Indicator based data generation and Framework for integrated MIS: Departmental Vision cum Roadmap for Development of Animal Husbandry and Veterinary Sector in the State of Assam, India

Excerpts of Final Report submitted to:

Department of Animal Husbandry and Veterinary
Government of Assam

By

Vet Helpline India Pvt Ltd

Preparation of Departmental Vision cum Roadmap for Development of Animal Husbandry and Veterinary Sector in the State of Assam – An initiative commissioned by:

অসম চৰকাৰ
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GOVERNMENT OF ASSAM

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The mandate of the Department of Animal Husbandry and Veterinary

The veterinary services with the mandate of promoting animal health care, animal welfare, public health, and livestock production, play the crucial role of protection of health, improvement in nutrition and economic well-being of the citizens.

The following is the proposed new twenty points detailed mandate of the Department of Animal Husbandry and Veterinary, Government of Assam:

1. To deliver veterinary services (Preventive, Curative, surgical and certification related) to farm, wild, companion, work and sports animals and birds.
2. To facilitate epidemiological studies and undertake measures for the control and spread of animal diseases (including transboundary animal diseases) ensuring trade-related reporting commitments to the central government.
3. To assist in the control of zoonotic and other emerging diseases of human working essentially under a 'One Health' framework.
4. To assist in food safety (e.g., meat inspection, etc.) and prevention of adulteration of livestock-based food at all level of the value chain.
5. To assist in the prevention of drug resistance and antimicrobial resistance.
6. To promote animal welfare, ethical practices and ensure implementation of regulations thereof.
7. To deliver livestock extension, training and skill development services to livestock/poultry farmers and other value chain players.
8. To deliver breeding related services to farm animals.
9. To facilitate development, management of physical livestock markets, inter-state animal /livestock product movement, livestock/livestock product-related trade, and competitive market development.
10. To undertake development activities for food security, ensuring adequate production and supply of quality and safe livestock products.
11. To promote sustainable use of natural resources and scientific disposal of dead animals and waste materials generated within facilities and livestock production systems.
12. To undertake livestock/poultry-related activities for livelihood promotion, higher income of farmers, and employment generation.

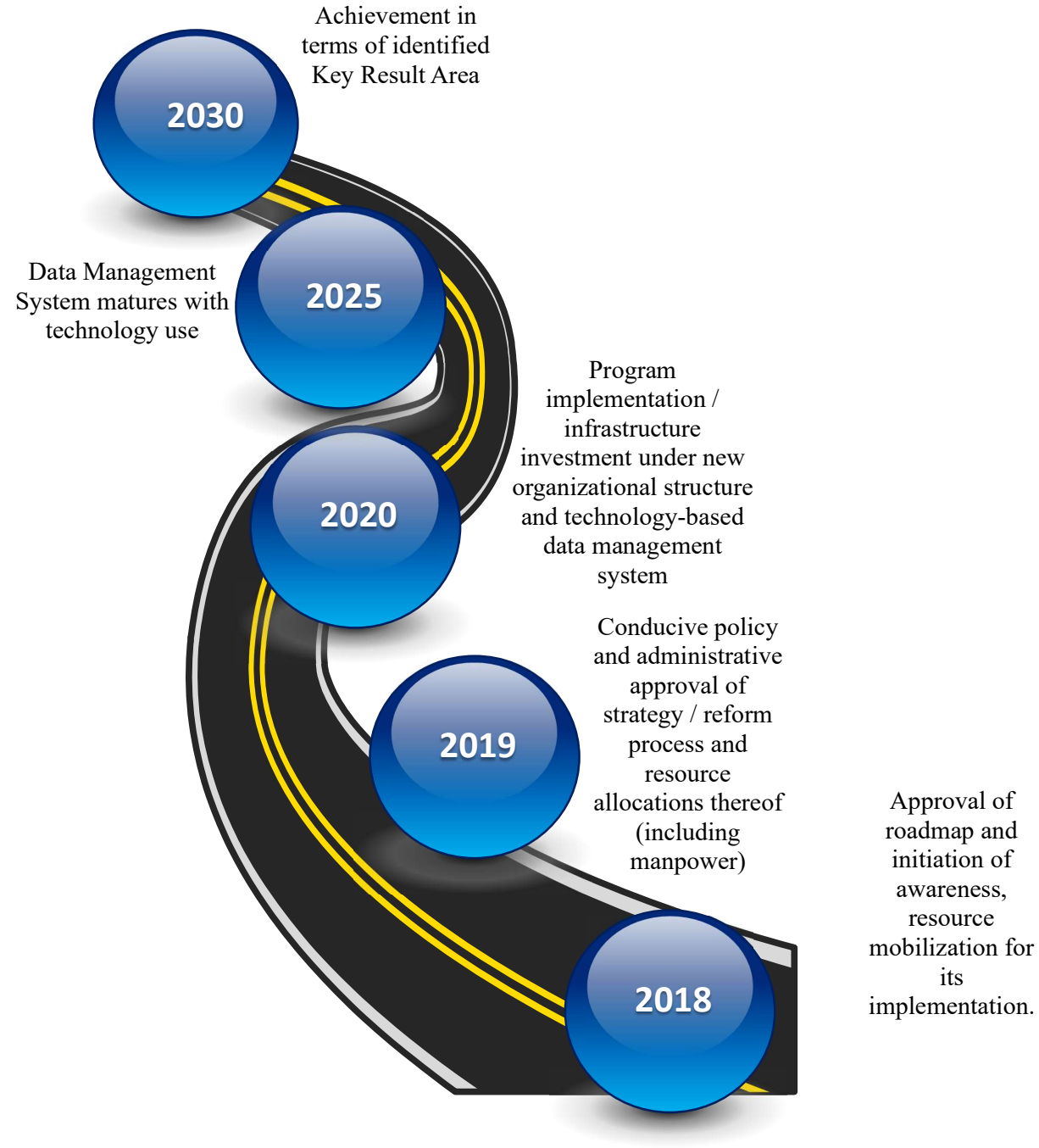
13. To assist in the management of human-animal conflict, translocation, and rehabilitation of injured wild animals.
14. To assist in municipal activities related to registration, animal birth control, rescue/rehabilitation of injured animals and management of urban livestock and pet animals.
15. To assist in risk and disaster management, e.g., Animal insurance, creation of infrastructures for protection of animals, the supply of fodder/feed, care to animals in distress, fast disposal of carcasses, etc.
16. To promote and set up slaughterhouses to ensure safe and hygienic meat to consumers.
17. To promote economic and environment-friendly utilization of livestock by-products.
18. To promote conservation of indigenous livestock/poultry breeds and assist in the conservation of biodiversity, promotion of traditional knowledge and measures related mitigation of climate change impact.
19. To assist in bioterrorism prevention and control.
20. To maintain standards of the veterinary profession and facilitate in veterinary, para-veterinary education and research.

Key Result Areas

The department should invest in the internal reforms and data management / M&E system by 2020 to measure its success in 2030, taking 2025 as the baseline. The following are the Key Result Areas for 2030.

1. Disease outbreak in animals reduced by 50 percent from baseline with the declaration of at least a few disease-free zones.
2. A performing livestock value chain as measured through enterprise growth, skilled employment generation, remunerative price to farmers, sustainable and safe practices based on the baseline.
3. Evidence of strong institutional arrangement to ensure quality human resource supply, safe practices, and emergency services as measured by the growth of the educational and training institutes, the working framework agreements of collaboration in the field of ‘One Health’ and Disaster management, performing statutory organization for service standards, etc.
4. Enhanced family expenditure (Urban / Rural) on the consumption of livestock products as measured by NSSO.
5. Improvement in livestock product standard and safety.

The roadmap timeline:



Indicator-based data generation for effective monitoring

The department will require major investment for an indicator based, IT-enabled monitoring, and evaluation system (M&E) system. Moreover, there is an absence of consumer-based demand studies related to livestock products within the state. The development of a 'stringer' network[1] for continuous data collection at the level of village panchayat can go a long way toward better planning and targeted project implementation. The forthcoming 20th census operation gives the Department of Animal Husbandry and Veterinary the added advantage to simultaneously undertake a more detailed data collection work along with the development of a 'stringer' network mentioned above. It is suggested the in its effort to improve the data generation department should conduct a desk review of existing data collection under various initiatives and available GPDP (Gram Panchayat Development Plan) under *Amar Gaon Amar Achoni* program of Panchayat and Rural Development Department.
The following table and section highlight proposed indicators, data to be collected, and suggested a methodology for the same.

List of indicators (External to Department)

Proposed indicator	**Data to be collected**
Survey Methodology: Census (100 % enumeration) – All Panchayat	
Indicator -1: Livestock-related functional community assets, e.g., Veterinary Facility, AI Facility, Breeding farms, Input trading facility, Agri-clinic, Milk collection center, small slaughterhouse, and any other Common Service Centres (CSC) taking livestock linked activities.	Panchayat wise veterinary/livestock linked community assets (Government funded / community funded)

[1] A stringer is a journalist who is employed part-time by a newspaper or news service in order to report on a particular area

Proposed indicator	Data to be collected
Indicator -2 Number of the beneficiary of veterinary / livestock linked government schemes	Beneficiary number panchayat wise for a given baseline year growing with bank finance / self-finance.
Indicator -3 Number of trained master livestock farmer	Number of trained master livestock farmer per panchayat *(Issue of ID card – with IT-based registration of their farm premises)*
Indicator -4 The number of breeding units capable of supplying heifer, kid, piglets, etc.	The number of breeding farms (species-wise) per panchayat *(Issue of ID card – with IT-based registration of their farm premises.*
NB: Things to be collected additionally during the panchayat level survey: 1. Road distance between panchayat office to the nearest town (as per census definition), primary veterinary facility (e.g., SVD and BVD), government livestock farm, Bulk Milk Cooling facility, Milk Processing Centre, Slaughterhouse and physical livestock market. 2. Estimated production figure of milk, meat, and egg per panchayat and sustainable target for the next five years based on situational analysis.	
Survey Methodology: Sample study of farmers Brief of Methodology: 50 farmers selected from within the jurisdiction of each of the ten sampled dispensaries per Agro-climatic zone 10x6=60 dispensaries or 3000 samples.	
Indicator-5 Adoption of recommended listed practices for respective agro-climatic zone	Adoption of a maximum of five priority practice identified for the zone for any livestock farming operations. Example of practices: Adoption of AI, Fodder cultivation/access to grazing or greens; regular vaccination, etc.
Indicator -6 Calf / piglet / kid mortality	Death vis a vis farm size.

<table>
<tr><th>Proposed indicator</th><th>Data to be collected</th></tr>
<tr><td>Indicator -7
Incidence of diseases (Bacterial / Viral and Production related) and Infertility at farmers place</td><td>Disease vis a vis classification.</td></tr>
<tr><td colspan="2">Survey Methodology: Sample study of consumer and retailers
Brief of Methodology -for consumer study:
The mix of area, e.g., Panchayat / Municipality and simple random sampling of households (Urban + Rural) with person-in-charge of household shopping as an element. For area sampling, composition and density of population can be taken as criteria. Further, each area (panchayat or municipality) can be divided into distinguishable residential areas. The sample size of the area can be decided based on the human population.
Brief of Methodology for the retail survey:
Area sampling and judgmental sampling.</td></tr>
<tr><td>Indicator -8
Percent demand for locally produced livestock products against overall demand.</td><td>As per designed instrument</td></tr>
<tr><td colspan="2">Survey Methodology: Market Intelligence Survey</td></tr>
<tr><td>Indicator -9
The volume of local production and sale of biologicals (Government and Private)</td><td>As per a designed guide.</td></tr>
<tr><td>Indicator -10
The volume of trade in physical livestock market</td><td>As per a designed guide.</td></tr>
<tr><td colspan="2">NB: Things to be collected additionally
1. GPS location of physical livestock markets vis a vis feeding areas (Areas from where animals are coming to the market)
2. Other relevant pointers as per designed physical livestock market intelligence guide.</td></tr>
</table>

List of indicator (Internal to Department)

The following is the list of indicators internal to the department:

Indicator-1

Incidence of major animal disease (Lab confirmed)

Indicator -2

Response time of disease investigation

Indicator-3

The number of capacity building training conducted (Category wise in each subdivision). A capacity-building training is different from a common awareness training)

Indicator-4

Standards of livestock products *(As per periodic sample testing for standards -including microbiological quality at various level)*

Indicator -5

Semen straw production vis a vis consumption

Indicator -6

Artificial insemination technology adoption rate

Indicator – 7

Artificial insemination Conception rate (Using department marketed semen straws)

Indicator -8

Footfall in veterinary & farm facilities for entrepreneurship-related counseling.

Indicator-9

Number of private farms incubated by government farms

Indicator -10

Completion time of infrastructure projects

Indicator -11

Stakeholder opinion on services at the level each institution, e.g., hospital, farms, training institutes

Framework for integrated Information Technology based Management Information System (MIS)

The department should endeavor to develop an integrated information technology-based management information system. It should help the department to achieve the following:

1. Informed stakeholders who are sharing their requirements and views on departmental activities.
2. Operational efficiency (Organizational / Project), e.g., reduced processing time.
3. Better project design and execution based on learning from the concurrent evaluation.
4. Monitoring of stakeholder investments, cluster and infrastructure growth for targeted and coordinated development initiatives.
5. Monitoring of production targets at the panchayat level.
6. Targeted and facilitated credit availability, benefit, and service delivery.

It should essentially be an integrated system covering the following components:

1. Communication, referral tele-veterinary & extension.
2. Data Management and M&E
3. Premises registration and asset management system.
4. Livestock Farming and market decision support.
5. Stock / Inventory management system for medicine and vaccines.

The system additionally should be integrated with select known administrative, human resource management (HRM), financial, herd health management, animal breeding, animal disease decision support, and livestock insurance management system.

The system may not cover animal disease reporting, as there is an ongoing parallel initiative in India to develop a comprehensive system integrating human and animal disease reporting and data analysis. However, it should allow border control points to enter animal movement data and laboratories to enter data related to performance evaluation and to issue online reports to clients. Based on the development of national initiatives related to the disease reporting system, provision should be made to integrate the system with the national animal disease reporting system along with

known private systems such as GIS-based spatial analysis or mobile-based system on disease reporting by a citizen scientist.

The department should ensure that the proposed system should promote the growth of private herd health, productivity, and breeding management-related service providers. It will have access to only certain data (e.g., those required for regulation, general production, productivity estimation and assessment of breeding policy adherence) to be shared by the promoted private service provider as per data sharing/use agreement. Similarly, proposed MIS will also get only the required data from disease management related private/public systems.

The following will be the policy and partnership related imperatives:

1. Setting up the animal and related infrastructure identification authority with set rules for unique ID and use of data by private entities. The authority should incentivize animal and premises identification.
2. Data share and use agreement with organizations like North Eastern Space Application Centre (for data support under North Eastern District Resource Plan project[2]), State Level Bankers' Committee (SLBC), Assam State Rural Livelihood Mission (ASRLM), West Assam Milk Union Limited (WAMUL) and State Institute of Panchayat and Rural Development (SIPRD).
3. Data share and use agreement with GIS and Remote sensing facility.
4. System structure design, Content development, and share agreement with Indian Council of Agricultural Research (ICAR), State Agricultural Universities (SAUs) and other knowledge agencies.
5. Mandatory sharing of artificial insemination and vaccination related data by private / cooperative / semi government organizations.

Since quality data is essential, there should be ample scope for user awareness and mobile application-based data entry interface with multiple data validation checks. Animal identification and premises registration both in public and private contexts must be the key thrust area to ensure quality data.

[2] www.nedrp.gov.in

The system must benefit farmers and other value chain actors in the following ways:

1. Access to credible information and extension materials in local language directly delivered to mobile phones of the system user.
2. Facilitated engagement with departmental project activities, the scope of sending requirement, and service feedback.
3. Online checking of initial livestock linked project feasibility for any specific area.
4. Access to location maps of related public and private facilities.
5. Smooth submission of direct application for project assistance/ farm loan with a system of getting intimation on application processing status and reason for negative decisions.

The system should additionally give the following benefits to the department and its partner agencies:

1. Operational efficiency and insights for new project/ improvement.
2. Credible real-time activity, production, farm cluster, and infrastructure growth data for targeted project activities.
3. Access to the analysis of system users' opinions/feedback for innovative products/services.
4. Enhanced delivery of developed content/extension messages.
5. Effective use of technologies, e.g., uses of GIS / remote sensing data for informed decisions.
6. Enhanced credit availability/disbursement due to the availability of farm decision support system.

The system should have the following levels of data entry:

1. Animal Level (e.g., Data to be shared by outsourced third party herd health or insurance service provider)
2. Private service provider, Farm/enterprise premise level (Data to be shared by farmers, entrepreneurs and verified by officials)
3. Government facility premise level (Data from hospitals, farms, laboratories and training facilities, etc.)
4. Citizen level data, e.g., Opinion / Feedback & Disease incidence data as reported by a citizen scientist.
5. Project/area/ Administrative level data entry, e.g., Financials, HR placement, production targets, etc.

The design of various data entry format should be based on:

1. Review of existing reporting systems at each type of institution, e.g., farms, hospitals, laboratories, etc.
2. Species-specific requirement. (e.g., Cattle, goat, pigs, poultry) needed to forecast production, events, etc.
3. The potential use of artificial intelligence in the future to assess public opinion and probe health, reproduction, and production problems.

Concurrent to the designing of the system, the department must review the functional use of the collected data as of now and methods for their collection. For example, we should not judge the performance of a veterinary facility based on footfalls for treatment when the ideal job of a veterinary hospital is to keep the assigned area free from disease.

The dashboard of the MIS should permit real-time monitoring of:

1. Indicators
2. Status of data sharing by registered private service providers. (e.g., Herd health & productivity data, vaccination data from identified animals, etc.)
3. Target (physical/financial) achievements across projects with district wise break up.
4. Statistics on extension-related content growth, registered individual private user activity, generated opinions, etc.
5. User activity, data entry status, and achievement across performance indicators for each of the individual user government institutions.
6. Estimated production and productivity (species-wise), cluster growth, and disease-related event forecast.
7. Status of a bank loan application, cluster growth maps with parameters like average farm size, breed status, etc.
8. Animal movement, disease-related spatial maps, and event forecast.
9. Status of medicine /vaccine/semen straw / Liquid Nitrogen use and forecast for the same.
10. Action status on administrative directives and status of departmental manpower with the spread.