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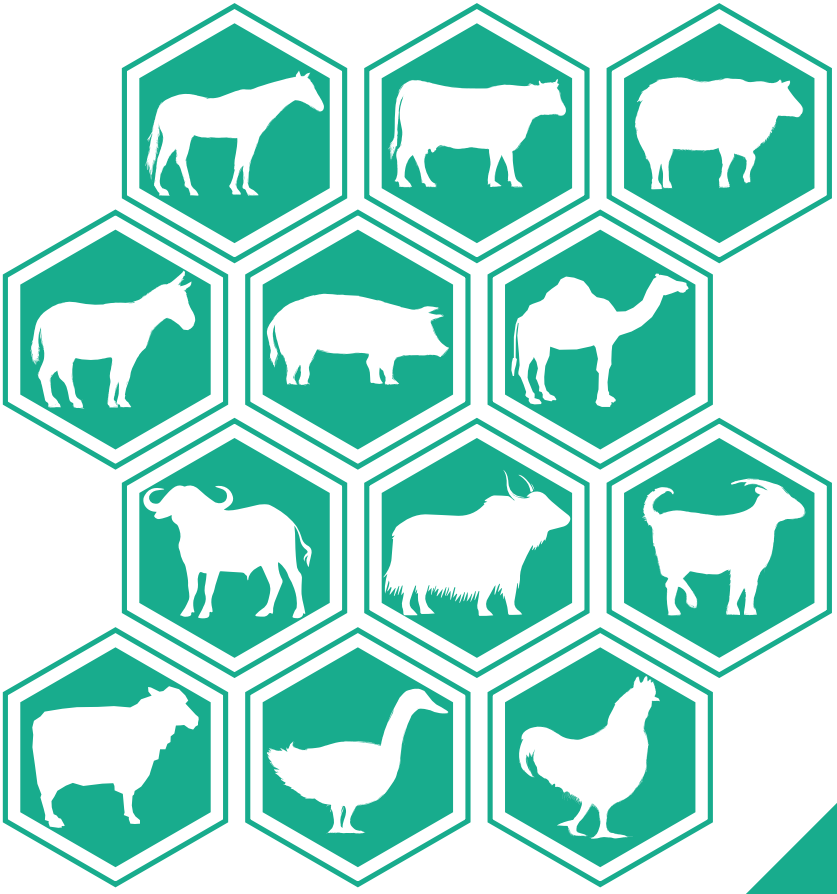
Resilient India - Disaster Free India

Sphere India
National Coalition of Humanitarian Agencies in India

Multi-Stakeholder Coordination

HANDBOOK FOR MANAGEMENT OF ANIMALS IN DISASTERS & EMERGENCIES



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Sphere India: Sphere India is a National Coalition of Humanitarian, Development and Resilience Actors in India. The strategic outreach of 155 full members includes key nodal organizations from UN, INGOs, National NGOs, CSR, Academic Institutions, Sector Networks, Expert Individuals, and State IAGs/Networks. The local outreach is evolving with 805 associate members as Sphere India Locally Empowered Organisations Network (LEON) and 1,80,000 community volunteers (CDRF -Community Disaster Response Force) mapped for varied capacities all over India. Sphere India facilitates multi stakeholder coordination, knowledge & capacity sharing and collaborative advocacy for enhancing accountability to affected and at-risk population.

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Preface

Animals are an integral part of several communities that depend on them for their incomes, livelihoods, nutrition, labour, fertilisers, companions and transport. The livestock sector contributes 4.11% to the national GDP and 25.6% to the total Agricultural GDP. Livestock provides livelihood to two-thirds of rural communities and also provides employment to about 8.8 % of the population in India. During emergencies, (both rapid and slow-onset disasters) loss of livestock puts these marginalised communities at risk of succumbing to abject poverty. This makes it important for emergency responses to consider the protection of livestock and livelihoods of these communities.

Apart from providing critical support to the communities that raise livestock, animals are also sentient beings and depend on humans for fulfilling their emotional and physical requirements. In the situation of any natural calamity, animals cannot help themselves and therefore it is a moral responsibility of the society to put structures and mechanisms in place that support the well-being of animals.

The LEGS handbook provides general framework and guidance from the global perspective as minimum standards for Livestock during emergencies. Section 30 (p) of the Sendai Framework for Disaster Risk Reduction also emphasises on 'strengthening the protection of livelihood and productive assets including livestock and working animals' from DRR perspective. The Department of Animal Husbandry, Dairy and Fisheries (DAHDF) issued DAHDF national disaster management plan further specifically spelling out how to protect animals before, during, and after disasters. The Uttarakhand High Court judgment on July 4, 2018, on animal rights, was a great milestone for the sector. It mentions that animals throughout the state of Uttarakhand should be treated as 'legal entities 'and adds that animals should not be treated as 'property'. The National Disaster Management Plan 2019 of India specifically refers to livestock related DRR issues in section 2.5 and wildlife in section 2.6, though the same are mainstreamed across the plan also. The National Plan also emphasised the importance of inter-agency coordination and Hon'ble Prime Minister's 10 point agenda and visioning of whole of society approach involving all stakeholders provides the vision and frameworks to be adapted further to Indian contexts as practical guidance for stakeholders for emergency preparedness for response and DRR.

Our aim is to enhance the capacities of all stakeholders for better management of livestock in emergencies. In this handbook, we have sought to include practical guidance on how different stakeholders can coordinate and work together through a collaborative approach for management of animals in emergencies. The handbook is an outcome of numerous consultative meetings and write

shops with sector experts from local and national organizations working in the food security, livelihoods, and veterinary sector. Inputs have been collected and collated from various experts across the field throughout the process. Consultative meetings were also organized to invite inputs from the Government and wider membership. Sphere India would like to thank all who have contributed their knowledge, expertise and time towards this edition of the handbook. We are also grateful to collaborative partners and other CSOs, FBOs, CBOs, corporations, institutions, Government departments and officials for their continued support and active participation in various consultations which helped us in facilitating this handbook.

Vikrant Mahajan

CEO, Sphere India

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सचिव
SECRETARY

सत्यमेव जयते

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पशुपालन एवं डेयरी विभाग
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Department of Animal Husbandry & Dairying
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June 20, 2022

Foreword

Animal Husbandry and Dairying activities, along with agriculture, continue to be an integral part of human life since the process of civilization started. These activities have contributed not only to the food basket and draught animal power but also by maintaining ecological balance. Owing to conducive climate and topography, Animal husbandry and Dairying Sectors have played prominent socio-economic role in India. The activities in AHD sector also play a significant role in generating gainful employment in the rural sector, particularly among the landless, small and marginal farmers and women, besides providing affordable and nutritious food to millions of people. Livestock production acts as a supplementary and complementary enterprise and a dependable "bank on hooves" in times of need.

India has vast livestock resources including poultry which play an important role in defining the lifestyle of the communities and are intrinsic to the values and tradition of the people throughout the country. With more than half of the world's buffalo population, India is endowed with the largest livestock population in the world. Livestock Sector has continuously been growing at Compound Annual Growth Rate (CAGR) of 7.93o/o (at constant price) from 2014-15 to 2020-21 , which is comparable to CAGR of manufacturing at 4.93o/o (at constant price) and Services at 4.82o/o (al constant price) and in contrast to Agriculture (Crop Sector) CAGR of 2.05o/o (al constant price) . Agriculture (crop sector) contributed 8.96 % (at constant prices) of total GVA, whereas livestock sector contrlbuted 4.90% (at constant prices) of total GVAin2020-21 . The value of output of milk is INR 5.33 Lakh Crores (at constant prices) which is more by 160% of the combined figures for wheat and paddy together (INR 3.32 Lakh Crores).

However, there are many challenges facing the livestock sector. Prevalence of animal diseases affect productivity of animals leading to severe economic burden due to mortality, loss of production and other indirect costs which pose potential threat to livelihood and survival of the livestock owners. This becomes more severe if the diseases are of zoonotic nature. It has been seen in the recent past that various health related issues having enormous socio-economic impact across the globe are

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emerging. These include emergence of new infections, re-emergence of existing diseases that are often neglected.

Experts predict an increased emergence of zoonotic diseases based on past incidence of bird flu, swine flu, and more recently Nipah virus and Zika virus outbreaks. About two third of human diseases have origin in animals. Therefore, controlling zoonotic pathogens at the animal source is not only critical for animal health, but also for building healthy nations and people. Control of animal diseases will result in more effective control and eradication of numerous human diseases.

Disasters including such diseases have damaging impact on animals that get affected during natural calamities. Holistic approach and collective efforts of stakeholders are required to address the issues of animals for which sensitization and due capacity building initiatives are very much needed. This becomes more crucial considering the role of animals (like dogs) in various mitigation efforts in the events of various disasters to kace the life.

The Ministry has been taking several proactive steps to protect animals, ensure their overall health and welfare. Additionally the protection of animals during emergencies is very crucial. I hope this guiding document on management of animals in disasters would help all the stakeholders in strengthening coordination mechanisms and developing appropriate strategies for effective management of animals in emergencies.

I compliment all the contributors, Sphere India and NIDM teams in compiling the Handbook and looking forward to work together with other stakeholders for the protection of animals and the livelihood of communities.

Wishing the best for this endeavour.

(Atul Chaturvedi)
Secretary(AHD)

Foreword

Shri Krishna S. Vatsa
Member,
National Disaster Management Authority
Government of India, New Delhi

The Indian subcontinent is highly vulnerable to different types of hazards. There are many pre-existing socio-economic vulnerabilities that make it highly prone to different types of disasters. Majority of the population are still rural and they depend on agriculture-related primary occupations.

Animals are an integral part of these communities and contribute significantly to their livelihoods. The socio-economic life of these communities is significantly interwoven with the well-being of animals. When disasters affect their communities, the process of relief and recovery includes animal care and protection.

We need to support those initiatives which prepare these communities to address important concerns related to animal care and protection in disaster situations. NOMA has long recognized the importance of inclusion of animal issues in disaster management and suitably highlighted them in the National Disaster Management Plan and Disaster Management Policy.

I greatly appreciate the role played by Sphere India in collaboration with National Institute for Disaster Management in bringing together different animal care and disaster management organisations in India. As a result of this collaboration, the publication of "Multi-Stakeholder Coordination Handbook for Management of Animals in Disasters & Emergencies" is an important step forward. I am happy to note that Sphere India and NIDM are committed to taking forward the capacity-building programmes based on the recommended measures in this publication at the state and district levels.

I congratulate Sphere India for this valuable effort and wish them the very best in this endeavour.

Krishna S. Vatsa

Foreword

Animal welfare has always been an integral part of good animal husbandry but its importance in its own right is increasingly recognized with understanding of disaster and climatic extreme related emergencies. In India, for the promotion of animal welfare and for the purpose of protecting animals from being subjected to unnecessary pain or suffering, in particular, there is establishment of Animal Welfare Board of India by Central Government under commencement of The Prevention of Cruelty to Animals Act, 1960. However, when it comes to protection of animals in disasters and emergencies, efficient coordination between different stakeholders and actors becomes critically important. In emergency situations, specific livestock-targeted interventions are required to help households survive the immediate crisis and to support communities in rebuilding their livelihoods. Training, advice, assistance, expertise and guidelines should be provided to local people to protect and care for their animals. They ought to be given the tools, to put in place long term, sustainable solutions to safeguard their animals, families and livelihoods. With millions of local people depending on animals for their livelihoods, and for companionship, it is essential to protect animals, so their owners can rebuild their lives when the worst happens. It should be ensured that animals are included in disaster management plans, to help animals, communities, and local people survive and thrive after disasters.

I am glad to see this Multi-Stakeholders Coordination Handbook for Management of Animals in Disasters which seek to build strategic partnerships with various stakeholders in the country. We will work for wider mainstreaming and inclusion of Animals in Disaster Risk Reductions.

Dr. Anil K. Gupta

Professor and Head, ECDRM

NIDM

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Resilient India - Disaster Free India

Foreword

The world is still recovering from the global health crisis. The COVID-19 implications are still evolving due to the emergence of new variants. It can be marked as a biological disaster. The animals along with the human race faced its repercussions too. The whole of humanity was virtually brought to a standstill. Natural disasters like floods, droughts and earthquakes add to it. India is an agrarian society and animals are an integral part of it. A large number of marginalized communities are dependent on livestock for their incomes and livelihoods. Livestock provides livelihood to two-thirds of rural communities and also employs about 8.8 % of the population in India.

During the disaster, the loss of animals put the marginalized communities dependent on animals for their livelihoods at the risk of falling into the poverty trap. They require help and support to again rebuilt their lives. The role of CSR has become more relevant than ever, as corporates played a crucial role in supporting the nation in the fight against pandemics and other disasters. HCL Foundation, along with partner organizations, has been working significantly to mitigate the humanitarian crisis. HCL Foundation, through its various flagship programmes and special initiatives, has rescued 18,140 animals.

The CSRs are working for environmental causes such as developing solar-based projects, and climate change mitigation for improving livelihoods. It can only be achieved with the coordinated efforts of all the partners in coordination with the communities. Farmers and rural communities consider the household animals as a part of their family. They are not only seen as a source of livelihood but as a family member. At HCL Foundation, we remain committed to addressing socio-economic concerns while focussing on humanitarian aid and assistance. Our CSR programmes have the potential to bring value to the preparedness, response, and recovery systems by aligning corporate citizenship efforts to sustainable development processes.

The formulation of the Handbook, ***Multi-Stakeholders Coordination Handbook for Animal Management*** in India, through joint efforts of Sphere India and partner organizations, shall act as an operational manual for coordination among government, humanitarian and veterinarian actors during emergencies and help protect livestock in disasters and emergencies.

Nidhi Pundhir

Vice President & Director, HCL Foundation

HCL FOUNDATION

Acknowledgement

The various sections in this Sphere India's *Multi-Stakeholders Coordination Handbook for Management of Animals* in Emergencies and Disasters are the result of a series of long and diverse consultation process amongst animal sector experts in India. Sphere India gratefully acknowledges the scale and breadth of the contributions made by Brooke India, PPF, FAO, UNICEF, FIAPO, JBF India and other organisations. The working process to develop this handbook was coordinated by Sphere India through various online and in person meetings. We sincerely thanks Shri. K.M Singh, IPS (Retd.), former Member NDMA & Vice President, PPF for his guidance and contribution to the process for development of the handbook. Most of the write-ups were put forward by authors of the organizations, dedicating their time and effort as an in-kind contribution to the sector. Sphere India acknowledges the valuable contribution made between January to June 2022.

Sphere India also extends special thanks to Prof. Anil K. Gupta (Head, ECDRM, NIDM) and Ms. Nidhi Pundhir (Director HCL Foundation) supporting the initial conceptualization of the handbook.

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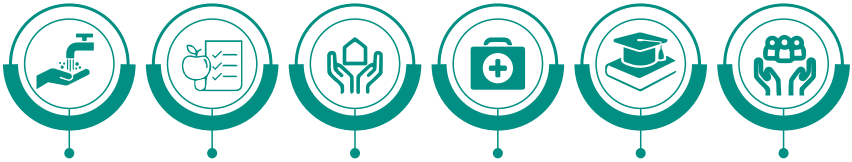
About Sphere India

Sphere India is a National Coalition of Humanitarian, Development and Resilience Actors in India. The strategic outreach of 155 full members includes key nodal organizations from UN, INGOs, National NGOs, CSR, Academic Institutions, Sector Networks, Expert Individuals, and State IAGs/Networks. The local outreach is evolving with 805 associate members as Sphere India Locally Empowered Organisations Network (LEON) and 1,80,000 community volunteers (CDRF -Community Disaster Response Force) mapped for varied capacities all over India. Sphere India facilitates multi stakeholder coordination, knowledge & capacity sharing and collaborative advocacy for enhancing accountability to affected and at-risk population.

	Right to life with dignity.
	Right to assistance and protection.
	Principles of humanity impartiality, neutrality, independence, and other principles of Red Cross Code of Conduct
	Inclusion

These are grounded in Sphere India's commitment to the Article 21 of Indian Constitution on Right to Life and its interpretations in various judicial proceedings, Universal Declaration of Human Rights, International Humanitarian Law, Refugee Law and the associated Treaties and Covenants.



SPHERE INDIA PROGRAM AREAS

ACCOUNTABILITY TO AFFECTED POPULATION

INTER-AGENCY COORDINATION

KNOWLEDGE AND CAPACITY SHARING

COLLABORATIVE ADVOCACY

LINKING HUMANITARIAN, DEVELOPMENT, DRR, CCA, PEACE

About the Handbook

The *Multi-Stakeholders Coordination Handbook for Animal Management in Disasters* provides practical guidance and advise on how different stakeholders and sector actors (NGOs, CSOs, UN Agencies, Private Sector and Government) can come together to strategize preparedness, and response for animal management in emergencies. It highlights key principles of humanitarian action, and how coordination and joint efforts among different sector actors can increase the effectiveness and efficiency of interventions and promote better outcomes.

Process of Drafting the Handbook on Animal Management in Disasters

The handbook has been drafted under the ***Network Approach to Emergency Preparedness for Response,*** after numerous consultative meetings and write shops with sector experts from local and national organizations working in the fields of animal management, protection and emergencies.

The inception of the handbook began in the first week of January 2022. On 18th January 2022, a national level consultation was facilitated by Sphere India and Brooke India with representatives from Government, NGOs, CSOs, Academia, Private Sector and Individuals to get inputs and feedbacks on the 1st Draft Guidelines on Animal Protection in Emergencies developed by Brooke India.

Following this, the interest from sector experts from food security, livelihoods, nutrition, livestock, animal protection and inter agency coordination for emergencies was sought and nominations end of February. Introductory meeting with core group of Authors was on 04th March 2022, wherein Sphere India presented a prototype of the handbook to elucidate the desired chapters and content to be produced.

Following this, lead authors, section authors with support from Sphere India secretariat began drafting the handbook. Several rounds of meetings were held for discussions. Extensive research and discussions happened between the authors before finalising the content. Inputs were collected and collated from various experts; Key Informant Interviews (KIIs) were conducted with a diverse range of experts, professionals, and advocates who have done considerable work on Animal Management in Emergencies in the country. Further consultative meetings were organised with expert veterinarians, veterinary institutions and representatives of Govt. with experience of working with Animals during emergencies.

Acronyms

ATI	Administrative Training Institute
AWBI	Animal Welfare Board of India
BCI	Blue Cross of India
BSL	Bio Safety Level
CCFB	Compressed Complete Feed Block
CIRB	Central Institute for Research on Buffaloes
CIRC	Central Institute for Research on Cattle
CIRG	Central Institute for Research on Goats
CSWRI	Central Sheep and Wool Research Institute
DAHD	Department of Animal Husbandry and Dairying
DDMA	District Disaster Management Authority
DPR	Directorate of Poultry Research
DSWA	Donkey Sanctuary Welfare Association
FAO	Food & Agriculture Organization of the United Nations
FIAPO	Federation of Indian Animal Protection Organizations
HSI	Humane Society International
IAG	Inter-Agency Group
ICAR	Indian Council of Agriculture Research
IFAW	International Fund for Animal Welfare
IFRC	International Federation of Red Cross and Red Crescent Societies
IIPA	Indian Institute of Public Administration
INGO	International Non-Government Organization
IRCS	Indian Red Cross Society
IVRI	Indian Veterinary Research Institute
JBF	Just Be Friendly
LEGS	Livestock Emergency Guidelines & Standards
NADRES	National Animal Disease Referral Expert System
NCDC	National Centre for Disease Control
NDDB	National Dairy Development Board
NDMA	National Disaster Management Authority
NDRI	National Dairy Research Institute

NDRF	National Disaster Response Force
NGO	Non-Government Organization
NIAW	National Institute of Animal Welfare
NIBSM	National Institute of Biotic Stress Management
NIDM	National Institute of Disaster Management
NIHSAD	National Institute of High Security Animal Diseases
NIVEDI	National Institute of Veterinary Epidemiology and Disease Informatics
NRCC	National Research Centre on Camels
NRCE	National Research Centre on Equines
NRCM	National Research Centre on Mithuns
NRCP	National Research Centre on Pigs
NRCY	National Research Centre on Yaks
OIE	World Organization for Animal Health
PFA	People For Animals
PPF	Policy Perspective Foundation
PSA	Public Service Announcement
RAHTC	Regional Animal Husbandry Training centres
SDMA	State Disaster Management Authority
SDRF	State Disaster Response Force
SITREP	Situation Report
SPCA	Society for the Prevention of Cruelty to Animals
SSB	Sashastra Seema Bal
TAD	Trans-boundary Animal Diseases
UMLD	Urea Molasses Liquid Diet
UMMB	Urea Molasses Mineral Block
URS	Unified Response Strategy
VCI	Veterinary Council of India
VERU	Veterinary Emergency Response Unit
VSPCA	Vishakha Society for the Protection and Care of Animals
WAP	World Animal Protection

Glossary of Terms

Transhumance: A seasonal movement of people along with their livestock between fixed summer and winter pastures. In mountain regions, it implies movement between higher pastures in summer and lower valleys in winter.

Pastoralism: A form of animal husbandry practice where the livestock are released onto large vegetated outdoor lands or pastures for grazing, historically by nomadic people who moved around with their herds.

Nomadism: A socioeconomic mode of life based on intensive domestication of livestock which requires a regular movement of the community in an annual cycle in order to sustain the communal ecological system.

Herder: A pastoral worker responsible for the care and management of a herd or flock of domestic animals, usually on open pasture.

Dzud: A dzud is the Mongolian term for when the animals of the steppe, semi-desert and cold desert regions die in vast numbers following extreme climatic conditions (sudden onset of extreme winter following a drought) mainly due to starvation. Without pasture to eat, animals don't put on the protective fat needed to last the raw winters, and also the herders can't collect enough hay for their stores to feed their animals. If the winter is too severe, the animals must rely on stores of food rather than grazing. When the supplies run out, the animals get weaker until they freeze or starve to death.

Epidemiology: Study and analysis of the distribution, patterns and determinants of health and disease conditions in defined populations.

Zoonosis or Zoonoses: Diseases or infections that can be transmitted between humans and animals. They are sometimes called zoonotic diseases or infections.

Trans-boundary Animal Diseases (TAD): Epidemic diseases which are highly contagious or transmissible and have the potential for very rapid spread, irrespective of national borders, causing serious socio-economic and possibly public health consequences.

Ethology: Scientific study of animal behaviour, usually with a focus on behaviour under natural conditions, and viewing behaviour as an evolutionary adaptive trait.

Guidelines for Animal Centric Technical Interventions in Emergencies

Guidelines for Animal Centric Technical Interventions in Emergencies

Humane Animal Rescue & Handling

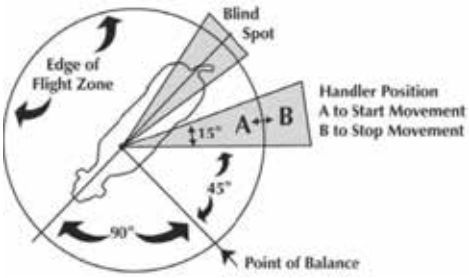
Rescue or handling of any animal especially during disasters is considered a risky and challenging task. In fact it can be really dangerous to both the animal and the rescuer if their behaviour is not properly understood and assessed. Adrenalin, panic and confusion affects both animals and humans psychologically and physiologically. Therefore it requires specialized technical skills and knowledge to humanely handle and rescue animals, building on the concepts of "ethology" or animal behavioural studies. The four most important features the handler should visually assess before undertaking any rescue are, the Animal's 1. Vision, 2. Feet, 3. Teeth, and 4. Instinct. These features are very different for "predator animals" and "prey animals", so they will behave differently and would accordingly require different handling techniques. Livestock are prey animals having monocular vision (a wide field of vision) because of their sideways facing eyes; hooved feet for running; teeth built for grazing; and have an instinct to always run along with their herd or escape from any danger. The rescuer need to understand these characteristics in addition to the disaster environment and plan the rescue. The below 2 points should be considered during animal rescue operation.

1. *Survival instincts of animals during emergencies can make any animal handling technique ineffective.*
2. *Focus should always be on saving life and not to create any further injury or damage.*

Livestock & Poultry	Recommended Guidelines
Cattle Technical Advice: VERU, CIRC, NDDB, NDRI	**Rescue Methods:** Chemical and physical restraint **Handling Techniques:** Leg tie, Rueff's technique, Rope squeeze technique **Essential Equipment/Resources:** Ropes, Dart Gun, Blow Pipe, Helmets, Cranes, Trolleys, Trained handlers **Rescue & Handling Guidelines:** Chemical restraint is useful for free ranging cattle whereas as tethered animals can be restraint by physical restraint using specific restraint techniques. Collateral damage (animal and handlers) is to be avoided in every situation. Fractures, ocular damage and udder injuries are common injuries that must be avoided during rescue.
Buffaloes Technical Advice: VERU, CIRB, NDDB, NDRI	**Rescue Methods:** Chemical and physical restraint **Handling Techniques:** Leg tie technique **Essential Equipment/Resources:** Ropes, Dart Gun, Blow Pipe, Helmets, Cranes, Trolleys, Trained handlers **Rescue & Handling Guidelines:** Chemical restraint is very important for buffaloes are they are very temperamental. Anaesthetic dosing must take in to account the health and physical status of the animal (rescue from drowning should need minimal anaesthetic dose), rescue should be planned in the cooler times of the day if practically possible to avoid heat shock.
Mithuns Technical Advice: NRCM, VERU East Zone (Assam)	**Rescue Methods:** Mithuns are very strong and pride animal of Arunachal Pradesh, Nagaland, Manipur and Mizoram (North East India). The mostly stay in hilly terrain of North East. Their population is slowly declining however, NRC Mithun has been working seriously to protect and promote this species in this region. Mostly in this area landslides are common. Hence, the attempt has been made to explain how to rescue during land slide. Little prior training is essential for a rescuer to shift the animal from trapped environment. Mithun may get trapped in muddy soil, flash flood or along the sliding land. Mithuns are well adapted to accommodate themselves in adverse condition. It is not advised to go close to the head on either side, rather try to push the animal forward by putting force from hind, hind drag with the help of rope, dragging and lifting keeping Mithun in same position,

rope should not be entangled over the horn. For the forward propulsion of a recumbent Mithun; tie the rope securely over the horn and loop over the both front leg involving the neck, another rope should be placed over the hind legs to pull towards the front. For the hind approach: normal loop should be placed over both hind legs and make a round over the hind girth, and again taken through the inside of both hind leg in order to pull towards back side. Besides pulling by ropes, support with hand if possible should be incorporated.

Handling Techniques: Usually approach to a Mithun should be from the left side, however it depends upon the circumstances and the position of the Mithun. If the animal is injured or blind in one eye, then approach from the opposite side. Avoid making loud noise which creates fear amongst them. Do not go direct behind the animal as Mithun may kick suddenly. The rescuer must know the blind spots of a large ruminant which is similar in Mithun too. Thick cloth tied with bamboo vertically both side may be used to give support from the hind while pushing ahead.



Essential Equipment/Resources: Bolt cutters, anaesthetic agents, Mithun Sling, Saracen Crush, head lamp, cotton rope, helmets, and protection gloves.

Rescue & Handling Guidelines:

- All individuals involved in rescue of Mithun must have prior experiences of rescue operation with cattle, buffalo etc. They should have idea about danger zone as well as the blind spot for a standing and a recumbent Mithun.
- Maintain a 1 feet distance from the hind quarter and the head to avoid injury.
- All individuals must wear a helmet and gloves. The head bumper and chest gourd is must. Be aware of warning signs shown by animals. Ensure the head collar is well fitted.

Yaks Technical Advice: NRCY, VERU East Zone (Assam)	**Rescue Methods:** Yak is a high altitude animal and well designed to survive in extreme inclement weather especially during harsh cold weather. Yaks are as strong as Mithuns. They mostly stay in hilly terrain of North East. Except trapped in muddy flood or avalanche they can climb in steep mountain. Rescue for such high altitude animal can be attempted only if the reachability or accessibility by walk is possible otherwise helicopter lifting is advised. As compare **Handling Techniques:** ▪ Do not go suddenly and directly to free range yak trapped in mud or in the bushes or in between broken and falling tree. ▪ Offering feed and provide sufficient time to settle down before approaching a yak is highly essential. ▪ Always try to go with owner or Brukpas to get the best approach. E**ssential Equipment/Resources:** Bolt cutters, anaesthetic agents, Yak Sling, Saracen Crush, head lamp, cotton rope, helmets, and protection gloves. **Rescue & Handling Guidelines:** All the individual working with yak should have the physical compatibility to work in high altitude with low atmospheric oxygen. After rescue, yak should not be brought to low altitude which may generate further stress. Saddled yak should be freed so that they can breathe freely.
Horses Technical Advice: NRCE, Brooke India, DSWA, VERU North Zone (Himachal Pradesh)	**Rescue Methods:** 1) training of human handers on humane safety handling and restraining 2) Use of sedation 3) Place a head collar/halter for guidance but never use to pull an animal 4) if you must manipulate limbs, ensure use of sufficient padding A step-by-step method of simplified rescue method should be applied with sufficient padding/cushion in the floor to move, drag, roll and lift a stranded, entrapped and recumbent horse (refer ***Further Reading- after the reference). Sedation or full GA may be required to make a safe rescue of a horse/donkey/mule. However, prior training is required for a rescuer to move an animal: forward assist, rear assist, rear drag, rolling, horizontal drag and vertical lift. A head collar must be placed on the horse and secured by one person. For the forward assist of a recumbent horst; toss loop over both

front legs from a safe position, then place loop under head, slide loop down neck to centre of body and then place loop between front legs. For rear assists: toss loop over both rear legs, pull loops under both legs and under rump, pull loop under rump and body, place loop between rear legs. For roll of recumbent horse, toss loop over both upper legs, place foot on back of horse to establish leverage for pull, pull horse and begin roll, immediately step backwards away from the horse as it rolls forwards you. For rear drag: place loop under upper leg, place a loop overhead and slide under the head and neck, adjust the placement of the loop, tightening the loop under the forearm and across the sternum, pull the loop toward the horse's rump, take another loop and place on the end of the first loop. For horizontal drag: Toss front loop over both front legs, pull loop under both front legs, place loop under the head, pull rear loop under top leg.

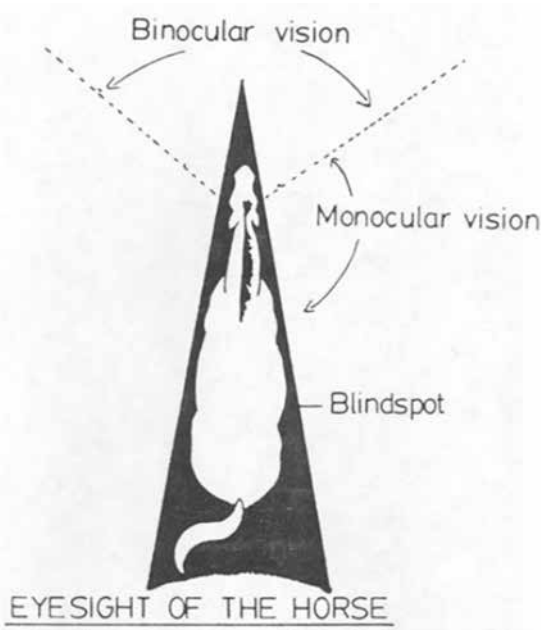
For the vertical lift of a recumbent horse: a person should toss the first loop over the upper forelimb. Pull the first loop towards you and slide it under the horse's head and neck. Place a piece of duct tape to temporarily secure the loop in place. Toss the second loop over the lower front limb. Pull the second loop towards you. Slide the second loop under the head and neck. Place one carabiner in front of the sternum. Place a piece of duct tape to temporarily secure the loop in place. Note how the loops Criss cross between front limbs. Toss the third loop over the upper hind limb. Pull the third loop towards the horse so it lays between the hind limb. Pull the loop underneath the horse's tail such that it crosses over the horse's rear. Place a piece of duct temporarily secure third loop in place. Toss the fourth loop over the lower hind limb. Pull the fourth loop towards the horse, such that the loop is in between the hind limbs. Reach and pull the 4th loop towards the rear. Pull the 4th loop towards the tail. Place a carabiner between the loops going over the rump, and a piece of duct tape to secure temporarily the loops in place. Place a carabiner between the loops crossing between the hind limbs. Place the clamp-on foam around each of the loops between the hind limbs. Place all four loops onto the clevis and begin lifting. Note the arrangements of the loops on the curved part of the D-ring (clevis) and begin lifting the horse on its feet.

Handling Techniques: When a horse is in standing position, it is essential to secure a horse's head first by adopting systematic approaches. Always approach them from the side (either left or right). If the animal is blind in one eye, then approach from the opposite side. Do not make direct eye contact with a horse, instead look at the neck and breast and

allow the animal to sniff, keep your arms either down or side, don't make sudden movements or noise, talk softly. Time should be spent with a horse to make them calm, relax and accept the interactions. Slowly, put the head collar without making sudden movements and put the lead rope on it. Always try to maintain contact with the horse, however a minimum amount of contact is required at sensitive areas like girth/belly, limbs, equipment contact points, wounds, scars.

Essential Equipment/Resources: Round sling 183 cm length each-4, carabiner-2, D-ring (clevis)-1, pieces of duct tape-3, clamp-on foam-2, head bumper-1, skid-1, Head collar and lead rope, helmets and gloves.

Rescue & Handling Guidelines: All individuals must train before attempting this rescue method. You should identify the danger zones and follow safe standing positions while approaching a recumbent horse. Maintain a 3 feet safety radius around the horse's head, feet and tail. Stay behind the horse's body and away from the limbs. All individuals must wear a helmet and gloves, but a person near the head should wear a head bumper. Be aware of warning signs shown by animals. Ensure the head collar is well fitted.



Mules

Technical Advice: NRCE, Brooke India, DSWA, VERU North Zone (Himachal Pradesh)

Rescue Methods: Same as horses but needs to consider the mule's behaviour as they are distinct from horses.

Handling Techniques: Mules are different from horses. They are quick learners and problem-solvers. But they express more aggressive and avoidant behaviour to the unfamiliar handlers than those they knew. Therefore, one needs to be consistent and careful while handling the mules. Use slow and deliberate movements. Use flight zones to direct movements. Avoid sudden movements or jerks, loud noise, yelling. Do not make direct eye contact with a mule, instead look at the neck and breast and allow the animal to sniff, keep your arms either down or side, don't make sudden movements or noise, talk softly. Time should be spent with an animal to make them calm, relax and accept the interactions. Slowly, put the head collar without making sudden movements and put the lead rope on it. Always try to maintain contact with the mule, however a minimum amount of contact is required at sensitive areas like girth/belly, limbs, equipment contact points, wounds, scars.

Essential Equipment/Resources: Round sling 183 cm length each-4, carabiner-2, D-ring (clevis)-1, pieces of duct tape-3, clamp-on foam-2, head bumper-1, skid-1, Head collar and lead rope, helmets and gloves, blind fold.

Rescue & Handling Guidelines: While handling a mule most injuries occur because of lack of understanding of equine behaviour. Chasing an equine may result in agitated or stressed animals. Therefore, handling of equines should be carried out in a calm and gentle manner. The basic objective of restraining is to limit the animal's movement for their own safety. Think about how the animal will perceive human actions and reactions and be aware of the surroundings. The cascade approach of handling should be used like preference should be given to behavioural handling, if not successful then only follow the chemical and physical at the end.

Donkeys Technical Advice: NRCE, Brooke India, DSWA, VERU North Zone (Himachal Pradesh)	**Rescue Methods:** Same as horses but needs to consider the donkey behaviour which is differ from horses. **Handling Techniques:** Observe the animal and assess the animal's feelings and make a plan before actual handling. Approach the animal either side. Do not make direct eye contact, look at the neck or breast instead and allow the animal to sniff. Do not make any sudden movements, keep your hands down or side and talk softly. Always try to develop contact with the animal, but use a minimum amount of contact as per the need. Secure the head as a first step to control an animal. Ensure the head collar is well-fitted. If animal resists do not force and allow sometime and reassess again. Always prefer behaviour modification techniques over chemical and physical methods. Donkeys enjoy the company of their own kind; therefore, it is recommended to handle them in the presence of another donkey. **Essential Equipment/Resources:** same as horses, addition of blind fold **Rescue & Handling Guidelines:** Donkeys are not horses and they have subtle distinct differences. Therefore, understanding the donkey behaviour is vital while handling them. Donkeys may exhibit more territorial behaviour than horses. A donkeys' body language is often less expressive than horses, so change in their behaviour may be hard to read. Donkeys express emotions through sounds and actions.
Sheep Technical Advice: CSWRI, VERU	**Rescue Methods & Handling Techniques:** ▪ The easiest way to catch an animal is to bring with food. ▪ If this fails a group of animals can be herded to a pan or enclosure from which the individual animals can be caught ▪ This is done by approaching from the side and catching the horns, legs, and neck usually succeed ▪ The sheep or goat can be manhandled to be in a sitting position by reaching under the belly and gently holding the hind legs ▪ The best way to hold the animal is by grabbing the loose skin in the right hind flank if you are a right handed person and vice versa if you are a left handler ▪ Hold the skin firmly and lift upward to control the sheep, to move a sheep hold it by the skin under the throat and place the other hand under the dock ▪ Lift up the dog and sheep will move carrying a lamb and letting her follow can usually accompany moving an ewe and her lamb into a lambing pan

- The sheep are held above the hock or placing the left hand underneath the paw and around the back. Horned sheep can be held by the horn
- When holding a sheep stand on its left side and place the left hand under its jaw, the right hand should reach well under the bally
- To turn up a sheep, the attendant should stand against its left side placing his left hand under the neck
- Pass your right hand over the right flank as far under the bally as possible and take hold of the wool
- Raised the sheep's fore legs off the ground with the right hand lift the animal into a sitting position in front of the shepherd legs and supported
- In horned breeds to avoid injury and to have better control, the horns are held instead of the fore limbs

Essential Equipment/Resources: Muzzle, Chute, Weigh crates, dragging crate, Turnover crate, Trailer, Wool packing crate, Gambrel restrains

Rescue & Handling Guidelines:

- Easiest way to catch an animal is to bring with food
- If this fails a group of animals can be herded to a pan or enclosure from which the individual animals can be caught
- This is done by approaching from the side and catching the horns, legs, neck usually succeed
- The sheep or goat can be man handled to be in a sitting position by reaching under the belly and gently holding the hind legs
- The best way to hold the animal is by grabbing the loose skin in the right hind flank if you are a right handed person and vice versa if you are a left hander
- Hold the skin firmly and lift upward to control the sheep, to move a sheep hold it by the skin under the throat and place the other hand under the dock
- Lift up the dog and sheep will move carrying a lamb and letting her follow can usually accompany moving a ewe and her lamb into a lambing pan
- The sheep are held above the hock or placing the left hand underneath the paw and around the back. Horned sheep can be held by the horn
- When holding a sheep stand on its left side and place the left hand under its jaw, the right hand should reach well under the bally

- To turn up a sheep, the attendant should stand against its left side placing his left hand under the neck
- Pass your right hand over the right flank as far under the bally as possible and take hold of the wool
- Raised the sheep's fore legs off the ground with the right hand lift the animal into a sitting position in front of the shepherd legs and supported
- In horned breeds to avoid injury and to have better control, the horns are held instead of the fore limbs

Goats

Technical Advice: CIRG, VERU

Rescue Methods & Handling Techniques:

- Easiest way to catch an animal is to bring with food.
- If this fails a group of animals can be herded to a pan or enclosure from which the individual animals can be caught
- This is done by approaching from the side and catching the horns, legs, neck usually succeed
- The sheep or goat can be man handled to be in a sitting position by reaching under the belly and gently holding the hind legs
- The best way to hold the animal is by grabbing the loose skin in the right hind flank if you are a right handed person and vice versa if you are a left handler
- Hold the skin firmly and lift upward to control the sheep, to move a sheep hold it by the skin under the throat and place the other hand under the dock
- Lift up the dog and sheep will move carrying a lamb and letting her follow can usually accompany moving an ewe and her lamb into a lambing pan
- The sheep are held above the hock or placing the left hand underneath the paw and around the back. Horned sheep can be held by the horn
- When holding a sheep stand on its left side and place the left hand under its paw, the right hand should reach well under the bally
- To turn up a sheep, the attendant should stand against its left side placing his left hand under the neck
- Pass your right hand over the right flank as far under the bally as possible and take hold of the wool
- Raised the sheep's fore legs off the ground with the right hand lift the animal into a sitting position in front of the shepherd legs and supported

- In horned breeds to avoid injury and to have better control, the horns are held instead of the fore limbs

Essential Equipment/Resources: Muzzle, Chute, Weigh crates, Dogging crate, Turnover crate, Trailer, Wool packing crate, Gambrel restrains

Rescue & Handling Guidelines:

- Easiest way to catch an animal is to bring with food.
- If this fails a group of animals can be herded to a pan or enclosure from which the individual animals can be caught
- This is done by approaching from the side and catching the horns, legs, neck usually succeed
- The sheep or goat can be man handled to be in a sitting position by reaching under the belly and gently holding the hind legs
- The best way to hold the animal is by grabbing the loose skin in the right hind flank if you are a right handed person and vice versa if you are a left handler
- Hold the skin firmly and lift upward to control the sheep, to move a sheep hold it by the skin under the throat and place the other hand under the dock
- Lift up the dog and sheep will move carrying a lamb and letting her follow can usually accompany moving an ewe and her lamb into a lambing pan
- The sheep are held above the hock or placing the left hand underneath the paw and around the back. Horned sheep can be held by the horn
- When holding a sheep stand on its left side and place the left hand under its faw, the right hand should reach well under the bally
- To turn up a sheep, the attendant should stand against its left side placing his left hand under the neck
- Pass your right hand over the right flank as far under the bally as possible and take hold of the wool
- Raised the sheep's fore legs off the ground with the right hand lift the animal into a sitting position in front of the shepherd legs and supported
- In horned breeds to avoid injury and to have better control, the horns are held instead of the fore limbs

Pigs Technical Advice: NRCP, VERU East Zone (Assam)	**Rescue Methods & Handling Techniques:** 1. Catching Method – **Hurdling** – trap the pigs between solid barriers to restrict movements of the pigs. Catch the large ones among the pigs with pig catcher rope when trapped. It is advisable to handle young ones with care to avoid dislocation of the bones ▪ Trap or confinement individual pigs may be driven into confinement and selectively restrained with effective use of rope ▪ Pig catcher catch the rear legs in the clamp of the pig catcher and pull the rope to hold it tight around the legs ▪ Use of bucket move a large pig covering its face with bucket and moving it in the reverse direction ▪ Snubbing rope – the rope behind the tusk is snubbed to a post as the pigs pull back 2. Special Restraint Methods – **Hug share twitch** – the twitch used for pigs is usually made up of a very long pole with a wire loop. Place the twitch over the upper jaw behind the tusk and apply gentle pressure that is painful enough to prevent resistance or backward movement. **Essential Equipment/Resources:** Cotton rope, Long Handle pig catcher, Pig Cage, Transportation cage, Snares and tongs, Metal trough, Portable Squeeze chute, Herding board, Feeding trough, Pig feeder, Pig Transport
Camels Technical Advice: NRCC, VERU West Zone (Gujarat)	**Rescue Methods & Handling Techniques:** Restraining practices vary with age of the animal and purpose of restraining; ▪ Homemade rope hatter primarily used for restraining young camels, while use of nose peg and nose rings are common techniques used in adult animals. ▪ Tying fore or hind legs with rope is frequently used for restraining animals in standing or sitting position **Essential Equipment/Resources:** Halter, Hobbles, Nose peg, hose ring, tying rope **Rescue & Handling Guidelines:** ▪ A young camel fitted with hatters and lead rope should never be tied and left unattended ▪ Halter is used for controlling adult camels either alone or in combination with nose peg and rein

Chicken Technical Advice: DPR, VERU	**Rescue Methods:** ▪ Pre-occurrence: Place the birds in a safer place and store the feed ingredients in a dry place to avoid dampness. Prevent disease outbreaks by adopting prophylactic measures. ▪ During the event: Use stored feed, don't allow for scavenging, cull the weak birds and spray appropriate fly repellents in sheds. Use water sanitizers or offer hygienic drinking water, provide proper drainage, ensure electricity supply by solar energy or biogas, sprinkle lime powder to prevent ammonia accumulation. To prevent forced air during cyclones, closed the curtains, and take precaution not to have the roof blown off by strong winds. ▪ Post event: Repair shed, clean and disinfect shed, bleach (01%) drinking water. Vaccinating against common ailments, deworming and disinfecting the shed, treating sick birds, disposing of dead birds, removing manure, supplementing feed with coccidiostat. **Handling Techniques:** It is best to keep the chicken upright and hold it firmly against your body while the other wing rests under your arm. Whenever you handle larger chickens, you should place your free hand under their body for support. **Essential Equipment/Resources:** Chicken cages, feed, feeders, waterers, detergents, sanitizers, chicken vaccines and medicines, carcass disposal kits, worker's personal safety uniform kits, communication tools and a vehicle for transport of rescued chickens in crates will be required. **Rescue & Handling Guidelines:** If you are setting down a chicken, ensure that their feet touch the ground safely and carefully while keeping their wings secured until you are confident that they will depart gently. Watch for signs of stress and prepare to set them down if they become too stressed. If the chicken's comb or wattles start turning purple or if it is severely open-mouth breathing, it should be put down. Large breed chickens should never be turned on their backs.
Ducks Technical Advice: DPR, VERU	**Rescue Methods:** Pre-occurrence: To minimise dampness, move the birds to a safer location and store the feed ingredients in a dry spot. Use prophylactic steps to avoid illness. **During the event:** Use stored feed, allow ducks for scavenging, cull the weak bird, and spray sheds with adequate insect repellents. Use water sanitizers or provide hygienic drinking water, provide good drainage, and rely on solar or biogas for electricity. Close the curtains and take precautions not to have the roof blown off by severe winds to avoid forced air during cyclones.

Post event: Repair the shed, clean and disinfect it, and use 1% bleach in the drinking water. Vaccinating against common illnesses, deworming and sanitising the shed, treating sick birds, removing manure, and boosting feed with antimycotic and anticaking agent are all things that need to be done.

Handling Techniques: Keep one hand tightly under the duck's rear end to carry it. You can tuck their head between your arm and your body, but don't restrict them from seeing, since this will likely stress and startle the bird.

Essential Equipment/Resources: Transport cages, feed, feeders, waterers, detergents, sanitizers, duck vaccines and medicines, carcass disposal kits, worker personal safety uniform kits, communication equipment, and a vehicle for transporting rescued ducks in crates will all be needed.

Rescue & Handling Guidelines: If you're putting a duck down, make sure its feet touch the ground safely and softly. Keep an eye out for stress indicators and be ready to put them down if they grow too stressed.

Turkeys

Technical Advice: DPR, VERU

Rescue Methods: Pre-occurrence: Place the turkeys in a secure location and keep the feed ingredients dry to avoid moisture. Use prophylactic steps to avoid illness epidemics.

During the event: Use stockpiled feed, prevent scavenging, cull weak birds, and spray sheds with adequate insect repellents. Use water sanitizers or give clean drinking water, guarantee adequate drainage, use solar energy or biogas for electricity, and sprinkle lime powder to reduce ammonia build-up. Close the curtains and take precautions not to have the roof blown off by severe winds to avoid forced air during cyclones.

Post event: Repair the shed, clean and disinfect it, and use 1% bleach in the drinking water. Vaccination against common diseases, deworming and disinfection of the shed, treatment of sick birds, disposal of deceased birds, and removal of manures are all tasks that must be completed.

Handling Techniques: To handle a turkey, reach behind it with one hand and gain a firm grip on both legs. Gently lower the bird onto its breast, then slide your free arm over the wings and under the body. Raise the bird to your chest. The legs may be moved to your other hand once you've been elevated to your body, and your free hand can be used to control the wings.

Essential Equipment/Resources: Big cages, feed, feeders, waterers, detergents, sanitizers, vaccines and medicines, carcass disposal kits, worker's personal safety uniform kits, communication tools and a vehicle for transport of rescued turkey in big crates will be required.

Rescue & Handling Guidelines: If you're putting a turkey down, make sure their feet strike the ground safely and softly, and tie their wings until you're assured, they'll exit gently. Keep an eye out for stress indicators and be ready to put them down if they grow too stressed.

Safe Animal Evacuation & Transportation

The prerequisites and preparations for ensuring the safety and survival needs of animals need to be considered prior to any evacuation or transportation plan during emergencies. These could include basic survival needs, documents, or contacts of the animal and the owner. There should be evacuation route plans along with a defined mode of transportation to meet the species-specific requirements in different types of emergencies. These plans need to be regularly practised through simulation exercises, mock drills or table top exercises in coordination with the local community, veterinary and humanitarian stakeholders.

Livestock & Poultry	Recommended Guidelines
Cattle Technical Advice: VERU, CIRC, NDDB, NDRI	**Safe Evacuation Options:** Herding and walking animals through the disaster-prone area is the best option. In case of flooding, machine lifting is the best option. If even machine lifting is not possible, evacuation islands should be created, and food and water and medicines/ treatment must be provided at the site. **Emergency Survival Kit (10 Days/Animal):** Fodder and clean water, antibiotics, analgesics, intravenous fluids, oral rehydration solutions, multivitamin injections, anti-histaminic, anti-snake venom, bandages, cotton, splints, betadine, antibiotic and fly repellent ointments, ocular antibiotic ointments and solutions, anti-bloat solutions, digestive tonics and powders. **Transportation Modes:** Trucks and trolleys with floors well-padded with soft dry straw **Transportation Guidelines:** Driving at a maximum speed limit of 40km/h and stops at every 4 hours of the journey

	for watering and feeding the cattle. No journey should be for more than 8 hours and cattle must be offloaded during the halt after 8 hours' journey to stand up and roam about, feeding.
Buffaloes Technical Advice: VERU, CIRB, NDDB, NDRI	**Safe Evacuation Options:** Safe Evacuation Options: Herding and walking animals through the disaster-prone area is the best option. In case of flooding, machine lifting is the best option. If even machine lifting is not possible, evacuation islands should be created, and food and water and medicines must be provided at the site. **Emergency Survival Kit (10 Days/Animal):** Emergency Survival Kit (10 Days/Animal): Fodder and clean water, antibiotics, analgesics, intravenous fluids, oral rehydration solutions, multivitamin injections, anti-histaminic, anti-snake venom, bandages, cotton, splints, betadine, antibiotic and fly repellent ointments, ocular antibiotic ointments and solutions, anti-bloat solutions, digestive tonics and powders. **Transportation Modes:** Trucks and trolleys with floors well-padded with soft dry straw **Transportation Guidelines:** Driving at a maximum speed limit of 40km/h and stops at every 4 hours of journey for watering and feeding the cattle. No journey should be for more than 8 hours and cattle must be offloaded during the halt after 8 hours journey to stand up and roam about, feeding.
Mithuns Technical Advice: NRCM, VERU East Zone (Assam)	**Safe Evacuation Options:** Identification tagging or microchip for tracking records, put neck collar for the evacuated animals, bell should be hanged over the neck collar; sometime colour marking over the horn can also be adopted. **Emergency Survival Kit (10 Days/Animal):** Straw, bran, buckets for watering, drinking water, first aid kit and basic medicine in the vehicle **Transportation Modes:** Mithun can be transported by means of road or rail or sea or even on foot. Trucks can be used to transport in an emergency. **Transportation Guidelines:** All animals should be fed and offered drinking water before the start of the journey. Do not mix the different types of species together. While travelling by vehicle do not transport pregnant and no pregnant animals

	in the same vehicle. Some loud noises or careful push may be essential. Pneumatic tyre fitted motor vehicle is required in hilly region and other pulling vehicle may not be useful. Soft bedding (at least 8 inches deep) or anti slippery materials and padding around the sides of the vehicle can be arranged. The animal's head should face left away from the passing traffic. Do not tie horses head above the level of wither. Do not carry more than 9 Mithuns in a single Truck. Throughout the journey, one attendant should be available in the vehicle. Frequent watering and feeding is required during the journey with basic first aid support.
Yaks Technical Advice: NRCY, VERU East Zone (Assam)	**Safe Evacuation Options:** Identification tagging or microchip for tracking records if available, GPS location of the rescue area, put neck collar for the evacuated animals, bell should be hanged over the neck collar; sometime colour marking over the horn can also be adopted. Helicopter lifting is the safest method in High Altitude since manual evacuation is complicated. **Emergency Survival Kit (10 Days/Animal):** Straw, bran, buckets for watering, drinking water, first aid kit and basic medicine in the vehicle. **Transportation Modes:** Road, helicopter lifting, walking, high altitude truck designed with tier chain to cut the ice. **Transportation Guidelines:** Transportation should be maintained in higher altitude only. Small amount of grazing land and bushes is enough for survival of yak.
Horses Technical Advice: NRCE, Brooke India, DSWA, VERU North Zone (Himachal Pradesh)	**Safe Evacuation Options:** For the safe evacuation of a horse an advance planning, preparedness and practice is required. Make sure each horse should have identification marks. Micro chipping, neck or leg bands would be useful to keep the records of your stock. The horses should always be tied with easy release knots, so that they can easily release in emergencies. Keep leather halter or cotton rope ready outside the horse paddock / stable. Train your horse before an emergency to calmly load in a vehicle or trailer. **Emergency Survival Kit (10 Days/Animal):** Keep enough hay or grass, drinking water, buckets for watering, first aid kit in the vehicle or trailer.

	Transportation Modes: Horses can be transported by means of road or rail or sea or even sometimes on foot. Vehicles or trailers can be used to transport the horses in an emergency. **Transportation Guidelines:** All animals should be fed and offered drinking water before the start of the journey. Do not mix the different types of species together. Do not transport pregnant and non-pregnant animals together if they are not companion, in the same vehicle. Pregnant animals feel relaxed with not pregnant animals if they are from same band (companion). Make sure proper loading (offering feed will attract them) and unloading facilities are available for animals. Do not make sudden movements, loud noise, threaten, beat, pull or push the animal while loading or unloading. If specially fitted vehicles are not available, ordinary vehicles can be used by making sure of some arrangements. Adequate ventilation in the vehicle should be maintained throughout the journey. Such vehicles should have soft bedding (at least 8 inches deep) or anti slippery materials and padding around the sides of the vehicle. Bamboo poles of at least 8 cm diameter between each animal and two stout battens at the back shall be provided to prevent the animal from falling. The animal's head should face left away from the passing traffic. There is evidence that horses prefer travelling facing backwards. Do not tie horses head above the level of wither. A horse needs 2.5 sq. meter during transportation. These vehicles should not run beyond 35 km per hour speed. Throughout the journey, one attendant should be available in the vehicle. Frequent rest, watering and feeding is required during the journey.
Mules Technical Advice: NRCE, Brooke India, DSWA, VERU North Zone (Himachal Pradesh)	**Safe Evacuation Options:** For the safe evacuation of a mule advance planning, preparedness and practice is required. Make sure each animal should have identification marks. Micro chipping, neck or leg bands would be useful to keep the records of your stock. The animals should always be tied with easy release knots, so that they can easily release in emergencies. Keep leather halter or cotton rope ready outside the paddock / stable. Train your animals before an emergency to calmly load in a vehicle or trailer. **Emergency Survival Kit (10 Days/Animal):** Keep enough hay or grass, drinking water, buckets for watering, first aid kit in the vehicle or trailer. **Transportation Modes:** Mules can be transported by means of road or rail or sea or even sometimes on foot. Vehicles or trailers can be used to transport the mules in an emergency.

Transportation Guidelines: Transport mules in loose with head collars. Do not tie them up, they prefer to find their own balance. Keep bonded mules / companions together and do not separate or split them with a partition. All animals should be fed and offered drinking water before the start of the journey. Do not mix the different types of species together. Make sure proper loading and unloading facilities are available for animals. Do not make sudden movements, loud noise, threaten, beat, pull or push the animal while loading or unloading. If specially fitted vehicles are not available, ordinary vehicles can be used by making sure of some arrangements. Adequate ventilation in the vehicle should be maintained throughout the journey. Such vehicles should have soft bedding (at least 8 inches deep) or anti slippery materials and padding around the sides of the vehicle. Avoid overcrowding or do not carry more than 4 or 6 animals in a single vehicle. These vehicles should not run beyond 35 km per hour speed. Throughout the journey, one attendant should be available in the vehicle. Frequent rest, watering and feeding is required during the journey.

Donkeys

Technical Advice: NRCE, Brooke India, DSWA, VERU North Zone (Himachal Pradesh)

Safe Evacuation Options: For the safe evacuation of a donkey an advance planning, preparedness and practice is required. Make sure each animal should have identification marks. Micro chipping, neck or leg bands would be useful to keep the records of your stock. The animals should always be tied with easy release knots, so that they can easily release in emergencies. Keep leather halter or cotton rope ready outside the paddock / stable. Train your animals before an emergency to calmly load in a vehicle or trailer.

Emergency Survival Kit (10 Days/Animal): Keep enough hay or grass, drinking water, buckets for watering, first aid kit in the vehicle or trailer.

Transportation Modes: Donkeys can be transported by means of road or rail or sea or even sometimes on foot. Vehicles or trailers can be used to transport the mules in an emergency.

Transportation Guidelines: Donkeys shall be loaded parallel to the rails, facing each other. Keep bonded donkeys / companions together and do not separate or split them with a partition. All animals should be fed and offered drinking water before the start of the journey. Do not mix the different

	types of species together. Make sure proper loading and unloading facilities are available for animals. Do not make sudden movements, loud noise, threaten, beat, pull or push the animal while loading or unloading. If specially fitted vehicles are not available, ordinary vehicles can be used by making sure of some arrangements. Adequate ventilation in the vehicle should be maintained throughout the journey. Such vehicles should have soft bedding (at least 8 inches deep) or anti slippery materials and padding around the sides of the vehicle. Avoid overcrowding or do not carry more than 4 or 6 animals in a single vehicle. These vehicles should not run beyond 35 km per hour speed. Throughout the journey, one attendant should be available in the vehicle. Frequent rest, watering and feeding is required during the journey.
Sheep Technical Advice: CSWRI, VERU	**Safe Evacuation Options:** **Emergency Survival Kit (10 Days/Animal):** **Transportation Modes:** Truck, Any Vehicle having efficient penning and loading facilities **Transportation Guidelines:** Safe, Efficient penning and loading facilities, livestock trailers ready for handling long distances, adequate ventilation, protection from wind, separate classes of stock during transport, separate females with suckling offspring from mature males and advanced pregnant females from all other animals
Goats Technical Advice: CIRG, VERU	**Safe Evacuation Options:** **Emergency Survival Kit (10 Days/Animal):** **Transportation Modes:** Truck, Any Vehicle having efficient penning and loading facilities **Transportation Guidelines:** Safe, Efficient penning and loading facilities, livestock trailers ready for handling long distances, adequate ventilation, protection from wind, separate classes of stock during transport, separate females with suckling offspring from mature males and advanced pregnant females from all other animals
Pigs	**Safe Evacuation Options:** **Emergency Survival Kit (10 Days/Animal):**

VERU East Zone (Assam)	**Transportation Modes:** Truck, any vehicle having efficient penning and loading facilities **Transportation Guidelines:** Safe, Efficient penning and loading facilities, livestock trailers ready for handling long distance, adequate ventilation, protection from wind, separate classes of stock during transport, separate females with suckling offspring from mature males and advanced pregnant females from all other animals
Camels Technical Advice: NRCC, VERU West Zone (Gujarat)	**Safe Evacuation Options:** **Emergency Survival Kit (10 Days/Animal):** **Transportation Modes:** Truck, any vehicle having efficient penning and loading facilities **Transportation Guidelines:** Safe, Efficient penning and loading facilities, livestock trailers ready for handling long distance, adequate ventilation, protection from wind, separate classes of stock during transport, separate females with suckling offspring from mature males and advanced pregnant females from all other animals.
Chicken Technical Advice: DPR, VERU	**Safe Evacuation Options:** In case of flood warnings, move the chicken to safer areas. If the running shed sustains heavy damage, chickens in crates should be evacuated safely to new sheds. **Emergency Survival Kit (10 Days/Animal):** Feed, feeders, waterers, basic first aid kit, vaccines and medicines, detergents/sanitizers etc. **Transportation Modes:** Chickens are generally transported by vehicles like truck, tempo etc. It is preferable to move the chicken by boat or helicopter in a flood situation. **Transportation Guidelines:** Before putting the birds in the containers, make sure they're clean and sterile. While transporting, keep out of the sun, rain, and direct blasts of air. The recommended temperature range for transporting chicken is 15 to 250 C. Before and during transit, chicks should not be fed or watered. It is important to keep the boxes level while transporting them. The birds that will be transported must be in good health. Birds of the same species and age group must be carried in the same container. Before

transit, the chickens must be adequately fed and watered, with additional feed and water provided in appropriate troughs installed in the containers. Watering and feeding arrangements are prepared for the duration of the journey. Cocks must not be transported in the same container as hens. Chicken carrying containers must not be stacked on top of one another and must be properly covered to allow for light, ventilation, and protection from rain, heat, and cold. All fire safety procedures must be performed, and fire extinguishers must be carried in the vehicle.

Ducks

Technical Advice: DPR, VERU

Safe Evacuation Options: There is no need to relocate the ducks if flood warnings are issued because they are more suited to mucky wetlands, streams, and ponds. Ducks in crates should be carefully evacuated to new sheds if the running shed experiences significant damage.

Emergency Survival Kit (10 Days/Animal): Feed, feeders, waterers, basic first aid kit, vaccines and medicines, detergents/sanitizers etc.

Transportation Modes: Trucks, tempos, and other vehicles are commonly used to transport ducks. In the event of a heavy flood, it is advisable to transport the ducks by boat or helicopter.

Transportation Guidelines: Make sure the bamboo baskets are clean and disinfected before placing. Keep out of the sun, rain, and direct air blasts while transporting. The temperature range for transporting chicken is 10 to 270C. Ducklings should not be fed or watered before or during transport. When transferring the boxes, it's critical to keep them level. The ducks that are being transported must be healthy. Ducks of the same age must be transported together in the same container. The ducks must be properly fed and watered before being transported, with additional feed and water provided in appropriate troughs fitted in the containers. Arrangements for watering and feeding are made for the duration of the travel. Drakes are not permitted to be carried in the same container as ducks. Duck transport containers must not be stacked on top of one another and must be adequately covered to allow for light, ventilation, and protection from rain, heat, and cold. Fire extinguishers must be carried in the vehicle, and all fire safety protocols must be followed.

Turkeys Technical Advice: DPR, VERU	**Safe Evacuation Options:** If flood warnings are issued, relocate the turkey to a safer location. Turkeys in crates should be securely evacuated to new sheds if the running shed receives major damage. **Emergency Survival Kit (10 Days/Animal):** Feed, feeders, waterers, basic first aid kit, vaccines and medicines, detergents/sanitizers etc. **Transportation Modes:** Trucks, tempos, and other vehicles are commonly used to transport turkeys. In the event of a flood, it is best to transport the turkey by boat or helicopter. **Transportation Guidelines:** Make sure the containers are clean and hygienic before placing them. Keep out of the sun, rain, and direct air blasts while transporting. The temperature range for transporting chicken is 12 to 250C. Poultry's should not be fed or watered before or during transport. When transferring the boxes, it's critical to keep them level. The birds being transported must be in good physical condition. The same species and age group of birds must be transported in the same container. The turkeys must be properly fed and watered before being transported, with additional feed and water provided in appropriate troughs fitted in the containers. Arrangements for watering and feeding are made for the duration of the travel. Tom turkeys must not be carried with turkey hens in the same container. Turkey transport containers must not be piled on top of each other and must be adequately covered to allow for light, ventilation, and protection from rain, heat, and cold. Fire extinguishers must be carried in the vehicle, and all fire safety protocols must be followed.

Emergency Feed Provisions

Provision of Feed for adequate nutrition is fundamental to the survival, welfare and productivity of livestock. During emergencies, the type of supplementary feeding required varies depending on the type of livestock involved and the nature of the emergency. Essentially, it involves the provision of extra feed to livestock owners to enable them to meet the current nutritional needs of their animals and a diet that can maintain full health and vigour to cope during emergencies. The reproductive capacity of animals which have been underfed for some time is reduced. Females are particularly sensitive and may exhibit disrupted reproductive (Oestrus) cycling at relatively low levels of under nutrition. Supplementary feeding programmes that aim to preserve livestock as a livelihoods asset normally put a

high priority on breeding female (stock). The options for use of locally available and feasible non-conventional feeds could be planned considering the scope for easy transport, storage and distribution in the disaster affected areas.

Livestock & Poultry	Recommended Guidelines
Cattle Technical Advice: CIRC, VERU, NDDB, NDRI	**Minimum Feed Requirement:** ▪ Adult Male, Adult Female, Heifer, Calf, etc. during disasters at rescue sites/camps per day ▪ Adult females – 5kg paddy straw, 15kg greens, 1.25kg concentrate ration ▪ Adult males -1.25kg concentrates, 10kg paddy straw or 5kg paddy straw, 5kg greens ▪ Heifers- 2.5kg concentrates, 15kg greens or 10kg greens and 5 kg paddy straw ▪ Calves (6to 9months old) – 1.5kg concentrates, 5-10kg grass **Feed Options:** Green Fodder, Dry Fodder, Concentrate Feed, Mineral Mixture, Special Feed (Silage, UMLD, UMMB, CCFB, etc.), Non-Conventional / Alternate Feed, etc. **Feeding in Situ:** **Feeding in Camps:** **Feeding Guidelines:** ▪ Feed concentrates in two divided doses in the morning and evening before the milking ▪ Avoid overfeeding of concentrates as it might lead to indigestions, bloats and cattle going off feed ▪ Avoid abrupt changes in the feeding ▪ Chopped fodder is better and moderately ground concentrates should be fed ▪ Mixing of greens with dry grasses is better to prevent bloat. ▪ Avoid spoilt and mouldy grasses and concentrates.
Buffaloes	**Minimum Feed Requirement:** ▪ Adult Male, Adult Female, Heifer, Calf, etc. during disasters at rescue sites/camps per day

Technical Advice: CIRB, VERU, NDDB, NDRI	▪ Adult females: Greens 25kg, dry straw -5kg, concentrates – 1kg ▪ Adult males: Greens 20 kg, dry straw-10kg, concentrates -1.5kg ▪ Heifers: Green - 20kgs, dry straw 5kg, concentrates -0.5kg ▪ Feed Options: Green Fodder, Dry Fodder, Concentrate Feed, Mineral Mixture, Special Feed (Silage, UMLD, UMMB, CCFB, etc.), Non-Conventional / Alternate Feed, etc. **Feeding in Situ:** **Feeding in Camps:** **Feeding Guidelines:** As in cows

Mithuns Technical Advice: NRCM, VERU East Zone (Assam)	**Minimum Feed Requirement:** During lean season, when availability of forest grasses goes down, concentrate mixture (20% CP and 70% TDN) fortified with salt and mineral mixture may be fed at the rate of 1 to 2 kg per animal daily up to 2 years and 2 to 4 kg per animal daily above 2 years. For lactating Mithun as it produces less quantity of milk, additional feeding is not required. However minimum 10% of their body weight feeding is essential per day. **Feed Options:** Green Fodder, Dry Fodder, Concentrate Feed, Mineral Mixture, Special Feed (Silage, UMLD, UMMB, CCFB, etc.), Non-Conventional / Alternate Feed, etc. **Feeding in Situ:** Mithun depends on the jungle forages, tree fodders, shrubs, herbs and other natural vegetation, however in situ they may be provided such natural vegetation and they will go ahead with their requirement. Commercial mineral mixture along with bran may be provided. **Feeding in Camps:** Silage, Urea Molasses Mineral Blocks, complete mineral feed blocks, jaggery, bran, Hay or green grasses, Salt Licks, **Feeding Guidelines:** As Mithun entirely depends on the locally available jungle fodders, special care should be taken in terms of mineral supplementation for better performances (Das et al 2010). During the lean season, when availability of jungle fodders goes down, additional concentrate supplementation may be required. It is advisable that during the flush season when abundant fodders are available in the jungle, the salt

and mineral mixture together may be fed additionally to the animals to avoid mineral deficiency. Whereas, during lean season additional concentrate feed (15% CP and 70% TDN) fortified with salt and mineral mixture (1 to 2 kg per animal daily up to 2 years and 2 to 4 kg per animal daily above 2 years) may be offered to maintain optimum performances (Das et al 2010).

Yaks Technical Advice: NRCY, VERU East Zone (Assam)	**Minimum Feed Requirement:** Generally, yak consume less feed than other cattle, probably because of their smaller rumen capacity. Yak prefer fresh, high-quality forages, and both housing and high temperature can reduce feed intakes. Dry matter intake (DMI, kg per day) of the growing yak under indoor feeding can be estimated as DMI = 0.0165 W + 0.0486 (W is body weight in kilograms). **Feed Options:** Green Fodder, Dry Fodder, Concentrate Feed, Mineral Mixture, Special Feed (Silage, UMLD, UMMB, CCFB, etc.), Non-Conventional / Alternate Feed, etc. **Feeding in Situ:** Yak suffers deficiency of crude-protein and of energy from grass in winter, hence adequate protein supplement in summer is advised. Commercial mineral mixture along with bran may be provided. **Feeding in Camps:** Silage, Urea Molasses Mineral Blocks, complete mineral feed blocks, jiggery, bran, Hay or green grasses if available since the camp for yak should be maintained at high altitude. Concentrates are more essential to enhance the productivity. **Feeding Guidelines:** Fresh forage requirement varies from 18 to 25 kg in summer to 6 to 8 kg per day in winter. Besides forages, oats and some crop residues (agricultural by-products) from nearby farming areas could be alternative feed.
Horses Technical Advice: NRCE, Brooke India, DSWA, VERU North Zone (Himachal Pradesh)	**Minimum Feed Requirement:** Horses naturally graze and should have access to ad-lib roughage where possible. The adult horse require more energy while lactating and pregnant mare and young foals required more protein. The feed should be provided according to the physiological status, age group (adult, young), pregnant and non-pregnant, working (transportation of goods, people) or not working (pleasure, ceremonial) and season.

Feed Options: Horses are natural grazers and eat small quantities but eat frequently. Their main diet should contain high roughages like grasses or hay. Long fibre forage is important for horse's digestion. Cut green forage should be provided if grazing facilities are not available. Dry long forage can be given if green grass is not available. The diet should contain energy, fibre, protein, minerals and vitamins for proper growth, performance and overall health. However, local available feed like barley and maize grains, rice bran, wheat straw, green grass adlib can be given.

Feeding in Situ: Cut green forage can be given when the animal is stall fed. Crushed grains of barley and maize are a high energy source for horses. Rice bran in limited quantities can be offered. Adlib green grass is very essential. Wheat straw can be given. Supplementation of mineral mixture in horse's diet is beneficial.

Feeding in Camps: If possible follow the current feed regime like introducing the same type of feedstuff. If the same feedstuff is not available then introduce the feed gradually over at least a week. Any sudden change in diet leads to digestive disturbance and colic. Quality and succulent feed is always recommended. Follow the feeding schedule and feed at the same time each day. Due to limited mobility of horses, do not overfeed, especially caution should be taken while providing a high energy diet. Make sure that each horse is getting enough feed. Horses' natural feeding habit is taking feed from the ground but that leads to sand colic or parasitic infestations, therefore feed should be provided in clean feed troughs. Such feed troughs should not be placed too high. Regular removal of faces and hygienic care should be taken to prevent the fly and associated diseases.

Feeding Guidelines: Horses are very sensitive and selective about their feed. Naturally, they spent the most of their time in frequent grazing. They can store limited feed due to small stomach capacity, hence they require small and frequent feeding. Any sudden change in their diet would disturb their digestive system and lead to colic and other health ailments, therefore, gradual change in diet is recommended. Grazing is always recommended, if

not then cleaning the feed and feed troughs is required. Straw feed should be soaked in water for a few minutes to remove any dust. Balanced feed is important for the health and wellbeing of a horse. Since equines are hindgut fermenters, they need a good quality roughage to get desired energy for their maintenance.

Mules Technical Advice: NRCE, Brooke India, DSWA, VERU North Zone (Himachal Pradesh)	**Minimum Feed Requirement:** This is same as horses but remember mules are trickle feeders. Also, their diet should be low in protein, sugar and starch but high in fibre. Offering straw in their diet is recommended. They require 2 to 3% of feed per kg. of their body weight on a dry matter basis. **Feed Options:** Mules are natural grazers and eat small quantities but eat frequently. Their main diet should contain high roughages like grasses or hay. Long fibre forage is important for mule's digestion. Cut green forage should be provided if grazing facilities are not available. Dry long forage can be given if green grass is not available. The diet should contain energy, fibre, protein, minerals and vitamins for proper growth, performance and overall health. However, local available feed like barley and maize grains, rice bran, wheat straw, green grass adlib can be given. **Feeding in Situ:** Cut green forage can be given when the animal is stall fed. Crushed grains of barley and maize are a high energy source for horses. Rice bran in limited quantities can be offered. Adlib green grass is very essential. Wheat straw can be given. Supplementation of mineral mixture in horse's diet is beneficial. **Feeding in Camps:** If possible follow the current feed regime like introducing the same type of feedstuff. If the same feedstuff is not available, then introduce the feed gradually over at least 7 to 14 days. Any sudden change in diet leads to digestive disturbance and colic. Quality and succulent feed is always recommended. Follow the feeding schedule and feed at the same time each day. Due to limited mobility of horses, do not overfeed, especially caution should be taken while providing a high energy diet. Make sure that each animal is getting enough feed. Mule's natural feeding habit is taking feed from the ground but that leads to sand colic or parasitic infestations, therefore feed should be provided in clean feed troughs. Such feed troughs should not be placed too high rather they should be at floor levels.

Regular removal of faces and hygienic care should be taken to prevent the fly and associated diseases.

Feeding Guidelines: Mules are very sensitive and selective about their diet. Naturally, they spent the majority of their time in frequent grazing. They can store limited feed in their stomach due to small stomach capacity, hence they require small and frequent feeding. Any sudden change in their diet would disturb their digestive system and lead to colic and other health ailments, therefore, gradual change in diet is recommended. Grazing is always recommended, if not then cleaning the feed and feed troughs is required. Straw feed should be soaked in water for a few minutes to remove any dust. Balanced feed is important for the health and wellbeing of a mule. Since equines are hindgut fermenters, they need a good quality roughage to get desired energy for their maintenance.

Donkeys

Technical Advice: NRCE, Brooke India, DSWA, VERU North Zone (Himachal Pradesh)

Minimum Feed Requirement: Donkeys have evolved to travel long distances in search of sparse vegetation. They are highly efficient to digest fibrous and poor quality feed. Since they have lower energy and protein requirements as compared to horses their diet should be low in protein, sugar and starch but high in fibre. However, donkeys involved in production or work need supplementary diets. Offering straw in a donkey's diet is preferred and such fibre should be available at least for 14 to 18 hours a day. They require 2 to 3% of feed per kg. of their body weight on a dry matter basis. Also, remember donkeys are trickle feeders so frequent feeding in small quantities are recommended.

Feed Options: All types of straw feeding are useful but barley or oat or wheat straw can be provided. Avoid grains and green grass instead offer dry roughage or straw.

Feeding in Situ: Cut green forage can be given when the animal is stall fed. Crushed grains of barley and maize are a high energy source, but straw feeding is recommended. Adlib green grass is not suggested but can be given in small quantities. Supplementation of mineral mixture in Donkey's diet is beneficial.

Feeding in Camps: If possible follow the current feed regime like introducing the same type of feedstuff. If the same feedstuff is not available, then introduce the feed gradually

over at least 7 to 14 days. Any sudden change in diet leads to digestive disturbance and colic. Quality and succulent feed is always recommended. Follow the feeding schedule and feed at the same time each day. Due to limited mobility of horses, do not overfeed, especially caution should be taken while providing a high energy diet. Make sure that each animal is getting enough feed. Donkey's natural feeding habit is taking feed from the ground but that leads to sand colic or parasitic infestations, therefore feed should be provided in clean feed troughs. Such feed troughs should not be placed too high rather they should be at floor levels. Regular removal of faces and hygienic care should be taken to prevent the fly and associated diseases.

Feeding Guidelines: Most donkeys become overweight if unrestricted. Feed requirement is 2 to 3 % of body weight on a dry matter basis. Naturally, they spent the majority of their time in frequent grazing. They can store limited feed in their stomach due to small stomach capacity, hence they require small and frequent feeding. Any sudden change in their diet would disturb their digestive system and lead to colic and other health ailments, therefore, gradual change in diet is recommended. Grazing is always recommended, if not then cleaning the feed and feed troughs is required. Straw feed should be soaked in water for a few minutes to remove any dust. Balanced feed is important for the health and wellbeing of a mule. Since equines are hindgut fermenters, they need a good quality roughage to get desired energy for their maintenance.

Sheep Technical Advice: CSWRI, VERU	**Minimum Feed Requirement:** Ewe with lamb – 2.2 kg hay/day Ewe dry – 1.3 kg hay/day Weaning lamb – 1.3 kg hay/day **Feed Options:** 1. For Energy – Hay, Grain, crop, forages 2. Protein – Soya bean meal, sunflower meal, ground nut oil cake 3. Minerals – salt + mineral mixture 4. Dry lot feeding is also an option

Feeding in Situ, Camps and Feeding Guidelines: In the calamities, there are acute shortage of food, fodder and drinking water for livestock. Transportation of food and fodder for animals becomes more difficult to the affected areas. However, this has to be done on top priority for saving of animal's life. The feeding strategies can be developed with the following objectives –

1. To feed animals for maintenance that ensures survival of animals.
2. To feed productive stock, such as pregnant and lactating animals preferentially

In such conditions, livestock are to be fed with the locally available industrial waste, different tree leaves or improving the coarse roughage which will be able to support the life of animals.

Goats

Technical Advice: CIRG, VERU

Minimum Feed Requirement:

- Goat – A 30kg goat needs 1kg dry matter per day
- Late Pregnancy or early lactation – 2kg

Feed Options:

1. For Energy – Hay, Grain, crop, forages
2. Protein – Soya bean meal, sunflower meal, groundnut oil cake
3. Minerals – salt + mineral mixture
4. Dry lot feeding is also an option

Feeding in Situ, Feeding in Camps and Feeding Guidelines:

In the calamities, there are acute shortage of food, fodder and drinking water for livestock. Transportation of food and fodder for animals becomes more difficult to the affected areas. However, this has to be done on top priority for saving of animal's life. The feeding strategies can be developed with the following objectives –

1. To feed animals for maintenance that ensures survival of animals.
2. To feed productive stock, such as pregnant and lactating animals preferentially

In such conditions, livestock are to be fed with the locally available industrial waste, different tree leaves or improving

the coarse roughage which will be able to support the life of animals.

Pigs Technical Advice: NRCP, VERU East Zone (Assam)	**Minimum Feed Requirement:** Brood sow with litter- 3.6 kg grain/day Brood sow pregnant- 0.9kg grain/day Gilt or boar- 1.3kg grain/day **Feed Options:** 1. For Energy – Grain 2. Protein – Soya bean meal, sunflower meal, groundnut oil cake 3. Minerals – salt + mineral mixture **Feeding in Situ; Feeding in Camps & Feeding Guidelines:** In the calamities, there are acute shortage of food, fodder and drinking water for livestock. Transportation of food and fodder for animals becomes more difficult to the affected areas. However, this has to be done on top priority for saving of animal's life. The feeding strategies can be developed with the following objectives – 1. To feed animals for maintenance that ensures survival of animals. 2. To feed productive stock, such as pregnant and lactating animals preferentially In such conditions, livestock are to be fed with the locally available industrial waste, different tree leaves or improving the coarse roughage which will be able to support the life of animals.
Camels Technical Advice: NRCC, VERU West Zone (Gujarat)	**Minimum Feed Requirement:** Grams crushed – 1.35 kg Barely – 1.35 kg Missa (Straw) Bhoosa (whet straw) – 8-9 kg Salt – 0.15 kg **Feed Options:**

- Dry roughage – Bhoosa (straw) of two leguminous crops as moth and gram or moth is mixed, it is called MISA BHOOSA. Bhoosa is mixed with dried leaves of trees such as khejri or jharberi.
- Concentrate feeding – ½ kg to 1 kg moth flour or Bajra or Barley + 350 – 400 gram of jaggery.

Feeding in Situ, Feeding in Camps & Feeding Guidelines:

- Do not abruptly feed the camel with grains. If it is not inured to them because it can cause acidity or bloat problems in them
- Do not starve camel for long , this causes go slow of and chewing and then pain of the stomach
- Do not offer grain or bhoosa after a long fatiguing journey, especially it performed without feed and water. This may cause colic or impaction in them
- A camel must not be taken for long fast riding after intense feeding, for it may develop colic or tympani
- Do not feed the camel total grains and seeds, especially barley, oats, gram cotton etc. These should be feed after crushing and wet in water for at least 7 – 9 hours

Chicken Technical Advice: DPR, VERU	**Minimum Feed Requirement:** The minimum feed requirement is depending on utility of birds. During the disaster situation, 8 kg of compounded feed is sufficient for 100 layers whereas 5 kg feed is required for 100 broiler birds. **Feed Options:** The type of feed offered to them is determined by its function. Birds are fed either mash/crumble/pellet forms of feed, depending on availability. Typically, the birds receive 80-85 % of the required diet in this condition. Non-conventional feed ingredients are also employed to feed the chicken in an emergency. **Feeding in Situ:** Raw materials needed for compounded feed, such as maize, soybean meal, DORB, shell grits, and mineral mixes etc. are stored and monitored to ensure that they are not harmed by rainwater splashing. For convenient feed preparation, management of the feed preparation unit, as well as checking of the machinery and power supply to it, is required. Preparing and storing prepared feed well in advance of natural disasters to avoid feeding interruptions during uncertain and undefined durations of power outage.

The chickens that are the most affected are fed first, followed by the remaining birds. Depending on the availability, feeding should be done right away. Examine the colour and smell of the feed to determine its quality. Mouldy feed should not be provided.

Feeding in Camps: Efforts should be taken during feeding in camps to supply feed that meets the needs of the chicken. Fed them fresh feed if feasible, and add some anti-stress agents while preparing balanced feed. Observe behaviour of birds, if any signs of stress in the birds should be reported to the veterinarian immediately.

Feeding Guidelines: Check for any cake development in the feed bags, and avoid feeding off-smelling, mouldy, or spilt feed. Feed the impaired birds first and perform the feeding according to their age and needs. If crumbles are available, it is recommended to feed the birds. To eliminate needless rivalry, feeder space must be sufficient.

Ducks

Technical Advice: DPR, VERU

Minimum Feed Requirement: During the free-range system of housing, little attention to feeding is required. In the event of a calamity, 7 kilogrammes of compounded feed will feed 100-layer ducks, whereas 5.5 kilogrammes of feed will feed 100 meat type ducks. Feed consumption varies depending upon the rate of production and availability of greens.

Feed Options: Because they can easily ingest either pellets or wet mesh, ducks prefer them. In this scenario, the birds typically receive 70-75% of the needed feed. In an emergency, non-conventional feed items are also used to feed the ducks.

Feeding in Situ: Maize, soybean meal, DORB, shell grits, and mineral mixes are the important feed ingredients used in compounded feed. These ingredients are stored and monitored to ensure that they are not affected by rainwater splashing. Management of the feed preparation unit, as well as checking of the machinery and power supply to it, are essential for convenient feed preparation. To avoid feeding interruptions during uncertain and indefinite periods of power outage, prepare and store prepared feed well in advance of natural catastrophes. Feeding should be done as soon as possible, depending on availability. To judge the feed's quality, look at its colour and flavour.

Feeding in Camps: Efforts should be made during camp feeding to provide ducks with feed that matches their

demands. If possible, provide them fresh feed and add some anti-stress ingredients to your balanced feed. Observe the behaviour of the ducks; any signs of stress in the birds should be immediately reported to the Veterinarian.

Feeding Guidelines: Check the feed bags for any cake formation and avoid providing off-smelling, mouldy, or spilt feed. Feed the sick ducks first, and then feed the rest of the ducks according to their age and needs. Feeder space must be ample to eliminate unnecessary competitiveness. Because birds are more susceptible to aflatoxicosis, it's best to stay away from mouldy feed. Ducks should never have access to feed without water.

Turkeys

Technical Advice: DPR, VERU

Minimum Feed Requirement: One adult turkey bird will be fed roughly 230 grams of feed every day during the disaster.

Feed Options: Depending on availability, the birds are fed mash, crumble, or pellet feed. Under this situation, the birds usually get 80% of their daily requirement. In an emergency, non-conventional feed items are also used to feed the turkey.

Feeding in Situ: Maize, soybean meal, DORB, shell grits, and mineral mixer are the major ingredients used in compounded feed. These ingredients are stored and monitored to ensure that they are not affected by rainwater splashing. Management of the feed preparation unit, as well as checking of the machinery and power supply to it, are essential for convenient feed preparation. To avoid feeding interruptions during uncertain and indefinite periods of a power outage, prepare and store prepared feed well in advance of natural catastrophes. The most severely affected turkeys are fed first, followed by the other birds. Feeding should be done as soon as possible, depending on availability. To judge the feed's quality, look at its colour and flavour. Avoid feeding of mouldy feed.

Feeding in Camps: Efforts should be made during turkey feeding in camps to provide feed that fits the turkey's needs. If possible, provide them fresh feed and add some anti-stress ingredients to your balanced feed. Observe the behaviour of the birds; any indicators of stress in the birds should be immediately reported to the veterinarian.

Feeding Guidelines: Because of their poor eyesight and anxiousness, young poults are naturally hesitant to eat and

drink in their first few days of life. Boiling egg mixed with ground Bengal grammes can be fed to poults for up to 10 days in aided feeding. Poults can be lured to the feed by tapping the container gently with the fingertips. Poults will also be drawn to coloured marbles or pebbles placed in feeders. Colour egg trays can be used as feeders for the first two days.

Emergency Water Provisions

Water is fundamental to the physiological equilibrium and well-being of all animals which, except for some camelids, cannot survive more than a few days. Lack of water causes poor appetite, poor digestion and reduced excretion of waste products – all of which contribute to susceptibility to diseases. In emergency situations where access to water for animals is compromised, the provision of alternative sources of water becomes a priority. Lack of water may also make areas of otherwise adequate grazing unusable. Restriction in the supply of water to livestock is often a consequence of natural disasters and emergencies - especially droughts. It may, however, also be significant in other types of emergency, including earthquakes or landslides in highland areas, which can block long-standing routes to livestock water points. Other hazards, including tsunamis, may also result in the loss of freshwater to livestock as ponds are inundated by salt water from the ocean.

Livestock & Poultry	Recommended Guidelines
Cattle Technical Advice: CIRC, VERU, NDDB, NDRI	**Minimum Water Requirement:** Adult Male, Adult Female, Heifer, Calf, etc. ▪ Adult males – 60-80 litres/day ▪ Adult female – 80-100 litres/day ▪ Heifers – 20-40 litres/day ▪ Calves - 15-30litres/day **Water Sources:** Potable water primarily as water sources at sites during disasters get contaminated. However, local water sources must be properly checked before use for water cattle. **Water Trucking:** It is the most important mode of providing water for immediate relief to cattle at disaster sites. **Water Provision Guidelines:** Makeshift water troughs can be constructed but care must be taken to avoid contamination of water due to local disaster situations for example floods.

	Buckets can be used in emergency situations for immediate relief though providing water in buckets is labour intensive.
Buffaloes Technical Advice: CIRB, VERU, NDDB, NDRI	**Minimum Water Requirement:** ▪ Adult males – 80-100 litres/day ▪ Adult female – 100-120 litres/day ▪ Heifers – 35-50 litres/day ▪ Calves - 25-40litres/day **Water Sources:** Potable water primarily as water sources at sites during disasters get contaminated. However, local water sources must be properly checked before use for water cattle. **Water Trucking:** It is the most important mode of providing water for immediate relief at disaster sites. **Water Provision Guidelines:** Makeshift water troughs can be constructed but care must be taken to avoid contamination of water due to local disaster situations for example floods. Buckets can be used in emergency situations for immediate relief though providing water in buckets is labour intensive.
Mithuns Technical Advice: NRCM, VERU East Zone (Assam)	**Minimum Water Requirement:** 9% and 12% of body weight during winter and summer respectively **Water Sources:** Fresh, clean and portable water should be offered. Do not allow stagnant or overnight water to an animal. **Water Trucking:** In hilly area rain water harvest is the most suitable and if possible diversification of small rivulet to the camp **Water Provision Guidelines:** The provision of adequate drinking water is essential. Particularly during summer and based on dry matter intake the requirements may go higher than mentioned above
Yaks Technical Advice: NRCY, VERU East Zone (Assam)	**Minimum Water Requirement:** The thermos-neutral zone of the growing yak is estimated as 8° - 14°C. **Water Sources:** Fresh, clean and portable water should be offered. Do not allow stagnant or overnight water to an animal.

Water Trucking: In hilly area rain water harvest is the most suitable and if possible diversification of small rivulet to the camp which generally formed due to melting of ice or from the crevices of stone.

Water Provision Guidelines: The provision of adequate drinking water is essential. Particularly during summer and based on dry matter intake the requirements may go higher. If the rescue camp is located in low altitude the demand of water may be more due to heat stress.

Horses

Technical Advice: NRCE, Brooke India, DSWA, VERU North Zone (Himachal Pradesh)

Minimum Water Requirement: Always offer fresh, clean drinking water after letting the animal cool for a few minutes. An average horse should have 30 to 40 litres of water per day, however, 40 to 60 litres of water (4 to 6 buckets) a day is required to maintain hydration status in very hot and humid conditions. Due to small stomach capacity, water should be offered frequently before feeding. Water requirements should be according to the season, physiological status of an animal, age group, pregnant, non-pregnant. However, frequent watering at least 4 to 5 times a day is recommended. The water container or trough should have a wide mouth and allow the animal to spend some time (at least 5 minutes) drinking the water since horses take small bouts at one time.

Water Sources: Fresh, clean and portable water should be offered. Do not allow stagnant or overnight water to an animal.

Water Trucking: A large volume of water can be transported from the water source to the camp as a temporary arrangement. Ensure the water quality from where the water is being fetched.

Water Provision Guidelines: Do not offer the water immediately after exercise or work, let the animal cool for a few minutes before offering the water. Allow animals to spend some time drinking the water. Free access to drinking water is recommended. Do not offer stagnant or cold water especially in winter seasons. Remove the mouth bit while offering the water. Horses are prone to dehydration, therefore monitoring capillary refilling time is beneficial. Normal CRT should be 2 or less than 2 per seconds. Heat stress or stroke is common in horses especially in hot conditions, heavy exercise or work, long distance transportations. Such hot animals can be cooled

by housing or throwing water all over the body and rubbing it into the skin is useful.

Mules Technical Advice: NRCE, Brooke India, DSWA, VERU North Zone (Himachal Pradesh)	**Minimum Water Requirement:** Water intake in mules is about 4 to 9% of body weight per day during rest. But the requirement may vary depending on the diet, work and climatic conditions. Mules may not show obvious signs of thirst and will maintain appetite even when dehydrated, therefore, they should provide clean, fresh water with easy access at all times. **Water Sources:** Fresh, clean and portable water should be offered. Do not offer stagnant or overnight water, cold water to an animal. **Water Trucking:** Same as Horses. **Water Provision Guidelines:** Do not offer the water immediately after exercise or work, let the animal cool for a few minutes before offering the water. Allow animals to spend some time drinking the water. Free access to drinking water is recommended. Do not offer stagnant or cold water especially in winter seasons. Remove the mouth bit while offering the water. Mules are prone to dehydration, therefore monitoring capillary refilling time is beneficial. Normal CRT should be 2 or less than 2 per seconds. Heat stress or stroke is common in mules especially in hot conditions, heavy exercise or work, long distance transportations. Such hot animals can be cooled by housing or throwing water all over the body and rubbing it into the skin is useful.
Donkeys Technical Advice: NRCE, Brooke India, DSWA, VERU North Zone (Himachal Pradesh)	**Minimum Water Requirement:** Water intake in donkeys is about 4 to 9% of body weight per day during rest. But the requirement may vary depending on the diet, work, climatic conditions, and pregnancy or lactation stages. Donkeys are very selective about what they drink. Donkeys may not show obvious signs of thirst and will maintain appetite even when dehydrated, therefore, they should provide clean, fresh water with easy access at all times. **Water Sources:** Fresh, clean and portable water should be offered. Do not offer stagnant or overnight water, cold water to an animal. **Water Trucking:** Same as Horses **Water Provision Guidelines:** Do not offer the water immediately after exercise or work, let the animal cool for

	a few minutes before offering the water. Allow animals to spend some time drinking the water. Free access to drinking water is recommended. Do not offer stagnant or cold water especially in winter seasons. Remove the mouth bit if any while offering the water. Monitoring capillary refilling time is beneficial. Normal CRT should be 2 or less than 2 per seconds.
Sheep Technical Advice: CSWRI, VERU	**Minimum Water Requirement:** 4.4 lit/day **Water Sources:** Providing enough quality water is essential for livestock during any disaster, because water makes up 80% of the blood, regulates body temperature and is vital for organ functions such as digestion, waste removal and the absorption of nutrients. The water resources include – tube wells, tanks, harvesting rain water in tanks, large ponds, local pond or canal **Water Trucking:** Emergency water trucking **Water Provision Guidelines:**
Goats Technical Advice: CIRG, VERU	**Minimum Water Requirement:** 4.4 lit/day **Water Sources:** Providing enough quality water is essential for livestock during any disaster, because water makes up 80% of the blood, regulates body temperature and is vital for organ functions such as digestion, waste removal, and the absorption of nutrients. Water resources include – tube wells, tanks, harvesting rain water in tanks, large ponds, local pond or canal. **Water Trucking:** Emergency water trucking Water Provision Guidelines:
Pigs Technical Advice: NRCP, VERU East Zone (Assam)	**Minimum Water Requirement:** ▪ Weaner- 2L/day ▪ Feeder pig- 4.5 L/day ▪ Grower- 4.5 L/day ▪ Gestating sow/ boar- 15 L/day ▪ Lactating sow- 20 L/day **Water Sources:** Providing enough quality water is essential for livestock during any disaster, because water makes up

	80% of the blood, regulates body temperature and is vital for organ functions such as digestion, waste removal and the absorption of nutrients. Water Resources – Tube wells, tanks, harvesting rain water in tanks, large ponds, local pond or canal **Water Trucking:** Emergency water trucking **Water Provision Guidelines:**
Camels Technical Advice: NRCC, VERU West Zone (Gujarat)	**Minimum Water Requirement:** 25-50 litres depending upon kind of grazing and season **Water Sources:** ▪ Shrubs or Bushes contain 75-80 % water almost in all seasons ▪ Wells, then put in water through ▪ 18-20 litres per day may be wet by herbaceous plant intake **Water Trucking:** Emergency water trucking **Water Provision Guidelines:** ▪ Water is offered to camels once per week in summer ▪ In Spring and autumn, it is offered every 7 – 10 days ▪ In winter , it is offered every 3 – 4 weeks ▪ Yarded camels need less water than grazing camels that may freely travel 35 – 70 km per browsing ▪ Camel may consume only 10% of the water consumed by the bovine in the same environment because camel excrete 20% less urine than bovines, there is very low faecal water loss in camels than bovines
Chicken Technical Advice: DPR, VERU	**Minimum Water Requirement:** The minimum amount of water required is determined by the temperature. For each 100 broiler and layer birds, 19 litres of water at room temperature is sufficient. During the summer, a greater volume of water is required. **Water Sources:** To avoid water contamination during heavy rains, inspect all water channels, pipe lines, and reservoirs for any leaks or missing covers. To avoid water pollution, disinfect water resources with appropriate disinfectants. Sanitation

measures for water should be closely checked. In the event of a water supply outage, a sufficient amount of water should be conserved on the farm for daily management purposes.

Water Trucking: It is the process of transporting large amounts of water from a source to a farm. During an emergency, these vehicles might be utilised to supply water to farms on a short-term basis. Check and confirm the source of water during water trucking. It is critical that water sources such as boar wells, dug, or wells be adequately cleaned in order to obtain safe water for drinking or other domestic usage.

Water Provision Guidelines: Water must be available at all times and in unlimited quantities. The bacteria will not be able to proliferate if chlorine is added to the water. This chlorinated water should be kept in big containers that are kept out of direct sunlight. Ensure that the birds have access to clean, drinkable water. Use sanitizers and acidifiers in water. Drinkers must be cleaned at least twice a day, and freshwater must be provided. Drinkers in deep litter systems must be kept horizontal and water must not flow out onto the litter. To avoid needless rivalry, drinker space must be sufficient. Taste, solid build-up in water systems, and toxicity should all be considered in water quality standards. It is vital to supply chickens with safer, potable drinking water.

Ducks

Technical Advice: DPR, VERU

Minimum Water Requirement: The temperature determines the amount of water that is needed. Ducks consume water at different rates depending on their age. At 1, 4, and 8 weeks, they drink 28, 120, and 330 ml/duck/day, respectively.

Water Sources: Inspect all water channels, pipe lines, and reservoirs for any leaks or missing covers to avoid water contamination during heavy rains. Disinfect water resources with proper disinfectants to avoid water contamination. Water sanitation methods should be properly examined. A sufficient volume of water should be stored on the farm for daily management requirements in the case of a water supply failure.

Water Trucking: It is process of moving huge volumes of water from a source to a farm. These vehicles could be used to provide water to farms on a temporary basis in an emergency. During water trucking, double-check and confirm the source of water. To acquire safe water for drinking or

other household purposes, water sources such as bore wells, dug wells, or wells must be well cleaned.

Water Provision Guidelines: Water must be available at all times and in unlimited amounts. If chlorine is added to the water, the bacteria will be unable to reproduce. This chlorinated water must be stored in large containers out of direct sunlight. Ensure that the birds have clean, potable water at all times. In water, use sanitizers and acidifiers. Freshwater must be provided and drinkers must be cleaned at least twice a day. Drinker space must be sufficient to avoid unnecessary rivalry. Water quality standards should take into account taste, solid build-up in water systems, and toxicity. It's critical to provide ducks with safe, drinkable water. Water in drinkers should be sufficient to deep their heads. If they cannot do this, their eyes seem to get scaly and crusty and in extreme cases blindness may occur.

Turkeys

Technical Advice: DPR, VERU

Minimum Water Requirement: The minimum amount of water required is determined by the temperature. Adult bird will consume around 500 ml of water per day. During the summer, a greater volume of water is required.

Water Sources: To avoid water contamination during heavy rains, inspect all water channels, pipe lines, and reservoirs for any leaks or missing covers. To avoid water pollution, disinfect water resources with appropriate disinfectants. Sanitation measures for water should be closely checked. In the event of a water supply outage, a sufficient amount of water should be conserved on the farm for daily management purposes.

Water Trucking: It is the process of transporting large amounts of water from a source to a farm. During an emergency, these vehicles might be utilised to supply water to farms on a short-term basis. Check and confirm the source of water during water trucking. It is critical that water sources such as boar wells, dug, or wells be adequately cleaned in order to obtain safe water for drinking or other domestic usage.

Water Provision Guidelines: Water must be available at all times and in unlimited quantities. The bacteria will not be able to proliferate if chlorine is added to the water. This chlorinated water should be kept in big containers that are kept out of direct sunlight. Ensure that the birds have access to clean, drinkable water. Use sanitizers and acidifiers in

water. Drinkers must be cleaned at least twice a day, and freshwater must be provided. Drinkers in deep litter systems must be kept horizontal and water must not flow out onto the litter. To avoid needless rivalry, drinker space must be sufficient. Taste, solid build-up in water systems, and toxicity should all be considered in water quality standards. It is vital to supply turkeys with safer, potable drinking water. Poults will also be drawn to coloured marbles or pebbles placed in drinkers.

Emergency Veterinary Support

Veterinary Support can prevent sickness and death and help maintain the value of the surviving animals. Natural and conflict-based disasters affect the health, well-being and productivity of livestock; this in turn has implications for household economies and livelihoods as well as animal welfare. Disasters compromise access to animal health services (public and private), which are invariably disrupted and/or overwhelmed. Yet livestock owners need access to such services throughout an emergency to protect their animals and maintain productivity. Pastoralists, whose livelihoods depend on livestock, are particularly vulnerable, as are poorer households whose few animals may be their only assets. If animals are in poor condition, starving or dehydrated, treatment and vaccination alone are unlikely to have any impact.

Livestock & Poultry	Recommended Guidelines
Cattle Technical Advice: CIRC, VERU, NDDB, NDRI	**Veterinary Treatment:** Ocular injuries, burn injuries, poisonings, udder injuries and integument injuries must be attended immediately to avoid complications. Lameness and fractures should be immediately treated. Pneumonic, heat and cold stressed animals should be shifted to intensive care units in the camp sites itself. **Vaccination Schedule & Options:** Immediate vaccination is to be avoided as vaccination causes stress. However, in case of impending signs of outbreak vaccination must be carried out especially against Foot and Mouth Disease (FMD) and Haemorrhagic Septicaemia (HS). As the cattle are stabilized after rescue, vaccination can be carried out. **Deworming Options:** Deworming should also be done after the rescued cattle are stabilized to avoid immediate stress. **Veterinary Care & Support Guidelines:** Multivitamin and mineral supplementation orally and parenteral must be given.

Buffaloes

Technical Advice: CIRB, VERU, NDDB, NDRI

Veterinary Treatment: Ocular injuries, burn injuries, poisonings, udder injuries and integument injuries must be attended immediately to avoid complications. Lameness and fractures should be immediately treated. Pneumonic, heat and cold stressed animals should be shifted to intensive care units in the camp sites itself.

Vaccination Schedule & Options: Immediate vaccination is to be avoided as vaccination causes stress. However, in case of impending signs of outbreak vaccination must be carried out especially against Foot and Mouth Disease (FMD) and Haemorrhagic Septicaemia (HS). As the cattle are stabilized after rescue, vaccination can be carried out.

Deworming Options: Deworming should also be done after the rescued cattle are stabilized to avoid immediate stress.

Veterinary Care & Support Guidelines: Multivitamin and mineral supplementation orally and parenterally must be given.

Mithuns

Technical Advice: NRCM, VERU East Zone (Assam)

Veterinary Treatment: The treatment should be generated based on the clinical inspection by the veterinarian for both infectious and non-infectious diseases. However the internal medicine used are antipyretic, analgesic, NSAID, Corticosteroids, Antibiotics, liver extract injection, common fluid therapy preferred is crystalloids, anthelmintics, acaricidal, anti hemoprotozoan, hormones etc. May herbal medicines are commonly can be used in Mithun. Locally available plant source can be used for respiratory, gastro intestinal, dermatological and for many other ailments.

Vaccination Schedule & Options:

Disease	Primary	Regular Vaccination
1. Anthrax	at the age of 6months	once annually (in affected area only)
2. Haemorrhagic septicemia	at the age of 6 month	once annually before monsoon
3. Black quarter (BQ)	at the age of 6months	once annually before monsoon
4. FMD	at the age of 4 month	Twice in a year (sept & march)

5. Brucellosis	By 4-8 months of age(only female)	Once in life time
6. Theileriosis	3 months of age and above	Once in life time
7. IBR	3 months of age and above	1 month after the primary dose as a booster followed by 6 months interval
8. Rabies	Immediately after post bite therapy from dog or fox	0 day, 7, 14, 28 and 90th day of Post Bite

Deworming Options: Fenbendazole @7 mg per kg body weight in broad specrum, Levamisole @7 mg/kg body weight, Ivermectin 200 µgm/kg body weight for hemonchus, Triclabendazole @7 mg per kg body weigh in fluke endemic areas in Mithun.

Veterinary Care & Support Guidelines:

1. Following the vaccination schedule helps in restriction of many infectious diseases.
2. Maintain biosecurity at the farm and also for the visitors.
3. Proper deworming strategy after stool sample examination after regular interval.
4. External parasite control programme with fumigation firing of the walls before introducing new animals.
5. Strict hygienic measures for the milking animals and proper udder management of the mastitis occurring clinical cases.
6. Wound should not turn to maggoted wound and hence regular dressing of the wounds is essential.
7. Antibiotic should be used as per disease pattern and clinical symptoms.
8. Indiscriminate hormone therapy should be curtailed.
9. For mastitis control proper milking methods with strict hygiene should be followed. Unnecessary use of corticosteroid should be avoided.
10. Foot lameness due to orthopaedic, musculoskeletal disorder or due to infectious disease origin eg. FMD should be properly monitored.

11. Feed supplement and multi-mineral supplement in diet should be incorporated.
12. Mithun calf diarrhoea should be immediately attended and if needed fluid therapy should be judiciously incorporated.
13. Since Mithun is also used as a food animal proper drug withdrawal period should be followed.
14. Proper Carcass disposal methods should be implemented

Yaks

Technical Advice: NRCY, VERU East Zone (Assam)

Veterinary Treatment: The treatment should be generated based on the clinical inspection by the veterinarian for both infectious and non-infectious diseases. However the internal medicine used are antipyretic, analgesics, NSAID, Corticosteroids, Antibiotics, liver extract injection, common fluid therapy preferred is crystalloids, anthelmintics, acaricidal, anti hemoprotozoan, hormones etc. May herbal medicines are commonly can be used in Yak. Locally available plant source can be used for respiratory, gastro intestinal, dermatological and for many other ailments.

Vaccination Schedule & Options:

Disease	Primary	Regular Vaccination
1. Anthrax	at the age of 6months	once annually (in affected area only)
2. Haemorrhagic septicemia	at the age of 6 month	once annually before monsoon
3. Black quarter (BQ)	at the age of 6months	once annually before monsoon
4. FMD	at the age of 4 month	Twice in a year (Sept& March)
5. Brucellosis	By 4-8 months of age(only female)	Once in life time
6. Theileriosis	3 months of age and above	Once in life time
7. IBR	3 months of age and above	1 month after the primary dose as a booster followed by 6 months interval
8. Rabies	Immediately after post bite therapy from dog or fox	0 day, 7, 14, 28 and 90th day of Post Bite

Deworming Options: Fenbendazole @7 mg per kg body weight in broad specrum, Levamisole @7 mg/kg body weight, Ivermectin 200 µgm/kg body weight for hemonchus in yak.

Veterinary Care & Support Guidelines: Mostly followed in organised yak farm in high altitude

1. Following the vaccination schedule helps in restriction of many infectious diseases.
2. Maintain biosecurity at the farm and also for the visitors.
3. Proper deworming strategy after stool sample examination after regular interval.
4. External parasite control programme with fumigation firing of the walls before introducing new animals.
5. Strict hygienic measures for the milking animals and proper udder management of the mastitis occurring clinical cases.
6. Wound should not turn to maggoted wound and hence regular dressing of the wounds is essential.
7. Antibiotic should be used as per disease pattern and clinical symptoms.
8. Indiscriminate hormone therapy should be curtailed.
9. For mastitis control proper milking methods with strict hygiene should be followed. Unnecessary use of corticosteroid should be avoided.
10. Foot lameness due to orthopaedic, musculoskeletal disorder or due to infectious disease origin eg. FMD should be properly monitored.
11. Feed supplement and multi-mineral supplement in diet should be incorporated.
12. Yak calf diarrhoea should be immediately attended and if needed fluid therapy should be judiciously incorporated.
13. Brukpas should be educated with various basic training programme and extension programme regarding veterinary care. Avoid of dead carcass by Brukpas and proper carcass disposal education should be followed.

Horses

Technical Advice: NRCE, Brooke

Veterinary Treatment: All horses before any treatments should be handled and restrained with systematic approach mentioned in previous section (handling & restraining) and

India, DSWA, VERU North Zone (Himachal Pradesh)

secure the horse's head first by applying head collar and lead ropes. Wherever possible, chemical restraint is always preferred over physical. Wherever possible, physical restraint should always be minimized. Behavioural restrain is always recommended (example use of blind folds). Assessment of horses to observe an animal's demeanour (alert or apathetic or depressed), check from front, back, side for symmetry, stance, any abnormality, swellings, bumps, injuries on the body parts is essential. A Clinical examination to check vital parameters- pulse, heart and respiration rates, rectal temperature, CRT is the second step after handling and restraining an animal. Pain management by using appropriate drugs is critical, but check rehydration status before giving any NSAIDs. Maintenance of 24 x 7 pain management is important. All injuries and wounds should be treated. Fresh or surgical wounds (less than six hours) should be treated as close wounds while contaminated wounds should be treated as open wounds. Injuries or wounds on lower limbs should be covered or bandaged properly to prevent proud flesh. Protecting the fly by using fly repellents (Himax ointment, topicure spray, etc.) surrounding the wounds are important. Checking horses' foot, shoe and nails for any injury, abnormality is also important. All horses above the age of 3 months should receive tetanus toxoid vaccines (2.5 ml intramuscular). Pregnant mares should receive 5 ml tetanus toxoid. Any burn should be treated with silverex ointment. Do not apply any irritant on dog bite injuries and never close dog bite injuries if any.

Vaccination Schedule & Options: A horse should get 2 doses of Tetanus toxoids apart from 4 to 6 weeks followed by one annual booster dose. Additional one dose is recommended whenever an animal gets injured. A pregnant mare should receive 5 ml T.T. deep intra-muscularly before one month of foaling. A new born foal from vaccinated mare should receive 3 doses at 6, 7 & 9 months of age and then annually once; whereas foal from unvaccinated mare should receive 3 doses at 3rd, 4th & 6th month of age followed by annually once. In case ofrabies endemic areas, anti-rabies vaccination is beneficial. All animals above three monthss of age can be vaccinated. First dose can be given followed by second dose on 21st day and annually once. Vaccinate mare before breeding rather than during pregnancy.

Deworming Options: In horses, mass worming is not recommended. Rationale use of wormers is essential. Worming can be done in a six months' period or according to the need. Symptoms like dry and rough body coat or loss of hairs or emaciation can be considered to decide the worming. However, faecal egg count is recommended whether animals should be wormed or not (> 500 epg is recommended for worming). All wormers should be used cautiously. Oral ivermectin solution (0.08% or 1% strength) is the safest in equines. Never use injectable ivermectin in horses. Oral Fenbendazole @7 mg per k g body weight can be given. Never overdose or under dose these wormers, they should be given according to the animal's body weight. To avoid drug resistance, never use the same wormers every time and use them on rotation or alternate basis.

Veterinary Care & Support Guidelines: For our own, others and animal's safety point of view, understanding animal's demeanour is very important. A humane handling is the very first step before any intervention. . Care should be taken before, during and post interventions. Be ready with all requisites before approaching an animal. All medicines, equipment should be stored according to the standards. Maintain the cool chain for vaccines until they are being used on animals. Checking drug expiry, any change in colour or consistency is important. Always carry handling & restraining materials, lifesaving, emergency and pain management drugs in veterinary supplies. Use of protective gears like wearing aprons, sensible shoes, gloves and face masks are prerequisites for clinical interventions.

Mules Technical Advice: NRCE, Brooke India, DSWA, VERU North Zone (Himachal Pradesh)	**Veterinary Treatment:** Same as horses but remember mules have different dose requirements (higher than horses) and drugs should be calculated accordingly. **Vaccination Schedule & Options:** Same as horses **Deworming Options:** Same as horses **Veterinary Care & Support Guidelines:** Same as horses
Donkeys Technical Advice: NRCE, Brooke	**Veterinary Treatment:** Same as horses but remember donkeys have different dose requirements (higher than horse and mule) and drugs should calculate accordingly.

India, DSWA, VERU North Zone (Himachal Pradesh)

Vaccination Schedule & Options: Same as horses

Deworming Options: Same as horses

Veterinary Care & Support Guidelines: Same as horses

Sheep

Technical Advice: CSWRI, VERU

Veterinary Treatment:

- During disasters an increase of stress related disease may be observed
- Animals that usually carry the disease without clinical symptoms may be return to excreting increased amount of disease agents and therefore increase the transmission to others animals. Animal whose immune system is impaired due to the stress experienced in disasters can start to show clinical signs.
- After proper examination of the animal tentative treatment need to be provided to them.

Vaccination Schedule & Options:

DISEASE	PRIMARY	REGULAR VACCINATION
1. Anthrax	at the age of 6 months	once annually (in affected area only)
2.Haemorrhagic septicemia	at the age of 6 month	once annually before monsoon
3 . Enterotoxaemia	at the age of 4 months; (if dam is vaccinated) at the age of 1st week (if dam is not vaccinated)	before Monsoon booster after 15 days of 1st vaccine
4. Black quarter (BQ)	at the age of 6 months	once annually before monsoon
5. PPR	at the age of 3 month	once in 3 years
6. FMD	at the age of 4 month	Twice in a year (sept & march)
7. Goat pox	at the age of 3 months	once annually (December)

Deworming Options: 1st – at the age of 3 months repeat at an interval of 3 months

Veterinary Care & Support Guidelines:

1. Arrangement for treatment of infected/sick animals
2. Post Disaster, Animal need to be dewormed with suitable broad spectrum anthelmintic
3. Maintenance of sanitation – disinfection of premises of temporary sheds
4. Carcass should not come in contact with healthy animals
5. Pre-mass vaccination in flood prone areas
6. Recognition of life threatening diseases
7. Collection of emergency drugs & instruments and miscellaneous supplies like gloves creasers' forceps, thermometer, tincture iodine, stethoscope, povidone iodine etc.

Goats

Technical Advice: CIRG, VERU

Veterinary Treatment:

- During disasters, an increase of stress related disease may be observed
- Animals that usually carry the disease without clinical symptoms maybe return to excreting an increased amount of disease agents and therefore increase the transmission to other animals. Animals whose immune system is impaired due to the stress experienced in disasters can start to show clinical signs.
- After proper examination of the animal tentative treatment need to be provided to them

Vaccination Schedule & Options:

DISEASE	PRIMARY	REGULAR VACCINATION
1. Anthrax	at the age of 6 months	once annually (in affected area only)
2. Haemorrhagic septicemia	at the age of 6 month	once annually before monsoon
3. Enterotoxaemia	at the age of 4 months; (if dam is vaccinated) at the age of 1st week (if dam is not vaccinated)	before Monsoon booster after 15 days of 1st vaccine

4. Black quarter (BQ)	at the age of 6 months	once annually before monsoon
5. PPR	at the age of 3 month	once in 3 years
6. FMD	at the age of 4 month	Twice in a year (sept & march)

Deworming Options: 1st – at the age of 3 months repeat at an interval of 3 months

Veterinary Care & Support Guidelines:

1. Arrangement for treatment of infected/sick animals
2. Post Disaster, Animal need to be dewormed with suitable broad-spectrum anthelmintic
3. Maintenance of sanitation – disinfection of premises of temporary sheds
4. Carcass should not come in contact with healthy animals
5. Pre-mass vaccination in flood prone areas
6. Recognition of life threatening diseases
7. Collection of emergency drugs & instruments and miscellaneous supplies like gloves creasers forceps, thermometer, tincture iodine, stethoscope, povidone iodine etc

Pigs

Technical Advice: NRCP, VERU East Zone (Assam)

Veterinary Treatment:

- During disasters an increase of stress related disease may be observed
- Animals that usually carry the disease without clinical symptoms may be return to excreting increased amount of disease agents and therefore increase the transmission to others animals. Animal whose immune system is impaired due to the stress experienced in disasters can start to show clinical signs.
- After proper examination of the animal tentative treatment need to be provided to them

Vaccination Schedule & Options:

DISEASE	PRIMARY	REGULAR VACCINATION
1. Anthrax	once in a year	once annually in a year

2. Classical swine fever	after weaning	once a year
3. FMD	at about 6months, booster- after 4months	once a year
4. Swine erysipelas	after weaning, booster- after 3 months	once a year
5. Tuberculosis	at about 6 months	once a year

Deworming Options: Piglet- after 2 weeks of weaning, repeat at an interval of 3 months

Veterinary Care & Support Guidelines:

1. Arrangement for treatment of infected/sick animals
2. Post Disaster, Animal need to be dewormed with suitable broad-spectrum anthelmintic
3. Maintenance of sanitation – disinfection of premises of temporary sheds
4. The carcass should not come in contact with healthy animals
5. Pre-mass vaccination in flood-prone areas
6. Recognition of life-threatening diseases
7. Collection of emergency drugs & instruments and miscellaneous supplies like gloves creasers forceps, thermometer, tincture iodine, stethoscope, povidone iodine etc.

Camels

Technical Advice: NRCC, VERU West Zone (Gujarat)

Veterinary Treatment: During disasters, an increase of stress related disease may be observed. Animals that usually carry the disease without clinical symptoms maybe return to excreting an increased amount of disease agents and therefore increase the transmission to others animals. Animals whose immune system is impaired due to the stress experienced in disasters can start to show clinical signs. After proper examination of the animal tentative treatment needs to be provided to them.

Vaccination Schedule & Options: Camel pox vaccine- above 4 months of age

Deworming Options: Ivermectin injected under skin/ by mouth-1-2 times a year, or other dewormers such as, fenbendazole, pyrantel-1-2 times a year

Veterinary Care & Support Guidelines:

- Arrangement for treatment of infected/sick animals
- Post Disaster, Animal need to be dewormed with suitable broad spectrum anthelmintic
- Maintenance of sanitation – disinfection of premises of temporary sheds
- Carcass should not come in contact with healthy animals
- Pre-mass vaccination in flood prone areas
- Recognition of life threatening diseases
- Collection of emergency drugs & instruments and miscellaneous supplies like gloves creaser's forceps, thermometer, tincture iodine, stethoscope, povidone iodine etc.
- Triquin injected under skin- twice a year (preventive treatment for surra)

Chicken Technical Advice: DPR, VERU	**Veterinary Treatment:** Stocking up on medicine to treat diseased birds for mycoplasma, colibacillosis, fowl cholera, salmonellosis, coryza, and other air or water borne infections. Antibiotics and anti-stress medications are often given to birds. Vaccines in required doses are kept on hand at the farm to ensure timely vaccination. **Vaccination Schedule & Options:** Commercial chicken stocks should be inoculated against ranikhet, mark's disease, infectious bursal, and fowl pox diseases depending on endemicity, according to a disease and vaccination calendar designed for this purpose. Domestic (desi) fowls are often disease-resistant and may not require vaccination. Immunity will be sufficient to combat any disease outbreak if vaccinations are administered correctly and on time. **Deworming Options:** Deworming drugs in sufficient quantities should be sent well in advance of natural disasters. To save chickens from a severe worm burden, they must be adequately dewormed.

	Veterinary Care & Support Guidelines: Chicken should be examined for injuries and chemical exposure, and if necessary, a veterinarian should be consulted. A veterinarian should examine any bird that exhibits signs of lethargy, loss of appetite, depression, or injury. Depending on the condition of the birds, their age, and their production status, they are treated with a variety of medicines. As a precaution, disinfectants, lime powder, and bleaching powder should be brought in well before natural disasters strike.
Ducks Technical Advice: DPR, VERU	**Veterinary Treatment:** Ducks are tougher than chickens and are more resistant to avian disease. Stocking up on medicine to treat duck cholera, botulism, parasites, and aflatoxicosis in infected birds. Antibiotics, Epsom salt, anti-mycotic medicines, anti-stress medicines, and other medications are administered to commercial ducks. To guarantee timely vaccination, the farm has vaccines in appropriate doses on hand. **Vaccination Schedule & Options:** According to a disease and vaccination calendar created for this purpose, commercial duck stocks should be immunised against duck plague, duck cholera, and duck viral hepatitis, depending on endemicity. Domestic ducks (desi) are frequently disease-resistant and may not require vaccination. If vaccinations are given correctly and on time, immunity will be adequate to combat any disease outbreak. **Deworming Options:** Deworming medications should be sent in sufficient amounts well in advance of natural disasters. Ducks must be effectively dewormed to save them from a severe worm infestation. **Veterinary Care & Support Guidelines:** Ducks should be checked for injuries and chemical exposure, and a veterinarian should be called if necessary. Any duck that shows signs of lethargy, loss of appetite, dullness, depression, or injury should be examined by a veterinarian. A variety of treatments are used to treat the birds, depending on their condition, age, and production status. Disinfectants, lime powder, and bleaching powder should be brought in ahead of time as a precaution before natural calamities strike.
Turkeys	**Veterinary Treatment:** Stocking up on medicine to treat diseased birds for fowl cholera, erysipelas, Pullorum, turkey

Technical Advice: DPR, VERU	coryza, mycoplasmosis, histomoniasis, coccidiosis and other air or water borne infections. Antibiotics, anti-coccidial etc. are often given to birds. Vaccines in required doses are kept on hand at the farm to ensure timely vaccination. **Vaccination Schedule & Options:** Commercial turkey stocks should be inoculated against ranikhet, infectious bursal, fowl pox, cholera etc. Depending on endemicity, according to a disease and vaccination calendar designed for this purpose. Immunity will be sufficient to combat any disease outbreak if vaccinations are administered correctly and on time. **Deworming Options:** Deworming drugs in sufficient quantities should be sent well in advance of natural disasters. To save chickens from a severe worm burden, they must be adequately dewormed. **Veterinary Care & Support Guidelines:** Turkey should be examined for injuries and chemical exposure, and if necessary, a Veterinarian should be consulted. A veterinarian should examine any bird that exhibits signs of lethargy, loss of appetite, depression, or injury. Depending on the condition of the birds, their age, and their production status, they are treated with a variety of medicines. As a precaution, disinfectants, lime powder, and bleaching powder should be brought in well before natural disasters strike.

Emergency Animal Shelter & Settlements

Shelters protect animals from extreme weathers or any physical damages to animal housing. In addition, any crisis that results in displacement of people and their animals will result in the need to provide housing or shelter for both people and their livestock. Livestock shelters can be defined as the physical structures that animals need to survive, protecting them from weather, predation, and/or theft, and can be either temporary or permanent. In extreme climates, even basic livestock shelters provide an environment that reduces discomfort and the impact of the extreme climates. Young animals are especially sensitive to rain, humidity and cold during the night, and this can cause high mortality. Assessment of livestock shelter needs can be carried out as part of broader assessments of shelter requirement and planned accordingly by considering the type of disaster, species specific needs, local lifestyle, culture and practice.

Livestock & Poultry	Recommended Guidelines

Cattle Technical Advice: CIRC, VERU, NDDB, NDRI	**Minimum Space Requirement:** 3.5 m2/cow; 2.5m2/heifer; 1m2/calf **Temporary Shelter Options:** 30 cows &heifers/pen; 15 calves /pen **Permanent Shelter Options:**7m2 open area for cows & heifers and 4m2 for calves **Shelter & Settlement Guidelines:** 60-70 cm feeding and watering space per animal; 6000-7500cm length of manger for 100 animals; 600-750 com water trough length /100 animals **For calves:** 40-50cm feeding and watering space per animal; 4000-5000 cm length of manger for 100 animals; 400-500 com water trough length /100 animals
Buffaloes Technical Advice: CIRB, VERU, NDDB, NDRI	**Minimum Space Requirement:** 3.5 m2/buffalo; 2.5m2/heifer; 1m2/calf **Temporary Shelter Options:** 30 cows &heifers/pen; 15 calves /pen **Permanent Shelter Options:** 7m2 open area for cows & heifers and 4m2 for calves **Shelter & Settlement Guidelines:** 60-70 cm feeding and watering space per animal; 6000-7500cm length of manger for 100 animals; 600-750 com water trough length /100 animals **For calves:** 40-50cm feeding and watering space per animal; 4000-5000 cm length of manger for 100 animals; 400-500 com water trough length /100 animals.
Mithuns Technical Advice: NRCM, VERU East Zone (Assam)	**Minimum Space Requirement:** The space requirement for Mithun is similar with cattle and buffalo and same can be adopted viz. ▪ Enclosed Housing Area/ Animal = 75-100 sq. ft. ▪ Exercise Yard Area / Animal = 100-125 sq. ft. ▪ Pasture Area/Animal = 1-2 acres ▪ Type of Housing and Boundary Setback =. Open front 3-sided barn. Setback 50 ft. ▪ Fencing = Barbed wire, Electric Woven wire

Temporary Shelter Options: Bamboo fencing, tarpaulin sheath as roof material

Permanent Shelter Options: Concrete structure similar with cattle or Buffalo farm. Traditionally rearing of mithun in Porba village has a unique system called 'Razübo' means "Demarcation of an area of forest for mithun". In this practice, mithun are kept in different pockets of the community forest. It may be considered as semi-domestication. In this system the village community designates particular forest areas which are not fixed and varies in size and shape. These habitats are characterized by presence of streams, ponds and lakes. The fencing of the designated area is done by the mithun farmers using Stone, woods, trees, bamboo and other locally available materials. Aruku Dazo Vadeo et al (2018)

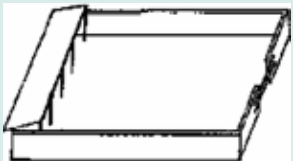
Shelter & Settlement Guidelines:

Mostly farmers rear Mithun under free-grazing condition in the forest area without any additional housing or feeding facilities. Farmers bring back the female Mithun just before parturition and send it back to the forest following parturition. However, it is suggested that even under a free-range system, a temporary housing structure using locally available materials can be constructed in some strategic locations in the Mithun rearing area. If farmers opt for semi-intensive system of rearing they should go for housing structures with feeding and watering provisions and they can also tie the animals at night once they come back from the forest after grazing. The supervision of individual animals, additional feeding, watering and medication can be done there in late evening or early morning. Mohan Mondal et al. (2014)

Yaks

Technical Advice: NRCY, VERU East Zone (Assam)

Minimum Space Requirement: Yak use to move along with Brukpas from one location to other depending upon the weather, availability of the browsing grass etc. The structure prepared is temporary since the herdsmen are pastoralist. Construction of Mud pen having area is 15 x 15 m, wall 1 - 1.2 m high can accommodate 15 to 20 large size yak. The size can be increased depending on no of yaks.



Temporary Shelter Options: Faeces pen: Useful during cold season. Recent yak faeces are adhered or piled up near the side walls in a layer of about 15 - 20 cm deep every day. The first layer freezes solid overnight and the second layer is added.

Turf pen: To build pens with turf, Brukpas usually select a position on the winter pastures that faces the sun and can avoid wind. The height of the turf walls is 60 cm. The structure is semi-permanent but needs to be repaired each year and can shelter to pack yak and some bulls.

Wooden compound (or corral): Difficult to procure in high altitude, however such structures are attempted.

Permanent Shelter Options: Concrete structure similar with cattle farm can be adopted as permanent structure. Infect the area can be reduced as compare to cattle farm located in sea level. Moreover, wooden enclosures are also incorporated with often only an adjunct to a mud pen and within its perimeter. The wooden enclosure may be roofed or not. In the alpine areas, wood is more abundant and the compound may be built independently. The structure is of small wooden bars and provision is made for holding hay. During the warm season, these wooden enclosures are used to keep the calves isolated from their dams at night, while the adults graze in preparation for milking the following morning

Shelter & Settlement Guidelines: Since yak can tolerate extreme cold weather, hence much effort may not be necessary. However, yak farming can be attempted following the guidelines of housing, sanitation, ventilation, water facility etc and with other amenities.

Horses

Technical Advice: NRCE, Brooke India, DSWA, VERU North Zone (Himachal Pradesh)

Minimum Space Requirement: Ideally horses like to move around in fresh air and interact with other horses. They can be provided with open space along with shelter. The space should be large enough so that an animal can lie down, get up and turn around easily. In the resource poor setting, a thumb rule suggests an average adult horse requires at least 10'x 12' space.

Temporary Shelter Options: The aim is to protect a horse from extreme weather conditions and predators. Wherever possible animals should be allowed to stand in shade either in temporary shelter or under trees. Such shelters should have

cross-ventilations, proper height and be free from any sharp materials, equipment's. The horses should not be kept along with other species. The pregnant and non-pregnant horses should be kept separately.

Permanent Shelter Options: Such shelters should provide effective protection from extreme weather conditions, predators and injuries. They should have adequate cross-ventilations. The floor should be clean, dry and large enough to lie down, get up and turn around easily. Such enclosures should be free of sharp edges and protrusions which may cause injuries.

Shelter & Settlement Guidelines: Shelter should have open space with shade. Shelters should have proper height with good ventilation. The effective shelter is required to protect horses from extreme weather, predators and injuries. The floor should be clean, dry and large enough so that a horse can lie down, get up and turn around easily. Other species should not be kept along with horses. Do not hobble or chained horses closely. Such shelters should have potable water facilities and horses should have free access to the water. Do not keep any sharp object or equipment in or near the shelters as they may cause injury to the animals.

Mules

Technical Advice: NRCE, Brooke India, DSWA, VERU North Zone (Himachal Pradesh)

Minimum Space Requirement: Always allow a mule to share a stable with their companions. Approximate 10 square meter space is required for an average size of 2 mules.

Temporary Shelter Options: The aim is to protect animals from extreme weather conditions and predators. Wherever possible animals should be allowed to stand in shade either in temporary shelter or under trees. Such shelters should have cross-ventilations, proper height and be free from any sharp materials, equipment's. The mule should not be kept along with other species.

Permanent Shelter Options: Such shelters should provide effective protection from extreme weather conditions, predators and injuries. They should have adequate cross-ventilations. The floor should be clean, dry and large enough to lie down, get up and turn around easily. Such enclosures should be free of sharp edges and protrusions which may cause injuries.

Shelter & Settlement Guidelines: Shelter should have open space with shade. Shelters should have proper height with good ventilation. The effective shelter is required to protect mules from extreme weather, predators and injuries. The floor should be clean, dry and large enough so that a mule can lie down, get up and turn around easily. Other species should not be kept along with mules. Do not hobble or chained mules closely. Such shelters should have potable water facilities and mules should have free access to the water. Do not keep any sharp object or equipment in or near the shelters as they may cause injury to the animals.

Donkeys

Technical Advice: NRCE, Brooke India, DSWA, VERU North Zone (Himachal Pradesh)

Minimum Space Requirement: Always allow a donkey to share a stable with their companion. An individual donkey required 4.5 square meter space, whereas for two companions the requirement will be double (9 square meter).

Temporary Shelter Options: The aim is to protect animals from extreme weather conditions and predators. Wherever possible animals should be allowed to stand in shade either in temporary shelter or under trees. Such shelters should have cross-ventilations, proper height and be free from any sharp materials, equipment's. The donkey should not be kept along with other species. The pregnant and non-pregnant donkey should be kept separately.

Permanent Shelter Options: Such shelters should provide effective protection from extreme weather conditions, predators and injuries. They should have adequate cross-ventilations. The floor should be clean, dry and large enough to lie down, get up and turn around easily. Such enclosures should be free of sharp edges and protrusions which may cause injuries.

Shelter & Settlement Guidelines: Shelter should have open space with shade. Shelters should have proper height with good ventilation. The effective shelter is required to protect donkeys from extreme weather, predators and injuries. The floor should be clean, dry and large enough so that a horse can lie down, get up and turn around easily. Other species should not be kept along with donkeys. Do not hobble or chained donkeys closely. Such shelters should have potable water facilities and donkeys should have free access to the water. Do not keep any sharp object or equipment in or near the shelters as they may cause injury to the animals.

Sheep Technical Advice: CSWRI, VERU	**Minimum Space Requirement:** ▪ Enclosed house area/Animal = 20-25 sq. ft. ▪ Exercise yard area/Animal = 50 sq. ft. ▪ Pasture area/Animal = 0.2-0.3 acres ▪ Type of housing and boundary setback – Enclosed barn with removable side panels or windows, setback 50 ft. ▪ Fencing – electric woven wire Temporary Shelter Options & Permanent Shelter Options: Availability of pasture area or open land (at least one acre of open space) **Shelter & Settlement Guidelines:** Some of the important consideration for setting up animal shelters is as follows; ▪ Animals – Different animal species, Animal identification, feed, water, veterinary service etc. ▪ Location – Safe from further risk, accessibility for animals & owners, maintenance and waste management ▪ Operation procedures – Human resources required, shelter design blueprint, Registers and records Basics of Animal housing – 1. Containment – Fencing, pans, stalls check for sharp objects, spacing 2. Shelter – Wind breaks, ventilation 3. Temperature – Shade, fan, warmth 4. Bedding
Goats Technical Advice: CIRG, VERU	**Minimum Space Requirement:** ▪ Enclosed house areas/Animal = 20-25 sq.ft ▪ Exercise yard area/Animal = 50 sq.ft ▪ Pasture area/Animal = 0.2-0.3 acres ▪ Type of housing and boundary setback – Enclosed burn with removable site panels or windows, setback 50 ft. ▪ Fencing – electric woven wire Temporary Shelter and Permanent Shelter Options: Availability of pasture area or open land for grazing (at least one acre of open space)

Shelter & Settlement Guidelines:

Some of the important consideration for setting up animal shelters is as follows

Animals – Different animal species, Animal identification, feed, water, veterinary service etc

Location – Safe from further risk, accessibility for animals & owners, maintenance and waste management

Operation procedures – Human resources required, shelter design blueprint, Registers and records

Basics of Animal housing –

- Containment – Fencing, pans, stalls check for sharp objects, spacing
- Shelter – Wind breaks, ventilation
- Temperature – Shade, fan, warmth
- Bedding

Pigs

Technical Advice: NRCP, VERU East Zone (Assam)

Minimum Space Requirement:

- Enclosed house areas/Animal = 48 sq. ft. with exercise yard; 100 sq. ft. without exercise yard
- Exercise yard area/Animal = 200 sq. ft.
- Pasture area/Animal = 12-14 sows/ acre/rotational pasture
- Type of housing and boundary setback – Enclosed barn, huts, sheds, hutches or lean to setback 50 ft.
- Fencing – electric plank rail

Temporary & Permanent Shelter Options: Availability of pasture area or open land (at least one acre of open space)

Shelter & Settlement Guidelines:

Some of the important consideration for setting up animal shelters is as follows

Animals – Different animal species, Animal identification, feed, water, veterinary service etc.

Location – Safe from further risk, accessibility for animals & owners, maintenance and waste management

Operation procedures – Human resources required, shelter design blueprint, Registers and records

Basics of Animal housing –

1. Containment – Fencing, pans, stalls check for sharp objects, spacing
2. Shelter – Windbreaks, ventilation
3. Temperature – Shade, fan, warmth
4. Bedding

Camels

Technical Advice: NRCC, VERU West Zone (Gujarat)

Minimum Space Requirement:

No of camels	Space required	Minimum width
1	100 m2	6 m
For every additional camel	50 m2	6 m

Temporary/Permanent Shelter Options: Availability of pasture area or open land (at least one acre of open space)

Shelter & Settlement Guidelines: Some of the important consideration for setting up animal shelters is as follows;

- Animals – Different animal species, Animal identification, feed, water, veterinary service etc.
- Location – Safe from further risk, accessibility for animals & owners, maintenance and waste management
- Operation procedures – Human resources required, shelter design blueprint, Registers and records

Basics of Animal housing –

i. Containment – Fencing, pans, stalls check for sharp objects, spacing
ii. Shelter – Windbreaks, ventilation
iii. Temperature – Shade, fan, warmth
iv. Bedding

Chicken

Technical Advice: DPR, VERU

Minimum Space Requirement: The amount of space given to the chicken is determined by its age and utility. One broiler bird is usually given 1.2 square foot of floor space under deep litter. When birds are maintained in cages, the hen is provided a minimum of 0.6 square feet of floor space.

Temporary Shelter Options: In the event that the running sheds are damaged by cyclones, extra sheds should be

available. In an emergency, more feeders and water pots are also required. Feed trolleys, feeding cages, and crates for in-time bird evacuation during major damage to the running shed should be well arranged.

Permanent Shelter Options: Drawing up a primary plan to use in the event of a natural disaster, which is always accompanied by a fall back plan in case the primary plan fails. In the event that a running shed is damaged, proper and safe evacuation of poultry birds in crates and cages to replacement sheds is required. Watering and feeding facilities have been installed in the new shelters.

Shelter & Settlement Guidelines: To reduce rain water splashing, poultry shelters should be inspected for any leaks or breaks. Farms should have enough carriers to evacuate all of their birds in the event of an emergency. If the birds are relocated to new circumstances, they should not be quickly released from their cages, as they may become terrified and flee. Keeping the birds warm can help them feel less stressed. Construction and rehabilitation of sheds that have been damaged. In the aftermath of cyclones, electric lines and polls must be repaired to ensure that electricity is delivered on schedule. Welded wire mesh in sheds is checked, and adequate farm perimeter fencing is restored.

Ducks

Technical Advice: DPR, VERU

Minimum Space Requirement: The age and utility of the duck's influence how much space they are allocated. Adult meat and egg ducks are typically allowed 3600 and 3200cm2 of floor space, respectively.

Temporary Shelter Options: Extra sheds is needed in the event that the running sheds are damaged by cyclones. More feeders and water pots are also required in an emergency. Feed trolleys, feeding cages, and bamboo baskets for immediate bird evacuation in the event of significant damage to the running shed should all be well-stocked.

Permanent Shelter Options: Creating a primary plan to utilise in the event of a natural disaster, along with a backup plan in case the original plan fails. In the event that a running shed is damaged, ducks must be safely evacuated to new sheds. The new shelters have been outfitted with watering and feeding stations.

Shelter & Settlement Guidelines: Duck shelters should be inspected for any leaks or cracks to avoid rain water splashing.

In the event of an emergency, farms should have enough carriers to transport all of the ducks. The ducks should not be rapidly released from their bamboo baskets if they are being transported to unfamiliar surroundings, since they may become afraid and flee. Maintaining a warm environment for the ducks can make them feel less anxious. Electric lines and polls must be restored in the aftermath of cyclones to ensure that electricity is delivered on time. Welded wire mesh in sheds is inspected, and proper farm perimeter fencing is reinstalled. Damaged shed construction and restoration.

Turkeys

Technical Advice: DPR, VERU

Minimum Space Requirement: The amount of space given to the turkey is determined by its age and utility. One adult turkey hen usually provided with 4 square feet of floor space under deep litter. Whereas turkey tom will be proved with 5 square feet of floor space.

Temporary Shelter Options: In the event that the running sheds are damaged by cyclones, extra sheds should be available. In an emergency, more feeders and water pots are also required. Feed trolleys, feeding cages, and crates for in-time bird evacuation during major damage to the running shed should be well arranged.

Permanent Shelter Options: Drawing up a primary plan to use in the event of a natural disaster, this is always accompanied by a fall back plan in case the primary plan fails. In the event that a running shed is damaged, proper and safe evacuation of turkey birds in crates and cages to replacement sheds is required. Watering and feeding facilities have been installed in the new shelters.

Shelter & Settlement Guidelines: To reduce rain water splashing, turkey shelters should be inspected for any leaks or breaks. Farms should have enough carriers to evacuate all of their turkey birds in the event of an emergency. If the birds are relocated to new circumstances, they should not be quickly released from the cages, as they may become terrified and flee. Keeping the birds warm can help them feel less stressed. Construction and rehabilitation of sheds that have been damaged. In the aftermath of cyclones, electric lines and polls must be repaired to ensure that electricity is delivered on schedule. Welded wire mesh in sheds is checked, and adequate farm perimeter fencing is restored.

Destocking & Restocking in Emergencies

For many of the world's most vulnerable rural families, Livestock may be one of the few, or indeed the only asset they own. It is common for households affected by disaster to lose part or all of their livestock, which can seriously threaten their livelihoods and food security. Small stock that survive rapid-onset emergencies are often consumed or sold in the immediate post-disaster phase, when food reserves are low and external supply has not yet reached affected communities. Such loss of livestock can result in depletion of household assets, income and food, which in turn can lead to poverty and, in some cases, destitution. Provision of livestock covers a number of scenarios in which households are given animals to replace - usually partially - those that they lost in a disaster. The objective is to help them rebuild their assets, or to build new livestock assets as a means to secure their household livelihoods. Providing smallholders or displaced families with livestock supports their livelihoods in several ways since they can use the animals as a source of income, food or transport. Sick animals or carcasses can also constitute a public health hazard without a functioning veterinary service following any disaster.

Livestock & Poultry	Recommended Guidelines
Cattle Technical Advice: CIRC, VERU, NDDB, NDRI	**Destocking Options:** Purchases by local livestock traders with support price from Disaster Relief Agencies **Carcass Disposal Methods:** Deep burial with application of lime stone powder and salt. **Restocking Options:** Avoid organisation of cattle fairs for purchase rather small groups of animals can be brought for sale. Proper vaccination must be ensured. **Destocking & Restocking Guidelines:** Proper vaccination must be ensured. Quarantine of new animals must be provided in makeshift facilities.
Buffaloes Technical Advice: CIRB, VERU, NDDB, NDRI	**Destocking Options:** Purchases by local livestock traders with support price from Disaster Relief Agencies **Carcass Disposal Methods:** Deep burial with application of lime stone powder and salt. **Restocking Options:** Avoid organisation of cattle fairs for purchase rather small groups of animals can be brought for sale. Proper vaccination must be ensured. **Destocking & Restocking Guidelines:** Proper vaccination must be ensured. Quarantine of new animals must be provided in makeshift facilities. **Destocking Options:** Not possible since it is a pride animal for the community.

	Carcass Disposal Methods: Deep burial, landfill, incineration or combustion, rendering, composting (see Box 20-2), and alkaline hydrolysis (chemical digestion) are the common methods however, deep burial is most preferred. **Restocking Options:** it is pride animal of Arunachal, Nagaland, Manipur and Mizoram, very difficult to restock for each family. But in recent times NRCM has done splendid performance to restore the population. **Destocking & Restocking Guidelines:** Depends upon the disaster and the livelihood status of the family over there will decide the destocking and restocking. However, this guideline will be decided based on the economic status of that area.
Yaks Technical Advice: NRCY, VERU East Zone (Assam)	**Destocking Options:** Not possible since it is pride animal of the Brukpas. **Carcass Disposal Methods:** Deep burial, landfill, incineration or combustion, rendering, composting (see Box 20-2), and alkaline hydrolysis (chemical digestion) are the common methods however, deep burial is most preferred. **Restocking Options:** it is pride animal of Nagaland, very difficult to restock for each family. However, it is possible with policy breeding and by increasing the productivity in farm system. **Destocking & Restocking Guidelines:** Depends upon the disaster and the livelihood status of the family over there will decide the destocking and restocking. However, this guideline will be decided based on the economic status of that area.
Horses Technical Advice: NRCE, Brooke India, DSWA, VERU North Zone (Himachal Pradesh)	**Destocking Options:** Most equid owning families possess only own one or two working equids and therefore slaughter destocking would be an inappropriate response removing this livelihood asset. Commercial destocking (sale) could be considered but only if they have alternative sources for transport, water carriage etc. and income generation. **Carcass Disposal Methods:** For untreatable cases, Euthanasia should be carried out by a qualified veterinarian as per the standard procedures. Avoid animals being transported or relocated live before euthanasia. Ensure that the animal is completely deceased then only shift or relocate at the burial site. The burial site should not be near the water sources, flood prone and residential areas. The size and depth of a burial pit should be 8'x 8'x 8'. Slowly put an animal into the trench or pit and sprinkle the lime and common salt on the animal's body prior to being covered with soil. At the end, fence the area or cover the top of the burial site with thorn bush to prevent exhumation by wild animals or dogs. **Restocking Options:** It is difficult to restock for each family, but possible through policy breeding

	Destocking & Restocking Guidelines: It depends on the livelihood status of the family.
Mules Technical Advice: NRCE, Brooke India, DSWA, VERU North Zone (Himachal Pradesh)	**Destocking Options:** Most equid owning families possess only own one or two working equids and therefore slaughter destocking would be an inappropriate response removing this livelihood asset. Commercial destocking (sale) could be considered but only if they have alternative sources for transport, water carriage etc. and income generation. **Carcass Disposal Methods:** The procedure is same as in horses, but remember mules are 'pair bond', therefore do not separate their companions while carrying out euthanasia procedures. Allow their companion animal to spend at least one hour with the deceased body. This will help to prevent certain behaviour problems and stress in the surviving companions. **Restocking Options:** Same as horses **Destocking & Restocking Guidelines:** Same as horses
Donkeys Technical Advice: NRCE, Brooke India, DSWA, VERU North Zone (Himachal Pradesh)	**Destocking Options:** Same as horses **Carcass Disposal Methods:** The procedure is same as in horses, but remember donkeys are 'pair bond', therefore do not separate their companions while carrying out euthanasia procedures. Allow their companion animal to spend at least one hour with the deceased body. This will help to prevent certain behaviour problems and stress in the surviving companions. **Restocking Options:** Same as horses **Destocking & Restocking Guidelines:** Same as horses
Sheep Technical Advice: CSWRI, VERU	**Destocking Options:** *No such specific guidelines or information available/could be found* **Carcass Disposal Methods:** ▪ **Burial:** Burial pit should be at least 2.3 meters wide and 3 meters deep (7× 9 ft.). At this depth, 1.3 m2 (15 ft2) of floor space will accommodate 5 mature sheep. ▪ **Burning:** To prepare the fire bed, an area of ground should be staked out to accommodate the number of carcasses to be burned; 8×3 ft for 5 mature sheep. **Restocking Options:** No such specific guidelines or information available/could be found **Destocking & Restocking Guidelines:** *No such specific guidelines or information available/could be found* **Destocking Options:** *No such specific guidelines or information available/could be found*

Goats Technical Advice: CIRG, VERU	**Carcass Disposal Methods:** ▪ Burial: Burial pit should be at least 2.3 meters wide and 3 meters deep (7× 9 ft.). At this depth, 1.3 m2 (15 ft.2) of floor space will accommodate 5 mature goats. ▪ Burning: To prepare the fire bed, an area of ground should be staked out to accommodate the number of carcasses to be burned; 8×3 ft. for 5 mature goats. **Restocking Options:** *No such specific guidelines or information available/could be found* **Destocking & Restocking Guidelines:** *No such specific guidelines or information available/could be found*
Pigs Technical Advice: NRCP, VERU East Zone (Assam)	**Destocking Options:** *No such specific guidelines or information available/could be found* **Carcass Disposal Methods:** ▪ **Burial** – Burial pit should be at least 2.3 meters wide and 3 meters deep (7× 9 ft.). At this depth, 1.3 m2 (15 ft.2) of floor space will accommodate 5 mature pigs. ▪ **Burning** – To prepare the fire bed, an area of ground should be staked out to accommodate the number of carcasses to be burned; 8×3 ft. for 5 mature pigs. **Restocking Options:** *No such specific guidelines or information available/could be found* **Destocking & Restocking Guidelines:** *No such specific guidelines or information available/could be found*
Camels Technical Advice: NRCC, VERU West Zone (Gujarat)	**Destocking Options:** *No such specific guidelines or information available/could be found* **Carcass Disposal Methods:** Burial and burning **Restocking Options:** *No such specific guidelines or information available/could be found* **Destocking & Restocking Guidelines:** *No such specific guidelines or information available/could be found*
Chicken Technical Advice: DPR, VERU	**Destocking Options:** In the event of a forewarning, relocate the birds to a safer location. It is preferable to begin culling weak birds and strive to keep only healthier birds on the farm. In the event of an outbreak of avian influenza (bird flu), we must destock all of the farm's birds. Following an epidemic of avian influenza, take precautions such as restricting people's, vehicles', and equipment's movement away from contaminated areas. Remove all diseased and in-contact birds from the population. **Carcass Disposal Methods:** Environmental contamination can be avoided by properly and timely disposing of carcasses in a scientific manner. Dead birds are disposed of via fire or

	deep burial in a pit with lime powder. The incinerator should be placed to the south of the poultry houses and away from the populated areas. Checking disposal pits for any leaking or digging by wild animals or dogs, which will result in contamination after a month of heavy rain. Covered the carcasses with a layer of calcium hydroxide, followed by a layer of soil, in case an outbreak of avian influenza happens. The burial pit must be clearly marked and not opened for at least five years. **Restocking Options:** Restocking will take place under tight bio-security conditions. **Destocking & Restocking Guidelines:** Birds should be protected from illness outbreaks and communicable diseases, as well as parasitic disorders. After the preparation, give at least 14 days of down time or rest. Ensure that there is enough water and feed, as well as feeders and drinkers in sufficient numbers.
Ducks Technical Advice: DPR, VERU	**Destocking Options:** Relocate the birds to a safer place if a forewarning is sent. Starting removing weak birds and attempting to keep just healthier birds on the farm is ideal. We must destock all of the farm's ducks in the event of an avian influenza (bird flu) epidemic. Take safeguards such as restricting people's, vehicles', and equipment's movement away from hazardous locations after an avian influenza outbreak. All unhealthy and in-contact birds should be removed from the population. Ducks have produced the most viruses of any poultry species, although they do not cause clinical disease. **Carcass Disposal Methods:** By carefully and timely disposing of carcasses in a scientific manner, contamination of the environment can be prevented. Ducks that have died are burned or buried in a pit with lime powder. The incinerator should be located south of the poultry houses, away from any populated areas. Examining disposal pits for any leaks or digging by wild animals or dogs, this could lead to pollution after a month of heavy rain. In the event of an avian influenza outbreak, the carcasses were covered with a layer of calcium hydroxide, followed by a layer of dirt. The burial pit must be carefully identified and sealed for at least five years before being opened. **Restocking Options:** Restocking will take place under tight bio-security conditions. **Destocking & Restocking Guidelines:** Ducks should be protected from illness, outbreaks and communicable diseases, as well as parasitic disorders. Allow at least 14 days of downtime or rest after the preparation. Make sure there's plenty of water and feed, as well as feeders and drinkers in suitable numbers.

Turkeys Technical Advice: DPR, VERU	**Destocking Options:** In the event of a forewarning, relocate the birds to a safer location. It is preferable to begin culling weak turkey birds and strive to keep only healthier turkey on the farm. In the event of an outbreak of avian influenza (bird flu), we must destock all of the farm's birds. Following an epidemic of avian influenza, take precautions such as restricting people's, vehicles', and equipment's movement away from contaminated areas. Remove all diseased and in-contact birds from the population. **Carcass Disposal Methods:** Environmental contamination can be avoided by properly and timely disposing of carcasses in a scientific manner. Dead birds are disposed of via fire or deep burial in a pit with lime powder. The incinerator should be placed to the south of the poultry houses and away from the populated areas. Checking disposal pits for any leaking or digging by wild animals or dogs, which will result in contamination after a month of heavy rain? Covered the carcasses with a layer of calcium hydroxide, followed by a layer of soil, in case an outbreak of avian influenza happens. The burial pit must be clearly marked and not opened for at least five years. **Restocking Options:** Restocking will take place under tight bio-security conditions. **Destocking & Restocking Guidelines:** Turkey birds should be protected from illness outbreaks and communicable diseases, as well as parasitic disorders. After the preparation, give at least 14 days of down time or rest. Ensure that there is enough water and feed, as well as feeders and drinkers in sufficient numbers.

Other Emergency Technical Interventions

Cash Transfers and Vouchers is an alternative to in-kind assistance partly due to a growing appreciation of the needs and wishes of recipients. In this respect, the advantages of cash transfers and vouchers are clear. Cash, and to lesser extent vouchers, enable people to decide for themselves what their most pressing needs are, and what goods/services they wish to purchase in local markets. This means that there is a shift of power from the implementing agency to the beneficiaries. With cash and vouchers, recipients have far more control over how the transfers are used. By shifting the power of choice to beneficiaries, cash-based transfers can give recipients a sense of dignity in situations where they are dependent on external assistance.

Role of Stakeholders – Before, During & After Emergencies

Role of Stakeholders Before, During & After Emergencies

STAKEHOLDERS	BEFORE DISASTER	DURING DISASTER	AFTER DISASTER
Department of Animal Husbandry & Dairying (DAHD - National/ State/ District)	**Early Warning:** Alert States/UTs to take steps as per the DM Plan. It should follow the participatory approach. **Vulnerability Mapping:** Assess risks and develop control strategies with updated animal population profiles. **Animal Identification and Resource Mapping:** Identify and map resources required for the rescue, and treatment of animals. All animals will be physically and digitally identified on an interactive virtual database. **Prevention:** Organize drives to vaccinate and de-worm livestock and poultry population. **Preparedness:** Identify sites for animal camps, advise States/UTs on Feed and Water arrangements, including identification of sites for carcass disposal. Impart awareness and training for staff, stakeholders and communities. Inventory management for recording the machinery, assets and human resource available.	**Public Service Announcements (PSA):** Regularly issue species-specific, disaster specific and region-specific audio and video PSAs to protect animals. **Animal Rescue:** Rescue stranded animals along with NDRF, SDRF and VERU in coordination with SDMAs and DDMAs. **Emergency Services:** Take stock of States/ UT's emergency feed, water, shelter, and vet care services. **Animal Production:** Manage demand and supply of animal products (milk, egg, etc.) including animal wastes. **Coordination:** Coordinate with veterinary & humanitarian stakeholders for strengthening biosecurity. NADRES/ NCDC/ NIVEDI/ IVRI/ ICAR/ etc. **Information Sharing:** Correct information sharing amongst all the stakeholders is very important.	**Impact Assessment:** Assess the disaster's impact on animals and the impact of the intervention for improvement. **Disease Surveillance:** Regularly assess surveillance and disease control measures to strengthen animal health emergency preparedness. **Carcass Disposal:** Coordinate with stakeholders for the safe disposal of carcasses. **Restocking:** In coordination with States/UTs plan restocking of animals with adequate training and biosafety protocols. **Research:** Coordinate with veterinary universities and research institutions on disaster-resilient animal husbandry strategies. **Rehabilitation:** Provide monetary assistance to restart some alternate livelihoods such as duck farming etc. in flooded areas.
	Before Disaster	**During Disaster**	**After Disaster**
Animal Protection Organizations (INGO, NGO, SPCA, PFA, etc.)	**Animal Protection Strategies:** Develop and strengthen species specific animal protection strategies and frameworks to be both locally and globally relevant.	**Assessments:** Conduct detailed assessments on the disaster's impact on animals and share with government, humanitarian agencies, and coordination bodies for addressing the gaps, issues, and local animal welfare needs.	**Experience Sharing:** Share experiences of protecting and managing animals from disasters in coordination with other animal protection organizations, government, coordination bodies, and other humanitarian agencies.

	Preparedness: Promote a culture of preparedness among animal owners, pastoralists, herders, nomads, and communities vulnerable to disasters through IEC (Information, Education and Communication) programmes.	**Coordinated Response Interventions:** Coordinate with government, humanitarian organizations and local communities for rescuing and protecting the vulnerable animals, people and communities. Avoid duplication of efforts.	**Research and Documentation:** Conduct species specific research studies on identified gap areas. Document and share the learnings, and experiences for promoting and replicating best practices in protection of animals from disasters.
	Before Disaster	**During Disaster**	**After Disaster**
Central & State Veterinary Universities/ Public Health & Research Institutions (VCI, IVRI, NIVEDI, NIHSAD, NDDB, NDRI, CIRB, CSWRI, CIRC, CIRG, NCDC, SSB, NIBSM, NRCM, NRCY, NRCC, NRCE, DPR, NRCP, etc.)	**Strengthen Institutional Capacities:** Establish and strengthen Veterinary Emergency Response Units (VERU) in all veterinary institutes with adequate training and resources (staff, funds, equipment, etc.) **Business Continuity:** Prepare business continuity/contingency plans for coping with emergencies to ensure safety of the institute (staff, animals, assets). Annually organize mock drills/ simulation exercises to test effectiveness of the business continuity/ contingency plans.	**Emergency Response:** Activate VERUs and implement the veterinary emergency response operations for assessing and ensuring safety of the institute (staff, animals, assets). Implement measures for ensuring business continuity. **Coordinated Interventions:** Coordinate with government, humanitarian organizations and local communities for rescuing and protecting nearby vulnerable animals from disasters. Also strengthen the disease surveillance and biosecurity measures in the institute and immediately report any potential diseases.	**Education & Research Programmes:** Improve and strengthen the institute's strategies for education and research related programmes especially in dealing with emergencies. Adopt alternate mode of education/research. **Research and Publications:** Conduct specialized research studies and develop publications on measures to manage animal welfare needs during emergencies and in different phases of disaster (floods, droughts, earthquakes, biological disasters, etc.)
	Before Disaster	**During Disaster**	**After Disaster**
Disaster Management Authorities (NDMA, SDMA, DDMA)	**DM Policies/Guidelines:** Integrate animals into the existing disaster management related policies, guidelines, and programmes. **Animal DM Plans:** Support the Department of Animal Husbandry in preparing and annually updating the Animal Disaster Management Plans at National, State and Districts with adequate resources. **Executive Committee:** Include Department	**Emergency Meetings:** Organize emergency meetings and devise strategies with adequate resources to protect both people and animals from disasters. **PSA Messages:** Disseminate Public Service Announcement (PSA) messages through several communication channels for timely meaningful actions. **Technical Guidance:** Regularly provide technical guidance to the	**Disaster Relief Provisions:** Facilitate timely actions in disbursement of the disaster relief provisions to the affected communities with clearly defined processes in place to benefit both people and animals. **Update SOPs:** Based on earlier disaster experiences develop and update Standard Operating Procedures (SOP) for dealing with several technical issues on managing animals

	of Animal Husbandry representatives as members in the National, State and District Executive Committees.	public, animal owners and stakeholders to ensure safety of both people and animals.	in disasters. (Carcass disposal, biological disasters, diseases outbreak, etc.)
	Before Disaster	**During Disaster**	**After Disaster**
Training & Capacity Building Institutions (IIPA, NIDM, NIAW, ATI, RAHTC, etc.)	**Training Need Analysis:** Periodically organize training need analysis with veterinary and humanitarian stakeholders, on addressing animal welfare needs in disasters and develop training modules/resources. **Training Calendar:** Integrate management of animals in disasters into the annual training calendar and update stakeholder trainings with specialized designed courses and modules.	**Resource Inventory:** Maintain, update and communicate the inventory of resources (IDRN, SDRN, etc.) available to assist stakeholders in rescue, handling and protection of both people and animals during disasters. **Assess Training Gaps and Needs:** Based on stakeholders' experiences in managing people and animals in disasters assess the gas and needs for planning stakeholders' specific trainings.	**Innovative Training Strategies:** Adopt innovative strategies for imparting trainings both online and offline through technological advancements for protecting both people and animals from disasters. **Training Resource Directory:** Annually update HR Resources (trainers, consultants) into the training resource directory for strengthening stakeholder's capacities to protect both people and animals from disasters.
	Before Disaster	**During Disaster**	**After Disaster**
Specialized Rescue Teams (NDRF, SDRF, VERU, etc.)	**Specialized Rescue Trainings:** Periodically organize specialized species specific animal rescue trainings for staff and stakeholders to rescue animals from different emergencies (flood, fire, earthquake, etc.). **Vaccination of Rescue Teams:** It is mandatory for all rescue teams to follow pre-vaccination schedules to ensure their own safety from any potential disease transmissions from animals. **Preparedness:** Prepare rescue teams with species specific animal rescue equipment and disaster specific resources (Personal Protective Equipment-PPE, etc.) for readily planning emergency animal rescues.	**Coordination:** In disaster affected areas coordinate with government, humanitarian organizations and local communities for animal rescue operations, preferably along with animal owners. **Humane Animal Rescues:** All animal rescues should follow humane rescue and safe handling techniques (safety of both animal and handler) with the aim of saving life and not to create any further harm, injury or damage. **Reporting Potential Diseases:** Every rescue teams should have veterinarians and is responsible for timely reporting any potential diseases observed during animal rescues as part of biosecurity/ bio-safety protocols.	**Reporting Rescues:** Total number of species the rescue teams have rescued need to be documented and timely reported to the government authorities for re-uniting with owners. **Updating Rescue Trainings:** Based on earlier animal rescues, and experiences of rescue teams in disasters the rescue trainings for staff and stakeholders should be revised and updated after each animal rescue operation. **Procure/Update Resources:** Based on species specific requirement in different disasters and advancements procure specialized animal rescue equipment to update the rescue team's resources.

	Before Disaster	During Disaster	After Disaster
Indian Red Cross Society (IRCS) Branches (National/ State/ District)	**Preparedness:** Educate local community, animal owners, and public on protecting animals from disasters through Information, Education and Communication (IEC) tools and resources. **Capacity Building:** Implement capacity building programmes and train stakeholders on management of animals in disasters. **Risk Reduction:** Implement risk reduction initiatives, and create provisions for sheltering animals close to human settlements in the cyclone/flood shelters.	**Safe Evacuation of Animals:** Mobilize animal owners and communities to safely evacuate their animals along with documents and belongings as per early warning and PSA messages from government authorities. **Veterinary First Aid Camps**: Organize veterinary first aid camps in the disaster affected areas to provide veterinary support and control spread of diseases. **Emergency Animal Shelters:** Support animal owners and local communities in providing emergency shelter care for the disaster affected animals.	**Psycho Social Care for Animal Owners:** Provide specialized and technical psycho-social care and first aid support for animal owners impacted due to loss of their animals after any disaster. **Rebuild Livestock Asset:** Support disaster affected communities in rebuilding their livestock assets, as part of the "Build Back Better" initiatives. **Documentation:** Document and share the experiences, gaps, challenges and best practices in protecting animals from disasters.
	Before Disaster	**During Disaster**	**After Disaster**
Humanitarian Agencies (INGO, NGO, Humanitarian Actors at National/ State/ District/ Local Level)	**Integrating Animals:** Integrate animal protection as part of the organization's disaster preparedness plans, and strategies. **Thematic Deliberations:** As part of thematic deliberations, mainstream animal protection in the food & nutrition security and livelihood protection initiatives to build resilience of vulnerable communities.	**Communication:** During disasters if animals are lost or impacted due to disasters, communicate the information to government, animal protection organizations, and coordination bodies to jointly address the issues and challenges. **Coordination:** Coordinate with animal protection organizations, local communities and animal owners for planning and implementing any animal centric interventions in disasters.	**Experience Sharing:** Share experiences of protecting and managing animals from disasters with the animal protection organizations, coordination bodies and government. **Documentation:** Document and share the learnings, and experiences for promoting and replicating best practices in protection of animals from disasters.
	Before Disaster	**During Disaster**	**After Disaster**
Coordination Bodies (Sphere India, IAG-State/ District, FIAPO)	**Coordination:** Engage stakeholders involved in protection of animals from disasters and strengthen the coordination systems. **Thematic Sessions:** Facilitate thematic workshops/ seminars/ webinars/ conferences	**Communication:** Integrate animal protection in meetings, templates (SITREP, URS Matrix, assessments, etc.) and communications to address issues of animals. **Disaster Response Appeals:** Based on gaps and identified needs	**Guidelines/SOPs/ Frameworks:** Coordinate with relevant stakeholders to develop/update technical guidelines and SOPs for protecting animals from disasters. **Documentation:** Document and share

	and mainstream animal protection in the humanitarian sector.	mobilize resources through disaster appeals for addressing animal welfare needs through coordination.	the stakeholder's experiences for promoting and replicating best practices in protection of animals from disasters.
	Before Disaster	**During Disaster**	**After Disaster**
Animal Owners (Livestock/ Poultry Owners, Pastoralists, Herders, Nomads, Care Takers)	**Animal Identification:** Ensure all animals have clear identification along with contact numbers to ensure their safety and assist in tracking/reuniting lost animals with owner. **Disease Prevention:** Ensure animals are vaccinated and insured, and also ensure insurance and vaccination of family members as recommend by the medical and veterinary doctors. **Emergency Kit:** Maintain a first aid kit for family including animals with all the important documents (insurance, asset ownership, etc.) and contacts for emergency survival. **Preparedness:** Identify safe shelters with evacuation routes and regularly practice along with the animals to cope during emergencies.	**Safe Evacuation:** As per the instructions (early warning and PSA messages) of local authorities and veterinary doctor if needed, evacuate along with animals to safe shelters. **Transportation:** In case of using any means of transport (water, road, rail, air) for emergency relocation, re-confirm the transport safety measures with authorities for animals. **Manage Welfare of Animals:** Regularly monitor animals and address their welfare needs (feed, water, shelter, health) in coordination with local veterinarian. Also plan timely management of animal products (egg, milk, etc.) including animal waste.	**Returning Home:** If in emergency shelters/ camps, return home safely along with animals after receiving confirmation message from the government. **Coordination with Authorities:** Coordinate with local authorities, share information on disaster loss, impact on animals, asset damages; and avail the necessary disaster relief assistance. **Disaster Risk Reduction:** Actively participate in all disaster risk reduction related to planning and development meetings to voice concerns and ensure safety of family including animals from any future disasters.
	Before Disaster	**During Disaster**	**After Disaster**
Local Communities (Urban / Rural)	**Preparedness:** In all disaster preparedness activities include measures to protect animals owned by people, including community animals for a safe and well prepared community. **Awareness:** Participate in community education programmes for improved awareness, knowledge and skills to ensure the safety of both people and animals from different disasters.	**Take Meaningful Actions:** As per instructions (Early Warning messages, PSA, etc.) from government authorities take timely and meaningful actions for safety of the community (people, animals, assets, etc.). **Support Animal Owners:** Ensure safety of animals in your community by supporting your fellow community members and animal owners in evacuation, transportation or in any emergency related assistance.	**Coordination:** Coordinate with authorities, share updates on the disaster's impact (losses/damages) on the community, including impact on animals and avail the necessary disaster relief assistance. **Strengthen Community Resilience:** Share disaster experiences and strengthen community resilience by integrating animal protection in DRR and development programmes.

Existing Gaps & Opportunities

Existing Gaps & Opportunities

Gaps in Legal Provisions and Frameworks

- **Disaster Management Act:** Currently "animals" are not included as sentient beings in the definition of "disasters". Also, government authorities from the Animal Husbandry and Fisheries Departments are not part of the Executive Committees. Therefore, there are opportunities to amend the National Disaster Management Act (2005) for including animals in the definition of disasters; and to integrate both the Department of Animal Husbandry (Livestock and Poultry) and Department of Fisheries as members of the respective Executive Committees at all levels.
- **Disaster Management Plans for Animals:** Except for a few states, there are no specific disaster management plans in most States/UTs for addressing the needs of animals in disasters. Therefore, all States/UTs have opportunities to prepare dedicated Disaster Management Plans for the protection of animals (Livestock and Poultry) considering the different animal species, disasters and state-specific needs.
- **Disaster Relief Provisions:** The disaster relief provisions hugely vary from state to state and also depend on the species that are lost or affected by disasters. The compensation packages for the loss of animals from disasters need to be revised and updated. Therefore, there is a need to standardize species wise disaster relief provisions with a simplified process for animal owners/farmers to directly access and benefit from the provisions.

Inadequate Resources

- **Inadequate Biosecurity Facilities:** A Bio Safety Level (BSL-4) laboratory facility supports studies of diseases such as Nipah, H5N1 Avian influenza, Crimean Congo Haemorrhagic fever, Ebola, and many other emerging and re-emerging diseases. Considering the population (both human and animal) there are inadequate bio-safety laboratories for handling dangerous pathogens. Currently, there are only 2 BSL-4 standard laboratories (National Institute of Virology, Pune; and High-Security Animal Disease Laboratory, Bhopal) in India. Ideally, every State should have at least 1 BSL-4 level laboratory to deal with emerging contingencies. In addition to this, there are poor management of biosecurity protocols at animal farms and a lack of mobile veterinary laboratories/clinics to work at the emergency locations. There is great potential to strengthen the biosecurity protocols at animal farms as well as in setting up mobile veterinary laboratories/clinics at least in every district.
- **Human Resources:** General norm is to have one veterinary doctor for every 5,000 animals; based on this norm India should have more than 100,000 (One Lakh) veterinarians, but currently there are only 63,000 registered veterinarians (Source: VCI). In addition to this, there are no officially recognized veterinary roles for the management of animals in disasters. There is a great opportunity for training, and capacity building initiatives for training more skilled professionals in the management of animals in emergencies.
- **Financial Resources:** There are no specific funds or financial resources earmarked for the management of animals in disasters. The "Flexi Funds" mentioned in the National Disaster Management Plan of the Department of Animal Husbandry and Dairying have a provision of using 10% of the centrally sponsored schemes for emergency activities with the approval of the competent authority. Therefore, there is an opportunity for the government to establish a dedicated fund such

as "Veterinary Emergency Response Fund" or similar financial arrangement for addressing the animal welfare needs during emergencies.

- **Material/Physical Resources:** In order to humanely rescue or handle animals during emergencies there are no materials/physical resources available in any veterinary institution. This is a major concern during disasters, therefore there are opportunities to equip all the veterinary institutions with at least a basic set of emergency animal rescue and handling equipment.
- **Resource Inventory:** The existing disaster resource networks such as India Disaster Resource Network (IDRN) is greatly helpful for public to access the required resources for coordinating and dealing with emergency situations. However, there are no specific resources available in the inventory list to rescue animals. Therefore by integrating animal rescue equipment and resources in the IDRN, it would help the public and animal owners to easily contact and coordinate with the respective stakeholder for availing the resource in protecting animals during emergencies.

Risk Assessments and Data Management

- **Animal Vulnerability Mapping:** Vulnerability mapping usually encompasses the mapping of regions exposed to hazards or disasters, sensitive areas based on animal population and their density, and coping capacities. The greater the exposure to hazards/disasters, the greater the vulnerability. In India, there are no vulnerability maps to specifically assess the hazards and disaster's impact on animals. Species-specific, disaster specific and region-specific vulnerability mapping tools and resources would greatly help in effectively planning for the management of the animals during different emergency phases.
- **Animal Resilience Index:** Resilience index monitoring, tracking and reporting systems can help measure countries' vulnerability, risk and resilience profile due to the impacts of disasters, and extreme climatic conditions. There are opportunities to develop an Animal Resilience Index for ranking the States/UTs based on a set of indicators to assess the vulnerabilities and resilience initiatives and enable better protection measures for animals from disasters. Based on the index consistent and sustainable strategies could be conceptualized, prototyped, piloted and implemented to protect animals from different disasters.
- **Data Management:** This is an overall process of planning, developing, recording, documenting, organizing, and maintaining data for using the generated information in planning emergency interventions. In India the census of livestock and poultry is conducted once every five years, the last census was conducted in 2019. Apart from this, there are no data management systems (both offline and online) to regularly record, document, analyse or report quantitative and qualitative data specifically on the vulnerability of animals to disasters. This has a great opportunity for government and stakeholders to collectively contribute to strengthening the data management systems to protect animals.

Institutionalization and Stakeholder Coordination

- **Veterinary Emergency Response Unit (VERU):** Regional Veterinary Emergency Response Units (VERU) are functional in veterinary universities of Palampur (North-Himachal Pradesh), Chennai (South-Tamil Nadu), Guwahati (East-Assam), Anand (West-Gujarat), Jabalpur (Central-Madhya Pradesh) in addition to Patna (Bihar-Pilot VERU) for capacity building and emergency response. There is a greater need to establish similar VERUs in veterinary institutions in all the States/UTs to enable

better institutional capacities for implementing effective emergency management initiatives in protecting animals at levels.

- **Coordination between Veterinary and Public Health Stakeholders:** In India, the NADRES, DAHD, NIVEDI and NCDC have expertise in disease surveillance and managing disease outbreaks towards ensuring the safety of both people and animals. However, there is no specific mechanism to bring synergy between these institutions. Therefore, there are opportunities to strengthen the coordination mechanisms between these key specialized bodies for eradication, prevention, preparedness and control of diseases.
- **Coordination of Humanitarian Stakeholders:** There are thousands of actors who get involved in humanitarian actions following any major disaster event. Communication and coordination between these actors to address the gap areas and avoid duplication is a challenge. Therefore, in order to ensure the quality and accountability of each of the actors involved in the humanitarian sector coordination mechanisms are important. In India, Sphere India actively plays an important role at the national level in coordinating between organizations for disaster interventions. However, still, there are potential areas for integrating animal protection into the humanitarian sector and thematic cluster meetings.
- **Coordination between Animal Protection Organizations:** There are more than 200 animal protection organizations in India working on diverse issues to protect animals. FIAPO is a federation at the national level that represents the collective voice of the animal protection movement in the country. In view of the increasing frequency and intensities of disaster events, there is a greater need to strengthen coordination between animal protection organizations for implementing animal-centric interventions in emergencies.

Networking and Partnerships

- **Insurance & Risk Transfer Mechanisms:** The insurance schemes mainly focus on providing compensatory relief to the farmers for the loss of animals during emergencies. These insurance schemes are premature, don't directly benefit the animals, and are still not widely promoted. This is an area that provides opportunities for insurance and financial institutions to devise comprehensive (5 freedoms for animals) insurance and risk transfer mechanisms to directly benefit both the animals and the farmer in an event of disasters by integrating specific clauses to ensure all the animal's welfare aspects are addressed.
- **Technology and Innovation:** The use of the latest technologies and emerging digital advancements such as Artificial Intelligence, Virtual Reality, Block chain, Internet of Things (IoT), Cloud Computing and Machine Learning could be used for protecting animals from disasters. For example, there are many situations during disasters where robots or drones could be the only hope in rescuing animals from inaccessible locations. Therefore, the opportunities for innovative ideas are boundless and would complement the humanitarian initiatives.
- **Public Private Partnerships (PPP):** The opportunity for private companies, corporates, and like-minded elites to contribute to the protection of animals in disasters is diverse. The potential areas could include, research studies, pilot interventions, model animal-centric emergency interventions, etc. As this is an emerging field of science having limited capacity, resources, and expertise both nationally and globally; the scope for pioneering ideas to protect animals would be greatly recognized.

Experiences & Best Practices

Experiences & Best Practices

National Experiences (India)

Community Fodder Bank cum Animal Shelter in Odisha (Flood/Cyclone)

Subola village of Kendrapada district in Odisha gets affected by floods and cyclones every year. During such emergencies, all the people from this village temporarily had to shift to the cyclone shelter and help each other cope till the situation improves. The people were busy trying to sort out options to safeguard themselves and survive the disaster, they had no option to keep their animals (cattle, buffaloes, sheep and goats) safe. Either they had to leave their animals to cope by themselves or temporarily send them to nearby villages (friends/relatives' places). The local communities took shelter in the cyclone shelter in their own village during cyclones and floods. In 2011 World Animal Protection (earlier known as WSPA) helped the local communities in the construction of a two-storey community fodder bank cum animal shelter so that the animal feed can be safely stored and animals could take safe shelter close to the existing cyclone shelter in the village during floods and cyclones. The structure was designed, planned and constructed by the local community with support from WSPA, the local NGO (PFA) and the local veterinary and animal husbandry department. The intervention directly benefitted 2503 animals and 600 households through the provision of paddy straws, veterinary treatments, training, village disaster management plan and construction of the community fodder bank cum animal shelter facility. In 2013 there was a severe Cyclone Phailin which affected several villages in Odisha, however, the animals and people of Subola village could cope and survive the emergency, thanks to the community fodder bank cum animal shelter which strengthened their resilience. *(Source: WSPA support local communities to safely store fodder [https://animalsindisasters.typepad.com/wspa/animals-in-disasters/page/6/)](https://animalsindisasters.typepad.com/wspa/animals-in-disasters/page/6/)*

Household Animal Shelter cum Fodder Bank in Assam (Flood)

Flooding is an annual phenomenon in Dhemaji, a district in Upper Assam, situated along the Brahmaputra River. In fact, the name "Dhemaji" locally means "Playground of Floods" due to the clueless geographical terrain which causes to change the direction of the river every year and causes sudden floods in unexpected regions. This made it challenging for the local community, authorities and disaster management professionals to predict and devise appropriate

coping strategies. In 2012 WAP (earlier known as WSPA) supported the local communities in Seuijia Pathar village of Machkhowa Block, Dhemaji District in coordination with a local NGO (JBF) and the animal husbandry department with a range of disaster risk reduction plans and strategies. The intervention included the provision of rice brans for the cattle and pigs, veterinary health camps, a village disaster management plan, awareness, training and construction of 15 individual household animal shelters cum fodder storage banks directly benefiting a total of 56206 animals and 4265 households. Construction design was based on strengthening the local concepts and practice by enhancing its capacity to protect its animals from 2 months to at least 4 months during severe floods. In 2015 there was again severe flooding throughout Assam which affected all the districts including the Khaziranga National Park. The preparedness efforts of the local community in Seujia Pathar helped them survive and cope these extreme floods without having the need to evacuate to the nearby school, raised roads, or river embankments, which was the usual practice earlier. A cost-benefit analysis of the intervention commissioned by WAP demonstrated that it had saved India's economy almost £2.5m, 96 times the £25,000 price tag of providing the aid, even at a conservative estimate, the response saved the economy £46 (96$) for every £1 (1$) spent. *(Source: A benefit-cost analysis of WSPA's flood intervention in Assam https://animalsindisasters.org/uploads/Economists-at-Large-2014-A-benefit-cost-analysis-of-WSPAs-2012-Intervention-in-the-Dhemaji-district-of-Assam-India.pdf*)

Green Shade Nets as Emergency Temporary Shelters for Cattle Camps in Maharashtra (Drought)

The 2013 drought in Maharashtra intensified after the region received lower rainfall during the monsoon season from June to September 2012. It was considered the worst drought in 40 years. The worst-hit areas were Solapur, Parbhani, Ahmednagar, Latur, Pune, Satara, Beed and Nashik. The state government established more than 400 cattle camps to provide feed and fodder for the drought-affected animals (mainly cattle and buffaloes). Each cattle camp had approximately 3000 animals brought by the local communities from the nearby villages. There were no provisions to shelter the animals in the camp so people used old clothes and

thatched shelter materials to protect their animals from the scorching sun and heatwaves. However, this made camps more vulnerable to fire accidents as the shelter materials were highly inflammable due to the blazing heat along with people using fire for cooking (as people living along with their animals in the camps). WAP supported the local government and the Department of animal husbandry in 3 cattle camps in the Beed district through the distribution of 45,000 kg of mineral mixture supplements, 300 Green Shade nets, and feeding troughs/mangers for animals. The intervention directly benefitted a total of 9000 animals and 1146 households. In addition to this trainings and education programmes were organized for farmers to care for their animals during extreme droughts. During the intervention, in one of the nearby cattle camps having thatched shelters, a fire broke out severely injuring 15 cattle. This incident triggered the district administration to immediately organize a meeting and an order was issued to all the 400 cattle camps to replace thatched shelter materials with green shade nets for the safety of the animals and avoid the risk of secondary disaster. This initiative by the State Government helped ensure the protection of more than 12,00,000 animals in the State. *(Source: WSPA provide shade nets for cattle camps in Maharashtra Drought: https://animalsindisasters.typepad.com/wspa/2013/04/update-some-good-news-from-beed.html)*

International Experiences

Livestock Rotation Programme in Rwanda (Drought)

Following decades of economic crisis after Rwanda's economy collapsed in 1994, the Rwanda Red Cross initiated a livestock rotation programme to address livelihood and food security issues. The programme provided herds of cattle, pigs, goats, rabbits and other livestock to targeted communities and ensured that each household in the community receives livestock, as a rotation programme through which the firstborn heifer, pig, goat or rabbit is passed on to another household; each animal then reproduces a new born for another household. The IFRC supported this initiative by linking it with agricultural activities and aimed at a more holistic recovery approach. After eight years since the programme started, it contributed significantly to the beneficiaries' income, livelihood, and food security. These helped households to cope effectively during dry seasons and periodic droughts in the country. *(Source: Experience in cow rotation programming http://www.ifrc.org/PageFiles/113913/1257600-rwanda-case%20study-en.pdf)*

Forecast Based Financing for Herders in Mongolia (Dzud)

Livestock is the main source of income for more than 36% of households in rural areas, and the livestock sector produces more than 80% of the gross agricultural product. Dzud is a Mongolian term for a unique climatic phenomenon where a severe drought is followed by an extreme winter with some areas reaching -50 degrees. Over 70% of the country experienced severe drought in the summer of 2017, which left herders without reserve fodder; the animals got weaker and starved to death wiping out millions of livestock heads, driving the poorer households into destitution and instigating rural-to-urban migration. As part of Forecast Based Financing (FbF), Mongolian Red Cross Society (MRCS) with support from British Red Cross, IFRC and other stakeholders developed Dzud risk maps with 14 scientific indicators such as rainfall deviation, risk of drought, regional temperature, etc. By implementing the FbF programme, early action could be taken to reach the herders on time and save their livestock. A key element of FbF is that the allocation of financial resources is agreed upon in advance, together with the specific forecast threshold that triggers the release of those resources for the implementation of early actions. The roles and responsibilities of everyone involved in implementing these actions are defined in the Early Action Protocol (EAP). This ensures the full commitment of implementation among those involved and has helped herders in Mongolia to keep their livestock alive through extreme climatic conditions. (Source: Forecast-Based Financing for Vulnerable Herders in Mongolia http://media.ifrc.org/ifrc/wp-content/uploads/sites/5/2018/06/CaseStudy16_Mongolia-FbF-Final.pdf)

Protecting Livestock from Diseases in South Sudan (Conflict)

South Sudan, a landlocked country having one of the largest cattle populations in the world is bordered by Sudan, Ethiopia, Kenya, Uganda, the Democratic Republic of Congo, and the Central African Republic. Communities' livelihoods depend mainly on their cattle for survival. There has been civil conflict ongoing since 2013. Keeping livestock alive and healthy is vital in a country where most of the population heavily depends on cattle, sheep and goats for their livelihood, but it's challenging. Decades of armed conflict continue to undermine veterinary services in South Sudan. It increased the risk

of epidemics, parasites, wounds and health issues that hampered the production and reproduction of livestock. The International Committee of the Red Cross (ICRC) helped protect animals from diseases and strengthen the resilience of communities affected by the armed conflict. The ICRC along with the Ministry of Agriculture and Animal Resources and Fishing (MAARF) trained "Community Animal Health Workers" to treat 117,000 animals, vaccinate 550,000 cattle and regularly carry out preventive vaccination campaigns with periodical refresher courses. Keeping livestock healthy allowed communities to continue to sustain themselves amidst so many conflict dynamics directly benefitting 116,000 people. *(Source: Protecting Livestock from Diseases in South Sudan https://www.icrc.org/en/document/south-sudanese-renk-yei-cattle-vaccination-food)*

Stakeholder Experiences

Kindly refer below to the list of stakeholders and their experiences in rescuing, handling and protecting animals from different emergency scenarios,

- OIE Emergency and Resilience, **https://www.oie.int/en/what-we-offer/emergency-and-resilience/**
- FAO in Emergencies, **https://www.fao.org/emergencies/en/**
- Federation of Indian Animal Protection Organizations (FIAPO), **https://www.fiapo.org/covidresponse/**
- World Animal Protection, **https://animalsindisasters.org/country-profile/india**
- Brooke India, **https://www.thebrooke.org/our-work/india**
- Humane Society International (HSI), **https://www.hsi.org/issues/disaster-response/**
- Heifer International, **https://www.heifer.org/about-us/where-we-work/india.html**
- International Fund for Animal Welfare (IFAW), **https://www.ifaw.org/international/programs/disaster-response**
- Four Paws International, **https://www.four-paws.org/campaigns-topics/topics/disaster-relief/animal-disaster-relief-in-india**
- Blue Cross of India (BCI), **https://bluecrossofindia.org/rescue/**
- People For Animals (PFA), **https://www.peopleforanimalsindia.org/pfa-rescues.php**
- Donkey Sanctuary Welfare Association (DSWA), **https://www.dswelfareassociation.org/#project**
- Just Be Friendly (JBF), **https://jbfsociety.org/disaster-relief/**
- Visakha Society for the Protection and Care of Animals (VSPCA), **https://vspca.org/category/animal-rescue/**

References

- Guidelines on Management of Biological Disaster by NDMA, https://nidm.gov.in/PDF/pubs/NDMA/5.pdf
- Livestock Emergency Guidelines and Standards (LEGS), https://www.livestock-emergency.net/wp-content/uploads/2021/09/LEGS-Handbook-2nd-edition-web-version-1.pdf
- Sendai Framework for Disaster Risk Reduction (2015 - 2030), https://www.preventionweb.net/files/43291_sendaiframeworkfordrren.pdf
- Animal Welfare Board of India (AWBI), Acts & Rules, http://www.awbi.in/policy_acts_rules.html
- Livestock related interventions during emergencies, https://www.fao.org/3/i5904e/i5904e.pdf
- Disaster Management Plan, Department of Animal Husbandry and Dairying (DAHD), https://www.worldanimalprotection.org.in/sites/default/files/media/in_files/diaster_management_plan.pdf
- Protecting India's animals – safeguarding people's futures, https://animalsindisasters.org/country-profile/india
- Animals are legal entities, https://indianexpress.com/article/india/uttarakhand-high-court-declares-all-animals-as-legal-entities-5246002/
- Animals need DRR too, https://www.undrr.org/news/animals-need-drr-too
- Management of Animals in Emergencies - A Veterinarians Handbook for Disaster Management, https://www.basu.org.in/wp-content/uploads/2018/06/handbook-of-disaster-management.pdf

- A Handbook on Management of Animals in Disaster, https://verutanuvas.com/wp-content/uploads/2020/10/Management-of-Animals-in-Disaster-Hand-book-inner.pdf
- Management of Animals in Disasters, https://www.amazon.in/Management-Animals-Disasters-Subhash-Verma/dp/9811693919
- Poster: It's our responsibility "Animals matter in Disaster" https://animalsindisasters.org/uploads/120823-English-Poster-new.pdf
- A Guide for Governments: https://animalsindisasters.org/uploads/AnimalsDisasters-Infographic-01.jpg
- Cost-Benefit Analysis: https://animalsindisasters.org/uploads/Economists-at-Large-2014-A-benefit-cost-analysis-of-WSPAs-2012-Intervention-in-the-Dhemaji-district-of-Assam-India.pdf
- Removable Animal Shelter Design: https://animalsindisasters.org/uploads/pdf-PIG-PEN.pdf
- 20th Livestock Census (2019), https://www.dahd.nic.in/sites/default/filess/Key%20Results%2BAnnexure%2018.10.2019.pdf
- IFRC Checklist on Law and Disaster Preparedness and Response, https://disasterlaw.ifrc.org/sites/default/files/media/disaster_law/2020-08/DPR_Checklist_Final_EN_Screen.pdf
- Management of Yak https://www.fao.org/3/AD347E/ad347e0j.htm
- Madigan, J., Costa, L. , Nieves, S., Horgan, M., Weberg, K. and Aleman, M. (2019). Evaluation of simplified loops system for emergency rescue lifting of the stranded or recumbent horse. Animals, 9, 511. doi:10.3390/ani9080511
- http://www.lrrd.org/lrrd26/1/mond26006.html
- https://www.thebrooke.org/our-work/working-equid-veterinary-manual

Annexes

Annexure 1: SITREP on Animals Affected by Disaster

Livestock & Poultry	Number of Animals Affected by Disaster			
	Lost or Died	*Sick or Injured*	*Starving or Stranded*	*Evacuated or Relocated*
Cattle				
Buffaloes				
Mithuns				
Yaks				
Horses				
Mules				
Donkeys				
Sheep				
Goats				
Pigs				
Camels				
Chicken				
Ducks				
Turkeys				
Total				

Annexure 2: Unified Response Strategy (URS) Matrix for Resource Mapping & Planning

Organization (Implementing Agency/Donor/ Local Partner)	Target Area (States/ Districts/ Villages)	Animal Centric Technical nterventions in Emergencies								
		Rescue	*Evacuation*	*Feed*	*Water*	*Vet Care*	*Carcass Disposal*	*Shelter*	*De / Restocking*	*Others*

Note: Please tick (✓) the areas relevant to your organizations interventions related to management of animals in emergencies

Annexure 3: Assessment Checklist (LEGS)

S/N	A. Role of Livestock in Livelihood (To ascertain if livestock is a livelihood of affected people).
1.1	*What are the main livelihood strategies in the affected areas in usual times?*
1.2	*What are the key uses of livestock (food, income, social, draught, transport)?*
1.3	*What percentage of food is derived from livestock in usual times?*
1.4	*What percentage of income is derived from livestock in usual times?*
1.5	*What roles do different household members play with regard to livestock care and management, including use and disposal rights, (note: different livestock species and ages; seasonal variations) with particular reference to gender?*
1.6	*What customary institutions and leaders are involved in livestock production and natural resource management and what is their role?*
1.7	*What are the main coping strategies and indicators for 'difficult times' (for example: famine foods; high livestock slaughter or sales; migration; dispersal of household members; sale of other assets etc.)? Do these strategies have negative implications for future livelihood security?*
Conclusion of A Section: Views of the assessment team	
S/N	**B. Nature and Impact of Emergency (To determine whether a response is necessary)**
2.1	*What type of emergency is it; rapid onset; slow onset or complex?*
2.2	*What is the cause of the emergency (drought, flood, war, etc.)?*
2.3	*What is the history of this type of emergency in this context?*
2.4	*Which stage has the emergency reached (alert / alarm / emergency / immediate aftermath / recovery etc.)?*
2.5	*What is the area affected?*
2.6	*What has been the impact of the disaster on the affected population?*
	2.6.1 What is the nutritional status of the affected population?
	2.6.2 What is the prevalence of disease?
	2.6.3 What is the mortality rate?

2.6.4 What has been the impact on vulnerable groups (women, children, people living with HIV/AIDS, ethnic groups)?

2.6.5 Are there signs that the coping strategies/difficult time indicators from question 1.7 are being implemented?

2.6.6 Has there been significant migration or displacement of the affected populations? If so, who is affected and have they taken their livestock with them? What is the impact on the host community?

2.7 What has been the impact of the emergency on livestock management strategies:

2.7.1 What is the impact on access to grazing?

2.7.2 What is the impact on access to water resources for livestock?

2.7.3 What is the impact on daily and seasonal movements?

2.7.4 What is the impact on livestock traders and key livestock markets?

2.7.5 What is the impact on livestock services?

2.7.6 What has been the impact on natural resources?

2.7.7 What has been the impact on the gender division of labour?

2.7.8 What plans do the affected population have for their livestock in the future?

2.8 What has been the impact of the emergency on livestock (differentiate by species if necessary);

2.8.1 What is the impact on livestock sales?

2.8.2 What is the impact on livestock prices?

2.8.3 Have the terms of trade between livestock and cereal prices changed?

2.8.4 How has livestock condition deteriorated?

2.8.5 Has livestock productivity fallen (off-take of milk, blood, eggs etc.)?

2.8.6 Has livestock morbidity increased?

2.8.7 Has livestock slaughter for home consumption increased?

2.8.8 What is the livestock mortality rate?

2.8.9 Has there been any impact on livestock shelter/enclosures?

2.8.10 What is the scale of these impacts?

2.9 What has been the impact of the emergency on the environment?

2.10 What are the forecast and trends (where relevant) for the forthcoming season (for example anticipated snow, rains, heat, dry season, increasing insecurity, access to food etc)?

Conclusion of B Section: Views of the assessment team

S/N C. Situation Analysis (To understand the operating environment)

3.1 Who are the key actors in the affected area and what are they doing?

3.2 Is any stakeholder playing a coordination role?

3.3 What services and facilities are usually available and what has been the impact of the emergency on them (including government administration, markets, and animal production and health services)?

3.4 What resources are available in particular indigenous coping strategies?

3.5 What is the history of disaster response in the affected area, both positive and negative experiences and lessons learned?

3.6 What is the current context (further detailed assessments with regard to these issues may need to be carried out depending on the technical options selected (see technical chapters below). These particular questions become particularly significant (and in some cases 'killer assumptions') in conflict situations)?

3.6.1 How are communications functioning?

3.6.2 What is the security situation?

3.6.3 What are the implications for livestock movement and migration (rights of access, potential conflict)?

3.6.4 What is the key protection issues facing livestock owners?

3.6.5 What is the current infrastructure (roads and transport)?

3.6.6 Are there any cross-border issues?

3.6.7 What are the policy and/or legal constraints affecting livestock related interventions (for example livestock movements or export bans; slaughter laws; taxation policy; licensing regulations; coordination of aid agencies; national disaster management policies; organizational policies of key stakeholders)?

Conclusion of C Section: Views of the assessment team

Decisions of the assessment team

Annexure 4: State Wise Population of Livestock and Poultry *(20th Census, 2019)*

Indian States	Livestock Population							
	Cattle	*Buffaloes*	*Mithuns*	*Yaks*	*Horses*	*Mules*	*Donkeys*	*Sheep*
Andaman & Nicobar Islands	35179	3700	0	0	0	0	2	5
Andhra Pradesh	4577743	6219499	0	0	1884	240	4678	17626971
Arunachal Pradesh	338696	6379	350154	24075	3051	0	0	7345
Assam	10853264	421715	0	0	12783	724	900	332100
Bihar	15311173	7719794	0	0	32176	1491	11264	213377
Chandigarh	13378	12177	0	0	237	0	0	0
Chhattisgarh	9974824	1174722	0	0	675	21	142	180229
Dadra & Nagar Haveli	39731	997	0	0	39	0	0	84
Daman & Diu	1820	374	0	0	15	0	0	68
Delhi	45671	162142	0	0	434	136	1087	278
Goa	60220	27207	0	0	15	1	0	662
Gujarat	9610865	10543250	0	0	21811	5	11286	1787263
Haryana	1820530	4368023	0	0	9683	2499	800	288370
Himachal Pradesh	1826293	646565	0	1940	8851	20415	4797	791345
Jammu & Kashmir	2532615	690829	12	26221	63335	16722	9563	3247503
Jharkhand	11188770	1350313	0	0	1378	73	400	641183
Karnataka	8458917	2984560	0	0	7018	51	8790	11050728
Kerala	1332513	101504	0	0	560	0	65	1482
Lakshadweep	2455	16	0	0	0	0	0	0
Madhya Pradesh	18735191	10307131	0	0	13260	2543	8135	324585
Maharashtra	13924926	5603692	0	0	18892	681	17572	2680329
Manipur	224209	36230	9059	0	1083	0	2	5921
Meghalaya	902025	15714	0	0	273	0	0	15679
Mizoram	43928	2109	3957	0	159	8	0	485
Nagaland	76865	15654	23123	0	70	0	2	361
Odisha	9876937	458324	0	0	143	18	83	1279149
Puducherry	71812	2395	0	0	29	0	4	2445
Punjab	2473331	4015947	0	0	14243	1644	471	85560
Rajasthan	13912457	13693316	0	0	33679	1339	23374	7903857
Sikkim	146908	1144	2	5219	115	0	2	2016
Tamil Nadu	9469499	518795	0	0	5417	305	1428	4500491
Telangana	4217986	4226306	0	0	3878	91	2031	19063058
Tripura	724442	7131	0	0	17	2	10	5460
Uttar Pradesh	18789306	33016785	0	0	75718	8933	16016	984725
Uttarakhand	1846619	866318	0	54	7452	26293	589	284615
West Bengal	19021499	630921	0	213	1593	26	94	952886
Total Animals	**192482597**	**109851678**	**386307**	**57722**	**339966**	**84261**	**123587**	**74260615**

Poultry Population							
Goats	*Pigs*	*Camels*	*Total Livestock*	*Chicken*	*Ducks*	*Turkeys*	*Total Poultry*
64761	40488	0	*144135*	779306	4798	892	*1289160*
5522133	91958	166	*34045272*	21745862	586	32701	*107863152*
159740	271463	0	*1160903*	1472580	386	339	*1599575*
4315173	2099000	567	*18040283*	33105572	29014	143958	*46712341*
12821216	343434	88	*36454023*	8274756	6472	2275	*16525349*
998	138	0	*26928*	2322	25	7	*48883*
4005657	526901	1	*15863172*	8388853	5500	497	*18711824*
7548	0	0	*48399*	87883	0	0	*89671*
987	0	0	*3264*	18086	0	7	*18264*
30470	76346	157	*316721*	37151	15	149	*43831*
9446	35480	2	*132379*	144204	249	149	*349543*
4867744	658	27620	*26870504*	4192137	55	5162	*21773392*
334640	108240	5154	*6937939*	413053	15524	488	*46294965*
1108413	2477	26	*4411122*	310413	35	417	*1341951*
1730218	1215	466	*8318699*	2261036	44	1599	*7366308*
9121173	1276973	0	*23580359*	18809688	11791	34112	*24832906*
6169392	323836	33	*29003325*	10981829	254	5354	*59494481*
1359161	103863	26	*2899174*	13260322	811798	20915	*29771905*
43188	0	0	*45659*	113546	348	366	*226025*
11064524	164616	1753	*40621738*	9386870	163	5859	*16659898*
10604883	161000	465	*33012854*	21585157	1421	16288	*74297765*
38697	235255	0	*550456*	3833975	21384	4869	*5897637*
397503	706364	0	*2037558*	5232449	56	20	*5379532*
14820	292465	0	*357931*	2018495	438	176	*2047810*
31602	404695	0	*552372*	2655157	235	6092	*2838944*
6393452	135162	8	*18143322*	16223100	5814	958	*27439257*
73630	880	1	*151196*	179892	22	3572	*235999*
347949	52961	120	*6992226*	355587	54	670	*17649984*
20840203	154808	212739	*56775270*	1899505	241	3293	*14622975*
90506	27320	0	*273232*	573487	4	72	*580864*
9888746	66772	7	*24451460*	20951645	13114	33380	*120781100*
4934673	177992	71	*32626214*	17386005	1076	12014	*79999404*
360204	206035	2	*1303313*	3179040	3820	2800	*4168246*
14480025	408678	2424	*67784817*	3883581	1076	42491	*12515704*
1371971	17659	15	*4422104*	985905	21621	3433	*5018684*
16279340	540356	45	*37426877*	46082766	50668	38000	*77322602*
148884786	**9055488**	**251956**	***535785200***	**280811215**	**1008101**	**423374**	***851809931***

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