



Final Draft

National Livestock Extension Policy

Submitted to

Director, PIU-NATP-DLS

by

Md. Abdur Razzaque Mia

Date: 20th January 2013

TABLE OF CONTENTS

ABBREVIATIONS	3
EXECUTIVE SUMMARY	4
1.0 Background	5
2.0 Rationale of Livestock Extension	7
3.0 Policy Perspectives	8
4.0 Vision	10
5.0 Mission	10
6.0 Objectives	10
7.0 Thematic Areas and Approaches	11
8.0 Emerging Livestock Development Issues	14
9.0 Implementation and Governing Strategy	20
10.0 Supervision, Monitoring and Evaluation	22

ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
BAU	Bangladesh Agricultural University
BLRI	Bangladesh Livestock Research Institute
BRAC	Bangladesh Rural Advancement Committee
CIG	Common Interest Group
CVASU	Chittagong Veterinary and Animal Sciences University
DAE	Department of Agricultural Extension
DAM	Department of Agricultural Marketing
DLS	Department of Livestock Services
DOF	Department of Fisheries
DOYD	Department of Youth Development
FFS	Farmers Field School
FFYP	Fifth Five Year Plan
GDP	Gross Domestic Product
HIV	Human Immunodeficiency Virus
HRD	Human Resource Development
ILRI	International Livestock Research Institute
LG	Local Government
MOA	Ministry of Agriculture
MOC	Ministry of Commerce
MOFL	Ministry of Fisheries and Livestock
MOI	Ministry of Industries
MOLG	Ministry of Local Government
NATP	National Agricultural Technology Project
NGO	Non Governmental Organization
NLDP	National Livestock Development Policy
NLEP	National Livestock Extension Policy
PO	Producers' Organization
RFLDC	Regional Fisheries and Livestock Development Component
SLDP	Smallholder Livestock Development Project
TB	Tuberculosis
TLDC	Thana Livestock Development Center
TOT	Training of Trainers
UP	Union Parishad

EXECUTIVE SUMMARY

The Livestock Extension Policy would refresh the knowledge and skill of policy makers and extension workers for providing demand based extension services to livestock farmers in a non-formal participatory and decentralized manner with the objective of increased productivity and improving farmers' quality of life.

Livestock extension services are multi sectoral and multi dimensional lacking coordination among the stakeholders and the service recipients. For better implementation and effective delivery of extension services, DLS felt the need of bringing all the stakeholders under one policy umbrella. So with this perception the issue of preparing National Livestock Extension Policy has been emerged.

The mandates and functions of DLS include all activities related to livestock development and control of livestock diseases. This includes provision of livestock services, conservation and genetic improvement of livestock poultry breeds, artificial insemination, development of feeds and fodder, extension of livestock services, vaccine production, procurement and distribution, training and diagnosis services.

Based on the recommended ten critical areas of National Livestock Development Policy 2007, the principles of NLEP are built on. The principles are:

- i. Changed circumstances and increasing trends;
- ii. Increasing both public and private investments;
- iii. Veterinary public health and food safety issues;
- iv. One stop livestock extension services for backward linkages;
- v. Supply chain development for forward linkages;
- vi. Visualization of different approaches;
- vii. Technology transfer to farmers' level;
- viii. Strong linkage among research, extension, education and farmers;
- ix. Impediment of farmers affecting access to extension services;
- x. Implementation of decentralized, bottom-up, demand driven & pluralistic market led extension services.

To achieve these principles and goal of NLEP, the main actors would be to: (i) strengthen DLS extension setup up to union parishad; (ii) Organize farmers' community; (iii) Coordinate activities of service providers both in public and private sector; (iv) Strengthen market based networking; (v) encourage investors.

The role of Government for implementation of this Livestock Extension Policy should be to play more regulatory role in the area of Poultry and livestock farming, veterinary services, veterinary public health issues that may lead to facilitate private sector to encourage more investment in livestock sub sector.

Extension activities according to this policy document should be based on farmers need, problems and potentials at farm level. The Extension agencies would work closely with the farmers and entrepreneurs to identify their needs and provide technologies, technical information and services for its solutions in the form of technology demonstrations, vaccinations, artificial insemination, regular de-worming, input accessibility and exposure visit. To meet the increasing demand of milk, meat and egg an affective adoptable livestock extension policy needed.

The mission of NLEP is to generate, provide, disseminate demand driven, coordinated and decentralized knowledge & technology based livestock extension services for sustainably increased productivity, profit optimization and well-being of stakeholders.

National Livestock Extension Policy

1.0 BACKGROUND

- 1.1 Agriculture consisting of crop, fisheries, livestock and forest sub sector continues to be the largest sector of Bangladesh economy. Livestock sub sector contributes 12% to agricultural GDP and 3% to National economy. Livestock sub-sector provides new raw material for industry, serves a social security for the rural poor, and provides security against crop failure or damage during draught or cyclone. Though Bangladesh has one of the highest livestock populations in the world, but characterized by very low productivity, particularly in cattle because of low productivity, inferior genetic material, indiscriminate breeding leading to severe genetic erosion, neglect of animal healthcare and non- existence of an efficient value chain, shortage of feeds and fodder resources, and lack of awareness. Goat and sheep are generally maintained by landless marginal farmers mostly for meat. Poultry is another important component where private industries are playing a major role to support farmers in selected hubs across the country.
- 1.2 The livestock sub-sector is a thrust sector for economic development of Bangladesh. **Major potentials are:** livelihood development tools for poor and pro poor, employment and income generation and poverty reduction, nutrition, food security and safety, and social safeguards, export earnings, rising demand and scope of increased productivity, renewable energy and soil health, value addition and supply chain development. Poultry and dairy farming has some comparative advantages over crop, fishery and forestry as they require less land, small capital and is least influenced by seasonal changes.
- 1.3 Technology generation, dissemination and support services need to be geared up for livestock productivity improvement but keepers are too poor to harness the potentials of livestock. It needs to be ensured through production by masses instead of mass production by the corporate. The small and marginal farmers should be organized through well planned livestock extension services.
- 1.4 The National Livestock Extension Policy has been drawn to strategically address the **key challenges/constraints** prevailing in the livestock production systems. These are inappropriate organizational setup with inadequate extension manpower, scarcity of feeds and fodder, inappropriate marketing system and poor investment, shortage of drinking water, inadequate animal health care services, limited diseases diagnostic and research facilities, preponderance of emerging and re-emerging diseases, poor coordination among public and private bodies, lack of database system and weak strategic planning, poor monitoring and reporting system, low productive local genetic stocks, shortage in preventive and curative inputs supply, increasing population and food safety issues, slow mechanization in animal agriculture, poor investment and weak value chain, weak research-extension linkages.
- 1.5 Proper implementation of livestock extension policy requires: Formulation and implementation of rules and regulations.

- 1.6 It requires capacity building of animal health care and advisory services, farm management and husbandry practices, training of unemployed youth on poultry, dairy farming, vaccination, adaptive and applied livestock research, technology dissemination, input supply, animal health related traditional services, improvement of feeds and fodder production and feed technology, supply of breeding materials, tools and technology, supply of commercial inputs and machineries, quality control of vaccines and feeds, marketing of livestock products and value addition technology, flaying, processing and curing of hides and skin, management of international trade, management & safety regulation of slaughter house, processing, marketing and quality control of meat, milk and eggs.

- 1.7 The public sector organizations participating as service providers are: Ministry of Fisheries and Livestock, Ministry of Law, Department of Livestock Services, Ministry of Health and Family Welfare, Directorate of Health Services, Ministry of Forestry and Environment, Department of Forestry, Department of Fisheries, Department of Agricultural Extension, Agricultural Universities, University of Science and Technology, Department of Youth Development, Bangladesh Rural Development Board, Bangladesh Livestock Research Institute, Department of Agricultural Marketing, Ministry of Local Government and Cooperatives, Ministry of Industries, Ministry of Commerce, Ministry of Finance.

- 1.8 The private sector involved in providing livestock services are: Non Government Organizations, private entrepreneurs, animal health companies, poultry breeders, feed millers, individual farmers, farmers organization /cooperatives, producers organizations, meat and milk processors, animal health workers, vaccinators, livestock volunteers, marketing agencies, and information technology center (newspaper, radio, mobile, email, internet), and farm advisory group.

- 1.9 Livestock extension services are multi sectoral and multi dimensional, lacking coordination among the stakeholders. For better implementation and effective delivery of extension services, DLS felt the need of bringing all the stakeholders under one umbrella which led the issue of formulating National Livestock Extension Policy.

2.0 RATIONALE OF LIVESTOCK EXTENSION

Livestock extension is the entire set of services or systems or ongoing non-formal education processes. It facilitates the access of farm peoples, their organizations and relevant market actors to knowledge, information and technologies, interacts with partners in research, education, agribusiness institutions. It also assists them to develop their own technical, organizational and management skills and practices for improving animal healthcare, public health awareness, productivity, profitability and livelihoods through attitude and behavioral changes. Basics of livestock extensions are:

- Services can be performed by any person or public or private institution technically qualified and having years of practical experience.
- The technology and advice recommended by extension workers would be timely available, economically affordable, easily understood and applicable for adoption to the stakeholders.
- Organizing farmers group, ensuring market value chain and networking of different stakeholders involve in livestock production system.

3.0 POLICY PERSPECTIVES

The National Livestock Development Policy 2007 (identified ten critical areas) for livestock development. National Poultry Development Policy 2008 was formulated to encourage poultry industry and to control quality of inputs for sustainable poultry development. For disease control and eradication, Government enacted – Diseases of Animal Act 2005, Animal and Animal Product Quarantine Act 2005, Fish Feed and Animal Feed Act 2010, Animal Slaughter and Meat Control Act 2011. DLS also adopted Breeding Policy 1992.

Livestock extension today in Bangladesh is not what it used to be and is passing through a transformation of out dated traditional attitude. It is because of policy changes and development trend emergence. In the past livestock extension services were top-down and mostly project based. The National Livestock Extension Policy will focus the following issues:

- 3.1 **Changed circumstances and increasing trends:** With the changed circumstances of livestock and poultry production system and increasing trend of globalization, commercialization and demand-led livestock extension services need to play a new role. Livestock extension services should be systemized and modernized with bottom-up micro extension planning by community based farmers groups, its gradual consolidation at union level.
- 3.2 **Increasing trends of investment:** Investment in private sectors especially in the field of livestock & poultry production, processing and inputs manufacturing are increasing gradually.
- 3.3 **Veterinary public health and food safety issues:** Increased attention urged epidemiological, public health initiatives as well as food safety in value chain processes.
- 3.4 **Producer organization based demonstration and adoption:** For demonstration of newer improved technologies and their pervasive adoption, social mobilization through developing CIG of farmers is imperative.
- 3.5 **One stop livestock extension services for backward linkages:** Farmer Information and Advice Centers (FIAC) housed at UP Complex are rising as neighboring extension units providing integrated advisory services for all category farmers.
- 3.6 **Supply chain development for forward linkages:** Infrastructures for value addition to livestock and poultry products, its diversification and promoting marketing channel are incrementally emerging in the country.
- 3.7 **Visualization of different approaches:** The approach is the essence of an extension system which informs, stimulates and guides such aspects of the system as its structure, its leadership, its program, its resources and its linkages.
- 3.8 **Success in dissemination of models and technologies:** Participation and empowerment of farmers and communities, linkage between groups and institutions,

- innovative learning and communication, policy and priorities issues involves in the successful dissemination of suitable technologies.
- 3.9 **Strong linkage among research, extension, education and farmers:** Research for innovating newer technologies, its dissemination to stakeholders, capacity building should be strongly bonded together.
 - 3.10 **Impediment of farmers affecting access to extension services:** Gender, farming system, wealth status, land ownership and farm size, membership of farmer group/community organization, level of knowledge and education of beneficiary farmers hinders their access to extension services.
 - 3.11 **Increased demand of organic livestock:** Advancement of science, awareness in health and food safety and easy access to information, accelerated demand for organic livestock and poultry products in the present era.
 - 3.12 **Focusing on family level small scale livestock farming:** Due to shortage of land, capital and quality breeds or species constraining large scale farming, but, the potentiality of expanding small scale farming especially for beef fattening, dairy, goat raising is high.
 - 3.13 **Other driving policies:** Regarding livestock extension, recently some projects under DLS has provision for implementation of decentralized, pluralistic and demand driven approaches. DLS is practicing bottom-up approach model in some upazila though rest of the upazila livestock extension services are still inadequate, top-down, bureaucratic and big-farmer oriented. The NLEP is synthesized within the context of and drawing lessons from National Livestock Development Policy-2007, Poultry Development Policy – 2008, National Food Policy-2006, National Agricultural Policy-1999, Bangladesh Climate Change Strategy and Action Plan-2008, Country Investment Plan-2010, Perspective Plan (2010-2021), National Fisheries Policy-1998, Sixth Five Year Plan, Poverty Reduction Strategy Paper, Institutional Analysis and Future development of DLS, PEM consult, 2003, Animal Slaughter and Meat Control Act-2011, Animal and Animal Product Quarantine Act-2005, Extension Operation Manual, NATP-2008, Diseases of Animal Act 2005.

4.0 VISION

The vision of NLEP is to become self-reliant to satisfy the national demand of milk, meat and egg for fast growing populace through increased productivity thereby accelerating economic growth, employment and income generation and reducing poverty.

5.0 MISSION

The mission of NLEP is to generate, provide, disseminate demand driven, coordinated and decentralized knowledge & technology based livestock extension services for sustainably increased productivity, profit optimization and well-being of stakeholders.

6.0 OBJECTIVES

The major objectives of the NLEP are to:

- fortify research-extension-farmers linkages, mobilize, build and develop farmer groups and producer organizations for better access to technologies, information and marketing channels;
- promote sustainable improvements in safe milk, meat and eggs production to satisfy national demands, processing and value addition for optimal income & employment generation;
- facilitate increased private sector participation and investments in livestock production, market development and export of livestock products and by products;
- contribute towards national food security through enhanced production, processing and marketing of livestock products;
- strengthen health services, veterinary public health, epidemiology of diseases and diagnostic facilities, diseases surveillances and reporting;
- assist and motivate farmers in adopting suitable technologies through capacity building, harmonize extension services provided by public and private service providers at all levels including input suppliers, livestock commodity producers, producers organization and other agencies;
- develop human resource and skill of extension service providers and farmers.

7.0 THEMATIC AREAS AND APPROACHES

- 7.1 **Decentralization:** Decentralization has been adopted in many countries and the main ground for the move is to shift decision-making authority to lower administrative and political level units for restoring the decision making mandate to the farmers and facilitating their direct access to resources and markets, enhancing their bargaining capacity for sharing benefits as well as improve extension accountability to their needs. Decentralization not only gives local government control over personnel and finances, but also re-focuses the management of extension through farmer participatory involvement in responsibility sharing. The main features of decentralization are appropriate information to their needs along with work scheduling for extension activities based on local resources, social and physical environment.
- 7.2 **Fortify one stop service center:** To provide technological services to the farmers and to ensure two-way flow of information between farmers and service providers, Farmers Information and Advice Centre (FIAC) may be adopted nation-wide to provide one stop integrated services to make farmers pro-active and to bring the extension services at grass root level.
- 7.3 **Facilitating Role of Extension Workers:** The role of extension agents either public or private will be rather facilitator, not as doer. Though DLS has limited manpower centered at upazila, the frontline of service facilitation, but number of farmers, youths have been trained on different livestock related events.
- 7.4 **Demand-led Extension:** Prioritized extension and research activities would be based on farmers need, problems and potentials at farm level. Extension agencies would work closely with the farmers and entrepreneurs to identify their needs and provide technology, technical information, and services for its solution in the form of technology demonstrations, vaccination, artificial insemination, regular de-worming, inputs accessibility, and exposure visit.
- 7.5 **Pluralistic Extension:** Delivering extension services including inputs (vaccines, medicines, feed, AI materials) to farms and farmers is provided by both public and private sectors. For effective extension services delivery, participation and partnerships with multi sectoral agencies both public and private are to be continued according to the regulations framed by public sector i.e. DLS.
- 7.6 **Research - Extension Linkage:** Working together for common objectives in both backward and forward direction linked by information flow and feedback. In traditional research and extension linkage tended to be on a 'top-down' approach providing limited options in making decision for aptness of innovated technology, bottom up system allowing early involvement of stakeholders for symbiotic demand-based on farm technology validation will be given priority. Linkage activities in livestock research and extension system would be managed at varying administrative levels - national, regional, district, upazila and union level identifies farm families as their target and hub around imparting training both to the extension service providers and farmers.

- 7.7 **Integrated Extension Services:** Development of crop, fishery and livestock sub sectors are all inter-linked and inter-dependent. Until development of their own facilities by DLS, there is necessity of integration for dissemination of technologies to farmers. NGOs and private sector also work on these sub sectors in cooperation and collaboration with government departments to some extent. So, for avoiding duplication as well as inhibiting irrelevant messages dissemination, strong integration of these agents even at grassroots level defining responsibilities of stakeholders, is very important.
- 7.8 **Extension Education:** The livestock extension education plays an important role in the context to empower the farmers irrespective of gender with appropriate technological knowledge and skills. Extension education is out of school and meant for farmers efficiency.
- 7.9 **Extension Communication:** Communication is exchanging ideas, facts, feelings in a way that each gains a common understanding of the meaning of message. Few important elements are: communicator, message, media, receiver, feedback and impact.
- 7.10 **Community Livestock Development:** Community livestock development is to build farmers capacity through integrated farming system involving community people thereby increasing productivity to improve livelihood and reduce poverty, ensure empowerment of rural poor community forming producers organizations, self operated community owned village organization equally effective in implementation of veterinary public health issues and control of animal diseases.
- 7.11 **Fodder Extension:** Commercial production of green grass for dairy cattle is very inadequate and essential item of daily feed stuffs. For extension of fodder production, government fellow land, roadside slops, riverside slops, newly accreted char land may be used for fodder production through organizing community farmers. Land attached to ULDC could be used as high yielding fodder seed production.
- 7.11 **Human Resource Development:** DLS manpower is inadequate in numbers and needs skill development so as to increase productivity, reduce mortality, and enhance feeds & fodder quantity and quality, finally to improve the living condition of rural people. Simultaneously training institutes will be strengthened with sufficient resource mobilization.
- 7.12 **Role of Livestock Extension Agencies/Workers:** Role of various stakeholders both in public and private sectors is to improve the efficiency, coordination, working environment and to ensure effective implementation of extension services. In the public sector, the role is to create conducive environment and to perform regulatory activities, to facilitate and sensitize private sector to participate in extension services delivery. The role of private sector is to participate in livestock farmers' needs assessment, organize farmers' organization and to develop and practice livestock products value addition technique, supply livestock input, equipment and machinery.
- 7.13 **Extension Services in Marketing of Livestock and Livestock Products:** Adoption of technologies in marketing of livestock and its products should be market driven

rather than technology driven. It is rather easier to produce milk, meat and eggs but difficult to market these products due to lack of proper marketing infrastructure, procurement, transportation and sale of livestock products. In dairy industry, collection and processing of milk is developed through private sector initiatives but needs an organized marketing of network discouraging local traders as middle-man ship. Unless ensuring regular easy access to organized market with producer friendly price standards, technologies innovated for increased productivity will just remain less adopted.

- 7.14 **Target Group:** Livestock development involves a number of target groups with whom the extension agents need to work with. They are: Livestock owners; Livestock service providers; Input suppliers; Educational institutes; Marketing agencies.
- 7.15 **Extension Planning:** Planning is the process of determining in advance what should be done, by whom, when, how, and at what cost. Despite, planning long-term program priorities or planning a consultation meeting with farmers, plan to determine organizational aims, developing premises about the current environment. Selecting the course of action, initiating activities required to transform plans into action to ensure livestock farmers' benefit and community development. Decisions are concerned with the future & may be made under circumstances of certainty or uncertainty but should be a group process.
- 7.16 **Locations Specific Planning:** Bangladesh livestock population are scattered all over the country but their density and marketing system are not similar. Dairy cattle of smallholders are located mostly in Pabna, Sirajganj, Kushtia, Satkhira, Khulna, Rangpur, Dinajour, Naogaon, and Chittagong districts. Buffalos are found in Bhola, Noakhali and Satkhira mostly in the Char areas of the coastal belt of the southern districts. Goats and Sheep are developed in Meherpur, Kushtia, Jhenaidah, Jessore, Satkhira, Naogaon and Bogra districts. Ducks are heavily populated in Sunamganj, Netrokona, and Kishoreganj and in the Haor districts. Traditional poultry in backyard farming system spread all over the country, but commercial poultry differs district to district. These all are dependent on marketing, infrastructure, communication, transportation and access of farmers to inputs resources. So the planning process and the extension methodology would be based on locations specific resources. Manpower setting and distribution of support services & input supply would be ensured according to agro-ecological situations in Bangladesh, these are: (i) plain land, (ii) haor area, (iii) coastal belt and saline zone, and (iv) draught prone northern area.
- 7.17 **Public Private Partnership (PPP):** The PPP initiative is a recent approach of the government to promote and encourage private sectors' partnership to enhance investment in value added market-led development process linking commercial production and market information system. It has occurred at a time when investments in public sector infrastructure are seen as an important means of maintaining economic activity. The importance of PPP to economic activity was established to support public sector capacity to implement PPP and share timely solution to problems across Bangladesh. The livestock sector under PPP may involve the private sector to backward and forward stages of production cycle including value addition. In health sector, public and private sector may go for increased vaccine

production and establishment of processing plant for dairy projects for further investment.

- 7.18 **Coordination:** Mechanism to facilitate a clear understanding of roles and nature of the livestock service providers and other stakeholders to harmonize services provided by them at all levels including input suppliers, livestock commodity bodies. Close collaboration among stakeholders including routine planning and sharing information through exchange of reports, workshops, seminars and consultations as well as follow up of all extension interventions at all levels as a way of promoting effectiveness would be ensured.
- 7.19 **Proper Implementation of Laws, Rules & Regulations and Policies:** All the existing laws, rules and regulations are to be strictly followed.
- 7.20 **Specific Control Program for Economically Important & Zoonotic Diseases:** Strategic control programs for addressing economically important diseases like HPAI, FMD, PPR, Rabies, Anthrax, etc. are the public health issues would be in the domain of public sector.
- 7.21 **Assure Quality of Biologics, Medicine, Feed, Breeding Materials, Animal Products & Bi products:** Quality of biologics, medicine, feeds, feed additives, breeding materials, animal products and bi-products etc. will be the assured by the public sector.
- 7.22 **National level advocacy to prioritize livestock development:** Unlike agriculture, government would attach equal priority of livestock products in the food basket to ensure food security as well as balancing diet.

8.0 EMERGING LIVESTOCK DEVELOPMENT ISSUES

The NLEP is designed to address the emerging developing issues of the sector in order to achieve the vision and set objectives of the policy. The development issues are many and some of them are directly linked to the implementation of the policy. But there are many cross-cutting issues also within the broader spectrum of agricultural development of the country. The important development issues considered are:

- 8.1 **Food Security and Malnutrition:** Development of non-crop agriculture i.e. dairy, buffalo, goat and sheep, ducks and poultry could enrich the main protein source of milk, meat and egg for balancing and nutritious foods. Boosting up of livestock and poultry production, of course, enrich food basket and can be considered as an important frontier towards augmenting overall food production in the country. The availability of food ingredients, one of three major pillars of food security as well as to make menu balanced even with micro nutrients to prevent malnutrition. The motto of livestock extension services should be production oriented through the following initiatives: (i) Improvement of quality and productivity of livestock by strengthening research- extension-farmers linkages; (ii) Ensure development of animal health care services, particularly for the control of parasitic and infectious diseases; (iii) Investment assistance for expansion of marketing network for production technologies, input supply, improved technology for preservation and marketing of

livestock products; (iv) Support development and expansion of technologies for the resource-poor people.

- 8.2 **Food Safety Issues:** Presence of health hazardous components either microbiological or chemical (drug, hormone, steroid) residues in food products of animal origin is a major concern of present time. Informally marketed animal origin food items in Bangladesh are frequently tested not up to the standard of food safety management. At the level of pre and post production of meat, milk and egg as well as value added products; the focus should be on food safety. Food safety on the farm addresses the issue on chemical, microbiological and drug residues in food of animal origin. Implementation of guideline prescribed by OIE to be followed strictly ensuring SPA standard. Effective control of food adulteration, a multi-disciplinary collaboration involved in feed and animal production especially those in a position to provide veterinary clinical and epidemiological information is essential.
- 8.3 **Veterinary Public Health Issues:** Animal diseases can have a major impact on public health, national economy and international trade, food security and livelihood of households particularly of poor segments. The emergence of HPAI led to an increased understanding and awareness of relationship between animal and human health. It encompasses the potentials of trans-boundary animal diseases and emerging infectious diseases on food security, livelihood and poverty reduction. There is a need for enhancement of veterinary infrastructure in public, private and NGO sector and their capacity for disease surveillance, diagnosis and epidemiological activities and public health awareness. Prevention and control of trans-boundary animal diseases requires regionally harmonized and effective early warning system to prevent the spread of diseases. Veterinary public health in principle encompasses food and feed safety of human animal health and body for livestock origin. The one-health approach may be followed to improve the public health situation in the interface of man, animal and environmental context. The extension departments in collaboration with local government and other stakeholders should prepare guidelines and distribute it to the farmers regarding the effects and evils of public health and sanitation. In the training manual, there should be public awareness program on improvement of sanitation.
- 8.4 **Zoonosis, Emerging and Re-emerging Issues:** Animal has the potential to transmit diseases to human known as zoonosis. Some of the zoonotic diseases such as Bird flu, Anthrax, Nipa, Rabies, and Tuberculosis etc. are caused through faulty husbandry practices, movement of infected animals, handling of animals and clinical equipment, management of animal wastes and dead animals, poor surveillance and unrestricted encroachment of borders of neighboring countries etc. Livestock diseases are not regularly reported and investigation into their epidemiology not fully introduced. DLS has preparedness and response guideline for the field officials and farmers to follow for control of the emerging and re-emerging diseases. Inter-ministerial national coordination is needed to be formed to combat the spread of fatal infectious diseases. Proper pathways can be utilized for awareness creation among the general public regarding zoonotic diseases including HPAI.

- 8.5 **Bio-security:** Bio-security is those practices designed to prevent the introduction of harmful agent to livestock and poultry operation. Bio-security at the farm level is the management practices and enabling producers to prevent the movement of disease causing agents. Therefore, bio-security involves many aspects of farm management such as disease control and prevention, feed management and visitor control. Other sources of contamination are closing goods, equipments and vehicles. The designing of planning process in view of the improved bio-security should include location, construction of houses, traffic off and on the farm, pest management, designing of house cleaning and disinfection, personal hygiene, flock and herd health care and monitoring, husbandry practices and compliance with the regulations. Principles of bio-security plans are: (i) increase the animal ability to resist diseases; (ii) minimize the number of contact that might result in diseases; (iii) eliminate sources of infection.
- 8.6 **Use of ICT in Livestock Extension (e-livestock):** Information and Communication Technology (ICT) can play a key role in providing extension services with all information needed for the farmers work including livestock production, inputs supply, disease control and improving market access, and availability of technology dissemination. It is vital to strengthen capacities of farmers, their organizations and rural communities. ICT includes the use of computer, internet, geographical information service, mobile phone messages etc. It is necessary to use ICT in the frontline offices of DLS in upazila and union parishad for linking livestock marketing and production through web and mobile based technology advisory services for farmers. Through these mobile and web based messages early warning of diseases and natural disasters as well as dissemination of information may be included in the extension procedure establishing gateway system.
- 8.7 **Diseases Surveillance, Epidemiology and Reporting System:** Close intensified door-step monitoring of animal production cycles, strong surveillance for diseases and their epidemiological scenario along with organized reporting for further immediate action should be a regular practice. A database of livestock and poultry production, animal health care services, disease incidence related statistics should be established and improved for forward work planning.
- 8.8 **Specific Livestock Development Service Areas:** With the increase of commercialization of livestock the traditional livestock is declining, but yet large number of dairy and poultry still exists and contributes to the national production. Commercial entrepreneurs are taking care of feeds and fodder, health services and marketing, but traditional dairy and poultry are left for public care. So special attention to develop the traditional dairy and poultry and to improve their health care should be the thrust activities of DLS.
- 8.9 **Organic Farming:** Organic farming is recently getting popularity among the consumers because of their system where material detrimental to human health and environment is not used. Organic farming strictly confines the use of growth regulator such as hormones, antibiotics, food additives and genetically modified organisms and nano-materials. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects. Organic livestock farming combines tradition, innovation and science to benefit the shared environment

and promote fair relationships and quality of life for all involved. The characteristics feature of organic products is costlier and environment friendly. Paramount importance should be given to disseminate bio-rational based management systems in the farms to ensure productivity and products' safety and quality standard maintaining collaboration with stakeholders and publicity through electronic and print media for mass awareness.

- 8.10 **Value Chain Development:** Value chain is a high-level of businesses receives raw materials as input, add value to the raw materials through various processes, and sell finished products to customers. Value-chain consists bundle of activities accomplished by firm to design, produce, market, deliver and support its products. These value chain activities are the discrete building blocks of the competitive advantages. Thus the analysis of value chain encompasses wider issues than supply chain which only shows physical flow of products or services through immediate stages of value addition. Constraints hindering value chain development should be identified by government machineries to provide enabling environment, opening opportunities, reducing risks and vulnerability for harnessing full potential of livestock sector.
- 8.11 **Natural Disaster Management and Livestock Production:** Bangladesh is prone to natural disasters vz. heavy rainfall, floods, draught, cyclone, tidal surges and intrusion of saline water, etc. Livestock population is the first to be affected in that situation because of transportation of feed and fodder become more difficult to the affected areas including fresh drinking water. At that time, all efforts are made to safe human life. Due to unusual and difficult situation massive spread of epidemic diseases occurs during the post disaster period. In order to tackle this situation effectively, it is vital that disaster sustainable development and climate policy are integrated including livestock based interventions in terms of sustaining the livelihoods and resilience of the poor. Disaster Management Policy 2008 has a post and pre period disaster management and preparedness and response guideline can be followed in the affected area.
- 8.12 **Technological Knowledge Gap on Hides, Skin, Horn and Bone:** Leather and leather goods are the third most important export earner items in Bangladesh. The value of hides and skin depends on its quality which in turn depends on techniques of flaying the skin and on the status of health & nutrition of animals. Little work is done on flaying technique. Hides and skin are generally collected by complicated but well organized chain of middle men. Tanners buy their raw materials mainly from the middle men. In this field Aratdars act as commission agents for dealers. The main constraints is the poor flaying, improper method of curing, poor health and disease management, poor breed quality and age of the livestock species. On the contrary, valuable horn, hoofs and bones are mostly unused in spite of having usability and value addition. Mechanized slaughter house, storage facilities are also limited. DLS should introduce training program of the butcher on flaying and grading of meat cut, preservation of skins through curing. For quality control and certification of hides and skin, DLS may setup a wing and if necessary through promulgation of an act. DLS may also work on to prepare a comprehensive marketing policy for hides and skin.
- 8.13 **Strengthening Infrastructure and Facilities for Livestock Services:** DLS being the public sector principal organization mandated for livestock extension should reach to the

lowest tier of local government i.e. union parishad for better service delivery. There should be extension worker in the mainstreaming of DLS organizational setup like DAE. Provide adequate fund for effective delivery of livestock extension services. Ensure satisfactory logistics support in terms of transport, extension kits for effective extension service delivery.

8.14 **Animal Health Care Services:**

Disease prevention through vaccination campaigns, reduction of mortality and morbidity losses, and meat hygiene have remained priorities considering public health concern. The working patterns of animal health worker and delivery of services tend not similar to regular mass extension rather mainly primary healthcare, vaccination, de-worming, diagnosis and treatment. A case can be made for complementing animal health services with a parallel livestock extension service, possibly operating from the animal health clinics and hospitals, but staffed separately.

8.15 **Cross Cutting Issues:** Livestock development is influenced by a number of issues that are either partially or entirely outside the mandate of MOFL and DLS. The issues include environment, gender, public health sanitation, diseases, population growth, and education.

8.15.1 **Environment and Social Safeguard Issues:** Livestock production activities should be carried out in a sustainable manner keeping in mind the environment conservation issue. The department will promote livestock production especially ruminants (cattle, buffalo, goat and sheep) according to ecological standpoint of the areas. Department will document and distribute materials with best practices in a grazing management in order to conserve the environment. For instance, promoting exploration of methane fermenting cattle dung, poultry droppings and farm waste, utilizing urine as a tool of pest management. The concerned ministries collaboration with local government and other service providers can: (i) encourage use of appropriate grazing and farm management practices; (ii) Awareness creation regarding proper management of animal dung and urine, feeds and fodder refuse and fresh poultry litter should be made among the farming community.

8.15.2 **Women in Livestock Extension:** Women and youths access to production resources and generating income from their work when compared to that of men is not negligible at all. Socio-cultural attitude that put youth in an inferior position in a society should be changed through social mobilization. In this respect especially in public sector in collaboration with other stakeholders with all livestock extension providers to ensure: (i) Mainstreaming gender issues into livestock farming communities; (ii) Promote gender sensitive labor saving technologies; (iii) Empower underprivileged groups to access livestock farming resources; (iv) Livestock keepers should have access to marketing information and marketing network and develop farmers group.

- 8.15.3 **Knowledge Gap and Education:** The large number of population of Bangladesh suffers from illiteracy. Bangladesh in near future may suffer from insecurity of food and nutrition. While implementing livestock extension services, side by side, there should be a thrust for awareness on adult education. A course on zoonotic diseases may be included in school level.
- 8.15.4 **Climate Change:** Impacts of climate stressors on animal agriculture is reflective. The uncertainty of climate change and how change will influence on animal production on a global as well as regional scale is largely unspecified. In Bangladesh, by contrast, the bulk of livestock have no protective structures and they graze off the land. There is every reason to expect that livestock in Bangladesh will be sensitive to climate change. Early warning system and response measures in order to protect livestock and environment during natural calamities, technologies adoptable to climate tempted vulnerabilities and long term resilient strategy will be upheld.
- 8.15.5 **Competition of Livestock and Crop Production on Land:**
In accordance with massive population growth food grain requirement is increasing and with rapid urbanization cultivable land is shrinking every day, as a result, increased pressure on land for crop production for human consumption is traditionally getting priority over livestock production. State priority of crop production depriving the livestock population through squeezing the opportunity of grazing in pasture. No land especially is ear-marked for animal grazing and fodder production consequences a serious dearth of feeds and fodder.

9.0 IMPLEMENTATION AND GOVERNANCE STRATEGY: The government will clarify the roles and responsibilities of various livestock service stakeholders to avoid overlapping of services with intention of creating synergism and complementation. For better implementation of this extension policy, the strategy should be as under the matrix:

Key Issues	Activities	Responsible organization	
		Public	Private
Institutionalization of livestock extension policy	<ul style="list-style-type: none"> ➤ Policy formulation and approval. ➤ Implementation guidelines preparation. 	MOFL, DLS	-
Preparation of guidelines for coordination and supervision	<ul style="list-style-type: none"> ➤ Defining concern agencies. ➤ Formation of different committees with responsibilities. 	MOFL, DLS	NGOs and private entrepreneurs
Enabling environment for both public and private sectors	<ul style="list-style-type: none"> ➤ Development of acts and regulations 	MOFL, DLS	
Farmers' organization Producers' organization	<ul style="list-style-type: none"> ➤ Framing of organizational structure. ➤ Promote and strengthen. 	MOFL, DLS	NGOs and private entrepreneurs.
Research – extension – farmers' linkage	<ul style="list-style-type: none"> ➤ Client oriented research ➤ Facilitate research & extension collaboration. ➤ Promote linkages with farmers. ➤ Recognize & improve farmers' indigenous knowledge & innovations. 	MOFL, DLS, BLRI, Agril. Universities	NGOs, Donor agencies, Producers organizations.
Cross cutting issues in livestock extension services	<ul style="list-style-type: none"> ➤ Identification of issues. ➤ Outlining mitigation measures. 	Public sectors	NGOs, Investors, Entrepreneurs
Training & skill development	<ul style="list-style-type: none"> ➤ Preparation of training modules. ➤ Train extension personnel's. ➤ Tailor made training for farmers. 	DLS, Universities, DOYD	NGOs, private sector, poultry worker, livestock volunteers
Advisory services on farm management and husbandry practices	<ul style="list-style-type: none"> ➤ Farmers guide on husbandry practices. ➤ Sensitize farmers on commercial farming. ➤ Knowledge sharing & disseminate technologies on production management and husbandry practices. 	DLS, BLRI, BRDB, DYD Universities.	NGOs, private entrepreneurs.
Advisory services on primary healthcare	<ul style="list-style-type: none"> ➤ Preparation of farmer's manual on animal health care. ➤ Motivate on impact of sanitation & hygiene. 	DLS, BLRI, DYD, BRDB Universities.	Pharmaceutical companies, Vaccinator, para vets, NGOs

	<ul style="list-style-type: none"> ➤ Biosecurity. 		
Commercial inputs and machineries supply	<ul style="list-style-type: none"> ➤ Facilitate farmers to input-output market. ➤ Products availability. ➤ Quality assurance 	MOFL, DLS, BLRI	Pharmaceutical companies, NGOs, Input suppliers.
Credit delivery	<ul style="list-style-type: none"> ➤ Ensure credit availability on easy terms. ➤ Risk coverage. 	DLS, DYD, BRDB, Social Welfare	NGOs and private sector
Breeding material	<ul style="list-style-type: none"> ➤ Implementation of breeding policy. ➤ Availability of quality breeding material. ➤ Performance monitoring. 	DLS, BLRI.	NGOs, private sector
Quality control of vaccines and feeds	<ul style="list-style-type: none"> ➤ Ensure products quality. ➤ Supervision and monitoring. ➤ Compliance of rules and regulations. 	MOFL, DLS, BLRI	-
Marketing of livestock products	<ul style="list-style-type: none"> ➤ Ensure market oriented livestock farming. ➤ Improve market infrastructures. ➤ Access to market information. ➤ Value chain development. 	MOFL, DLS, BLRI, etc.	NGOs, Private sector
Hides and skin, Slaughter house by products.	<ul style="list-style-type: none"> ➤ Help establishing modern slaughter house and abattoir. ➤ Organize butchers training. ➤ Sensitize for value addition. 	MOFL, DLS, MOI.	Private investors.
International trade management	<ul style="list-style-type: none"> ➤ Infrastructure development. ➤ Export promotion policies & guidelines. 	MOFL, DLS, DAM, (LG) Milk Vita	NGOs and Private sector
Public Private Partnership (PPP)	<ul style="list-style-type: none"> ➤ Create enabling environment attracting private sector. ➤ Ensure government supports. ➤ Capacity building. 	MOFL, DLS, BLRI	NGOs, Private investors.

10.0 SUPERVISION, MONITORING AND EVALUATION: For effective implementation of livestock extension policy, regular monitoring & supervision will be carried out at all level of extension initiatives. Through monitoring and evaluation, collection and analysis of information and problems gaps and actions taken would be primary steps and participatory M&E method involving stakeholders at various level of evaluating particular program, share control over the contents, process, results and corrective measures. In participatory evaluation system, primary stakeholders deliberated as active participants – not just cradle of information; build their capacity to analyze, reflect and taking action; catalyze joint learning for corrective measure. The goals of monitoring and supervision are:

- To ensure that inputs, work schedules and outputs are proceeding according to plan, i.e. that project implementation is on right track;
- To provide record of input use, activities and results;
- Early warning of deviations from initial goals and expected outcome.