



Introducing Good Governance Across Food Value Chain

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<https://dairysciencepark.org/>

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(This Report has been prepared in response to an FAO-UN Call for best practices in transforming food systems for affordable healthy diets and addressing key drivers of food insecurity and malnutrition; Cover picture: Introducing silage as a farming innovation practice at peri-urban dairy and beef farming)

Summary

This Report has been prepared in response to an FAO-UN Call for best practices in transforming food systems for affordable healthy diets and addressing key drivers of food insecurity and malnutrition. Dairy Science Park (Park/DSP) has been introduced as a sacred mission for welfare of people of the Region through generation of self-employment and hygienic/Halal food production. The Park has been registered as a Society with the Government of KP, Pakistan and accepted by the United Nations as #UNSDGAction9671. In line with the vision of the Higher Education Commission, the business incubation concepts were integrated into postgraduate research ongoing at the Faculty, shaping up the University – Industry linkages. A biennial series of international workshops was initiated and it continued during November, 2011, 2013 and 2015, 2017 and 2019, each by 450+ delegates, with 100+ technical papers and industrial exhibitions. The proceedings were published online/printed and in impact factor journals. The 1st workshop focused on post-flood revival of dairy industry, the 2nd on meat potential of the region, the 3rd on entrepreneurship development for the outgoing graduates, the 4th on biorisk management and the 5th on emerging trends and opportunities. The first three conference were held at Peshawar, the 4th at Selcuk University Konya, Turkey and the 5th at Quetta.

Emerging industries in milk and meat processing and marketing have been provided technical and Quality Control certification support to relieve legal threats from the District Administration, who focus on price capping of milk and meat rather than quality. Meat shops established on modern lines of hygiene produce quality beef; however, such facilities are raided by the government agencies on the basis of higher prices. DSP facilitates inspection of such facilities provide SOPs for quality standards and issue a certificate. Similar services are being extended to private slaughter houses and meat/milk processing centers and other emerging entrepreneurs. A road map has been prepared for developing a Hygienic/Halal meat export base. The plan is aimed at introducing good practices into livestock SMEs. The plan has been supported by the provincial Agriculture Minister, Special Assistants to Chief Minister KP on Law and Livestock. Sandia National Lab USA has been supporting DSP under a Biorisk Management Collaboration. Four consultative workshops have been held in Amsterdam, Dubai, Bangkok and Phuket, Colombo, Konya, Amman and Dubai-II, participated by 105 members of DSP for curriculum development and integration of biorisk management concept into the food value chain. A BRM package was developed for integration into Doctor of Veterinary Medicine degree in Pakistani Universities, under the supervision of Pakistan Veterinary Medical Council.

Food and Agriculture Organization of the United Nations engaged Prof M Subhan Qureshi as National Consultant Livestock with the mutually agreed TORs requiring 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. 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 the 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. DSP considers the plan as a Good Governance model to be implemented in letter and spirit.

The Livestock Value Chain and Policy Gaps

The Livestock Resources of DSP Region

Pakistan's Khyber Pakhtunkhwa, former Federally Administered Tribal Areas (FATA), Balochistan and the Northern Areas (DSP Region) have been the sites of international conflicts. The region is mostly mountainous and arid, rich in natural resources, predominantly livestock like sheep, goats, cattle, buffaloes, and poultry. The total value of livestock heads is Rs.13.90 trillion (US \$91.71 billion, Table 1, 2). However, the huge resource base can neither provide good economic return to the producers, nor quality food to the consumers. These holdings threaten public health safety.

Over the years, livestock subsector has surpassed the crop subsector as the biggest contributor to value added in agriculture. Presently it contributes 60.5 percent to the overall agricultural and 11.2 percent to the GDP during 2018-19. Gross value addition of livestock has increased from Rs. 1,384 billion (2017-18) to Rs.1,440 billion (2018-19), showing an increase of 4.0 percent over the same period last year. The importance of livestock sector can be realized from the fact that it is not only a source of foreign exchange earnings by contributing around 3.1% to the total exports, but also a source of 35-40% of income for over 8 million rural families and providing them food security by supplementing high value protein of animal origin. Despite the fact that livestock sub sector could not attract large amount of investment due to its inherent subsistence and structural characteristics, this sector has shown a healthy growth of 4.0 % in 2018-19 over the previous year of 2017-18.

Traditionally livestock resources are managed by Livestock and Dairy Development Departments at the provincial level. The primary focus is made on animal health and breeding coverage through veterinary hospitals at district, tehsil and village council level. Mobile veterinary clinics provide additional coverage. Private veterinary clinics have been providing services to the farmers with various levels of reputation. This becomes an earning source for the officers as well as for the provincial government treasury which keep the incidence of diseases as a desired target, conflicting with the farmers' interests, who want disease free animals and appropriate financial returns to meet family expenses. The Annual Development Programs executed by the provincial departments are rarely found compatible with the farmers' needs.

Veterinary Research Institute and centers are functioning as diagnostic, research and vaccine production units at provincial level. Deputy Commissioners regulate the prices of commodities without going for categorization of milk and meat on the basis of quality. It discourages the quality products to fetch the appropriate prices. Food Safety Authorities have been launched for quality assurance of hygienic and Halal food items provided the consumers. However, instead of supporting the emerging businesses, they raid the facilities in hostile manner and focus on imposing heavy fines and sealing of the food processing facilities instead of creating enabling environment to support the business networks. Livestock Farmers Associations have been in place but their role in price fixation of the commodities, planning and implementation of the development and research projects has been at minimum level.

Table 1. Livestock population of Pakistan and share of the DSP Region (million heads)

Species	1976	1986	1996	2006	2019*					
					Pak	KP%	Bal%	NA%	DSP (%Pak)	Value DSP (Rs. trlns)
Buffaloes	10.6	15.7	20.3	27.3	40.0	7.06	1.17	0.00	8.23	0.74
Cattles	14.9	17.5	20.4	29.6	47.8	20.20	7.61	1.39	29.19	2.34
Goats	21.7	29.9	41.2	53.8	76.1	17.85	21.92	1.75	41.51	0.62
Sheep	18.9	23.3	23.5	26.5	30.9	12.63	47.96	2.40	62.98	0.95
Camel	00.8	01.0	00.8	00.9	01.1	6.52	41.30	0.00	47.83	4.30
Horses	00.4	00.4	00.3	00.3	00.4	23.53	23.53	0.00	47.06	2.82
Asses	02.2	03.0	03.6	04.3	05.4	13.11	11.01	0.70	24.82	0.62
Mules	00.06	00.1	00.1	00.2	00.2	43.75	6.25	0.00	50.00	1.50
Poultry Domestic	32.03	57.50	63.20	73.65	88.49	37.61	8.02	0.49	46.12	0.01
Total										13.90 (US \$91.71 billion)

Source: Economic Survey of Pakistan 2018-19; * Provincial share (%) is based upon Pakistan Bureau of Statistics 2006 and Northern Areas share on the basis of 1986 data.

Table 2. Livestock Production in Pakistan and the DSP Region during 2019

Production/ Species	Pakistan	KP	Balochistan	Norther Areas	DSP Region	DSP Value (Rs. trln)
milk (billion kg)	59.76	7.17	2.67	0.32	10.16	1,016
Cow	21.69	4.38	1.65	0.30	6.33	633
Buffalo	36.19	2.55	0.42	0.00	2.98	298
sheep	0.04	0.01	0.02	0.00	0.03	3
Goats	0.94	0.17	0.21	0.02	0.39	39
Camel	0.908	0.06	0.38	0.00	0.43	43
Meat (billion kg)	4.48	0.99	0.47	0.04	1.50	612.26
Beef	2.23	0.30	0.10	0.02	0.42	166.91
Mutton	0.73	0.11	0.26	0.02	0.38	305.13
Poultry	1.52	0.57	0.12	0.01	0.70	140.22
Total						1628.26 (US\$ 10.74)

Source: Economic Survey of Pakistan 2018-19; * Provincial share (%) is based upon Pakistan Bureau of Statistics 2006 and Northern Areas share on the basis of 1986 data.

Policy Gaps

Keeping in view the present shape of the Livestock and Allied Departments, 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



Farmers protest against lower government prices



MoU with Konya Technopark could not get materialized



Goats farmers couldn't get attention of policy makers

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

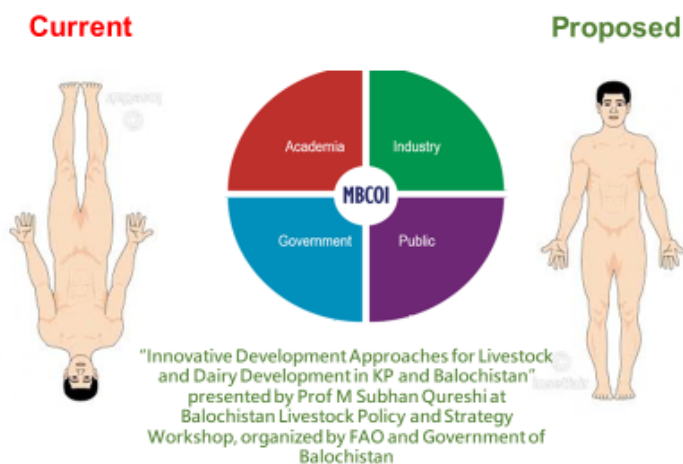
Under the present system, focus of the public sector organization has been on: i) Livestock Extension, breeding and health coverage; ii) Livestock Research, vaccine, diagnosis and nutrition; iii) Livestock Education, veterinary medicine; iv) Agric Extension/Research, Fodder/Crops Production & Mngt; v) 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.

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



Senior Minister LG KP couldn't implement transformation agenda

The Development Approach



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

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.

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.

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

KP-LFWA representatives meet National Consultant FAO

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.



KP Livestock Farmers Convention 2019

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 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 buffaloes' 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 arisen 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 DSP and KP-LFWA

Calf fattening

Calf fattening was introduced by Mr Hafeez ur Rahman and Mr Kamran Khan at Peshawar in collaboration with Dairy Science Park. 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.



Meat processors pondered upon price regulatory issues

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, Chicken pie, Chicken Sausages, Frankfurters, Pepperoni and Paprika.



Farmers sausage, a women entrepreneurship model

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 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.

Peshawar Meat Factory

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 for 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.



Peshawar Meat

Jan Meat Shop

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



DSP Quality Certified Jan Meat Shop

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.



Operationalization of University Feed Mill

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



Animal Transpiration to slaughter house



Slaughtering at Main Slaughter House



Poultry slaughtering in Peshawar city

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.

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 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



Entrepreneurship development promoted under support centers



Goats kept as entrepreneurship models and pets

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.

Birth of Dairy Science Park

The idea emerged in Egypt during conversation between Prof M Subhan Qureshi, Faculty of Animal Husbandry and Veterinary Sciences (FAHVS), University of Agriculture Peshawar (UAP), Pakistan and Mr Abdur Rahman Ilyas, ICRISAT, India, while attending the International Workshop On Industrial Biotechnology at Alexandria, Egypt, sponsored by OECD, Paris, France. The phrase “Dairy Science Park” (DSP) was coined after the Agri-Science Park@ICRISAT (ASP) established as a “hub” for public-private partnerships that enhances the development and commercialization of science-generated technologies and knowledge through market mechanisms. DSP was launched by its founder Prof Qureshi as International Workshop on DSP 2011 held on November 21-23. After taking over as Dean FAHVS, UAP, Prof M Subhan Qureshi initiated preparations for the first ever international conference for livestock sector of Khyber Pakhtunkhwa province of Pakistan. The Workshop was a response to the great flood 2010, resulting from heavy monsoon rains in the Khyber Pakhtunkhwa, Sindh, Punjab and, Balochistan regions of Pakistan, which affected the Indus River basin.

Approximately one-fifth of Pakistan's total land area was affected, with the Khyber Pakhtunkhwa province facing the brunt of the damage and casualties (above 90% of the deaths occurred in that Province). According to Pakistani government data, the floods directly affected about 20 million people, mostly by destruction of property, livelihood and infrastructure, with a death toll of close to 2,000. A total of 0.20 million livestock heads were killed and animal fodders, housing and farm infrastructure was damaged. The Workshop attracted a huge number of farmers, scientists, development practitioners and policy makers into its technical sessions and industrial exhibitions. Proceedings were published in the form of a Book online and in the form of a Book with ISBN.

DSP has been utilized as a platform to coordinate the activities related to academia-industry-government-society Nexus. It has been registered as a Society under Societies’ Registration Act XXI of 1860 (Reg No.4582/5/8589 dated 2-7-2015) by Government of Khyber Pakhtunkhwa and accepted by KP Chamber of Commerce and Industries as a Corporate Member. The United Nations has accepted DSP as SDG Action 9671, notified at <https://sustainabledevelopment.un.org/partnership/?p=9671>. DSP is taking care of Sustainable Development under SDG 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.

DSP has been working under supervision of a Board of Governors, Panel of Experts and Consultants, Country Focal Points and various committees. Chief Executive Officer is its overall controlling authority. Information of public interest are available at <http://dairysciencepark.org/>.

DSP and Sustainable Development Goals

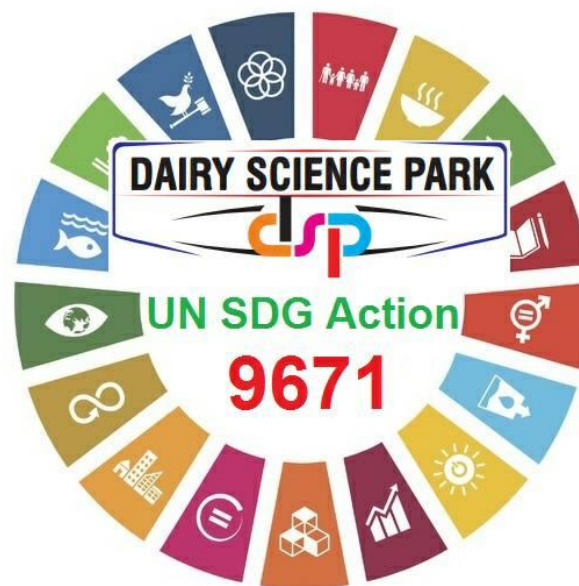
Dairy Science Park has been accepted by the United Nations as SDG Action 9671 and placed at their [website](#). The Park has delivered in the following areas.

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.

Integrating 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.



MoU signing between WUM and DSP

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.

International Conference Series

DSP I – 2011 Peshawar

The [First International Conference and Industrial Exhibitions on Dairy Science Park](#) was held on November 21-23, 2011 at the Agricultural University Peshawar, with the theme, “Developing a hub of dairy enterprises in the flood affected regions of Khyber Pakhtunkhwa through partnership of academia, government, entrepreneurs & civil society”. Cooperation was provided by the Extension and Research wings of the Livestock and Dairy Development, Pakistan Veterinary Medical Association and Livestock Trainers and Consultants as organizing partners. HEC assisted as the main sponsor, followed by financial assistance of Alltech Pakistan Ltd, Ghazi Brothers, Karachi: Inter-cooperation (IC) Pakistan, Peshawar. ICI Pakistan and Naseem Traders/Romer Lab Rawalpindi also displayed their products through stalls. Technical support was provided by ICRISAT India, SMEDA Peshawar, KPCCI, Charles Sturt University, NSW, Australia and Agri Livestock Bureau, Faisalabad. Website coverage was provided by AU Peshawar, Engormix.com, World Veterinary Year, 2011; World Vet Association; Int Soc Zool Sci; IBKRC Philippines; The Dairy Site News; Khyber Pakhtunkhwa Official Gateway News and Events. pakissan.com. Press coverage was provided by Daily Mashriq, Daily Aaj; Daily Pakistan Observer; The Frontier Post; Business Recorder; Associated Press of Pakistan; The Weekly Technology Times, Pakistan.

The conference was attended by +450 delegates from all four provinces of the country and Azad Jammu and Kashmir belonging to a variety of segments of the society. During the three days of the workshop, experts from academia, research, extension and industry, policy makers and farmers’ community presented 35 papers and exchanged ideas to work out a comprehensive plan for the development of dairy industry of the province. The workshop was inaugurated by the Honorable Minister for Agriculture, Arbab Muhammad Ayub Jan and concluded by Haji Hidayatullah Khan, Minister for Livestock.

Ninety-one Abstracts and 13 titles were published in an abstract book, ISBN-978969-422-001-7. Another volume of the book was published covering recommendations, daily proceedings and pictorials. Fifty selected papers were published as a special supplement of the Journal of Animals and Plants Sciences. A committee shaped up the recommendations into various components including Business Support, Infrastructural Support, Legislative and Policy Support, Animal Production Support, Animal Health Support, Environment and Energy Solutions, Institutional Strengthening and Coordination.

DSP II – 2013 Peshawar

The [Second International Conference and Industrial Exhibition on Dairy Science Park](#) was organized in 2013, Nov 18-20, focusing on developing enterprising capacity of livestock and poultry farmers of Pak-Afghan Region for meat production. The Conference was attended by 500+ members. The Higher Education Commission was the main sponsor supplemented by other sister and

development agencies and private companies. Papers were presented by during 9 sessions by speakers from various parts of the country, 6 faculty members for Kabul and Nangarhar University Afghanistan and Dr Mithat Direk from Selcuk University, Turkey. 200 abstracts were published in the proceeding book with ISSN number.

A recommendation committee has compiled their findings and are being shared for implementation by various relevant stakeholders, mainly focused on business incubation and development of the required infrastructure and services. A roadmap for implementation of the Park as a Business Incubation Center is under consideration by the HEC for sponsorship.

Farmers' Perceptions were accommodated as follows:

1. A draft report was prepared by Mr Azam Shah Dairy/Sheep Farmer/Ex-member Federal Livestock Board and presented in his inaugural paper during the Livestock Development and Business Session of the Dairy Science Park 2013. The same is hereby reproduced by the Chief Organizer, Prof M Subhan Qureshi as follows.

2. Pakistan's livestock sector could not get succeeded in utilizing its economic potential up to an optimum level due to no integration of facts into national development agenda like contribution of the sector to GDP up to an extent of 12%, 55% being within Agriculture Sector. Khyber Pakhtunkhwa being a hilly, arid or mountainous terrain, is suitable for meat production, rather than dairy, however, it could not be integrated into the policy. Livestock assets in the country exceed Rs.1000 billion.

3. Although the sector is ignored at policy level, it still showed an appropriate growth rate of 3.5%, mainly achieved on the basis of interest of the farming and business community at informal level.

4. Majority of livestock holdings belong to low social economic class, falling below poverty line; possessing livestock heads but not the required land. They can be easily shifted to a status entrepreneurship through research, development and marketing support, alleviating their poverty and producing surpluses for the export sector.

5. The livestock farmers are living under primitive system, with the worst type of practices. Integration of scientific practices and marketing backup will increase their income several folds, leaving a visible impact on national economy.

6. A hostile pricing system is preventing growth and development of this sector. The controlled prices of products and uncontrolled prices of farm inputs make the business vulnerable, leading it to total collapse under certain circumstances. The local government authorities must understand that the price of a buffalo during 1990 was Rs. 1,000 and milk price was Rs.10. Presently the two figures have reached to Rs. 150,000 and Rs.75. Proportionately the current milk price must not be less than Rs.150, if the government wishes to regulate it; otherwise it must be left free as for inputs. Legislation is needed for supporting the existing farming system and attracting new investment.

7. The trickledown effect of the research and development project up to the grass root level is totally lacking, which needs consideration at policy level. The research is conducted under the best possible environment, which does not reflect the real issues prevailing under farmers' conditions.

8. At the time of independence the number of industries was limited; however, the industrialization of textile sector has enabled it to contribute a significant share to the export sector. Huge loans were granted in the name of Livestock industry; however, these led to defaults which are frequently reported in the print and electronic media.

9. If the present government allows the poor people to get resources for developing their livestock holdings into viable entrepreneurs, and develop new ones, it would be leaving a good impact on the future of the province and performance of the present government.

10. Such steps would raise the people of the poverty and bring social, economic and political stability in this vulnerable province.

11. The people of the province have always welcomed change. An effort of the Federal Livestock and Dairy Development Board was successful in establishing fattening farms and about 5000 viable units were established. However, the government did not fulfill their commitment and amount of Rs.6.4 million due to be paid to the farmers was refused. It led to breaking of the Units and herds of the farmers. As a member of the Board I was disappointed and pulled away from it; however, on request of Prof M Subhan Qureshi I have come back again to share my feelings with you.

12. An international Halal meat market is dealing with a trade of US\$ 635; does our province involved in meat production does not deserve to get its due share of 10%? Halal Industry Park has been established at Faisalabad; and no body at top level in the province is noticing the Dairy Science Park established here in this province.

13. A Muslim consumer in any part of the world would be pleased to get Halal meat with Peshawar label; and a farmer in KP would get due return for his/her investment in such case. We can easily make this dream true through joint efforts. The roadmap of the Dairy Science Park focusing at graduates' entrepreneurship to be supported by the University, the government and the Chamber of Commerce and Industry seems to be a feasible step to harvest the future.

In pursuance to the directive of the worthy Minister for Agriculture and Information Technology during his visit to the University, a meeting of the Mr Ahmad Said, Chief Planning Officer, Dr Sher Muhammad Director General Livestock and Dairy Development and Prof M Subhan Qureshi Dean FAHVS, the University of Agriculture Peshawar was held on 26-10-2013 to discuss implementation strategy for the directive. The participants agreed on:

1. Introducing the business setup by the University graduates in broilers, quails, turkeys and ruminants farming, etc., and seeking the SMEDA support in developing the business further utilizing the latest techniques.

2. Inviting the KPCCI representatives to consider such enterprises for further investment, especially in establishing slaughtering facilities.

3. Launching research at the University on commercial aspects of the meat production and quality control, making the production system competitive at the international markets.

4. Establishing a mini-slaughter house at the University for graduate teaching and launching of postgraduate diploma courses livestock entrepreneurship.
5. Utilizing the resources, skills and knowledge available at the University and the L&DD Department for developing the private sector, enabling expansion and introducing quality control in the production and marketing chain.
6. Supporting the outgoing University graduates during their six-months mandatory internship as prescribed under the Pakistan Veterinary Medical Council Act 1996 through a joint project of the University and the L&DD Department.
7. Providing an enabling environment for establishing a private company by the Department and slaughter houses in the private sector.
8. Utilizing information technology in linking the enterprises effectively with the Department, the University, services/inputs providers and the International Halal meat market.
9. Holding 2nd International Workshop on Dairy Science Park, November 18-20, 2013, at the University in which the public and private sector and the Universities would be participating.

DSP III – 2015 Peshawar

The [Third International Conference and Industrial Exhibition on Dairy Science Park](#) was organized on Nov 16-18, 2015, focusing on support to the war-hit economy of Khyber Pakhtunkhwa through self-employment and hygienic food production for local consumers and international Halal Meat Market. The Senior Minister Mr. Inayatullah Khan inaugurated the Workshop, The Senior Minister Mr. Inayatullah Khan inaugurated the Conference, flanked by Prof Zahoor Ahmad Swati, Vice Chancellor of the University of Agriculture Peshawar and Prof M Subhan Qureshi, Dean FAHVS/Chief Patron DSP. Academic, government and industry leaders, policy makers and farmers, from all four province of the country, Azad Jammu and Kashmir, Afghanistan and Turkey, participated in the event. Mr Mohibullah Khan Special Assistant to Chief Minister on Livestock, Mr Arif Yousaf Special Assistant to Chief Minister on Law and Mr Jaffar Shah Member Public Accounts Committee and Arbab Asim Khan District Mayor Peshawar chaired various sessions, accompanied by Deans and institutional head from various organizations.

Seven technical sessions were held comprising: i) Livestock Development and Business Incubation; ii) One Health; iii) Feed and Food Safety; iv) Animal Health and Technology; v) Poultry Science and; vi) Prospective Dairy Farming and Dairy Products in Pakistan. MoU's were signed by Dairy Science Park team with Mevlana Exchange Program and Selcuk University Turkey. The Sessions were chaired by Prof M Sarwar, Prof Zafar Iqbal, Prof Ahrar Khan and Prof Anas Sarwar from UA Faisalabad, Prof Ashraf from UVAS Lahore, Prof Younas Rana from CVS Jhang, Dr Arfan from PMAS Arid University Rawalpindi, Dr Iqbal Khattak from VRI, Prof M Afzal AUP, and Dr Mithat from Turkey. Delegates from ILRI, L&DD, COMSATS, SMEDA, AJKU, Romer Labs, KMU and AWKUM participated. HEC was represented by Mr Nasir Shah Director QAA.

As suggested by Dr Mithat Direk, the biannual International Workshops on the Dairy Science Park, will be jointly organized in continuation with those held during the years 2011, 2013, and 2015. The suggested venue for the 2017 conference is Istanbul, Turkey.

DSP IV – 2017 Konya, Turkey

The [4th International Conference and Industrial Exhibition on Dairy Science Park](#) was held on November 1st to 5th, 2017 at Selcuk University- Konya, Turkey. The Conference was organized jointly by the Mayor Konya Municipality, Konya Turkey, Selcuk University Konya, Konya Teknokent, Dairy Science Park Society Peshawar, Women University Mardan, University of Agriculture Peshawar, Baluchistan University Quetta and Government of Khyber Pakhtunkhwa, Pakistan. Prof M Subhan organized the Conference as Chief Patron DSP and Dr Mithat Direk assisted as Turkish counterpart.

Khyber Pakhtunkhwa, Special Assistant to Chief Minister, Arif Yousaf said, “The scientists in Pakistan and Turkey will work together to organize such conferences and high level consultation for establishment of technology centers in the future. He was addressing the Fourth International Conference and Industrial Exhibition on Dairy Science Park in Konya, Turkey. I would like to thank especially Konya Metropolitan Municipality and Selcuk University for organizing the conference. The conference has attracted participation from 20 countries, including Turkey, Pakistan, Australia, China, Iraq, Egypt, Algeria, Mongolia, Nigeria, Sudan, Bosnia, Gambia, etc. Mr Arif Yousaf assured support of the Government of Pakistan to support TechnoPark Mardan and TechnoPark Quetta, for generating entrepreneurship and bringing quality standards in the food value chain in the two provinces.

The inaugural session was followed by first technical session covered Livestock Production with eight oral presentations. Papers were presented on use of biotechnology for food security, red meat production in Mongolia, thermal and nutritional stress, neonatal development, semen quality, milk production and meat technology.

On the second day parallel sessions were held in two halls. Hall A covered session on One Health. Papers were presented on One Health achievements and future vision under Dairy Science Park, antibacterial property of Bacillus, Dairy Sector in Yemen, hypoglycemic effects of Quinolone, dietary interaction and use of plant extracts with dental health and environment-farming interaction. Food Security and Ethics was run in Hall B, covering Food Security and Ethics. Papers were presented on meat production, role of cooperative farming, fodder production, enzyme technology, extension tools and awareness about food security. Session on Meat and Dairy Entrepreneurship was held in Hall A, covering a review of BRSP, evaluation of livestock production in Celebiler village, milk production around Konya, meat protein, bedding for dairy cows and introduction of farm technologies. After coffee break papers were presented on workers’ safety applications, meat quality, milk production systems and dairy cattle in milk.

Hall B covered session Animal Health and Technology and papers were presented on therapeutic effects of herbal plants, pathogenomics of E coli, estrous synchronization protocols, anemia, meat

emulsion systems and Aflatoxin B in dried meat. Trends in Dairy Technology was another session covering papers on beef patties, cheese mapping, neonatal development, ozone technology, oxidative stress and food security. A session on Small and Medium Enterprises Development was held covering challenges and scope of SMEs in Balochistan, buffalos' entrepreneurship, biotechnology in entrepreneurship, monopolistic marketing competition, sunflower/sorghum silage and eggs production.

Hall C covered a session on Biorisk Management, covering lab biorisk management, government academia linkages, bovine brucellosis, drinking water quality and antibiotic bacterial resistance. On third day of the conference a session was held on Entrepreneurship Development, covering achievements and future vision of Dairy Science Park, meat technology, mercury – lactation relationship, millet, gamma irradiation of rice and Peshawar Meat.

The delegates of the Fourth International Conference and Industrial Exhibition on Dairy Science Park visited [Konya Teknokent](#) 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. It was recommended that a TechnoPark will be established at Mardan (TPM), with leading role of Women University Mardan, Dairy Science Park, KP Chamber of Commerce and Industries and SDGs Task Force. Similar TechnoPark will be established at Quetta (TPQ), which has already been agreed by BRSP, BCCI, SMEDA, BU, BUITMS and SBK WU. Mission of the two TechnoParks will be utilization of indigenous human and natural resources for welfare of the people through academia – industry linkage, with focus on entrepreneurship development and hygienic food production for local consumption and export.

It was recommended that an autonomous TechnoPark, to be registered as Society under Societies' Registration Act XXI of 1860, will be established at Mardan (TPM) and Swat (TPS), with leading role of Women University Mardan/University of Swat, Dairy Science Park, KP Chamber of Commerce and Industries/SMEDA and Government of Khyber Pakhtunkhwa. Similar TechnoPark will be established at Quetta (TPQ), which has already been agreed by BRSP, BCCI, SMEDA, BU, BUITMS and SBK WU and endorsed by Governor Balochistan. The Governor Balochistan and other organizations agreed on the concept during a visit of DSP Team, before DSP IV-2017 Konya. An MoU has been signed with Konya Teknokent for establishment of Peshawar Technopark, Mardan-TechnoPark-WUM-Mardan and Quetta-TechnoPark-BU-Quetta. Konya Teknokent and Dairy Science Park will collaborate 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 under an MoU DSP-KT signed at Islamabad later on.

DSP V – 2019 Quetta

The [Fifth International Conference and Industrial Exhibition on Dairy Science Park](#) was held at Expo Center, University of Balochistan on 19-21 Nov, 2019 with the theme: Emerging Trends and Opportunities in Livestock Sector of Balochistan. The event was held during the Livestock Expo Balochistan 2019 in collaboration with the Government of Balochistan and Food Agriculture Organization of the United Nations.

Balochistan Governor Amanullah Khan Yasinzai, Chief Minister Jam Kamal Khan, Commander Southern Command Lieutenant General Waseem Ashraf, Adviser to the Chief Minister on Livestock Mitha Khan Kakar, Special Assistant Mir Ijaz Sanjarani, Balochistan Chief Secretary Fazeel Asghar, UoB Vice Chancellor Dr Anwar Panizai and other officials were present on the occasion.

The Conference comprised of inaugural session, Academia-Industry Linkages and Policy Reforms and Support Packages. Research and review papers were presented on: AOH=Animal Health and One Health; APT= Animal Production and Technology; FRM= Fodder and Range Management; QCH= Quality Control and Halal Practices; BAH= Biotechnology and Animal Health; EDV= Entrepreneurship Development; PST= Poultry Sciences; FRMI= Farming Innovation. The Conference Proceedings were compiled by: Editors: Muhammad Azam Kakar, Sania Subhan Qureshi, Tauseef Asmat, Zahid Mustafa, Mahboob Ali, Muhammad Masood, Tariq Kiani and Muhammad Subhan Qureshi. Abstracts were published (ISBN-978-969-422-001-7; website: <http://dairysciencepark.org.pk/leb/>).

Dairy Science Park Balochistan Chapter was established consequent to a meeting of stakeholders from the Academia, Industry, Government and Civil Society. The meeting was held on the sidelines of Balochistan Livestock Expo 2019 inaugurated by Mr Arif Alvi, President of the Islamic Republic of Pakistan. Mr Jam Kamal Khan Chief Minister and Mr Dosain Jamaldini Secretary Livestock pursued the arrangements aggressively.

Livestock Entrepreneurship Development Initiative (LEDI) was launched as a model of good governance pursuing the Academia-Industry-Society-Government Nexus at Chamber of Commerce and Industry (CCI). The Initiative would be implemented by Dairy Science Park Balochistan Chapter (DSP-BC) as a follow up mission of Balochistan Expo 2019 inaugurated by Mr Arif Alvi, President of the Islamic Republic of Pakistan, pursued aggressively by the Chief Minister Jam Kamal Khan and Secretary Livestock Mr Dussain Jamaldini.

The decision was made after extensive deliberations in a meeting of stakeholders of livestock sector, held at Quetta CCI, headed by Mr Badruddin Kakar President CCI and attended by representatives of public and private sector from Balochistan. Ms Rubina Shahwani and Dr Fayaz coordinated the proceedings. Prof M Subhan Qureshi President DSP and Dr Shahzad N Jadoon Alltech Pakistan briefed the house on the modality of interaction between the government and private sector. Dr Shabbir Cattlekit-PATTA offered support of the industry. Qazi Ayaz represented Talha Enterprise.

Biorisk Management

The Netherlands meeting

A collaboration on "[Biorisk Management](#)" is with process with the Sandia National Laboratories (SNL) USA under Dairy Science Park. A four-member's delegation of the Park visited the Netherlands on March 15-18, 2015 for launching the initiative. The tour was sponsored by the United States Department of State's Biosecurity Engagement Program and Sandia National Laboratories. The One Health concept is based on the recognition that human and animal health are inextricably linked. SNL were represented by Dr Melissa Finley and Mr Robert Otero and DSP by Prof M Subhan Qureshi, Prof Sarzamin Khan, Prof Umer Sadiq, Dr Shakoor Ahmad and Mr Imran Khan. A presentation was made by Prof M Subhan Qureshi, covering the livestock production system in the Khyber Pakhtunkhwa province and FATA regions of Pakistan, rich in natural resources but hit by extreme poverty.

The livestock and poultry farming system are lacking quality control standards and lack of access to modern practices have an adverse effect on the profitability of these operations economically. Similarly, the processing facilities and marketing outlets are run without quality control practices and any documentation for traceability. The Doctor of Veterinary Medicine degree program is focusing on treatment of diseases and lack appropriate concepts on Biorisk Management. The SNL delegates desired to collaborate with the Dairy Science Park in establishing a Center of Excellence on Biorisk Management.

The Dubai meeting

A 9-members' delegation of DSP and a 4-members' delegation of Sandia National Laboratories USA met in Dubai to hold the Pakistan Biorisk Management Curriculum Workshop during May 21-25, 2016. SNL was represented by Dr Melissa Finley, Veterinarian; Iris Shurdhi, Development Expert; and Giulio Mancini (Global Security Expert). DSP was represented by Prof M Subhan Qureshi, Chief Patron; Prof Sarzamin Khan, Chief Technical Advisor; Engr Irfan ul Haq Qureshi, Chief Executive; Prof Umer Sadiq, Advisor One Health; Mr Nasir Shah, Advisor Higher Education; Mr Rashid Aman, Expert Entrepreneurship; Dr Shakoor Ahmad, Expert Quality Control; Ms Sadia Qureshi, Expert Halal Food; and Ms Samina Qureshi, Expert Economics (Guest Participant). The DSP participants belonged to the University of Agriculture, Peshawar, Higher Education Commission of Pakistan, SMEDA, and the Private Sector.

The Workshop concluded that the curriculum in practice in various universities of Pakistan under the supervision of Higher Education Commission of Pakistan needs to be mapped and reviewed for presence of Biorisk Management contents or availability of a full-fledged teaching program at undergraduate or graduate levels. Keeping in view the importance of the subject, the participants recommended that Biorisk Management may be given appropriate consideration while developing teaching programs at national level.

The Bangkok meeting

Mr Arif Yousaf, Special Assistant to the Chief Minister (Law), Government of Khyber Pakhtunkhwa, Pakistan, who is also representing the province as a member of Task Force on SDGs, led a fifteen members' delegation of Dairy Science Park Peshawar to attend a consultative workshop at Bangkok, Thailand from 12 to 19 November. Prof M Subhan Qureshi Dean FAHVS/Chief Patron DSP, University of Agriculture, Peshawar, Pakistan; Prof Umer Sadiq, Prof Sarzamin Khan (UAP), Dr Zia ul Haq (KMU), Mr Nasir Shah (HEC) and Engr Irfan ul Haq (DSP) and Mr Kamran Khan (farming and industry) represented DSP. The workshop focused on Curriculum Development for Pakistani and regional universities and is sponsored by the Sandia National Laboratories USA.

The workshop evaluated the biorisk contents of curricula in place at various universities. Recommendations were prepared for standardizing the courses and accommodating the concerns of the local livestock/poultry farming, products processing, marketing and quality control systems present in the region.

The Phuket meeting

An awareness workshop was held at Phuket, Thailand, participated by experts of Dairy Science Park (DSP), Peshawar, Pakistan and Sandia National Laboratories (SNL), Albuquerque, NM, USA. The meeting was held on 19th to 21st April, 2017. The workshop was focused on awareness of the policy makers about the biorisk management (BRM) concepts and identifying the areas of interventions into the functions of government, academia and private sector organizations, with special focus on documenting and improving the status of biosafety and biosecurity associated with laboratory operations, clinics and the human food chain. In addition, the integration of Biorisk Management Curriculum into the existing curricula of Pakistani Universities and development of new courses with the coordinated efforts of the provincial and federal governments, private sector and civil society were considered.

During various presentations, the participants discussed the issues in detail and suggested measures through collaborative efforts of all stakeholders to be led by DSP-SNL partnership.

The Colombo Meeting:

A delegation of Dairy Science Park (DSP), The University of Agriculture, Peshawar, Pakistan completed their consultation on Biorisk Management (BRM) with Sandia National Laboratories (SNL) USA at Colombo, Sri Lanka. The delegation of DSP was led by Mr Arif Yousaf, Special Assistant to Chief Minister on Law/Convener Task Force on Sustainable Development Goals, Government of Khyber Pakhtunkhwa and comprised Prof M Subhan Qureshi Chief Patron DSP, Prof Nazir Ahmad Dean FAHVS, Prof Umer Sadiq, Dr Shoaib Sultan, Dr SB Khan, Dr Farhan A Khan, Dr Hamayun UAP, Prof Ghazala Yasmeen VC WUM, Prof Azam Kakar World Bank, Mrs Javed Farmer Sausage Co, Irfan Qureshi and Sadia Qureshi DSP, M Inam SSBU Sheringal, Dr Arshad PVMC, Prof M Rabbani UVAS and Dr Tayyab KMU. The Sandia team comprised Dr Melissa Finley, Mr Waleed Joyan and Ms Iris.

A BRM Package was developed for integration into DVM curriculum at Pakistani Universities under the supervision of Pakistan Veterinary Medical Council. The draft has been uploaded at <https://dairysciencepark.org/special-reports/>.

The Konya Session

Biorisk Management Session was held during the Fourth International Conference and Industrial Exhibition on Dairy Science Park at Selcuk University Konya, Turkey during November 1-5, 2017. The session was managed by: Chairman: Prof. Dr. Ghazala Yasmeen, Vice Chancellor, WU Mardan, Pakistan; Co-Chairman: Prof. Dr. Yılmaz Bahtiyarca, Selcuk University, Konya, Turkey; Moderator: Rifat Ullah, AUP, Pakistan. Seven papers were presented during the session.

The Amman Meeting:

A delegation of Dairy Science Park attended a workshop on the Use of Research Methods and the Role of Molecular Biology, hosted by Sandia National Laboratories (SNL, USA), in Amman & Irbid, Jordan from 29 April – 1 May 2018. Dairy Science Park, University of Agriculture Peshawar was represented by Prof M Subhan Qureshi, Chief Patron DSP, Prof Nazir Ahmad Dean FAHVS, Prof Umer Sadiq Chairman Animal Health and Dr Farhan Anwar Assistant Professor. Prof Masood Rabbani represented UVAS Lahore and Prof Zafar Randhawa, Dr Tariq, Dr Faqir Muhammad, Dr Kasib and Dr Shafia represented UA Faisalabad. Dr Melissa Finley and Dr Lynn Fondern represented SNL.

On first day a review of the training workshops and basic concepts of biorisk management were presented by Dr Melissa Finley and Dr Lynn. It was followed up by a review of the facilities and strength of the three Pakistani Universities and Dairy Science Park regarding availability of manpower, laboratory resources and academia industry linkages. The missing links and gaps were identified, with special reference to availability of molecular biological techniques at these institutions. On second day the Princess Haya Biotechnology Center (PHBC), MENA Biorisk Management and Genomic Training Division (BRMTD), Jordan University of Science and Technology, Irbid, was visited.

The Dubai Meeting-II

A Workshop was held at Dubai on Biorisk Management, organized jointly by Dairy Science Park Peshawar, Sandia National Labs USA and Pakistan Veterinary Medical Council Islamabad. This was eighth event of the series held at different locations around the World. BRM contents were developed for integration into DVM degree curriculum at Pakistani Universities. Participants from Sandia National Laboratories included Dr Melissa Finley, Mr Waleed Joyan and Ms Iris Shurdhi. Delegates from Pakistan comprised Deans and senior faculty members from the DVM degree awarding institutions of Pakistan; senior civil officers of the federal and provincial government, Pakistan Veterinary Medical Council and Dairy Science Park.

Lectures were delivered by the resource persons from Sandia Laboratories USA and President PVMC. BRM related issues prevailing in the field were reviewed. Integration of the BRM contents into the DVM curriculum, already developed at Colombo and refined in the Deans meeting in Pakistan, were discussed in detail in three groups. Final draft was presented on third day for integration into DVM Curriculum. Prof M Subhan Qureshi suggested establishment of BRM Alumni Association as the eight workshops jointly organized by SNL, DSP and PVMC have trained a good number of persons which may play their due role in integrating BRM concepts into the Food Value Chain in Pakistan.

Entrepreneurship Network Development

Establishing a network of entrepreneurship under the Dairy Science Park would solve the marketing and other issues. A farming entrepreneur would be producing cost effective quality products to the factories, he/she will get inputs from the quality tested, registered suppliers, registered vets, analytical labs and other service providers; and he/she 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.

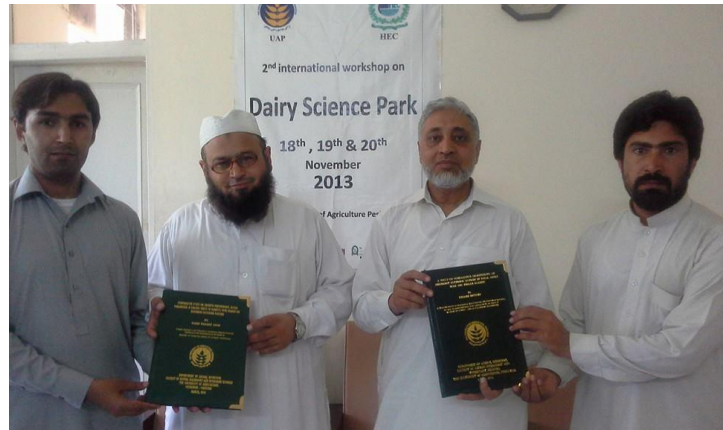
Establishment of model dairy farms for the purpose of extension, research and business demonstration at regional level under partnership with the private sector, would popularize the innovative farming models in the province, for further replication. Establishment of modern slaughter houses with advance 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.

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



Postgraduate scholars worked with industry



Technical Support to Local cheese marketing



University Cattle Feed introduced in the field

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 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,



Maggots meal was studied as poultry feed



Rabbit farming studied as an entrepreneurship model



Quails investigated for entrepreneurship development

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 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

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, Livestock Entrepreneur, with a continuous history of struggle at various fronts, is Beacon of Hope

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.

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.

Policy Reforms

Endorsement by Senior Minister

Dairy Science Park has been interacting with the farmers, processors, academicians and government representatives regarding policy reforms across livestock value chain ([Business Recorder 2011](#); [2013](#); [2014](#); [2016](#); [2016a](#); [2017](#); [2017a](#)).

Economic constraints and low social status of farmers are the biggest obstacles in manufacturing of dairy and livestock products. Despite highest position of Pakistan in milk producing countries in the world, farmers are unable to improve breeding level in the country. These views expressed by speakers during the opening session of

two-day international workshop on "Dairy Science Park," organized by KP Agricultural University here in collaboration with Sarhad Chamber of Commerce & Industry, Small & Medium Enterprises Development Authority and other business stakeholders. Minister for Agriculture, Arbab Ayub Jan formally inaugurated the workshop. Notable speakers on the occasion included Acting Vice Chancellor of the university, Professor Dr Mohammad Naeem, Dean Faculty of Animal Husbandry & Veterinary Sciences, Professor Dr M Subhan Qureshi, and former dean of the faculty, Dr Ghulam Habib. Arbab Ayub said that the dairy and livestock sector has integral part in development, saying the province is totally dependent on Agriculture sector because of slow growth of industrialization. He stressed the need for promotion of research culture in educational institutions, saying research is considered mother of agriculture sector.



Senior Minister Local Government Khyber Pakhtunkhwa Province, Mr Inayatullah Khan approved DSP Board

Faculty of Animal Husbandry and Veterinary Sciences held a meeting here with members Khyber Pakhtunkhwa Chamber of Commerce & Industry (KPCCI) and private sector with President, Zahidullah Khan Shinwari in the chair. During the meeting Dean, Faculty of Animal Husbandry and Veterinary Sciences, Agricultural University Peshawar (AUP, Professor, Subhan Qureshi) gave a detailed presentation on Dairy Science Park. Replying to a question the Dean informed the private sector that Punjab is best suited for dairy production. However, the Khyber Pakhtunkhwa, mostly comprising of a hilly terrain and arid regions can support meat production though sheep and goats, cattle and buffalo in some regions. The small poultry farming has been adopted as small business, which need support to produce quality feed at competitive rates. Huge investment in the sector must be made after appropriate feasibility studies and in phase manner. Speaking on the occasion, the President KPCCI highly appreciated the presentation and realized the potential of the sector playing its due role in eradicating poverty and creating employment opportunity. He supported the proposal of the Dean for establishing an internationally accredited quality control setup at the university supported with commercial research for local consumption and export certification of livestock and poultry products.

Khyber Pakhtunkhwa Senior Minister Ikramullah Khan Gandapur inaugurated the Livestock Business Facilitation Desk of the Dairy Science Park at the KP Chamber of Commerce and Industries (KPCCI), Peshawar. During the inaugural ceremony, Zahidullah Shinwari, President KPCCI; Prof M Subhan Qureshi Dean Faculty of Animal Husbandry and Veterinary Sciences (FAHVS), the University of Agriculture Peshawar; Javed Hashmat, Chief Executive Officer, KP Board of Investment and Trade; Nasir Shah, Higher Education Commission; Gul Kiaz Bank of Khyber; Dr Umer Sadique Chairman Animal Health UAP, Hafeez ur Rahman President Sarhad Dairy Farmers Association; Dr Imdadullah Director Livestock and Dairy Development Department KP, Rashid Aman SMEDA/ITAC office, and heads of farmers organizations.

Bureaucrats are not ready to accept the innovative Dairy Science Park (DSP) floated by an academician for the development of livestock sector, achieving the goals of hygienic/halal food for local consumption and export of US \$2 billion and to generate self-employment through entrepreneurship, involving academia, public and private sectors. The concept was prepared by Dr Subhan Qureshi, Dean, Faculty of Animal Husbandry, Agriculture University Peshawar recommends for establishment of economic power house to register and regulate livestock sector. For this purpose, Dr Subhan Qureshi has also proposed the establishment of an independent and autonomous Board of Directors (BoD) to run the affairs of the park. The Secretary Local Government & Rural Development (LG&RD), Khyber Pakhtunkhwa has appreciated the concept as innovative idea and wrote an assenting note to the Chief Secretary for the establishment of Dairy Science Park (Academic support to livestock SMEs under the initiative for inclusion in the proposed annual development program (ADP) for the financial year 2016-17. Similarly, the Additional Chief Secretary, Mohammad Azam Khan in his written note for the Chief Secretary also appreciated the innovative idea of the Local Government Department regarding establishment of Dairy Science Park at Peshawar to provide hygienic food production to the whole province.

A Task Force was suggested to be established as a temporary arrangement for establishment of the Dairy Science Park (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 in a presentation by Prof M Subhan Qureshi, Dean FAHVS, UA Peshawar/Chief Patron Dairy Science Park. The Honorable Senior Minister during a previous meeting of the representatives of the Department of LGE&RD, L&DD, 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.

Pursuantly, Secretary LGE&RD initiated a summary for the Chief Secretary which was appreciated as a novel idea by the ACS however, it was turned down by the Secretary Agriculture. The Task Force would be helpful in mobilizing the provincial livestock resources for welfare of the people under the umbrella of Dairy Science Park. The Senior Minister was thankful to various national and international organizations in supporting this sacred mission and welcome collaboration to materialize the dream of bringing stable peace in the Region through coordinated efforts. The Task Force was approved by the Chief Minister Khyber Pakhtunkhwa but filed by Secretary Agriculture instead of implementation.

FAO Consultancy

The Author worked with Food and Agricultural Organization of the United Nations at Islamabad, Pakistan as National Consultant Livestock and Dairy Development. The mutually agreed TORs required development of 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. The livestock and poultry farmers are facing unbearable financial burden and



Consultation at Veterinary Research Institute Peshawar

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.

The 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 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.

Resistance to the Policy Reforms

Resistance by Secretary Agriculture GokP

On advice of the Senior Minister Khyber Pakhtunkhwa, the Chief Minister approved Task Force on DSP to overcome bureaucratic hurdles faced by stakeholders across livestock value chain. Academia Industries Linkages, Entrepreneurship Development, Public Private Partnership, Consumers Preferences, Quality Control for hygienic and Halal status of products and sustainability through Endowment Fund, were the main features of the Terms of Reference. There was a conflict of interests as the farmers and processors are working without any visible support from the public sector organizations. Development funds are provided to government organizations with no say of the stakeholders. Rates of milk and meat are fixed by district administration at lowest without considering the production cost or quality based grading. So secretary agriculture Government of Khyber Pakhtunkhwa, Mr Iarar did not issue relevant Task Force notification, violating the directive of Chief Executive of the provincial government.

Needless to mention that in addition to international support, the previous authorities of the provincial government had endorsed concept of Dairy Science Park in teh larger interest fo the province and the region. The Authorities include Ex-Chief Ministers Akram Khan Durrani and Sardar Mehtab Khan Abbasi and Ex-Additional Chief Secretary, Mr Muhammad Azam Khan.

Resistance by Vice Chancellor UAP and death of wife of Prof Qureshi

Salary of the Chief Patron, Prof M Subhan Qureshi, Prof and Dean Veterinary Sciences, University of Agriculture Peshawar (UAP)/President Dairy Science Park was stopped by the Vice Chancellor Prof Noor Pao Khan for a prolonged period of seven months leading to frustration in the family and ultimately death of wife of Prof Qureshi.

Earlier, Prof Zahoor Ahmad Swat, Vice Chancellor UAP, signed a Memorandum of Understanding with President DSP and Vice Chancellor Khyber Medical University under supervision of Prof Mukhtar Ahmad, Chairman Higher Education Commission of Pakistan.

The MoU covered consultative meetings of experts from various disciplines of biological sciences to develop curriculum on Biorisk Management. Biorisk Management Curriculum will be designed, developed, and implemented as a separate discipline and its incorporation into the existing curricula of life sciences as it relates to courses where infectious agent handling occurs. Training of stakeholders will cover implementing the newly developed curriculum and to reach out to other universities to design, develop, and implement similar curriculum to establish Biorisk Management Curriculum and practices throughout the region.

During the meantime, the Fourth International Conference and Industrial Exhibition on Dairy Science Park was held at Konya Turkey, participated by delegates from 20 countries, 50 from various parts of Pakistan.

The Higher Education Commission of Pakistan offered establishment of the Center of Excellence on Dairy Science Part at UAP, with an initial allocation of Rs.400 million. However, Prof Zahoor Swati VC UAP did not allow Prof Qureshi President DSP/Dean FAHVS UAP to present the case and advised him to stop all activities of DSP. Prof Qureshi considered the advice contrary to the interests of the University and people of the Region and refused to obey. Prof Swati removed the huge data prevailing over a decade regarding organization of the biennial international convergences and exhibitions series, international workshops on biorisk management under sponsorship of Sandia National Labs USA, technical, legal and administrative support to the livestock producers and processors; and policy reforms under supervision of the Senior Minister GoKP Mr Inayatullah Khan.

Resistance by DG Livestock GoKP in FAO-UN Reforms Process

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.

Prof Qureshi worked hard in collaboration with the Livestock Farmers and Processor Organizations, civil society, line departments/universities, elected representatives of provincial assemblies and district councils and expert individuals. Weaker stakeholders were identified across the

Livestock Value Chain and Livestock Technopark Peshawar was suggested as a Triple Helix Good Governance Model of Academia-Industry-Government Nexus. A conflict of interest raised between the Powerful and weaker stakeholders. Dr Sanaullah Khan facilitated the powerful stakeholders to bulldoze the FAO KP Livestock Action Plan 2019 in collaboration with Dr Sher Muhammad, Director General Livestock and Dairy Development Department GoKP.

Vision of Livestock Technoparks

The delegates of the Fourth International Conference and Industrial Exhibition on Dairy Science Park visited [Konya Teknokent](#) 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. It was recommended that a TechnoPark will be established at Mardan (TPM), with leading role of Women University Mardan, Dairy Science Park, KP Chamber of Commerce and Industries and SDGs Task Force. Similar TechnoPark will be established at Quetta (TPQ), which has already been agreed by BRSP, BCCI, SMEDA, BU, BUITMS and SBK WU. Mission of the two TechnoParks will be utilization of indigenous human and natural resources for welfare of the people through academia – industry linkage, with focus on entrepreneurship development and hygienic food production for local consumption and export.

It was recommended that an autonomous TechnoPark, to be registered as Society under Societies' Registration Act XXI of 1860, will be established at Mardan (TPM) and Swat (TPS), with leading role of Women University Mardan/University of Swat, Dairy Science Park, KP Chamber of Commerce and Industries/SMEDA and Government of Khyber Pakhtunkhwa. Similar TechnoPark will be established at Quetta (TPQ), which has already been agreed by BRSP, BCCI, SMEDA, BU, BUITMS and SBK WU and endorsed by Governor Balochistan. The Governor Balochistan and other organizations agreed on the concept during a visit of DSP Team, before DSP IV-2017 Konya. An MoU has been signed with Konya Teknokent for establishment of Peshawar Technopark, Mardan-TechnoPark-WUM-Mardan and Quetta-TechnoPark-BU-Quetta. Konya Teknokent and Dairy Science Park will collaborate 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 under an MoU DSP-KT signed at Islamabad later on.

Livestock Technoparks would provide an integrated model of services through public-private-partnership. It would be managed by a board represented by all stakeholders from public and private sector organizations with shared authority and responsibilities. Details of Livestock Technoparks are given under Chapter 18, The Good Governance Model.

Financial Management System

The issue

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 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.

The Proposal

Under the above clause the Consultant concluded 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.

The Good Governance Model

The Author 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.

Livestock Technoparks

The Governance Model proposed by the Author is based on Academia-Industry-Government-Society Nexus, reflected in the picture at the end of this Report and provided on cover page of the FAO KP Livestock 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.

Legal Framework

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.

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 judicious 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.

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.

Funding sources

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 and grants, technical and financial assistance received from international agencies and on bilateral basis from other countries; h) Registration fees from stakeholders and Income from operational units of the LTP and; i) Local and international Halal Investment.

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

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.

Institutional Units (IU-LTP)

Institutional Units (IU) would be established by LTP at each constituent organization, for managing each IU-LTP, except Policy Implementation Cell (PIC). The Management Committee for each IU 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;

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 for further work. Funds would be released to the Institutional Unit by Managing Board LTP.

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.

Entrepreneurship Units

Entrepreneurship Units of LTP would comprise: 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 and; 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”.

Livestock Business Support Centers

Livestock Business Support Centers (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, line departments of government and the universities. LBSC would follow the Financial Rules developed for LTP.

LBSCs would be strengthening linkages with the commercial farmers through the LTP; for organizing joint awareness programs regarding vaccination, applied research and diagnostic services at community level. This activity would be covered under LBSC. Feed mills would be leased out to KP Livestock Farmers’ Association or other partners through open competitions, at reasonable rates. An Endowment Fund would be available for supporting activities of LBCs.

Each LBSC 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.

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; ii) 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; iii) 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.

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 Mission recommended 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.

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.
3. Fiscal and performance evaluation of the institutional Units.
4. Addressing complaints of the LTC staff, members and general public against any member/institutional unit of the LTP.
5. The Committee will evaluate the quarterly, semiannual and annual progress report of each Institutional Unit of LTP.
6. 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.

7. 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.
8. The Committee will monitor quickness, transparency and fairness in the income and expenditures of LTP.
9. The monitoring and evaluation committee will finalize the plans and targets along with the institutional units on yearly basis.
10. Result based monitoring, evaluation and reporting will be introduced at all levels.
11. SMART indicators will be set up for process and progress monitoring and evaluation.
12. Monitoring and evaluation plan will be developed to monitor or evaluate the indicators
13. The committee will conduct progress review meetings against the set targets, with the units and will provide feedback for any deviation from the plan.
14. Beneficiaries feedback mechanism/satisfaction surveys will be designed and implemented on periodic basis for course correction, learning and improvement purposes.



Good Governance Model of Dairy Science Park