Performance Appraisal of the Agriculture Department, Government of the Punjab

Primary Data Collection

Focus Group Discussions and Key Informant Interviews

Consultant:

Shahid Javed Burki Institute of Public Policy at NetSol (BIPP)

Introduction

This report is part of a series of documents to support the white paper to be produced by the Burki Institute of Public Policy (BIPP) to conduct a performance appraisal of the Agriculture department of Punjab. An essential component of the study is primary data collected from the field in the form of key informant interviews and focus group discussions.

The key informant interviews, mostly semi-structured, were conducted to elicit responses from agriculture experts and stakeholders from the academia, private sector, small and medium sized industry and senior officials from the government. This arrangement was created to ensure inclusivity and participation at all levels. Simultaneously, the BIPP research team conducted a set of four focus group discussions, two in Bhakkar and two Chakwal. Two focus group discussions were conducted in each district; one with a group of farmers and the other, with a group comprising of assistant directors, agriculture officers and field assistants to gauge their level of satisfaction with the department and the structural and functional transformations that have taken place during the last year or so.

The interviews and group discussions were transcribed and then converted into meaningful information (find produced below) that can inform and validate some of the indications made by the agriculture data from Punjab and some secondary research made available by the department and that which is conducted by third party reviewers and researchers in the province.

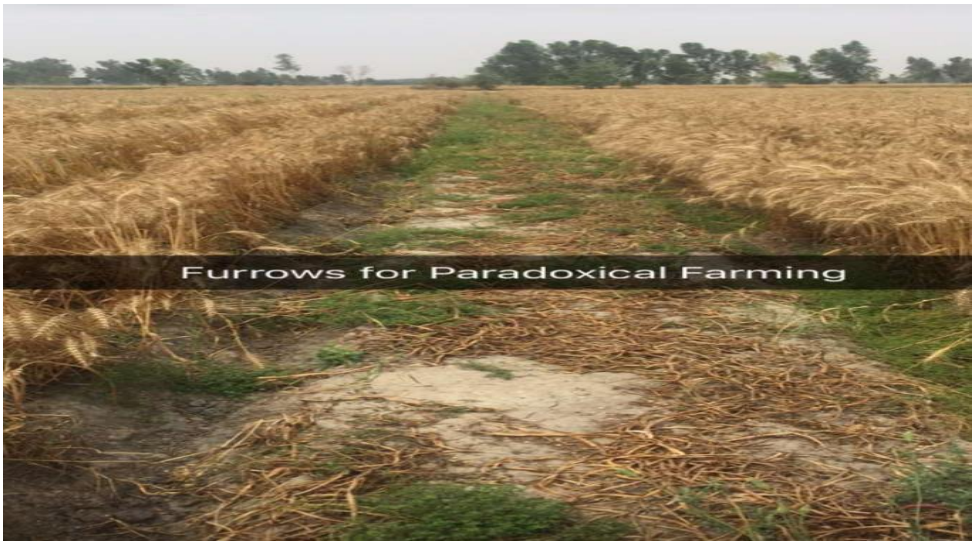
Key Informant Interviews

1. Mr. Asif Sharif (Agriculture Expert)

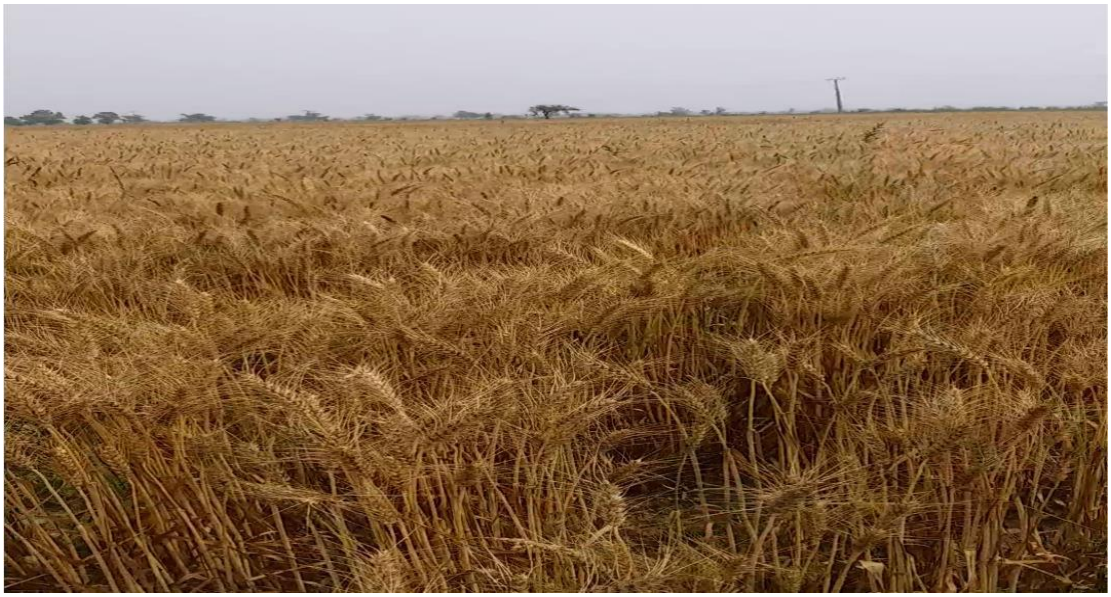
In one of the field visits (village Dabur Bhattian, Sukheki), pursuant to the meeting with one of the Key Informants, BIPP team witnessed the demonstration of adoption of paradoxical agriculture crop management that had resulted in the attainment of twin objectives of crop/agriculture profitability and competitiveness. An integral part of the package was the capacity building, training and skills development of the farmers.

Paradoxical Agriculture integrates both the principles and theory of conservation agriculture under practices of system of crop intensification on the one hand and the practical and economic consideration of the field on the other while aiming to move ultimately to organic farming. The diverse technologies deployed are based on a set of agronomic and biological fundamental for application to any crop production system and process. It involves:

- use of seeds and plants that are not genetically modified;
- abstinence from the use of synthetic fertilizers, hormones or inorganic nutrients;
- no use of pesticides, herbicides or weedicides;
- focus on optimal use of inputs to improve conversion rations;
- conservation of agriculture with minimum use of tillage, minimum soil disturbance, no periodic deep tillage, proper soil cover, and crop rotation;
- system of crop intensification i.e., timely planting/transplanting, lowest trauma to plant during various operations, optimally wide spacing between plants, weeding and active soil aeration, water management to meet but not exceed plant and soil needs, compost application to enhance structure and function of the soil systems;
- integration and application of latest researched production management

- 

The farmer, Mr. Sultan Bhatti, had cultivated 10 acres of wheat crop using the paradoxical agriculture technology under direct advice, guidance and training from Mr. Asif Sharif, the proponent of PA. The following Table shows the comparative analysis of the costs of production under the PA system and conventional agriculture and the huge differential between the two palpably demonstrating the competitiveness and profitability of the wheat crop. The positive policy implications are: (a) withdrawal of the subsidy; (b) withdrawal of the support price; (c) incentivize exports; and (d) the area retrieved from wheat because of vertical productivity to be used for high value crops.



		PA	Conventional
Description	**Rate**	**Actual**	**Averages**
Seed rate used-kg		4	40
Cost of seed	2700	270	2700
Cultivation -seedbed preparation			3000
Fertilizer -DAP/Total Conventional	2800	1000	10,210
Water - per hour tube well	150	600	3500
Cost per acre		8191	24910
Yield/Kgs per acre		67.66	45

Issue catalogue

- Obsolete, traditional, subsistence input technology resulting in low productivity and yield
- Excessive use of fertilizers and pesticides
- Unavailability of right mix of agricultural tools, implements and machinery
- Lack of skilled labour and training opportunities
- Inefficient crop management practices including lack of crop rotation, cultivation and harvesting techniques
- absence of extension and advisory services
- The exploitative role of the middle man

2. Capt. Muhammad Mahmood – Secretary Agriculture

This KII meeting took place in the Old Secretariat office, Lahore. Representatives from BIPP met Agriculture Secretary regarding the progress of Agriculture department in the past two years. He outlined the constraints faced by the department that he inherited at the time of his induction which included:

- Dearth of financial and technical resources to launch the programs and policies necessary to provide the agriculture sector the special treatment that it deserves.
- Trust deficit between farmers and the department.
- High cost of production due to production, pre- and post-production inefficiencies
- Lack of capacity development both at the individual and institutional levels
- Lack of good leaders and managers which has led the department to provide training and education scholarships that can create future leaders and managers

The Secretary during the interview also highlighted the following points:

- When he joined, agriculture sector's performance was dismally poor as it had experienced, for the first time in the history of Pakistan, a negative growth. There was a conscious realization at the politico-professional level to revitalize the sector for which "Kissan Package" was, inter alia, introduced. He took this challenge as an opportunity, in the wake of strong political will at the highest level, to bring about a paradigm shift in the agriculture

sector through a three-pronged focus: enhancing profitability; farmer centered ICT based service delivery; and incentivizing the role of private sector to lead agricultural growth;

- He believed in the agriculture sector wide approach for the purpose which involved issues at times much beyond the mandated domain of agriculture department and which entailed a massive effort to overcome the policy and institutional fragmentation on the major policy issues the sector was confronted with e.g., water, climate change and environment, food, livestock etc. He strived hard to harness the synergies and complementarities to achieve sustainable agricultural outcomes. At times he succeeded but given the vertically segregated hierarchically separated functional and structural milieu, assiduous and consistent effort was required which he continues with. He specifically mentioned the water use efficiency and pricing issue which despite his best effort could not find effective expression in the decision space. On the other hand, he was successful with the food department on wheat procurement policy.
- He agreed with the observation that there was a gap and disconnect between the HQ and the operational outfits in the pursuit of the transformation process in the sector which he was trying to fix while conscious of historical status quo legacy and resilience to change. It took him quite a bit of time even to convince his team at the HQ that the transformation was successfully workable.
- In addition to the constraints already covered in the main document, he identified the need to bring about a cultural change in the managers and staff of agriculture department right down to the lowest echelons so that they own and commit themselves towards implementing the well thought out paradigm shift; make use of the ICT and smart agriculture tools for management and service delivery; and carry out their role in terms of providing good quality services to the farmers to win back their trust and confidence.
- He has embarked upon an incremental approach to bring about this cultural change: the top tier is already on board; he is working at present with the middle level management; and hope fully within a year, this much need change will reach the lowest tiers. Monitoring and accountability, incentivized pay structure; training and workshops were some of the tools being used in this regard.
- He was conscious of the political economy of decision making and the possibility of rotation of leadership which could thwart the gains already made or derail the transformation process in the sector characterized by, in addition to the three areas of focus, transition from subsistence to commercial farming; major crop focus to HYC and horticulture; diversification and value addition; and market driven and results based agricultural performance. In order to ensure sustainability, he has personally ensured that WB assisted SMART project, embodies specific covenants, DLIs, P4R instrument and clearly articulated results chain to keep the paradigm shift on tack in terms of (a) emphasis on-farm productivity and value of crops and livestock; (b) value addition and competitiveness of crops and livestock; and (c) climate change sensitive agriculture to enhance resilience of smallholder farmers.
- On specific questions as to the CSA, CPEC and HYCs, he responded as follows:
    a. CSA extremely important and reflected in WB SMART project but so far comprehensive strategic thrust lacking on which CC adviser was working; capacity deficit; lack of reliable data were the major deficits
    b. CPEC potential was being realized and for the purpose HYC (olives etc.) in the potohar region and suitable interventions (dates etc.) in the southern Punjab

through which CPEC route passes were being promoted. This was work in progress;

c. While he conceded lack of major resource shift from the major crops to horticulture, he underscored the commitment of the government to promote and incentivize the HYCs and horticulture;

Issue catalogue

- The need to mobilize the staff at all levels to espouse and concretize the transformative vision and paradigm shift of the agriculture sector into reality
- Lack of commitment and sensitization at lower tiers and the need to develop a communication strategy
- Cultural change in the functional milieu of the department to make it farmer centric and regain farmers' trust
- Adoption of agriculture sector wide approach (which goes much beyond the core domain of agriculture department) to ensure sustainability and enhanced impact in the realization of departmental goals
- Policy and institutional fragmentation vis-a-vis the allied departments (irrigation, livestock, forestry, environment)
- Implementation of Climate Smart Agriculture given th rapidity and severity of climate change
- Harnessing full potential of CPEC for agriculture sector
- Making agriculture competitive and profitable in the global context and issues of subsidies
- Water use efficiency including water pricing

2. Babar Malik - Chief Technical Advisor, Agriculture Delivery Unit

- The importance of value chain and what has been achieved in the past couple of years was discussed in detail.
- He stated that value addition has immense importance as it can overcome the money deficits of the agriculture sector.
- He also highlighted the issues of the agriculture sector that can purely be attributed to the least importance that is given to value chains.
- He also talked about the balance of payments impact that a large import bill creates which needs to be minimized.
- He underscored the need to integrate CC in the policy, institutional and programmatic interventions of the department.
- He talked about the role of mechanization, diversification from major to HYCs and agriculture product market reforms as also impact of inefficient resource allocation including regressive subsidies regime which impacted competitiveness and profitability of agriculture.
- In a draft paper he shared with BIPP team, he highlighted lack of effective linkage of research and extension and lack of priority to streamline and improve the research system
- He dwelt in detail on the potential of olive production and development of potohar as olive valley including the need to incentivize agro-industry, institutionalize training and improve extension and advisory services

Issue catalogue

- Lack of crop diversification to HYCs and potential for olive
- Need for value chain development and addition
- Inefficient market system and segmentation causing financial deficit in agriculture sector
- Outdate mechanization practices
- Drastic increase in import bill (import bill of edible oil)
- Climate change and its impact on agriculture
- Water inefficiencies
- R&D deficit- resource, capacity and institutional
- Lack of processing, packaging technology
- Farmers' training and skills development
- Value chain financing
- Traceability to build consumer confidence

3. Saqib Shahzad – International Food Policy Research Institute (IFPRI)

The International Food Policy Research Institute Pakistan is an important player in the agriculture sector, specifically research and extension, globally but more importantly in Punjab where the provincial agriculture policy formulation is in full swing and IFPRI, alongside other government and non-government stakeholders is part of the formulation process. So, thy interview of Mr. Saqib Shahzad who's working on the policy side at IFPRI Pakistan was instrumental in bringing to light the supply-side perspectives pertaining to the agriculture policy. Clearly, where did the policy formulators draw their primary inspiration from and what objects are they trying to achieve through the policy were key supply-side questions that needed to be addressed.

Saqib Shahzad opted to speak more about the agriculture policy as that discussion fell more under the umbrella of work that he and his institution had conducted and felt that he might not be able to talk about the institutional and structural changes that have taken place within the agriculture department. He did answer in the affirmative to a question regarding the general performance of the department by responding that the pace at which certain transformations like the those under the smart agriculture project have taken is satisfactory however, the problems regarding pricing, water availability and the role of intermediaries.

However, he thought that the newly formed agriculture policy addresses everything from price distortions to agriculture financing to farmer incomes and inclusion of agriculture in the CPEC plans. He also believed that not only the policy is complete but it also includes the political economic and governance aspects which are key towards the successful implementation of the policy. He mentioned projects like extension 2.0 and smart agriculture as success stories even though there are areas and pockets where processes could be improved.

One important aspect that dominated the discussion was the renaming of the small farmer category to small commercial farmer and the expansion of the category to include farmers that own and possess land upto 75 acres. This was defended by Mr. Saqib Shahzad as a category which was not only inclusive but also logical since farmers having a holding larger than 75 were deemed to be too large and those lesser than 3 acres were small. He believed that famers slightly less than 75 acres, it was learned empirically, faced the same problems that a farmer with a holding of say, 5 acres does.

Issue catalogue

- Lack of water availability due to inefficient coordination with irrigation department
- Inefficient role of intermediaries leading to market failure
- Unavailability of high yield seeds leads to high cost of production

5. Mr. Mansoor Ali – Asian Development Bank

The five major constraints and opportunities identified by the informant included:

- Disconnect between Government Extension and Private Sector
- Disconnect between Research Institutes and commercial needs of sector
- Primary focus still on production without linkage to value-chain
- Non-functioning marketing system. No strategy to reform Agri markets
- No strategy of focusing on relevant crops in terms of climate change and water crisis
- Marked improvement in internal debate on way forward and dissection of shortcomings.
- Realization that private sector investment best way forward for sector
- Financing subsidy under Kissan package is a good move but suffered from poor execution in the first year primarily due to bureaucratic procedures.
- Some ongoing efforts on using IT for communication and information outreach. Still early to comment on success
- New seed development at Research Institutes is ongoing but lack of infrastructure as well as incentive does not result in commercial adoption of new technologies

Policy:

The policy does cover all the main topics and is an important prerequisite for future development. However, as always, the disconnect between policy goals and individual strategies and projects is where the country has suffered. There is still no mechanism to ensure strict adherence and following of policy doctrines.

Resource Efficiency:

While resources may be ample, their misallocation as well as wastage is the prime reason for slow development. In fact, most of agri growth can be attributed to private sector initiatives. The usual bureaucratic structure is a major hurdle for reform. Redesigning of incentives and goals of key research, extension and marketing staff is necessary if their productivity is to be aligned to the needs of small farmers.

Pakistan has shown robustness in the sense that lower subsidies compared to India gives strength to manage changing situations. Indian agri growth has a large component of helping hand from subsidies. However, the infrastructure of Indian agri research and the conduit of its output to farmers is far superior. Numerous examples are there to show the efficiency of introduction of new varieties and technologies to farmers.

ICT Involvement:

ICT is an integral part of all future development but currently its role is only being talked about in terms of information and data collection and dissemination. Reform of markets by using ICT has to be the main goal if farmers are to get fair and transparent market prices. Linkage with national commodity exchange as well as establishment of local commodity exchanges requires radical adoption of ICT as well as policy and regulatory changes.

Performance of the Department:

Agriculture department's capacity is the same as rest of government departments, whether federal or provincial. There are pockets of brilliance but the overall poor reward and incentive mechanism cannot be expected to bring about radical transformation of the sector. A gradual move to improve selected areas can bring about change over years. Lack of leadership continuity with its effect on policy hiatus is the feature of public sector in the country. In this environment, only piecemeal improvements may be possible which is still better than none at all.

- boost agricultural exports;
- reduce trade deficit; and
- improve agriculture's terms of trade to move agriculture up the policy and resource allocation agenda

- Reduction in the long-value chain cost is important for export growth. Near-farm processing and linking farmers to export market demand can rapidly produce a culture of farming-for-export-markets. Providing farmers the right protocols on inputs and practices can result in good quality, targeted produce that is demanded internationally.
- More investment in local modification and manufacture of machinery as well as development of seed companies able to fulfill complete national demand can immediately reduce trade deficit. Linked with export promotion discussed above, the net deficit can be reduced. In addition, reliance on local production of large import items like oilseeds can reduce deficit from edible oil import.
- Greater visible linkage of agriculture to exports needs to be shown and marketed to policymakers. Policymakers need to be convinced that agriculture provides the quickest export growth potential. This becomes even more attractive when complemented by data showing that R&D needs of agri sector is less than manufacturing in order to provide same level of export growth.

Issue catalogue

- Lack of commitment between government and private sector
- Non-functioning marketing system
- Inadequacy of crop rotation
- Premature ICT intervention and lack of training both extension staff and farmers on the new gadgets
- Lack of infrastructure and incentive cause a slack at research institutional level
- No mechanism to ensure adherence and following of policy
- Disconnect policy, strategy and projects
- Misallocation and wastage of resources
- Rigid bureaucratic structure

6. Mr. Yawar Ali – Nestle Pakistan

- Current Agri policy is very good as per farmer needs (b) Do not have much knowledge on it (c) Agri department is doing good efforts for high efficiency irrigation systems, lining of water courses, provision of LASER levelers etc. But these are not sufficient to cater the climate change, there is need for raising huge campaigns to save every drop of water. Farmer does not seem to be prone to the current water crises and how to mitigate it.

Building flood water reservoirs and rain harvesting are the areas which should be part of agriculture policies.

- Resource allocation seems good, looking at farm sizes, passing on benefit to small farmers requires more efforts. Further investment for water reservoirs will have better returns for province.
- India competes better in costs and quality of agri commodities, however recent increase in export of rice from Pakistan is very good sign where Indian rice is struggling in international market due to pesticide issues.
- ICT is dire need to transform agriculture market. Recent efforts by Agriculture department on drone technology have allowed experts to work on new horizons. ICT should also be preferred for improving farmer's access to credit, inputs and expertise. Ultrasonic tools for water measurement at canals and water channels should be installed to monitor water distribution.
- Recent efforts by Agriculture department are much better than the past, there is overall improvement in performance of agriculture department teams. Continuing current efforts with deeper reach to small farmers can have significant improvement.
- Agriculture department has mobilized fodder research institute and Punjab Seed Corporation to provide better quality fodder seed. Around 65-70% cost of production of dairy goes to feed & fodders, so joint efforts by both departments can bring better improvement.
- Water pricing is good idea, success stories already exist in the world. It can bring good improvement in water management, the money earned can be invested back on farmers in improving their efficiency.

- Inefficient dairy farming operation resulting in high cost of production
- High losses of agri. commodities due to poor post-harvest handling
- Limited access of technology to farmers
- Agriculture financing through informal sector (like Arthi) at very high cost
- Lack of availability of right quality inputs

7. Malik Muhammad Akram, Director General On-Farm Water Management

After the introduction, the team asked the DG about limitations of PIPIP and the achievements and impact of HEIS. He went over the aims and objectives of the project and highlighted the impacts and gaps of PIPIP. He also said that the agriculture sector relies on the single largest contiguous irrigation system in the world and Pakistan is managing much lower crop yields per unit of water which is frightening because most of the water resources in Pakistan are consumed by the agriculture sector. To address such issues, serious efforts are needed to enhance water productivity due to which Punjab Irrigated agriculture productivity improvement project was started in 2013-14. The cost of the project is $250 million and is funded by the World Bank and also through farmer contributions. So, the 173 million funding comes from; (1) The World Bank, and (2) by the farmer/beneficiaries.

The DG said that the basic objective of the project is to enhance water and crop productivity through construction of watercourses. He claimed that they have renovated 5500 watercourses and installed 2000 irrigation schemes – irrigation scheme here includes watercourses of the

Barani areas. The major component of the scheme was to install HEIS in 1 lac 20 thousand acres, which are Sprinkler and Drip irrigation systems. This has been achieved in the allotted time.

The DG emphasized upon the limitations of the project by comparing India, Iran and Israel with Pakistan and said that in these countries, the Governments are providing 95 per cent subsidy on HEIS to increase productivity. However, it's difficult for the Pakistani farmer to abandon the traditional methods and to adopt new HEIS because the share of the farmer/beneficiaries is as low as 40% due to which the farmers are reluctant to invest money from their pockets.

Issue catalogue
• Lack of coordination with irrigation department • Obsolete technology • Lack of technology inclusion in farming practices • Less water and crop productivity

7. Asad Zahoor – USAID PEEP

- The interaction of USAID with the department has been at many levels; firstly, we created a policy and strategy unit with the department around 2 – 2.5 years ago. We were working on PSU through consultants on a regular basis but the relationship has cemented since the joining of the current secretary. Then we also proposed the olive development group which was endorsed by the secretary who wanted it to proceed at a quicker pace. Then we collaborated on multiple policy issues so the partnership basically increased in frequency and depth.
- USAID PEEP's mandate is policy, legal and regulatory reforms. Our objective is also to spur investment in Agriculture.
- The current secretary's approach on service delivery, etc. coincides with the approach used by the donors and development organizations.
- USAID isn't currently funding the government on anything however we continue to support the olive project.
- I'm aware of two projects that the department is doing; both related to olives. One issue with the government is that its projects are usually focused on the supply-side but the current secretary is cognizant of the governance issues that compromise the quality of government projects and therefore has tried to keep the wasteful usage of resources greatly under check.
- The resources of the department have increased especially after the creation of the ADU which has added greatly to the coordination of the department – this is manifested through the fact the all projects presented by the department in the ADP were approved by P&D. The two olive projects were lumped into one.
- DLIs within the smart agriculture project are key to sustainability and market reforms
- New people have been inducted in the department but that did not result in mistrust between the existing staff and new people hired through the ADU, etc.
- The agriculture policy should have fed into the public-sector resource mobilization, should be directly aligned with the reforms and be linked with the productivity and growth.

Issue catalogue
• Transparency and lack of governance within the government is a large deficit • Lack of oversight and reporting mechanisms

8. D.G. Agriculture Field Punjab (HMSCs)

Dr. Qurban Sandhu was asked about the limitations, achievements and impact of HMSCs. He briefly explained the components of the project and said that farm mechanization level is quite low as compared to the developed countries primarily because of the inadequacy of land cultivation in our region. The main constraints in increasing agricultural productivity are non-availability of farm machinery to the farmer at the right time and at affordable prices. Agriculture mechanization in Pakistan is limited to tractorization with cultivators only and due to the lack of technology usage in agriculture sector; we face the problem of crop yields gap. Production in the agriculture sector is far below the level of those countries that use the technology in their agriculture sector. DG also compared the per hectare use of horsepower with other counties by saying that: Pakistan's per hectare use of horse power is 1 or less than 1, India's 2.50 while that of
China is greater than 3. He also added that the manufacturing of local farm machinery lacks standardization and quality. The quality of locally produced farm machines is generally poor because of the traditional layout of workshops and lack of engineering and technical expertise.

Issue catalogue

- Low farm mechanization due to inadequacy of land cultivation
- Non-availability of farm machinery to the farmers at right time and affordable prices
- Lack of technology in agriculture sector

8. Mr. Shahrukh – Economist Agriculture Commission

To address these concerns, the Government of Punjab took the initiative of building 72 Hi-Tech Mechanization service centers (HMSCs) in all districts of Punjab with support of the private sector on a 50:50 cost sharing basis. In the first phase of 2017-18, the project will cover 18 districts of Punjab which will be completed by June 2018.

This was a brief meeting, Shahrukh started with the introduction of the agriculture commission: it was formed in 2016, main object is to have an inclusive approach so the department doesn't work in isolation, consists of 37 members from different government departments, academia, private stakeholders, farmers etc and has five sub-committees:

- Agriculture Marketing System
- Cost of Production
- Decapping of Meat and Milk Prices
- Formulation of Agriculture Policy
- Levy of Agriculture Income Tax

The chairman of the commission is the Chief Minister Punjab while the vice chairman is the Minister of Agriculture. The purpose of the subcommittees is to make sure individual attention is paid to the five issues in agriculture, the subcommittee provides its finding to the commission.

- The commission only provides recommendations to the ADU, it does not take decisions for them. All decisions are taken and executed by ADU.
- When asked about the PIPIP project, he did not have a lot of information on it, we raised the point of farmer owning land less than 5 acre being excluded from the project, to

which he replied that the project kept economies of scale in mind when deciding the size of the farm to see the impact of new technology, i.e: drip irrigation.

- When asked about the involvement of the environment department while making the new agro-ecological zones, his response was that a member from the environment department has always been present in meetings (NOTE: In the meeting with DG Environment and team, there was no mention of their members being a part of these meetings)
- Major achievement of the commission was to initiate the formation of the agriculture policy of Punjab which was non-existent.
- It will take at least five to eight years to see the impact of the agriculture commission on the performance of the agriculture department.
- Members of subcommittee and the TOR's are available on the website along with the minutes of the meetings.

Issue catalogue

- Disconnection between department

9. Mr. Arif Nadeem – Agriculture Expert

The following points were made by the informant:

- Contradictions in the policy and project documents provided by the Agriculture department
- What should be the agriculture policy in the 21st century?
- Project intervention: why has agriculture department not been able to incorporate water which is a key factor in agriculture? HIES has also not been a thumping success.
- Mechanizing farms: if the design is good, the implementation is expected to be good (UN)

On the policy side, he said that:

- Strategic crops (maize, rice, wheat, cotton) is at thrust but they want to diversify to horticulture crops. But no intervention strategy is stated in the document.
- Wheat and fertilizer subsidy is bringing the national economy down, sugarcane is encroaching.

Issue catalogue

- Need for value chain management in agriculture department
- Plugging the value leakages at the production process and marketing stages
- Expended role of private sector
- A compact input technology package to commercialize agriculture
- Advanced processing capabilities
- Investment in the infrastructure for forward linkages both domestic and export market
- Identification of market segments for exports and information and intelligence system

10. Mr. Kalim Qamar – Agriculture Expert

Mr. Kalim Qamar commenting on one of the projects currently implemented by the department made the following comments:

- The title of the document is a misnomer as over 95% of the contents cover soil science from soil sampling to analysis to recommendations on fertilizer application based on missing/insufficient nutrients on specific plots of land.. Basically, it is a project to strengthen soils aspect, which is of great importance , but it is not at all modernization of extension services. The inclusion of certain ICT tools like web portal, GIS and soil database in a soil-focused project do not make any traditional extension service modern. If the provincial government considers this document as an extension reform document then it is technically ill-advised. I am familiar with persistent weaknesses in Pakistan's extension system. Devolution has its own problems as I noticed in a number of developing countries. The reform of extension in any country requires a proper detailed assessment and analytical study, which this particular document is not.
- The project design is weak not only because it has too broad objectives hence unrealistically ambitious, but also its underlying assumptions. For example, one main assumption is that all farmers, have at least minimum literacy and computer knowledge to benefit from a web portal, which is questionable. There is another assumption that various fertilizers are readily available in villages on time, in sufficient quantity and at reasonable cost. We know it is not true as if nothing else local politics becomes a serious hurdle in the availability of fertilizers as I once discovered in the office of the Director General of Extension in Lahore.
- The project period is five years, and most of the time seemingly is to be spent on collection and analysis of a large number of soil samples. It is not clear when is the entry point for extension. Budget and work plans are also missing.
- Knowledge of and extension advice on soils and fertilizers is but only one of the needs of farmers. I won't be surprised if the DG Extension in Punjab already has something similar to a web portal containing useful information for farmers, covering several technical areas. This project proposal reminded me of the very successful FAO food security project in Sargodha. We had done exactly the same thing on soils (and many other aspects), taking soil samples from selected farmers's plots, analyzing them to determine nutrient status and then recommending what fertilizers to apply.
- Capacity building/training, a very important aspect in using extension agents for any specific project, is not well pronounced if not totally ignored.
- Assuming that this project focuses on Punjab, my technical opinion is that it will not advance or improve extension services in any significant way let alone reform the extension system

Issue catalogue

- Modernization of ICT tools for extension purposes
- Weak project designs due to broad objectives and unrealistic ambitions
- Lack of primary research of agriculture department
- Lack of capacity building and training for extension agents

11. Prof Dr. Talat Naseer Pasha, Vice Chancellor, University of Veterinary and Animal Sciences, Lahore (UVAS)

He stated that livestock was the largest stakeholder in the agriculture sector and accounts for 58.3% agricultural GDP. Over 7.5 million families, mostly landless and smallholders were dependent upon livestock as their major livelihood asset. Milk, by far, constituted the most important product of livestock which alone exceeded the combined values of all major crops.

Pakistan claims to be the third largest milk producer in the world with over 50 billion litres of milk annually. However, livestock arming is not treated as agricultural farming and thus denied the incentives including subsidies, reduced electricity tariff, income tax exemption, relief in import duties, etc.

Apart from that, one major challenge facing the livestock industry is the price capping of milk imposed by government in Pakistan as against the actual cost of production. This foments illicit practices including massive adulteration, black marketing and use of unhygienic synthetic recipe products made from vegetable fats etc. The UHT dairy liquid and UHT whitener seems to have grown enormously to the detriment of the fresh milk.

Dr. Talat Naseer recommended: (a) enhancing import duty to 100% to reduce the import of dry milk; (b) incentivizing small scale farmers; (c), delivery of quality extension services and advice to the livestock producers; (d) consumers awareness about the possible deleterious impact of re-constituted milk; and (e) initiation of school milk and egg program to combat the stunted growth in the young population.

Issue catalogue

- Excessive and illegal import of dry milk
- Department failed to raise awareness among consumers about quality of dairy products
- De-capping of milk has still not been done despite of market failure
- Need to rationalize and enhance Import duty on dry milk
- Extension and advisory services' improvement for the livestock farmers
- Nutrition and food requirements of the school children

12. Muhammad Saad, Department for International Development, DFID

The policy and program officer from DFID referred brought an interesting perspective to the KII discussions that both agriculture and water are neither on the agenda for DFID nor there are any plans to initiate programs that center around the agriculture sector. He however dwelled upon the fact that the importance of agriculture sector cannot be denied and since DFID has a large portfolio focusing upon poverty eradication in South Punjab and in that regard, has built string synergies with the planning and development department of the government pf Punjab and the in terms of aligning their efforts with the sustainable development goals. He said that this work is being done simultaneously with our work on issues pertaining to political economy and governance in Punjab which is primarily done through programs like the Sub-National Governance Programme (SNG).

He agreed with the fact that agriculture is an important tool to foster economic growth and can play a vital role in the poverty eradication campaign currently run by DFID, however none of their direct tools to foster the desired economic growth currently focuses upon agriculture.

13. Humera Qasim – Climate Change Advisor, Agriculture Delivery Unit

In an interview held at BIPP, Ms. Humera Qasim made the following observations:

- The department only has a few projects that have climate change
- There is no capacity for way forward
- There is no action, communication and gender plan
- Formation of agro-ecological zones was an initiative of the secretary
- The smog project is one of the most important project by the agri dept: using GIS to figure out if smog is caused by burning stubble or traffic (this study is currently in process)
- GCF: Indus basin project. The PC-1 is underway, $54.7 million project, joint project of Punjab and Sindh
- Climate action plan is underway (Climate Smart Agriculture)

She also identified a few gaps and made recommendations to remove those gaps:

Gaps:

- Dissemination of communication with other departments
- Lack of capacity
- Will NOT work on mitigation, focus only adaptation because we are not an emitting country [0.7%]
- Lack of technology and funds
- Action plan is awaiting two docs: Punjab Climate Change Profile and Agro-ecological zones
- Adaptation measures: none since the study has not been done yet
- Livestock is not integrated in this
- lack of internal commitment and awareness

Issue catalogue

- Need to work on mitigation and the synergy between mitigation and adaptation need to go together with research and productivity that is the sustainable
- Irrigation dept. needs to be taken on board
- The department is working in isolation, needs to coordinate with forestry, livestock, environment, irrigation
- Heat resistant crops need to be researched on
- Nothing about GMO's?
- There needs to be a structural integration between depts.

14. Dr. Ghazanfar – Additional Secretary Planning, Agriculture Department

Dr. Ghazanfar mentioned the following achievements in performance and service delivery:

- Installation of biometric attendance mechanism
- Monitoring and Installation systems
- Involvement of DCOs in the agriculture sector
- Tabs given to field officers, tracking through GPS, reduces corruption and TA/DA cost
- Duties of DG's have been clearly defined in JD to make sure they meet their goals

- Performance contract is signed with all DG's and directors – quarterly review done
- ADU formed: competitive market salaries, people best in their fields hired for technical, ICT, M&E, strategy & policy advisors
- Commission performance is good, is involved from all stakeholders, looks over policy matters, however it needs a legislative cover (Act) waiting for approval from govt
- There is lack of robustness and interdepartmental coordination, it is only present in foreign funded projects
- Sec 144 ban on agriculture waste burning to reduce smog!
- PIPIP only involves farmers above 5 acres holding because very small farmer cannot afford the drip technology
- Punjab farm mapping is under process
- Smartphones are provided to farmers with 9 applications
- One-day training is done to train them on how to use the smartphone
- Registration of farming families (5.2 million families, 30 million farmers)

Issue catalogue

- Training centres are not optimally functioning
- Lack communication of farmer about new technology
- ICT/technology assimilation by farmer
- Absence of enforcement of law (sugar mills in cotton area)

15. Mr. Saif Anjum – Secretary Environment Protection

Department The informant made the following observations:

- Climate change is an equal but differentiated responsibility
- We lack technology
- Imbalanced use of fertilizer and pesticide
- Renewable energy is needed
- Multiple devices are being used by EPD to reduce pollution: hand-held for factories and industry, ambient monitors for cities
- Environmental inventories:
- Industry brick kilns
- Biomass
- Domestic cooking
- Transportation
- Rail transport
- Air transport

There is impact on health, eco-system and agriculture

Cross-sectoral integration:

- There is lack of integration, it is only possible when there are working platforms available which sadly don't exist
- There is currently only one platform: GMO's
- In this project all departments were involved including academia
- Emergency provision has been taken in winters when there is low visibility and smog, 50 departments are involved

- Climate change policy has a chapter on agriculture – still awaiting to be approved by the govt
- Poor and landless are living in fragile ecosystems

Recommendations:

- Create adaptability and resilience, agriculture system should be able to absorb climate change shocks
- Agroecological zones are not of use due to unpredictability
- A cohesive strategy needs to be made for departmental exchange
- Mitigation is essential with adaptation
- Irrigation, agriculture and livestock dept. needs to work together
- EPD should be the focal point for all climate change related work in departments

Issue catalogue

- Need to develop a platform for inter departmental coordination for environment and climate change issues
- Lack of technology
- Imbalanced use of fertilizer and pesticide
- Inadequate renewable energy
- Poor and landless are living in fragile ecosystems

16. Mr. Shaukat Ali – Secretary Food Department

The services provided by the Food departments include:

- Anti-Adulteration
- Food Security
- Market Stabilization
- Protection of Growers' Rights

Have taken the initiative to set-up silos at different points in Punjab:

- Silos at Faisalabad: It is a complex of 15 silos each having 3300m ton
- Steel Silos at Islamabad: It is a complex of 6 silos having 5000-ton capacity
- Silos at Multan: A complex of 10 silos having 38000m ton capacity and it is being rehabilitated nowadays

Wheat procurement is the biggest challenge that the department is currently facing. The following issues regarding wheat need to be considered:

- The wheat stock is being damaged due to inadequate warehousing facilities and weight of wheat
- Our wheat is not globally competitive therefore we can't export
- If we don't take active initiative we're going to lose crop and cause losses to the economy
- We should change our cropping pattern according to global competitiveness, especially with CPEC.

Issue catalogue

- Inadequate warehousing facilities of wheat
- Wheat is not globally competitive

Mr. Nasim Sadiq – Secretary Livestock and Dairy Development Department

He stated that Pakistan has 300 billion dry milk imports despite being the 5th largest country in terms of livestock. 17 billion worth of animal hide and 3 billion wool imported. He also said that farmers with small holding should forget agriculture because it's too expensive for them and not profitable.

Wheat:

There is 4 years' worth stock of wheat yet we keep cultivating more wheat which is a menace to the economy.

Wheat procurement in the past:

- 60% is by private owners and mills
- 40% by food department, PASCO is currently providing a subsidy of Rs. 1200-

1300 Current wheat procurement:

- Private players have been wiped out
- Afghanis are gone
- Temperatures have increased leading to early harvesting!
- Farmers expenses have increased

No farmer wants to keep their harvested crop at home, it is as good as a dead body for them.

Milk: Don't compare our milk with India or Europe, they worship their animals and keep them in a very well-maintained way. Lal Bahadur Shastri formulated the livestock policy in India in 1953.

- Humped animal has deposits of fat and better milk quality which is demanded all over the world, Pakistan has this animal breed
- Other countries especially India slaughters old animal, we slaughter our young healthy animal which is not advised.

Women account for 95% of the labour force, but there is lack of importance in social fabric, women are clearly underestimated, we have been training men who are good for nothing since it's the woman who handles the cattle.

- We need to train our women, ever since women training programs have been initiated, animal mortality rate has fallen to 0.3% now.
- Rural economy has been ruined due to politicians and rural-urban migration.
- De-capping is critical in the livestock sector.

Three key people who can make this happen are:

- Nestle
- Agriculture department
- Livestock department

Tannery industry slaughters under-sized animal which leads to wastage of carcass and skin
De-capping is not currently the number one priority of the livestock sector, there are lack of subsidies and cost of production of milk is high, in order to save cost bad fodder is being used,

COP of 1 litre of milk is Rs. 100+ whereas price of milk is less, there is clearly stress-selling. Successful models need to be adopted from Iran and Turkey.

Recommendations:

- Rural economy needs to be improved
- Livestock sector should not be confused with agriculture
- Farmer needs to be relieved of stress
- We're taking money out of the rural economy, we need to stop doing that
- Water is essential or milk production
- The Government also needs to be cognizant of the population explosion occurring unnoticeably in the province

Issue catalogue

- Lack of gender inclusion and women empowerment
- De-capping of milk price is critical
- Illegal trade of animal across the border
- Wastage of carcass and skin
- Lack of subsides in livestock sector
- Cost of production is high

18. Mr. Sher Ayub Khan – CEO SMEDA

This KII meeting took place in the head office of SMEDA, Lahore. Around 8 employees of SMEDA participated in the meeting moderated by the BIPP staff on the Agriculture Sector and the role of small-medium industry especially in terms of its ability to add value to the agriculture produce. The KII meeting with the involvement of senior level officers of SMEDA adopted the structure and shape of a focus group discussion.

The participants from SMEDA and BIPP exchanged many questions and answers regarding the agriculture sector, value chains and role of SMEDA. The following key observations are emerged:

- The session started with the brief introduction of SMEDA, its mandate and mission. The outreach of SMEDA in the SME dense areas was also brought under discussion.
- A detailed discussion revolved around the operational strategy of SMEDA that includes Building a Conducive Environment, Developing Sectors and Clusters and Provision and Facilitation of Services.
- They explored the agriculture production data of Pakistan comprising vegetables, fruits and major crops and their exports.
- They also discussed about the Fruits and Vegetable value added sector chain and Small & Medium Enterprises.
- The following constraints faced by growers, exporters and infrastructure research and development are highlighted in the meeting
- Lack of quality assured Farm Inputs - Viral Free Planting Materials, Pesticides etc., Low yield, Seasonal Farm Contracting – Price insecurity, non-compliance with Int'l Standards (EUROGAP, SPS, etc.) , Lack of product innovation / varieties, Poor Farm Management
- Lack of Skilled Workforce, Lack of business acumen, weak linkages with processors & exporters - disproportionate power of middleman, Lack of storage and transportation facilities, Lack of crop insurance products

- Highly skewed production – seasonality & perish ability, Incapability of Exporters to deal with quality sensitive buyers, Weak Compliance to Int. Std. & Certification, Lack of quality processing and packing, Poor image of Pakistan as a supplier of Quality Fruits, Lack of Product diversification, Market diversification - limited access to high end markets
- Lack of technical expertise & infrastructure, Lack of cold storages, ripening chambers, packing houses and transportation facilities etc, Limited and expensive refrigerated transport facilities, limited air cargo space, ineffective and outdated research setup, lack of value added processing facilities

Issue catalogue

- Lack of adequate support to agriculture SMEs - finance, training, technology, markets
- quality assured Farm Inputs for agriculture commercialization
- Low yield unsuitable for processing
- Seasonal Farm Contracting
- Lack of product innovation / varieties
- Poor Farm Management as hindrance to agri-business
- Lack of Skilled Workforce
- Weak linkages with processors & exporters
- Lack of storage and transportation facilities
- Lack of crop insurance products

19. Director General, Environment Protection Agency

The DG gave an introduction of the department and the nature of his role. He talked about lack of interdepartmental coordination, lack of inclusion of Climate Change in programs/projects and a lack of policy making.

The EPA was given a project to do the policy review on use of pesticides. Talking about physical intervention, environment is not considered as a critical factor, PND has recently asked mining companies and power plants to get environment approval and NOC from EPA, but this has not been done with all of the sectors in Punjab.

As far as policy is concerned, IWEIA intervention should be integrated. NOC from all sectors should be required, not just sand mining, coal mining and industry dept.

Naseem ur Rehman: Pakistan environment policy should have coordination with the agriculture department as agriculture sector is a major contributor to the economy and is most affected by climate change. Water depletion is a major environmental concern, the department EPA recommends drip irrigation in place of flood irrigation. (Perhaps they are not aware of the HEIS project of the Agri dept.).

The following points were also made:

- Agri department did not consult with environment department when forming new agro-ecological zones.
- Punjab draft of environment policy and smog policy is still awaiting approval
- Capacity building of EPA Punjab is critical and desperately needed
- A lab is required to have sufficient evidence
- Not aware of the HEIS project of the Agri dept.
- Job of the DG EPA is 95% enforcement and compliance

- Environmental governess and environmental justice, secretary agriculture is part of the committee (still no interdepartmental coordination)

Adopted indigenous technology to reduce Bhatta emissions up to 70% and convert smoke to dust which in turn is a raw material for paint manufacturing. Bhatta owners earn up to Rs. 2 lakhs from the dust.

GM (Genetically modified) crops are not good for the future generations, also causes cross contamination in adjacent fields which is irreversible. GM crops have been tested and they have not resulted in a reduction in pesticide and fertilizer use.

Issue catalogue

- Lack of interdepartmental coordination
- Water depletion
- Absence of equipped labs
- Lack of inclusion of climate change in program/projects and policy making
- Capacity building is critical
- Use of GM (Genetically modified) has not resulted in reduction in use of fertilizers and pesticides

Issues and Leakages of Agriculture

Pre-production	Agricultural Production	Processing	Post Processing	Market
• Low quality inputs due to farmers' lack of knowledge or limited access to input markets, resulting in sub-optimal production	• Lack of economies of scale, resulting in higher unit costs	• Lack of advanced processing capabilities, resulting in low value-added	• Lack of Packaging, sales in bulk, lower profits	• Lack of understanding different segments of domestic and foreign markets, leading to smaller market share
• High-cost procurement due to lack of economies of scale, no bargaining power	• ineffective crop rotation, resulting in low production	• Lack of semi-skilled workforce, leading to low levels of productivity	• Lack of product diversificatio n, less resilience to market shocks and less responsiven ess of market demands	• Lack of anticipation of consumer needs, leading to less sales,
• High energy costs	• Inappropriate timing of production, leading to lower prices	• Lack of workforce with advanced skills, preventing innovation	• Lack of eco-designs, less value-added	• Inefficient market system
• Inefficient use of water, resulting in salinization and higher costs	• Inefficient cultivation and harvesting techniques, leading to low production	• Lack of financing, decreasing profitability	• Lack of traceability, less consumer confidence, less sales	• Policy fragmentation vis a vis the allied department is not present (irrigation, livestock, forestry, environment)
• Lack of commitment and sensitization at lower tires about transformative change and paradigm shift	• Inefficient mechanizatio n leading to higher costs	• Lack of quality control, causing smaller market share	• Inadequate warehousing facilities **of crops**	• Rigid bureaucratic structure
• Cultural change to make department farmer centric		• Premature ICT intervention		• Plugging the value leakages at the production process amd marketing stages
		• Misallocation and wastage of resources		• De-capping of milk has still not been done despite of market failure

Focus Group Discussions

1. Assistant Directors (Extension) and Agriculture Officers, Chakwal

This FGD took place in the office of the Deputy Director Extension, District Chakwal. Around 10 extension workers and officers from the agriculture department participated in the discussion which was moderated by a staff member from BIPP.

The participants were exposed to a set of structured questions revolving around the challenges they face in administering the extension and research tasks assigned to them by the department, how often they interact with the officials from the secretary's office in Lahore, what changes have they experienced in their routine work and how the department has functioned in the last year or so. The extension workers were also asked if they are satisfied with the overall performance of the department. The following emerged as the key responses:

- The participants expressed general satisfaction with the structural and process changes that the department has made in the last year or so.
- A detailed discussion revolved around the agriculture and growth policies of the department and it was unanimously stated that the policies are developed without involving any input from the districts and hence aren't inclusive and participatory.
- It was also stated by the participants that the policies no matter how inapplicable they are to the local context are ultimately imposed on the districts to implement. The same they believed is the case with the current agriculture policy which might not consider the land and topographic characteristics that are specific to the Barani region.
- The workers not only described the huge ICT-led transformation that had taken place but also gave demonstrations on how the entire inter-connected ICT-based network that connects the famers, extension workers and the department works.
- They also discussed how technology is developing but also prone to errors that interrupt the system. However, it was agreed that if regular streams of investment flow into the smart agriculture project, the technological advancements made under it can be sustained.
- The workers had little knowledge of the projects that are currently being run by the government. The only project that was known to them was the smart agriculture project run by the World Bank and that too because of its tangible interventions.
- The department with support of research institutes like BARI conducts regular capacity building and training workshops which has enabled extension workers to respond to the queries of the farmers.
- The extension workers expressed dismay over the incentive and service structure provided to them. Promotions above Grade-17 they expressed was almost impossible which reflects poorly on their motivation and performance.

2. Farmers, Chakwal

The main agenda was to know about the farmer's perspectives and views pertaining to the projects, policies and other interventions of the department.

Following were the key responses by the farmers:

- In the Barani region mostly there are Small Farmer's (2, 3 acres and holding) and government policy only benefits those who have 5 or more than 5 acre.
- They also discussed about non-availability of Machineries likes Laser land levelers.
- Farmers were not aware of all projects, only two projects were implemented their PIPIP and Kissan empowerment package.
- Farmers stated that government should construct Small dams in potohar area, there are some small dams but those dams are not fully utilized due to inadequate development of their area.
- Small storage ponds are also less in number as you know Barani area agriculture in entirely based on rainfall, so to collect rainwater it is essential to have some storage capacity like mini Dams, Water storage ponds, small dams.
- There should be small units for field assistant between every three villages so farmers can contact them easily and get response impulsively.
- Government should revise the Potohar Agriculture policies; because in this region farmers have small land, holding and government only facilitate those who have more than 5 acres.
- The farmers were disappointed because of the seeds quality they are getting from the private source and government they mention that government should break the monopoly of big stakeholder in seed industry.

3. Assistant Directors (Extension) and Agriculture Officers, Bhakkar

Around 15-20 participants comprising the deputy director extension, Bhakkar, assistant directors, agriculture officers and field assistants attended the focus group discussion that was targeted towards understanding the

This discussion followed a similar one held in the district of Chakwal. The main purpose in holding one discussion in Chakwal and then one in Bhakkar was clearly to obtain perspectives from the both the Barani (North) and South Punjab but the purpose was also to see how the problems and

The interesting fact that emerged from an hour-long discussion with the extension workers was that in terms of the issues that the farmers report, nothing was noticeably dissimilar to what was reported in Chakwal infact some of the major concerns that had emerged in Chakwal were posited to the focus group discussion participants in Bhakkar to cross-validate (as per the hierarchical

validation methodology proposed) to see if those concerns are uniformly present across the province and it tuned out that the some of the problems that the extension workers faced especially in terms of adoption of the smart agriculture tools and in terms of lack of technological advancements and agri-mechanization were uniformly present and consistent across the province.

However, this caveat of similarity between agriculture issues of north and south Punjab holds with the following exceptions:

- The land and topography in South Punjab was different which meant that farmers whose lands were rainfed were much poorer and therefore the agriculture department had to incentivize them in a way different to the farmers whose lands were fed by a nearby water canal system. That makes the agriculture support, research and extension system in Bhakkar complicated.
- The land holdings are much smaller than the rest of Punjab which impacts yields, productivity and farmer incomes.
- Administrative issues have also compromised the impact the agriculture subsidies could have created in terms of providing financial relief to the farmers.

4. Farmers, Bhakkar

The main agenda was to know about the farmer's perspectives and views pertaining to the projects, policies and other interventions of the department.

Following were the key responses of the farmers:

- Government should set a limit on very crop and facilitate farmers with the raw material and should balance demand and supply of cop.
- Pricing issue, farmers stated that they are not getting the price as per their hard work they are coercion to sell their crops to "Arrtee"
- Farmers stated that the main issue we are facing is water shortage.
- The farmers were disappointed because of the seeds quality they are getting from the private source and government they mention that government should break the monopoly of big stakeholder in seed industry.
- The loan/ financial aid process under the Kissan Package is very slow and time taking and farmer cannot afford that.
- Farmer stated that the PIPIP sharing percentage 60 40, 40% share of farmers should be lower by 20%.
- Mechanization service centers are not there and farmer by their own support they are managing to bring machines from the landlords on high rent per hour.

Annex.1: KII Questionnaire

Q.1. What five major deficits and problems (including policy, institutional) can you identify pertaining to the agriculture sector in Punjab?

Q.2. How do you see the past two years performance of agriculture in Punjab both in terms of achieving productivity gains (making agriculture profitable and competitive) and attracting investment and how do you compare it with the overall performance prior to 2015?

Q.3. Can you mention a few projects that the agriculture department is currently doing that you are aware of and give your opinion especially with regards to the design quality, deliverables and the likely impact on the small farmers?

Q.4. Do you think the current Agri policy formulated by the department (a) is responsive to, the needs of the farmers (b) integrates well with the development priorities of the province (growth strategy) and Pakistan (vision 2025) and (c) is climate sensitive given that Pakistan is one of the top 10 worst affected countries vulnerable to the severity and rapidity of climate change and afflicted with the major problem of increasing "water scarcity"? Any specific adjustments or shifts, you wish to recommend.

Q.5. In your opinion, do the current allocation of resources and investment in the agriculture sector represent "value for money" in terms of harnessing the full potential of agriculture in Punjab and that these resources are turned into tangible results both in terms of spurring the economic growth and improving the overall well being of the farmers especially small ones? Will you suggest some specific adjustments in the existing resource allocation and investment thrust of the government to maximize sustainable agriculture potential?

Q.6. How do you compare the agriculture performance of Pakistan’s Punjab with that of India’s and of some of other countries with identical Agri-ecology? Are there any best practices and/or lessons learned of which Punjab could benefit?

Q.7. How do you see the potential of technological interventions including mechanization and ICT integrated solutions to transform the subsistence agriculture to commercial agriculture as also giving further boost to profitability and competitiveness for the medium to large farms? Please give a few specific examples indicating the priority areas of interventions for the purpose?

Q.8 What is your overall take on the institutional capacity and performance of the agriculture department to bring about a paradigm shift and transformation of agriculture into a competitive and profitable sector in the wake of major opportunities and challenges e.g., rural poverty, urbanization, climate change, technological advancement, CPEC etc?

Q.9. Can you suggest some measures to?

- boost agricultural exports;
- reduce trade deficit; and
- improve agriculture's terms of trade to move agriculture up the policy and resource allocation agenda