



## **Transforming Livestock Resources into a Beacon of Hope through a Good Governance Model**

An Action Plan for transforming livestock resources into a network of entrepreneurs, generating decent employment and exportable surpluses under Livestock Technopark Peshawar, Pakistan



**FOOD AND AGRICULTURAL ORGANIZATION OF THE UNITED NATIONS**  
*Peshawar, 2019*

## List of abbreviations

AWKUM	Abdul Wali Khan University Mardan
BRMC	Biorisk Management Center
CAAS	Chinese Academy of Agricultural Sciences
DMTC	Dairy and Meat Technology Center
DSP	Dairy Science Park
DRAP	Drug Regulatory Authority of Pakistan
GTP	Gomal Technopark
GU	Gomal University, DI Khan
KMU	Khyber Medical University, Peshawar
KP	Khyber Pakhtunkhwa
KPCCI	Khyber Pakhtunkhwa Chamber of Commerce and Industries
KP-FSHFA	Khyber Pakhtunkhwa Food Safety and Halal Food Authorities
KP-LFWA	Khyber Pakhtunkhwa Livestock Farmers Welfare Association
KT	Konya Technopark, Turkey
LBSC	Livestock Business Support Center
LCB	Local Council Board
LDD Ext	Livestock and Dairy Development Department Extension Wing
LDD Res	Livestock and Dairy Development Department Research Wing
LPIC	Livestock Policy Implementation Cell
LTP	Livestock Technopark Peshawar
PNAC	Pakistan National Accreditation Council
PVMC	Pakistan Veterinary Medical Council
SBBU-S	Shaheed Benazir Bhutto University Sheringal Dir
SMEDA	Small and Medium Industries Development Authority
SNL-USA	Sandia National Laboratories USA
UAP	University of Agriculture Peshawar
UOS	University of Swat
VRI	Veterinary Research Institute Peshawar
WUM	Women University Mardan

## Table of Contents

S.No.	Content	Page
1	Executive Summary	5
2	Author's note	9
3	Review of KP Livestock Policy 2018	10
4	The Governance Model	13
5	Administrative Framework	17
6	Allocation of Financial Resources	19
7	Livestock Sector Priorities and Sustainable Development Goals	20
8	Stakeholders of the Livestock Sector	22
8.1	Livestock and Dairy Development Department Extension Wing	23
8.2	Livestock and Dairy Development Department Research Wing	24
8.3	Local Government, Election and Rural Development Department	27
8.4	Directorate General Fisheries	28
8.5	KP Food Safety and Halal Food Authority	30
8.6	The Universities (AWKUM, WUM, GU, SBBU-S, UOS, UAP, KMU)	31
8.7	KP Livestock Farmers Welfare Association	41
8.8	Livestock Markets and Slaughter Houses	48
8.9	Unemployed veterinarians	52
8.10	KP Chamber of Commerce and Industries	53
8.11	Women in Livestock Value Chain	54
8	Policy Implementation and Regulatory Issues	55
9	Market Oriented Production Strategy and Business Incubation	58
10	Facilitating Agribusiness Linkages – Entrepreneurship Network	61
11	Wrap up meeting	64
12	Implementation and Management Arrangements	67
13	Livestock Technopark Peshawar	69
13.1	Historical Background	69
13.2	Attempts in Punjab, Pakistan	69
13.4	Konya Technopark – DSP Collaboration	71
13.5	The KP Livestock Resource Management Status	71
13.6	Endorsement of the Provincial Chief Executives	72
13.7	Outcome of the Wrap-up Meeting	73
13.8	Legal Framework for LTP	74
13.9	Managing Board LTP	82
13.10	Institutional Network of LTP	83
13.11	Entrepreneurship Network LTP	84

<b>S.No.</b>	<b>Content</b>	<b>Page</b>
14.1	Livestock Policy Implementation Cell LDD Ext	86
14.2	Livestock Business Support Center Bannu	88
14.3	LBSC and Veterinary Research and Diagnostics Center Merged Areas of KP	90
14.4	Livestock Business Support Center VRI	91
14.5	Livestock Business Support, VRDC Kohat	92
14.6	Livestock Business Support Center, VRDC Abbottabad	92
14.7	Livestock Business Support Center Fish Farm Sher Abad	93
14.8	Livestock Business Support Center Ring Road Slaughter House, LCB	93
14.9	Dairy and Meat Technology Center WUM Mardan	94
14.10	Livestock Business Support Center AWKUM Mardan	94
14.11	Gomal Technopark, Gomal University, GU DI Khan	95
14.12	Livestock Business Support Center, SBBU Sheringal	97
14.13	Livestock Business Support Center, UA Peshawar	97
14.14	Biorisk Management Center KMU	98
14.15	Livestock Business Support Center University of Swat	98
15	Financial Management System	100
16	Business Plan for value added livestock products; quick impact results	102
17	Livestock Sector Action Plan with estimated Budget	106
18	Summary of Cost Estimate	115
19	Capacity Development and Formulation of Working Groups	116
20	Potential Risks	119
21	Monitoring and Evaluation Framework	121
22	Meetings/Workshop held	122
23	Acknowledgement	123
24	References	124

## Executive Summary

The good offices of Food and Agricultural Organization of the United Nations at Islamabad, Pakistan appointed Prof Dr Muhammad Subhan Qureshi as National Consultant Livestock and Dairy Development under Program/Project Number TCP-PAK 3701-C1/AFOR Program with duty station at Peshawar for a period of 45 Days, to report to Farrukh Toirov, AFOR Program, FAO, Islamabad. Personal Service Agreement (Manual Section 319) was signed with Ms Mina Dowlatchahi FAO Representative Pakistan. The Mission started working at FAO Peshawar on 10 June, 2019. Mr Waleed Mahdi and Dr Sanaullah Khan have been taking care of the local facilitation of the Mission as IPC and Responsible Officer of the project, to complete this task while Ms Faiza Younas facilitated at FAO Islamabad.

The mutually agreed TORs required development of the Action Plan with estimated budget for Livestock Sector Development and Transformation, based on KP Livestock Policy; covering regulatory issues, value chain development, private sector engagement and overall required capacity at provincial and district levels; to elaborate on roles and responsibilities of various stakeholders focused on institutional reforms; review the current policy/strategies/program and align livestock sector priorities.

The National Consultant has been involved in sensitization and facilitation of stakeholders across food-value-chain for generation of decent employment and exportable surpluses through his diversified service experience in livestock extension and research wings of the Livestock and Dairy Development, Government of Khyber Pakhtunkhwa and as a Professor/Dean at the University of Agriculture Peshawar, spread over 36 years. He has got an extensive exposure to the private sector through Herd Health Program, Small and Medium Enterprise Development Authority (SMEDA), Dairy Science Park (DSP), KP Food Safety and Halal Food Authority (KP-FSHFA), KP Livestock Farmers Welfare Association (KP-LFWA) and KP Chamber of Commerce and Industries (KPCCI). Productive collaborations were established with Sandia National Labs USA, Konya Technopark Turkey (KT), Chinese Academy of Agricultural Science (CAAS) and Charlus Sturt University (CSU). Three Chief Ministers of the province endorsed concept of the author on transformation of livestock sector through academia-industry-government interaction.

Office of the Director General LDD (Extension Wing) of the Livestock and Dairy Development Department (LDD Ext) was visited along with Director Planning LDD Ext. The DG suggested establishment of Policy Implementation Cell and restructuring of the Department through a clearly defined mandate. They suggested Rangeland Management Committee and a forum for creating linkages among department, migratory livestock keepers, livestock traders market administration etc. These concepts have been covered under an autonomous body of Livestock Technopark Peshawar (LTP). Coordination forum for updating curriculum was suggested, however, it falls under national mandate of the Pakistan Veterinary Medical Council and cannot be addressed at provincial level. Creation of paid house jobs and risk analysis of jobs have been covered under LTP through an incentives package. Determination of nutrients profile at regional level may be undertaken as a development project.

Establishment of an Advisory Board for livestock and poultry market was an important suggestion of Director General LDD (Ext); however, the Mission is suggesting an autonomous body, “Livestock Technopark Peshawar (LTP)”, as an Academia-industry-society-government nexus, rather than an advisory board with no implementation authority. The department is suggesting livestock baseline survey, which can be done through the existing institutional network. Training need assessment is the requirement of all the stakeholders across food value chain and will be taken up by the proposed LTP. Extension and Communication Advisory Committee and gender mainstreaming have already been accommodated in the plan through engagement of Women University Mardan and establishment of LTP.

Director General Livestock and Dairy Development Research Wing (LDD Res) Charsadda Road Peshawar was kind enough to hand over the required documents to the Mission and to arrange a workshop regarding the issues, policy interventions and proposals to be included in this Action Plan. A general perception was that research facilities could not be made appropriately available due to procedural complications and the time required to materialize the purchase process. The scientists get little opportunities for conducting outstation applied research at commercial farms and products processing facilities. Creativity of the scientists is depressed due to lack of motivating environment and after getting higher qualification (PhD degree) the scientists find no attraction to stay here and leave to join services at some university or abroad. Creating an enabling applied research environment for the officers through an incentives package, user-friendly procurement rules and their promotion based upon performance, will raise the level of satisfaction of the officers, leading to enhanced performance of the research wing.

Vaccine production is a useful activity of Veterinary Research Institute Peshawar. However, the laboratories do not meet the required standards and certification of PNAC, DRAP, ISO and other agencies would help in improving the quality of services. Coordination is lacking with the LDD Extension Wing, impeding access to field trials; sale of vaccines in the field; popularizing the biological products and getting feedback for improvement of the products. VRI Peshawar has already demonstrated an effective setup of PLA Revolving Fund, ensuring timely supply of the desired items qualitatively and quantitatively. Personal Ledger Account has been a success story as the brainchild of Dr Bakht Daraz Khan, which is proudly brought on record by this Mission. Outreach facilities for working with commercial farmers on applied research, are lacking. Dairy feed mills have been established at LRD Farms. Purchases and sales are made under PP Rules 2004, with competition for low prices among the bidders, payment of taxes and decision at the highest administrative levels. An amount is paid by government as subsidy. Unrealistic and higher receipt targets are fixed by the provincial government in the Budget Book.

LDD Ext and LDD Res are taking care of extension and research needs of the livestock sector. Livestock Markets and Slaughter Houses are being managed by Local Council Board, livestock education is managed by Higher Education Department through various universities, Livestock Enterprises and Trade are overseen by KP-LFWA, KPCCI and SMEDA; food quality by KP-FSHFA and price regulation by the district administration. Fisheries have got their own Directorate General. Hence, 10 government/private

organizations are taking care of a single livestock sector. All of these organizations work in total isolation without any mechanism for coordination or judicial access to the government resources. Hence, the issues of the livestock stakeholders across the livestock based food value chain remain ignored. This may not qualify to be called as a good governance model.

This Mission is of the opinion that the private sector is suffering badly. Price capping has restricted the growth of the dairy and meat industries. Young dairy and meat entrepreneurs providing high quality products, are fined, punished and sealed by the district administration/KP-FSHFA while those selling low quality items keep on working. Degree programs of three provincial universities have got non-accredited by the Pakistan Veterinary Medical Council. Livestock Market and Slaughter Houses failed to attract attention of the Government. Private sector could not get appropriate patronage of the government to survive and contribute in economic growth of the province through generation of decent employment and exportable surpluses. Consumers could not get access to milk, meat and eggs of their desired quality. International opportunities like collaboration with Konya Technopark, Tukey could not be honored.

LDD Ext represents 25% of the Livestock Sector, the rest being LDD Res, UAP and KP-LFA, 25% each. The primary stakeholder is the farmer, represented by KP-LFA while the rest are service providers. A well-off farmer would be a sign of relief for the society to get clean food and employment opportunities. For achieving the targets of transformation of the sector on commercial lines and development and replication of entrepreneurship models across the livestock value chain, all the participants except representative of the DG LDD Ext agreed on establishment of an autonomous body with full administrative, legislative, regulatory and financial authority. Livestock Technopark Peshawar (LTP) was suggested by this Mission, as a Good Governance Model, in line with the FAO opinion on governance work to be problem-driven, context-specific and people-centric. It seeks to clarify the political nature of a problem, identify the primary issue (s) and involve all relevant stakeholders to arrive at workable solutions. Governance analysis helps to understand how structures, institutions and unequal relations of power interact in the deliberation over ideas, interests and preferences to shape institutions, policies and programs, create or remove incentives, and condition political outcomes related to food and agriculture.

Livestock Technopark Peshawar (LTP) may be established, initially as an LTP Task Force through an executive order of the Chief Minister Khyber Pakhtunkhwa. Later on, an Act of the Legislative Assembly/Ordinance of Governor may be initiated. LTP will be an autonomous authority with full regulatory, administrative, financial and legislative powers to protect all the stakeholders of the livestock industry, and to engage all the relevant private and public sector organizations in the process. This would create an enabling environment for the growth of the emerging entrepreneurs, through a coordinated approach, targeted at generating decent employment and exportable surpluses. A balance approach would provide a level playing field to all the stakeholders and ensure a private sector led growth as per international standards. The Managing Board of Livestock Technopark Peshawar would comprise one representative each of: i) DG LDD Ext; ii) DG LDD Res; iii) DG Fisheries; iv) Dean FAHVS UAP; v) Secretary

Local Council Board; vi) VC WUM; vii) KP-LFA; viii) Poultry Farmer; ix) Fish Farmer; x) Feed Processor; xi) Dairy Processor; xii) Meat Processor; xiii) KPCCI; xiv) KP FSHFA and; xv) MPA.

An Endowment Fund would be established to the tune of Rs.1.6 billion through provincial/federal/donors grants. The private sector would offer their land, animals, building and other assets for a period of at least five years with investment by LTP and operational arrangement by the private partner. The fund would be used for entrepreneurship development and the facilities required for relevant activities. The net profit, to be determined by a joint committee of the private partner and the LTP, would divide the profit at a ratio of 80:20, respectively. A non-lapsable Development Grant of Rs1.4 billion would be provided for various infrastructural and operational activities.

Institutional Units-LTP would be established as: i) LPIC LDD Ext; ii) LBSC CVH Bannu; iii) LBSC Merged Areas; iv) LBSC VRI; v) LBSC VRDC Kohat; vi) LBSC VRDC Abbottabad; vii) LBSC Fisheries; viii) LBSC SH LCB; ix) DMTC WUM; x) LBSC AWKUM; xi) GT GU; xii) MTC SSBBU-S; xiii) LBSC UAP; xiv) BRMC KMU; xv) LBSC UOS. For managing each IU-LTP, except Policy Implementation Cell (PIC), the Management Committee would comprise two members from the respective host organization; two members from other relevant public sector organizations; two members from the industry; and one member from district/tehsil council. Management Committee for PIC comprising experts in animal health, breeding, training, research, vaccination, education, farming, products processing, entrepreneurship and media. Committee of Institutional Units (CIU) of LTP would be established comprising one member from each Unit and a representative of the Chairman LTP. Each IU-LTP would report to the Management Board LTP and the progress, requirements, technical programs, etc, would be reviewed CIU.

Entrepreneurship Units would be established as: i) Dairy Farming; ii) Beef Farming; iii) Mutton Farming; iv) Poultry Farming; v) Fish Farming; vi) Pets Farming; vii) Nontraditional Farming; viii) Vet Clinics; ix) Analytical Labs; x) Inputs Suppliers; xi) Renewal Energy Providers; xii) Legal Advisors; xiii) Innovators; xiv) Meat Shops; xv) Dairy Shops; xvi) Meat Factories; xvii) Dairy Factories. The Entrepreneurship Units would be registered with the Registrar of Firms, Government of Khyber Pakhtunkhwa and organized into an a registered “Society of Livestock Entrepreneurships, Livestock Technopark Peshawar”.

At the end of the year 2021, Khyber Pakhtunkhwa would be able to generate direct decent employments to the tune of 18000, each one earning about Rs.50,000 per month and employing five more persons each. Hygienic, Halal and Organic food would be produced per annum, as: 657.0 million kg milk, 19.2 m kg beef, 32.9 m kg mutton, 45.0 m kg poultry meat and 3.2 m kg fish meat, valuing Rs. 5098 billion. A fraction of 10% may be injected into Halal Meat Export Market. Motivated young graduates in veterinary, engineering, medical, business and social sciences would be joining LTP for their career development and transformation of ideas into actions to serve the society. Quality conscious consumers would be having access to traceable food products in the towns. Public and private sector organizations would be having sufficient operational funds for motivating their staff and serving the people. And this is the Beacon of Hope committed by the author through title of this FAO-KP Livestock Action Plan 2019.

## Author's Note

I am thankful to the Food and Agricultural Organization of the United Nations at Islamabad, Pakistan for giving me this opportunity to serve the people of the war-hit region of Khyber Pakhtunkhwa. Of course, this was an exciting task for me, as I have interacted with various stakeholders across the livestock-based value chain during my 36-years regular career as a civil officer with the provincial government and as a professor/dean at the University of Agriculture Peshawar. I got a productive interaction with the private sector, policy makers and international players through academia-industries-government linkages.

The dairy, mutton, poultry and fish farmers are usually landless people, living a life with little access to quality foods and education. Their income is usually very little in spite of having a huge resource-base and the food they are producing for the consumers in the form of milk, meat and eggs, is neither assured for quality parameters, nor monitored under some traceability system. They are subjected to penalty by the district administration when they sale meat and milk of pure quality at somewhat higher prices. Hence the livestock and poultry farmers are facing unbearable financial burden and most of these valuable assets are on way to total collapse. Ten public and private sector organizations are mandated for serving the Livestock Sector covering extension, research, fisheries, education, livestock markets, slaughter houses price regulation, food safety, trade and farmers welfare. However, lack of coordination and their apathy towards the farmers and processors, has left the burning issues unattended.

This Mission has tried his best to prepare KP Livestock Action Plan 2019 as a relief for the weaker stakeholders across the livestock value chain, in the public and private sectors, within a governance framework of Academia-Industry-Government-Society Nexus. An autonomous Livestock Technopark Peshawar (LTP) has been suggested to be established, initially as a Task Force through an executive order and later on through an Act of the Legislative Assembly/Ordinance of Governor; with full regulatory, administrative, financial and legislative powers to protect all the stakeholders of the livestock industry, and engage all relevant private and public sector organizations with shared authority and responsibility.

At the end of the year 2021 LTP would be able to generate direct decent employment models to the tune of 18,000, each one earning about Rs. 50,000 per month and employing five more persons each. Hygienic, Halal and Organic food would be produced per annum valuing Rs. 5,098 billion. A fraction of 10% may be injected into Halal Meat and Biotech Export Market. Motivated young graduates in veterinary, engineering, medical, business and social sciences would be joining LTP for their career development and transformation of ideas into actions to serve the society. Quality conscious consumers would be having access to traceable food products in the towns. Public and private sector organizations would have access to sufficient operational funds for motivating their staff and serving people. And this is the Beacon of Hope committed by the author through title of this FAO-KP Livestock Action Plan 2019.

(Prof Dr Muhammad Subhan Qureshi)  
National Consultant FAO Peshawar

## **Review of the KP Livestock Policy 2018**

The provincial government of Khyber Pakhtunkhwa is taking care of the livestock sector through the two Directorates General, namely, Extension and Research Wings of Livestock and Dairy Development (LDD) Department. Major network of public sector organizations comprises the civil veterinary hospitals at district, tehsil and village council levels supported by mobile veterinary clinics. The breed improvement and farm operations program and livestock training programs are supervised by director general (research) and director general (extension) separately. This office controls the largest number of veterinarians, para-vets, administrative staff, material and fiscal resources under the annual development program and public sector development program. Hence this office is the most influential one among the two wings of LDD, the University of Agriculture Peshawar and the private sector.

Research Wing of LDD Department has two sub-components; Veterinary Research Institute (VRI) and its sub-centers at DI Khan, Kohat, Abbottabad, Swat and Chitral. Production Component of LDD Research is composed of Livestock Research and Development Stations at Peshawar, Kohat, DI Khan, Swabi, Mansehra, Dir Lower and Swat. VRI comprises of the divisions of Microbiology, Parasitology, Biotechnology and Vaccine Production, Regional Veterinary Research and Diagnostics Labs in the divisions of DI Khan, Abbottabad, Swat and Kohat and Livestock Research and Development Stations.

Veterinary Education is undertaken by the Faculty of Animal Husbandry and Veterinary Sciences, University of Agriculture Peshawar (UAP), Faculty of Veterinary Sciences, Gomal University (GU) DI Khan, College of Veterinary Sciences and Animal Husbandry, Abdul Wali Khan University Mardan (AWKUM) and Shaheed Banazir Bhutto University Sheringal, Dir. The first institution is supervised by the Governor KP through Secretary Agriculture Government of KP while the later three are supervised through Secretary Higher Education Department.

Five Regional Consultative Workshops and focused group discussions were held, followed by identification of thematic areas grouped into six core areas. One national and four international workshops were held, followed by formulation of policy for livestock sector of Khyber Pakhtunkhwa, covering the following areas:

- Animal Health and Disease Control
- Animal Breeding and Genetic Resource Conservation
- Veterinary Education, Research, Extension and Human Resource Development
- Animal Nutrition
- Livestock Marketing
- Institutional Restructuring for Specialized Tasks

In formulating the Khyber Pakhtunkhwa Livestock Policy 2018, the Extension Wing of Livestock and Dairy Development Department (LDD), Government of Khyber Pakhtunkhwa has been properly represented, based upon their presence in the administrative and services setup. The LDD Research Wing, the four DVM/MS-degree awarding universities, the producers, processors, service providers, non-

government organizations, unemployed veterinary graduates and the civil society could not be represented appropriately in the consultative process. Concerns, issues and interests of all the stakeholders could not be accommodated properly in the policy document.

It contradicts the concepts of the popular governance model of Triple Helix of university-industry-government relations, proposed by Etzkowitz and Leydesdorff (1995 and 2000) for explaining structural developments in knowledge-based economies. Knowledge-based economy has been suggested against political economy, as the structure of society is constantly disturbing the transformations which originate from techno-sciences. The model has been adopted by the developed world and by the Higher Education Commission of Pakistan for networking and sensitizing the stakeholders in the industry, to play their due role in the development process. In contrast, the impact of the public services on civil society have been at meager level. A farmer having 50 lactating buffaloes under peri-urban farming system or 300 sheep/goats in the remote regions, investing more than Rs.10 million rupees is unable to get the due fiscal return for living a respectful life or quality tested food to the consumers. Three of the four DVM/M Phil-degree awarding universities (UAP, AWKUM) are still not accredited by Pakistan Veterinary Medical Council (PVMC). The KP Livestock Farmers Welfare Association (KP-LFWA) has been made irrelevant from the execution of the field projects by the provincial government.

Khyber Pakhtunkhwa Livestock Farmers Welfare Association (KP-LFA) has been in place, protecting the interests of the farmers, products processors and marketing agents. They have recently arranged an excellent livestock farmers' convention at AHITI Peshawar inaugurated by Minister for Agriculture and Livestock, Minister for Finance, Government of Khyber Pakhtunkhwa and attended by a large number of officers of the Livestock and Dairy Development Extension and Research Wings, various universities, NGOs, private companies and livestock farmers, totaling 5000 delegates. LFA has been actively involved with the district administration and Food Safety and Halal Food Authority in resolving farming issues and a greater role of the private sector in developing the provincial economy. They have been facilitating extension services to the farmers through USAID PATTA projects, etc, and organize frequent trainings for capacity development of farmers. The KP Livestock Policy 2018 has rightly identified the issue of lack of effective and productive coordination between potential livestock farmers, poultry farmers, nomads, processors and other stakeholders. All the stakeholders work in isolation and there is no recognized official forum which can provide an opportunity to them to sit together and make more productive discussions.

Stakeholders from the Academia and the Private sector have been interacting under the umbrella of Dairy Science Park for almost a decade through a biennial series of international conferences and industrial exhibitions held during November 2011, 2013 and 2015 at Peshawar and during 2017 at Konya, Turkey. Emerging industries in milk and meat processing and marketing were provided technical and Quality Control support to relieve threats from the District Administration. Meat shops and processing factories are being established in private sector on modern lines of hygiene with a sound level of investment. Such shops have to sell their products at relatively higher prices but are frequently raided by the District Administration with the allegation that they are selling meat at higher prices, while those selling low quality products at lower rates keep working. Such practices discourage the young

entrepreneurs to continue the activities and deprive the consumers from getting high quality products. The Minister Local Government appreciated their meat quality during a presentation and recommended their exemption from the general meat rates. A silage production facility was established by a private farmer at Mardan with financial assistance of USAID Agribusiness Support Program and technical/research facilitation by DSP-UAP team. University of Agriculture Peshawar generated several entrepreneurship models in the form of rabbit and quail farming, maggots' meal, dairy cattle feed and stress management modules for exotic and crossbred cattle and poultry.

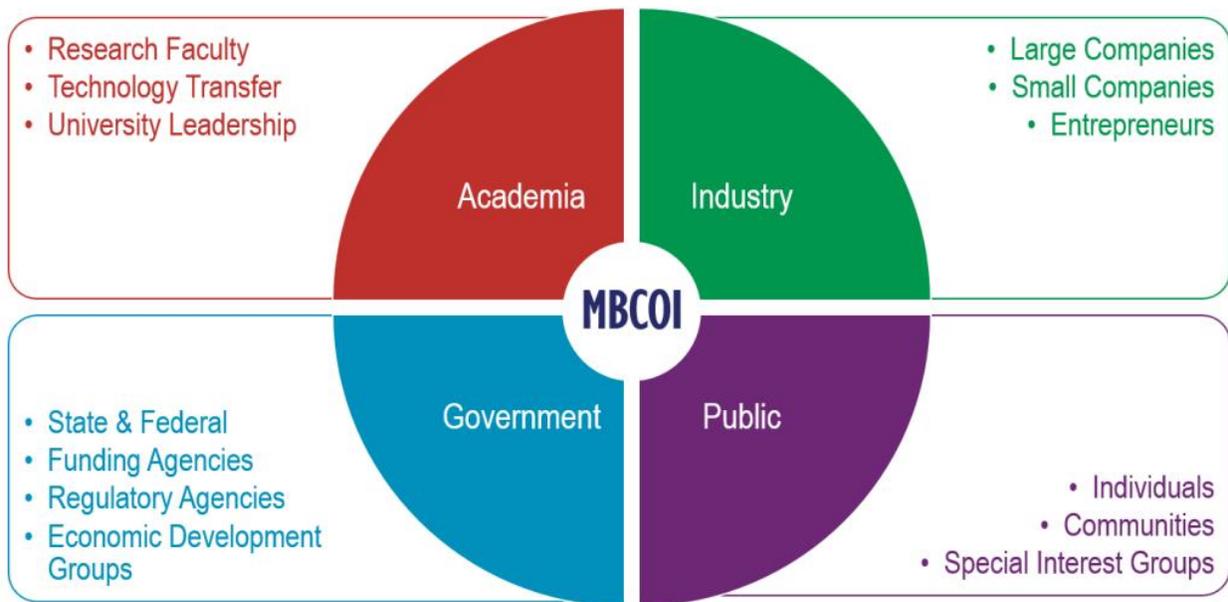
Mr Kamran Khan is a young entrepreneur and an Animal Husbandry Graduate who started his career as dairy farmer and also marketed pure milk at somewhat higher prices. But the District Administration compelled the sellers to sell milk at subsidized rates, ignoring the production cost and quality of the product. So Mr Khan established a quails breeding and fancy birds' production entrepreneur at Badaber; a suburb of Peshawar City. Facing certain technical problems there, he established a dairy processing unit in the name of Royal Dairies and launched yoghurt and butter and got his products linked with the local superstores in Peshawar City. Mr Khan may be presented as a model livestock entrepreneur, surviving all hardships that the industry is facing and organized the farmer at KP-LFA.

The Senior Minister Local Government allocated Rs.200 million for establishment of a model slaughter house to introduce quality control concepts and provide a base for entering into Halal meat export market. Finally, a meeting was held under the chairmanship of Senior Minister to Government of Khyber Pakhtunkhwa for Local Government followed by a Note to the Chief Secretary for establishment of DSP Board and later on to the Chief Minister KP for formulation of Task Force on Dairy Science Park, to initiate and oversee the process of industrialization of the livestock sector, which was approved by the Chief Minister on 2-8-2017. The Additional Chief Secretary (ACS) KP considered it an innovative idea and recommended its support. The provincial government was requested by Chief Patron DSP vide letter dated 10-4-2018 for incorporation of the concept into the proposed KP Livestock Policy 2018, however, it could not get reflected in the same.

As per TORs of the National Consultant, transformation of the livestock sector is required, providing an appropriate role to the stakeholders from public and private sectors in management, execution and monitoring of the current/development plans, price fixation of farm products and other regulatory, legislative and administrative issues faced by livestock and poultry farmers, products processors, marketing partners and service providers. We recommend the governance model of Triple Helix of university-industry-government, to ensure shared authority and responsibilities in managing resources of the livestock sector.

# The Governance Model

**Historical perspective of Governance Models:** Utilization of indigenous resources for welfare of the people and for bringing peace and stability in the regions, has been influenced by the governance pattern. The changing governance patterns have been reviewed (Etzkowitz and Leydesdorff (1995). Universities and industry, up to now relatively separate and distinct institutional spheres, are assuming tasks that were formerly largely the province of the other. The role of government in relation to these two spheres is changing in apparently contradictory directions. Governments are offering incentives, on the one hand, and pressing academic institutions, on the other, to go beyond performing the traditional functions of cultural memory, education and research, and make a more direct contribution to "wealth creation" (HMSO 1993).



**Fig 1. The Academia-Industry-Government-Public Nexus at MBCOI, North Carolina, USA**

Governments are also shifting their relationships to economic institutions, becoming both more and less involved. In some countries with a laissez faire capitalist tradition such as the U.S. government is playing a greater role in innovation in the civilian economy (Etzkowitz 1994a) while in former socialist societies government has withdrawn from its previous position of total control of science and technology policy; adopting a stance more in accord with laissez faire principles. Multi-national institutions such as the European Union, the World Bank and the U.N. are also moving to embrace concepts of knowledge based economic development that bring the knowledge, productive and regulatory spheres of society into new configurations.

**MBCOI Model of Governance:** Marine Bio-Technologies Center of Innovation, North Carolina, USA takes a much broader view that includes diverse applications of marine-based discoveries into sectors

such as food, energy, and health (MBCOI, 2019). Recently, the global market for marine biotechnologies was estimated to be as high as \$168 billion with significant growth opportunities for small business entities focused on areas such as fuel, diagnostics and aquaculture. MBCOI was established in 2012 as an independent, non-profit 501(c)(3) corporation to establish a marine biotechnology cluster. They facilitate the translation of innovative marine-related discoveries into products and services to benefit North Carolina's economy. By combining a regional focus with a global perspective, they strive to become the nexus for information, collaboration, and commercialization of marine biotechnologies among our stakeholders, both domestically and internationally.



*FAO works at the global, regional and national levels providing coherence on governance issues.*

MBCOI has assembled a diverse network of stakeholders around the globe to spur the development of marine biotechnologies. Initial efforts have led to identification of technologies with promising potential, resulting in a number of successful connections between innovators and collaborators. In their Mission Statement they mention: MBCOI strives to become the NEXUS for information, collaboration, and commercialization of marine biotechnologies among our stakeholders, both domestically and internationally.

In this report the Consultant would attempt to suggest reforms in this changing environment with a focus on establishing an Academia-Industry-Government-Society Nexus. Academia would interact with the industry for providing solutions to their issues regarding productivity, quality control (Halal and hygienic status), products processing, products traceability and marketing at domestic and international levels. The Government would, at the same time, intervene in resolving the financial, marketing, administrative, legislative and infrastructural issues faced by the stakeholders and would consider replication of success stories in the form of entrepreneurship models. Shared authority and responsibilities would be practiced for getting ownership of the programs by the stakeholders.

**FAO Opinion on Governance:** Governance was described as more than ever a driving concern in FAO's work and was considered critical to achieving FAO's Strategic Objectives (FAO 2019). At the global level, FAO works to build institutions and mechanisms that provide international norms, standards and data, promote international cooperation, and support an enabling environment for effective collective action to solve problems that cannot be addressed, or as effectively addressed, working at national level alone.



*DSP Governance Model is based on Academia-Industry-Government-Society Nexus; producing entrepreneurship models across livestock value chain, through interaction of the former two and propagation through the latter two*

At country level, the governance lens looks beyond purely technical issues to highlight how people, institutions and authority interact to influence political decision-making. Using political economy and stakeholder analyses, FAO helps governments identify their most important governance challenges related to food and agriculture, and improve the inclusiveness of their policies and programs to address them more effectively.

**The Current Governance Model:** The Consultant has been involved with the provincial and federal governments, the academia and private sector for a long period of 36 years. DSP governance model has been developed through extensive interaction with the stakeholders during this period (DSP 2019). As evident from title of this Action Plan, “Transforming Livestock Resources into a Beacon of Hope through a Good Governance Model”, this Plan is an attempt to transform the current system of governance, concentrating the powers within a single stakeholder, into a new model with shared authority and responsibilities for all the four stakeholders, namely, LDD Ext, LDD Res, UAP and the private sector, under the umbrella of Livestock Technopark Peshawar.

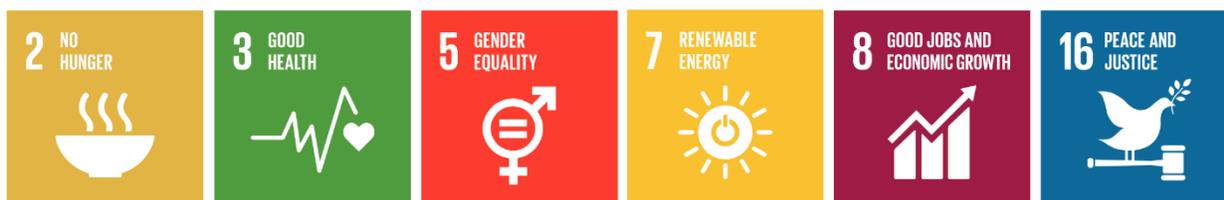
*Ghojal* is a word used for animal sheds, in Pushto language, spoken in the northern Pakistan and the adjacent Afghan Region. It is a sign of illiteracy, poverty, inferiority and helplessness of the livestock owners. This is a dirty area, without hygienic practices, supporting a good number of sheep, goats, cattle,

buffaloes and poultry. Government and private veterinary practitioners, feed dealers and other inputs supplier use this facility for earning income and selling their products, ignoring their corporate sector responsibilities and effective public sector management.

The development programs of provincial and federal government utilize funds for various projects, but with negligible impact on *Ghojal*. As a result, the farming resource base is facing socio economic pressure, compelling farmers to change the business. Especially the young educated family members look at the miserable conditions of their parents and try to avoid joining farming business.

The author opted for working at private buffalo farms for his PhD thesis research on nutrition-reproduction interaction in dairy buffaloes, identifying losses of exportable surpluses worth US\$ 20 billion. A close contact with the miserable people led to production of Chief Minister Development Plan on advice of CM Office Letter dated 30-11-1998, for productive utilization of the livestock resources to bring prosperity and stable peace in the region. The Plan was endorsed vide letter of CM Office dated 8-1-2003, for implementation which was ignored. CM Office again endorsed establishment of Task Force on Dairy Science Park vide letter dated 2-8-2017, with no result. The author continued working on academia-industry-government interaction and was successful in protecting several emerging entrepreneurship models across livestock value chain; organized biennial series of international conferences and industrial exhibitions and popularized Biorisk management through sponsorship of Sandia National Labs USA.

The Governance Model proposed by this Mission is based on Academia-Industry-Government-Society Nexus, reflected in the cover picture of this Action Plan. It reflects the DSP initiative for establishing Livestock Technoparks, founded on the six SDGs; initiated through on-campus development of entrepreneurship models; supported by Extension and Research wings and industry/civil society for building the entrepreneurship network; leading to Halal food export. LTP would be used as an interactive platform for achieving the Sustainable Development Goals #2, covering production of milk, meat and milk for local consumption; SDG #3 covering food safety for protection of public health; SDG 5, engaging women in the livestock sector transformation process; SDG 7, providing biogas and solar energy for farm operations and processing factories; SDG 8, ensuring generation of decent employment for the youth through business incubation and entrepreneurship development and; SDG 16, ensuring end of conflict among stakeholders in the private and public sectors.



**Coverage of United Nations SDGs under FAO KP Livestock Action Plan, 2019**

## Administrative framework

The Government of Khyber Pakhtunkhwa, Pakistan, notified functions of the Livestock and Dairy Development Department vide Notification No SO(O&M) S&GAD/3-3/1985 dated 6-4-1985 has provided the following Rules of Business for Livestock and Dairy Development Department (Extension and Research Wings):

### III. Livestock:

1. Improvement of Livestock.
2. Prevention of animal diseases.
3. Veterinary Training and Research.
4. Appropriate measures for welfare and prevention of cruelty to animals.
5. Establishment of regional epidemiological units and their linking with provincial, federal and other regional centers for epidemiological surveys, disease surveillance, reporting, early warning and rapid response.
6. Strengthening of animal extension production services for organizing farmers, transfer of technology and establishing a network of livestock farmer's field schools.
7. Improvement of Livestock, poultry and their products & by-products markets, facilitation of their marketing and conducting market surveys.
8. Research and development of feed, fodder, forages and pasture development.
9. Organizing and promoting Livestock fair, shows, fairs and veterinary camps.
10. Conservation and development of livestock, poultry breeds.
11. Basic and applied research on livestock, poultry production, diseases, biologics, feed and fodder.
12. Coordination and liaison with various stakeholders in Livestock sector.
13. Bio-risk management and maintenance of bio-safety and bio-security in entities where biological activities are carried out.
14. Ante-mortem and postmortem examination of animals, inspection of slaughter houses, inspection and analysis of milk, meat, feed ingredients, veterinary drugs and other Livestock, poultry products and by products.
15. Regulating the movement and transportation of Livestock and poultry and their products and by products from and to the province.
16. Establishment of Livestock and poultry complexes, veterinary institutions, provision of veterinary/ veterinary public health services.
17. Livestock sector project formulation, implementation, monitoring and evaluation.
18. Facilitating insurance of livestock and poultry, and credit for dairy and poultry farming and allied industry.]

The Khyber Pakhtunkhwa District Government Rules of Business, 2015 notified vide NoSO(Dir)ROB/LGE&RDD/2015 dated November 3, 2015; Second Schedule {See Rule 3 (2)} Distribution Of Business Amongst District Offices, the following functions have been allocated to Livestock and Dairy Development Department:

- i) Promotion of private sector for establishment of dairy farms and poultry farms
- ii) Prevention of livestock and poultry diseases and training of villagers on prophylactic vaccination, management and first aid
- iii) Enforcement of livestock and poultry related laws and rules.
- iv) Artificial insemination, breed improvement and genetic upgradation of livestock resources in the district.
- v) Livestock census, communication and extension services
- vi) Diagnosis, surveillance and control of diseases in livestock
- vii) Improvements of cattle markets
- viii) Milk and meat safety measures and inspections
- ix) Modernization of public sector slaughter houses and promotion of private sector investment
- x) Support services for small livestock farmers
- xi) Technical support to private enterprises investing in livestock
- xii) Promotion and regulation of Dairy Farms and Poultry Farms
- xiii) Human Resource Development for livestock and farm management
- xiv) Conducting livestock census in the district, its analysis, compilation and publication
- xv) Collection, compilation and dissemination of primary data, segregated by gender

LDD Extension and Research Wings have been covering most of these jobs, however, identification of stakeholders responsible for various activities is required. The private sector support is missing in the Rules and interest of the stakeholders need to be protected. These would be covered through the proposed Livestock Technopark Peshawar (LTP); Gomal Technopark at DI Khan, LBSC/LTP-IUs at Mardan, Bannu, Kohat, Swat, Abbottabad, VRI, KMU, WUM and UAP. KP Livestock Technopark Peshawar Act of the provincial assembly would be presented for covering these activities on the analogy of the Punjab Livestock, Dairy and Poultry Development Board act, 1974 and the Khyber Pakhtunkhwa Medical Teaching Institutions Reforms Act, 2015. The Board would be having proper representation of the stakeholders across the Livestock Based Food Value Chain in KP as described under section 13.8.

## Allocation of Financial Resources

The allocation of funds as per provincial government's Annual Development Program 2019-20; Agriculture Sector got Rs. 4.2 billion, making 2.78% of the total allocations. Livestock Sector received an allocation of 23.71% of the total agriculture. The allocation of funds to the agriculture within total ADP and to the livestock within agricultural ADP is not compatible with their contribution in the GDP, being, 2.78% versus 22% funds for total allocation in case of agriculture; and 23.71% versus 50% in case of livestock.

LDD Ext got Rs.539.6 million for 6 ongoing projects covering buildings construction and repair and establishing pets, labs and disease control facilities under ADP 2019-20. Five new programs valuing Rs.237 million have been included for establishment of dispensaries, calf fattening and development of rural poultry. LDD Res got Rs.88.575 million for establishing cattle genomics facilities and a Veterinary R&D Center at Haripur. They could not get any share in the new programs. The constraints identified in the KP Livestock Policy due to lack of institutional support, could not be accommodated in the ADP 2019-20.

Allocation of funds rarely meet with the real issues faced by the stakeholders and the overall needs of the economy; being generation of decent employment and exportable surpluses across the food value chain. The ADP schemes are proposed by the Directorate Generals Livestock Ext/Res and evaluated at the levels of Administrative Department and Planning and Development Department, Government of Khyber Pakhtunkhwa. Currently, no system is in place for involving the stakeholders (academia, farmers, products processors, marketing partners, service providers and the consumers) in the planning, implementation and monitoring of the projects funded under Annual Development Programs KP or other funding sources.

The funds are utilized under Public Procurement Rules 2004 and provincial rules. Under Clause 5. International and inter-governmental commitments of the Federal Government. - Whenever these rules are in conflict with an obligation or commitment of the Federal Government arising out of an international treaty or an agreement with a State or States, or any international financial institution the provisions of such international treaty or agreement shall prevail to the extent of such conflict.

Under the above clause the Consultant concludes that procurement process on the basis of PP Rules 2004 results in purchase of low quality animal feeds, medicines and other input supplies in the extension organizations; low quality research materials at the research organizations and low quality delayed supplies at the Universities. It hinders the smooth delivery of services by the public service organizations, lowering the trust and expectations of the people. Hence, the National Consultant FAO-UN considers the PP Rules as a contradiction with the interests of stakeholders of livestock value chain and under Clause 5 and suggests formulation of new rules within the guidelines mentioned under section 15.

## Livestock Sector Priorities and Sustainable Development Goals

**Good Governance:** Producing more with less, while balancing consumption, and reducing losses, must be our target for livestock production (FAO 2018). Livestock supply chains are resource-hungry, using large amounts of land, water, nutrients and energy and contributing significantly to greenhouse gas (GHG) emissions. As consumption of animal products is expected to increase, the livestock sector needs to produce more with less. Unsustainable production and consumption not only contribute to inefficient use of resources but are also the source of lost economic opportunities, environmental damage, poverty and health problems. This Mission would focus on sustainable livestock production through good governance and improved marketing linkages under Livestock Technopark Peshawar, ensuring livestock based food security, United Nations Sustainable Development Goal 2 (UN SDG #2).

**Food safety:** Livestock has been a source of milk, meat and eggs which need to be ensured for health safety, as 70% of human diseases are originated from livestock related facilities. A prolonged exercise has been in place in the province for biorisk management at Veterinary Research Institute and Dairy Science Park, University of Agriculture Peshawar. A good number of persons have been trained abroad under sponsorship of Sandia National Laboratories USA, ranging from students, university teachers, researchers, provincial ministers, government officers and industry representatives. This activity will continue for covering stakeholders across food value chain in the province, through the proposed BRM Center of LTP at Khyber Medial University. This activity covers UN SDG 3.

**Women Empowerment:** Women Empowerment has been an important segment of the livestock value chain. Women University Mardan (WUM) has been imparting education in various life, social and business sciences. Women have been at risk from food borne/zoonotic diseases through milk and meat handling and livestock husbandry and lack appropriate income sources. The Vice Chancellor WUM has participated in the biorisk management curriculum development workshop at Colombo, Sri Lanka and Dairy Science Park IV at Konya, Turkey, along with ten delegates from WUM. The University teachers intend to work on biorisk management, food processing, quality control and entrepreneurship development. Women would be empowered in line with UN SDG 5, SDG Action 9671.

**Good practices:** Adoption of best practices can lead to large gains in natural resource-use efficiency. Rebalancing diets to reach nutritional recommendations can also have significant impact on natural resource use and GHG emissions. Efficiency can further be improved by reducing food waste and losses along supply chains, and targeting different stages of those chains in different regions, depending on priorities. Because improvements are needed along the whole life cycle of products, this goal requires the involvement of various stakeholders, including consumers, policymakers, retailers and industry representatives. However, adapting and enforcing new technologies in local environments, and instituting supporting policies and infrastructure to encourage adoption, will be the greater challenge. Renewable energies like biogas and solar systems would be utilized for energizing farming, processing and other facilities across food value chain, in line with UN SDG 7.

**Employment Generation:** Khyber Pakhtunkhwa and the merged tribal areas have been rich in natural resources especially livestock resources. Livestock Sector is the major source of livelihood in the

province. However, the young generation face difficulty in finding employment in the provincial public or private sectors, as the livestock farming is predominantly subsistent with 1-4 animals which keeps more than 70% of the livestock population. Only 3% of the livestock population is in peri-urban commercial farms of over 30 animals each. Forty percent of sheep population, however, is kept in units of 50-350 animals. Livestock/agriculture farming, processing, marketing and services network has absorbed about 44% of the labor force, almost 80% of the population relies on this sector for a significant part of their income (FAO, 2015). This Mission would focus on transformation of the livestock sector with an autonomous governing setup for generating decent employment across the value chain in line with UN SDG 8.

**Responsiveness:** Responsiveness has been included in the policy document for supplying safe and affordable food of animal origin to domestic and international markets. The public sector organizations have been established with a predefined mandate of livestock extension, research and education. The available limited resources can only respond to the routine requirements of clients; like a civil veterinary hospital has got facilities to receive a sick animal along with the owner, to examine the animal; record the history, get chit fee and provide a prescription for treatment of the disease. Occasionally awareness campaigns are held for introduction of good practices, but here again, the farmers expect some free medication to treat the diseases instead of some good advice to the farmer for enhance profitability of the farm. Research wing of the Livestock Department as well as the Universities lack the facilities to respond to the demands of the investors and potential farmers/processors/entrepreneurs regarding availability of funds, marketing support, administrative and legislative support. The proposed Livestock Technopark Peshawar (LTP) is expected to fill up the resources/communication gap between the public sector organizations and the beneficiaries as an academia-industry-government-society nexus. This would be in line with SDG 16 calling for peace, security and prosperity in the war-hit region of Khyber Pakhtunkhwa and help in ending the cycles of conflicts of interests between livestock producers, products processors, consumers and the public sector organizations, as per UN SDG 16.

**Competitiveness:** KP Livestock Policy 2018 has accommodated competitiveness under its vision statement. Livestock products produced under the farming system in the Khyber Pakhtunkhwa have to compete with products from other parts of the country and abroad. Competitiveness cover prices as well as quality of the product. Both these parameters could be improved through training in good practices, applied research on the prevailing bottlenecks and business incubation through academia-industry interactions. Selecting good breeds with better immunity against the prevalent diseases, growth, fertility and productivity potential, are indicative of better profitability, sustainability and competitiveness. Breed has to be backed up by better management practices through comfortable housing; cost effective feeding meeting the nutritional requirements of animals, breeding and reproductive management strategies, and record keeping for the purpose of monitoring health, productivity and business parameters of the livestock production and processing units. A network of entrepreneur in farming, products processing, services delivery and marketing partnership would be able to find place in the competitive local and international market.

## **Stakeholders of the Livestock Sector**

Livestock Sector has got various stakeholders in the public and private sectors. Primary stakeholder is the farmer, keeping cattle, buffaloes, sheep, goats, poultry, fish and non-traditional animals like quails, fancy birds, rabbits, ostriches and pets. Many service providers are linked with the farming community. Livestock and Dairy Development Department of the provincial government is taking care of animal health, productivity and research needs.

Local Government Department is taking care of slaughter houses and livestock markets. Higher Education Department is taking care of educational needs at various universities. Food Safety and Halal Food Authority is responsible for quality maintenance of milk and meat. Livestock Framers Welfare Association is working for welfare of farmers and advocates for improvement in technical and marketing services to the members. Details of each organization are given as under.

## Livestock and Dairy Development Department (Extension Wing)

Director General (Extension Wing) of the Livestock and Dairy Development Department (LDD), Government of Khyber Pakhtunkhwa was called on for discussion along with Director Planning LDD. A list of 13 activities was discussed for accommodation at the FAO KP Livestock Action Plan 2019.



He suggested establishment of Policy Cell and restructuring of the Department through a clearly defined mandate, which has been accommodated in this Action Plan. They have suggested Rangeland Management Committee and a forum for creating linkages among department, migratory livestock keepers, livestock traders market administration etc. These two concepts have been covered under autonomous bodies of Livestock Business Support Centers.

Coordination forum for updating curriculum has been suggested by the Department, however, it falls under national mandate of the Pakistan Veterinary Medical Council and cannot be addressed at provincial level. Creation of paid house jobs and risk analysis of jobs may be taken up by a special forum of the provincial government. Determination of nutrients profile and development of feeds and nutrition calendar at regional level may be developed as a development project and an activity of the proposed autonomous bodies in this Report.

Establishment of an Advisory Board for livestock and poultry market was an important suggestion of Director General LDD (Ext); however, the Mission is suggesting an autonomous body, “Livestock Technopark Peshawar (LTP)”, with shared authority and responsibilities, as an Academia-industry-society-government nexus, rather than an advisory board with no implementation authority. The department is suggesting livestock baseline survey, which can be done through the existing institutional network of the provincial government, with allocation of some funds.

Training need assessment, capacity development of stakeholders and revisiting the mandates of various wings of LDD are the requirement of all the stakeholders across food value chain were prepared in consultation with the LDD, UAP and private sector representatives. Extension and Communication Advisory Committee and gender mainstreaming have already been accommodated in the plan through engagement of Women University Mardan and establishment of LTP. The Directorate General LDD Extension has been working through its network of civil veterinary hospitals, artificial insemination centers and livestock farms at provincial, district, tehsil and village council levels. The Mission inquired about the role of any desired change in their functions. However, the Director General was satisfied with their present functions. Previously, Director Planning LDD Ext was requested via email dated July 4, 2019 and letter dated 2 July, to arrange a meeting of the FAO Mission with the senior officers and to provide copies of the relevant documents/ongoing projects/achievements/future plans for further consideration. However, the request was not honored in a befitting manner.

## LDD Research Wing

Director General Livestock and Dairy Development Research Wing Charsadda Road Peshawar was informed about Consultancy awarded to the undersigned and certain documents regarding their Wing were requested. He was kind enough to advise Dr Hayazuddin to visit FAO Office Peshawar, hand over the required documents to the undersigned and discuss holding of a workshop regarding the issues, policy interventions and proposals to be included in this Action Plan.



Letter dated 25-6-2019 along with TORs fixed by FAO for the National Consultant and Expectation of the National Consultant from various public and private sector organizations, was handed over to the officer and departmental documents were received. It was suggested that a consultative workshop may be held at VRI Peshawar on 1-7-2019 at 10:30 a.m., involving the senior officers at VRI headquarters and regional veterinary R&D centers/stations. Special emphasis would be made on integrating the needs of the research wing of LDD into the proposed Action Plan.

A meeting was held with senior officers of the LDD Research Wing on 2-7-2019, attended by 29 officers. The KP Livestock Policy 2018 has mentioned the lack of need based research and effective coordination among relevant stakeholders as the critical limiting factors in identifying and solving issues. The available infrastructure of the research establishment was found below international standards.

The research organizations are supposed to provide friendly working environment to the researchers to motivate them and support their creativity, which are pre-requisites for their services to the community. A general perception was that research facilities could not be made appropriately available due to procedural complications and the time required to materialize a purchase process. Hence research needs are rarely satisfied and technical programs are rarely implemented. The scientists get little opportunities for conducting outstation applied research at commercial farms and products processing facilities.

Workers satisfaction is at minimum level due to lack of access to higher quality research materials within the desired time limits, purchased under Public Procurement Rules 2004 calling for an exhaustive and prolonged exercise; etc, with powers concentrated at the highest administrative levels. The rules qualify bidders with lowest rates, which deteriorate the quality of research materials as well as the quality of services delivered by the organization.

Creativity of the scientists is depressed due to lack of motivating environment and after getting higher qualification (PhD degree) the scientists find no attraction to stay here and leave to join services at some university or abroad. Creating an enabling applied research environment for the officers and their promotion based upon their performance, will raise the level of satisfaction of the officers leading to enhanced performance of the research wing.

Vaccine production is a useful activity of Veterinary Research Institute Peshawar. However, the laboratories do not meet the required international standards; hence certification of ISO and other agencies would help in improving the quality of services. In addition, availability of an Endowment Fund for the purpose would help in enhancing the applied research and field trials for quality enhancement. Payment of honoraria and share in productivity of vaccine, to the scientists/workers for their better performance in qualitative and quantitative vaccine production would motivate the workers for improving their performance. Joint research projects with the universities would be helpful in introducing new vaccines in livestock and poultry for eradication of the diseases.

Coordination is lacking with the LDD Extension Wing, impeding access to field trials; sale of vaccines in the field; popularizing the biological products and getting feedback for improvement of the products. Outreach facilities for working with commercial farms on applied research are lacking.

Dairy feed mills have been established at LRD Farms at Surezai, Paharpur and Dir and poultry feed mills at Surezai. Purchases and sales are made under PP Rules 2004, with competition for low prices among the bidders, payment of taxes and decision at the highest administrative levels. An amount is paid by government as subsidy. Unrealistic and higher receipt targets are fixed by the provincial government in the Budget Book.

### **Action Plan**

- i) Introduction of promotion of scientists on performance basis.
- ii) Accreditation of diagnostic laboratories of Microbiology, Biotechnology, Parasitology, Animal Nutrition and Dairy Technology and Vaccines Production laboratories covering BQV, HSV, ASV, ETV, NDV and FMV; initially with Pakistan National Accreditation Council/Drug Regulatory Authority of Pakistan (DRAP) and later on with International Organization for Standards (ISO). It would be ensured under an autonomous Vaccine Research and Transformation Board (VRTB)
- iii) Qualitative and Quantitative Enhancement in Vaccine Production at VRI Peshawar. VRI Peshawar has already demonstrated an effective setup of PLA Revolving Fund, ensuring timely supply of the desired items qualitatively and quantitatively. PLA is the brainchild of Dr Bakht Daraz Khan, which is proudly brought on record by this Mission. The current size of the amount is appreciable. However, the current fiscal policy of provincial government doesn't appreciate such activities and consider it a stagnancy of public money. This

amount is helping VRI in generating vaccine worth Rs. 30 million while VRI gets meagre funds for such activity under the current budget. PLA is the only source supporting such excellent activity. Indigenous vaccine production, import substitution, saving foreign exchange, under a Vaccine Research and Transformation Program.

- iv) Establishment of LBS and Veterinary R&D Center Merged Areas Khyber Pakhtunkhwa at Khar Bajore, Landokotal Khyber, Miranshah and Wana is recommended. This setup will be managed by a joint committee at DG level.
- v) Strengthening Feeds and Fodders R&D Program through establishment of Fodder Research Institute and outreach linkages.
- vi) Livestock Business Support Center (LBSC), may be established under supervision of Livestock Technopark Peshawar, for applied research, training of officers/farmers/civil society representatives and establishment of business incubation and entrepreneurship development facilities with the cooperation of commercial farmers, products processors and marketing partners in the private sector and the universities. LBSC would follow the Financial Rules developed for LTP.
- vii) Strengthening linkages with the commercial farmers through the proposed LTP; for organizing joint awareness programs regarding vaccination, applied research and diagnostic services at community level. This activity would be covered under LBSC.
- viii) Leasing out of feed mills to KP Livestock Farmers' Association at reasonable rates; an Endowment Fund of Rs.20 million. This activity would be covered under LBSC.
- ix) Capacity development of technical and supporting staff in modern practices and improved laboratory techniques.
- x) Paid internship for DVM students from KP universities, in various areas of specialization, arranging research facilities targeting at providing solutions to the industries and development of entrepreneurship models. This activity would be covered under LBSC.

## **Local Government, Election and Rural Development Department**

The Khyber Pakhtunkhwa District Government Rules of Business, 2015 notified vide No SO(Dir)ROB/LGE&RDD/2015 dated November 3, 2015; Second Schedule {See Rule 3 (2)} Distribution Of Business Amongst District Offices, allocated various functions to Livestock and Dairy Development Department.

Minister LGE&RD Mr Inayatullah Khan was briefed on Peshawar Meat Company through a DSP presentation during March 2014. The meeting was attended by the UAP Vice Chancellor, Professor Zahoor Ahmad Swati, senior faculty members, Deputy Commissioner Mardan and Peshawar and senior officers of the KP Local Government and Agriculture Department. Representatives of SMEDA, Khyber Chamber of Commerce and Industry and KP Board of Investment and Trade also participated in the meeting. The role of the university in developing feasible farming models for broilers, quails, rabbits, sheep, goats and beef animals was highlighted. The minister urged upon improvement in the slaughter houses and advised to launch development projects under provincial ADP. (Source: Business Recorder, March 2014). Later on the Directive was mentioned by Additional Chief Secretary, Government of KP as Innovative Idea, and Chief Minister KP accepted it as DSP Task Force.

The concept of commercialization was appreciated; supporting the producers and consumers of livestock products, value addition, self-employment to the youth and hygienic food production. An ongoing project of Rs.200 million was supported under annual development program, for establishment of Slaughter Houses.

DSP activities are in line with the Integrated Development Strategy KP, 2014-2018 regarding sustainable and effective local government system, improved citizens' participation, industrial development for economic growth, and job creation. DSP vision also covers the Federal Government's Pakistan Vision 2025 calling for Private Sector-Led Growth and Entrepreneurship.

The United Nations accepted DSP to implement sustainable development action #SDGAction9671. The provincial government was supposed to extend all possible support to achieve the goals set for bringing peace and prosperity in the Region comprising KP, FATA, and Northern Areas of Pakistan and the adjoining areas of Afghanistan, Tajikistan, and China.

The development and private sector organizations within the country and abroad, were invited to participate in this sacred mission and collaborate in launching novel initiatives like alternate energy solutions, environment protection, biorisk management, entrepreneurship development, legislative and policy support, quality control, and Halal certification in the food value chain.

## Directorate General Fisheries

Office of Director General Fisheries KP was visited on his invitation, to integrate fisheries into KP Livestock Action Plan, as an important component of Meat Value Chain. Eight senior officers of the Department, including the Director General, participated in the meeting. The scientists were working in various disciplines like hatcheries, small dams, merged areas, public private partnership and planning.

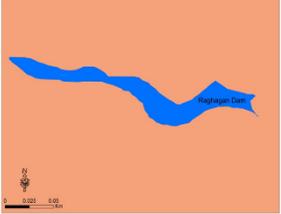
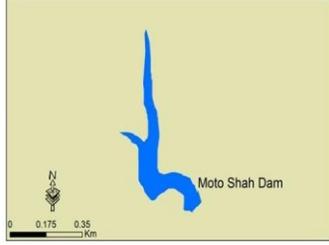


The National Consultant FAO briefed the participants on background of the Task under the umbrella of the Food and Agricultural Organization of the United Nations. The Action Plan would focus on development and transformation of the livestock sector covering the matters associated with commercialization, value addition, traceability and marketing the products and local, national and international levels. According to the Khyber Pakhtunkhwa District Government Rules Of Business, 2015, in addition to other activities, the District Office of Fisheries is also responsible for extension services to private sector for promotion of fish farming and hatcheries, training through open training schools, advocacy, publicity and awareness campaigns, promotion of fisheries and seed production, development of fish hatcheries and establishment of demonstration fish farms.

The public sector feed mills available at the University of Agriculture Peshawar and Livestock Research and Development Stations would be run through private public partnership and the operating cost/annual lease would be paid by the private parties. Specialized Feeds would be produced for various categories of fish and research on nutritional aspects would be conducted at Livestock Research and Development Station Surezai, Peshawar. Fisheries Department has got ADP projects worth Rs.400 million and PSDP projects worth Rs.1200 million, which would be linked with the LBSC. Capacity of the existing hatcheries would be increased through cementing of the ponds and the attached drainage areas at Sher Abad Fish Farm to prevent water losses and enhance the services to commercial fish farmers. A Fisheries Engineering Cell would be established at DG Office for designing fish farms, solar tube wells and chilling/chilled transportation facilities for meat. Fisheries Research and Development Center would be established at Jhanda Road Swabi, or another site where department's land is available. The Institute would be headed by a Director and assisted by 3 SROs, 5 ROs and 10 essential supporting staff.

GIS based Mapping of the Dams of Khyber Pakhtunkhwa (KPK) and Federally Administered Tribal Areas (FATA) for promoting the culture of edible fishes in Pakistan was conducted (Masood and Masood, 2015). It was concluded that through GIS with maps of any preferred dam, fish culturists can see the penalty of their need to locate a new production unit at any particular district to improve the conditions

of dams for fish growth and survival in terms of water depth, quality, hydrodynamics, existing dam locations, and benthic fauna to support the preparation of aquaculture strategies and development plans, in future which will contribute in economy of the nation. Such information's could also be valuable for determining the growth rate and productivity of fishes that later could be valuable in the systematic, fisheries management and conservation to improve the ecological setup necessary for growing fish.

			
Bajore Dam	Baran Dam Bannu	Moto Sh Dam Mohmand	Dargai Pal Dam SW

It was agreed that Livestock Business Support Centers (Fisheries) may be established at Sher Abad Fish Farm at the outskirts of Peshawar. An Endowment Fund would be made available for expanding the business or qualitative improvement of the products and services. The public sector feed mills available at the University of Agriculture Peshawar and Livestock Research and Development Stations would be run through private public partnership and the operating cost/annual lease would be paid by the private parties. Specialized Feeds would be produced for various categories of fish and research on nutritional aspects would be conducted at Livestock Research and Development Station Surezai, Peshawar.

LBSC would be managed by a Management Committee comprising two members from the host organization; two members from other relevant public sector organizations; two members from the industry; and one member from district/tehsil council. Chairman of the committee would be elected by the members for a period of two years.

## **Khyber Pakhtunkhwa Food Safety and Halal Food Authority**

Khyber Pakhtunkhwa Food Safety and Halal Food Authority (KPFSHFA) has been in place in the province for ensuring availability of safe and healthy food for human consumption. Issuance of licenses to food operators under the three categories of food business operators would be helpful for documentation of these small businesses. Three types of laboratories i.e. scientific laboratory, appellate laboratory and medical laboratory for quality monitoring are appreciated. Organizing training programs in food safety, standards, and SOPs for food production and health standards and certification are appreciated.

The Director General, KP Food Safety & Halal Food Authority, Government of Khyber Pakhtunkhwa Peshawar, was requested vide letter dated 26-6-2019, communicated through fax and email, to organize a Consultative workshop on FAO KP Livestock Sector Action Plan. It was suggested that a meeting of the author may please be arranged with the senior officers of the Authority with a multimedia presentation and copies of the relevant documents/ ongoing projects/ achievements/ future plans. The current procedures and practices of FSHFA and the hurdles faced by the Authority as well as the food processors and marketing agents, to be discussed. Development and technical support would be recommended to overcome the barriers faced by the Authority as well as the stakeholders. This Mission would accommodate the development, legal and financial needs of the Authority in its Action Plan.

On the due date of meeting the DG office informed the author that the staff is busy in Peshawar Higher Court in some official proceedings and nobody would be available for discussion. Hence the visit was postponed.

Anyhow, during the meeting in the office of Deputy Commissioner Bannu, the in-charge officer of the Authority participated and shared information about their work in the district. The officer showed his concerns at the lack of hygienic facilities at the slaughter houses. He mentioned the improvement in quality of foods through enhanced awareness among the food handlers and the general masses. Expansion of the testing services through establishment of more laboratories was recommended. The big shops may establish their own labs setup and appropriate record may be maintained regarding lab tests, procurement and sale of milk, for the purpose of traceability of the products.

## The Universities

### AWKUM Mardan

A meeting was held at College of Animal Husbandry and Veterinary Sciences, Abdul Wali Khan University, Mardan, comprising faculty members of AWKUM, Women University Mardan and members of Livestock Farmers Welfare association Mardan, totaling 22 delegates. The following discussions were held:



#### **AWKUM:**

The College of Veterinary Sciences and Animal Husbandry was established in August, 2014 with the approval of syndicate of the Abdul Wali Khan university Mardan, and was properly notified by the registrar of the said university. The fee and essential requirement Performa were submitted to the Pakistan Veterinary Medical Council Islamabad for accreditation. Mission of the College is to provide undergraduate and graduate veterinarian with excellent academic preparation, research experience and market oriented skills. Veterinarian seeks to discover the fundamental principles that treat the sick animals, its management, rearing and production to cater the need of the communities. The college strives to create an environment that enables teaching and research to attain high levels of excellence and in which its members can achieve their full potential.

Fifty students were enrolled in DVM degree program in fall semester 2014 and another batch was admitted during the succeeding year. The two batches have got graduated. Class rooms, laboratories, demonstration farms and essential staff have been made available. However, Pakistan Veterinary Medical Association has not yet accredited the program and prevented further admissions as some more staff, etc, are required as per PVMC requirements.

A veterinary clinic has been established at CVSAH, however, the university gate has been closed for the farmers and their animals to visit the clinic and get health and production services.

#### **Recommendations:**

1. Advising AWKUM admin for an earlier appointment of the deficient staff; and meeting the required deficiencies pointed out by the PVMC.
2. Advising PVMC for immediate restoration of DVM admissions.

### **KP Livestock Farmers Welfare Association Mardan:**

Issues of commercial livestock and poultry farmers, butchers, milk and meat dealers were discussed. Price capping was identified as the biggest issue, regulating the prices of milk and meat by the district administration while prices of the farm inputs like animals, feeds, medicines, semen and labor are free of any regulations. No subsidy is provided to the livestock farmers on the analogy of advanced countries, who keep the prices livestock products low, while subsidizing farm production at the same time. The cost of production of meat and milk is much higher than that fixed by the district administration.

This practice is discouraging those farmers and milk dealers who maintain quality and enjoy consumers' confidence. Higher quality milk is sold by the farmers or milk shops at rates somewhat higher than those approved by the district administration. The flat rates fixed are favorable to those selling low quality milk but this rates capping practice is lethal for the growth of those sale points which maintain quality. Quality control for inputs supplies and market access may be addressed; the young generation in farming community is reluctant from being indulged in the farm business; the farming system needs to be converted into decent employment as per UN-SDG 8; UN-SDG Action 9671.

No formal slaughter house is available for meat production and animals are slaughtered at unauthorized places without appropriate inspection by the experts or quality control measures. Awareness campaigns for hygienic and cost effective livestock health and production are at minimum level. Various types of taxes are imposed on livestock and poultry activities; however, food production is a business with the minimum level of profitability around the globe and is subsidized in the advanced countries. This Mission suggests establishment of Livestock Business Support Center (LBSC) as a university outreach facility at AWKUM, to be managed jointly by public and private sector organization.

## **Women University Mardan**

Women University Mardan has been imparting education in various life, social and business sciences. Women have been at risk from food-borne/zoonotic diseases through milk, meat and eggs handling and livestock husbandry. The Vice Chancellor has participated in the biorisk management curriculum development workshop at Colombo, Sri Lanka and Dairy Science Park IV at Konya, Turkey, along with ten delegates from WUM. The University teachers desired to work on biorisk management, food processing, quality control and entrepreneurship development. Women need to be empowered as per UNSDG 5, SDG Action 9671.

### **Dairy and Meat Technology Center**

Dairy and Meat Technology Center (DMTC) would be established at Women University Mardan with the main objectives of empowering women to establish food/quality control related business models, training in BRM concepts; protecting women health through food and animals' handling and working in research and diagnostic laboratories related to life sciences.

**Recommendation:** Establishment of Dairy Technology Center is recommended.

## Gomal University DI Khan

Gomal University DI Khan was visited and a meeting was held on 11<sup>th</sup> July, 2019 in the office of the Vice Chancellor Gomal University Dera Ismail Khan to discuss the Khyber Pakhtunkhwa Livestock policy and strategy and suggest Action Plan under preparation by National Consultant FAO. The meeting was organized by the Faculty of Veterinary and Animal Sciences in collaboration with FAO Peshawar Office. The main objective was to set a legal framework in a dynamic equilibrium where everyone can find room and adjust in growth cycle under the legal Umbrella and keep growth cycle wider as well as harmonizing the peace of development, achieving the objectives mission and vision.



### Participants of Gomal University and relevant faculty:

1. Prof. Dr. Muhammad Sarwar, Vice Chancellor Gomal University
2. Prof. Dr. Salahudin, Coordinator City Campus
3. Prof. Dr. Niamatullah Babar, Director ORIC
4. Dr. Shakeebullah, Dean FVAS
5. Dr. Shakirullah, Chairman, APPD, FVAS
6. Dr. Numan Rahim, Director, QEC
7. Mr. Tariq Mehmood, Registrar, Gomal University
8. Mr. Zahid Awan, Director Finance
9. Director P&D

### Participant of FAO: Prof. Dr. Muhammad Subhan Qureshi, National Consultant FAO-UN

The Vice Chancellor welcomed the honorable guest and appreciated the role of FAO and their struggle for assuring zero hunger across the Globe and for assisting the Government of Khyber Pakhtunkhwa to develop a Livestock Action Plan. He offered his support in the development process. The Vice Chancellor shared his experience of running a university feed mill successfully under an imprest money (revolving fund). This was an example of devolution of financial powers at the lowest levels and the activities were run in a sustainable manner without putting burden of operational cost on the government treasury.

Prof. Dr. M. Subhan Qureshi appreciated the Vice Chancellor for his motivating words and highlighted the importance of universities in national development. He referred to the current exercise of developing an Action Plan with estimated budget for Livestock Sector Development and Transformation, based on KP Livestock Policy; covering regulatory issues, value chain development, private sector engagement and overall required capacity at provincial and district levels; to elaborate on roles and responsibilities of various stakeholders focused on institutional reforms; review the current policy/strategies/program and align livestock sector priorities.

Prof Qureshi emphasized on following the Academia-Industry-Government Nexus in practice in the Developed World. The academicians would be having an opportunity to transform their ideas into feasible actions and the industry would have an opportunity to find knowledge based solutions for their issues. As such, entrepreneurship models would be developed for generating decent employment and exportable surpluses. The government, then, would be developing strategies to transform such models into prosperity of the people.

Based upon the expertise available at the University and the huge resource base available in the DI Khan district and the southern Khyber Pakhtunkhwa, the participants agreed on establishing Gomal Technopark (GTP). GTP, with a management board having full legislative, financial and administrative powers.

### **Session with Faculty Members**

Dr Shakirullah welcomed the 19 participants and introduced the background of the visit of National Consultant. FAO-UN was appreciated as an organization working for the stability in the regions through development of resources and economic support of poor masses in the rural areas. He also emphasized how to make it possible a transparent and corruption free progress in the accomplishment of the mentioned objective.

The Faculty Members raised various points and suggestions were given by the staff to develop the FVAS and eventually benefit the local farmer's community. Concerns were raised regarding the promotion of the teaching community working at the Gomal University. Performance based ranking was recommended for promotion to motivate the hard workers. Senior posts usually remain vacant which result in frustration of those whose promotion is due.

**Livestock Outreach Center** is recommended to be established at Faculty of Veterinary and Animal Sciences, Gomal University D.I. Khan, to provide health, production, products processing and business support services to the livestock, poultry and fish farmers, processors and service providers. Appropriate

charges would be fixed for various services packages, so that the program could be run on sustainable basis. An Endowment Fund would be made available to support this activity.

**Infrastructural Support Fund FVAS GU:**

1. The existing laboratory setup for poultry sciences, pathology, microbiology, parasitology, animal reproduction, dairy/meat technology and quality control services and animal nutrition would be strengthened through equipment and essential building/renovation requirements.
2. Poultry farm will be upgraded further with the installation of solar incubator and the capacity for poultry and quail farming would be enhanced. Training will be imparted in poultry and quail farming.
3. A small sized demo feed mill will be established at FVAS which will prepare feed at the rate of 1 ton/ hour.
4. Information communication system will be established to link the commercial farmers, processor, marketing partners and service providers with the Faculty.
5. Establishment of a canine breeding Centre and two dairy sheds. Prevention would be the motive rather than the treatment; hidden losses to the farms, not recognized by the farmers, would be identified and rectified.
6. Establishment of demonstration chilling/pasteurization unit for milk and meat pasteurization, processing and preservation.
7. Installation of solar and diesel generator.

**Session with farmers, industrialist and stakeholders in FVAS**

The session started with recitation of Holy Quran by Dr. Qudrat Ullah. Dr. Shakirullah welcomed the participants and introduced the agenda of the meeting. He mentioned the major goal of FAO-UN is to control poverty and to bring stability in world through overcoming the food crisis, ensuring zero hunger. FAO has been assisting the Government of Pakistan in livestock policy implementation and the present meeting has been arranged to get inputs of the stakeholders.

A network of veterinary hospitals has been made available throughout the province, with major focus on curative health coverage to the sick animals. However, these hospitals may be utilized as livestock business support centers and prevention/eradication of the endemic diseases. The Vice Chancellor, Gomal University has agreed on establishing Gomal techno Park (GTP) as a joint venture of the Academia, Industry and the Government, at Gomal University. GTP will supports in terms of feasibility making, identifying and facilitating supply of quality feeds, medicines, disease diagnosis, treatment and prevention, establishing meat/milk/eggs processing facilities as entrepreneurship models, quality control testing and certification, brands making, and export facilitation. The partnership would be operated in a sustainable manner, generate funds to meet the expenses and reward the staff and workers involved in the activities.

Under Gomal Techno Park a feed mill, mobile clinic, quality control center, water testing center etc will be established and private facilities will be linked with the university, in order to facilitate farmers at door step. A focal person would be nominated by the Dean FVAS for office of Gomal Techno Park to guide the farmers. Dr Sidra and Mr Asif awan will make whats app group and also will develop a software for interlink ages among different institutions. Pamphlets will also develop for guidance of poultry and livestock farmers. An e-portal will be introduced on Gomal University official website for registration of farmers.

### **Main issues faced by the farmers**

Poultry and livestock feed prices are much higher and these inputs are not producing the desired results. Gomal Technopark will address this issue by establishing a medium sized feed mill in Gomal University in order to provide quality feed at low price. Farmers face problems especially in summer season as temp may sometime touch the digit of 50°C. GTP will involve the civil engineers for giving models of suitable construction, to resolve the issue of load shedding will aid in solar installation and also advice the farmers to use antioxidants and probiotics to release stress.

Medicines and vaccines are also too expensive in market and their quality is also not satisfactory. Gomal Techno Park will identify and facilitate supply of these inputs to the registered farmers at accessible points. Registered farmers would be paid monthly visits for monitoring animal health and production and business aspects of the units. No hatchery is available for poultry in D I Khan. A medium sizes hatchery would be established in FVAS Gomal University in order to provide day old chicks to poultry farmers. Quality of underground water is also not good, leading to emergence of different diseases. A water testing lab will be established in order to resolve this issue of farmers.

Most of the farmers are un-educated and un-aware of use of modern technologies in both livestock and poultry farming. Training would be arranged in good farming practices and establishment of entrepreneurship across the livestock based food value chain.

## **SBB University Sheringal**

Department of Animal Sciences, Shaheed Benazir University Sheringal, Dir has got the responsibility of enhancing livestock performance particularly in alpine rangelands through joint collaboration of academia, researchers, relevant government departments, NGO's and progressive farmers. Establishment of model poultry and dairy farm was an excellent initiative of this department. Practical demonstration of poultry, quail, duck, rabbit and dairy farming, improving local sustainable livestock production system, minimizing limitations and providing technical assistance in "livestock as enterprise" are key responsibilities of this department. This department is planning to provide a platform for progressive farmers to link them directly with national and international poultry and

livestock market through Dairy Science Park. Three students each have been graduated with in the two degree programs and all of them have successfully established their business setup.

During 2014 the Department initiated M Phil program in Livestock Management and Poultry Science and inducted four faculty members. The next year a dairy farm was established with ten crossbred cattle which were added with ten more Holstein Friesian cattle yielding more than 20 kg milk per day. Silage and wheat straw bales were introduced as a farming innovation in the region. A PC-I has been approved providing an academic block, dairy farm, beef farm, sheep and goats farm and controlled poultry shed. Tenders have been floated for procurement of items. Approval of the F&PC, Academic Council and the Syndicate is awaited.

Pakistan Veterinary Medical Council paid a zero visit for evaluation of M Phil Program, three years back. However, the minutes have not been issued till this date, despite repeated requests. The Governor Secretariat has issued a letter for stopping admissions at the department which has been complied.

This National Consultant recommends that:

1. Approval of the statutory bodies may be obtained at an earliest as the Animal Science Program is essential for development of the Dir Region with rich resource-base in the form of ranges, pastures and small ruminants providing an important livelihood support to the people and a potential resource-base for exportable surpluses.
2. Implementation of the PSDP project Development of University of Dir Sheringal, covering academic building, cattle sheds and poultry sheds.
3. Implementation of PVMC recommendation regarding deficiencies in staff, etc. PVMC is requested to cooperate with the newly established veterinary institutions and allow them to grow instead of expected too much of the required standards.
4. Establishment of a Meat Technology Center for research on quality parameters of meat and business incubation, farmers support services in meat farming and marketing.

## Swat University Swat

On May 29th , 2010 the Prime Minister of Pakistan, visited swat and announced the establishment of university of swat. The university came into formal existence at dated 07/07/2010 by the Honorable Governor. Khyber Pakhtunkhwa Mr. Awais Ahmad Ghani with the prior approval of the President of Pakistan. Its first Vice Chancellor Dr. Muhammad Farooq Khan (Shaheed) was appointed on 23/08/2010. Initially the Higher Education Department (HED) handed over two buildings to the university located at Saidu Sharif Swat. The University of Swat own campus is under construction at Charbagh. currently the University is residing in different campuses at Kanju township.

The Centre for Animal Sciences and Fisheries is committed to the production of well-rounded international standard academicians in the field of animal sciences. The Centre aims to give coverage of modern sciences, followed by the opportunity to specialize in one or more areas reflecting the students interest. The Program, besides providing a broad educational background to its students with a foundation in the basic principles will inculcate high level of integrity, responsibility at individual and departmental level and quality research skills to enable the graduates to participate in community development projects. The mission of the Centre is to grow into an outstanding world class organization in all areas of its operation.

## University of Agriculture Peshawar

The Faculty of Animal Husbandry and Veterinary Sciences, University of Agriculture Peshawar has been considering the Khyber Pakhtunkhwa province as a natural resource base, possessing livestock and poultry resources with an estimated value of Rs.1.09 trillion (DSP, 2019). Meat is an important product and its proper management can overcome the protein deficiency of the nation and produce surpluses for export, not less than US 2.00 billion. An organized effort has been made at the Faculty under the Dairy Science Park to utilize the livestock resources with optimum efficiency with a focus on industrialization. A biennial series of international workshops has been in progress on Dairy Science Park; successfully holding conferences during 2011, 2013 and 2015 at Peshawar and during 2017 at Konya, Turkey. Each workshop was attended by 450+ participants, from academia, government and private sector organizations.

Under the DSP the laboratory setup at the Animal Health Department has been utilized for investigating disease problems in the medium sized livestock and poultry herds/flocks. The Poultry Science Department has introduced new concepts in postgraduate research like maggot meal, silk worm meal, meal worm, omega-3 enriched eggs, iron and zinc enriched eggs, quality control through drug-residues, aflatoxin levels, antibiotic resistance, herbal probiotics as growth promoters, improvement meat quality through dietary antioxidants supplementations, stress management through antioxidants, semen evaluation, breeding through artificial insemination, introduction and evaluation of rabbits for meat production.

The sheep, goats, poultry, dairy and beef animals were studied for their productivity, products quality and business potential. Carcass yield and quality. Processing of meat, palatability and consumers' preferences were documented. The local livestock and poultry breeds are investigated for productivity and business incubation. Commercial farmers are provided technical services and good practices are introduced. The University Cattle Feed Mill was run under a lease arrangement with a private partner. It has provided a gateway to the University System for applied research and an effective outreach setup for the mediums sized commercial livestock farmers. The Faculty members and postgraduate students have been utilizing these facilities for applied research and getting feedback from the farmers utilizing these products. Medium-sized livestock production and processing units were networked with services providers, markets, and emerging entrepreneurs. The United Nations has accepted the initiative as partner for implementing Sustainable Development Goals.

## **Livestock Business Support Center - UAP**

This Mission recommends establishment of a Livestock Business Support Center - UAP with an Endowment Fund and joint management committee comprising two members from the respective host organization; two members from other relevant public sector organizations; two members from the industry; and one member from district/tehsil council. LBSC will support applied research connected with industrial issues and entrepreneurship development for generating decent employment and exportable surpluses. The Center would ensure an active and visible interaction among the academia, industries, government and the civil society, to provide feasible solutions to the emerging issues faced by producers, processors, service providers, marketing partners and consumers.

Farming innovations would be introduced like introduction of biotechnologies, solar technologies, food technologies and bio-waste management across the livestock based food value chain. Entrepreneurship models would be developed in livestock, poultry, fish and fodders production, processing, quality control, diagnostics, veterinary clinical, processing, marketing and legislative services, as source of decent employment and exportable surpluses. Some examples may be establishing milk, meat and eggs shops; fodder production facilities; fodder seeds shop; silage plants; mini-slaughter houses, livestock/poultry/fisheries/other farming, also including fancy birds, pets, rabbits, ostrich, or others; processing, packaging milk, meat and eggs; marketing at district, provincial or international levels.

Veterinary clinics, diagnostic laboratories or biotechnological products processing or any other related facilities would be encouraged. Graduate interns and postgraduate scholars would be engaged in these activities under an incentive package.

## **Khyber Medical University**

A memorandum of understanding for Collaborative Biorisk Management Initiative (CBMI) was signed between Dairy Science Park (DSP), Khyber Medical University (KMU), the University of Agriculture, Peshawar (UAP), and Higher Education Commission of Pakistan (HEC). The signing ceremony was supervised by Prof Mukhtar Ahmed, Chairman HEC. The MoU was a follow up of a consultative workshop held at Bangkok, Thailand, participated by experts of DSP, led by Mr Arif Yousaf, Special Assistant to Chief Minister Khyber Pakhtunkhwa on Law, who was also representing the province as Chairman of Task Force on Sustainable Development Goals of the United Nations for Khyber Pakhtunkhwa. The workshop at Bangkok was focused on the objectives of Biorisk Management, identifying courses where Biorisk Management Curriculum can be inserted into existing curricula of Pakistani universities, development of new courses, and formulating other measures for Biorisk Management.

Senior faculty members of KMU attended the DSP-SNL collaborative events on Biorisk Management and contributed in development of BRM curriculum and other relevant issues. A curriculum package was

developed for integration into Doctor of Veterinary Medicine degree program during the events at Phuket, Colombo and Konya. BRM concepts were integrated into the postgraduate degree programs in various disciplines of the Institute of Public Health and Social Sciences, KMU.

WHO, NIH and Department of Health collaborated to establish a Public Health Reference Lab (PHRL) at KMU, ALHAMDULLILAH. Prior to it, NIH Islamabad was the only PHRL in the country. The core function of any PHRL is; to advise the Department of Health on health related matters especially diagnosis and prevention of diseases and investigation of epidemics and to act as reference center for the diagnosis and surveillance of diseases especially the infectious diseases. Other responsibilities include, response to Epidemics and Outbreaks, Seasonal awareness and alert letter for epidemic prone infectious diseases, Laboratory Support for Polio Eradication through Molecular Sequencing.

***Biorisk Management Center KMU:*** On advice of the Vice Chancellor KMU and Dean Public Health and Social Sciences, KMU, Dr Yasir and Dr Nauman visited FAO Peshawar Office for consultation on Biorisk management collaboration under the FAO KP Livestock Action Plan. It was agreed to establish Biorisk Management Center at KMU, by renaming the Food, Environment and Water Lab, under guidelines of the MoU already signed with DSP, UAP and HEC. The Center would be responsible for: i) launching One Health program at postgraduate level; ii) bio-waste management at KMU and other facilities of Livestock Technopark Peshawar; iii) collaborative research.

## Khyber Pakhtunkhwa Livestock Farmers Welfare Association

A meeting was held with Khyber Pakhtunkhwa Livestock Farmers Welfare Association (KP-LFWA, registered) at FAO Peshawar office. The KP-LFWA delegates comprised the President, Vice President, Secretary General and President Peshawar Chapter.

### **KP Livestock Farmers Convention**

**2019:** KP-LFWA has been serving the community since 1990s. Recently the KP Livestock Farmers Convention 2019 was held at Animal Husbandry Ins-service Training Institute, Peshawar



<http://dairysciencepark.org.pk/lpfc/>. The Convention was supported by Livestock & Dairy Development Department (LDD) Extension and Research Wings, Pakistan Veterinary Medical Association (PVMA), Pakistan Poultry Association (PPA), Fisheries Department (FD), Faculty of Animal Husbandry and Veterinary Sciences, UA Peshawar (UAP), Poultry Doctors Forum (PDF), Poultry Dealers Association (PDA), Dairy Science Park (DSP) Peshawar and KP Chamber of Commerce and Industries (KPCCI) Peshawar.

The objectives of the convention were to show the smallholder farmers in particular and commercial farmers in general, the recent advancements in field of livestock and poultry sectors. Adopting these practices by farmers will improve livestock productivity and reduce operational cost incurring at farms. Furthermore, the civil society and particular the youth were encouraged to take on livestock & poultry farming as livelihood source, resulting in reduced rates of unemployment in Khyber Pakhtunkhwa. The subsistence livestock farms and majority of commercial farms have management practices in a primitive stage and application of modern technology is almost lacking. The farmers have no or little knowledge of best farming practices to improve their productivity. This farmers' convention was helpful in imparting up-to-date knowledge and in demonstrating innovations in farming practices.

The Convention comprised of lectures delivered by prominent livestock and poultry experts on recent advancements accomplished in different areas of veterinary and poultry sectors. Stalls were installed by national and multinational companies of livestock, poultry and fisheries involved in sale/promotion of feed, medicine, vaccine, semen, fodder seed, diagnostic equipment, dairy technology equipment, general machinery and equipment, farm record software, veterinary books sellers, etc. Public sector departments and universities exhibited their products and services through stalls. Scheduled banks demonstrated credit facilities provided to the farmers. Healthy animals' competitions were held for all species of livestock. Milk production competition among all species and particularly cattle and buffaloes were held. The Ministers for Agriculture, Finance and other dignitaries participated in the event as Chief Guests and Guests of Honor. Total delegates exceeded 5000, including 100 commercial companies.

**Price capping and policy issues:** KP-LFWA wrote a letter dated 30-3-2019 addressed to Mr Jehangir Tareen of the ruling Party of the country, Tehreek I Insaaf, highlighting economic importance of the livestock sector. Deficiency of KP in milk and meat production were mentioned as 80%, met out through imports from Punjab. They referred to the price control as per NWFP Foodstuff Control Order 1975, whereas the District Magistrate in consultation with the District Committee or otherwise, fixes prices of foodstuffs for different localities of the



***KP Livestock Farmers Convention 2019***

District. They clarified that as the inputs including animals, feeds, fodders, medicines, labor, etc are not controlled or subsidized by the Government, there seems no justification to control the prices of milk and meat. The issue has been raised by the Association many times at various fora.

The KP Livestock Policy 2018 has mentioned price capping of milk and meat as the biggest hurdle in development of the livestock sector and adulteration of food items supplied to the consumers. The Association requested in the above referred letter for decapping pricing of milk and meat and allowing the concerned association for price determination on the analogy of poultry, vegetable, sweets, etc, with no government control.

The Association mentioned in the letter that 70% of the farms are at mercy of private money lenders and animal dealers. If a farmer cannot pay back the loan, the lenders can take away their animals, home or even families. Their markup rate is about 50% per annum and default rate is zero. They suggested long term loans on soft terms to be given to farmers with a significant role of the Association in the lending and recovery process. They desired Bank of Khyber to launch farmers' friendly schemes.

Availability of adulterated milk to the people of KP was identified as a bigger public health issue resulting in illness of the people. Such milk come from outside due to shortage of milk in the province. The cheaper rates of such milk attract the consumers.

In 2005, the local government launched buffalos' colonies to be set in Peshawar, Mardan and DI Khan areas. The Association mentioned in the letter than only some work was initiated in DI Khan. They demanded to set up milk villages around major cities, through allotment of plots to farmers on soft terms, establishment of labor colonies, product markets, veterinary hospitals manned 24 hours, milk and meat processing plants, etc.

CPEC was mentioned as an important opportunity for local economy. The growing Chinese food demands, and especially Halal Food for the Muslim population, can be met out through productivity improvement and commercialization of the livestock resources in the province. The Chinese

transportation system while returning back, can take milk, meat and other livestock based food products to China.

The Association appreciated the Vision of the Prime Minister Imran Khan and offered their support to implement the Vision of Self Reliance and utilization of livestock and poultry resources for generation of millions of jobs and exportable surpluses for economic revival of the country.

On 10-4-2019 the Association approached the Director General Food Safety and Halal Food Authority KP and mentioned that highly adulterated milk is filling the gap on cost of local dairy farming. Occurrence of hepatitis B and other abdominal diseases were attributed to consumption of such adulterated milk. They stressed on overcoming this issue in the interest of the local farming system.

The Association offered opening of model milk shops at different locations for selling pure milk as a joint venture with the Authority. These shops would be registered and regulated and may be considered as a source of decent employment in line with the Vision of the Prime Minister.

On 24-4-2019 the Association wrote a letter to Secretary Agriculture, Government of KP. They highlighted the issue of price capping of milk and meat while prices of the farm inputs were not regulated. They mentioned that the KP Agricultural Policy 2005 and Livestock Policy 2018 emphasized on deregulation of milk and meat prices on the analogy of poultry and vegetables. They complained that their application for price increase was pending with the Deputy Commissioner since two months and so many meetings with the Assistant Commissioner were not productive. They requested for bank financing of farming activities on soft terms. Adulterated milk coming from outside KP, pressurizing the local farming community was mentioned as an impeding factor in growth and survival of farms in KP. Establishing Milk Villages and harvesting economic opportunities under CPEC were requested.

The cost of milk produced per kg at Peshawar, was assessed as Rs.132 notified by the Association on 2-5-2019, based upon the depreciation of animal's cost, management cost and feeding cost. The exercise was supervised by Dr Masoom District Director Peshawar and Consumers Committee and put forward to Assistant Commissioner. In a press release on 17-7-2019, the Association mentioned the price fixation as the main issue of the farming community. Later on a meeting was held on the directives of the Chief Secretary KP with the Director General Livestock and Dairy Development KP, Dr Sher Muhammad on 4-7-2019. The minutes were issued on 4-7-2019. Notification of the revised prices were still awaited.

**Consultation on emerging challenges:** Senior Executives of KP-LFWA met to discuss the emerging challenges faced by the stakeholders across the livestock based food value chain. The Directorate Generals of Livestock and Dairy Development Department Extension and Research Wings and the University of Agriculture Peshawar are doing their jobs well, to provide routine extension, research and educational needs of the sector. However, most of the activities mentioned under the KP Rules of Business 1985 could not be covered.

In addition, many new issues have aroused which need to be addressed under this Plan. For achieving the targets inputs are required from the Directorates General Livestock and Dairy Development Department, Extension and Research Wings, Khyber Pakhtunkhwa, the University of Agriculture Peshawar and the private sector, including livestock and poultry farmers, meat, milk and feed processors and

representatives of women, under umbrella of an autonomous body. Establishment of an autonomous body was suggested under an Act of the Provincial Assembly of Khyber Pakhtunkhwa with full legislative, financial, regulatory and administrative powers to be backed up by an Endowment Fund.



*Calf fattening was introduced by KP-LFWA*

**Calf fattening:** Calf fattening was introduced by Mr Hafeez ur Rahman and Mr Kamran Khan at Peshawar. Both of these farmers have been in dairy farming since last two decades

and active partners of Sarhad Dairy Farmers Association and Dairy Science Park. Initially both of the farmers practiced dairy farming, however, the higher cost of inputs and a control price for the milk sold, is putting a tremendous financial pressure on the producers and reluctantly they quit the dairy production business.

The two farmers utilized their dairying experience, participated in scientific cum business dialogue of the Dairy Science Park, surveyed marketing status of the inputs and sale of the finished products and planned their fattening activities as separate models (DSP 2019). One farm fed the animals with energy-protein rich concentrates (probably resulting in overfeeding of the nutrients), expensive medication and veterinary coverage provided by the feed company. The other farm provided simple wheat straw and a little green fodder, keeping the cost at the minimum, with almost zero medication and veterinary coverage. Astonishingly both of them resulted in similar growth rates and each calf saved about Rs.8000 per calf within a period of three months. This provides an excellent model for entrepreneurship for the youth.

**Slaughtering during Eid Al Adha:** Small and large ruminants are required for slaughtering on the eve of Eid Al Adha in the Muslim community as a memorial of Hazrat Ibraheem, the father of prophets. The demand for such animals is increased on this occasion and the prices also go up. The Dairy Science Park realized the importance of this issue and opted for initiating model initiatives for calf fattening, to be sold on the eve of Eid Al Adha, 2016, falling during September.

Beyond such occasions, such type of calf fattening programs are facing marketing challenge, as these animals providing prime beef, have to compete with the beef coming from slaughtering the aged, sick and culled buffaloes and cows after completing their lactation. The district administration notifies flat prices, e.g. Rs.270 per kg beef, irrespective of the quality of animals, beef or preservation modes. Such a price capping discourages the young entrepreneurs producing quality beef at higher rates; and selling at higher prices.

**Meat production and processing:** DSP Slaughtering Point was established in the suburbs of Peshawar as an entrepreneurship model. Quality standards have been introduced and the facility is

providing meat to Pakistan Air Force. The same facility will be used for slaughtering sheep and goats and specially reared buffaloes/cattle calves for meat production.

A meat processing factory was established at Industrial Estate Hayatabad, Peshawar with the name Peshawar Meat by DSP Innovations, to process and pack meat from sheep, goats, cattle and poultry of local breeds reared in the pastures of Khyber Pakhtunkhwa and Federally Administered Tribal Areas. This helped in raising the income of the producers and provide safe food to the consumers, accommodating concerns on biorisk management. This facility was established as an entrepreneurship model to be replicated as a self-employment tool for the youth and hygienic food production for the people of the region.

**Farmers' Sausage Company:** This facility has been established at Industrial Estate, Hayatabad, headed by Mrs Javed, requested the DSP for inspection after they were fined and banned by the District Administration from functioning. The facility has been working since 2003 with family investment; not getting interest-based loans from the financial institutions. High quality equipment were purchased for the factory and quality control system was introduced. The products prepared at the factory were Baked Meatloafs, Mortadella, Smoked veal, Hunter sausages, Beef salami, Smoked chicken, Chiken pie, Chicken Sausages, Frankfurters, Pepperoni and Paprika. The inspection team were shown facilities by Mr Bahram Khan, comprising premises for handling the incoming meat after arrival, cold room, weighing scale, mincing assembly, mixing and crushing machine, smoking chamber and boiling pots. The experts examined the quality of the facilities, discussed the deficiencies and advised the Company executives on improvement of the same. The Company's executives were educated upon importance of hygienic practices and protocols in line with the national and



*Meat processors pondered upon regulatory issues*



*Farmers sausage, a women entrepreneurship model*



*Peshawar Meat*

international standards. The company still faces threats from district administration and KP Food Safety and Halal Food Authorities, instead of getting support as an emerging entrepreneurship model.

**Meat marketing:** Meat Shop, Jan Shopping Arcade, Peshawar Cantt has been in operation by Mr Habib Jan as model shop in Peshawar City. This facility was raided by the District Administration with the allegation that he is selling meat at higher prices. The DSP team visited his facility and inspected the quality of animals, slaughtering, processing, packaging and storage facilities. Jan Arcade had maintained quality of meat at their setup through procurement of the best and healthy animals of appropriate age, slaughtered and processed under hygienic and Islamic principles. The meat is graded as per accepted standards.

Sufficient investment has been made in maintaining pathogens free environment and chilled storage. The Shop has gained consumers' confidence, attracting elite and quality conscious families across the City. Dairy Science Park has been providing technical Support to the Jan Arcade and ensures quality and Halal standards at their Meat Shop. The Minister Local Government has appreciated their meat quality during a presentation made by the DSP and recommended its exemption from the general meat rates.

Al Hajj Habib ur Rahman Jan, President Al Quraysh Mutton and Veal Retail Shops Association wrote a letter to the Deputy Commissioner Peshawar, copy handed over to this Mission on 16-7-2019, stating that their meat shops have been supplying meat to the reputed superstores in Peshawar and specialized meat shops in the old city. They have been using best quality machinery for meat processing and the processing halls and cold storages are purposely built to maintain the desired quality standards. The processing halls and sale premises are air-conditioned for maintaining quality of meat and meat products. The Association desired to make an exercise with a competent officer of the district administration and consumers body, for determining the cost of per unit meat production, including the price of animals, shop rent, electricity bills, labor salaries, transportation, packaging and capital investment on the facility.

The consumers of these products are highly educated with an appropriate purchasing powers for getting quality meat products. The President mentioned that he has been working in this business since 1999 that led to establishment of about 30 shops of its kind. Coincidentally, this was the year when the author worked on Chief Minister Livestock Development Plan. Improvement in the shops is constantly made through feedback from the customers.

**Introduction of silage:** DSP Innovations was established with cooperation of KP-LFWA, to bring innovations in the existing farming system in the private sector. Silage was purchased from Punjab and introduced at the dairy and calf fattening facilities in Peshawar City. Meat Park was established at Peshawar and silage was introduced at the fattening farm owned by another partner of Meat Park which replaced the wheat straw, reduced production cost and improved the growth rate and health of calves. However, the partnership could not continue due to delayed/non-payment to the two investing partners in feed and silage.

To support the calf fattening facility, a DSP Clinic and Marketing Center was established at Chamkani Morh GT Road, Peshawar. It was run by a part-time veterinary consultant DSP, Dr

Muhammadullah who visited this and other farms in the premises and provided therapeutic and advisory services. DSP Innovations envisions, especially introduction of elite dairy and beef semen produced at CEBG facilities, into the local commercial farms. Good practices will be introduced at the local farms, especially improved hygienic status through availability of plenty of clean water using solar water pumps and bio-waste management.

**Silage Production Plant:** A silage production facility was established by Khanzada Ahmed Kamal at Mardan. USAID Agribusiness Support Program provided him training and the equipment on subsidized rates. This facility has started producing silage on preliminary pilot basis. Maize fodder is being used as the crop for production of silage. ILRI has been sponsoring Mr Nadir Khan, PhD Scholar Animal Nutrition UAP to work on silage production using various maize varieties under local conditions. Romer Lab Rawalpindi has provided inoculums for the experiment. Mr Kamal and another registered farmer in Peshawar have agreed to provide land for the experiment

**Operationalization of UAP Cattle Feed Mill:** The Cattle Feed Mill of University of Agriculture Peshawar was run under a lease arrangement with a private partner. It has provided a gateway to the University System for applied research and an effective outreach setup for the mediums sized commercial livestock farmers. The Faculty members and postgraduate students had been utilizing these facilities for applied research and getting feedback from the farmers utilizing these products. Alternate feed resources were explored and new technologies were developed for enhancing feed utilization by the livestock and poultry species. Feasibility models were developed for entrepreneurship in meat production. However, some elements did not like the collaboration between the academia and industry and managed to terminate the agreement unilaterally, through the university administration.

## Livestock Markets, Slaughter Houses

Livestock Markets and Slaughter Houses are being managed by Local Government and Rural Development, Government, Khyber Pakhtunkhwa. The huge livestock resource base of DSP Region could not be utilized to provide good economic returns to the producers, nor quality food to the consumers. The main reasons behinds this state of affairs are poor socio-economic status of the farmers, lack of resources and focus on part of the state institutions, a hostile marketing system. The marketing issues have been analyzed and recommendations have been made (DSP 2019).

Weekly exhibitions take place in various regions in the province, in rural as well as urban areas. The Market usually comprises a piece of land, rarely supported with some sheds. Availability of water and fodders for the animals and facilities for the attendants are lacking.

Animal are transported from and to the markets and to the slaughter houses in extremely pathetic and inhuman conditions. The trucks are not comfortable for the animals and the huge dairy/beef animals are jam-packed, with very little space. The animals are exposed to severe stress and the environment is contaminated with animals' excreta, threatening public health with zoonotic diseases.

***Required facilities:*** A special arrangement is required for transportation of animals through a legislative act, to be conducted by some autonomous/private organization/the proposed PTP, as the public sector has no capacity to conduct business activities. Special transportation arrangement is also required for meat transportation from slaughter houses to the sale points, as presently the meat is also transported in open trucks exposed to contamination and is a source of contamination of the environment.



*Animal Transpiration to slaughter house*



*Slaughtering at Main Slaughter House*



*Poultry slaughtering in Peshawar city*

**FAO Guidelines:** Options and designs for hygienic basic and medium-sized abattoirs have been reported (FAO 2008). One of the principles of hygienic slaughtering is the lifting of carcasses off the floor at the earliest possible stage. Bovines, mainly cattle and buffaloes and in some areas also yaks, have to be lifted up mechanically. But many slaughter operators do not have the means for this or for proper carcass suspension. This results in a multitude of hygienic problems in bovine slaughtering.

As per FAO guidelines, the animal, after stunning, is lifted by means of a special hoist for bleeding in a vertical position. However, under Islamic slaughtering system, we slaughter it without stunning and a sharpe knife for slaughtering in the name God, to minimize the pain of slaughtering and complete evacuation of blood from the blood vessels.

After the bleeding, the hoist then moves to a mobile skinning cradle and the carcass is placed on the cradle, where the initial flaying operation starts and the feet are cut. The cradle moves to any of the remaining hoists and the carcass is hoisted up and into a vertical position then moved along the line to where the flaying, eviscerating and splitting are done.

Veterinary services are required for ante mortem and posts slaughter carcass inspection as well as internal quality control. Carcass inspection can be



*Entrepreneurship development promoted under support centers*



*Goats kept as entrepreneurship models and pets*



*University Feed Mill run under public private partnership*

done from the floor. Meat inspection of the internal organs and the heads, may be performed at hanging carcass. Carcass washing may be done at a stainless steel washing tunnel with spray nozzles or by using a simple water hose. The area for the washing should be separated to keep the washing water from spreading across the floor

**Munir and Co Slaughter House:** It is located at Ring Road, Peshawar, the largest facility in the province, accommodating a livestock market for small and large ruminants also. Cattle, buffaloes, sheep and goats come from various parts of the province as well as from Punjab. Now a day several progressive farmers have started fattening their cattle and buffalo calves for beef production. The Slaughter House is used by the butchers with sale points in various locations in the city and the suburbs of Peshawar. The newly emerging meats shops at the supermalls are also using the same slaughter house. It provides sufficient space for marketing animals. Slaughtering sheds are available for cattle, buffaloes, sheep and goats. Cold rooms are available for meat storage. Hides and skins are processed and sent to tanneries for further processing. The intestines are processed for preparation of casings for sausages.

The slaughter house is lacking basic facilities like sufficient supply of water and lights, safety from predators, flies and dirt, appropriate veterinary inspection, analytical laboratory and clinic. Proper lifting of the carcass for skinning and cutting are also not available for large scale operations.

**Directive of the Senior Minister Local Government:** Minister LGE&RD Mr Inayatullah Khan was briefed on Peshawar Meat Company through a DSP presentation during March 2014. The meeting was attended by the UAP Vice Chancellor, Professor Zahoor Ahmad Swati, senior faculty members, Deputy Commissioner Mardan and Peshawar and senior officers of the KP Local Government and Agriculture Department. Representatives of SMEDA, Khyber Chamber of Commerce and Industry and KP Board of Investment and Trade also participated in the meeting. The role of the university in developing feasible farming models for broilers, quails, rabbits, sheep, goats and beef animals was highlighted. The minister urged upon improvement in the slaughter houses and advised to launch development projects under provincial ADP. (Source: Business Recorder, March 2014). Later on the Directive was declared by Additional Chief Secretary, Government of KP as Innovative Idea, and Chief Minister KP accepted it as DSP Task Force.

**Proposed Joint Venture as LBSC-LCB Slaughter House:** A joint venture would be initiated between Livestock Technopark Peshawar, Local Council Board Peshawar and Munir and Co, to upgrade the slaughter house at, Gulbahar Canal, Ring Road Peshawar and establish a Livestock Business Support Center at the site. For animals' transportation, special trucks would be designed for conformability of the animals and their attendants and safety of the environment and beauty of Peshawar city. The cold storage facilities would be enhanced and made available to the corporate partners on rent/lease. The chain of cold trucks would be expanded to facilitate meat transportation to the superstores, meat shops, meat factories, bus terminals and airports.

Sale of animals on live weight basis would be introduced to protect the farmers, animal dealers, butchers and general consumers from fraudulent deals. A diagnostic laboratory and veterinary clinic would

be established for serving the farmers and butchers. The export section of the slaughter house would be made available for supply to the superstores in Peshawar areas and other locations approved by LTP.

The following activities can be held jointly:

- i) Development of entrepreneurship models in livestock. poultry and fish production, processing, quality control, diagnostics, veterinary clinical, processing, marketing and legislative services, as source of decent employment and exportable surpluses; some examples may be establishing milk, meat and eggs shops; mini-slaughter houses, livestock/poultry/fisheries/other farming, also including fancy birds, pets, rabbits, ostrich, or others; processing, packaging milk, meat and eggs; marketing at district, provincial or international levels. Veterinary clinics, diagnostic laboratories or biotechnological products processing or any other related facilities would be encouraged.
- ii) Establishing and replicating milk and meat shops with quality certified products, linked with the registered farmers and products suppliers;
- iii) Improving/establishing, slaughter houses and meat processing facilities through joint ventures or public/private sector investment;
- iv) Establishing cold chain for transportation of milk, meat and by products across district, provincial and national borders;
- v) Development of environment-friendly and ethically sound, transportation system for animals, through public private partnership;
- vi) Development of standard operating procedures for quality control of livestock based food products, foods, feeds, medicines, vaccines, other biologics testing through the proposed BRM Center KMU and registered laboratories in the public and private sector;
- vii) Development of traceability system for animal production, products processing, slaughtering, labelling and marketing and facilitation for entry of local food products into international Halal meat market;
- viii) Improving the livestock markets and introducing innovative technologies in marketing and communication among stakeholders for maintaining quality standards, traceability, linkages with the local and international market and for harvesting new talent for the livestock based food value chain
- ix) Engaging DVM and other graduates from KP Universities in the entrepreneurship development activities
- x) Develop and monitor strategies and plans designed to achieve and maintain self-sufficiency and efficiency in meat/milk production, processing, manufacturing and marketing and providing feedback to the provincial government and legislative assemblies for taking corrective measures

## Unemployed Veterinarians

The number of unemployed veterinarians or those working in the private sector, has been 1645. These may be categorized into: Practitioner 675; well established their own clinics: 435; private practice but no clinic (mobile clinics): 167; unsuccessful practitioners: 73; farm setup: 107; post graduate students: 287; private feed mills: 87; pharmaceutical company: 110; private poultry farms: 145; secondary school teachers: 125; primary school teachers: 109; some vets have been enrolled in post-graduation studies while others are running groceries shops or auto-mechanic workshop.

The veterinarians working as employees in private dairy farms totals as 73 and may be categorized as: weekly visiting vets to small scale dairy farms 34; post graduates' nutritionist 33; working as a regional sale manager 16; working as an area sale manager 38; working as a medical rep 57 and; feed distributors 53. At private poultry farms the total veterinarians working are 145 and may be classified as: working as employee in private poultry farms 113; selling poultry products 32.

Veterinarians are hard-working, skilled persons, usually believing to poor families of the rural areas. These graduates are highly educated taught animals, health, production, business management as well as zoonotic diseases hitting human health. The employment opportunities are decreasing day by day due to budget deficits in public sector at provincial as well as federal level.

Livestock Technopark Peshawar and its institutional network has got the capacity to absorb the young unemployed veterinarians with a visible impact on the employment status and qualitative and quantitative improvement in the livestock services. We expect generation of 800 entrepreneurship models within a year, which is expected to double each year. The unemployed veterinarians are expected to prove useful for success of the LTP through their contribution as part time or full time employees of LTP in the form of meat/milk inspectors, quality control lab workers, trainers and veterinary clinicians. Veterinarians may work as registered entrepreneurs of the LTP Institutional Network in the form of innovative farmers, trainers, meat and milk shop managers, milk and meat factory supervisors and local/international traders.

LTP would support entrepreneurship development at the university and public sector organizations through academia industry interaction. Saleable ideas of the faculty members and postgraduate students at the universities would be tested through development of prototype models, and their integration into on-campus studies. The successful models would be replicated through further field trials at registered farms. Emerging entrepreneurs would be supported in reducing production cost, adherence to quality standards and linkages with the local and international markets. Information systems would be developed to keep informed the entrepreneurs about the market status and availability of expertise and inputs required at the respective unit.

## KP Chamber of Commerce and Industries

A presentation was made before the Senior Minister Government of Khyber Pakhtunkhwa, Mr Ikramullah Khan Gandapur (late) at KP Chamber of Commerce and Industries. Issues of livestock industrialization and commercialization were highlighted being under-utilization of the farm resources, lack of marketing support and constant threat from the administration in the name of price capping calling for lower prices of milk and meat in spite of higher cost of production. Sale of pure products at comparative higher rates, is discouraged in spite of acceptability of consumers. Low and adulterated products goes on unnoticed.



***Livestock Business Facilitation Desk established at KPCCI***

Export potential of the region for meat was highlighted before the Senior Minister, Local Government and Rural Development, Mr Inayatullah Khan, by the Dairy Science Park and establishment of Peshawar Meat Company was agreed upon. Legislation were suggested to protect the interests of the producers, processors, service providers and the consumers, under KP DSP Act. Academic Support to the livestock sector was suggested through a project of the Annual Development Program.

Three international conferences and Industrial Exhibitions during November 2011, 2013 and 2015 and the fourth event was held at Konya Turkey on November 1-5, 2017, jointly with Selcuk University and Konya Teknokent. The President of KPCCI appreciated the achievements and desired that the factors impeding farmers' income and products quality may be identified and small projects proposals may be prepared with tangible targets to demonstrate business models for self-employment.

The President offered support of KPCCI in forwarding the mission to generate self-employment for the youth and hygienic food production for the people of KP and FATA. He advised for invitation of traders and investors from KP, FATA and other provinces to participate in the international events and to establish scientific and trade collaboration with Turkey and other friendly countries. The present Action Plan has suggested such activities under the function of Livestock Technopark.

At local level the member of KPCCI would be invited to invest in joint ventures with Livestock Technopark Peshawar like innovative dairy, beef and mutton farming, meat and dairy processing, establishment of common facility centers and export of Halal food products to the Muslim dominated regions of the World.

## Women in Livestock Value Chain

Women have been involved at various points in livestock based food value chain in the Khyber Pakhtunkhwa as well as the merged areas. The peri urban dairy farms are mostly managed by families usually comprising the male owner, his wife, sons and daughters.

They provide food to the animals, milk the lactating cows, buffaloes, sheep and goats; wash the premises and perform other management tasks. The decision making is made

on consensus. Women have a major role of being with the animals for most of the times and observing them for productivity, health status, fertility conditions and hygienic status of the premises.

Under Integrated Development Strategy 2014-2018 of KP (Sustainable and effective local government system), improved citizens' participation has been proposed that empowers communities at grassroots level. Under "Entrepreneurship", industrial development for economic growth and job creation, improved enabling environment for private sector including SMEs and cottage industry through entrepreneurial friendly regulatory framework and other support has been proposed. Women contributes to 50% of the total population and the literacy rate is increasing.

After getting graduate qualification in animal science, food science, agricultural science or business sciences, the educated women can enter into formal entrepreneurship models like sausage factories. Livestock SMEs have been identified as important ones, comprising dairy farms located in the urban areas, and sheep, goats, and poultry farms in the rural regions. The medium-sized farms, factories, and marketing chain lack quality standards and have failed to provide the due financial return to the farmers and food of acceptable quality to the consumers. These facilities will be converted into viable enterprises, capable of creating self-employment for the youth and hygienic food for the people of KP to support food security and export.

The Women University Mardan (WUM) has signed an MoU with DSP for Biorisk management collaboration and entrepreneurship development. Trainings would be arranged for house-women are exposed to the health hazards associated with food items, like meat, milk and eggs. The food value chain would be explored for providing self-employment to the young women, like quails farming, rabbits farming, meat processing, cheese making, diagnostic laboratories and so on. Qualified women would be helped in setting up QC labs and biotechnological business facilities. The collaboration will safeguard the health of students, biomedical professionals and the community. Dairy and Meat Technology Center proposed under this Action Plan would be helpful in exploring new areas in women development.



*MoU signing between WUM and DSP*

## Policy Implementation and Regulatory Issues

Keeping in view the present shape of the Department, the governance structure doesn't protect interests of the stakeholders across the food value chain impeding the productive utilization of the state and peoples' resources. The emerging entrepreneurship models are facing hardships in surviving under the hostile marketing and governance system. Quality of food produced at farms is not evaluated for being beneficial to the health of the consumers.

It is not supporting the good workers at research organizations or the universities to transform their ideas into development of feasible business models and ensuring farming innovations under health, breeding and feeding management at the extension/research organizations or business incubation at the universities. Majority of the workers in the public sector organizations feel safe if they do not work, otherwise, they are chased by the audit people and Accountability Organizations for violating public procurement Rules.

The procurement process dictated under the Clause 30, Sub-clause (2), of the Public Procurement Rules 2004, calls for comparison of the items on the basis of cost. Here arises the issue when the suppliers offer lower prices for the items to win the bids. Lower price means lower quality of items. Animal feeds, medicines or other inputs purchased at lower prices would lead to adverse effects of the items on animals' health, reproduction and productivity and on public health through development of drug resistance and enhanced farm expenditures. The purchase committees suffer audit paras and accountability proceedings



*Farmers protest against lower government prices*



*MoU with Konya Technopark could not get materialized*



*Goats farmers couldn't get attention of policy makers*

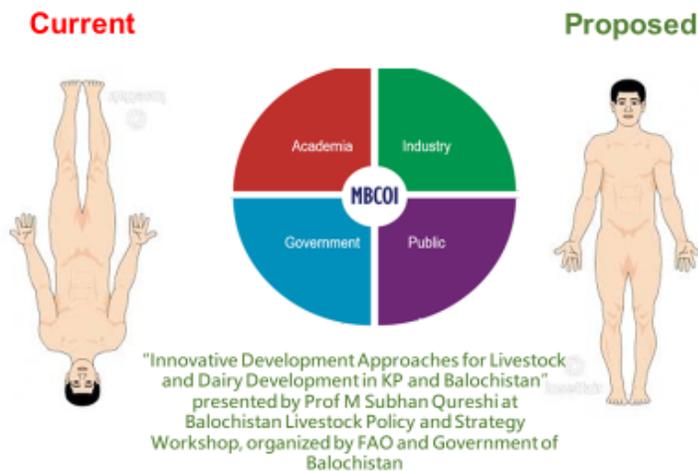
for purchasing items with better quality with somewhat higher prices and in some instances, get relief after intervention of the High Court.

Under the present system, focus of the public sector organization has been on: i) Livestock Extension, breeding and health coverage; ii) Livestock Research, vaccine, diagnosis and nutrition; iii) Livestock Education, veterinary medicine; iv) Agric Extension/Research, Fodder/Crops Production & Mngt; v) Deputy Commissioner, price capping, no Quality Control; vi) Legal courts, export ban; vii) SMEDA, little attempts; viii) KPCCI, low priority; ix) Public Health Services, low priority; x) ORIC Offices of Universities, underutilized. Overall impact of negligence of livestock resource base mobilization has resulted in missing of entrepreneurship/ exports/ Quality Control/ Traceability/ Halal concept across livestock based food value chain.



**Senior Minister LG KP couldn't implement**

## The Development Approach



**Innovative Development approach presented at Quetta in FAO-Govt of Balochistan workshop**

Task Force on Dairy Science Park was agreed by Senior Minister LGRD, Government of Khyber Pakhtunkhwa, Mr Inayatullah Khan. The Task Force was a temporary arrangement for establishment of the DSP Board in light of a wide-based high-level meeting chaired by the Senior Minister reflected in the note of Secretary Local Government, Election and Rural Development, Government of KP. The decision was made during a presentation by the author. The Honorable Senior Minister during a previous meeting of the representatives of the Department of LGE&RD, LDD, PDA, University of Agriculture Peshawar and the private sector, held on 3-3-2016, directed for: i) implementation of the ADP project worth Rs.200 million for establishing a modern slaughter house; ii) supporting academic component of DSP for SMEs and; iii) formulation of DSP Board through an Act of the Provincial Assembly. The Task Force was

appreciated by the Additional Chief Secretary and approved by Chief Minister Khyber Pakhtunkhwa on 2-8-2017. However, it could not get implemented and was not included in the KP Livestock Policy 2018.

While lack of good governance, infrastructure and regulations leads to a decline in societies, livestock are a major component of the economy even in countries affected by instability or crisis, accounting for more than 40 percent of agricultural GDP (FAO 2018). In other words, in these and other conflict-torn nations, animal production provides some remaining measure of social and economic security by offering access to food to residents in towns and villages, and ensuring that the population balance remains sustainable between rural and urban areas.

Under Speedy India, FAO has placed a report (Speedy 2001) to develop medium sized cooperative commercial units which are more susceptible to technological improvement and sustained supply. If the cooperative system and organized marketing is applied to the poultry sector, there is enormous potential for expanded production in rural areas, supplying the cities. The advantages of such development are: ownership remains with village people; enterprise enjoys economy of scale; some technical advantages of industrial systems compared to backyard farming; regular supply, increased scale, improved standards possible; more people participate and benefit from market and; it is easier to apply good agricultural practices.

“Innovative Development Approaches for Livestock and Dairy Development in KP and Balochistan” was presented by the Author at Balochistan Livestock Policy and Strategy Workshop, organized by FAO and Government of Balochistan (FAO-GoB 2019). Development approach of the author was appreciated as a lesson learned from other provinces and abroad and vision on Livestock Sector of Balochistan. Concern was expressed over inhuman transportation, unhygienic processing of animals, lack of animals Traceability and Quality Control Certification, which are mandatory for export of animal products across the country/international market. The author emphasized over price capping by the government, which discourages the livestock producers. The Government must understand the actual cost of production and then setting reasonable and economic prices. The author shared his experience saying that it is era of technology and information and we must make livestock farmers aware about such useful technologies. The author suggested establishment of Livestock Business Support Centers from where livestock farmers can get maximum assistance. He emphasized on incorporation of such concepts in the livestock policy and strategies.

The Livestock Policy 2018 has been processed by Directorate General LDD Extension KP. This Mission has tried its best to accommodate concerns of the industry, LDD Research, academia, government and civil society, in preparation of the KP Livestock Action Plan 2019. The academic wisdom generated at the University of Agriculture Peshawar through the series of international conferences and industrial exhibitions, interaction with the international bodies, interaction with the farming community and civil society and the consultation with the provincial government, is being integrated into this Action Plan.

## Market Oriented Production Strategy and Business Incubation

Business Incubation is the only remedy for entrepreneurship development on modern lines and to make it compatible with the market demands, consumers' preference and acceptability of the community and cultures. University of Agriculture Peshawar, has tried its best to develop such models through university industry interaction as business incubation models, under deanship of the author for two tenures. Postgraduate thesis research was redesigned to meet expectations of the industry and civil society and train the postgraduate scholar as a scientist as well a potential entrepreneur.

The present farming system comprises of small scale subsistence activities in the rural areas, or opportunity cost-based traditional family farming, mostly inherited from forefathers, in the peri-urban areas. The farmers are mostly illiterate with no awareness about their own health, animal health or impact of their farm products on public health. Dairy buffaloes are usually kept under the peri urban dairy farming system, with few crossbred dairy cows.

Quails have been introduced in the region through various non-government organizations in cooperation with the University of Agriculture Peshawar. Master and PhD thesis were produced on various issues of quails' fertility, hatchability, growth and stress management (DSP 2016). Through the reshaped postgraduate research, the Poultry Science Department of the University successfully came up with several entrepreneurship models under a revolving fund. Various poultry birds were studied including quails. Several studies were conducted under a revolving fund, to investigate the feed conversion ratio, supplementation of



*Postgraduate scholars worked with industry*



*Technical Support to Local cheese marketing*



*University Cattle Feed introduced in the field*

antioxidants, growth pattern, breeding efficiency and effects of aflatoxins on economic parameters and other aspects. It was concluded that AFB1 is capable of inducing clinico-biochemical reactions and alterations in different organs when fed to quails in different concentrations.

A study on effect of organic acids on the performance of Japanese quails found that net return was significantly higher by the supplementation. Two studies were conducted to investigate efficiency of artificial insemination and identification of a suitable extender and their effect on quail eggs fertility. AI showed good results in Japanese quails in term of least fertility related problem as compared to natural mating. Proctodeal gland foam extender was found to be very effective for fertility, hatchability, sperm motility and count and as well as economical, in terms of cost per chick.

Analysis of the data generated on quails at the Department showed that a rolling fund of Rs. 400,000 generated Rs.42,000 per month which is an excellent entrepreneurship model for the region.

Nutrition is mostly imbalanced, not meeting the protein, energy and mineral requirement in dairy buffaloes (Qureshi et al, 2002). The low yielding buffaloes usually get higher protein intake in the form of cottonseed cakes. The excess protein has to be got rid through conversion of ammonia in the rumen and urea in the liver, which is an energy consuming process. As such the farm expenditures go up; milk yield and fertility of animals comes down and immunity of the animal is compromised.

Rebreeding is usually avoided due to fear of decline in milk yield. It has been found (Khan et al, 2009) that this fear is baseless and appropriate feeding management may maintain higher milk



***Maggots meal was studied as poultry feed***



***Rabbit investigated for meat entrepreneurship***



***Quails investigated for entrepreneurship***

yield and fertility in a sustainable manner. Artificial insemination has failed to find a place in breeding of the buffaloes.

The traditional peri-urban farms keep running through loans from the livestock or feed dealers, with meagre net profit having no plan for horizontal expansion or quality improvement. The per head milk yield is low (about 10 liters) and cost per unit productivity is higher (Rs.90). These farms lack the resources for living a graceful life in the society, in spite of huge investment, e.g. Rs.5-10 million on establishing the Unit. New generation of the farmers and certain educated young persons have adopted dairy farming using the crossbred dairy cows.

Such farmers are adopting new technologies for managing feeding, breeding and health of animals. They are getting higher per head milk yield (about 30 liters) and have got linked with the marketing system, sometime after processing and packaging their products. However, some issues of animals' health, productivity, fertility, feed quality, price capping and taxation faced by these farmers, needs to be addressed and have been covered under this Action Plan through establishment of Livestock Technopark Peshawar and Livestock Business Facilitation Centers.

The remotely located sheep and goats' farms are also run without adopting improved management and feeding practices or concepts of profitability. Sheep and goats are located in the arid, hilly or mountainous terrains in the Khyber Pakhtunkhwa including the tribal areas. The fodders and water availability is usually difficult and the farming system is sedentary, transhumant, nomadic or migratory. About 60% of the goats' population is kept in units of more than 30 animals. Sheep population of about 40% is kept in flocks of 50 to 350 animals. Under such a situation, these production activities are not considered graceful, profitable or sustainable.

The products quality coming out of unhygienic facilities would not be considered safe for human consumption and hence, face hurdles in local, national and international marketing. They have no say in the matters like price fixation, quality control, policy formulation or projects implementation. This Report, however, improving the governing system and practices at these farms, would enhance the profitability and sustainability of the units.

The essential assets are available with the farmers in the form of sheep, goats, cattle, buffaloes, camels, poultry, quails and even ostrich. The farmers have got the basic skills in farming and management of health, breeding and feeding of animals. There is a need to convert these valuable assets into viable entrepreneurship models. The proposed Livestock Technopark Peshawar would facilitate Academia-Industry interactions to develop feasible entrepreneurship models through introducing good production practices in the production system, improving the health and immunity of animals, decreasing the per head productivity costs, ensuring traceability of animals and products, providing disease diagnostic, therapeutic, quality control and laboratory services through public and private partners, availability of high quality animals and farm inputs, sale of surplus animals and farm products, insurance in case of farm losses and addressing other associated issues. The efforts of the Park would be supplemented by LBFCs and other regional bodies.

## Facilitating Agribusiness Linkages – Entrepreneurship Network

Khyber Pakhtunkhwa province, although rich in natural resources, face issues like unemployment, terrorism and lack of access to quality foods. The cover picture of this Action Plan reflects the DSP Good Governance Model for livestock technoparks, founded on the six SDGs; initiated through on-campus development of entrepreneurship models; supported by extension and research wings and industry/civil society for building the entrepreneurship network; leading to Halal food export.

Mr Kamran Khan, an animal husbandry graduate, may be presented as a successful entrepreneur. He adopted his professional knowledge as a source of livelihood for his family. He is a source of relief for the farming community, a Beacon of Hope for the young generation and a sign of relief for the quality conscious food consumers in the city.



*Mr Kamran Khan, Livestock Entrepreneur, with a continuous history of struggle at various fronts, is Beacon of Hope*

Presently the livestock and poultry farmers face difficulty in connecting with service providers, especially the fair marketing dealers. Health issues are usually chronic and the low quality of medicine, under-dosing of antibiotics, therapeutic approach of the veterinary practitioner instead of preventive, poor housing/ventilation and lack of hygienic practices affect the farm profit, adversely. The dairy, fattening, poultry and fish farmers are usually afraid of animal health issues. Very few veterinary practitioners find popularity among the farmers' community, based on their performance and contribution in combating animal health issues and raising farm profitability and sustainability. The farmers usually consult veterinary practitioners in case of severe disease outbreaks and mortality of animals. This is called fire brigade treatment and is a source of income for the veterinary practitioners and input suppliers. The farmers fail to realize the hidden losses at their farms due to under and overfeeding, toxic feeds, parasitic infections, infertility and other issues of economic importance.

The Livestock Technopark Peshawar will engage and train the DVM unemployed graduates as well as in service veterinarians to visit the registered farmers on monthly basis for observing the animals' health and productivity cases with special emphasis on the hidden losses due to bad hygiene, parasitic infestation or toxic feeds. The veterinary practitioner will act as animal healers, public health protectors

as well as economy boosters. All the three aspects would help the farmers to get maximum benefits out of minimum investment, producing milk, meat and eggs with the qualities of accepted standards, through our registered labs. Engineering, medical, business and other graduates in natural and social sciences would be motivated to establish services in their respective areas.

LDD Ext Department would be engaged in developing special training modules for entrepreneurship development. They will host the Policy Implementation Cell and collaborate with LTP and its regional bodies. The hospitals would be utilized for shifting their therapeutic approach in disease control towards preventive and business advisory one. The outdoor cases would be encouraged and institutional based practice would be allowed on the analogy of medical doctors provided under Khyber Pakhtunkhwa Medical Teaching Institutions Reforms Act, 2015. The veterinary doctor would utilize his skills as animal healer, public health protector and economy booster. The Policy Implementation Cell would help in farming innovation and commercialization, providing an enabling environment for entrepreneurship development. New breeding innovations would be developed and introduced for enhancing growth rate, fertility and fecundity of animals.

LDD Res would work on applied research to control diseases, vaccine improvement and commercial production and advanced research in collaboration with the universities. They would help in Biorisk management research and development in collaboration with Khyber Medical University and University of Agriculture Peshawar. They will host Livestock Technopark Peshawar and LBSCs at Peshawar Kohat and Abbottabad and collaborate with LBSCs at other locations.

Directorate General would appoint a Focal Point Livestock Technopark Peshawar to support improvement in livestock markets and slaughter houses and in implementation of the joint ventures with Munir and Co Slaughter House, Ring Road Peshawar. Directorate General Fisheries would host LBSC Fisheries and would implement the fisheries components of the functions of Livestock Technopark Peshawar.

UAP would utilize the human resource base available in the form of highly qualified faculty members and enthusiastic postgraduate students for responding to the emerging industrial issues and developing entrepreneurship models. The Livestock Business Support Center at UAP would be utilized extensively through international linkages, especially under an MoU with the Konya Technopark, Turkey and other organizations developed under Dairy Science Park.

The university would contribute as follows: i) Swat University would host the LBSC Swat; ii) AWKUM will host LBSC Mardan; iii) WUM will host Dairy and Meat Technology Center; iv) Gomal University will host Gomal Technopark; v) Khyber Medical University will host BRM Center; vi) University of Agriculture Peshawar will host LBSC UAP and; vii) SBBU Sheringal will host meat technology center.

Livestock and poultry farmers are provided feeds, semen, medicine and other farm inputs by commercial companies. Most of the times these inputs are not quality tested, nor cost-effective. The feed companies supply feeds and their salesmen convince the illiterate farmers to feed the animals more and more. And as mentioned already in this document, this leads to excess intake of proteins, leading to ammonia and urea toxicity and losses in milk productivity, fertility and profitability of the farms.

The Board will test the farm inputs in various partner laboratories and the per unit productivity cost would be determined. Cost effective farm inputs would be made available at the Livestock Business Support Centers and other associated facilities. Feeds would be tested for nutrients availability and toxins presence through laboratory analysis and through growth, fertility and productivity trials, Semen would be tested for fertility and genetic potential through field trials at registered and experimental farms, engaging postgraduate students.

Marketing linkages are most of the times hostile to the farmers, be it livestock or poultry farmers. Animals are purchased from contractors or feed/milk dealers on loans to be paid in installments. The mark up rate usually goes beyond 100% per annum. And the lenders sometime take back animals or even families of the farmers, if he is unable to pay back the installments. In case of peri urban buffaloes dairy farming, the freshly parturited buffalo is purchased at about Rs.200,000 and after getting milk for six months, the animals are sold back at Rs.70,000. Weekly cattle markets are held at various popular locations of public gatherings. The LTP would devise a marketing mechanism for keeping dry animals at remote areas with little running cost, as salvage farming and newly pregnant animals would be kept at such stations for supply back to the peri urban dairy farms.

Peshawar Meat was established as an entrepreneurship model for providing Hygienic and Halal tested beef and mutton to Peshawar. It could not survive due to price capping form meat by government, lack of animals supplies to the factory and lack of sale points. The specially prepared beef through rearing calves, has to compete with culled old buffaloes at the end of lactation, or diseased and injured animals. The production cost of such animals is far lower while the production of prime beef would cost at least double this amount. However, the prices of beef and mutton are fixed at flat rates, irrespective of qualitative grading. Such a practice discourages growth and survival of young entrepreneurs, struggling for finding a graceful living in the society, while the shops with unhygienic and low quality products goes on working in an uninterrupted manner.

Establishing a network of entrepreneurship would solve the issue. A farming entrepreneur would be producing cost effective quality products to the factories, he will get inputs from the quality tested, registered suppliers, registered vets, analytical labs and other service providers; and he will supply his products to the registered factories and products marketing dealers. There would be a win-win situation for everyone. New graduates would find it easy to enter the chain at any point of the entrepreneurship network. Buffaloes are brought to major cities of the province from Punjab and sent to slaughter house after getting milk for few months. It drains the genetic potential of buffaloes towards trash and puts financial burden on local farmers, purchasing a fresh buffalo on higher rates. Establishment of salvage farms for rearing and caring of dry animal in remote areas of the province would prevent the animals from slaughtering and maintain the genetic pool of best breeds of livestock population. Establishment of model dairy farms for the purpose of extension, research and business demonstration at regional level under partnership with the private sector, would popularize the innovative farming models in the province, for further replication. Establishment of modern slaughter houses with advance facilities through joint venture will ensure the production of quality meat to the consumers and to be used for research purposes targeted at meat industry expansion and provision of Halal Meat to the entire Muslim community.

## Wrap-up meeting

Wrap up meeting was held at FAO Office Peshawar, attended by representative of the four major stakeholders across the livestock value chain, comprising: i) Livestock and Dairy Development Department (LDD) Extension Wing and; ii) LDD Research Wing; iii) University of Agriculture Peshawar (UAP) and; iv) Khyber Pakhtunkhwa Livestock Farmers Welfare Association (KP-LFWA).

The Rules of Business for functioning of the Departments of the Government of Khyber were discussed, already notified vide No. SO(O&M) S&GAD/3-3/1985, dated 6th April, 1985. Under Schedule-II, part III, S.No.27-44, Livestock business has been covered. LDD Extension and Research Wings KP have been taking care of most of the jobs notified vide this notification. Some of the functions are overlapped among various stakeholders while others function remained uncovered. For achieving the targets of transformation of the sector on commercial lines and development and replication of entrepreneurship models across the livestock value chain, all the participants except representative of the DG LDD Ext agreed on establishment of an autonomous body with full administrative, legislative, regulatory and financial authority. Livestock Technopark Peshawar (LTP) was suggested by this Mission, on the basis of FAO opinion on good governance, to build institutions and mechanisms that provide international norms, standards and data, promote international cooperation, and support an enabling environment for effective collective action to solve problems that cannot be addressed, or as effectively addressed, working at national level alone.

The LTP would be an autonomous corporate body with legislative, regulatory, financial and administrative power to support entrepreneurship development and protect interests of the producers, processors, service providers and marketing partners. However, representative of the LDD Ext presented his opinion that LDD Ext can do all these jobs itself and they have been the sole organization processing the KP Livestock Policy 2018, Livestock Strategy 2019, Livestock Action Plan 2019 and legislative process to resolve the various issues.

The Mission was of the opinion that the private sector is suffering badly. Price capping has restricted the growth of the dairy and meat industries. Young dairy and meat entrepreneurs providing high quality products, are fined, punished and sealed by the district administration while those selling low quality items keep on working. Degree programs of the provincial universities are getting derecognized by the Pakistan Veterinary Medical Council. Private sector needs appropriate patronage of the government to survive and contribute in economic growth of the province through generation of decent employment and exportable surpluses. LDD Ext represents 25% of the Livestock Sector, the rest being LDD Res, UAP and KP-LFA, 25% each. The primary stakeholder is the farmer, represented by KP-LFA while the rest are service providers. A well-off farmer would be a sign of relief for the society to get clean food and employment opportunities.

A balance approach would be to provide a level playing field to all the stakeholders and ensure a private sector led growth as per international standards. The Managing Board of LTP would comprise one

representative each of: i) DG LDD Ext; ii) DG LDD Res; iii) DG Fisheries; iv) Dean FAHVS UAP; v) Secretary Local Council Board; vi) VC WUM; vii) KP-LFA; viii) Poultry Farmer; ix) Fish Farmer; x) Feed Processor; xi) Dairy Processor; xii) Meat Processor; xiii) KPCCI; xiv) KP FSHFA and; xv) MPA. The Managing Board will decide on the basis of simple majority with 50% quorum. Members will elect Chairman for a tenure of two years with consensus or through voting. Executive Director would be responsible for day to day operations and management of the Board proceedings.

The Board would be supported by an Endowment Fund of Rs.1.60 billion and a development Grant of Rs.1.40 billion. Additional grants would be provided by the provincial and federal development programs, donor assistance, donations and income generation through commercial ventures and public private partnership. Procurements and auctions would be managed under user friendly special financial rules for transparent, simple and quick procurement and auction process. Further details are available under “Financial Management System” in the relevant section 15. The Board will come into existence, initially as an LTP Task Force through an executive order of the Chief Minister Khyber Pakhtunkhwa. Later on, an Act of the Legislative Assembly/Ordinance of Governor may be initiated for legal coverage of LTP. LTP will be an autonomous authority with full regulatory, administrative, financial and legislative powers to protect all the stakeholders of the livestock industry, and to engage all the relevant private and public sector organizations in the process.

The participants agreed on distribution of work among the four stakeholders of the Livestock Sector as follows:

**Table. 1: Distribution of activities of Rules of Business notified vide No. SO(O&M) S&GAD/3-3/1985, dated 6th April, 1985, Schedule-II, part III, S.No.27-44, Livestock business.**

Item No	Activity	Responsibility*
27	Improvement of Livestock	All
28	Prevention of animal diseases	Epidemiology: LDD Ext Vaccine Production: LDD Res Vaccination/hygiene: all
29	Veterinary Training and Research	Education/Training: UAP Extension/Training: LDD Ext Research/ Training: LDD Res
30	Appropriate measures for welfare and prevention of cruelty to animals.	Implementation: LDD Ext Legislation/Regulations: LTP
31	Establishment of regional epidemiological units and their linking with provincial, federal and other regional centers for epidemiological surveys, disease surveillance, reporting, early warning and rapid response.	Epidemiology: LDD Ext Applied research: LDD Res
32	Strengthening of animal extension production services for organizing farmers, transfer of technology and establishing a network of livestock farmer's field schools.	LDD Ext LTP

<b>Item No</b>	<b>Activity</b>	<b>Responsibility*</b>
33	Improvement of Livestock, poultry and their products & by-products markets, facilitation of their marketing and conducting market surveys.	LTP UAP
34	Research and development of feed, fodder, forages and pasture development.	Academic research: UAP Applied research: LDD Res Technology Transfer: LDD Ext/ LTP
35	Organizing and promoting Livestock fair, shows, filed days and veterinary camps.	LTP/UAPKP-LPFWA, continuation of Dairy Science Park 2011, 2013, 2015 and 2017 as biennial series
36	Conservation and development of livestock, poultry breeds.	All
37	Basic and applied research on livestock, poultry production, diseases, biologics, feed and fodder.	LDD Res UAP
38	Coordination and liaison with various stakeholders in Livestock sector.	LTP
39	Bio-risk management and maintenance of bio-safety and bio-security in entities where biological activities are carried out.	UAP/KMU/LTP Utilization of the capacity developed under VRI/DSP-UAP/KMU/Sandia-USA/KMU collaboration
40	Ante-mortem and postmortem examination of animals, inspection of slaughter houses, inspection and analysis of milk, meat, feed ingredients, veterinary drugs and other Livestock, poultry products and by products.	All, coordinated by LTP
41	Regulating the movement and transportation of Livestock and poultry and their products and by products from and to the province	LTP
42	Establishment of Livestock and poultry complexes, veterinary institutions, provision of veterinary/ veterinary public health services.	LTP
43	Livestock sector project formulation, implementation, monitoring and evaluation	All Project Identification: LTP
44	Facilitating insurance of livestock and poultry, and credit for dairy and poultry farming and allied industry.]	LTP

\* LLD Exr, LDD Res, UAP, KP-LFWA and LTP

## Implementation and Management Arrangements

Under the present governing system livestock is directly served by two Directorates General of Livestock and Dairy Development Department (LDD), Extension and Research Wings, providing relevant services. Local Government Department supervises the livestock markets and slaughter houses and Higher Education Department is responsible for livestock education at various provincial universities. Another two public sector organization are the office of Deputy Commissioner (DC), regulating prices of milk and meat and the KP Food Safety and Halal Food Authority (KP-FSHFA), monitoring food quality. University of Agriculture Peshawar (UAP) is producing doctor of veterinary medicine graduates and postgraduate scholars. AWKUM, Gomal University and SBBU Sheringal are imparting veterinary education. KP Livestock Farmers Welfare Association (KP-LFWA) is fighting for protecting rights of farmers and processors and the associated stakeholders in the province.

The two wings of LDD are conducting their activities under a tightly fixed framework of functions, with no administrative or fiscal space for consideration of the emerging issues of the livestock industries like struggle of the young generation to establish model entrepreneurs or need of the quality conscious consumers to get quality tested, hygienic and Halal food items. They are provided funds under KP Annual Development Program and federal Public Sector Development Program, but the constraints, mentioned in KP Livestock Policy, mostly remained unaddressed.

Local Government Department could not launch some visible infrastructural projects for improvement of cattle markets and slaughter houses. All the provincial universities except Gomal University could not get accreditation of the DVM and other degree programs with Pakistan Veterinary Medical Council (PVMC). Price capping of milk and meat, ignoring the production costs, or concerns of the producers and the consumers; is restricting growth of the industry. Ambiguous quality standards are used for monitoring food quality and the emerging entrepreneurs are punished, instead of providing development support to the young entrepreneurs. KP-LFWA has been helpless in getting attention of the power corridors for solving farmers and processors issues, in spite of arranging KP Livestock Farmers Convention 2019, attended by 5000 visitors and 100 manufacturing and marketing companies and service providers. All these organizations are working in isolation.

The constraints mentioned in the KP Livestock Policy and the above paragraphs, are very serious; restricting growth of the emerging entrepreneurship models as tools for decent employment of the youth and availability of quality foods to the consumers. Realizing these issues, the ex-Senior Minister Local Government and Ex-Chief Minister issued directives for establishment of an autonomous body.

Based on consultation of this Mission, it is suggested that an autonomous Livestock Technopark Peshawar (LTP) may be established, initially as a Task Force for Livestock Technopark Peshawar and later one through an Act of the Legislative Assembly/Ordinance of Governor; with full regulatory, administrative, financial and legislative powers to protect all the stakeholders of the livestock industry, and engage all the above-mentioned organizations in the process. This would create an enabling environment for the growth of the emerging entrepreneurs, through a coordinated approach, targeted at generating decent employment and exportable surpluses.

LTP would work under supervision of a Managing Board, supported by an Endowment Fund, with special and user-friendly financial rules. Functions of LTP and other parameters have been given under relevant section of this Action Plan. LTP would facilitate the University-Industry-government linkages through engaging the outgoing internees and postgraduate scholars in applied research on farming, processing, marketing and services issues. Feasible ideas on industrialization would be identified for validation under field conditions as entrepreneurship models. The activities would be registered as companies with relevant regulatory bodies. LTP would provide forward and backward marketing linkages and technical support to all the registered partners. The stakeholders would be supported in their day to day as well as emerging issues. Executive Director LTP will take care of the day to day activities of LTP.

The Managing Board LTP would establish various committees for the functions allocated in the Action Plan. Activities among the Institutional network of LTP would be coordinated. The Entrepreneurship Network would be provided forward and backward marketing linkages and technical support from various partner organizations.

International liaison would be established with Konya Technopark Turkey, Chinese Academy of Science and other international organizations for technology transfer, collaborative industrial research and trade linkages. KP Chamber of Commerce and Industries would be helping in establishing linkages of local entrepreneurs with international trade organizations.

The biennial series of international conferences and industrial exhibitions on Dairy Science Park (DSP) would be continued in collaboration with partner organizations. Workshops on biorisk management would be continued. Collaboration with international organizations like Konya Technopark, Turkey and Chinese Academy of Agricultural Sciences, initiated under MoU's with DSP would be strengthened and new collaborations to be explored. Expert panels of DSP would help in devising strategies and technical guidance in farming innovations, processing technologies and development of quality control standards.

Livestock Technopark would keep the Endowment Fund in joint account of Director Finance and Director Entrepreneurship. The Chairman Technical Committee would forward the approved projects to Director Finance and funds would be released to respective institutional unit.

Technical Committee will comprise one representative each of Director General LDD (Ext/Res), Director General Fisheries, Dean FAHVS, a representative of the industry and a provincial expert. The members will select/elect their Chairman.

Committee of Institutional Units (CIU) LTP would be established comprising one member from each Unit and a representative of the Chairman LTP. The Chairman for CIU would be elected by the members for a period of two years. The Committee would meet on quarterly basis for review of the achievements and hurdles in implementation of the relevant functions and need assessment for further work.

The Entrepreneurship Units would be registered with the Registrar of Firms, Government of Khyber Pakhtunkhwa and organized into an a registered "Society of Livestock Entrepreneurships, Livestock Technopark Peshawar" to be registered as a Society under Society Registration Act 1850.

# Livestock Technopark Peshawar

## Historical Background

Science parks (also known as research parks) first originated in western nations, such as the US and the UK and were often affiliated with academic or research institutions (Vaidyanatha, 2008). These parks provided an environment for mutually beneficial collaboration of research and development (R&D) among tenants in the park, and with academia in the case when they are university based. Such parks have been considered one model for promoting innovation, entrepreneurship, growth of knowledge-based companies and in turn economic growth within their regions (Link and Scott 2003). The success of these ventures is an empirical issue, and the evidence to date is too thin to generalize that all parks are successful. Of course, the success depends upon support to the parks through good governance.

Western science parks that have had notable success have influenced developing countries to adopt the “park model” as a vehicle for technology-based economic growth and development. East Asian countries such as Taiwan, South Korea, Hong Kong, and Malaysia that also started parks, generally referred to as technology parks, have been successful, especially in attracting foreign investment and promoting growth of knowledge-based industries in these countries.

Interestingly, while Asian countries in general, and India in particular, have imitated the park model, there are striking differences between their technology parks and the science parks in the west. These differences are important for comparative purposes and for a broader understanding of high-technology growth in India. Regarding such differences, most of the technology parks in India are specific to one sector such as information technology (IT) or biotechnology (biotech), and some of the technology parks are highly specialized within a sector. As well, a majority of the technology parks in India are not associated with any university. Finally, similar to the technology parks in Taiwan and Singapore, technology parks in India are export oriented whereas the science parks in the west are focused on R&D.

As in East Asian countries such as Malaysia, Singapore, Taiwan, and Hong Kong, technology parks have been a catalyst for India’s exports and economic growth in the last two decades. A number of technology parks, especially in the IT sector and more recently in the biotech sector, have started in India in less than two decades.

## Attempts in Punjab, Pakistan

In Pakistan the cooperative system was introduced as Idara-e-Kissan, a vertically integrated cooperative in the dairy sector, which procures fresh milk, processes it and uses the profits earned in urban milk product markets to provide development services to member farmers (Riaz, 2008). The analysis suggests that, compared to a control group of non-members, the cooperative’s members had 29% higher net returns per milk animal, 9% more milk buffaloes, 6% fewer dry buffaloes and they used three times more milk fat-enhancing cottonseed cake. The members had better access to animal

vaccination, artificial insemination, and visits from livestock extension workers; they were able to secure more animal treatments per year, and reported greater satisfaction with service provision. The cooperative's successes were more modest in areas where the benefits of inputs and services provided were more public, e.g. livestock breed improvement and enhancing fodder productivity, indicating that there is an important role for the government in supplying public goods such as livestock/agriculture R&D.

Punjab Livestock & Dairy Development Board (PLDDB) was established as a non-profit organization established under Section 42 of the Companies Ordinance, 1984. The PLDDB has been aimed to develop Livestock & Dairy sector of the Punjab while facilitating small & large farmers in production, processing & marketing with the latest infrastructure and modern farming technologies to improve their animals' genetics and milk/ meat production ratio. PLDDB is also meant to accelerate private investment opportunities in this sector. The Board is being operated by 4 major wings i.e. Farm Production & Planning, Nutrition Resource Management, Field Service & Capacity Building and Finance & Admin. PLDDB has focused on the up gradation of more than 90% small farmers of the province by providing technical & in kind assistance as per their need, the women empowerment is another added domain of the board & the team is working closely with the women working in Livestock & Dairy Development management.

The Board has trained about 600 women Livestock Extension Workers (WLEWs) as master trainer to educate the rural women regarding good livestock practices & better animal feeding resource management. PLDDB is also in joint venture with Women Chamber of Commerce Bahawalpur Division to strengthen the Southern Punjab livestock women workers. To synchronize the efforts of academia with industry PLDDB has join hands with University of Agriculture, Faisalabad University of Veterinary & Animal Science, F.C College University and other stakeholders in their respective combination.

Punjab Agriculture & Meat Company was established at Lahore as a Government of the Punjab owned, non-profit R&D organization, duly incorporated and registered under section 42 of Companies Ordinance, 1984. The company has been aimed at formalizing horticulture and meat sector through interventions at each tier of value chain i.e. production, processing and marketing (inland & export) under compliance of international quality standards through public / private channels. PAMCO is running several projects like Lahore Meat Processing Complex. Currently about 600 billion dollars Global Halal market is facing supply gap due to constraints in terms of quality animals and processing under the compliance regime of international quality standards.

Facilities have been established like mechanical slaughtering lines for beef & mutton, meat processing facilities, value addition through allied products, supply to global Halal market, meat technology institute in collaboration with UVAS. Blood rendering plant, compost plant, waste water treatment plant, cooling system (Chilling & Blast Freezing), compliance of standards at all tiers of value chain. Its Capacity is 500 beef & 6,000 mutton animals / 8hrs shift and one dedicated municipal shift.

## Konya Technopark - Dairy Science Park Collaboration

Konya Teknokent (Technopark), Selçuk University, Konya, Turkey, hosted the Fourth International Conference and Industrial Exhibition on Dairy Science Park 2017. Konya Teknokent has been mandated to provide important support to the production and service sector in terms of increasing competitive power, improving quality and productivity by producing new products, improved products, new technologies and improved technologies. As the continuation of the 7th Framework Program, the Horizon 2020 Program (2014-2020) encourages innovation in research and strengthen industrial-academia collaboration. Founded five years ago, Konya Teknokent has become one of the fastest developing Technoparks of the country with its 107 firms in its field today. The Rectorate of Selçuk University has assigned Konya Teknokent to the Technology Development Zone of Selçuk University of 5000 m<sup>2</sup> in Alaaddin Keykubat Campus in order to start its activities immediately without waiting for Konya Teknokent to build its own buildings.

The delegates of the Fourth International Conference and Industrial Exhibition on Dairy Science Park visited Konya Teknokent (Technopark) on third day of the conference, under supervision of Dr Mithat Direk. The delegates, more than fifty from Pakistan including others from various countries, visited Konya Teknokent on 3 November, were excited to know about the achievements made at the Teknokent. Prof Birol, head of the organization was not available on the day of our visit to Teknokent and we were given a presentation by Mr Mehmet. An MoU was signed between Konya Teknokent and Dairy Science Park for collaboration in Smart Energy programs, sharing success stories in food processing, quality control and marketing and sharing ARGE activities in Information Technologies, Agricultural Technologies, Biotechnology, Design Technologies, Environment and Energy Technologies and Defense Industries.

## The KP Livestock Resource Management Status

Khyber Pakhtunkhwa province is rich in livestock resources, however, management of these resources on commercial lines is almost totally lacking. Focus of the provincial government has been on disease control and limited research services through the extension and research wings of the Livestock and Dairy Development Department while the universities are limited to their teaching and limited postgraduate thesis research. The State Services are providing support to subsistence farming and only SMEDA has been doing some limited interventions.

The commercial farming is emerging out of traditional farming systems depending upon opportunity costs. The commercial farming and processing entrepreneurs are facing serious issues of price capping and other regulatory barriers restricting their growth. Dairy Science Park, a scientific society, aroused at the University of Agriculture Peshawar, as a platform for the emerging entrepreneurs to get linked with the academia, a network of marketing partners, provincial government authorities and service

providers. Feasibility models were developed under academic environment and quality control standards were developed under supervision of panels of experts.

The Governor of the Khyber Pakhtunkhwa was pleased to make the Khyber Pakhtunkhwa Government Rules of Business, 1985, notified vide No. SO(O&M) S&GAD/3-3/1985, dated 6th April, 1985. Under Schedule-II, part III, S.No.27-44, Livestock business has been covered. LDD Extension and Research Wings KP have been covering most of the jobs notified vide this notification and the Khyber Pakhtunkhwa District Government Rules of Business, 2015 notified vide No SO(Dir)ROB/LGE&RDD/2015 dated November 3, 2015; Second Schedule {See Rule 3 (2)} Distribution Of Business Amongst District Offices, the functions allocated to Livestock and Dairy Development Department. The uncovered allocated functions would be integrated into mandate of the proposed Khyber Pakhtunkhwa Livestock Development and Transformation Board (LTP).

British Council (2017) published the Scoping Study - Education City Khyber Pakhtunkhwa Pakistan, Extended Report. Opportunities identified included: the growing number of well-qualified graduates from local and international universities as potential employees and leaders; attracting international students from China and other parts of the world; attracting high quality international staff; developing as regional hub for R & D in specified sectors and; growth in number of SMEs led by women as a result of incentivisation.

## Endorsement by Provincial Chief Executives:

Chief Minister Livestock Development Plan was prepared on advice of Chief Minister Mehtab Ahmad Khan Abbasi (PMLN) communicated vide CM Office letter dated 30-11-1998, for productive utilization of the livestock resources to bring prosperity and stable peace in the region. The Plan was endorsed by Chief Minister Akram Khan Durrani (JUI) vide letter dated 8-1-2003, for implementation. Senior Minister Arbab Ayub Jan of ANP endorsed the idea during DSP-I 2011 Peshawar. Senior Minister Local Government Mr Inayatullah Khan (JI) and Additional Chief Secretary KP Muhammad Azam Khan endorsed the concept vide office note, as an innovative idea. Mr Muzaffar Saeed Finance Minister and Mr Arif Yousaf Convener SDGs Takk Force/MPA supported the concepts through international consultation.

Chief Minister Pervaiz Khattak endorsed establishment of Task Force on Dairy Science Park on 2-8-2017 vide Office Note of Local Government Department, however, it could not be notified. The author continued working on academia-industry-government interaction and was successful in protecting several emerging entrepreneurship models across livestock value chain; organized the 4<sup>th</sup> international conferences and industrial exhibitions on DSP in Turkey, signed MoU with Konya Technopark and popularized Biorisk management through collaboration with Sandia National Labs USA.

## Outcome of the Wrap-up meeting

Wrap-up meeting of this Mission was held at FAO Office Peshawar, attended by representative of the four major stakeholders across the livestock value chain, comprising: i) Livestock and Dairy Development Department Extension (LDD Ext) and; ii) Research (LDD Res) Wings; iii) University of Agriculture Peshawar (UAP) and; iv) Khyber Pakhtunkhwa Livestock Farmers Welfare Association (KP-LFWA).

Reference was made to the Rules of Business for functioning of the Departments of the Government of Khyber Pakhtunkhwa, already notified vide No. SO(O&M) S&GAD/3-3/1985, dated 6th April, 1985. Under Schedule-II, part III, S.No.27-44, Livestock business has been covered. LDD Extension and Research Wings KP have been taking care of most of the jobs notified vide this notification. Some of the functions are overlapped among various stakeholders while others function remained uncovered.

The Mission was of the opinion that the private sector and universities are suffering badly, due to ineffectiveness of public sector organizations to resolve the issues faced by the stakeholders. Price capping has restricted the growth of the dairy and meat industries. Young dairy and meat entrepreneurs provided high quality products, are fined, punished and sealed by the district administration while those selling low quality items keep on working. The Academia has not been provided opportunities to contribute their share in nation building. Private sector needs appropriate patronage of the government to survive and contribute in economic growth of the province through generation of decent employment and exportable surpluses. LDD Ext represents 25% of the Livestock Sector, the rest being LDD Res, UAP and KP-LFA, 25% each. The primary stakeholder is the farmer, represented by KP-LFA while the rest are service providers. A well-off farmer would be a sign of relief for the society to get clean food and employment opportunities.

For achieving the targets of transformation of the sector on commercial lines, development and replication of entrepreneurship models across the livestock value chain, all the participants except representative of the DG LDD Ext agreed on establishment of an autonomous body. However, representative of the LDD Ext did not agree with the establishment of the Board with the opinion that LDD Ext can do all these jobs itself and they have been the sole organization processing the KP Livestock Policy 2018, Livestock Strategy 2019, Livestock Action Plan 2019 and legislative process to resolve the various issues. Livestock Technopark Peshawar (LTP) was suggested by this Mission, on the basis of FAO opinion on Good Governance and success stories around the Globe.

The LTP would be an autonomous corporate body with legislative, regulatory, financial and administrative powers to support entrepreneurship development and protect interests of the producers, processors, service providers, marketing partners and the consumers. Initially the LTP would be notified as a Task Force and later on it will be established through a legislative act of the provincial assembly or Ordinance of the Governor.

## Legal Framework for LTP

Livestock Technopark Peshawar (LTP) is proposed to be established as an Academia-Industry-Government Nexus model of shared authorities and responsibilities, based on propagation of SMART entrepreneurship models developed through academia-industry interaction covering United Nations SDGs 2,3, 5, 7, 8 and 16, local traditions and culture with a final target of generating decent employment and exportable surpluses across Livestock-Based-Food-Value-Chain. Initially the LTP would be notified as a Task Force and later on it will be established through a legislative act of the provincial assembly or Ordinance of the Governor. Salient features of LTP follow:

- 1. Name:** Livestock Technopark Peshawar (LTP)
- 2. Vision:** Generating decent employment and exportable surpluses across livestock based food value chain.
- 3. Mission:** Introducing Academia-Industry-Government-Society nexus of governance model, facilitating entrepreneurship development across livestock based food value chain, backed up by quality control, traceability and forward/backward marketing linkages.
- 4. Functions:**
  - a) An active and visible interaction among the academia, industries, government and the civil society, to provide feasible solutions to the emerging issues faced by producers, processors, service providers, marketing partners and consumers.
  - b) Introducing farming innovations like introduction of biotechnologies, solar technologies, food technologies and bio-waste management across the livestock based food value chain.
  - c) Development and replication of interlinked entrepreneurship models in livestock, poultry and fish production, processing, marketing, quality control, diagnostics, veterinary clinical, processing and biotech products, marketing and legislative services, engaging university student and graduates; as source of decent employment and exportable surpluses.
  - d) Improving/establishing, slaughter houses and meat processing facilities through joint ventures or public/private sector investment.
  - e) Establishing cold chain for transportation of milk, meat and by products across district, provincial and national/international borders for meeting local and international marketing requirements and standards.
  - f) Development of environment-friendly and ethically sound, transportation system for animals through public private partnership or other models.

- g) Development and notifying standard operating procedures for quality control, food inspection and traceability of livestock based food products, foods, feeds, medicines, vaccines, other biologics testing for local and international market; through registered laboratories in the public and private sector; the farm inputs available would be analyzed for quality and price comparison and notified for reducing production cost and enhancing quality of farm products.
- h) Protecting financial, marketing, legal and public health interests of the stakeholders, especially the price regulation, across the livestock food value chain and exemption of the registered entrepreneurs and institutional units from all type of taxations.
- i) Establishing common facilities centers for entrepreneurship inputs supplies, advocacy and training, marketing
- j) Improving the livestock markets and introducing innovative technologies in marketing and communication among stakeholders to maintain quality standards, traceability, linkages with the local and international market and for harvesting new talent for the livestock based food value chain
- k) Continuing the biennial series of international conferences and industrial exhibitions on Dairy Science Park (DSP); workshops on bio risk management, continuation collaboration with international organizations like Konya Technopark, Turkey and Chinese Academy of Agricultural Sciences, initiated under MoU's with DSP and new collaborations to be explored.
- l) Establishing disease free zones for various disease through surveillance and quarantine across the district, provincial and national borders.
- m) Develop and monitor strategies, and plans designed to achieve and maintain self-sufficiency and efficiency in meat/milk production, processing, manufacturing and marketing and providing feedback to the provincial/federal government departments and legislative assemblies for taking corrective measures.
- n) Periodical monitoring and contributing in developing response strategies for addressing local, national and international commitments on issues like climate change and others.
- o) Coordination with public and private sector organizations and associated LTP subunits for addressing sectoral issues, capacity development, and prioritization of their functions judicial utilization of the available resources through coordinated approach.

- p) Implementation of Special Service Incentives Package for scientists/officers/staff of LDD Extension and Research Wings and other components of LTP on performance basis, using measurable indicators and reporting on annual basis.
- 5) **Location:** Head Office of the LTP would be initially located at the Livestock and Dairy Development headquarters at Charsadda Road, Peshawar and later on shifted to another appropriate location, if needed.
  - 6) **Executive Director:** The person working as Director Livestock Research and Development, Livestock and Dairy Development Department KP would be posted Executive Director LTP. The Managing Board would make further arrangements for supervision of the project, whenever required.
  - 7) **Endowment Fund:** An Endowment Fund would be established to the tune of Rs.1.6 billion through provincial/federal/donors grants. The private sector would offer their land, animals, building and other assets for a period of at least five years with investment by LTP and operational arrangement by the private partner. The fund would be used for entrepreneurship development and the facilities required for relevant activities. The net profit, to be determined by a joint committee of the private partner and the LTP, would divide the profit at a ratio of 80:20, respectively, or as considered appropriate.
  - 8) **Non-lapsable Development Grant:** Rs1.4 billion, for various infrastructural and operational activities.
  - 9) **Managing Board:** A balance approach would provide a level playing field to all the stakeholders and ensure a private sector led growth as per international standards. The Managing Board of Livestock Technopark Peshawar would comprise one representative each of: i) DG LDD Ext; ii) DG LDD Res; iii) Dean FAHVS UAP; iv) DG Fisheries; v) Secretary Local Council Board; vi) VC WUM; vii) KP-LFA; viii) Poultry Farmer; ix) Fish Farmer; x) Feed Processor; xi) Dairy Processor; xii) Meat Processor; xiii) KPCCI; xiv) KP FSHFA and; xv) MPA. The Board will decide on the basis of simple majority with 50% quorum. Members will elect Chairman for a tenure of two years with consensus or through voting. Executive Director would be responsible for day to day operations and management of the Board proceedings.
  - 10) **Institutional Units (IU-LTP):** i) LPIC LDD Ext; ii) LBSC CVH Bannu; iii) LBSC Merged Areas; iv) LBSC VRI; v) LBSC VRDC Kohat; vi) LBSC VRDC Abbottabad; vii) LBSC Fisheries; viii) LBSC SH LCB; ix) DMTC WUM; x) LBSC AWKUM; xi) GT GU; xii) MTC SBBU-S; xiii) LBSC UAP; xiv) BRMC KMU; xv) LBSC UOS. For managing each IU-LTP, except Policy Implementation Cell (PIC): a) the Management Committee would comprise two members from the respective host organization; two members from other

relevant public sector organizations; two members from the industry; and one member from district/tehsil council. Chairman of the committee would be elected by the members for a period of two years; b) Management Committee for PIC comprising experts in animal health, breeding, training, research, vaccination, education, farming, products processing, entrepreneurship and media. Experts in animal health, breeding and training will be nominated by Director General LDD Extension KP and experts in research and vaccination would be nominated by Director General LDD Research. Experts in education would be nominated by the Dean FAHVS UAP. Experts in farming and products processing would be nominated by President KP Livestock Farming Welfare Association. Entrepreneurship Expert would be nominated by Livestock Technopark Peshawar. Media Expert would be nominated by relevant bod; c) Committee of Institutional Units (CIU) of LTP would be established comprising one member from each Unit and a representative of the Chairman LTP. The Chairman for CIU would be elected by the members for a period of two years. The Committee would meet on quarterly basis for review of the achievements and hurdles in implementation of the relevant functions and need assessment further work. Funds would be released to the Institutional Unit by Managing Board LTP; d) Each IU-LTP would report to the Management Board LTP and the progress, requirements, technical programs, etc, would be reviewed in the quarterly review meetings of the CIUs.

- 11) **Entrepreneurship Units:** i) Dairy Farming; ii) Beef Farming; iii) Mutton Farming; iv) Poultry Farming; v) Fish Farming; vi) Pets Farming; vii) Nontraditional Farming; viii) Vet Clinics; ix) Analytical Labs; x) Inputs Suppliers; xi) Renewal Energy Providers; xii) Legal Advisors; xiii) Innovators; xiv) Meat Shops; xv) Dairy Shops; xvi) Meat Factories; xvii) Dairy Factories. The Entrepreneurship Units would be registered with the Registrar of Firms, Government of Khyber Pakhtunkhwa and organized into an a registered “Society of Livestock Entrepreneurships, Livestock Technopark Peshawar”.
- 12) **Technical Committees:** Technical Committee will comprise one representative each of Director General LDD (Ext/Res), Director General Fisheries, Dean FAHVS, a representative of the industry and a provincial expert. The members will select/elect their Chairman.
- 13) **Finance committee:** It will comprise Director Finance LTP, Industry Representative and a qualified Auditor. A joint account will be opened which will be operated by Director Finance LTP and a nominee of the Managing Board LTP.
- 14) **Distribution of the profit:** Net profit for each on campus new project activity will be shared on periodical basis as: i) 10% to Government of KP, 20% to the principal researcher, 39% relevant employees/worker, 30% to Endowment Fund; and 1% to Insurance Fund; 2) for on campus ongoing

activity the profit share would be 10% to Government of KP, 30% to the staff and 60% to the Endowment Fund; 3) for off campus activities the profit distribution would be 80% for the Industry and 20% for the LTP and LTP will pay honoraria to the relevant staff involved in the off campus activities.

- 15) **Monitoring Committee:** A 5 members monitoring committee to be nominated by the Management Board, will ensure the transparency and availability of quality services to the farmer's community/processors/marketing partners, at grass root level; fiscal and performance evaluation of the institutional Units; addressing complaints of the LTC staff, members and general public against any member/institutional unit of the LTP. The Committee will evaluate the quarterly, semi annual and annual progress report of each Institutional Unit of LTP. Measurable indicators would be developed for assessing performance of individual and institutional member of LTP, for . Indexing system would be developed for quantifying such progress at a level of 0-100. These reports would be utilized in reviewing policy, fund releasing, promotion of staff other relevant matters. The Committee will also monitor quickness, transparency and fairness in the income and expenditures of LTP.
- 16) **Appointment of Officers etc.** LTP may appoint such officers, advisers, experts, consultants, and employees, as it considers necessary for the efficient performance of its function on such terms and conditions as it may deem fit, subject to such general, or special direction by the Government may give to it from time to time in this behalf.
- 17) **Constitution of committees:** The Board may constitute such committee as may be deemed necessary for carrying out the purposes of LTP.
- 18) **Accountability and Immunity:** Member, Directors, Advisers, officers, experts consultants and employees shall ensure the interest of the LTP and its stakeholders. However, they will be indemnified from any losses and expenses sustained or incurred by them in the discharge of the duties of their offices resulting from unavoidable circumstances. The procurement and auction process would be made transparent up to maximum; however, the relevant staff would be indemnified from unnecessary harassment through medial or accountability process.
- 19) **Delegation of powers:** The LTP Managing Board may, by general or special order, delegate to the Chairman, Executive Director, Directors, Advisers, Officers, Experts, Consultants or employees of the Board etc or the committees constituted, any of its powers, duties or functions under this Act and the rules and regulations made there-under subject to such conditions as it may deem fit to impose.

- a) The Managing Board may associate with itself, in such manner, on such terms and for such period as it may deem fit, any person whose assistance or advice it may desire in carrying out any of the provisions of its functions. A person associated as such shall have right to take part in the discussion relating to such purpose in the meetings of the Board but shall not have right to vote and shall not be deemed to be a Director for that or any other purpose.
- b) Form and establish companies in respect of any of the projects mentioned in the schedule.
- c) Manage on behalf of LTP the shares held by Board in the issued capital of the companies referred to at (a) above, in the larger interest of the public and stakeholders.
- d) Subscribe to the capital of the companies to such extent as may be necessary.
- e) Act as Managing Agents of the companies established by the LTP.
- f) Give short and long-term loans or furnish guarantees to the scheduled banks for loans to the companies established by the LTP. Preferable mode for loaning will be the Endowment Fund LTP which may allocate competitive research and extension grants for demonstrating viable feasibility models and replication under the Institutional Units of LTP.
- g) The LTP may negotiate and obtain for its projects and companies established under LTP Act, loans in local and foreign currency from the local or the international financing institutions or individuals. Islamic Investment will be preferred and provisions will be there for supporting the neglected segments of the Society under Baitul Mal and Charity.
- h) There shall be a fund to be known as the Endowment Fund LTP which shall vest in the LTP and which shall be utilized by the LTP to meet expenses in connection with its functions under LTP Act, including salaries and other remunerations of the regular and casual staff of LTP, funding research and development projects; establishment of commercial units and marketing outlets, transportation and cold chain facilities, etc. The Fund can also be utilized for purchase or sale of shares. Initial investors will be offered shares at proportionate basis.

**20) The LTP Endowment Fund shall consist of:**

- a) Investment made by Government/Donors
- b) Grants awarded by Government;
- c) Loans obtained from Government
- d) Charges for the management of Projects/Units under the direct control of the LTP
- e) Managing agency commission in respect of companies managed by the LTP
- f) Loans obtained from the scheduled banks/investment by Local or foreign partners
- g) Foreign loans obtained by the LTP; grants, technical and financial assistance received from international agencies and on bilateral basis from other countries
- h) Registration fees from stakeholders; Income from operational units of the LTP
- i) Local and international Halal Investment

**21) Utilization of Endowment Fund LTP**

- a) Developing feasibility models for entrepreneurship under LTP Institutional Units
- b) Facilitating groups of stakeholders in establishing entrepreneurs through Institutional Units of LTP.
- c) Input supply and services through Institutional Units
- d) Development and replication of prototypes through graduate entrepreneurship for production of hygienic and Halal food and biotechnological products
- e) Establishing breeding stocks, farming and value addition facilities
- f) Branding of LTP Halal meat and outlets/ export for product marketing
- g) Renewable energy, energy efficient housing and innovations.
- h) Charity and Bait-ul-mal for the neglected segment of Society

22) **The Fund shall be managed by** LTP in accordance with the LTP financial management system.

23) **LTP shall be deemed to be a local authority** under Local Authorities Loans Act, 1914, for the purposes of borrowing money under the Act and the making and execution of any scheme under this Act shall be deemed to be a work which such authority as legally authorized to carry out. The associated entrepreneurs would be registered, certified and charged for services at appropriate rates.

24) **No provision of law relating to winding up of the companies shall apply to the LTP.** When, in the opinion of Managing Board, it is expedient that the LTP shall cease to exist, the Managing Board may advise the Secretary Planning and Development, Government of Khyber Pakhtunkhwa for issuing notification accordingly and publish it through official Gazette regarding the dissolution from such date as may be specified in this behalf and the LTP shall be deemed to have been dissolved accordingly and from such date. All properties, funds and dues which are vested in or realizable by the LTP shall vest in and be realizable by the Secretary or any other officer appointed by Government on this behalf. All liabilities which are enforceable against the LTP shall be enforceable only against the Secretary Planning and Development or any other officer appointed by Government in this behalf. For the purpose of completing the execution of any function sanctioned under the LTP Act which has not been fully executed by the LTP and of realizing properties, funds and dues the functions of LTP under the Act shall be discharged by the Secretary Planning and Development or any other officer appointed by Government in this behalf;

25) **LTP may make rules for carrying out the purposes of LTP Act.** In particular, and without prejudice to generality of the foregoing powers such rules may provide for the manner and form of keeping the accounts of the LTP; recruitment, terms and conditions of officers, advisers, consultants, experts and other employees of the LTP; procedure for appropriation and re-appropriation of moneys at the credit

of the LTP; investment of LTP Funds and surplus moneys; sale or transfer of farms, projects or industries and other immovable property of the LTP; and operational requirements of the Entrepreneurship Units of LTP regarding purchases, quality control, meat inspection, imports, exports, training, education, research, sale, purchases, slaughtering, packaging, labelling, branding, etc; such other matters relating to the administration and other affairs of the LTP as the Board may think fit to prescribe by rules.

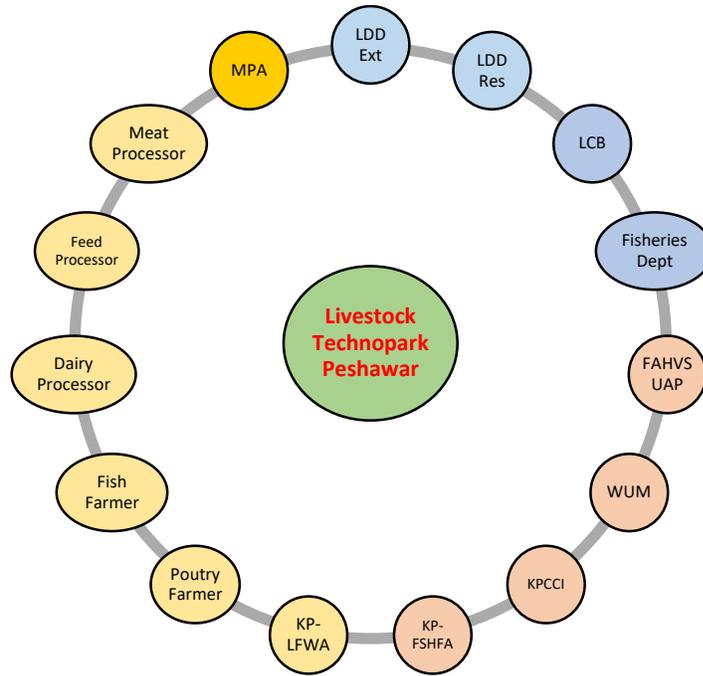
26) ***The LTP may, with the previous approval of the Managing Board,*** make regulations for all matters not provided for in the rules for which provision is necessary or expedient for carrying out the purposes of this Act and the rules.

27) ***Objectives of LTP:***

- a. To prepare the province of Khyber Pakhtunkhwa for export of Halal Meat and biotech products, with a potential target of US\$ 2.00 billion; through introduction of national and international scientific, business and Halal standards at every tier
- b. To promote applied and advanced research through academia-industry-government interaction, to be used for development of business models and entrepreneurship related to production, value addition and marketing
- c. To provide self-employment to the youth through exploitation of indigenous livestock, poultry and fisheries resources.
- d. To convert the existing medium sized inefficient and unhygienic livestock and poultry production units into viable, hygienic ones; qualifying the standards for production of hygienic food for local consumption and export
- e. To attract the stakeholders for active participation in development activities and processes and to create awareness among the masses and sensitize them on issues of food security and food quality and approval of package for corporate farming, especially livestock and poultry breeding.
- f. Facilitate, promote and support the development and dissemination of improved technologies for the livestock sector and to support utilization of livestock resources for creating self-employment for youth.
- g. To establish a network of all the stakeholders and provide an opportunity for export of Halal Meat and other farm products, by-products, biotech products; utilizing the academic, research and development resources of the provincial government and LTP park for improving livestock and dairy sector throughout province.
- h. To integrate the ethical/Halal considerations, consumer's preferences, environment, sustainable development, human rights and gender issues in the food/biotech production and marketing cycle and to undertake capacity building of all stakeholders
- i. To ensure profitability of Entrepreneurship Units and recovery of losses to the Units through appropriate insurance policy.

## Livestock Technopark Peshawar (LTP)

### Members of Managing Board



**Members Government: 4**

**Autonomous: 4**

**Private: 6**

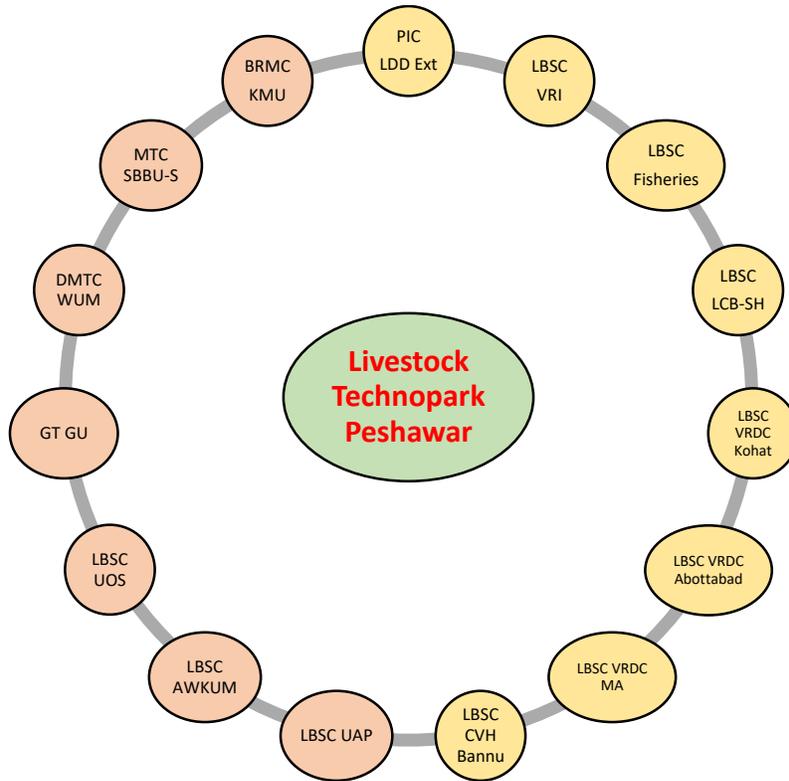
**Member Provincial Assembly KP: 1**

**Members Total: 15**

**Chairman: To be elected by members for 2-years tenure**

## Livestock Technopark Peshawar (LTP)

### Institutional Network



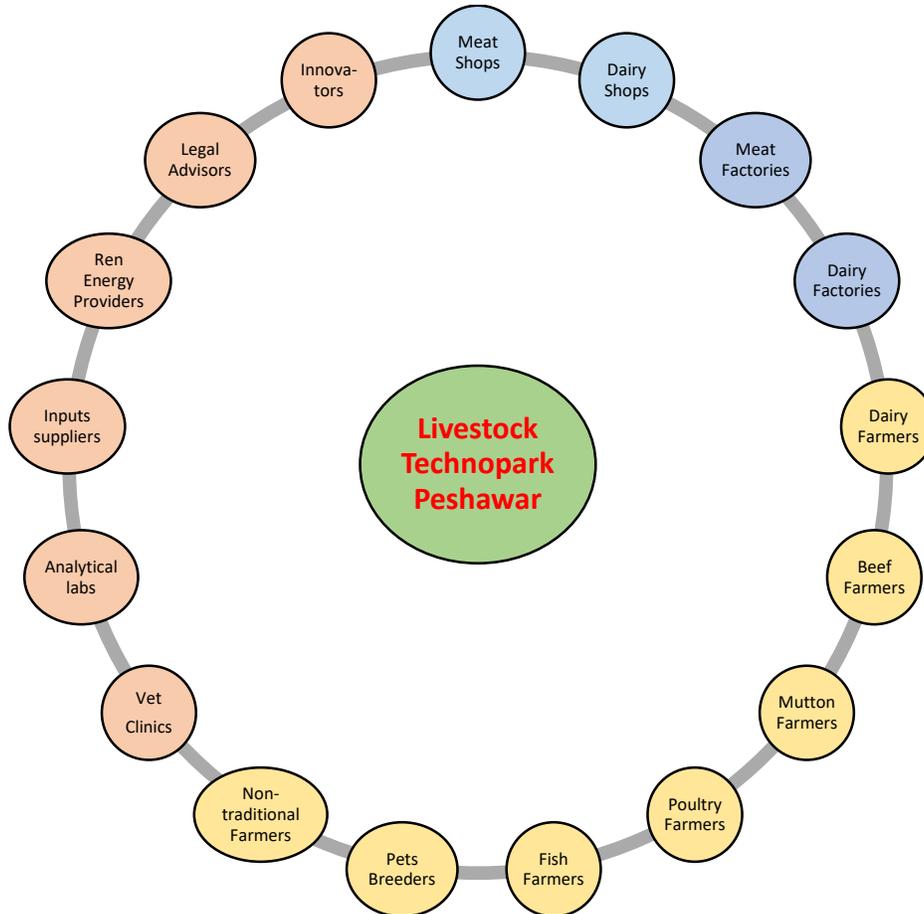
**Government: 8**

**Universities: 7**

**Total: 15**

## Livestock Technopark Peshawar (LTP)

### Entrepreneurship Network



**At the end of the year 2021, Khyber Pakhtunkhwa would be able to generated direct decent employments to the tune of 18000. Hygienic, Halal and Organic food would be produced per annum, as: 657.0 million kg milk, 19.2 m kg beef, 32.9 m kg mutton, 45.0 m kg poultry meat and 3.2 m kg fish meat, valuing Rs. 5098 billion, in addition to biotech products. A fraction of 10% may be injected into export channel.**

### Entrepreneurship development estimates under the Livestock Technopark Peshawar

S No	Entrepreneurship type	Number	Average size	Output (million kg)	Value (Rs billion)
1	Dairy Farming	3000	30 heads	657.0	65.7
2	Beef Farming	1500	50 heads	19.2	765.5
3	Mutton Farming	3000	100 heads	32.9	2628.0
4	Poultry Farming	3000	3000 birds	45.0	1350.0
5	Fish Farming	800	3 Ha	3.2	288.0
6	Pets Farming	300			
7	Non-traditional Farming	200			
8	Veterinary Clinics	500			
9	Analytical Labs	200			
10	Inputs suppliers	1500			
11	Renewable Energy	1500			
12	Legal Advisors	500			
13	Innovators/Biotech	500			
14	Meat Shops	500			
15	Dairy Shops	500			
16	Meat Factories	250			
17	Dairy Factories	250			
	<b>Total</b>	<b>18000</b>			<b>5,098.2</b>

## Livestock Policy Implementation Cell LDD Ext

Policy Implementation Cell would be established at Directorate General Livestock and Dairy Development Extension Wing. The KP Livestock Policy 2018 was followed up by KP Livestock Strategy 2019 and finally by this KP Livestock Action Plan 2019 prepared under the patronage of the Food and Agricultural Organization of the United Nations, which would be followed up by the relevant quarters, for implementation.

Khyber Pakhtunkhwa Livestock Policy 2018 was prepared with the vision of presenting a competitive, responsive, compliant, and sustainable livestock sector, supplying safe and affordable food of animal origin to domestic and international markets. The policy has developed different objectives in the light of the above vision comprising: i) to ensure efficient delivery of services in the livestock sector to improve health, efficiency, and productivity of livestock with sustainable use of natural resources; ii) to conserve, improve, and develop local livestock breeds; iii) to promote the production of safe and healthy food and: iv) to promote one health approach to minimize the incidence of zoonosis.

A Strategy Plan was developed for Khyber Pakhtunkhwa Livestock Policy 2018 with the aim to enable the Livestock and Dairy Development Department to communicate what they are trying to accomplish; align the day-to-day work that everyone is doing with strategy; prioritize projects, products, and services; and measure and monitor progress towards strategic targets. FAO KP Livestock Action Plan is the final document for implementation of the Policy with focus on development and transformation of the livestock sector from subsistence to commercial farming and completing the livestock based food value chain. A Governance Model of Academia-Industry-Government-Society has been suggested with various activities to be carried out by the stakeholders.

The Policy Implementation Cell would be established with the following TORs:

1. The Cell will be headed by a Director, assisted by three Deputy Directors (coordinating with public and private sector organizations and the universities, respectively) and four Veterinary Officers (Health).
2. The Cell will work as a part of LTP, under the supervision of a Management Committee comprising experts in animal health, breeding, training, research, vaccination, education, farming, products processing, entrepreneurship and media. Experts in animal health, breeding and training will be nominated by Director General LDD Extension KP and experts in research and vaccination would be nominated by Director General LDD Research. Experts in education would be nominated by the Dean FAHVS UAP. Experts in farming and products processing would be nominated by President KP Livestock Farming Welfare Association. Entrepreneurship Expert would be nominated by Livestock Technopark Peshawar. Media Expert would be nominated by relevant body. The Management Committee would elect their chairman through mutual consensus or voting.

3. The Cell will monitor impact of the activities of various service providers on the community regarding the status of livestock diseases in various regions and the relevant threat to public health, level of introduction of innovations, improvement in farm income and access of consumers to livestock based food products.
4. Implementation of Special Service Incentives Package would be ensured for scientists/officers/staff of LDD Extension and Research Wings and other components of LTP on performance basis, using measurable indicators and reporting on annual basis.
5. The Cell will initiate a dialogue through an Advocacy Forum for addressing issues faced by the stakeholders comprising the consumers' societies, district administration, academia, public sector organizations, representatives of milk and meat shops/dealers, farmers and media.
6. The Cell will identify success stories in animal health, breeding, training, vaccination, research, education, farming and products processing and will notify such persons/groups on annual basis, with a certificate and a nominal award.
7. The Cell will arrange TV Talk Shows on popular channel for general awareness of public about scope of the Livestock Sector in generating decent employment and exportable surpluses across the livestock based food value chain. Importance of zoonotic and food borne diseases would be highlighted and the threats to public health due to various livestock based diseases would be presented.
8. Videos would be prepared on important socio-economic issues in livestock sector like poor hygienic status under the traditional farming system versus improved models. Documentaries on farming innovations would be prepared, with the business scope for the young generation.
9. Keeping a liaison with the sister organizations regarding the changing scenario of Climate Change and livestock-environment interaction. Arranging workshops on these issues for the stakeholders for getting their inputs and imparting latest information through resource persons.
10. To work on conflicts of interests among producers, consumers, service providers and regulators across livestock based food value chain and create harmony among partners for achieving the higher goals of serving the community in the best possible manner.
11. To provide policy support for creating an enabling environment for the young entrepreneurs to grow and contribute in generating employment, foods and biotech products, for local market and export. Issues faced by the students and universities in getting accreditation of degree programs, funding applied research programs and scholarships for outstanding students would be supported. Private sector and government/military organizations would be approached for job provision to veterinary and other graduates.

12. To develop a mechanism for encouraging outdoor cases and preventive medicine at veterinary hospitals/dispensaries/centers on special rates, maintenances of stocks of medicine, semen, feeds, etc, under a revolving fund and institutional based practice on the analogy of medical doctors provided under Khyber Pakhtunkhwa Medical Teaching Institutions Reforms Act, 2015.
13. To promote reforms and innovations at state farms of the provincial and federal governments and military farms, for novel models in dairy, beef, mutton and poultry farming, products processing and industrial research; focuses at development of entrepreneurship models and enhancing farm income.

## LBSC Bannu

A meeting was held with stakeholders of District Bannu and the adjacent areas for identifying their issues and integration into Livestock Action Plan. Eighteen representatives of commercial farming community, milk dealers/shops, meat dealers/shops, Livestock and Dairy Development Department KP and KP Food Safety and Halal Food Authority attended the meeting. The delegates were welcomed after recitation from the Holy Quran and objective of the meeting was explained. The delegates were invited to present the issues faced by their respective community.



Mr Israr Shah, Commercial Dairy Farmer highlighted the background of farming as a tool for eradicating poverty under hard conditions. Awareness about commercial farming is lacking in the region. He informed that about 200 commercial farms have been established in the district. Insemination has been a great issue at the farms. Milk quality testing is required on larger scale to reward the good producers and phase out those involved in adulteration. Diseases have been a major bottleneck in development of the commercial farms. Prices of the farm inputs are not regulated by government while prices of the milk and meat are regulated by the district administration. The cost of milk/meat production is increasing rapidly without any parallel increase in the prices of milk and meat. The farm management and labor have been other issues impeding the smooth running of the farming operations. Milking machine are required for the commercial farms but no support is available from the government in this regard. He advised monthly advisory visits of technical persons to support the commercial farmers in overcoming the issues.

LDD officers informed that the commercialization process has resulted in emergence of new issues at the farms and the younger non experienced farmers face too much difficulties in responding to

the issues. Their capacity needs to be enhanced to cope with the health, fertility and heat stress issues and feeding/management requirements of the high yielding dairy cows at the commercial farms. Quality Control lab has been established and the milk quality has improved a lot regarding adulteration with water or addition of formalin, etc., for preservation of milk. Increase in the number of labs was recommended to expand the service in the interest of the people.

KP Food Safety and Halal Food Authority representatives showed their concerns at the lack of hygienic facilities at the slaughter houses. They mentioned the improvement in quality of foods through enhanced awareness among the food handlers and the general masses. Expansion of the testing services through establishment of more laboratories was recommended. The big shops may establish their own labs setup and appropriate record may be maintained regarding lab tests, procurement and sale of milk, for the purpose of traceability of the products.

The delegates informed that Farm Services Centers Bannu has been used for promoting agricultural activities including livestock farming. One veterinary officer use to work at the Center however, the imposition of OPD chit fees on such an activity is not justified because these Centers are approached by commercial farmers for getting business support and improved management practices, not therapeutic health coverage. The participants recommended that OPD chit fees may be waived off from these Centers.

Price fixation was identified as a major issue impeding growth of the dairy sector. The inputs of dairy farms like price of animals, feeds, medicines, semen, vaccines, labor, electricity, etc., are under free market while the prices of milk are fixed by district administration, in a very unrealistic manner. It puts an unbearable economic pressure on the producers, preventing growth of the industry.

Livestock Business Support Center Bannu was recommended to be established at Bannu with a Grant/Endowment Fund and development grant. LBSC Bannu would be managed by as Management Committee comprising two members from the respective host organization; two members from other relevant public sector organizations; two members from the industry; and one member from district/tehsil council. Chairman of the committee would be elected by the members for a period of two years. This would be a satellite remote component of Livestock Technopark Peshawar. It will support the farmers in improving their farm productivity, products quality, business viability and forward/backward linkages of the entrepreneurship models. The farmers and other stakeholders were advised to get registered with the Farm Services Center presently and with Livestock Business Support Center Bannu later, pay the due fees and get the desired support for their respective livestock related business activities. LBSC will also host an Advocacy Forum comprising stakeholders' representatives to accommodate concerns of all, like price fixation, food quality, business viability and replication, etc.

It was appreciated that livestock value chain is generating many business models like farming, animal trade, milk processing and trade, meat processing and trade, service delivery, etc. Such businesses are at their primitive stage and need to be exempted from all type of taxes for the next 10 years.

Endowment Fund: Rs.50 million; Development Grant, non-lapsable: Rs.50 million

## LBSC and Veterinary R&D Center Merged Areas

The Merged Areas of Khyber Pakhtunkhwa, previously known as the Federally Administered Tribal Areas (FATA) of Pakistan are rich in livestock resources as given in the table.

**TABLE 1. LIVESTOCK POPULATION AND DOMESTIC POULTRY BIRDS BY ADMINISTRATIVE UNIT**

ADMINISTRATIVE UNIT	NUMBER OF ANIMALS / POULTRY BIRDS								
	CATTLE	BUFFALOES	SHEEP	GOATS	CAMELS	HORSES	MULES	ASSES	POULTRY
1	2	3	4	5	6	7	8	9	10
<b>N.W.F.PROVINCE</b>	<b>5967886</b>	<b>1927495</b>	<b>3363249</b>	<b>9599017</b>	<b>63952</b>	<b>76174</b>	<b>66630</b>	<b>559853</b>	<b>27695116</b>
F.R.KOHAT	16367	261	6970	52457	41	-	24	252	110720
F.R.D.I.KHAN	104509	373	167838	199095	2086	63	24	4498	66439
F.R.BANNU	97429	11522	128448	639587	910	53	39	5055	472106
F.R.MANSEHRA	32724	32517	15480	75681	90	36	1350	4959	97803
F.R.KURRUM	104330	1400	138380	204650	320	290	1410	14560	508730
F.R.TANK	50926	856	107443	110207	3970	73	33	6147	145171
F.R.LAKI MARWAT	64921	-	39421	105579	467	18	9	1863	144387
MALAKAND AGENCY	74065	19555	5928	64561	81	671	73	1884	253087
BAJOUR AGENCY	132274	15207	53025	173358	417	50	129	4407	697361
KHYBER AGENCY	155817	10274	190478	529147	826	15092	28216	31448	1317873
MOHMAND AGENCY	232544	3439	133887	378245	431	221	454	18178	1031552
KURRUM AGENCY	121457	3171	76698	113588	47	673	901	3966	530621
AURAKZAI AGENCY	64336	12979	48202	107932	250	190	2774	13390	350735
NORTH WAZIRISTAN AGENCY	210480	18716	233561	263979	2746	1080	436	16826	505521
SOUTH WAZIRISTAN AGENCY	134611	14677	313639	399137	9356	314	1416	23022	496924

The merged area of KP has been a site for international conflicts since British rule of India, invasion of Soviet Union on Afghanistan and NATO's war on terror in Afghanistan. Massive displacement of human and livestock population was observed due military operations in various tribal regions. Livestock has been the source of livelihood for the people and during the displacement of the people a major portion of livestock population was lost due to lack of care.

As per report of Livestock Census (2006), highest number of goats are found in FR Bannu, followed by Khyber Agency and South Waziristan. Sheep population is largest in South Waziristan followed by North Waziristan and Khyber Agency. Cattle are found in highest number in Mohmand Agency followed by North Waziristan and Bajore Agency. Poultry population is largest in Khyber Agency followed by Mohmand Agency and Bajore Agency.

Livestock Business Support Center and Veterinary R&D Center Merged Areas may be established in the Merged Areas (former FATA) of Khyber Pakhtunkhwa to be located at Khar Bajaur, Landi Kotal, Parachinar, Miranshah and Wana. This setup will be managed by a joint committee at DG level.

Funds required, Endowment Fund: 100; non-lapsable grant: Rs.170 million

## LBSC VRI

Livestock Business Support Center (LBSC), may be established at Veterinary Research Institute Peshawar in closed coordination with the Livestock Technopark Peshawar, for applied research, training of officers/farmers/civil society representatives and establishment of business incubation and entrepreneurship development facilities with the cooperation of commercial farmers, products processors and marketing partners in the private sector and the universities. LBSC would follow the Financial Rules developed for LTP. LBSC VRI would be managed by a Management Committee comprising two members from the respective host organization; two members from other relevant public sector organizations; two members from the industry; and one member from district/tehsil council. Chairman of the committee would be elected by the members for a period of two years.

Veterinary Research has been the pioneer public sector organization of its kind responsible for providing applied research, diagnostic services and vaccine production for controlling livestock and poultry diseases prevalent in the Khyber Pakhtunkhwa province, including the merged areas. During 1990s, biotechnology and herd health programs were introduced and the author was luckily a member of the team. Farmers were registered for technical services like protection against prevalent diseases through vaccination, treatment of sick animals, artificial insemination of cattle and buffaloes, advisory services on feeding, hygienic and housing management. Farmers issues were analyzed and addressed through registration of commercial farmers and their facilitation for creating productive linkages with the local, national and international organizations and experts. KP Livestock Farmers Association was established and issues of mutual interest were analyzed. Services of University of Agriculture Peshawar, Small and Medium Enterprises Development Agencies, KP Chamber of Commerce and Industries and Bank of Khyber were available for farmers.

The proposed LBSC-VRI would provide a platform for interaction among commercial farmers, veterinary researchers, university students and other associated stakeholders. Diagnostic services would be provided to the commercial farmers on appropriate sustainable rates. Hygienic status of the farms would be improved and standard operating procedures would be developed for quality control practices. The farmers would be advised on improved feeding and reproductive management practices, targeting at minimizing cost per unit productivity and maintaining products quality.

Computerized recording system would be developed for generating and maintaining data and communications with other stakeholders. Appropriate inputs would be made available to the farmers, including feeds, semen, equipment, medicine, vaccine, which would be cost effective, meeting the quality standards. The groups of registered farmers would be assisted in establishing processing facilities for the farm products. Breeding facilities would be established in public and private sector for livestock, poultry and fisheries. Capacity of the stakeholders would be developed in improved practices, farming innovations and laboratory techniques. Stakeholders issues would be addressed through advocacy and effective networking with others. Endowment Fund 70 million; Infrastructural non lapsable grants

## LBSC Kohat

Livestock Business Support Center is recommended to be established at Veterinary Research and Diagnostic Center (VRD) Kohat. This would be a satellite remote component of LTP. It will support the farmers in improving their farm productivity, products quality, business viability and forward/backward linkages of the entrepreneurship models. The farmers and other stakeholders may be advised to get registered with the Farm Services Center presently and with Livestock Business Support Center Kohat later on; pay the due fees and get the desired support for their respective livestock related business activities. LBSC will also host an Advocacy Forum comprising stakeholders' representatives to accommodate concerns of all, like price fixation, food quality, business viability and replication, etc. Livestock value chain is generating many business models like farming, animal trade, milk processing and trade, meat processing and trade, service delivery, etc. Such businesses are at their primitive stage and need to be exempted from all type of taxes for the next 10 years.

Endowment Fund of Rs.50 million.

## LBSC Abbottabad:

Livestock Business Support Center is recommended to be established at Veterinary Research and Development Center Abbottabad, a divisional headquarter. LBS Abbottabad would be managed by as Management Committee comprising two members from the respective host organization; two members from other relevant public sector organizations; two members from the industry; and one member from district/tehsil council. Chairman of the committee would be elected by the members for a period of two years. The Center will cover livestock activities in Abbottabad, Haripur, Mansehra, Batagram and Kohistan districts. Cattle, buffaloes, sheep, goats, camels and poultry population of the region is 0.79, 0.53, 0.32, 1.57, 0.004 and 3.68 million heads. Buffaloes, goats and poultry would be focus of entrepreneurship, based upon the livestock population as per Livestock Census (GOP 2006).

This would be a satellite remote component of LTP. It will support the farmers in improving their farm productivity, products quality, business viability and forward/backward linkages of the entrepreneurship models. The farmers and other stakeholders may be advised to get registered with the Livestock Business Support Center Abbottabad; pay the due fees and get the desired support for their respective livestock related business activities.

LBSC will also host an Advocacy Forum comprising stakeholders' representatives to accommodate concerns of all, like price fixation, food quality, business viability and replication, etc. Livestock value chain is generating many business models like farming, animal trade, milk processing and trade, meat processing and trade, service delivery, etc. Such businesses are at their primitive stage and need to be exempted from all type of taxes for the next 10 years.

Endowment Fund of Rs.50 million.

## LBSC Fisheries

Consequent upon consultation with the Director General Fishers and his senior management, It is proposed that Livestock Business Support Centers (Fisheries) may be established at Sher Abad Fish Farm at the outskirts of Peshawar. An Endowment Fund would be made available for expanding the business and qualitative improvement of the products and services. The public sector feed mills available at the University of Agriculture Peshawar, Livestock Research and Development Stations and willing private partners, would be run through private public partnership and the operating cost/annual lease would be paid by the private parties. Specialized Feeds would be produced for various categories of fish and research on nutritional aspects would be conducted at Livestock Research and Development Station Surezai, Peshawar.

Fisheries Department has got ADP projects worth Rs.400 million and PSDP projects worth Rs.1200 million, which would be linked with the LBSC. Capacity of the existing hatcheries would be increased through cementing of the ponds and the attached drainage areas at Sher Abad Fish Farm to prevent water losses and enhance the services to commercial fish farmers. A Fisheries Engineering Cell would be established at DG Office for designing fish farms, solar tube wells and chilling/chilled transportation facilities for meat. Fisheries Research and Development Center would be established at Jhanda Road Swabi or other appropriate site, where department's land is available. The Institute would be headed by a Director and assisted by 3 SROs, 5 ROs and 10 essential supporting staff.

LBSC (Fisheries): Endowment Fund: Rs.50 million; Infrastructural Grant: Rs.100 million

## LBSC Slaughter House Ring Road Local Council Board

Livestock Business Support Center would be established at Ring Road Slaughter House regulated by Local Council Board Peshawar. LBSC would be jointly managed as per Livestock Technopark Peshawar procedures. This would be a joint between Munir and Co under the KP Livestock Action Plan 2019 to upgrade the slaughter house with essential required facilities through the proposed Khyber Pakhtunkhwa Livestock Technopark Peshawar. For animals' transportation, special trucks would be designed for conformability of the animals and their attendants and safety of the environment and beauty of Peshawar city. The cold storage facilities would be enhanced and made available to the corporate partners on rent/lease. The chain of cold trucks would be expanded to facilitate meat transportation to the superstores, meat shops, meat factories, bus terminals and airports. Universities would be invited for biotech research targeted at producing exportable products like super-ovulatory pituitary hormones.

Sale of animals on live weight basis would be introduced to protect the farmers, animal dealers, butchers and general consumers from fraudulent deals. A diagnostic laboratory and veterinary clinic would be established for serving the farmers and butchers. The export section of the slaughter house would be made

available for supply to the superstores in Peshawar areas and other locations approved by LTP. Proposed Endowment Fund: Rs. 100 million; development non lapsable grant Rs.100 million (Rss.200 m already allocated by Local Government Department under KP-ADP)

## Dairy and Meat Technology Center-WUM

Dairy and Meat Technology Center (DMTC) would be established at Women University Mardan with the main objectives of empowering women to establish food/quality control related business models and protecting women health through food and animals' handling and working in research and diagnostic laboratories related to life sciences. Establishment of Dairy Technology Center is recommended. DMTC WUM would be managed by a Management Committee comprising two members from the respective host organization; two members from other relevant public sector organizations; two members from the industry; and one member from district/tehsil council. Chairman of the committee would be elected by the members for a period of two years.

Infrastructure grant Rs.50 million; Endowment Fund 50 million.

## LBSC AWKUN Mardan

Establishment of Livestock Business Support Center (LBSC) is suggested as a university outreach facility at AWKUM. LBSC Mardan would be managed by a Management Committee comprising two members from the respective host organization; two members from other relevant public sector organizations; two members from the industry; and one member from district/tehsil council. Chairman of the committee would be elected by the members for a period of two years.



LBSC will facilitate laboratories of microbiology, pathology, parasitology, nutrition, reproduction, etc, would be utilized for providing diagnostic services to the livestock farmers, with special emphasis on disease prevention, productivity enhancement, profitability and products quality.

Development of modern dairy, beef and mutton farms in collaboration with the existing farms, through advanced management practices and farming innovations will be ensured. Establishing modern milk/meat shops and processing factories, veterinary clinics, diagnostic labs and associated facilities would be established as entrepreneurship models. Price fixation/decapping will be advocated through

collaboration with KP Livestock Farmers Welfare Association, consumer societies the district administration and legislators. Biorisk Management Training would be arranged in coordination with Dairy Science Park, Veterinary Research Institute and other relevant organizations. Collaboration would be made with CPEC Special Economic Zone Rashakai. Endowment Fund and Islamic Financing would be utilized for entrepreneurship development and other activities of LBSC.

Infrastructure Grant Rs.50 million; Endowment Fund 50 million.

## Gomal Technopark

The knowledge resource base available at the campus of Gomal University DI Khan is spread over seven diversified fields of: i) Sciences; ii) Arts; iii) Agriculture; iv) Pharmacy; v) Veterinary and Animal Science; vi) Engineering and Technology; vi) Institute of Business Administration; vii) Institute of Natural Sciences. The university is currently running almost 100 programs (Undergraduate, Postgraduate, MPhil & PhD) with 95 PhDs in 45 departments/institutes of the university. The university also has a big infrastructure of vast land, separate buildings for academic, administrative purposes, colonies for the professors and staff, 19 hostels, sports grounds, halls and centers for multiple events.

Keeping in view the quantity and quality of available resources, it is expected that all genuine objectives of the university are realizable provided we all remarkably succeed in exhibiting required levels of performance. It is therefore incumbent on all the stakeholders to come up with their best respective potentials thereby enabling the university management to capitalize on their 'collective-intelligence.'

Based upon the expertise available at the University and the huge resource base available in the DI Khan district and the southern Khyber Pakhtunkhwa, the participants agreed on establishing Gomal Technopark (GTP). GTP, with a management board having full legislative, financial and administrative powers. GTP will coordinate with Livestock Technopark Peshawar for experience and resource sharing.

**Location:** Head Office of the GTP would be initially located at the Gomal University, Faculty of Education (old IER Campus). Later on a separate building will be constructed in form of a Trade Tower, symbol of industrialization in the Khyber Pakhtunkhwa, for hosting the head office of GTP.

**Executive Director GTP:** Manager Industrial Linkages and Technology Transfer, ORIC, Gomal University DI Khan, will work as Executive Director GTP. The Managing Board would make further arrangements for supervision of the project.

**Endowment Fund:** An Endowment Fund would be established to the tune of Rs.500 million, to be provided with the same ratio by the university/public sector in the form of money and by the private sector in the form of land, animals and other assets. The fund would be used for entrepreneurship development and the facilities required for relevant on-campus and off campus activities.

**Managing Board:** Managing Board will comprise: i) Senior Dean; ii) Vet Dean; iii) senior faculty member with demonstrated experience in industrial linkages; iv) Director ORIC; v) representative of KP-Livestock Farmers Welfare Organization; vi) sheep farmer; vii) poultry farmer; viii) fish farmer; ix) Milk/Meat processor or dealer; x) representative of District Mayor. Chairman of the Board will be selected/elected by members of the Board for a period of two years.

**Technical Committees:** Technical Committee of GTP will comprise a representative of each Dean and a representative of industry, headed by the Senior Dean. Faculty technical committees will be constituted for each Faculty for transformation of ideas into feasible business models. The committee will comprise Executive Director GTP or his representative, a representative of relevant Dean and an industry representative.

**Finance committee:** It comprises Director GTP, Industry Representative and representative of Director Audit. A joint account will be opened which will be operated by Director GTP and a nominee of the Managing Board GTP.

**Distribution of the profit:** 1) Net profit for each on campus new project activity will be shared on periodical basis as: i) 10% to Gomal University, 20% to the principal researcher, 39% relevant employees/worker, 30% to Endowment Fund; and 1% to Insurance Fund; 2) for on campus ongoing activity the profit share would be 30% to the staff and 70% to the institute; 3) for off campus activities the profit distribution would be 80% for the Industry and 20% for the GTP and GTP will pay honoraria to the relevant staff involved in the off campus activities.

**Monitoring Committee:** A 5 members monitoring committee to be nominated by the Management Board, will ensure the transparency and availability of quality services to the farmer's community/processors/marketing partners, at grass root level. The committee will take care of the services to dairy farmers, sheep goat farmers, processors, butchers and dealers. It will be responsible for reviewing policy, fund releasing, monitoring and other relevant matters. The Committee will also monitor quickness, transparency and fairness in the income and expenditures of GTP.

## LBSC SBBU Sheringal

During 2014 the SBBU Sheringal initiated M Phil program in Livestock Management and Poultry Science and inducted four faculty members. The next year a dairy farm was established with ten crossbred cattle which were added with ten more Holstein Friesian cattle yielding more than 20 kg milk per day. Silage and wheat straw bales were introduced as a farming innovation in the region. A PC-I has been approved providing an academic block, dairy farm, beef farm, sheep and goats farm and controlled poultry shed. Tenders have been floated for procurement of items. Approval of the F&PC, Academic Council and the Syndicate is awaited.

Pakistan Veterinary Medical Council paid a zero visit for evaluation of M Phil Program, three years back. However, the minutes have not been issued till this date, despite repeated requests. The Governor Secretariat has issued a letter for stopping admissions at the department which has been complied.

This National Consultant recommends that:

1. Approval of the statutory bodies may be obtained at an earliest as the Animal Science Program is essential for development of the Dir Region with rich resource-base in the form of ranges, pastures and small ruminants providing an important livelihood support to the people.
2. Implementation of the PSDP project Development of University of Dir Sheringal, covering academic building, cattle sheds and poultry sheds.
3. Implementation of PVMC recommendation regarding deficiencies in staff, etc. PVMC is requested to cooperate with the newly established veterinary institutions and allow them to grow instead of expected too much of the required standards.
4. Establishment of a Meat Technology Center for research on quality parameters of meat and business incubation, farmers support services in meat farming and marketing.

## Livestock Business Support Center - UAP

This Mission recommends establishment of a Livestock Business Support Center - UAP with an Endowment Fund and joint management committee comprising with membership as: UAP 2, LDD Ext 1, LDD Res 1, LFA 2, LTP 1. LBSC will support applied research connected with industrial issues and entrepreneurship development for generating decent employment and exportable surpluses. The Center would ensure an active and visible interaction among the academia, industries, government and the civil society, to provide feasible solutions to the emerging issues faced by producers, processors, service providers, marketing partners and consumers. Farming innovations would be introduced like introduction

of biotechnologies, solar technologies, food technologies and bio-waste management across the livestock based food value chain. Entrepreneurship models would be developed in livestock. Poultry, fish and fodders production, processing, quality control, diagnostics, veterinary clinical, processing, marketing and legislative services, as source of decent employment and exportable surpluses. Some examples may be establishing milk, meat and eggs shops; fodder production facilities; fodder seeds shop; silage plants; mini-slaughter houses, livestock/poultry/fisheries/other farming, also including fancy birds, pets, rabbits, ostrich, or others; processing, packaging milk, meat and eggs; marketing at district, provincial or international levels. Veterinary clinics, diagnostic laboratories or biotechnological products processing or any other related facilities would be encouraged. Graduate interns and postgraduate scholars would be engaged in these activities under an incentive package.

## Biorisk Management Center KMU

On advice of the Vice Chancellor, Khyber Medical University (KMU) and Dean Public Health and Social Sciences, KMU, Dr Yasir and Dr Nauman visited FAO Peshawar Office for consultation on Biorisk management collaboration under the FAO KP Livestock Action Plan. It was agreed to establish Biorisk Management Center (BRMC) at KMU, by renaming the Food, Environment and Water Lab, under guidelines of the MoU already signed with DSP, UAP and HEC. BRMC KMU would be managed by a Management Committee comprising two members from the respective host organization; two members from other relevant public sector organizations; two members from the industry; and one member from district/tehsil council. Chairman of the committee would be elected by the members for a period of two years. The Center would be responsible for: i) launching One Health program at postgraduate level; ii) bio-waste management at KMU and other facilities of Livestock Technopark Peshawar; iii) collaborative research.

Cost Development grant Rs.20 million; Endowment Fund Rs.20 million

## LBSC Swat

A visit was made to Khwazakhela Swat to discuss the prevailing issues and preparation of FAO KP Livestock Action Plan with the stakeholders across the livestock based food value chain. Principal Research Officer, Research and Diagnostic Center Swat; Senior Veterinary Officers and Veterinary Officers (Health),

Livestock and Dairy Development Department Extension Wing KP; and Director ORIC Swat University, represented the public sector organizations. Local Government/Provincial Assembly were represented by MPA PK-3; Tehsil Nazim, Khwazakhela; Chairman Agricultural Committee; and executive members of Union Councils. President, VP and General Secretary, Khwazakhela Trade Unions Federation, commercial farmers, butchers and milk dealers participated in the event, totaling 53 delegates. Dr Gohar LFF FAO conducted the proceedings.



Livestock Business Support Center Swat will be established at University of Swat (UOS). LBSC would be managed by Management Committee comprising two members from the respective host organization; two members from other relevant public sector organizations; two members from the industry; and one member from district/tehsil council. Chairman of the committee would be elected by the members for a period of two years. Swat University is running Center for Animal Science and Fisheries, Center for Biotechnology and Microbiology, Department of Environment and Conservation and Center for Management and Commerce, would participate in the joint venture through diploma courses, laboratory analysis, field trials and training programs in livestock, fisheries, poultry, sheep and goats. Entrepreneurship, public health and food productivity aspects of the livestock assets would be explored. LBDC Swat will be hosted by ORIC Office UOS and managed by a committee comprising one member each of University of Swat, LDD Ext, VRDC Swat, Tehsil Nazim, four members of KP LFWA, related to cattle, sheep and poultry and fish farming.

A visit was made to Khwazakhela Swat to discuss the prevailing issues with the stakeholders. It was suggested that the services provided by various department may be improved and coordinated. The available medicines in government veterinary hospitals were of inferior quality and unauthorized veterinary practitioners are damaging farmers profitability and products quality. Inspection team/departments responsible for quality control and price fixation were identified as a hurdle in the milk and meat marketing. Establishment of a modern slaughterhouse with proper space and facilities, was recommended. The role of butchers and milk salespersons were explained and these facilities were recommended for further support to create opportunities of decent employment generation and production of exportable surpluses. He suggested establishment of an entrepreneurship network in the form of modern farms and processing factories with branded milk and meat products for local market, provincial and federal capital and even export. Meat export potential was highlighted, for which the Swat Airport could be utilized and meat in the region could be exported to Muslim Regions.

Endowment Fund: Rs.50 million

## Financial Management System

Public Sector Organizations are bound to make procurement of items under Public Procurement Regulatory Authority Ordinance, 2002 (XXII of 2002), of the Federal Government of Pakistan. The issues faced by researchers and university scholars were discussed at Veterinary Research Institute Peshawar and Gomal University DI Khan.

Under Clause 21, the Public Procurement Rules, 2004, Open competitive bidding.- \*\*Subject to the provisions of rules 22 to 37 the procuring agencies shall engage in open competitive bidding if the cost of the object to be procured is more than the prescribed financial limit which is applicable under sub-clause (i) of clause (b) of rule 42. Under Clause 30, Evaluation of bids.- (1) All bids shall be evaluated in accordance with the evaluation criteria and other terms and conditions set forth in the prescribed bidding documents. Save as provided for in sub-clause (iv) of clause (c) of rule 36 no evaluation criteria shall be used for evaluation of bids that had not been specified in the bidding documents. Under sub clause\_(2) For the purposes of comparison of bids quoted in different currencies, the price shall be converted into a single currency specified in the bidding documents. The rate of exchange shall be the selling rate, prevailing on the date of opening of bids specified in the bidding documents, as notified by the State Bank of Pakistan on that day.

The procurement process dictated under the Clause 30, Sub-clause (2), the rules calls for comparison of the items on the basis of cost. Here arises the issue when the suppliers offer lower prices for the items. Lower price means lower quality of items. Animal feeds, medicines or other inputs purchased at lower prices would lead to adverse effects of the items on animals' health, reproduction and productivity and on public health through development of drug resistance and enhanced farm expenditures. The purchase committees suffer audit paras and NAB proceedings for purchasing items with better quality with somewhat higher prices. In one case the Peshawar High Court provided relief to the members of the Purchase Committee who were penalized by the audit party of the provincial government.

Under Clause 5. International and inter-governmental commitments of the Federal Government.  
- Whenever these rules are in conflict with an obligation or commitment of the Federal Government arising out of an international treaty or an agreement with a State or States, or any international financial institution the provisions of such international treaty or agreement shall prevail to the extent of such conflict.

The issue of the rules was discussed in detail during the workshops held with the LDD Research Wing and the Gomal University DI Khan. An alternate system was proposed to ensure greater transparency and quickness in the procurement process, which will enhance performance of the scientists as well as the organizations.

Under the above clause the Consultant concludes that procurement process on the basis of PP Rules 2004 results in purchase of low quality animal feeds, medicines and other input supplies in the extension

organizations; low quality research materials at the research organizations and low quality delayed supplies at the Universities. It hinders the smooth delivery of services by the public service organizations, lowering the trust and expectations of the people. Hence, the National Consultant FAO-UN considers the PP Rules 2004 as contradictory to the interests of stakeholders of livestock value chain and under Clause 5 and suggests formulation of new rules within the following guidelines:

1. The Rules must be simple, transparent and must ensure quick delivery of goods to requisitioner.
2. The purchase committee for a functioning Unit of an organization (hospital/farm, etc of LDD Ext/Research Division/Farm/Center of LDD Res/Department of a University) must comprise 2 senior officers of the functional unit and a representative from the industry/civil society, with delegation of powers to purchase the desired items. The senior-most officer of the unit would work as head of the committee.
3. The purchase committee for an Organization (Directorate General LDD Ext/Research or Dean of Faculty of a University) would comprise three senior most officers of the organization next to the head of the organization, one member of industry and one qualified auditor. The senior-most officer of the unit would work as head of the committee.
4. An Endowment Fund would be available in an authorized bank account operated jointly by the organization/unit head and representative of the industry/civil society.
5. Three quotation may be obtained, if required, otherwise a single quotation would be acceptable if the committee agrees. Specification of the intended items must be very clear and foolproof.
6. Delegation of powers for purchase, auction and cast off of animals, equipment, consumables, etc., must be made at appropriate levels to ensure smooth delivery of items to respective working unit.
7. The Rules must be followed while reviewing, ordering, obtaining, and paying for goods/services.
8. Checkpoints/steps must be minimum to avoid the complexity of the purchase process. Electronic correspondence may be encouraged instead of extensive use of paper, damaging the environment. However, the paperwork and documentation involved in every stage of the procurement process flow, must be collected and stored as hard/soft copies for reference and auditing reasons. Updated information may be made available on LTP website for information of the concerned monitoring personnel or general public.
9. The Funds available to the organization shall be non-lapsable.
10. The bills shall be audited within one day in case of a Unit and 3 days in case of an organization. The bill shall be passed by the chairman of the committee within 3 days in case of a Unit and within 10 days in case of an Organization.

Transparency of the process shall be monitored by a Monitoring and Evaluation Committee as a constant process. Any criminal/negligence would be notified to the head of the organization immediately. Transparency of the process would be ensured through accessibility to the relevant accountability organization, however the members would be protected from any attempt of blackmailing or harassment by any individual or organization. No member of the purchase committee would be harassed by the audit parties, accountability organizations or senior officials/elected peoples' representatives.

## Business Plan for value added livestock products; quick impact results

S No	Activity	Impact
<b>Establishing institutions and capacity development</b>		
1	<p>Notification of Task Force on Livestock Technopark Peshawar, (LTP), given under Legal Framework in FAO-KP Livestock Action Plan 2019, by Planning and Development Department, Govt of Khyber Pakhtunkhwa, covering notification of Executive Director on transfer of the officer working as Director, Livestock Research and Development, LDD Research Wing, Government of Khyber Pakhtunkhwa.</p> <p><b><u>Timeline: 1 January, 2020</u></b></p>	<p>Good Governance would be initiated, providing level playing fields for all the stakeholders across the livestock based value chain, in the public and private sector; for productive utilization of the resources; LTP would become operational through the office of the Executive Director LTP.</p>
2	<p>Notification of Managing Board, Institutional Units and essential committees by the Executive Director. Notification at <a href="http://dairysciencepark.org.pk/dsp-technoparks/">http://dairysciencepark.org.pk/dsp-technoparks/</a> and launching of new website for Livestock Technopark Peshawar, as <a href="http://www.ltpeshawar.edu.pk">www.ltpeshawar.edu.pk</a></p> <p><b><u>Timeline: 1 February, 2020</u></b></p>	<p>Institutional Units of LTP would be established as: I) PIC LDD; ii) LBSC VRI; iii) LBSC Fisheries; iv) LBSC SH LCB; v) LBSC LCB; v) LBSC VRDC Kohat; vi) LBSC VRDC Abbottabad; vii) LBSC CVH Bannu; viii) LBSC UAP; ix) LBSC AWKUM; x) LBSC UOS; xi) GT GU; xii) DMTC WUM; xiii) MTC SSBBU-S; xiv) BRMC KMU; xv) LBSC VRDC Merged Areas.</p>
3	<p>First meeting of the Managing Board LTP, review of the current status and formulation of a work plan and allocation of funds for the first three months.</p> <p><b><u>Timeline: 1 March, 2020</u></b></p>	<p>Institutional Units would become functional at various public sector organizations associated with LTP. Shared authority and responsibility would create a sense of ownership among the stakeholders.</p>
4	<p>The public sector organizations would be provided Endowment Funds and Development Grants for facilitating staff to transform their ideas into feasible actions. The Incentive package would be circulated among the staff.</p> <p><b><u>Timeline: 1 April, 2020</u></b></p>	<p>The staff of the public service organizations would be motivated to work with enhanced efficiency. The workers would be shareholder in the income generating activities. Sufficient and uninterrupted fund would be available for utilization of the manpower and other assets.</p>

S No	Activity	Impact
<b>Release of Funds and Registration of Assets of corporate partners</b>		
4	Release of non-lapsable Development Grant (Rs.1000 million) and Endowment Fund (Rs.500 million) to LTP.  <b><u>Timeline: 1 May, 2020</u></b>	Funds would be available for operation of the LTP.
5	Release of funds to the Institutional Units (IUs), within the amount allocated by the Managing Board.  <b><u>Timeline: 1 June, 2020</u></b>	Funds are available at Institutional Units within the public sector organizations.
6	Registration and freezing of assets of corporate partners for a period of 5 years, like land, animals, buildings, etc., to the tune of Rs. 500 million as joint ventures, equal to the amount allocated by govt/donors. LTP would invest for launching approved feasible activities and LTP would be shareholder of 20% of the net profit, to be determined through joint monitoring.  <b><u>Timeline: 1 September, 2020</u></b>	An Endowment Fund of Rs.500 would be supplemented gradually, by assets of corporate partners, totaling Rs.1000 million. Expected @5% per quarter; continuous activity
<b>Entrepreneurship Development</b>		
7	Review of the feasible entrepreneurship models by the Technical Committee and recommendation for field trials under the IUs.  <b><u>Timeline: 1 September, 2020</u></b>	Entrepreneurship models would be available for field testing.
8	Postgraduate research projects for responding to the issues emerging during the field trials.  <b><u>Timeline: 1 September, 2020</u></b>	Academic solutions would be available for addressing the issues in entrepreneurship development. Continuous; expected three projects per quarter.

S No	Activity	Impact
9	<p>Evaluation of Entrepreneurship models for technical, social and marketing feasibility. Approval of successful models by Technical Committee or sub-committee and publication as “Activity-Entrepreneurship Model – LTP” on website of LTP.</p> <p><b><u>Timeline: 1 September, 2020</u></b></p>	<p>Entrepreneurship models would be available for replication.</p>
10	<p>Preparing terms and conditions for funding of entrepreneurship models, by a subcommittee of Technical Committee. The models must be non-invasive, meeting ethical standards and having financial viability. LTP would provide technical and marketing support through its partner organizations. LTP Endowment Fund would finance the activity and would be shareholder as 20% of the net profit. Terms and conditions would be approval by the Managing Board LTP.</p> <p><b><u>Timeline: 1 September, 2020</u></b></p>	<p>Terms and conditions would be available for funding entrepreneurship models.</p>
11	<p>Calling applications for funding entrepreneurship models, scrutiny, interviews and approval by a subcommittee of Technical Committee and release of funds.</p> <p><b><u>Timeline: 1 September, 2020</u></b></p>	<p>Entrepreneurship models are funded. month; expected models, 10 per quarter, to increase further onwards</p>
12	<p>The availability of entrepreneurship models would be reviewed and missing links would be identified for developing further models in livestock production, processing, marketing and services.</p> <p><b><u>Timeline: 1 December, 2020</u></b></p>	<p>Farming, products processing and services network would be available, each one generating decent employment for young graduates and quality foods to the consumers. An enabling environment would be available for further investment. 25,000 models expected in 5 years.</p>

S No	Activity	Impact
13	<ul style="list-style-type: none"> <li>• Good governance would be demonstrated in management of livestock resource-base.</li> <li>• Capacity of public sector organizations would have been improved and fine-tuned to support the entrepreneurship models development on sustainable basis. Their visible interaction with the private sector would be available.</li> <li>• A system would have been in place for delivery of specialized services to the stakeholders across the livestock based food value chain.</li> <li>• Endowment Fund and investment package would be made available at partner institutions of LTP.</li> <li>• Public-private partnership would be in place for investment in private lands and farms by LTP and sharing profit by 80:20 ratio to the private partner and LTP Endowment Fund, respectively.</li> <li>• <b><u>Time line: 31-12-2021</u></b></li> </ul>	<ul style="list-style-type: none"> <li>• LTP would have become a beacon of hope for the young men and women.</li> <li>• Motivated young graduates in veterinary, engineering, medical, business and social sciences would be joining LTP for their career development and transformation of ideas into actions to serve the society.</li> <li>• An enabling environment would be available to generate 25,000 decent employments in i) Dairy Farming; ii) Beef Farming; iii) Mutton Farming; iv) Poultry Farming; v) Fish Farming; vi) Pets Farming; vii) Nontraditional Farming; viii) Vet Clinics; ix) Analytical Labs; x) Inputs Suppliers; xi) Renewal Energy Providers; xii) Legal Advisors; xiii) Innovators; xiv) Meat Shops; xv) Dairy Shops; xvi) Meat Factories; xvii) Dairy Factories.</li> <li>• At the end of the year 2021, Khyber Pakhtunkhwa would be able to generate direct decent employments to the tune of 18000, each one earning about Rs.50,000 per month and employing five more persons each. Hygienic, Halal and Organic food would be produced per annum, as: 657.0 million kg milk, 19.2 m kg beef, 32.9 m kg mutton, 45.0 m kg poultry meat and 3.2 m kg fish meat, valuing Rs. 5098 billion. A fraction of 10% may be injected into Halal Meat Export Market, valuing Rs.510 billion.</li> </ul>

## Livestock Sector Action Plan with estimated Budget

Under Institutional Restructuring the KP Livestock Policy 2018 has called for establishing Livestock and Dairy Development Board and Poultry Development Board. Various recommendations like livelihood interventions for traditional grazing communities, resting places for transhumant herds, adopting OIE health standards, animals' welfare during slaughtering, transportation, research and commercial production, including nutrition and management, have been presented in the Policy document. This Report has highlighted various industrial aspects of the livestock sector, identified through interaction with the stakeholders and reviewing the previous efforts in development and reforms. The Sustainable Development Agenda of the United Nations has been accommodated in this Action Plan regarding SDGs 2,3,5,7,8, 16. An autonomous Livestock Technopark Peshawar with full regulatory, administrative, legislative and financial powers is suggested, with institutional units at various public sector organizations.

Various actions have been reproduced below:

### LDD Extension Wing

1. **Livestock Policy Implementation Cell:** A Livestock Policy Implementation Cell (LPIC) may be established at Directorate General LDD Extension to monitor impact of the activities of various service providers on the community regarding the status of livestock diseases in various regions and the relevant threat to public health, level of introduction of innovations and improvement in farm income and access of consumers to livestock based food products. Details are given under section 15.1. LPIC will take care of:  
**Special Service Incentives Package:** Special Service Incentives Package may be introduced for scientists/officers/staff of LDD Extension and Research Wings on performance basis, using measurable indicators and reporting on annual basis. The person would be promoted to higher positions and awarded financial incentives, on this basis. The detailed mechanism would be finalized by Managing Board of LTP. Staff involved in economic activities like production of semen, vaccine, milk, etc, may be granted a fraction of their produce. Net profit for each on campus new project activity will be shared on periodical basis as: i) 10% to Government of KP, 20% to the principal researcher, 39% relevant employees/worker, 30% to Endowment Fund; and 1% to Insurance Fund; 2) for on campus ongoing activity the profit share would be 10% to Government of KP, 30% to the staff and 60% to the Endowment Fund; 3) for off campus activities the profit distribution would be 80% for the Industry and 20% for the LTP and LTP will pay honoraria to the relevant staff involved in the off campus activities.

Capacity development: technical and supporting staff in modern extension and farming practices, improved research methodologies and laboratory techniques.

Farming Innovation and Commercialization Cell (FICC): FICC may be established to utilize the farming resources in the public sector up to appropriate extent. Improved livestock and crop farming and laboratory upgradation/accreditation of semen production unit would be ensured. Efficient utilization of land for introducing various farming systems like beef, dairy, mutton, rabbits, quails, pets and processing cells for milk and meat would be encouraged through public private partnership. Improved fodder seeds would be produced through involvement of private farmers.

Proposed Endowment Fund Rs.100 million; non-lapsable Grant: Rs.150 million; to be supplemented with further grants from various sources

2. **LBSC Bannu:** Livestock Business Support Center Bannu is recommended to be established at Bannu. This would be a satellite remote component of LTP. It will support the farmers in improving their farm productivity, products quality, business viability and forward/backward linkages of the entrepreneurship models. The farmers and other stakeholders were advised to get registered with the Farm Services Center presently and with Livestock Business Support Center Bannu later, pay the due fees and get the desired support for their respective livestock related business activities. LBSC will also host an Advocacy Forum comprising stakeholders representatives to accommodate concerns of all, like price fixation, food quality, business viability and replication, etc. It was noted that livestock value chain is generating many business models like farming, animal trade, milk processing and trade, meat processing and trade, service delivery, etc. Such businesses are at their primitive stage and need to be exempted from all type of taxes for the next 10 years.

Endowment Fund of Rs.50 million; development grant Rs.50 million.

## **LDD Research Wing**

3. **Livestock Technopark Peshawar:** LTP may be established as an Academia-Industry-Government Nexus model of shared authorities and responsibilities, based on propagation of SMART entrepreneurship models developed through academia-industry interaction covering United Nations SDGs 2,3, 5, 7, 8 and 16, and the local culture with a final target of generating decent employment and exportable surpluses across Livestock-Based-Food-Value-Chain. LTP envisions generating decent employment and exportable surpluses across livestock based food value chain. Mission of LTP includes introducing Academia-Industry-Government-Society nexus of governance model, facilitating entrepreneurship development across livestock based food value chain, backed up by quality control, traceability and forward/backward marketing linkages.

- Endowment Fund: Rs.340 million; Development Grant: Rs.350 million, for various infrastructural and operational activities.
4. **Laboratories Accreditation:** Laboratories of Microbiology, Biotechnology, Parasitology, Animal Nutrition, Dairy Technology and Vaccines Production at Veterinary Research Institute (VRI) Peshawar, covering BQV, HSV, ASV, ETV, NDV and FM, may be accredited; initially with Pakistan National Accreditation Council (PNAC)/Drug Regulatory Authority of Pakistan (DRAP) and later on with International Organization for Standards (ISO).  
Funds required, non-lapsable grant: Rs. 100 million
  
  5. **Vaccine Research and Transformation Program:** VRI Peshawar has already demonstrated an effective setup of PLA Revolving Fund, ensuring timely supply of the desired items qualitatively and quantitatively. The current size of PLA is appreciable and is the only source supporting such an excellent activity. For supporting indigenous vaccine production, import substitution and saving foreign exchange, Vaccine Research and Transformation Program is suggested as a component of Livestock Business Support Center VRI. The current PLA may be enhanced to under new terms and conditions for quick procurement and auction process, incentivizing the relevant staff through share in income and assuring capacity enhancement of the relevant labs in applied research and field trials, for meeting the needs of local and international market.  
Funds required: PLA: Rs.50 million; Non-lapsable Development Grant: Rs.100 million
  
  6. **Establishment of Veterinary R&D Center Merged Areas:** Veterinary R&D Centers may be established in the Merged Areas (former FATA) of Khyber Pakhtunkhwa to be located at Khar Bajaur, Landi Kotal, Parachinar, Miranshah and Wana. This setup will be managed by a joint committee at DG level.  
Funds required, Endowment Fund: 100; non-lapsable grant: Rs.170 million
  
  7. **Feeds and Fodders R&E Program:** Feeds and Fodders Research and Entrepreneurship Program may be established at LDD Research through outreach linkages with farmers and sister organizations. Endowment Fund: Rs.40 million
  
  8. **Livestock Business Support Center (LBSC) VRI:** LBSC may be established at VRI in close coordination with the Livestock Technopark Peshawar, for applied research, training of officers/farmers/civil society representatives and establishment of business incubation and entrepreneurship development facilities with the cooperation of commercial farmers, products processors and marketing partners in the private sector and the universities. Linkages with the commercial farmers would be strengthened through the proposed LTP for

organizing joint awareness programs regarding vaccination, applied research and diagnostic services at community level. LBSC would follow the Financial Rules developed for LTP.

Endowment Fund 70 million

9. **Feed Mills Leasing:** The feeds mills available at state farms and the Universities would be leased out to KP Livestock Farmers' Association/private sector at reasonable rates; applied research and students' internship would be utilized for quality maintenances of the products to be supplied to livestock and fish farmers. An Endowment Fund of Rs.20 million. This activity would be covered under LBSC.

Endowment Fund of Rs.20 million

10. **Students' Internship:** Paid internship for DVM students from KP universities, in various areas of specialization, arranging research facilities targeting at providing solutions to the industries and development of entrepreneurship models. This activity would be covered under LBSC.

Endowment Fund 50; Non-lapsable Grant: Rs.10 million

**Grand total LDD Research, non-lapsable grant: 1500 million; Endowment Fund: 180 million**

11. **LBSC Kohat:** Livestock Business Support Center is recommended to be established at Veterinary Research and Diagnostic Center (VRD) Kohat. This would be a satellite remote component of LTP. It will support the farmers in improving their farm productivity, products quality, business viability and forward/backward linkages of the entrepreneurship models. The farmers and other stakeholders may be advised to get registered with the Farm Services Center presently and with Livestock Business Support Center Kohat later on; pay the due fees and get the desired support for their respective livestock related business activities. LBSC will also host an Advocacy Forum comprising stakeholders representatives to accommodate concerns of all, like price fixation, food quality, business viability and replication, etc. Livestock value chain is generating many business models like farming, animal trade, milk processing and trade, meat processing and trade, service delivery, etc. Such businesses are at their primitive stage and need to be exempted from all type of taxes for the next 10 years.

Endowment Fund of Rs.50 million.

12. **LBSC Abbottabad:** Livestock Business Support Center is recommended to be established at Veterinary Research and Development Center Abbottabad, a divisional headquarter. The Center will cover livestock activities in Abbottabad, Haripur, Mansehra, Batagram and Kohistan districts. Cattle, buffaloes, sheep, goats, camels and poultry population of the region is 0.79, 0.53, 0.32, 1.57, 0.004 and 3.68 million heads. Buffaloes, goats and poultry would be focus of entrepreneurship, based upon the livestock population as per Livestock Census (GOP

2006). This would be a satellite remote component of LTP. It will support the farmers in improving their farm productivity, products quality, business viability and forward/backward linkages of the entrepreneurship models. The farmers and other stakeholders may be advised to get registered with the Livestock Business Support Center Abbottabad; pay the due fees and get the desired support for their respective livestock related business activities. LBSC will also host an Advocacy Forum comprising stakeholders representatives to accommodate concerns of all, like price fixation, food quality, business viability and replication, etc. Livestock value chain is generating many business models like farming, animal trade, milk processing and trade, meat processing and trade, service delivery, etc. Such businesses are at their primitive stage and need to be exempted from all type of taxes for the next 10 years.  
Endowment Fund of Rs.50 million.

## Directorate General Fisheries and Local Council Board

- 13. LBSC Fisheries:** It is proposed that Livestock Business Support Centers (Fisheries) may be established at Sher Abad Fish Farm at the outskirts of Peshawar. An Endowment Fund would be made available for expanding the business or qualitative improvement of the products and services. The public sector feed mills available at the University of Agriculture Peshawar and Livestock Research and Development Stations would be run through private public partnership and the operating cost/annual lease would be paid by the private parties. Specialized Feeds would be produced for various categories of fish and research on nutritional aspects would be conducted at Livestock Research and Development Station Surezai, Peshawar. Fisheries Department has got ADP projects worth Rs.400 million and PSDP projects worth Rs.1200 million, which would be linked with the LBSC. Capacity of the existing hatcheries would be increased through cementing of the ponds and the attached drainage areas at Sher Abad Fish Farm to prevent water losses and enhance the services to commercial fish farmers. A Fisheries Engineering Cell would be established at DG Office for designing fish farms, solar tube wells and chilling/chilled transportation facilities for meat. Fisheries Research and Development Center would be established at Jhanda Road Swabi where department's land is available. The Institute would be headed by a Director and assisted by 3 SROs, 5 ROs and 10 essential supporting staff.

LBSC (Fisheries): Endowment Fund: Rs.50 million; Infrastructural Grant: Rs.100 million

- 14. Joint Venture in Livestock Market and Slaughter Houses:** A joint venture may be made with Munir and Co under the KP Livestock Action Plan 2019 to upgrade the slaughter house with essential required facilities through the proposed Khyber Pakhtunkhwa Livestock Technopark Peshawar.

Proposed Endowment Fund: Rs. 100 million; development non lapsable grant Rs.100 million (Rss.200 malready allocated by Local Government Department under KP-ADP)

## The Universities

15. **Dairy and Meat Technology Center (WUM):** Dairy and Meat Technology Center (DMTC) would be established at Women University Mardan with the main objectives of empowering women to establish food/quality control related business models and protecting women health through food and animals' handling and working in research and diagnostic laboratories related to life sciences. Establishment of Dairy Technology Center is recommended.  
Infrastructure grant Rs.50 million; Endowment Fund 50 million.
  
16. **Accreditation of DVM and postgraduate degrees (AWKUM):** Abdul Wali Khan University Mardan may be advised an earlier appointment of the deficient staff; and meeting the required deficiencies pointed out by the PVMC. Pakistan Medical Council (PVMC) Islamabad may be advised for immediate restoration of DVM admissions and accreditation of the degree programs running at Faculty of Animal Husbandry and Veterinary Sciences, AWKUM.  
Proposed non-lapsable grant: 50 million
  
17. **Livestock Business Support Center Mardan (AWKUM):** No formal slaughter house is available for meat production and animals are slaughtered at unauthorized places without appropriate inspection by the experts or quality control measures. Awareness campaigns for hygienic and cost effective livestock health and production are at minimum level. Various types of taxes are imposed on livestock and poultry activities; however, food production is a business with the minimum level of profitability around the globe and is subsidized in the advanced countries. It is suggested that Livestock Business Support Center (LBSC) Mardan may be established as a university outreach facility at AWKUM, to be managed jointly by the University (2 members), Local Government Department (1 member) and Livestock Farmers Welfare Association/processors Mardan (4 members).  
Proposed Endowment Fund: 50 million
  
18. **Gomal Technopark at Gomal University:** Based upon the expertise available at the University and the huge resource base available in the DI Khan district and the southern Khyber Pakhtunkhwa, the participants agreed on establishing Gomal Technopark (GTP). GTP, with a management board having full legislative, financial and administrative powers. An

Endowment Fund would be established to the tune of Rs.500 million, to be provided with the same ratio by the university/public sector in the form of money and by the private sector in the form of land, animals and other assets. The fund would be used for entrepreneurship development and the facilities required for relevant on-campus and off campus activities.

**Infrastructural Support Fund FVAS GU:** The existing laboratory setup for poultry sciences, pathology, microbiology, parasitology, animal reproduction, dairy/meat technology and quality control services and animal nutrition would be strengthened through equipment and essential building/renovation requirements. i) Poultry farm will be upgraded further with the installation of solar incubator and the capacity for poultry and quail farming would be enhanced. Training will be imparted in poultry and quail farming. ii) A small sized demo feed mill will be established at FVAS which will prepare feed at the rate of 1 ton/ hour.; iii) Information communication system will be established to link the commercial farmers, processor, marketing partners and service providers with the Faculty.; iv) Establishment of a canine breeding Centre and two dairy sheds. Prevention would be the motive rather than the treatment; hidden losses to the farms, not recognized by the farmers, would be identified and rectified; v) Establishment of demonstration chilling/pasteurization unit for milk and meat pasteurization, processing and preservation; vi) Installation of solar and diesel generator. Proposed Endowment Fund: Rs.250 million (Equal amount will be provided by private partners in form of assets; Development Grant Rs.100 million

19. **SBB University Sheringal:** During 2014 M Phil program was initiated in Livestock Management and Poultry Science and inducted four faculty members at SBB University Sheringal. A PC-I has been approved providing an academic block, dairy farm, beef farm, sheep and goats farm and controlled poultry shed. Tenders have been floated for procurement of items. Approval of the F&PC, Academic Council and the Syndicate is awaited. Pakistan Veterinary Medical Council paid a zero visit for evaluation of M Phil Program, three years back. However, the minutes have not been issued till this date, despite repeated requests. The Governor Secretariat has issued a letter for stopping admissions at the department which has been complied. It is recommended that: i) Approval of the statutory bodies may be obtained at an earliest as the Animal Science Program is essential for development of the Dir Region with rich resource-base in the form of ranges, pastures and small ruminants providing an important livelihood support to the people; ii) Implementation of the PSDP project Development of University of Dir Sheringal, covering academic building, cattle sheds and poultry sheds; iii) implementation

of PVMC recommendation regarding deficiencies in staff, etc. PVMC is requested to cooperate with the newly established veterinary institutions and allow them to grow instead of expected too much of the required standards; iv) establishment of a Meat Technology Center for research on quality parameters of meat and business incubation, farmers support services in meat farming and marketing.

Endowment Fund: Rs.10 million

20. ***Livestock Business Support Center – UAP:*** This Mission recommends establishment of a Livestock Business Support Center - UAP with an Endowment Fund and joint management committee comprising with membership as: UAP 2, LDD Ext 1, LDD Res 1, LTP 1. LBSC will support applied research connected with industrial issues and entrepreneurship development for generating decent employment and exportable surpluses. The Center would ensure an active and visible interaction among the academia, industries, government and the civil society, to provide feasible solutions to the emerging issues faced by producers, processors, service providers, marketing partners and consumers. Farming innovations would be introduced like introduction of biotechnologies, solar technologies, food technologies and bio-waste management across the livestock based food value chain. Entrepreneurship models would be developed in livestock. poultry and fish production, processing, quality control, diagnostics, veterinary clinical, processing, marketing and legislative services, as source of decent employment and exportable surpluses. Some examples may be establishing milk, meat and eggs shops; fodder production facilities; fodder seeds shop; silage plants; mini-slaughter houses, livestock/poultry/fisheries/other farming, also including fancy birds, pets, rabbits, ostrich, or others; processing, packaging milk, meat and eggs; marketing at district, provincial or international levels. Veterinary clinics, diagnostic laboratories or biotechnological products processing or any other related facilities would be encouraged. Graduate interns and postgraduate scholars would be engaged in these activities under an incentive package.

Endowment Fund of Rs.100 million; Non-lapsable development grant: Rs.50 million

21. ***Biorisk Management Center KMU:*** On advice of the Vice Chancellor KMU and Dean Public Health and Social Sciences, KMU, Dr Yasir and Dr Nauman visited FAO Peshawar Office for consultation on Biorisk management collaboration under the FAO KP Livestock Action Plan. It was agreed to establish Biorisk Management Center at KMU, by renaming the Food, Environment and Water Lab, under guidelines of the MoU already signed with DSP, UAP and HEC. The Center would be responsible for: i) launching One Health program at postgraduate level; ii) bio-waste management at KMU and other facilities of Livestock Technopark Peshawar; iii) collaborative research. Cost Development grant Rs.20 million; Endowment Fund Rs.20 million

22. **LBSC Swat:** Livestock Business Support Center Swat will be established at University of Swat (UOS) with joint management of SWS in collaboration with LDD Research, LDD Extension and District Government. Swat University is running Center for Animal Science and Fisheries, Center for Biotechnology and Microbiology, Department of Environment and Conservation and Center for Management and Commerce, would participate in the joint venture through diploma courses, laboratory analysis, field trials and training programs in livestock, fisheries, poultry, sheep and goats. Entrepreneurship, public health and food productivity aspects of the livestock assets would be explored. A visit was made to Khwazakhela Swat to discuss the prevailing issues with the stakeholders. It was suggested that the services provided by various department may be improved and coordinated. The available medicines in government veterinary hospitals were of inferior quality and unauthorized veterinary practitioners are damaging farmers profitability and products quality. Inspection team/departments responsible for quality control and price fixation were identified as a hurdle in the milk and meat marketing. Establishment of a modern slaughterhouse with proper space and facilities, was recommended. The role of butchers and milk salespersons were explained and these facilities were recommended for further support to create opportunities of decent employment generation and production of exportable surpluses. He suggested establishment of an entrepreneurship network in the form of modern farms and processing factories with branded milk and meat products for local market, provincial and federal capital and even export. Meat export potential was highlighted, for which the Swat Airport could be utilized and meat in the region could be exported to Muslim Regions.

Endowment Fund: Rs.50 million

## Summary of Cost Estimate (Rs. million)

S No	Component	Endowment Fund	Non-lapsable Development Grant	Total
<b>Livestock and Dairy Development Department Extension Wing</b>				
1	Livestock Policy Implementation Cell	100	150	250
2	LBSC Bannu	50	50	100
	<i>Subtotal</i>	<u>150</u>	<u>200</u>	350
<b>Livestock and Dairy Development Department Research Wing</b>				
3	Livestock Technopark Peshawar	340	350	690
4	Laboratory accreditation	0	100	100
5	Vaccine Research and Transformation Program	50	100	150
6	LBSC and Veterinary Research and Diagnostics Center Merged Areas of KP	100	170	270
7	Feeds and Fodders Research and Entrepreneurship	40	0	40
8	Livestock Business Support Center VRI	70	0	70
9	Feed mills leasing	20	0	20
10	Students Internship	50	10	60
11	LBSC Kohat	50	0	50
12	LBSC Abbottabad	50	0	50
	<i>Subtotal</i>	<u>770</u>	<u>730</u>	1500
<b>Directorate General of Fisheries and Local Council Board</b>				
13	Livestock Business Support Center Fisheries	50	100	150
14	LBSC Slaughter House Ring Road, Local Council Board Peshawar	100	100	200
	<i>Subtotal</i>	<u>150</u>	<u>200</u>	350
<b>Universities</b>				
15	Dairy and Meat Technology Center, Women University Mardan	50	50	100
16	Accreditation of degree programs of FAHVS Abdul Wali Khan University Mardan with PVMC	0	50	50
17	Livestock Business Support Center at Abdul Wali Khan University Mardan	50	0	50
18	Gomal Technopark, Gomal University DI Khan	250	100	350
19	Shaheed Benazeer Bhutto University, Sheringal, Dir	10	0	10
20	LBSC, University of Agriculture Peshawar	100	50	150
21	Biorisk Management Center, KMU Peshawar	20	20	40
22	LBSC Swat University Swat	50	0	50
	Subtotal	530	270	800
	Grand Total	1600	1400	3000

## Capacity Development and Formulation of Working Groups

- 1. Working Group on Institutional Coordination:** Implementation of this Action Plan may be split into various components. The main issue realized during this consultative process was identified as the present shape of the Department. The governance structure doesn't protect interests of the stakeholders across the food value chain impeding the productive utilization of the state and peoples' resources. Lack of coordination among the various departments of the provincial government, the relevant universities and the private sector organizations result into ineffectiveness of service delivery to the livestock producers, processors, service providers and products consumers.

Therefore, it is suggested that the Managing Board of Livestock Technopark Peshawar would oversee the functions of all relevant activities in the partner organizations, in the best interest of the end users. Coordination with public and private sector organizations and associated LTP subunits for addressing sectoral issues and prioritization of their functions judicial utilization of the available resources through coordinated approach, would be ensured. Composition of the Managing Board is given as under:

The Managing Board of LTP would comprise one representative each of: i) DG LDD Ext; ii) DG LDD Res; iii) DG Fisheries; iv) Dean FAHVS UAP; v) Secretary Local Council Board; vi) VC WUM; vii) KP-LFA; viii) Poultry Farmer; ix) Fish Farmer; x) Feed Processor; xi) Dairy Processor; xii) Meat Processor; xiii) KPCCI; xiv) KP FSHFA and; xv) MPA. The Managing Board will decide on the basis of simple majority with 50% quorum. Members will elect Chairman for a tenure of two years with consensus or through voting. Executive Director would be responsible for day to day operations and management of the Board proceedings.

- 2. Working Group on Capacity Development:** Capacity of various public sector organizations in the public sector would be improved through ready access to the development resources, quickness and transparency in the procurement and auction process and an affective linkage with the sister organizations in the region. The working group would be established comprising one member from each Unit and a representative of the Chairman LTP. The Chairman for CIU would be elected by the members for a period of two years. The Committee would meet on quarterly basis for review of the achievements and hurdles in implementation of the relevant functions and need assessment further work. Funds would be released to the Institutional Unit by Managing Board LTP. The Institutional Units are given as under:

LDD Ext: i) Livestock Policy Implementation Cell, LDD Ext; ii) LBSC CVH Bannu

LDD Res: iii) Livestock Business Support Center VRI; iv) LBSC Kohat; v) LBSC Abbottabad

Department of Fisheries: vi) Livestock Business Support Center Fisheries

Local Council Board: vii) LBSC Slaughter House Ring Road, Local Council Board Peshawar

Universities: viii) Dairy and Meat Technology Center, WUM Mardan; ix) LBSC AWKUM Mardan; x) Gomal Technopark, GU DI Khan; xi) SBBU, Sheringal, Dir; xii) LBSC, UAP; xiii) BRMC KMU; LBSC Swat University.

3. **Working Group on Regulatory Issues of the Stakeholders:** Various issues are faced by the stakeholders of the livestock sector. UAP, AWKUM and SBBU Sheringal have been awarding degrees in Animal Husbandry and Veterinary Sciences, however, these degrees are not recognized by the Pakistan Veterinary Medical Council, due to certain avoidable reasons. A Working Group would be constituted comprising one representative each of: i) DG LDD Ext; ii) DG LDD Res; iii) Dean FAHVS UAP; Principal CVAS AWKUM; In Charge Animal Science Program SBBU Sheringal; President KP-LFWA. The Committee will select Chairman through election/selection for a period of three years among themselves. This Working Group will analyze the cases and advise the government, PVMC and other relevant organizations for corrective measures. The price regulation has been in place through the office of the Deputy Commissioners. There is a conflict of interests between the producers, who have recently calculated the per kg production for milk as Rs.132, while the price has been fixed as Rs.90 per kg. Same is the case with beef and mutton, where the shops selling high quality items at somewhat higher rates, are sealed by the district administration. Food Safety and Halal Food Authority raids the food production and marketing facilities and fine the owners through ambiguous standards. This Working Group will take care of the interests of the stakeholders through technical evaluation through registered laboratories and filed based trials at research and educational organizations.
  
4. **Working Group for Quality Control of Farm Inputs and Products:** This Group will comprise one representative each of: i) Microbiology Section VRI; ii) Animal Nutrition section LRD; iii) Dairy Technology Section LRD; iv) Disease Investigation Officer LDD Ext; v) Director Breed Improvement LDD Ext vi) Microbiology Section FAHVS UAP; vii) Pharmacology Section FAHVS UAP; viii: President KP-LFWA. The Committee will elect/select Chairman among themselves for a period of two years. The Livestock, Poultry and Fish Farmers, Processors and Marketing Partners would be facilitated through quality control certification. Inputs supplies, like feeds, medicines, seeds, semen, vaccine and other products available in the local market, would be tested for quality and cost comparisons through partner organizations. The items qualifying the evaluation process would be notified on LTP Website and through other means for information of the stakeholders. High quality, low priced items may be made available through Endowment Funds at the designated places. The registered farming and products processing facilities would be provided quality control certificates for the products.

5. **Working Group on Livestock Markets and Slaughter Houses:** This Group will comprise one representative each of: i) Secretary Local Council Board; ii) DG LDD Ext; iii) DG LDD Res; iv) DG FSHFA; v) Dean FAHVS UAP; vi) President KP-LFWA; vii) Meat Processor. The Group will elect/select Chairman within themselves for a period of two years. Livestock Markets and Slaughter House have been run under the administrative control of Local Government Department. A lot of improvement is needed for providing a conformable environment to the animals and their attendants, butchers and other stakeholders. Infrastructure support would be provided in the form of building, equipment, availability of experts, etc. A joint venture would be initiated between Livestock Technopark Peshawar, Local Council Board Peshawar and Munir and Co, to upgrade the slaughter house at, Gulbahar Canal, Ring Road Peshawar and establish a Livestock Business Support Center at the site. For animals' transportation, special trucks would be designed for conformability of the animals and their attendants and safety of the environment and beauty of Peshawar city. The cold storage facilities would be enhanced and made available to the corporate partners on rent/lease. The chain of cold trucks would be expanded to facilitate meat transportation to the superstores, meat shops, meat factories, bus terminals and airports. Sale of animals on live weight basis would be introduced to protect the farmers, animal dealers, butchers and general consumers from fraudulent deals. A diagnostic laboratory and veterinary clinic would be established for serving the farmers and butchers. The export section of the slaughter house would be made available for supply to the superstores in Peshawar areas and other locations approved by LTP.

## Potential risks

As already mentioned in this Action Plan, utilization of indigenous resources for welfare of the people and for bringing peace and stability in the regions, has been influenced by the governance pattern (Etzkowitz and Leydesdorff (1995). Universities and industry, up to now relatively separate and distinct institutional spheres, are assuming tasks that were formerly largely the province of the other. Multi-national institutions such as the European Union, the World Bank and the U.N. are also moving to embrace concepts of knowledge based economic development that bring the knowledge, productive and regulatory spheres of society into new configurations.

In formulating the Khyber Pakhtunkhwa Livestock Policy 2018, the Extension Wing of Livestock and Dairy Development Department (LDD), Government of Khyber Pakhtunkhwa has been properly represented, based upon their presence in the administrative and services setup. The LDD Research Wing, the four DVM/MS-degree awarding universities, the producers, processors, service providers, non-government organizations, unemployed veterinary graduates and the civil society could not be represented appropriately in the consultative process. Concerns, issues and interests of all the stakeholders could not be accommodated properly in the policy document.

It contradicts the concepts of the popular governance model of Triple Helix of university-industry-government relations, proposed by Etzkowitz and Leydesdorff (1995 and 2000) for explaining structural developments in knowledge-based economies. Knowledge-based economy has been suggested against political economy, as the structure of society is constantly disturbing the transformations which originate from techno-sciences. The model has been adopted by the developed world and by the Higher Education Commission of Pakistan for networking and sensitizing the stakeholders in the industry, to play their due role in the development process. In contrast, the impact of the public services on civil society have been at meager level. A farmer having 50 lactating buffaloes under peri urban farming system or 300 sheep/goats in the remote regions, investing more than Rs.10 million rupees is unable to get the due fiscal return for living a respectful life or quality tested food to the consumers. Three of the four DVM/M Phil-degree awarding universities (UAP, AWKUM) are still not accredited by Pakistan Veterinary Medical Council (PVMC). The KP Livestock Farmers Welfare Association (KP-LFWA) has been irrelevant from execution of the field projects by the provincial government.

Governance was described as more than ever a driving concern in FAO's work and was considered critical to achieving FAO's Strategic Objectives (FAO 2019). At the global level, FAO works to build institutions and mechanisms that provide international norms, standards and data, promote international cooperation, and support an enabling environment for effective collective action to solve problems that cannot be addressed, or as effectively addressed, working at national level alone.

In this report the Consultant has attempted to suggest reforms in this changing environment with a focus on establishing an Academia-Industry-Government-Society Nexus. Academia would interact with the industry for providing solutions to their issues regarding productivity, quality control (Halal and hygienic status), products processing, products traceability and marketing at domestic and international

levels. The Government would, at the same time, intervene in resolving the financial, marketing, administrative, legislative and infrastructural issues faced by the stakeholders and would consider replication of success stories in the form of entrepreneurship models. Shared authority and responsibilities would be practiced for getting ownership of the programs by the stakeholders.

At country level, the governance lens looks beyond purely technical issues to highlight how people, institutions and authority interact to influence political decision-making. Using political economy and stakeholder analyses, FAO helps governments identify their most important governance challenges related to food and agriculture, and improve the inclusiveness of their policies and programs to address them more effectively. Conflict of interests among the livestock producers, processors, service providers, consumers and the public sector organizations is present.

The Consultant has been involved with the provincial and federal governments, the academia and private sector for a long period of 36 years. DSP governance model has been developed through extensive interaction with the stakeholders during this period. As evident from title of this Action Plan, “Transforming Livestock Resources into a Beacon of Hope through Good Governance”, livestock resource management is a difficult task, often associated with failures. The reasons are multifaceted. The veterinary hospitals in the public sector are focusing on disease treatment, with little attention on disease prevention and control, as it is a source of income. On the other hand, the commercial young farmers like to utilize their herds on modern lines with cost effective productivity and improved quality. Therefore, a resistance is expected against this current concept from some groups.

Livestock owners are usually landless and resource constrained. They have no say in the decision making process. The Consultant has tried his best to reach the real stakeholders, especially the representatives of the commercial farmers. Butchers, milk dealers and the local government elected representatives. The Universities, at present, are the most neglected entities in the country and have been kept from the development process. This Action Plan has involved seven universities, previously linked with the Consultant through various technical activities, into livestock business support centers, dairy and meat technology centers and Biorisk management centers. Universities are not used to such social activities usually, but in our case, their response was excellent.

The Consultant is hopeful of getting support from the Chief Minister Office for approval of the Action Plan as a Task Force, as it will motivate the public service organizations to improve their efficiency, open new venues for employment generation, quality food production and exportable surpluses. The Consultant expects a win-win situation for all the stakeholders, however, as the concept calls for drastic change in the governance system with shared authority and responsibility, it may be resisted by some powerful elements.

## Monitoring and evaluation framework

The monitoring and evaluation team will be comprised of 5 members including M&E specialist, M&E officers and field monitoring officer. The Committee will be responsible for:

1. Review of performance of the institutions and individuals against the predetermined targets.
2. Insurance of transparency and availability of quality services to the farmer's community/processors/marketing partners, at grass root level.
1. Fiscal and performance evaluation of the institutional Units.
2. Addressing complaints of the LTC staff, members and general public against any member/institutional unit of the LTP.
3. The Committee will evaluate the quarterly, semiannual and annual progress report of each Institutional Unit of LTP.
4. Members of the Committee would be having direct access to the ongoing activities of individual and institutional members of LTP through smart communication technologies. Satisfaction of the clients/end users/beneficiaries would be visible to the members of the Committee.
5. Measurable indicators would be developed for assessing performance of individual and institutional member of LTP,for . Indexing system would be developed for quantifying such progress at a level of 0-100. These reports would be utilized in reviewing policy, fund releasing, promotion of staff and other relevant matters.
6. The Committee will monitor quickness, transparency and fairness in the income and expenditures of LTP.
7. The monitoring and evaluation committee will finalize the plans and targets along with the institutional units on yearly basis.
8. Result based monitoring, evaluation and reporting will be introduced at all levels.
9. SMART indicators will be set up for process and progress monitoring and evaluation.
10. Monitoring and evaluation plan will be developed to monitor or evaluate the indicators
11. The committee will conduct progress review meetings against the set targets, with the units and will provide feedback for any deviation from the plan.
12. Beneficiaries feed back mechanism/satisfaction surveys will be designed and implemented on periodic basis for course correction, learning and improvement purposes.

## Meetings/Workshops held:

1. Faculty of Animal Husbandry and Veterinary Sciences, Abdul Wali Khan University Mardan also participated by faculty members of Women University Mardan and Livestock Farmers Association Mardan.
2. Directorate General Livestock and Dairy Development KP, Research Wing, participated by Director General, heads of the division of VRI, regional veterinary research and diagnostic centers, research and development farms and staff.
3. Directorate General Livestock and Dairy Development KP, Extension Wing, participated by Director General and Director Planning.
4. Meeting with Directorate General Fisheries and Senior Management stationed in at the headquarter and field stations.
5. Gomal University DI Khan, including the Vice Chancellor, Senior Management, faculty members of Faculty of Veterinary and Animal Sciences and representatives of livestock and poultry farmers and processors.
6. Meeting held at Office of the Deputy Commissioner Bannu, participated by commercial livestock farmers, Processors and products dealers along with representatives of Livestock and Dairy Development Department and KP Food Safety and Halal Food Authority.
7. Senior Management of Munir and Co Slaughter House, Gulbahar Canal, Ring Road Peshawar.
8. Senior Management of KP Livestock Farmers Association Peshawar.
9. Tehsil Nazim Khwazakhela Swat, participated by commercial farmers, milk dealers, butchers, senior officers of LDD Extension and Research Wings, Senior Management of the Trade Unions, University of Swat elected representatives of Union Council, and Tehsil Councils.
10. Faculty members and postgraduate students of Khyber Medical University Peshawar.
11. Meetings with freelancer legal advisors, development practitioners, academicians, retired civil officers, commercial farmers and university students.

## Acknowledgement:

The Mission acknowledge the guidance, support and facilitation of the following persons:

1. Prof Muhammad Sarwar, Gomal University, DI Khan
2. Prof Muhammad Jamal, Vice Chancellor, University of Swat
3. Prof Ghazala Yasmin, Vice Chancellor, WUM Mardan
4. Dr Sher Muhamamd, DG LDD Ext
5. Mr Muqarrab Ali Khan, Livestock Expert, LDD KP
6. Dr Mirza Ali Khan, DG LDD Res
7. Prof Nazir Ahmad Dean FAHVS
8. Dr Zia ul Haq, Dean Public Health and Social Sciences, KMU
9. Dr Shakeeb, Dean FVAS, Gomal University, DI Khan
10. Dr Sultan Ayaz Khan, Dean Life Sciences, AWKUM, Mardan
11. Dr Muhammad Khalid Khan, PRO, LDD Res, Peshawar
12. Dr Asal Khan, Director Planning, LDD Ext Peshawar
13. Dr Shakirullah, Chairman LM, Gomal University DI Khan
14. Dr Shakoor Ahmad, Assistant Professor Animal Health, UAP
15. Dr Zia ur Rahman Khalil, SBBU Sheringal
16. Mr Asif Awan, President KP LFW Association
17. Mr Kamran Khan, KP LFW Association
18. Mr Hafeez ur Rahman, KP LFW Association
19. Khanzada Ahmad Kamal, LFW Association
20. Mr Naseer Khattak, Tobacco Board
21. Advocate Murtaza Qureshi, Legal Expert Peshawar
22. Engr Zeeshan S Shah, GreenWend Energy Solutions, Peshawar
23. Mr Saeed Khan, Munir and Co Peshawar
24. Engr Irfan ul Haq Qureshi, Dairy Science Park
25. Mr Habib ur Rahman, Al Quraysh Mutton and Veal Retail Shops Association
26. Mr Israr Shah, Dairy Farmers Bannu
27. Mr Waleed Mahdi, FAO Peshawar
28. Mr Mujibur Rahman, FAO Peshawar
29. Dr Sanaullah Khan, FAO Peshawar
30. Ms Mahjabeen Aman, FAO Peshawar
31. Mr Rustam Khan, FAO Peshawar
32. Ms Safina Ijaz, FAO Peshawar
33. Mr Asghar Khan, FAO Peshawar
34. Engr Fazli Imran, FAO Peshawar
35. Mr Tariq Ahmad, FAO Peshawar

## References

1. British Council, 2017. Scoping Study - Education City Khyber Pakhtunkhwa Pakistan - Extended Report. British Council Pakistan, Islamabad. [https://www.britishcouncil.pk/sites/default/files/kp\\_scoping\\_study\\_report\\_-\\_2017\\_0.pdf](https://www.britishcouncil.pk/sites/default/files/kp_scoping_study_report_-_2017_0.pdf)
2. DSP, 2016. Dairy Science Park Society Profile; City Tower, University Road, Peshawar-25000.
3. DSP, 2019. Dairy Science Park Society Profile; Room #3, Floor #3, Azam Tower, Arbab Road Stop, University Road, Peshawar-25000, Pakistan; <http://dairysciencepark.org.pk/>
4. Etzkowitz, Henry, 1994. Technology Centers and Industrial Policy: The Emergence of the Interventionist State in the USA, *Science and Public Policy* 21, nr. 2., 79-87.
5. Etzkowitz, H. and Leydesdorff, L, 1995. The Triple Helix---University-Industry, Government Relations: A Laboratory for Knowledge-Based Economic Development. *EASST Review* 14, 14-19. 3.
6. Etzkowitz, H and Leydesdorff, L. (2000). The Dynamics of Innovation: From National Systems and 'Mode 2' to a Triple Helix of University-Industry-Government Relations. *Research Policy*, 29 (2), 109-123.
7. FAO, 2008. Abattoir development - Options and designs for hygienic basic and medium-sized abattoirs. Animal Production and Health Commission for Asia and the Pacific. Food and Agriculture Organization of the United Nations, Regional Office for Asia and the Pacific Bangkok.
8. FAO, 2015. The Agriculture Policy - a Ten Years Perspective' for Khyber Pakhtunkhwa (2014-2024G) Food and Agriculture Organization of the United Nations (FAO), Rome.
9. FAO. 2018. World Livestock: Transforming the livestock sector through the Sustainable Development Goals. Rome. 222 pp. Licence: CC BY-NC-SA 3.0 IGO
10. FAO-GoB, 2019. Minutes of Balochistan Livestock Policy and Strategy Workshop, 4 July, 2019. Livestock and Dairy Development Department, Balochistan.
11. FAO, 2019. Policy and Governance Support. <http://www.fao.org/policy-support/governance/en/>
12. HMSO, 1993. Government White Paper; Realizing Our Potential: Strategy for Science, Engineering and Technology (London: HMSO).
13. GOP, 2006. Livestock Census. Pakistan Bureau of Statistics, Government of Pakistan Islamabad.
14. Khan S, MS Qureshi, N Ahmad, M Amjed, M Younas, 2009. Feed Supplementation Prevents Decline in Milk Progesterone Levels associated with Post-conception Production Stress in Dairy Buffaloes. *Tropical Animal Health and Production*, 41: 1133-1142.
15. Link AN and Scott JT, 2003. The growth of Research Triangle Park. *Small Business Economics*, 20(2):S 167-175.

16. Masood H, Masood Z, et al, 2015. GIS Based Mapping of the Dams of Khyber Pakhtunkhwa (KPK) and Federally Administered Tribal Areas (FATA) For Promoting Fish Culture in Pakistan. *Global Veterinaria*, 15 (2): 248-259.
17. MBCOI, 2019. Marine Bio-Technologies Center of Innovation (MBCOI), North Carolina, USA takes a much broader view that includes diverse applications of marine-based discoveries into sectors such as food, energy, and health (<https://mbcoi.net/>).
18. NRSP, 2019. Empowering of Kissan through digital and financial inclusion. <http://nrsp.org.pk/e-kissan.html>
19. Qureshi M.S., G. Habib, H.A. Samad, M.M. Siddiqui, N.Ahmad, M. Syed, 2002. Reproduction nutrition relationship in dairy buffaloes. I. Effect of intake of protein, energy and blood metabolites levels. *Asian-Aust. J Anim Sci*, 15(3): 330-339.
20. Riaz, K., 2008. A Case Study of Milk Processing: The Idara-e-Kissan Cooperative Khalid Riaz. 13 1) : 87-128.
21. Speedy, 2001. The global livestock revolution: opportunities and constraints for the feed and livestock industries. 43rd National Symposium: Growth Prospects under Globalized Scenario vis-à-vis Livestock Production and Trade, Goa, India, 29 September. <http://www.fao.org/livestock/AGAP/FRG/Feedsafety/pub/speedy-india.doc>

