of the animal's owner.

Support from other people or institutions (personal, co-operative, commercial or public-sector) should come first from those who are closest to the need. If owners are incapable of providing care themselves, they are expected to secure help from family, friends, volunteers or commercial facilities. He discussed the problems raised when animals are affected by disasters; spoilage of food and/or the water supply, zoonosis, animal bites, the significant impact on public mental health due to emotional involvement with the animals, reduced dairy and livestock production, scarcity of food and water, high livestock mortality rates, etc. damage to both domestic and wild animal species and the diseases -spread during and after a disaster.

He spoke about the level of preparedness which is generally national level to ward/village level, whereas, according to him it should be the other way. Plans should be made at Village or Gram Panchayat level first. Formation of a team which deals specially with animals at the time of a disaster and which should include; Members of the Panchayat i.e. Sarpanch and Panch, Veterinarian or Para-Veterinary staff, Teachers from the school, Patwari, Persons from electricity and Public Health Engineering Department (PHED), Persons from wild life/forest department posted at that Panchayat or village and Volunteers from the village etc. The government authorities should be approached for the funding to carry out various mitigation measures. Financial help should also be taken from Panchayat, NGO's and Charitable organizations. He suggested that with the help of Panchayat, Patwari, police and the senior villagers the incidence of disasters occurred in recent past should be enlisted so that the area can be classified for the possible natural disasters and accordingly preventive measures can be decided. Record of the animal population should be obtained from the Patwari, if available, otherwise a fresh village level survey can be carried out through the volunteers. Once the animal population is obtained, vaccination and tagging or marking of the livestock should be done and the record of these animals should be kept by this team. Safe places should be identified and marked for making shelter and for shifting of the animals during disaster. The location of these places should be decided with the help of Patwari and the government officials from geological and Disaster management departments. Moreover construction of shelter and storage house for the fodder and water for the animals should be done and an optimum amount of fodder should be kept stored in these storage houses. It is advisable that the fodder should be collected on share basis and participation of each and every family of the village can thus become more fruitful. Animal lifting equipments and animal ambulance for the transportation of the injured and deceased animals during disaster should also be made available. The volunteers should be trained about handling and securing and restraining of the animals by Veterinarians or Para-Veterinary staff. In the end he suggested identification and marking of places for the disposal of carcass preferably by burial method, the team should be educated to make trench for en-mass burial during disaster. All these plans must move upwards in hierarchy i.e., from Panchayat level to district level and likewise.



Dr. S. M. Sabu, J.D., Animal Husbandry Department, Kerala shared his experience of Kerala Flood (2018) and Management of Animals through his presentation, "Flood 2018 Rescue-Relief-Rehabilitation". Giving a brief about the geography of Kerala state, he stated that the rainy season in the state sets in between June to November. It has two rainy seasons of southeast monsoon i.e. from June to mid August and then mid October to mid November. In 2018, on 10th of August the rain down poured which is usually opposite as the monsoon recedes generally by then. Out of 14 districts, 10 districts were affected by flood. The state is mainly dependent on hydroelectric power and due to overflow of dams, gates were opened and it caused floods like never before. Even palatial buildings were gulped by the respective massive flooding

in 2018. The poor as well as wealthy people were affected. Almost all houses of low lying areas as well as middle land were affected. Only houses in high altitude were spared. Many houses of the fine arts, vets were immersed. Some vets were air lifted from their houses. Fishermen with their boats rushed to the spot willfully and saved many.

Army also deployed in the rescue operation. Kerala faced economic loss of about 4 billion rupees and 463 humans died in the massive flood. According to Department of Animal Husbandry, Kerala lost about 5163 Cattle, 1228 Calves, 541 Buffalos, 380 Goat, 1053 Pig, 11.43 lakhs Poultry and 4.6 lakhs ducks. 324 Large animal 750 Small animal carcasses were disposed with the help of Suchitwa Mission. The state also lost the fodder, animal sheds/shelters and area for fodder. After the rain stopped, several health camps were conducted for animals. Feed, fodder were arranged for the animals with the help of nearby states Karnataka, Telangana and Tami Nadu. Veterinary AID given to farmers of about 29 crores, 1127 AHD health camps were being conducted, about 80000 animals were attended in the camps. Around 324 dead bodies of animals were being incinerated. Relief was given as per the State Disaster Response Force (SDRF) norms. In Kerala, animals are geo tagged which helped in recognition of false applications from the farmers.



Dr. Manjunath, Director, AHD, Karnataka Govt. shared his experience of State Govt. initiative through his presentation titled "Drought Mitigation Measures." He informed that Karnataka has got a vast experience in dealing with drought and floods. Since 2001 the state has faced drought for 17 years except 2009 and 2017. In 2016, 64 Talukas out of 176 were declared as drought affected. Although the criteria were different for declaration of drought but due to political pressure the department was made to open cattle camps and fodder stock. The priority was given to the fodder depot because the fodder is sold at a subsidized prize at fodder depot and in cattle camps it is free. 398 fodder depots and 99 cattle camps were opened. The district veterinary officer generally assesses the availability of fodder and reports to the Deputy Commissioner. Also, there was a weather watch committee formed to keep a close watch on all the related activities of animal safety management. In 2016 one model was developed in Kolar district which encouraged those farmers who have irrigation facility to grow fodder. Fodder seeds were given free and an incentive of rupees 3000 per acre was given by a milk cooperative society to the needy farmer. The farmers then can cut the required amount of fodder and it will be weighed and accordingly at the rate of 1.5 rupees, it was made available. In 2018, 156 Talukas were declared drought affected and a PIL was filed in the court that cattle camps are not opened in these Talukas. The daily expenditure was raised to 100 rupees from 70 rupees per animal per day to provide 6kg of fodder, 1kg concentrate and sufficient water to drink. Due to this, it saw a sudden surge to an extent but the production was not enhanced. In 2018 another PIL was filed that the government has to provide feed, fodder, shelter and water, which has not met the required number. Thereafter, the cattle camps number was increased to 358. In 2019, 103 out of 156 Talukas were flood affected. Cattle camps were opened for 2 to 40 days as per the requirements. But they were closed because people moved back to their places with their cattle. But court permission was not taken to close the camps. All the Public Interest Litigations (PIL) were disposed off. Karnataka state fodder policy was formed in the state. They have registered a Karnataka state animal welfare board. They are also funding some of the Gaushalas, and also the state is taking care of Animal Birth Control (ABC).

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SESSION III: Consolidation & Way Forward



From left to right: **Dr. Anil K. Gupta,** Professor, NIDM, **Maj. Gen. Manoj Kumar Bindal,** ED NIDM, **Dr. S.P. Yadav,** Member Secretary, Central Zoo Authority, **Dr. Kailash Chandra,** Director, ZSI, **Mr. Ashish K. Panda,** Consultant, NIDM During Valedictory session

Chair and Dignitaries on Dias: Dr. S.P. Yadav, Member Secretary, Central Zoo Authority, Dr. Kailash Chandra, Director, ZSI, Maj. Gen. Manoj Kumar Bindal, ED NIDM, Dr. Anil K. Gupta, NIDM

Brief of the session: The session was chaired by Dr. S.P. Yadav, Member Secretary, Central Zoo Authority. Other dignitaries present on the dias were Dr. Kailash Chandra, Director, ZSI, Maj. Gen. Manoj Kumar Bindal, ED NIDM and Dr. Anil K. Gupta, NIDM. Dr. S.P. Yadav highlighted that human-wildlife conflict by informing that it has been declared as natural disaster in Uttar Pradesh (UP). He also mentioned that there is a need for capacity building programs. Dr. Kailash Chandra emphasized that synergy between stakeholders, NGOs and state nodal agencies is needed on urgent basis. Maj. Gen. M.K. Bindal, ED, NIDM highlighted that Disaster Management Plan of Department of Animal Husbandry should be implemented and district level Disaster Management Plan should mainstream disaster resilience issues pertaining to the animals.

Key points discussed during the session:

- Forest departments should recruit veterinary doctors and proper training should be provided to them.
- In Disaster Management Plan, 'Animal Safety' policy has not been discussed anywhere. So this should be drafted and streamlined at district level. District Disaster Management Authority (DDMA) should be made aware about need of animal protection and care.
- Transboundary diseases should be recognised and aligned with human rights.

- There should be specific guidelines for wild animals, livestock, animals in captivity and stray animals, which should be followed by all states. NIDM should ensure if states have implemented it or not.
- No data on livestock & stray animals is available, so it should be recorded. If any disaster occurs, there should be a central management system to look after this.
- Capacity building and training of responders (NDRF, SDRF etc.) is needed.

Dr. S.P. Yadav, Member Secretary, Central Zoo Authority, spoke about Australia bushfires 2019-20, California forest fires 2018, Kaziranga national park flood and epidemics (Canine distemper virus, CDV) at Gir national park. He further stated that synergy between various departments is very much important. Rescue centers should be provided for the animals. He also mentioned that policies are there but people are not aware about it. So training should be provided to them. Knowledge management system should be addressed. Simultaneously, documentation is required. More such capacity building programs needs to be conducted. He further elaborated that adequate and immediate budgetary support is needed. He also emphasized on the role and importance of community empowerment and involvement. Lastly, he clearly stated that every zoo must have their Disaster Management Plan approved. Without it, zoo should not be allowed to be operated.

Dr. Kailash Chandra, Director, ZSI, taking note of the information discussed during the 'Group Exercise' session, stressed upon the need for thermal mapping to track the animal movement and their population. It was emphasized that synergy between stakeholders, many NGOs, state nodal agencies is necessary for sustainable ecosystem management.

Maj. Gen. Manoj Kumar Bindal, ED NIDM, concluded the workshop by stating that Disaster Management Plan of Animal Husbandry department should be implemented. NIDM will take up more research and development projects involving DRR for wildlife, zoo animals and domesticated animals. More open forums should be formed involving all stakeholders. Manifold approach should be developed for responders, care-takers and policy makers. More stress should be focused to address the gap areas. He also suggested that district level Disaster Management Plan should talk about animals and livestock. He emphasized that more such workshops should be done across the country to enlighten the stakeholders and bring awareness among masses. We all learn from each other. Success stories needs to be documented and replicated elsewhere to bring positive outcomes in this regard. Lastly, he thanked all the speakers and participants who attended the workshop.



The workshop concluded with a Vote of Thanks by **Dr. Sushma Guleria, NIDM** to the delegates of the Valedictory session, all the speakers, participants, knowledge partners, media, facilitating staff of Hotel Ambassador and the organizing team of NIDM.

SUMMARY

The initiative to recognize the need of Animal inclusive Disaster Risk Reduction (AiDRR) and the Consultative Workshop on Capacity Building in this regard was a successful endeavour. Issues of disaster risk reduction of livestock, wildlife and animals in captivity and stray animals were discussed in the programme.

The highlight of the programme included discussion on animal care during disasters with respect to its connection with human health, impact of forest fires on the fauna resources and subsequent management thereof, utilization of local resources and networks the best possible way, disaster risk management of captivated animal in zoo and stray animals, wildlife protection during disasters, participation of community in disaster risk management activities for animals, use of traditional knowledge for disaster risk management, livestock issues with respect to changing climate and aridity, state government initiatives and success stories with respect to handling animals during disasters, human wildlife conflict, need for capacity building programmes for government officials and local community, need for synergy between stakeholders, NGOs and state nodal agencies, mainstreaming of animal specific disaster management plans in district level DM plans etc.

Key issues and gaps:-

The following key issues and gap areas emerged during the deliberations in the programme:

- Negligence of Animal care and welfare specially during disasters;
- Animals don't find mention in policy and plan documents of disaster risk management;
- Poor implementation of existing rules and policies with respect to AiDRR;
- Requirement of awareness generation for all stakeholders including policy makers, programme implementers, local community etc.
- Lab to land approach is missing as scientific interventions are either not sufficient or they fail to reach the ground level;
- Lack of synergy between Government, Academia and Private players on AiDRR;
- Capacity building training programmes required to be developed and operated across India on AiDRR;
- Rise in Man-Animal Conflict due to pressure on natural resources as well as climate change;
- NDMA should prepare and issue separate guidelines for AiDRR;
- There should be repository of research works, best practices and contact details of stakeholders (both government and non-government) at one place who could be mobilized at the time of crisis;

Needs and Priorities: Based on the findings upon the key issues and gap areas in AiDRR, following aspects have been identified as needs and priorities during the workshop:

- Organising more such workshops and seminars across the country;
- Development and running of capacity building programmes for various stakeholders including policy makers, programme implementers, academia & industry and the local community;
- Bring all the stakeholders at one platform for any policy change initiative in AiDRR;
- Organizing awareness generation programmes;
- Bring academia, research community close to the policy makers as well as the local community;

- Inclusion of animal welfare in local level disaster management plans and policies and their review at regular interval;
- Documentation of successful case studies for knowledge dissemination and replication in areas and among groups where they may bring positive changes and fruitful results;
- NDMA to prepare and issue separate guidelines for animal inclusive Disaster Risk Reduction;
- Database management of research work, case studies and contact details of people who matter in this relevant field

RECOMMENDATIONS AND ACTION POINTS

During the programme a consensus was arrived on the fact that animals are neglected during disasters and that there is need for mainstreaming of this aspect into the state/district level DM plans. It was also felt that there is need for organizing such programmes in future with more participation from stakeholders viz. concerned government departments, private key players, NGOs, student groups, veterinary doctors and scientific community, media and local community etc. Recommendations, action points and agencies responsible for action, which emerged during the programme, can be seen as under:-

Recommendations	Action Points	Responsible Agencies
Capacity Building for various stakeholders	Preparation of training modules	NIDM
Awareness Generation for various stakeholders	Holding workshops, seminars etc.	NIDM, NDMA, NDRF, State Governments, Department of Animal Husbandry, Dairy and Fisheries, Wildlife Institute of India, Zoological Survey of India, Central Zoo Authority, NGOs, Pvt Organisations etc.
Development of Databank of organization and persons, who such endeavours and its regular updation	Development of Databank	NIDM, NDMA, NDRF, State Governments, Department of Fisheries, Wildlife Institute of India, Zoological Survey of India, Central Zoo Authority, NGOs, Pvt Organisations etc.
Documentation of case studies, best practices in AiDRR	Bring about an edited volume of a compendium in this regard with contributions from experts in the field.	NIDM
Research work needs to be	Projects, schemes and research works need to be identified and promoted.	NIDM, NDMA, NDRF, State Governments, Department of Animal Husbandry, Dairy and Fisheries, Wildlife Institute of India, Zoological Survey of India, Central Zoo Authority, NGOs, Pvt. Organisations etc.

Recommendations	Action Points	Responsible Agencies
There should be specific guidelines on AiDRR for all kinds of animals.	Guideline on AiDRR	NDMA
Strengthening the institutional network for better management of AiDRR.	Study existing institutional framework on AiDRR and suggest recommendations to policymakers in this regard.	NIDM, NDMA, NDRF, State Governments, Department of Animal Husbandry, Dairy and Fisheries, Wildlife Institute of India, Zoological Survey of India, Central Zoo Authority, NGOs, Pvt Organisations etc.

ANNEXURE: 1 Agenda

Time	Theme/Topic	Speakers
09.30-10.00	Registration	NIDM
Inaugural Session		
10.00-10.05	Introduction	Prof. Anil K. Gupta, NIDM
10.05-10.15	Welcome Address	Maj. Gen. Manoj Kumar Bindal, ED, NIDM
10.15-10.20	Address	Shri Upmanyu Basu, JS, DoAHD
10.20-10.25	Address	Ms. Bharati, IG Forests, MoEF&CC
10.25-10.35	Inaugural Address	Prof.V.K. Sharma, VC, Sikkim Disaster Management Authority
10.35	Vote of Thanks	Shri Ashish Kumar Panda, Consultant & Faculty Member, NIDM
10.35-11.00	**High Tea**	
Session I: Challenges and Gaps with respect to DRR for Wildlife & Zoo Animals		
11.00-12.15	Chair	Prof. V.K. Sharma, VC, Sikkim Disaster Management Authority
	Animal Care with reference to Human Health (Zoonosis)	Dr. Jugal Kishore, Director, Professor and Principal, VMMC & Safdarjung Hospital, New Delhi
	"Understanding the Impact of Forest fire on Fauna Resources for conservation and management".	Dr. Lalit Sharma, Zoological Survey of India, Kolkata
	Harnessing the potential of local networks to achieve DRR for animals.	Shri. Abhishek Narayan, Division Head, WTI, Noida.
	Zoo Specific DM Planning	Dr. Satendra, IFS, Sr. Consultant, BSDMA
	Protective Measures for Wildlife during Disasters.	Dr. A. M. Pawde, IVRI, Ijjatnagar
	Community Initiatives for Animal Care during Disasters;	Prof. Amita Singh, CSLG, JNU

Time	Theme/Topic	Speakers
	Traditional Ecological Knowledge in wildlife and protected areas – Strategies to include in ECO-DRR	Dr. Sonali Ghosh, DIG, Central Zoo Authority, Delhi
	Open House	Chair
12.15-13.30	**Lunch**	
Session II: Challenges and Gaps with respect to DRR for Livestock and Stray Animals		
13.30-14.15	Chair	Dr. Kailash Chandra, Director, ZSI
	Livestock vulnerability with respect to climatic factors and aridity – case study	Dr. Kirtiman Awasthi, Technical Adviser, GIZ
	A step ladder approach in Animal Disaster Management	Dr. Praveen Bishnoi, Principal Investigator, DM, Bikaner Veterinary University
	Experience Sharing of Kerala Flood and Management of Animals	Dr. S. M. Sabu, Animal Husbandry Department, Kerala
	Experience sharing of State Govt.	Dr. Manjunath, Director, AHD, Karnataka Govt.
	Open House	Chair
Session III: Consolidation & Way Forward		
15.15-16.15	Open for all discussion over set questionnaire	Chair: Dr. S. P. Yadav, Member Secretary, Central Zoo Authority & Dr. Kailash Chandra, Director, ZSI, Prof. Anil K. Gupta, NIDM, Ashish Kumar Panda, Consultant, NIDM
	Remarks by Chair Remarks by Co-Chair Way Forward	Maj. Gen. Manoj Kumar Bindal, ED NIDM
	Vote of Thanks	Dr. Sushma Guleria, Asstt. Prof. NIDM
	Tea	

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ANNEXURE: 2 List of Participants

Sr. No.	Name and Address
1.	**Mr. Durgaraj Singh Shekhawat**, CDI, Civil Rajasthan
2.	**Dr. Satendra,** Senior Advisor, Bihar State Disaster Management Authority, Patna Bihar
3.	**Mr. Shashikant Chopde,** Senior Associate, ISET
4.	**Dr. Jugal Kishor,** Professor and Head, DCM, VMMC & Safdarjung Hospital
5.	**Mr. Vivek Saxena,** Country Representative IUCN India & Information union for consecration of Nature (IUCN), C-10, Gulmohar Park New Delhi
6.	**Dr. T. S. Sachdeva,** Former Senior Consultant, (Medical Management & Biological Disaster(NDMA)
7.	**Dr. A. M. Pawde,** Principal Scientist & Incharge- Wildlife Centre ICAR-IVRI, Izatnagar Bareilly 243122
8.	**Dr. A.D. Kaushik,** SF 285 Panchavati Enclave 4A Shatabdinagar Delhi Road, Meerut
9.	**Dr. Praveen Bishnoi**, Principal Investigators (PI) Centre for Disaster Management Technology for Animals Rajasthan, Bikanar
10.	**Ms. Bindu Aggarwal,** Faculty/ Incharge Disaster Management, Indian Red Cross Society, 1 Red cross Road, New Delhi- 110001
11.	**Ms. Pratyansha Singh,** Ph.D. Scholar (Wildlife) USEM, Guru Gobind Singh Indraprastha University
12.	**Dr. G. Areendran,** Director IGCMC & ENVIS (WWF, India) 172B Lodi Estate New Delhi
13.	**Mr. Anoop Sharma,** Emergency Preparedness Expert, FAO of UN, ROME
14.	**Ms. Neha Chaturvedi,** Emergency Response Coordinator Peta India People for the Ethical, Treatment of Animals (Peta India) F-110 1st Floor Jagdamba Tower PreetVihar, New Delhi-110092
15.	**Ms. Sreeja S. Nair,** Environment Management Specialist (EIA) NSRMP Aga Khan Agency for HabitateJolhy, 406, 4th Floor, Mumbai
16.	**Mr. S. C. Bhan,** Head Health Application, India Meteorological Department Lodhi Road, New Delhi
17.	**Mr. Shailendra Singh,** Teaching Associate Centre for disaster management technology for Animal Rajasthan Univ. Bikaner
18.	**Dr. S. K. Jhirwal,** Assistant Professor, Centre for Disaster Mgt. Technology for Animals Rajasthan University of Veterinary and Animal Sciences, Bikaner, Rajasthan
19.	**Mr. Arshad Iftekhar,** District Project Officer (DPO) District Magistrate 12/1 Jam Nagar House Shahjahan Road
20.	**Mr. Vimarsh Sharma,** Jr. Tech Expert HWC Project GIZ, A2/18 Safdarjung Enclave, New Delhi
21.	Ms. Urvashi Shobhina Kachari, Consultant, People for Animals Plot 26, Gulmohar Enclave New Delhi-110049
22.	Mr. Rakesh Kumar Bhatt, Specialist (IEC/HRD), Municipal Commissioner Office, Ghaziabad

Sr. No.	Name and Address
23.	Shri. Abhishek Narayan, Head of Division Wild Rescue, WTI, Wildlife Trust of India, F-13 Sector-8, Noida -201301
24.	Mr. Manjeet Saluja, NPO, WHO India
25.	Mr. Sant Kumar Arora, TGT (Art Teacher) & Resource Person DM & NSSP Behta Inter Collage Ghaziabad UP
26.	Mr. T. Arun Prasad, Student Guru Govind Singh Indraprastha University Dwarka, New Delhi
27.	Dr. Lalit Kumar Sharma, Scientist-C, ZSI, M Block, New Alipur, Kolkata-700053
28.	Dr. Pavan Kumar Singh, Joint Advisor (ops), NDMA
29.	Mr. Yogesh Kumar, Project Coordinator, District Disaster Management Authority District, South, New Delhi
30.	Kirtiman Awasthi, Sr. Policy Advisor, GIZ A2/18, Safadarjung Enclave, New Delhi
31.	Dr. Sabu SM, Joint Director, Animal Husbandry Department, Kerala
32.	Mr. Mohit Sharma, District Project Officer DPO-DDMA (W), New Delhi
33.	Dr. Anil Kumar Sharma, Joint Director, Department of Animal Husbandry, Govt of Uttar Pradesh, Lucknow (U.P.)
34.	Mr. Peeyush Sekhsaria, DRM Specialist, World Bank, New Delhi
35.	Dr. M. T. Manjunath, Director, Dept of Animal Husbandry and Veterinary Services, Bengaluru -560024 Karnataka
36.	Dr. Manjunath S. Palegar, Additional Director (SR), Dept of Animal Husbandry & Veterinary Services, Bangalore
37.	Mr. Dharmendra Kumar, ADM (WEST), O/o District Magistrate Plot No-3 Shivaji Place Rajori Garden
38.	Mr. Gauri Maulekshi, Trustee People for Animals, People for Animals 14, Ashok Road, New Delhi-110001
39.	Mr. Ramakant Upadhyay, EE, B-4, Qutub Institute Area, New Delhi-16
40.	Shri Nakul Kumar Tarun, Director, Zone4Solutions, C-13, Sewak Park. New Delhi
41.	Ms. Sarwesh Sharma, VSM, TERI- SAS, International Area, Vasant Kunj, New Delhi
42.	Mr. Gurmeet Singh, Civil Engineer, EDMC, GGSIPU
43.	Prof. Amarjeet Kaur, Director , CDMS, GGSTIPU University, Delhi- 78
44.	Dr. Parag Nigam, Scientist F, Dept of Wildlife Health Management, WII, Dehradun.
45.	Ms. Sonali Ghosh, DIGF, Central Zoo, Authority, MoEFCC, New Delhi
46.	Ms. Bharati, Inspector General of Forests, Indira Paryavaran Bhawan MoEFCC, Govt of India, New Delhi

Sr. No.	Name and Address
47.	Ms. Aradhana Singh, Assistant Program Officer, Wildlife Trust of India F13, Sector 8-Noida
48.	Dr. Mrinalini Saini, Veterinary Consultant, Central Zoo Authority, Pt. Deendayal Aut. Bhawan, CGO Complex, N.D
49.	Dr. Kailash Chandra, Director, Zoological Survey of India, 535, M-Block-New Alipore, Kolkata-700053
50.	Dr. Aditi Sharma, Senior Veterinary Officer, Rajaji Tiger Reserve- 5/1 Ansari Marg, Dehradun-Uttarakhand
51.	Ms. Reetika Maheshwary, Projects Co-ordinator, Wildlife Protection Society of India: 5-25 Panchsheel Park Delhi-110017
52.	Ms. Tanuja Chandrika, Student, Forest Research Institute- Dehradun
53.	Mr. P. L. Sharma, Deputy Commandant, NDRF-11 BN NDRF-M.A. Road Sankul Bhawan Varanasi (U.P)
54.	Mr. Awdhesh Kumar, Assistant Professor of Civil Engineering Invertis University, Bareilly -Uttar Pradesh
55.	Dr. Sudipto Chatterjee, Associate Professor & Head, Dept. of national Research, TERI School of National Research 10 Institutional Area, Vasant Kunj New Delhi-110070
56.	Dr. S. P. Yadav, Member Secretary, Central Zoo Authority
57.	Dr. Amita Singh, CSLG, JNU, New Delhi
58.	Mr. S G Rautray, Arasmin, Odisha
59.	Mr. Pardeep Chauhan, AHD, Haryana
60.	Ms. Ketaki Bapat, Scientist F, O/o PSA to GoI, New Delhi.
61.	Shri Sanjay Mishra, US, DoFS, New Delhi
62.	Shri Ashish Sharma, DC, NSG, New Delhi
63.	Shri Madhukar Pandey, US, former Addl PS to HM, New Delhi
64.	Shri R. M. Sanjeevi, Director, NGO for Blinds, New Delhi
65.	Shri Manoj Kasana, 2nd IC, NDRF, DM I, MHA, New Delhi
66.	Shri Biswas, US DM II, MHA, New Delhi
67.	Shri C. M. Sharma, Consultant, DM Division, MHA, New Delhi
68.	Dr. Monika Gupta, Expert Veterinary DM, Former NDMA SRO, New Delhi
69.	Mr. Sudhir Varma, Research Scholar, JNU, New Delhi
70.	Shri P. L. Sharma, Deputy Commandant, 11 Bn, NDRF, Ghaziabad
71.	Col. Suresh Sharma, TERI, New Delhi

Sr. No.	Name and Address
72.	Dr. Subhash Garu, Vet Surgeon, Bikaner Vet University, Binaker
73.	Mr Rakesh Kumar Jagania.DIG, Forests, New Delhi
74.	Col. Ranbir Singh, NCC Supdt, Kamdhenu University, Durg
75.	Shri Sajjan Kumar, Retd Forest Officer, Delhi
76.	Shri Veer Singh, VP, Shuttl, Gurgaon
77.	Dr. Adiniti, Uttranchal P.G College, Dehradun
78.	Sulayman M S Jagne, a Gambian Citizen, West Africa studying at Uttranchal P.G College,Gambia, Ministry of Environment and Forests
79.	Shri Sunil Sharma, VP, zone4solution, Delhi
80.	Shri Avdhesh Kumar, Civil Engineering Department, Bareilly University
81.	Ms. Natasha, Research Scholar, Central Zoo Authority, New Delhi
82.	Dr. B. P. Satapathy, Advisor, Spandan
83.	Dr. Ashraf, Chief Vaterinary and Principal Investigator, WTI, Noida
84.	Dr. S. Satapathy, Former Adviser, NITI Aayog, New Delhi
85.	Shri Alok Mishra, Cluster Resource Coordinator, Palanpur
86.	Dr. P. K. Joshi, School of Environmental Sciences, JNU, New Delhi
87.	Dr. Shailendra, DS, MoD, New Delhi
88.	Shri Rajesh Bhatt, Specialist, Swachchha Bharat Mission, MOUD, New Delhi
89.	Dr. P. K. Anand, Director, MOAHD, New Delhi
90.	Dr. Archana, IUCN, New Delhi
91.	Shri Jitendra Kumar, Under Secretary, Ministry of Railways, New Delhi

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- Major General Manoj Kumar Bindal, VSM, Executive Director, NIDM
- Dr. Anil Kumar Gupta, HoD, ECDRM Division, NIDM

PROGRAMME COORDINATORS:

- Ashish Kumar Panda, Consultant & Faculty Member (Forestry, Biodiversity & Wildlife), NIDM
- Ms. Shilky, Young Professional, ECDRM Division, NIDM

LOGISTICS

- Lt. Col. Dinesh Chander Vashista, Joint Director
- Sh. Surendra Thakur (Admin Incharge)
- Sh. Vikram Gurjar, DC (Trg.)
- Mr. S. S. Bisht, Accounts Section, NIDM
- Mr. Hemant, Comp. Prog. and Admn. Asstt, (I/O) NIDM
- Smt. Santosh Mishra, Trg. Assistant, NIDM

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ANNEXURE: 3 Photo Gallery

















ANNEXURE: 3 Photo Gallery







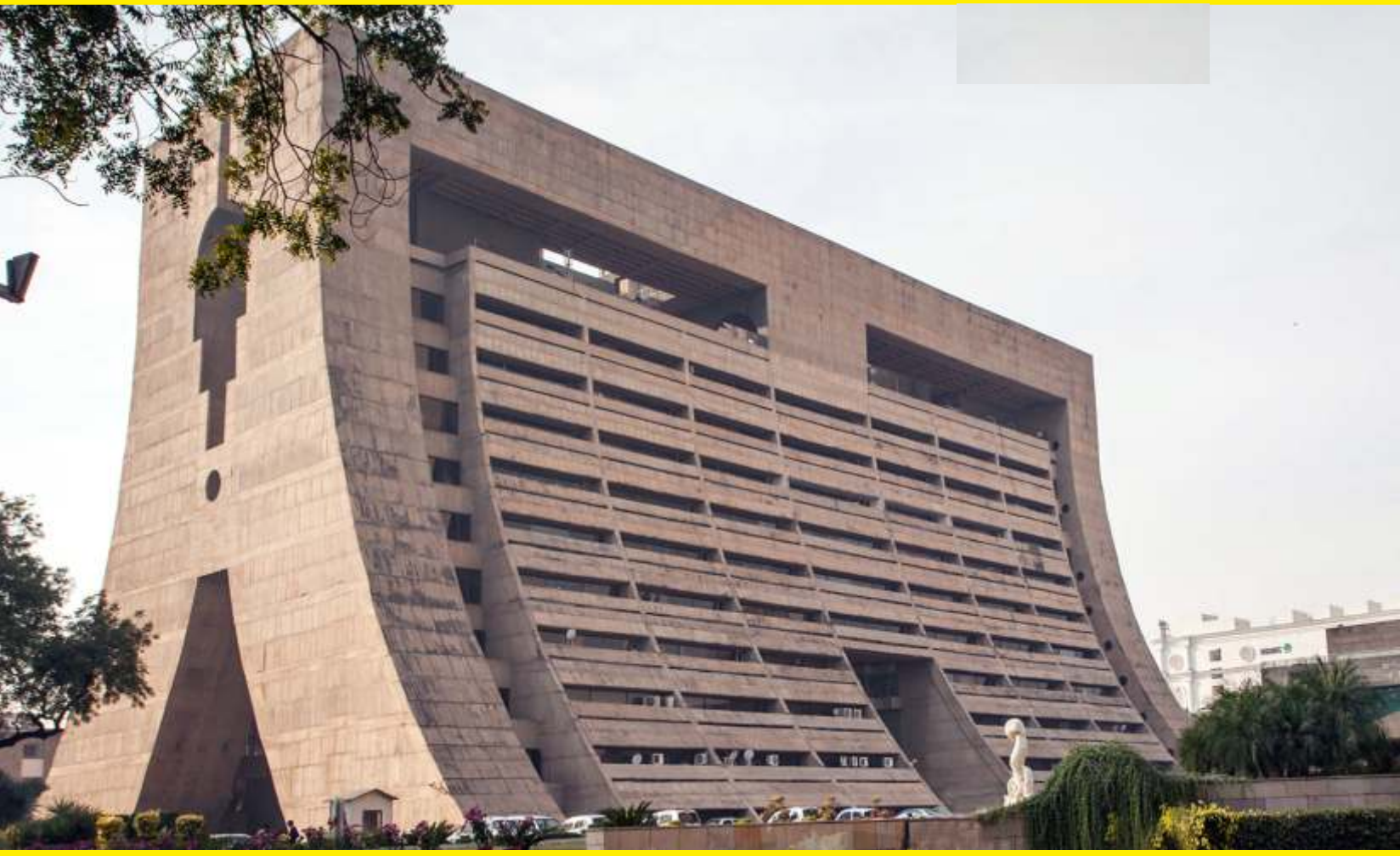












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