

FOOD SYSTEM MAPPING

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KEY DATA

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DISCLAIMER

The views expressed in this research report are those of the authors. They do not necessarily represent those of Action Against Hunger or any other stakeholder mentioned in the research report.



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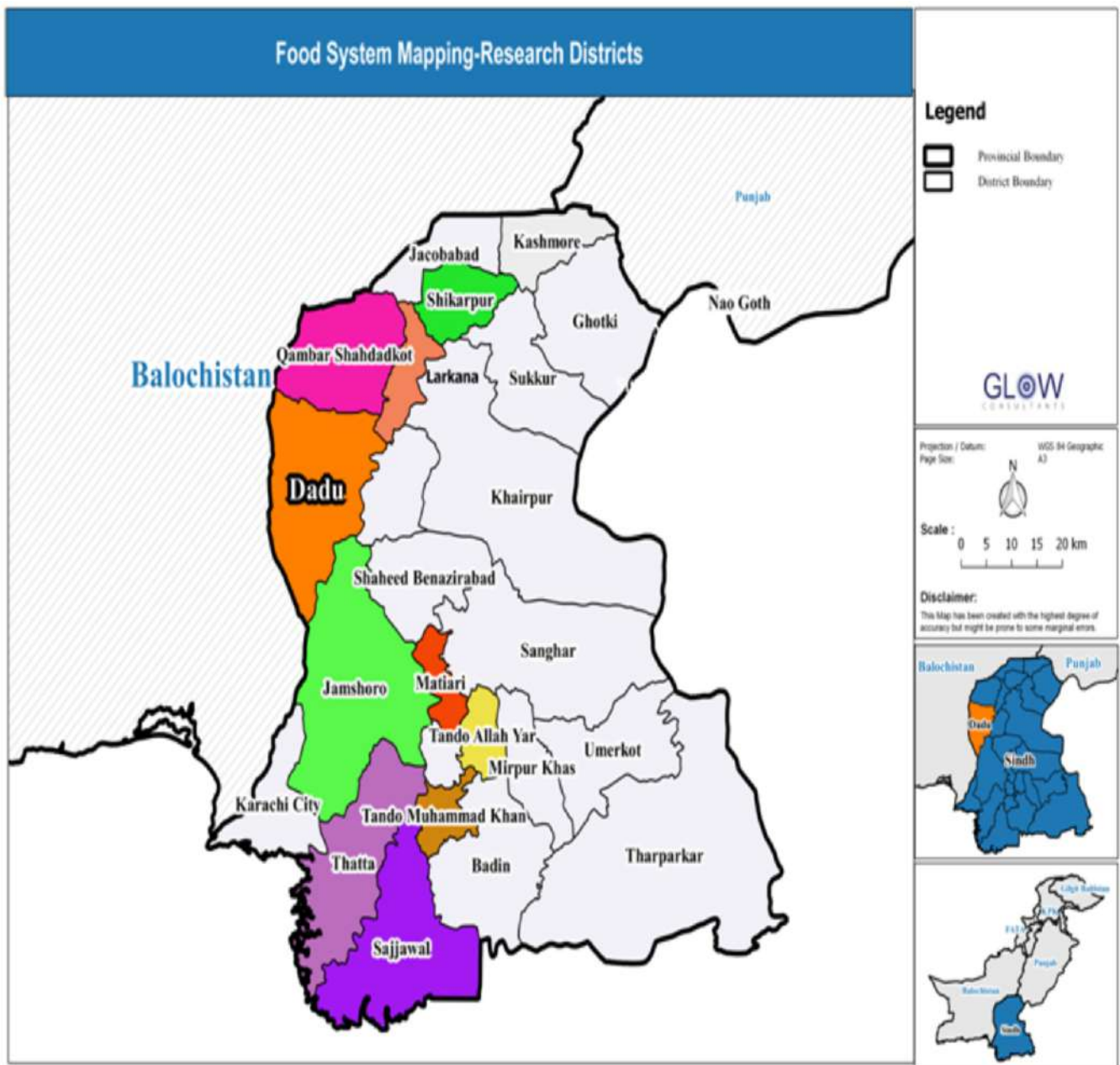
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LIST OF **ABBREVIATIONS**

ACF	Action Against Hunger
AAP	Accelerated Action Plan for Reduction of Stunting and Malnutrition
CotD	Cost of Diet
EU	European Union
FAO	Food and Agricultural Organisation
FGDs	Focus Group Discussions
GAM	Global Acute Malnutrition
GoP	Government of Pakistan
GoS	Government of Sindh
IPC	Integrated Food Security Phase Classification
KIIs	Key Informant Interviews
NNS	National Nutrition Survey
PDD	Planning and Development Department
PINS	Programme for Improved Nutrition in Sindh
PKR	Pakistani rupee
WFP	World Food Programme
WHO	World Health Organization



Figure 1: Map of PINS Districts



EXECUTIVE SUMMARY

Pakistan's 60% population face food insecurity. On average a household in Pakistan spends 51% monthly income on food. Food insecurity results from inadequate and unbalanced diet to the poorest and most vulnerable population groups, especially women. Rising prices further limits these groups access to food. Faced with this situation, Action Against Hunger as part of its 'Programme for Improved Nutrition in Sindh (PINS)' commissioned this Food System Mapping research. This study is an effort to better understand the complexity of the situation in an attempt to make informed decisions to manage the issue of malnutrition with particular reference to PINS targeted districts. The study focused on i) Wheat, ii) Rice, and iii) Potato; which are considered the staple foods and remain available throughout the year. The research study had the following objectives:

- 1 Identify traditional market hubs in 10 PINS target districts of Sindh.
- 2 Identify supply and demand pathways in food value chains for wheat, rice and potato.
- 3 Identify gaps and challenges that impact access of poorer households to selected foods.

To attain the research objectives, the project team followed, a strong consumer focused, value chain approach. In 'whole of the chain' context, the research team collected data from representative respondents from all tiers of the target value chains. The research team used both qualitative and quantitative data collection tools for this research study. The research study used mixed methodologies for data collection including desk review, point of sale consumer surveys, Focus Group Discussions (FGDs), and Key Informant Interviews (KIIs). As part of the consumer surveys, a 30 minutes interview was conducted with the consumers of the three food groups viz., wheat (692 respondents (112 females)); rice (627 respondents (101 females)), and potato (696 respondents (140 females)). Beside the survey interviews, 30 FGDs were conducted with the consumers of the target commodities. In each of the 30 FGDs, different issues related to wheat, rice and potato consumption were discussed. Furthermore, 93 KIIs were conducted (17 interviews of government officials, 28 of producers, 20 of processors and 28 of traders). The research team used SPSS, CPro, NVivo and MS Office for statistical analysis and report writing.

Traditional market hubs in 10 PINS districts

In PINS districts, a combination of the modern and traditional markets is offering different prices, qualities and bargaining power for same nature of products. Still these perform the common function of providing necessary space to people to engage in buying and selling of commodities and associated services. Even though the trends are changing, still 97% of markets in PINS supported districts can be classified as traditional market hubs where market actors act similar to the old practices. Research findings indicate that food products, particularly the wheat grain/flour and rice, move across the PINS districts through the traditional food hubs. Nonetheless, these food hubs have adopted themselves to changing requirements of retail market by incorporating various aspects of modern food markets. Traditional markets, as compared to modern markets, are not providing quality inputs to the producer nor they have high quality consciousness. Traditional markets have closer engagement with the consumer, but less engagement with the financial service provider. They offer less value in terms of product diversification. Traditional markets are less connected in the value chain and more exposed to changes in the prices. There are over 90 medium to large size markets which constitutes part of traditional market infrastructure in PINS supported districts. Their ability to serve their catchment

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areas vary from size of the market and specialisation in the product. There is limited impact of regulatory framework on these traditional markets and basic market economy principle of demand and supply drive these traditional markets. In general food and other commodities freely move from surplus districts to the areas which are deficient, and logistics costs relative to the profit margin provide one key determinant in relation to these goods' movement. Moving forward there is a need to regularise these traditional market hubs thus enabling them to provide more value to the consumer.

Food Value Chain and Associated Challenges

A typical traditional food chain which is the dominant structure in PINS supported districts has six main actors: Input Supplier; Producer (Farmer); Middle Man, Wholesalers, and Processors; Retailer; and Consumer.

Input supplier in the value chain deal with all kind of agricultural input such as seeds, fertilizers, farm equipment, and related advice. In general supply of quality input for all three crops and availability of finances is a very important issue affecting the whole value chain.

In terms of producers (farmers) traditional food producers in PINS districts are mainly subsistence farmers with limited marketing knowledge. There are fewer government policies which encourages them to adopt new technology and create new linkages with the market. These farmers do not exhibit characterise which are to be found in a modern market. Based on good practices from other countries, there is possibility to further increase their production by two-folds. In fact, the land holding that is available to them for farming purposes has gone down mainly due to family inheritance property division, a net increase in number of farmer and reduction in cultivable land. Wheat farmers mostly operate within the framework of a family unit. Wheat farmers are losing almost 10-20% of their price value of their produce due to their inability to sell their produce directly to the government. As a result, they get low price and are unable to meet their basic needs as well as buy quality seeds and other agricultural input. Farming on rice is taking place on privately owned land where either the farmers own the land or they are cultivating it for the landlord. Rice farming is a very labour-intensive work and there is limited availability of modern machinery. As a result, family members including women and children are heavily involved in the rice cultivation. Unlike wheat, given rice in general fetch better price, farmers are finally better off. Potato is a comparatively new crop for the farmer and they got the know-how from Punjab. There are limited number of farmers who are growing potato. The lack of farmers with an active interest is due to the climate conditions, and even more importantly, the presence of other crops which are providing better return as compared to potato. There is limited support provided by government on the potato production related activities to the farmers. Overall, for all the three crops, poor agricultural households, especially in rural areas of PINS, are dependent on underdeveloped agricultural sector. They have an overall dependency on primary agriculture. These farmers are operating below optimal level with low fertility soils, limited use of farm inputs, changing monsoon season and other environmental degradation, significant food crop loss both pre and post-harvest, inadequate food storage, lack of access to good seeds and external finances etc. As a result, these farmers are getting low returns from their agricultural activities and thus have limited cash to meet up food needs in a satisfactory manner throughout the year, especially when faced with raising food prices.

The third key aspect in the value chain is the role of the middlemen. In most instances the middlemen are acting as the input supplier and at the same time the main buyer from the farmers. The middlemen are providing the produce they are supplying to the main markets as well as to other large such customers and food processors. These middlemen adopted some important features of modern value

chain such as sorting and packing, something which is traditionally associated with main market hubs before. These middlemen are also more conscious of quality and to a degree support the farmers through input supplies so that these farmers can have better quality produce

The wholesalers and processors are the forth important aspect of the value chain. There are at least 3-5 big wholesalers in each of the traditional market. Their functions are similar to that of modern market, however the scale of their engagement in terms of their involvement in grading, sorting etc varied and are less intense in the value chain as compared to modern market chains. For wheat, the largest buyer of wheat is government itself. Other than the government, there are a total 150 Flour Mills out of which 75 mills are operating in PINS districts, where these mills are playing an important role in terms of wheat processing and also divide wheat into multiple products such as wheat flour, maida (by-product of wheat), soji (by-product of wheat) etc. In addition to flour mills, there are at least 240 Atta Chakkis, however unlike flour mills, these Chakkis are only producing whole wheat flour. Rice/Paddy wholesalers are the very important players in rice value chain. The wholesaler either buy paddy and send it for processing or buy processed rice and make it available to retail markets in his/her own districts or in the neighbouring districts or provinces. Some of the wholesalers are even involved in export of rice and/or act as the main collector of rice for different rice exporters. The wholesaler on average charges 6-8% of the profit margin. In terms of the rice millers, paddy is processed at their mills to obtain the raw rice or converted rice. In terms of availability of potato, they are available in all the wholesale market, mostly based on the production from Punjab and/or Khyber Pakhtunkhwa.

The fifth important actor in the value chain is retailer. In the PINS districts retailer can be categorised into two groups namely organised and unorganised. The organised retailers are a new phenomenon and have a maximum of 3% market share. The organised retailers include departmental stores, utility stores, super markets, hypermarkets and bakeries. In PINS districts we see an increasing trend in the rise of supermarkets and modern distribution businesses in the food marketing systems, even though they are less focused on wheat and rice and more on other food products (e.g. dairy products). So far, these organised food retailers are unable to take a major share from traditional retailers. The unorganised retailers dominate the market but they do not have a power to control the market. Wheat is available in every village through retail outlets. There is no price differentiation amongst different shops in similar types of markets. Rice retailers in most cases are buying rice from the wholesalers. They are mostly keeping low price rice varieties, even though some in cities some retailers are also keeping basmati and IRRI rice. Potato retailers are buying potatoes from the wholesale market. Retailers face issue with regard to the storage of the potato and bring to the shop only sufficient supplies which they can sell in 3-4 days.

Consumers are the sixth and last actor in the value chain. They are mainly buying their products from retail markets. Average wheat consumption is 130 kg/person/year while for rice this is 58 kg per person per year and for potato it is 15 kg person per year. Poor households are spending almost 80% of their income on food items whereas this money is mostly spent through the retail shops and any increase in their spending through transportation or other aspects negatively affects their overall budget. For households with higher income, their expenses on food decreased in proportion to their income, even though their net expenses on food items increased.

Most of the consumers are buying wheat and rice once or twice in a month usually after they receive their salary. Potato is purchased more frequently in a month due to its short shelf life. Awareness messages thus need to be aired/communicated towards the end of a month. Very poor and daily wage workers even buy food items on daily basis, highlighting their exposure to hunger in the event they will not get work or paid on time. The usual average price a consumer will pay for the three commodity is

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62% (wheat), 80% (rice) and 60% (potato) in comparison to the selling price of the farmers, highlighting a 15% value addition at different stages of the value chain. Increased market linkages between farmer and consumer which ensuring same product quality will help in fetching better prices for the farmers and potential price reduction for the consumer. In terms of household budget, wheat is the item resulting in highest cost in the household budget followed by rice and potato respectively.

Wheat flour is the predominant staple food with 95% of the consumers eating it at least once in a day while rice and potato is consumed by 62% and 59% of the people on daily basis. There are no direct linkages between wheat flour consumption and income as all income groups are using wheat as their staple food. For rice, there is a positive correlation where higher income groups are eating rice more frequently. In terms of potato, its usage increase with income but beyond a certain point this usage start declining highlighting the fact higher income groups may be replacing potato as part of their daily diet with other food items. Wheat with 1,210 constitutes the biggest calories contributor to the daily calories in take for people in Sindh, followed by potato (32 calories) and rice (21). This is calculated based on average consumption of wheat, rice and potato per person per year. There are still an unmet requirement of 1087 calories which has to be filled by other food items. A decrease in access to staple food will negatively impact average calories in-take. In terms of the key determinants affecting their purchase decision around wheat, rice and potato, it appears price, quantity or both are the main determinants. For example, in case of wheat flour, price (24%) and quality (25%) or both (41%) are the two main factors which people are using when deciding what to buy. There is a positive correlation between the income and quality meaning people with higher income are more quality conscious while those with lower income group are more price conscious.

The demand for wheat is inelastic both in rural as well as in urban areas' consumers. There is a comparatively less increase in the demand of wheat as the income rises. Similarly, there is no decrease in wheat demand with an increase in price or decrease in income. In terms of effect of price increase on consumers, 66% mentioned there is no effect on them, thus reflecting low price elasticity for wheat flour. For rice, when there is an increase in the price, 44% of the consumer reduce their rice consumption. There is a negative relationship between potato price and its demand. Whenever there is an increase in the price of the potato, its demand decreased. As such there are no price differentials between different markets for wheat flour - both in urban as well as in rural areas. The price differential for prices is the result of quality of wheat flour usually defined as full grain wheat flour (brownish in colour), semi-refined (half brown) and refined (whitish). Even the size of the packages of the wheat flour had little impact on the price. For rice, as such there is no major difference between the retail prices in villages as compared to retail prices in urban areas. The real difference in the prices is about the type of the rice and the size of the market. For example, broken rice cost almost 50% less as compared to Basmati rice. Similarly, in retail markets the prices are almost 10-20% higher as compared to major grain market at the district level. For potato, there is no difference in the retail prices of similar types of markets in the villages across the ten PINS districts. The price variation is mainly determinant by the perceived quality of potatoes and type of market where 91% of the consumers are using medium size potato.

While following a value chain structure and approach, the study proposes following key recommendations:

Input Suppliers: Efforts should be directed to provide quality agricultural products to the producers. This will help in providing better quality seeds, fertilizer and pesticides. This will be the first and basic step in the value chain resulting in quality produce for the farmer and for the market. It will also include agricultural and farm machinery to the producers as well as new varieties suitable for the

changing climate and climatic conditions. As part of input, farmers should be provided with easy financial support / loans to the farmers to reduce interest rate on the farmers to remove the need for high yielding interest. Financial institutions should be encouraged to develop new financial instruments to cater for the needs of different actors in the value chains, e.g., the processor may be providing a line of credit so that s/he can make timely payment to the farmer. Or provide insurance to the farmer thus helping him to withstand a shock such as natural disaster or price-shock. Research organisations should commission research to understand specific requirements of farmers in relation to input supplier related to agribusinesses thus helping in developing a minimum understanding of market demand and how their outputs are positioned to respond to that demand.

Producers: There is a need to educate poor farmers on modern agricultural techniques and facilitating their access to finance and agricultural inputs at affordable prices. Farmers should also be supported to gain access to the market and get fair price for their produce as well as providing alternative livelihoods opportunities, including provision of training. Efforts should be made to making structural changes to help small farmers and landholders utilise government provided support in wheat and other related crops/sectors.

Middlemen: They should be encouraged to share knowledge with the producers and other stakeholders, without the fear of losing market competitiveness thus bringing increased transparency. Linking farmers through mobile and internet with the wholesalers and end-consumer thus reducing the need for a middleman.

Wholesaler/ Processor: There should be a provision of fortified wheat flour while developing new networks with traditional flour Chakki as well as with nanbais (traditional bread makers). Processors should be linked up with new markets, and with the farmers.

Retailer: Efforts should be made to increase proper storage facilities for the retailers. This will allow reduction of wastages and decrease in transportation costs for the retailers. Direct linkages between retailer and farmers will help in reducing transaction costs, thus the value chain can provide better quality product to the consumer at lower price. Retailers should be organised so that they can develop themselves from a less traditional system to more modern operating structures.

Consumer: Form consumer protection groups to act in support of price and quality control. There should be efforts to promote of organic food and organic vegetables can help poor households earn additional money, and thus can promote their access to food. Alliance should be built with other likeminded groups in support of protecting consumer rights. Consumer groups should work with farmers to protect their rights and facilitate their access to better input. Finally, there is a need to commission high quality value chain study, especially for rice, that use primary data to move away from low end rice production to high end rice production and also to identify root cause of non-production of potato in Sindh.



SECTION 1
Introduction and Methodology

SECTION 1

Introduction and Methodology

1.1 Study Background

According to the Government of Pakistan Vision 2025 document¹, Pakistan's 60% population face food insecurity. At the same time, United Nations World Food Programme reported that on average a household in Pakistan is spending 51% monthly income on food² highlighting the fact that food is the single most important expenditure in the household budget. For poor, the lack of access to adequate and diverse food is resulting in food insecurity. Pakistan has the third highest number in the world of children under five affected by stunting³: on average, 45% of children under five are stunted (9.6 million) which are on higher side, rising up to 63% in the rural areas of Sindh⁴. Most nutrition-related health indicators in Sindh⁵ are worse than the national average. The undernutrition is accompanied by some of the highest levels of maternal and child's micronutrient deficiencies ("Hidden Hunger"): e.g. woman (15-49 years) and child's anaemia reaches 51% and 73%, respectively.⁶ To better understand food security situation which is at the centre of malnutrition crisis in Sindh, Action Against Hunger (ACF) as part of its 'Programme for Improved Nutrition in Sindh (PINS)' commissioned this Food System Mapping research. The study findings will help with informed decision making to manage the issue of malnutrition.

1.2 Methodology

This research study focuses on ten PINS districts namely: Dadu, Jamshoro, Matiari, Tando Muhammad Khan, Tando Allah Yar, Sujawal, Thatta, Larkana, Qambar Shadat Kot and Shikarpur in Sindh province. These districts accounts for approximately 50% of the Sindh's population. The study focuses on three main staple foods: a) Wheat / Wheat Flour b) Rice c) Potato. The selection of these three food items is based on their relative importance and presence in the food basket throughout the year. The research study has the following objectives:

1. Identify traditional market hubs in 10 PINS target districts of Sindh.
2. Identify supply and demand pathways in food value chains for wheat, rice and potato.
3. Identify gaps and challenges that impact access of poorer households to selected foods.

To achieve the research objectives, the research team followed a value chain approach with a strong consumer focus (please see figure below). While considering all three commodity value chains, this research focused on the various segments of consumers in the target study areas. Within the consumers, the population was divided into two main groups namely Urban and Rural Population where rural population was covered both farming and non-farming groups. The end consumers are

1 <https://fics.seecs.edu.pk/Vision/Vision-2025/Pakistan-Vision-2025.pdf>

2 <http://www1.wfp.org/countries/pakistan>

3 Demographic and Health Survey (2013), National Institute of Population Studies, Government of Pakistan

4 Demographic and Health Survey (2013), National Institute of Population Studies, Government of Pakistan

5 Sindh province is the second largest province in terms of population in Pakistan.

http://www.pbs.gov.pk/sites/default/files/PAKISTAN%20TEHSIL%20WISE%20FOR%20WEB%20CENSUS_2017.pdf

6 https://ec.europa.eu/europeaid/sites/devco/files/aap-financing-pakistan-annex4-c_2016_8487_en.pdf

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selected randomly during the survey, however, during the analysis, a bench mark through income quintiles was established to categorise consumers in to poorest of the poor, poor, average and well off.

Figure 2: A Typical Value Chain



Based on the available data PINS districts are divided into three different groups based on the production of rice, wheat and potato which helped the research team reaching out to the relevant stakeholders including government officials, producers, wholesalers etc. The consumer survey covered all ten districts.

Table 1: Major Crops Production Areas in PINS Districts

S. No	Crop	Districts
1	Wheat	Dadu; Jamshoro; Qamber Shadat Kot; Larkana; Matiari; Tando Allah Yar
2	Rice	Dadu; Larkana; Shikarpur; Sajjawal; Thatta
3	Potato	Shikarpur

In 'whole of the chain' context; the research team organised data collection from respondents from all tiers of the target value chains from following three distinct potential markets / outlets namely i) Primary Markets; ii) Secondary Markets; and iii) Retail Market. In the context of this study, markets are defined on the basis of these aspects: i) volume of trade, ii) ability to determine base price, and iii) number of commodities a market deals in. For this purpose, primary markets (mandis) are defined as large scale markets which are specialised in one or more of a particular type of goods/commodities. They are buying directly from the farmers or other major suppliers. These primary markets provided the operating place for large scale buyers and suppliers. These markets are providing their good and commodities to the whole of the province and beyond. They are playing a key role in setting up the overall price - especially from the market supply and demand perspective. From secondary markets perspective, the goods are provided either to the whole district or major population hubs. These district level markets (mandis) are the primary providers of the goods and commodities to the district. Usually there is one main market (mandi) in a district with one to two smaller mandis, but this situation varied from district to district depending on the size of the district and population of the district. Retailers usually are doing their procurements from the primary main markets and/or secondary markets, depending on the distance to these markets from their retail outlets. The final place is the retail markets. These are the places where a common consumer would buy good and commodities as s/he would need. They dealt with lower volume and quantity of procurement. From overall price determination perspective, they had little influence over determining price of the commodities, and they added only their cost and profit margins to their procurement prices.

⁷ Agriculture Statistics of Sindh (2009), Bureau of Statistics Planning & Development Department, Government of Sindh.

Koondhar, M. A., Qiu, L., Magsi, H., Chandio, A. A., & He, G. (2016). Comparing economic efficiency of wheat productivity in different cropping systems of Sindh Province, Pakistan. *Journal of the Saudi Society of Agricultural Sciences*.

Development Statistics of Sindh (2016) by Bureau of Statistics, Government of Sindh.

Seed Potato Upgradation and Post-Harvest Management (2013) by Carlos Martin-Barros (Under Sub Agreement UAP-ISC-012-001-CNFA).

Data collected from these three markets helped in calculating the purchase price, other costs (such as transportation), sales prices, profit margin etc. This in turn helped in determining price sensitivities to different variables such as fuel and how it may affect affordability of the food for the consumer. Also, attempt is made to record data on awareness of the value chain stakeholders made to preserve or add value in the target commodities from the point of purchase and the point of sale of each tier of the value chains.

This research study covered drivers and governors of change on both the supply and demand side in the three value chains such as demographics, consumer preferences especially the poor and lower middle class, buyer specifications, technology, regulatory change, market access, factor costs in distribution and retailing and economic growth trends.

The research team used both qualitative and quantitative data collection tools for the research study. The research study used mixed methodologies for data collection including:

- Literature review (review of secondary data and documents)
- Point of Sale Consumer Survey
- Focus Group Discussions
- Key Informant Interviews

The point of sale consumer survey captured quantitative information. FGDs and KIIs yielded qualitative information. Following are the details on these tools.

Desk Review

Available secondary data related to overall food security and in particular context of the three target value chains are covered as part of the literature review. The literature review used data from UN agencies (especially FAO), NGOs, World Bank, academic papers, Government of Sindh, and Government of Pakistan.

Point of Sale Consumer Survey

A 30-minute survey was conducted with the consumers at the point of sale for all the three food groups in both rural and urban areas of the PINS districts. Consumer perspective regarding quality, quantity, price, place of availability etc. regarding staple crops is captured with the help of consumer survey questionnaire. The survey covered different topics such as awareness of the association of nutritional imbalance with food consumption, preferred attributes, buying patterns, price affordability, decision making around purchases, local markets commercial consideration, perceptions issues, and negative adaptation scenarios. The questionnaires were first piloted during enumerators training prior to their rollout. Random sampling methods were followed while data was collected at the point of purchase. Random sampling with the consumer intercepted at markets was practiced. Presence of male and female enumerators allowed to interview both male and female consumers. These interviews took place in retail markets serving poor and lower middle-class consumers without doing any pro-active effort to interview female customers to avoid any biasness in the response. Sample was proportionally distributed in urban and rural areas on the basis of the population. In most cases, a single consumer was using at least two out of three food groups. For the purpose of this study, the team divided the consumer households in to four main groups based on their monthly income namely very poor (those earning below PKR 10,000), poor (earning between PKR 10,001-20,000), well-off (PKR 21,001-30,000) and middle income (PKR 30,000 and above). The study did not cover people earning over PKR60,000 in a month. Government of Pakistan has set minimum monthly wage at PKR 15,000. The design of the questionnaire allowed separate analysis for each of the food group. Sample was calculated for each of

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the food group i.e. wheat, rice and potato. SPSS and CPro was used for point of sale quantitative data analysis. Data was centrally entered and analysed to adhere to the data management protocols. The following table reflects sample size per food group and margin of error whereas the confidence level was 95% ($Z\alpha= 1.962$) and response distribution was assumed to be 50% (p) for each of the three value chains.

Table 2: Consumer Survey Sample and Margin of Error

S. No	Crop	Gender	Rural	Urban	Total	Margin of Error
1	Wheat	Male	458	121	580	3.66%
		Female	79	33	112	
		Total	537	154	692	
2	Rice	Male	388	138	526	3.85%
		Female	75	26	101	
		Total	463	164	627	
3	Potato	Male	443	113	556	3.64%
		Female	101	39	140	
		Total	544	152	696	

Focus Group Discussions

A total of 30 FGDs with consumers were conducted as part of this research. In these FGDs 297 individuals (70 female) participated. In each of the FGD, different issues related to wheat, rice and potato consumption were covered. FGDs helped in generating more qualitative information. In each FGD, a minimum of eight to 12 participants joined the session. FGDs took place in Sindhi language whereas participants for the FGDs were purposively selected where the participants had similar background. FGDs with women consumer included pregnant and lactating mothers as well. For each of the FGD, participation was voluntary and they were allowed to quit FGD any moment they would like to do so. Each of the focus group discussion took around 90 to 120 minutes. Prior to the start of the focus group discussion participants were briefed on the purpose of the FGD and expectation and utilization of the FGD findings and also the security of participants' privacy. Data of the FGDs was analysed in NVivo. Each FGDs covered at least two food groups. Annex 2 provides detail of these FGDs.

Key Informant Interviews

Key Informant Interviews (KIIs) took place to fill any remaining gaps in the data collected in surveys and validated the FGD. The respondents of KIIs included those who were directly involved in different food chains. This included seed/fertilizer providers, retailers, wholesalers, representative of trade unions, government departments, academics, researchers and other people who have an active and demonstrated interest in the value chain. A total of 93 KIIs took place as part of this research. Of these 17 interviews took place with government officials, 28 interviews took place with producers, 20 interviews took place with processors and 28 interviews took place with sellers. Details of these interviews per district can be found in Annex 3. At the end of the KIIs, all the data was analysed through NVivo.

Team and Other Research Considerations

The research study was conducted by the four core team members with expertise in food security,

agriculture and value chain development. They were joined by 10 field enumerators. To maximise outreach, the research team engaged data collection team with equal representation from male and female for data collection exercise. Further, training was provided to the team member to ensure data quality. All the team members had skills in local languages (Sindhi and Urdu). In addition, all quantitative and qualitative data gathered at field level for the purposes of this assignment was triangulated in order to address desired output and to develop meaningful conclusions and recommendations. Once clean and quality data was available, statistical analysis was performed and analysed data was presented in forms of tables, charts and graphs. The research team followed the highest standards of research ethics. As such the research team did not face any specific challenge in relation to conducting this research. For details on team composition, training, data analysis and research ethics, please refer to Annex 4.

1.3 Report Structure

This section is followed by a summary of key findings from the literature review (Section 2). Section 3 of the reports provides key findings in relation to traditional market hubs while Section 4 covers supply and demand pathways in food value chains for wheat, rice and potato. Also discusses gaps and challenges that impact access of poorer households to selected foods. Section 5 provides overall and specific recommendations for improving wheat, rice and potato value chains, both from access and quality perspective, for the consumers with special emphasis on poor and marginalised groups.





SECTION 2
Literature Review

SECTION 2

Literature Review

Though the concept of the food security has originated globally during 1970s, but it has evolved since then. Initially, the focus was entirely on supply side - adequate supply of basic foodstuff with price stability to some extent both nationally and in international market. The re-examining of the famine, hunger and food security helped in recognising the effects of potentially vulnerable and affected people across the globe as a crucial aspect. Another fact which became the source for bringing the global attention to this aspect was that the Green Revolution did not automatically and rapidly cause dramatic decline in poverty and levels of malnutrition.

Pakistan ranks 77 (out of 109 countries) on the Global Food Security Index. Food security in Pakistan has been under constant threat where food security is defined as "when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life" (FAO 2006). The access should be in terms of physical, social and economic." (Arif & Khalid. 2007) According to the World Food Programme (2016), the poorest and most vulnerable members of the population cannot afford a sufficient and nutritious diet despite the overall growth in food production. WFP (2016) indicates 120 million Pakistanis which is almost 60% of total population are food insecure. According to Sustainable Policy Research Institute (SDPI), 61% of districts in Pakistan food insecure leading to hunger and malnutrition, especially amongst women and children (SDPI, 2009). Despite having surplus food to feed its population with Pakistan being a major producer of wheat, rice and potato, 18% of the population in the country are facing a severe shortage. This lack of access to food is leading to poor nutrition status amongst the targeted population where 15% are suffering from acute malnutrition and 44% of children under 5 years of age are stunted. These 18% of the people are getting less than 1,700 kilo calories per day against 2,350 calories per day requirement for a healthy individual. According to Pakistan's Vision 2025, 60 percent of the people are facing food insecurity, and 44 percent of children under 5 years of age are chronically malnourished. Since 1980s to 2010, food inflation increased by 9.3 per cent annually. It increased from 7.9 per cent in the 1980s to 10.1 per cent in the 1990s, and reached to 14 per cent until 2010. Despite having sufficient production of staple crops, the IPC Chronic Food Insecurity analysis which was conducted for 18 districts of Sindh province during November 2016 - April 2017. The preliminary findings ranked seven districts in Level 4 - Severe Chronic Food Insecurity including Tharparkar, Jacobabad, Badin, Thatta, Dadu, Jamshoro, and Shikarpur; 10 districts in Level 3 - Moderate Chronic Food Insecurity; 1 district in Level 2 - Mild Chronic Food Insecurity; while none in Level 1 - Minimal Chronic Food Insecurity (FSIN, 2018). These factors have severely affected access to quality food for poor households in Sindh.

Another important aspect in terms of the availability is the distribution of food across provinces and districts. In case of Pakistan, we can observe an unequal distribution of food. This accumulative production does not expose the true picture of actual distribution. Micro data or local level data tells us an entirely different story. Some results reveal that out of the total 157 districts, are food insecure (Ahmed Ramay, 2014).

Food access is a major area of concern for Pakistan. Some of the factors which are proven barriers in the way of food access are poverty and low income. According to the World Bank, the national poverty headcount ratio was estimated to be 29.5%. Some of the issues of the country like bad governance, electricity shortage causing stagnant industry and combating terrorism by military actions across the

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country has resulted in lowering the number of earning opportunities and within country refugee displacements which has caused an increase in the incidents of poverty. These figures strengthen the argument that availability alone is not sufficient condition for food security. Availability alone is necessary but cannot guarantee the food security. Moreover, production is mostly dominant in both Punjab and Sindh by few landholders which mainly contribute in the production and small farmers only produce for domestic and they are mainly tenants.

The south-west districts of Sindh, continuous rainfall deficits since 2014 have resulted in the damage and failure of crops as well as livestock deaths, with acutely impacted the insubstantial livelihoods of the local population. Drought was preceded by three consecutive years of flood emergencies.

To increase access to food, it is imperative to look it from the whole value chain. This will result in improving access to better quality food for poor households. United Nations Food and Agricultural Organisation (FAO) defines a food value chain as a series of vertical business connections that "consists of all the stakeholders who participate in the coordinated production and value-adding activities that are needed to make food products." (FAO 2017). In other word, a sustainable food value chain is a food value chain that is profitable throughout all of its stages (economic sustainability); has broad-based benefits for society (social sustainability) and has a positive or neutral impact on the natural environment (environmental sustainability).

According to the Economic Survey of Pakistan 2016-2017, agriculture sector achieved its targeted growth rate for the year which is 3.5%. Its share in the GDP for the year was nearly 19.53 percent and 42.3 per cent of total employment is generated in agriculture. More than 67 per cent of the country's rural population is directly or indirectly linked with agriculture for their livelihood. Whatever happens to agriculture is bound to affect the livelihood and consequently food security of the poor rural people. In a nutshell, any change in the sector both affects the demand and supply of the food. Agriculture's share in the GDP has declined from 38 per cent in 1969-70 to 19.53 percent. Decline share of agriculture and shrinking livelihood opportunities have resulted in rising poverty in rural areas. Agriculture plays a pivotal role in providing food to the fast-growing population of the country.

Food is the second largest industry in Pakistan accounting for almost 26% of its value-added production. Pakistan has a population of 200 million of which 75% are living in rural areas. Agriculture contributes over 21% to overall GDP of Pakistan and employs 46% of total labour force. In the context of Pakistan, based on the data from the 2016-17 Economic Survey of Pakistan it is clearly evident that wheat, rice and potato are the three main food products consumed throughout the country (Economic Survey of Pakistan 2017). Prices of these commodities are very volatile. For example, for rice, Hyderabad and Sukkur are the most volatile markets and their volatility levels are highly persistent and require highest time to return to its long-term mean which makes them the riskiest rice markets. (B. Ahmed 2017).

The first main staple crop - wheat has shown an estimated production of 25.757 million MT in 2016-17 which is marginally higher by 0.4 percent compared to the production of the previous year, despite the total area under wheat cultivation has slightly decreased by 3.1 percent compared to last year. In terms of production, Punjab adds up to more than three quarters of the total wheat production of the country followed by Sindh. Wheat is the single most important agricultural crop in Pakistan. 40% of agricultural land in Pakistan is allocated to wheat production whereas it is contributing around 10% to value-added products and 2.1% to overall GDP. Sindh is producing almost 17% of total wheat production in the country (5 million tons out of 27 million tons). Amongst the PINS districts, Dadu has the highest wheat production followed by Qambar Shadat Kot.

According to the farmers, untimely rain, little rain during Rabi season, strong winds, and hailstorms are

amongst the factors that negatively affect wheat production. Other elements such as low-quality seeds, contaminated and inferior quality fertilizer and pesticides are amongst the factors that negatively affect wheat production. The ability of smaller farmers to sell their crops on the government enforced rates are amongst the factors which negatively motivate farmers as well. Farmers also mentioned the size of wheat grain is shrinking which they linked with water availability resulting in low moisture as well as high temperatures at grain filling period.

In terms of wheat value chain, pre-farming of wheat value chain includes seed research and distribution. Research organizations and private seed companies are proving new seed varieties to Pakistani farmers, however to the actual farmers there are numerous vendors who are providing seeds and other agricultural inputs to the farmers. In recent years, Pakistan's wheat production has been about 22 to 26 million tonnes per year. The crop is grown by predominantly small (0.5 to 5.0 ha) and medium-sized (5 to 10 ha) farmers, whose livelihoods depends on it. Wheat yields in Pakistan remain low, lagging behind those in other countries with comparable agroclimatic conditions. In Sindh, wheat is grown in 1.17 Million Hectares area which is almost 12.9% of Pakistan total cultivated land. Pakistan's current production of wheat is around 25.2 million metric tons where contribution of Sindh province is around 15%. Wheat grain is primarily staple food across the country. Wheat has high protein contents along with other nutrients making it a complete diet. According to FAO, farmers in Pakistan retain about one-third of their wheat production for seed and household food consumption. The government is the main buyer of farmers' wheat, with actual volumes of government procurement often reaching 25 to 30 percent of total production, driven by both food security and market intervention objectives. Pakistan has limited use of modern storage technologies. There are only few permanent grain storage facilities. 45%-50% of wheat that has been harvested is wasted, spoiled, smuggled, or never even enters the cash economy. (Bastin 2008)

There are about 1,000 flour mills in Pakistan, which are privately owned. These mills meet the needs of about 40% of the population, with the balance met by on farm consumption or atta Chakkis. The disbursement of government-owned wheat to flour mills is managed in an effort to ensure that sufficient wheat is available throughout the year. Afghanistan has been the main wheat export market for Pakistan for decades mainly due to easy accessibility and traditional trade linkages between the two countries but Pakistan's wheat flour exports to Afghanistan are losing momentum mainly due to the higher prices of Pakistani wheat as compared to the international market and border tensions between the two countries. Pakistan's current year wheat exports to Afghanistan (in the form of flour) are estimated at 400,000 metric tons. Pakistan has a government-controlled wheat marketing system where government considers wheat as the key strategic commodity. At the same time setting procurement prices too high relative to domestic prices results in massive fiscal costs with no benefit to consumers and small farmers that do not sell wheat to government agencies in Pakistan (Dorosh 2012). This limits access to wheat for the poor segments of the society.

The second most important staple and third largest crop in terms of area sown, after wheat and cotton, is rice. It contributes 3.0 percent in the value added in agriculture and 0.6 percent of GDP. During 2016-17, the rice production has been recorded at 6.8510 million MT (milled basis), showing a small increase of 0.7 percent over last year's production. The share of the provinces in national production of rice show similar pattern with Punjab and Sindh produce approximately 90 percent of total production. Rice is taking up around 11% of Pakistan's total agricultural area, where Sindh stands second after Punjab. Pakistan is one of the main exporters of rice, especially the Basmati and white long grain rice. Rice accounts for 3.1% of the value-added products in agriculture. Around 2.9 million tons of rice was consumed in Pakistan in 2016-17 making it almost 45% of total production, while the rest was exported. Basmati and IRRI are two favoured types of rice. Rice is also extensively used in poultry and

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animal feed. Pakistan, on an average, exports 4.0 million metric tons of rice every year. Pakistan has a 10% import duty on rice. Rice constitutes 26 percent of the total export to USA. Main issues around rice is the non-availability of support in terms of input the paddy farmers as well as non-suitability of some of the areas to more high yielding and high value rice types. Rice is better paying crop as compared to wheat. For example, the overall cost for rice is PKR 60991/Acre and gross revenue for the rice growers is PKR 68434/acre and gross margin as PKR 28197.1 /acre, but there are some problems being faced by farmers in study area such as water shortage problem, high price of inputs, marketing problems, low price of output (S. Wagan 2007). Rice is mainly grown around Indus river in upper Sindh e.g. Larkana are producing long grain rice with hot and humid summers, and mild to chilly winters. At the same time, other PINS districts of lower Sindh along the Indus river with arid tropical weather is suited for coarse varieties including red rice. Amongst the PINS districts, Shikarpur is producing the highest quantity of rice, followed by Qambar Shadat Kot. Rice supply can be found in all districts of Sindh whereas its prices are mostly uniform across the districts.

In terms of potato, even though a very important crop, it is not produced in Sindh and many imported from Punjab and Khyber Pakhtunkhwa. Potato is the third most consumed food item in Pakistan. It has a total production of around 3.14 million tons. Sindh accounts for 1% of total national potato production highlighting the fact that there is very limited production of potato in Sindh. Shikarpur is the only PINS district with some potato production. In terms of pre-plantation issues, 97% of the potato seed available in Pakistan is not of good quality. More than one-third of the input cost in potato production can be attributed to the cost of the seed, poor post-harvest handling, including transport and storage practices, causes unnecessary damage and losses and reduction of consumption quality. It is important to mention that sufficient cold store space is available in Pakistan for potato. There are severe cyclical fluctuations in price preventing the farmers from enjoying a reliable income and consumer from using potato as a regular staple part in their diet. A broader potato value chain in the context of Pakistan as identified in the literature includes Seed: Importers, Multipliers, Distributors and Retailers; Fertilizers: Manufacturers, Importers, distributors and retailers and Chemicals, manufacturers, importers, distributors, retailers. From producer's perspective, it includes small, medium, large growers and potatoes processors including those who are sorting and grading potato and chips manufacturers. In terms of distributor it includes both local arhti as well as exporter and finally the consumer (SBP 2015).

From consumer perspective, poverty affects the food access in terms of the choices they have made to eat a diversified food as well as the quantity consumed within a day. The household dietary diversity score for Sindh is lowest among all the provinces/regions of Pakistan. The score is 5.9 whereas 36.1 percent of the people of Sindh are below the score of 5. The figure below gives a detailed picture of the food access across the districts of Pakistan (Ahmed Ramay, 2014). Overall in the country, altogether, 96 districts fall in either extremely low or very low category. Situation in Sindh is also very depressing, where as many as 20 districts fall in very low, with majority in very low category (Ahmed Ramay, 2014).

In terms of inputs, there are vast gaps between the acquired and actual output of produce, which suffers due to a lack of appropriate technology, use of inputs at improper times, unavailability of water and land use and inadequate education about insect pest control, which not only negatively affects the produce but also significantly reduces the amount of produce. Farmers mainly use synthetic chemicals for the control of insect pests, but these are used unwisely. (A Rehman 2016). In addition, water is a very important input for all the three crops listed above, supply of which is severely affected by climate change. Pakistan was listed as 7th in the countries most affected by climate change from 1997 to 2016 recently by Germanwatch. Among all the regions, though, Sindh is most awfully affected by extreme

weather events that are the classic manifestations of climate change. Sindh witnessed massive floods in 2010 and 2011, and severe drought in Thar Desert, Achhro Thar, Nara Desert, Kachho region, and Kohistan since 2013. The 2010 floods alone caused an estimated \$9.7 billion in damage, twice that of the massive 2005 earthquake in the Kashmir region. (Kunbhar, 2018).

Marketing of final produce is a key component of the value chain; however, they are less developed in the case of these three crops in Pakistan. For example, there are no national wide brand for wheat flour or potato. It is pertinent to mention the improvement in the functioning of commodity markets as well as the improved performance of the marketing system is now generally recognized as important, strategic elements in agricultural and economic development (A. Memon 2005). In terms of payers in the three value chain in Pakistan research stations and seed companies, farmers, Trade Cooperation of Pakistan, wheat and rice imports and export, provincial government departments including in Sindh and dealers / wholesalers, wheat and rice mills, Atta Chakkis (traditional mills), Paddy Producers, Paddy Wholesalers, potato storage houses, food processing industry, retail shops and consumers Sellers/Millers, Exporters, Retailers and Consumers as the main actors (SBP 2015).

One common issue of the target value chains in specific and all food value chains in general is that the majority of consumers in Pakistan still do not understand eating nutritional diet. Although the urban population has access to information on consumption of nutritional diet and its effect on human health and physical and mental growth and performance, but the issues pertaining to access to resources and certified nutritional food remains. The consumers level of awareness of consumption of nutritional food is reasonably lower in rural areas. Particularly in the PINS districts where the under nutrition and stunted growth has been reported, the concept of consumption of nutritional food is entirely naïve. Generally, the rural poor believe in bulk eating with regular consumption of wheat, rice, and potato. Still, the nutritional value of these bulk food products in accordance with access to variable quality, required quantity, and cooking patterns is not known. This gap in practice merits a dedicated study on eating habits of marginalised communities in PINS districts and documentation of nutritional update by the children, young, and adults compared with the standard daily requirements of each age group. Also, at a second stage, the potential loss of nutritional value from the target value chains due to poor postharvest handling, storage, and cooking methods would need a dedicated investigation.





SECTION 3
Traditional Market Hubs



SECTION 3

Traditional Market Hubs

This section deals with the first research objective i.e. “Identify traditional market hubs in 10 PINS districts of Sindh”.

3.1 Comparative Analysis of Traditional vs Modern Markets

The modern market and traditional markets offer different prices, qualities and bargaining power for same nature of products, still they have the common function of providing necessary space to people to engage in buying and selling. With a few exceptions, the market hubs in PINS districts can fundamentally be defined as traditional markets.

In terms of the traditional market hubs in 10 PINS districts of Sindh, the study identified two main types of traditional market hubs i.e. Wholesale Markets and Retail Markets. The wholesale market is further divided into grains market and fresh fruit and vegetables. These wholesale traditional markets in PINS districts are both buying and selling in bulk quantities of wheat grains as well as well fresh fruits and vegetables. For the farmers and middlemen these wholesale markets are the main selling point, whereas for the retailer, processors and consumer which includes both small and large-scale consumers, these markets provide the buying space. It is important to mention of the processing functions are taking place within these markets. From a value chain perspective, it reduces transaction cost for the producer as well as the consumer by reducing transportation costs.

Even though the trends are changing, still 97% of markets in PINS supported districts can be classified as traditional market hubs where market actors act similar to the old practices. There are distinctive features which differs traditional markets from the modern markets. While having a value chain perspective, following table provides a comparative analysis of traditional markets hubs viz-a-viz modern market hub in PINS supported districts.

Table 3: Comparative Analysis of Traditional Vis-à-vis Modern Markets in PINS Supported Districts

Comparative Analysis		
S. No	Traditional	Modern
Input Supplier		
1	Quality of agricultural input including seeds and pesticide are low. Inputs suppliers are provided by traditional sources. No access to formal finances from banks.	Quality of inputs are high. Inputs are provided by the middlemen, large wholesalers, traders and processors. Government also provides quality seeds. Accesses to financial services are available.
Producer		
2	Subsistence farmer with small farm holding or share cropper. Not or less educated. No financial capacity to independently operate without external in-kind or financial support thus limited purchasing power. More in number, but not organised and have no	Comparatively bigger farm sizes with bargaining power. Better educated. More market linkages. Operate beyond their immediate market space. They are fewer in number but more powerful. More organised and awareness. More financially

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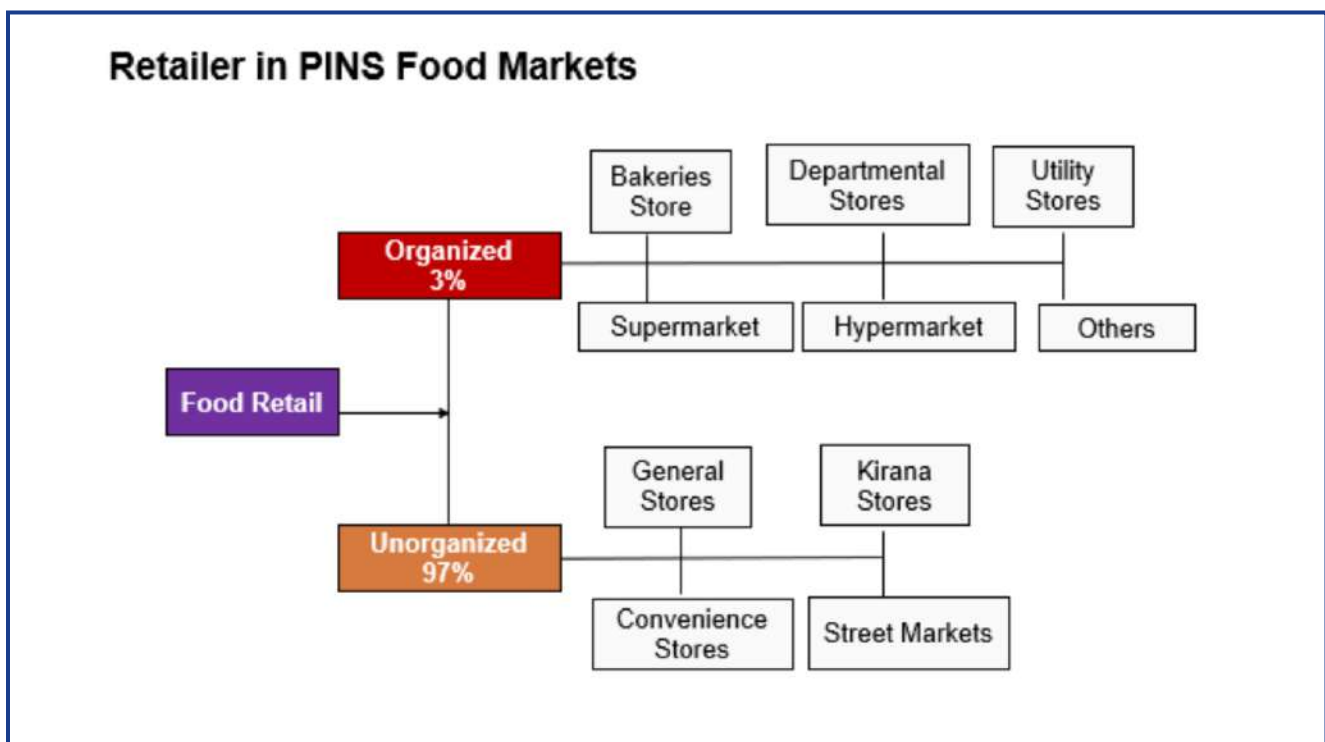
Sindh, Pakistan

	collective bargaining power. No use of modern technology. At no value to the value chain, expect the production function. Sells their produce via middlemen.	independent and have access to formal financial services. Uses better quality input and more quality conscious. Use modern technology and farming techniques in their farms. Sells their produce directly to the processor, wholesalers and exports. Perform other value additional functions such as packing and sorting.
Middleman		
3	Both socially and politically connected with farmer. Provide loans. Less concern on quality and quantity produced. Provide loans with no significant documentation requirement. Provides input for farming, but mostly inferior quality. Have presence close to the producer and engage directly with the producer.	More professional engagement with the producer. Higher engagement in terms of quality and quantity of produced. No social engagement with the producer. Long term professional engagement. Do not provides loans as such. Facilitate access to loans through financial services. Provide quality input. Not present close to the producer. Usually acts through its staff.
Wholesaler / Processor		
4	Higher in number and have district and sub-direct level power to affect market prices through supply and demand functions. Operate in informal setting. Perform basic sorting and packing functions. Do not have access to loans from financial institutions. Do not directly engage with the producers by providing them farm input and mostly uses middlemen.	Fewer in number and the ability to affect market prices in the province using quality parameters. Less control on market prices as commodity supplies in the market are not influenced through their actions given the presence of high number of wholesalers in the traditional markets. Perform high-end sorting and packing functions. Operate cold storages. Have linkages with financial institutions and avail loans. Also facilitate producers through provision of quality input. Have linkages with export markets directly or through other exporters.
Retailers		
5	Very high in number. Deals with small values. Less quality conscious. Use less formal packing. Easily accessible to consumer. Prices not fixed and offer space for negotiation. No policy on product display. Operate in low tech environment. Less power to negotiate purchasing price with the wholesaler due to low trading volume. High consumer and retailer engagements at personal level, leading to more consumer loyalty. Deals with consumers from local neighbourhood. High degree of empathy. More responsive in provision of items to consumer on loans. No systematic framework on consumer satisfaction. There are more competitors. Prices are comparatively lower. New retailers could easily join. They are dealing with	Fewer in number. Deals with higher values. More quality conscious. More conscious to provide similar type of quality every time. Use formal display for products. More power to negotiate prices with the wholesalers due to high trading volume of better-quality goods. Use formal packing. Not always easily accessible to consumer, even in urban areas. Prices are fixed. No price negotiation with the consumer. Operate in comparatively tech environment. No social engagement with the consumer. Consumer loyalty attained through provision of value for money. Deals with consumers from local neighbourhood and beyond. No empathy with consumer. No loan services for

	significantly larger number of goods, but offer less varieties.	consumer. Engage formal frameworks to ensure consumer satisfaction. There are fewer competitors. Prices are comparatively higher. New retailers could not easily join. They are dealing with significantly larger number of goods and offer more varieties
Consumer		
6	Mostly belong to poor and middle-income groups. Procure quantities to meet their daily or weekly needs. Some of them also procure on credit. They are mostly price conscious, even though quality consideration also affects their decision making. The place of their usual procurement is mostly close to their habitual place of residence.	They belong to middle income and rich consumers. They mostly buy bulk quantities. They are more quality conscious. They do not need credit from the shopkeepers for their purchases. Some of them also use digital currency such as debit or credit cards. Distance to the place of procurement is not their dominant decision making. mostly price conscious, even though quality consideration also affects their decision making. The place of their usual procurement is mostly close to their habitual place of residence.

From consumer's perspective, difference in the traditional market as comparative to modern markets are most evident at the retail stage. When this aspect is analysed, in the food market traditional markets are the dominant market structure in the form of general stores, kirana stores, convenience stores and street markets/vendors. In terms of modern markets, in the food retails, it included bakeries, department stores, utility stores, supermarkets, hypermarkets and others as reflected in the figure below:

Figure 3: Retailers in PINS Food Market Hubs



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Modern market hubs, especially in relation to food, are providing specialized services related to wheat and other food products such as delivery services, organic food, ready to cook food, fresh juices etc. This is a new happening in the food markets present in PINS districts as can also be seen in the figure:

Figure 4: Modern Food Markets at PINS Districts

Modern Food Markets

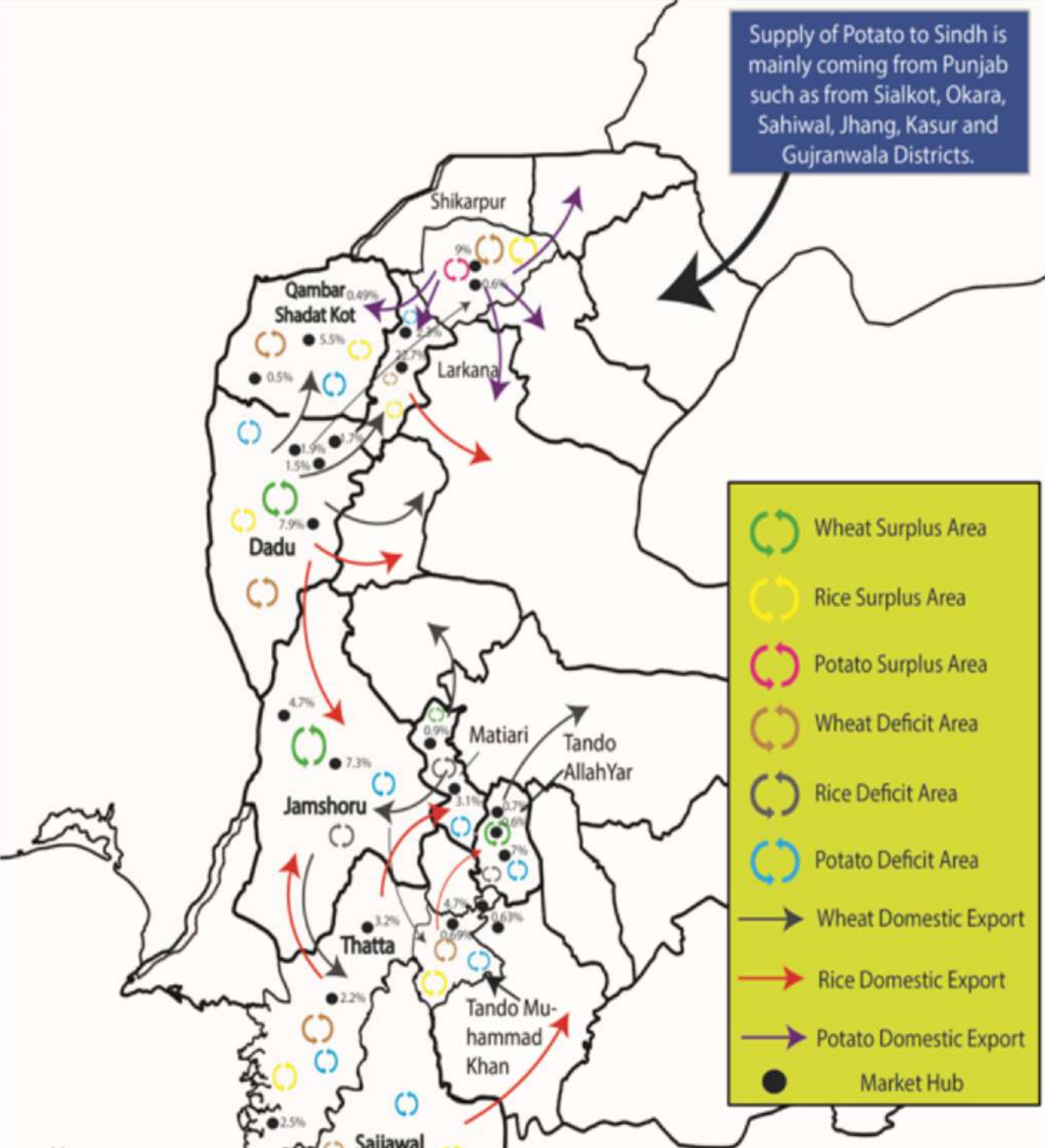


3.2 Traditional Food Markets and Catchment Area

The research identified over 90 major markets encompassing characteristics of traditional market hubs. These markets are listed in table and also geographically presented in the annex for each of the ten PINS districts. It is evident food is transferred from food surplus districts to the food deficit districts. Following map present food pathways as well as market catchment areas for PINS supported districts. Please note food pathways are discussed in more detail in the next section. As can be seen in the map, wheat and rice is mostly procured from neighbouring districts thus reducing transportation costs. Potato is sourced from Punjab as there is no meaningful production (except in Shikarpur district). In addition, there are two to three main markets in each of the districts. Relative size of the market as compared to overall PINS market size is given in the percentage. The relative size of the market is based on total population served by it while assuming same per capita consumption for wheat, rice and potato across all the PINS districts.

Food Pathways in PINS Supported Districts

Supply of Potato to Sindh is mainly coming from Punjab such as from Sialkot, Okara, Sahiwal, Jhang, Kasur and Gujranwala Districts.



- Wheat Surplus Area
- Rice Surplus Area
- Potato Surplus Area
- Wheat Deficit Area
- Rice Deficit Area
- Potato Deficit Area
- Wheat Domestic Export
- Rice Domestic Export
- Potato Domestic Export
- Market Hub





SECTION 4

Supply and Demand Pathways and Challenges in Accessing Food

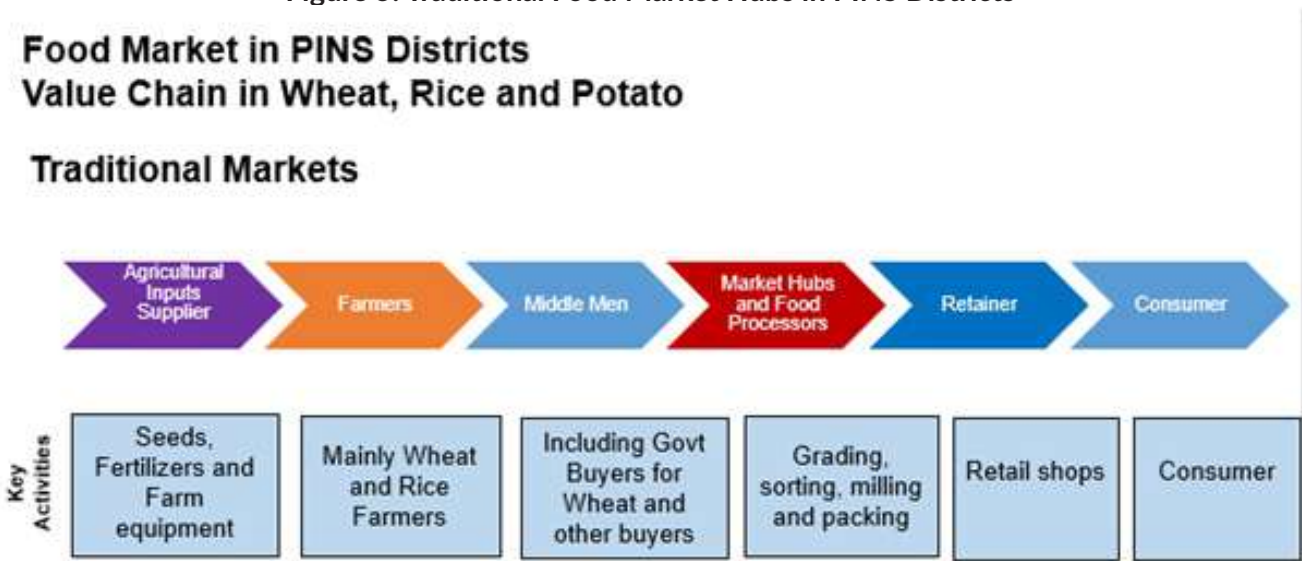
SECTION 4

Supply and Demand Pathways and Challenges in Accessing Food

This section presents supply and demand pathways and challenges in accessing food.

A typical traditional food chain which is the dominant structure in PINS supported districts has six main actors: Input Supplier; Producer (Farmer); Middle Man, Wholesalers, and Processors; Retailer; and Consumer as reflected in the figure below:

Figure 5: Traditional Food Market Hubs in PINS Districts



A brief analysis of the value chain actors is described hereunder.

4.1 Input Supplier

Input Supplier in Traditional Chains and emerging trends in Modern Context: A typical food value chain starts from the input supplier. The input suppliers deal with all kind of agricultural input such as seeds, fertilizers, farm equipment, and related advice. In traditional chains, the farmers continue to express their dissatisfaction on the quality of inputs they receive from the input suppliers. However, since these input suppliers also lend advance payments to the producers without asking any collateral and tend to have a long-term relationship with the farmers; the bond between the inputs suppliers and producers is usually strongly built on social ties. The rates the input suppliers are charging from the farmers are from 40-50% on annual basis and this works on the principles of compounding interest basis where interest is calculated both on principle and unpaid interest. Usually the small farmers have limited earnings and higher spending; the net amounts payable by the farmers to the input suppliers continues to increase year after the year. So, this relationship continues. A key change happening in the market in modern chains is the changing role of these loan providers where in some instances new actors such as Zarai Taraqiati Bank and other commercial banks / financial institutes provide loans to the farmers at lower rates. These banks / financial institutes have more stringent requirement of documentation regulations, they are not the favourable option for borrowing by the farmer as either the farmers do not understand these requirements or are reluctant to fulfil these requirements. The evolution of 'Akhuwat (an initiative of interest free loan for small farmers)' and similar financial institutes or models of purchase of farm outputs from the farmers on competitive market prices in

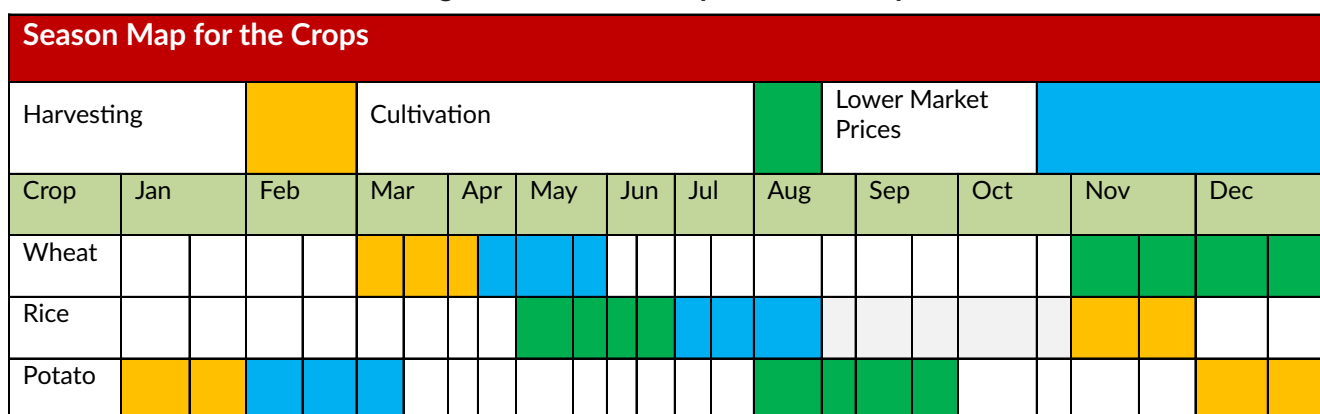
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advance can help the small farmers get away from the traditional input suppliers. In addition, the emergence of new businesses at district level e.g. Engro and Fauzi, etc. leads to provision of better-quality agricultural inputs to the farmers.

From farmer's perspective, the importance of input supplier varies at different points of year which coincide with the time sowing and harvesting period. For example, farmers are more dependent on input supplier during the sowing season or during the time when s/he needs seeds or fertilizer. Their dependency on input suppliers reduces during harvesting time. Of the three food crops, in Sindh, wheat and rice are considered as major crops where potato is considered as minor crops as fewer people grow them. Wheat is the single most important Rabi crop in Sindh. Within PINS districts exact dates for the wheat cultivation and harvesting varies depending upon monsoon. Even though rice is a major food, there are three other crops which compete with rice namely sugarcane, maize and cotton. Following graph presents seasonal map for Sindh covering these three crops, which can be used to align support activities for the farmers:

Figure 6: Seasonal Map for Sindh Crops

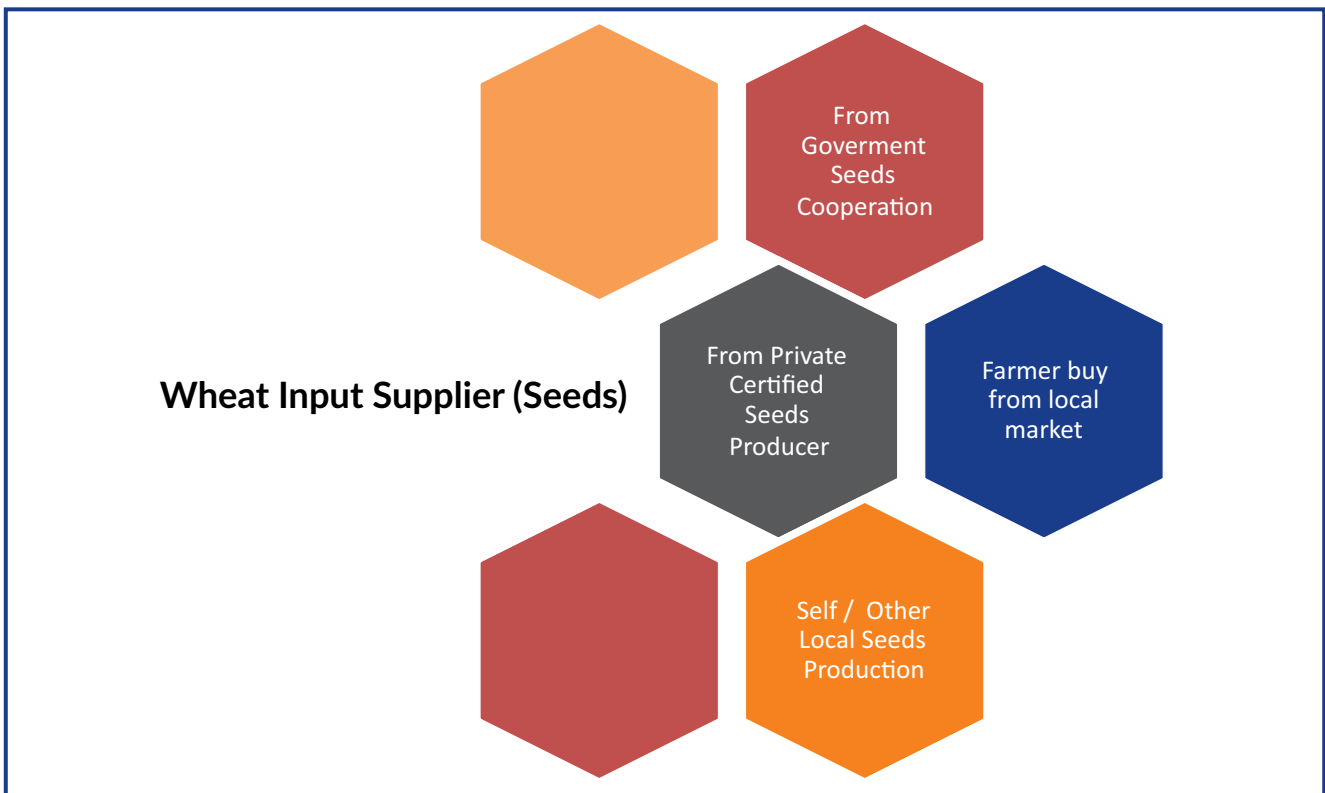


Cultivation of wheat in the PINS districts of Sindh can be broadly divided into two main groups. In the lower districts of Sindh, it starts in the beginning of November and goes up to the mid of December. Whereas in the districts falling in the upper Sindh, it also starts in the beginning of November but continues for a longer period i.e. till the end of December. Unlike wheat, there are two very different seasons for rice in Sindh. The cultivation of rice in upper districts of Sindh takes place in June whereas for lower districts of Sindh, it takes place in April. The harvesting for the rice in these areas takes place in March and August/September respectively. Even though in the past rice is considered as a monsoon crop with a more predictable time period. Availability of water including rain and irrigation water are amongst the key determinants which influence the decision on cultivation. The introduction of hybrid varieties in Sindh has affected the seasonal calendar for rice. As a result, now the new hybrid rice is cultivated in March and April and instead of June and July. Only a small quantity of potato production takes place where cultivation takes place in August and September and harvesting takes place in December and January.

Wheat

Farmers are receiving their input for the cultivation of wheat from input suppliers. The first and foremost important aspect is seeds. There are two types of seed providers in Sindh: formal seed providers which are managed by public-sector and are known as seed corporations and private sector seed providers known as private seed companies. However, majority of the farmers are receiving seeds through the informal sector including commission agents, retailers, and shopkeepers. In addition, some 70% of the farmers are using saved seeds. Besides seeds, their input suppliers are providing other

agricultural products such as fertilizers, pesticides. All these things are provided on credit. There are also limited role of financial institutions which provides loans to the farmers, but usually these loans are not accessible to the farmers due to documentation requirement or lack of information on part of the farmers. The negotiation for the loans, procurement of seeds and other agricultural input are carried out by men. From value chain perspective, this is the first major weakness of the value chain where farmers do not get access to quality seeds due to lack of information or lack of finances



Rice

Rice is the second most important crop for Pakistan. Different input for rice such as seed, fertilizer, machinery, pesticide, financial and extension services constitute its major input. Farmers have limited access to new rice varieties and they rely on traditional varieties. As is the case with wheat, fertilizer and pesticide for rice production is provided by large private companies. There are limited or no control over the quality they produce or the price they ask for their products. As a result, the market is full of fake pesticides. Private vendors are providing input for rice on credit with no documentation requirement. There are some public sector institutions, however their outreach is limited. Farmers in general are supported by the government through the extension services, especially those related to pest control.

Potato

As seeds are the most important input supplier for potato, in Sindh there are no major suppliers. In Shikarpur there are limited number of potato seeds provider, however they are mostly dealing with seeds which are produced locally. There are limited services available from the government with regard to potato in terms of extension services. As far as seeds and fertilizers are concerned, they are available through local market. There are no proper storage facilities for potato and the harvest is mostly sold immediately in the market.

Table 4: Provision of Input

Crops	Availability of Seeds	Easy Availability of Quality Seeds	Support from the Government	Local Knowhow	Easy Availability of Quality Pesticide	Extension Services from Government	Support from Private Sector
Wheat	Yes	No	Some - Yes	Yes	-	Some - Yes	Some - Yes
Rice	Yes	No	No	Yes	Some - Yes	Some - Yes	Some - Yes
Potato	No	No	No	No	No	No	No

4.2 Producers (Farmers)

Traditional food producers in PINS districts mainly are subsistence farmers with limited marketing knowledge. They face issues such as lack of capital, knowledge, tools and equipment. There are fewer government policies which encourages them to adopt new technology and create new linkages with the market. Consumers get access to food through a number of intermediaries, where no major value is added in these steps. From production side, the agricultural produce is provided both from local producers especially in case of wheat and to some extent in rice markets whereas for potato it is exclusively filled by external suppliers. In the traditional food markets, the mode of transaction is hard cash. There is no practice of barter trade in the market. Fundamentally the producers in PINS districts are small scale subsistence farmers who are acting the main producer in traditional food markets. These farmers do not exhibit characteristic which are to be found in a modern market. For these farmers, even though, their per hectare yield has increased from 20 mann/hectare to 40 mann/hectare over the last thirty years, there has been no change in his overall income. In fact, the land holding that is available to them for farming purposes has gone down mainly due to family inheritance property division, a net increase in number of farmer and reduction in cultivable land. In the PINS districts the research team did not come across any farmers who are running the farming on systematic basis, another key characteristic of modern farming, and in most cases the farmers are having access to smaller pieces of farming land of themselves or through the landlord. In addition, the farmers are still adopting traditional farming techniques and very few of them adopted new modern techniques.

Wheat

Wheat farmers mostly operate within the framework of a family unit. A family works jointly in the farm. Farmers either works on their own farm or work on someone else farms. Farmers in Sindh are subsistence farmers. In terms of their produce, during their discussion with the research team, the farmers mentioned several arrangements which these farmers make depending on the size of the landholding and produce, there are different practices in relation to wheat:

1. Whole produce is kept for own consumption;
2. Whole produce is sold to cater for the household needs;
3. Part of the wheat produce is kept to fulfil household needs while the rest is distributed/ sold to cater for other household needs;
 - a. The produce is sold directly by the farmer at the government purchasing point
 - b. The produce is sold via a third party/middle man.

Wheat farmers are losing almost 10% of their price value (if not more) of their produce due to their inability to acquire Bardana which is the official government packaging for wheat before Government will purchase it. As a result, they get low price and are unable to meet their basic needs as well as buy quality seeds and other agricultural input. This lack of access to Bardana thus perpetuates debt cycle and poverty cycle. Due to lack of sufficient storage facilities for wheat grains, farmers lose not only grains but also get less produce next year when they use part of the stored grains as seeds (due to moisture lost). This leads to low production thus low income for the farmer and low purchases.

Rice

Farming on rice is taking place on privately owned land where either the farmers own the land or they are cultivating it for the landlord. Rice is a very labour-intensive work and there is limited availability of modern machinery. As a result, family members including women and children are heavily involved in rice cultivation. Unlike wheat, given rice in general fetch better price, farmers are finally better off in Sindh are engaged in the cultivation of four main types of rice varieties available in Sindh, commonly known as Long Grain White Rice (Saila), Basmati Rice, Broken Rice (toota) and Red (Tairy) Rice.

- Basmati is famous for its taste and aroma. It costs up to PKR 120 / kg. Basmati is usually in high income group households.
- IRRI or Long Grain White Rice commonly known as Saila is used in high income groups. It costs up to PKR 100/KG.,
- Broken Rice or Toota have multiple sub varieties known as full toota, moderate toota or less toota. The price varies between PKR 55/kg. Good quality toota rice is used for kitchri and used for children and elderly. Full toota rice is broken rice is used in poultry and animal feed.
- Tairy Rice is traditional rice used for Rice Flour and eaten as rice bread. It is staple food in rice eating areas of Sindh. It is the cheapest of all costing PKR 40/kg.

As is the case with most of the wheat producers, most of the farmers are keeping part of the rice for their own usage while the remaining sell it in the market. At the same time, unlike wheat, as prices are not controlled by the government nor there is an effect of Bardana, this leads to more say for the farmers to sell their rice. Due to climatic and soil conditions, Sindh is not producing any Basmati rice in the country. IRRI rice is the high-end rice produced in Sindh. Farmers are mostly selling their rice to the middlemen or to the rice mills directly. For example, broken (toota) rice is sold at PKR 950 /Mann by farmers while the same is sold at PKR 55 at the retail. Farmers also indicated rice production since 2010 has improved and they are linking it with the more fertile land resulting of several floods in recent years which re-fresh the soil with more nutrients. In some cases when the rice farmer with large farm sizes are unable to sell their produce, they keep it till a time when market prices are higher, however this is not the case for farmers who are willing to sell their produce even at lower price as soon as the crop is harvested.

Even though government officials mentioned that government is providing subsidy on crops as well as on machinery while also facilitating access to capital for the farmers, but this could not be confirmed from the farmers.

Potato

Potato is a comparatively new crop for the farmer and they got the know-how from Punjab. There are limited number of farmers who are growing potato. The lack of farmers with an active interest is due to the climate conditions, and even more importantly, the presence of other crops which are providing better return as compared to potato. Potato is not produced in PINS district due to lack of know-how

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and climate conditions. As a result, even though potato is widely used by poor households, in case of a price increase, they stop using it. As a result, they lose access to a very important food item in their daily meal.

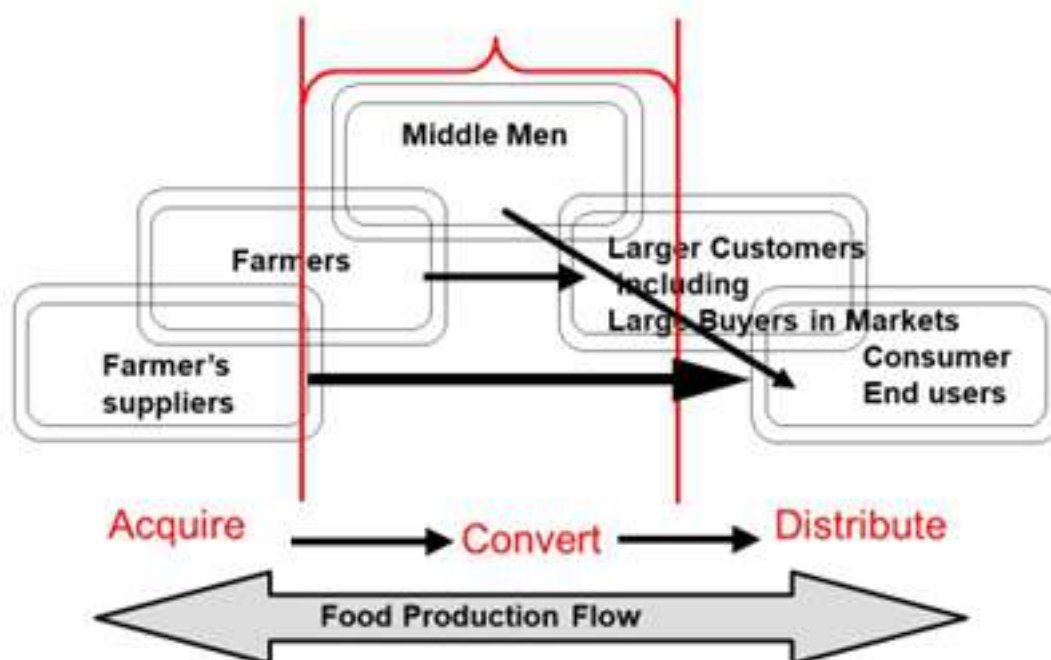
To conclude, poor agricultural households, especially in rural areas of PINS, are dependent on underdeveloped agricultural sector. They have an overall dependency on primary agriculture. These farmers are operating below optimal level with low fertility soils, limited use of farm inputs, changing monsoon season and other environmental degradation, significant food crop loss both pre- and post-harvest, inadequate food storage, lack of access to good seeds and external finances etc. As a result, these farmers are getting low returns from their agricultural activities and thus have limited cash to meet up food needs in a satisfactory manner throughout the year, especially when faced with raising food prices. Smallholders are experiencing access to markets as a result of inadequate support institutions and poor policies. As a result, these farmers cannot penetrate the market and they do not get fair price for their produce. This situation leads to poor household security.

4.3 Middlemen

The role of the middlemen in the traditional food market hub value chain is two folds. Firstly, in most instances the middlemen are acting as the input supplier and at the same time the main buyer from the farmers. The middlemen are providing the produce they are supplying to the main markets (explained in the next section) as well as to other large such customers and food processors. It is pertinent to mention these middlemen adopted some important features of modern value chain such as sorting and packing, something which is traditionally associated with main market hubs before. These middlemen are also more conscious of quality and to a degree support the farmers through input supplies so that these farmers can have better quality produce as can be seen in the figure below:

Figure 7: Traditional Market Chain

Traditional Market Chain in PINS Districts



Wheat

When wheat crops are ready, the government announces its purchase at specified locations known as purchase centres. These centres help the government to procure and/or store wheat stocks. Once government concludes its procurement, it releases wheat stocks to millers at pre-approved rates, which is usually lower than the purchase price thus providing a subsidy to everyone who will be buying wheat flour. The exact amount of the subsidy depends on increase in transportation costs, prices of Bardana and interest rate charged by the banks on the loans obtained by the Food Department. The purchasing price of the wheat grain by the government is usually higher than the open market and is known as support price. The ability of the farmers to successfully sell their produce is their ability to properly pack the wheat. For this purpose, issue them wheat bags (jute bags), commonly known as Bardana. These Bardana are issued by the department and serve as the proper packing modality. During the discussions with the government officials and farmers, it is evident usage of Bardana reduces losses against storage of wheat grain especially for the lowest layer of Bardana. A robust field monitoring mechanism has also been devised to supervise the centres more rigorously.

In practice, farmers are keeping part of their wheat production for their own usage while the remaining portion they are selling through third parties or middle men. In some contexts, the middleman is known as Saith or Wayya. In most of the cases, the farmers are taking their produce to the traders by themselves whereas the average transportation cost is PKR 40/mann for an average distance of around 35 km one side trip. As farmers usually did not have disposable cash income, this round-trip cost is paid the middle men. The middleman buys at PKR 1,150/Mann and sells at PKR 1300/Mann at the government designated purchasing point.

Rice

In the PINS districts small farmers are selling their products through the middlemen while the large farmers are directly supplying their paddy to the rice mills. These rice mills process the paddy. Usually the middlemen are also the supplier of farm input. These middlemen, in case of rice, keep up to 10% of the farmers prices, however they pay for the transportation cost. This 15% profit is over and above the interest rate the middlemen will charge for the loan he might have given to the farmers. Those small rice farmers who are able to avoid the role of middlemen also struggles to sell their produce directly to the rice mills, as the rice mill owners prefer not to deal with many small farmers. This reflect the dilemma which forces the small farmers to go through the middlemen. Rice mills find it more economically beneficial to buy it directly from larger farmers or middlemen instead of small farmers as it reduces transaction cost at their end which covers logistics and the supply chain cost.

Potato

Potato is mostly sold directly in the local wholesale market without going through the middlemen. Some of the produce sold is then re-sold in Hyderabad market, even though the total quantity from Sindh production hardly affects overall market supply or price.

4.4 Wholesalers/Processors

There are at least 3-5 big wholesalers in each of the traditional market. Their functions are similar to that of modern market, however the scale of their engagement in terms of their involvement in grading, sorting etc varied and are less intense in the value chain as compared to modern market chains.

Wheat

The largest buyer of wheat is government itself, as described above. Other than the government, there are a total 150 Flour Mills out of which 75 mills are operating in PINS districts, where these mills are

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playing an important role in terms of wheat processing and also divide wheat into multiple products such as wheat flour, maida, soji etc. In addition to flour mills, there are at least 240 Atta Chakkis where each of the licenced Chakki is provided with 40 bags of wheat per stone, however unlike flour mills, these Chakkis are only producing whole wheat flour. These flour mills are provided with wheat by government storage through subsidized prices from this storage facilities where the subsidy is covered by the federal and provincial government. Sindh has 70 registered wheat brokers and they have important players in terms of exporting wheat to other countries as well as providing additional wheat at market prices to the flour mills whenever these flourmills require additional wheat for milling. Almost all of them have presence in Karachi, they are well organised and connected and have the ability to affect the market prices of wheat due to their collecting bargaining power. In these mills, wheat grain is grinded and transformed into wheat flour and usually available in three types namely:

1. Brownish Flour: This type of wheat flour is not refined. The price on average is PKR 35/kg. This is commonly used by those who produce their own wheat crops.
2. Semi Brownish Flour: This type of wheat flour is semi brownish. It is made by mixing up the brownish and refined flour. The average price is PKR 40/kg. This is the most commonly used wheat flour in all income groups.
3. Refined Flour: This type of flour is very refined. The average price is PKR 45/Kg. This is mostly used in well to do families, hotels and traditional bakeries (tandoors). Villagers usually do not use it.

Those associated with wheat flour milling business including those from Atta Chakki mentioned the wheat policy in the province is flawed and there is a need to revisit the policy to ensure proper return to all those involved in wheat value chain, including farmers and millers. Key informant from flour millers mentioned several reasons such as increase in petrol prices leading to an increase in transportation and issues with seasonal forecasting of the wheat. Sindh on average produces some two million tonnes of wheat which is not sufficient to meet its demand and has to buy wheat from Punjab.

During the FGDs and KIs, it is evident there is not much price difference between wheat flour from traditional millers as compared to larger modern mills. However modern mills are able to produced multiple products from the wheat they grind such as meida which is made from the starchy white part the wheat grain also known as endosperm where media is finely milled and bleached from wheat flour. Such value additions are not available in case of traditional mills.

Rice

In PINS districts, rice/Paddy wholesalers were the very important players in rice value chain. The wholesaler either buy paddy and send it for processing or buy processed rice and make it available to retail markets in his own districts or in the neighbouring districts or provinces. Some of the wholesalers are even involved in export of rice and/or act as the main collector of rice for different rice exporters. The wholesaler on average charges 6-8% of the profit margin. In terms of the rice millers, paddy is processed at their mills to obtain the raw rice or converted rice. From value chain perspective, these mills adding value in rice mills by converting paddy into rice where they are purchasing and milling of paddy and selling of rice. Bulk of the profit, that is from 20-25% were going to the rice millers.

Potato

In terms of availability of potato, they are available in all the wholesale market, mostly based on the production from Punjab, even though in some seasons production from Khyber Pakhtunkhwa and Punjab is also introduced in the market. During the FGDs participants confirmed markets are functioning efficiently with respect of potato with no price distortion.

Potatoes are mostly brought from Punjab. This is mainly due to the fact climate is not suitable for potato production in Sindh. For example, potato needs optimal temperature of 23-35 oC for 120 days, whereas it is available only for 34 days. Within Sindh in general, including in PINS district, there is no storage space available for potato, even for short term. This is mainly due to the fact lower temperature within the storage facilities cannot be used as effective sprout suppression. In fact, lowering the temperature to 3 oC stops sprouts, but it results in changing the taste of potatoes from tasteless to sweet potatoes, which has lower market value. For this purpose, potatoes are stored at 15 oC in the storage facilities, which are mostly in Punjab, where these potatoes are exposed to chlorpropham. This gas is introduced into the storage building and distributed through the store ventilation system. As a result, even at the higher temperature no sprouting take place. The storage cost around PKR 350-450 per mann (40 kg) for a season of 6 months. In 2017-18 season, wholesale price of normal potato is PKR 1,800 per mann (40 kg) which is slightly above the normal breakeven point. In 2012, this price is PKR 6,000 per mann. Each truck of a potato costs around PKR 216,000. Transportation costs on average is PKR 50,000 per trip from Kasur (a main potato producing area) to Hyderabad. In fact, it cost less to hire a truck from Punjab to Hyderabad or Karachi as compared to having a truck from Karachi to another city in Pakistan. This is mainly due to high demand for trucks to transports goods from Karachi, which is also the port city, to other parts of the country. As such there is very limited knowhow around potato amongst the farmers and they have almost no exposure as how to grow potato, how to take care of it and how to store it.

At the main mandi (market) level, supply from Punjab and seasonality are amongst the two main factors which affect the overall price. This leads to a trickledown effect on price at the local prices of the potatoes. In addition, crop associations and suppliers also play a role in determining the price. Before the availability of new crop i.e. around December, prices of potatoes go down as usually all those having stored their potatoes takes it out and sell it. Whenever there is a supply disruption, prices go up. For example, Hyderabad mandi, which provides potatoes to the all the surrounding districts receive around 10 trucks of potato every day, each with around 120 mann of potato. Prices are determined every day. So even if supplies are not received even for two to three days (e.g. due to transportation strike or floods), prices of potatoes go up. Even though government also sets the prices of potatoes just like other food items, they are not usually implemented.

4.5 Retailer

In the PINS districts retailer can be categorised into two groups namely organised and unorganised. The organised retailers are a new phenomenon and have a maximum of 3% market share. The organised retailers include departmental stores, utility stores, super markets, hypermarkets and bakeries. In PINS districts we see an increasing trend in the rise of supermarkets and modern distribution businesses in the food marketing systems, even though they are less focused on wheat and rice and more on other food products (e.g. dairy products). So far, these organised food retailers are unable to take a major share from traditional retailers. The unorganised retailers dominate the market but they do not have a power to control the market. General stores, kirana stores, convenience stores and street markets/vendors. The demand is produced by the consumer which includes both individuals as well as organisations. From individual consumer perspective, the demands are coming both from the farmers (almost 15%) who produce some of the goods (e.g. wheat) as well as others who are exclusively contributing other services in the economy. One of the main demands which is created by organisations are in the field of wheat (government being the main buyer of wheat grain) followed by rice where big supplier is willing to buy some specific types of rain (i.e. IRRRI). Unlike in the organized market, in inorganized markets, consumers bargain when they do the shopping and ask the retailer to bring down the price. Furthermore, there is a perception that food items are fresher in traditional

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markets where there is a possibility food did not go through the cold chain process and may not have changed many hands whereas in modern markets represented by organized retail shops food items are not fresh. To conclude, in all PINS districts, sales of wheat, rice and potato are still mainly controlled by traditional retail markets.

Wheat

Wheat is available in every village through retail outlets. There is no price differentiation amongst different shops in similar types of markets. This highlights the facts that market is presenting a situation where in normal wheat flour value chain process is adding less elements which would differentiate wheat flour. Rather their main distinction is the type of wheat flour, as described above.

The retailers were in a difficult position to sell the wheat flour at the same price. They were factored in their transportation cost as well as storage costs. During interviews retailers mentioned they cannot buy huge quantity of wheat flour as it changes its tastes and colour if exposed to sun and water. They also mentioned it has comparatively short shelf life. This highlights the challenges in relation to wheat value chain from retailer perspective.

Rice

Retailers in most cases were buying rice from the wholesalers. They were mostly keeping low price rice varieties, even though some in cities some retailers were also keeping basmati and IRRI rice. Unlike wheat, retailers had little issue with the storage of rice, rather they mentioned demand for rice increases when it gets old. As the sales of the rice is less frequent, profit margin per kg is higher in case of rice as compared to wheat. Retailers as such mentioned they face less issue with regard to transportation issue, even though they mentioned unlike wheat prices for rice varies during different months of the year, where there is increased demand in winter and less demand in summer. Given the fact rice is almost available in all grocery shops, there were no differential prices between different retail shops (explained further down in the report).

Potato

Retailers are buying potatoes from the wholesale market. Retailers face issue with regard to the storage of the potato and bring to the shop only sufficient supplies which they can sell in 3-4 days. Even though retailers mention in summer they buy less quantity as potato turn sweet as a result of heat and are not liked by the consumer. As such there are no issue with regard to transportation costs as mostly a normal retailer in a village will not be buying more than 40 kg, usually in packets of 4 kg of potato per bag.

At the retail level, large size of potato usually cost around PKR 45 per kilogram; medium size of potato cost PKR 40 per kilogram, small size of potato cost PKR 30 per kilogram whereas the very small size cost PKR 20 per kilogram. Large size potatoes are commonly used for making French fries. On average transportation costs are PKR 2 per kilo for potato from the main market to the retail shops.

At retail level, there are no standard packages for potatoes. It is usually sold either in kilos. At the main mandis (markets), it is sold as mann (40 kg). For potato packages, special big whole bags are used allowing air to flow freely in it.

There were no village where which were experiencing any issue related to the availability of potato. This is despite the fact with the exception of Shikarpur, there is virtually no local production of potato in the PINS districts

4.6 Consumer

It is evident in each district there were one to two main markets and on average 3-14 medium size markets which to all purposes were also mini-wholesale markets. These mini-wholesale markets have two to three large scale buyers who are buying items from local farmers and traders and many small-scale vendors who are dealing with end-consumers who may be buying for their consumption or for other vendors who may be buying to sell in their shops. These markets are permanent in nature dealing with larger volumes of produce. In addition to these large and medium size wholesale markets, there are numerous retail outlets available in every village and town. Consumers are mainly buying their products from retail markets which provides an added value as consumer do not have to travel for long distances to buy food items for them where potential saving for the consumer in terms of lower prices is outweighed by the potential cost associated with longer distance and travel cost. From the researched it is evident that poor households are spending almost 80% of their income of food items whereas this money is mostly spent through the retail shops and any increase in their spending through transportation or other aspects will negatively affect their overall budget. For households with higher income, their expenses on food decreased in proportion to their income, even though their net expenses on food items increased.

Wheat

In terms of wheat flour consumers receive their desired goods through the retail shops. more power to negotiate price. During the KIIs and FGDs, the research team found that on average one person will consumes 0.356 kg of wheat flour in a day where each one kilo of flour will result in 12 rotis of 12-inch sizes and 5 mm thickness where average consumption per person is two rotis each during lunch and dinner time. Based on these calculation, average wheat consumption per person in Sindh 6s around KG 130 per person. It is important to note the practice of having three meals in a day is less common amongst the poor households and they were preferring an early lunch to compensate for no breakfast. As can be seen from the table below, even though some of Sindh district are producing lower quantity of wheat, keeping in view no market restrictions around movement of wheat grains, there are no shortages of wheat in PINS districts. To understand the self-sufficiency of wheat production, research team analysed wheat production viz-a-viz total population. From the data it is efficient there are significant difference between different districts. For example, Dadu district has a high per capita wheat production as compared to Larkana which has comparative low wheat production. Per capita demand per person on average is 130 kg per person per year. To cover the gap, the wheat is transported from more food secure districts to less food secure districts.

Rice

In Sindh, there are some distinct eating patterns for rice. High income earners eat wheat roti (bread) instead of rice roti while low income earners in some areas eat rice instead. In all PINS districts, people prefer to use rice at night as preferred time of eating. People were preferring Basmati rice followed by long grain IRRI rice. At the same time in some districts with high rice production, people eat rice during the day time as well. This is more common amongst the poor households and rice for some of these households can even be characterised as staple food. They use red rice for this purpose. Bread of the red rice is hard and difficult to eat. Rice bread is eaten with curry or lassi (a drink made of yogurt). Shikarpur has the highest per capita yield of rice whereas Jamshoro, Matiari and Tando Allah Yar has very low per capita rice production. Still this lack of no local production has no impact on the non-availability of rice in the market. Average consumption per person is 58 KG per person per year, highlighting the facts that some districts have to get rice from other districts to meet their need.

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Potato

Potato is consumed throughout PINS districts, even though in PINS districts there is only in Shikarpur where meaningful takes place. Most of the potato is imported from Sindh. For consumers, potato is a major part of their diet. While buying potato, consumers are differentiating on the basis of two distinct ways namely by taste - sweet or tasteless - or by size. High temperature leads a potato to become sweet. In general, there is limited or no market for sweet potatoes. For this reason, the market only deals with tasteless potatoes. These potatoes are commonly available in four different sizes namely:

- Large / Jumbo Potato (2½" diameter potato or larger)
- Medium / Premium Size Potato (1 ½" up to 2½" diameter). They are most commonly available.
- Small Potato (0.½" to 1 ½")
- Very small or known as Beeja (Less than 0.½" in diameter). They are the smallest potatoes available.

High and medium-income families usually buy large and medium size potatoes. Poor households procure medium and small potatoes. Very poor households procure very small potatoes. Very small size potatoes are not usually available in every retail shop.

In terms of average per capita consumption, wheat has an average per capita consumption of 130 kg/person/year whereas for rice it is around 58 kg/person/year while for potato it is around 15 kg / person/year. Below table provides production and consumption data for wheat, rice and potato.

Table 5: Per Capita Annual Production of Wheat, Rice and Potato Production in PINS Districts

Production Quantity of Wheat, Rice and Potato						
Name of District	Production Quantity	Rice Per Capita Yield (kg /person/ annum)	Production Quantity (M. Tons)	Wheat Per Capita Yield (kg /person/ annum)	Production Quantity	Potato Per Capita Yield (kg / person/annum)
Shikarpur	376,221	305.50	103,451	84.01	386	310
Larkana	295,284	193.71	119,493	78.39	-	-
Qamber Shadat Kot	261,635	195.10	137,224	102.33	-	-
Dadu	143,141	92.33	231,881	149.57	-	-
Jamshoro	1640	1.65	128,492	129.38	-	-
Matiari	2358	3.06	150,170	195.19	-	-
Tando Allah Yar	2257	2.70	113,324	135.41	-	-
Thatta	185,911	189.74	51,399	52.46	-	-
Tando Muhammad Khan	51803	76.49	34,139	50.41	-	-

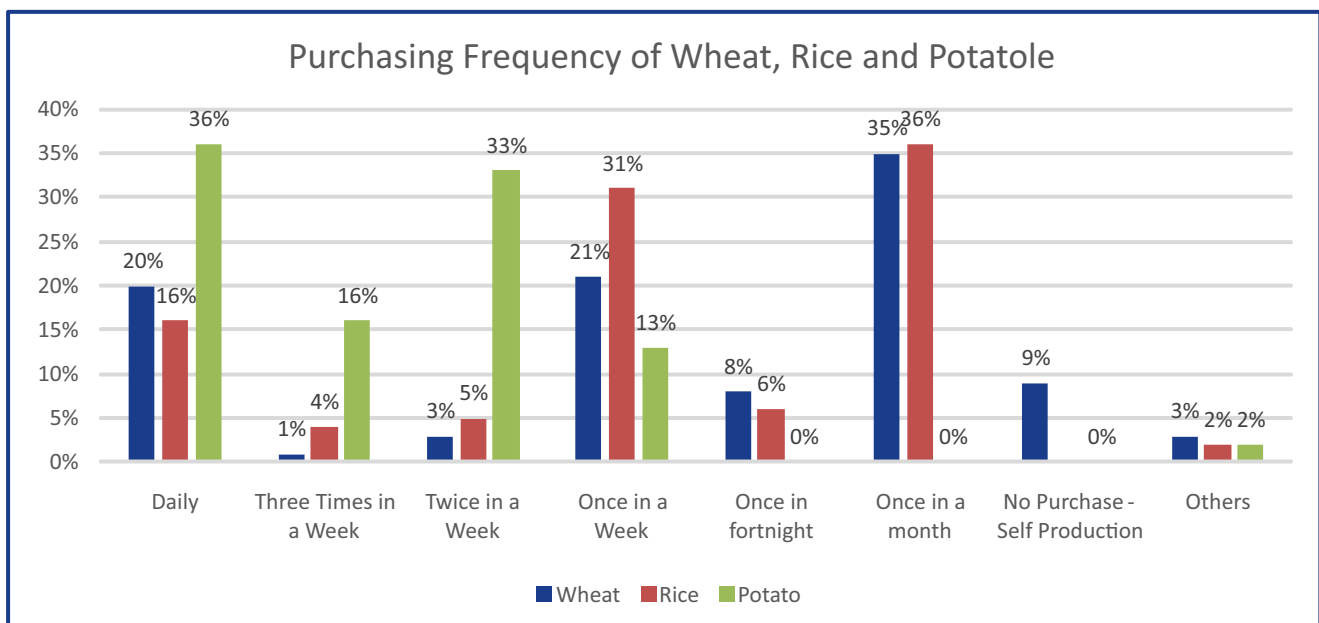
Table 6: Per Capita Annual Consumption of Wheat, Rice and Potato Production in PINS Districts

Consumption Quantity of Wheat, Rice and Potato	
Name of Crop	Potato Per Capita Yield (kg/per person/annum)
Wheat	130 kg /person/annum
Rice	60 kg /person/annum
Potato	15 kg /person/annum

4.7 Purchasing Frequency of Wheat, Rice and Potato

Based on the input from FGDs, KII informant interviews and consumer survey, it is clear that all three markets: wheat flour, rice and potato are functioning efficiently. There are no village where which are experiencing any issue related to the availability of these three commodities. From the wheat flour perspective, it is evident 20% of the consumers are buying wheat and wheat flour on daily basis, while 21% are buying it on weekly basis. Almost 35% are buying it once in a month. Amongst the respondents, almost 9% were not buying any wheat from the market as they were producing it by themselves. This also included urban consumers who were even though living in the urban areas, but they were having rural roots and were having self-production. Based on the discussions from the FGDs, it is clear all wheat producing farmers were also self-consuming it even though it is not sufficient to cover their whole year need. On average, each crop is sufficient to cover their need from four to six months. These farmers were keeping some portion of their crop for sowing next year or for selling as seed to their friends, especially when they were getting better per hector yield. In terms of rice, 36% of the consumers are purchasing it once in a month, 31% are buying it once in a week while 16% are purchasing rice every day. When consumers were asked how frequency they are shopping for potato, 36% mentioned they are buying it daily, 16% mentioned they are shopping for it three times in a week, 33% mentioned they are shopping for it twice in a week while 13% and 2% selected once a week and others options. From a value chain perspective this reflects potato has smaller shelf life and people would not store it for longer period.

Figure 8: Purchasing Frequency of Wheat, Rice and Potato



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4.8 Value Added (in PKR) at Different Stages of the Value Chain

Based on the findings from the survey, value added at different stages of the survey is calculated, while taking into consideration the final consumer prices. This value is the average value at different stages of the value chain, considering average market prices during the year (removing peak and off-peak prices). On average there is a 10-15% value added at each stage of the value chain.

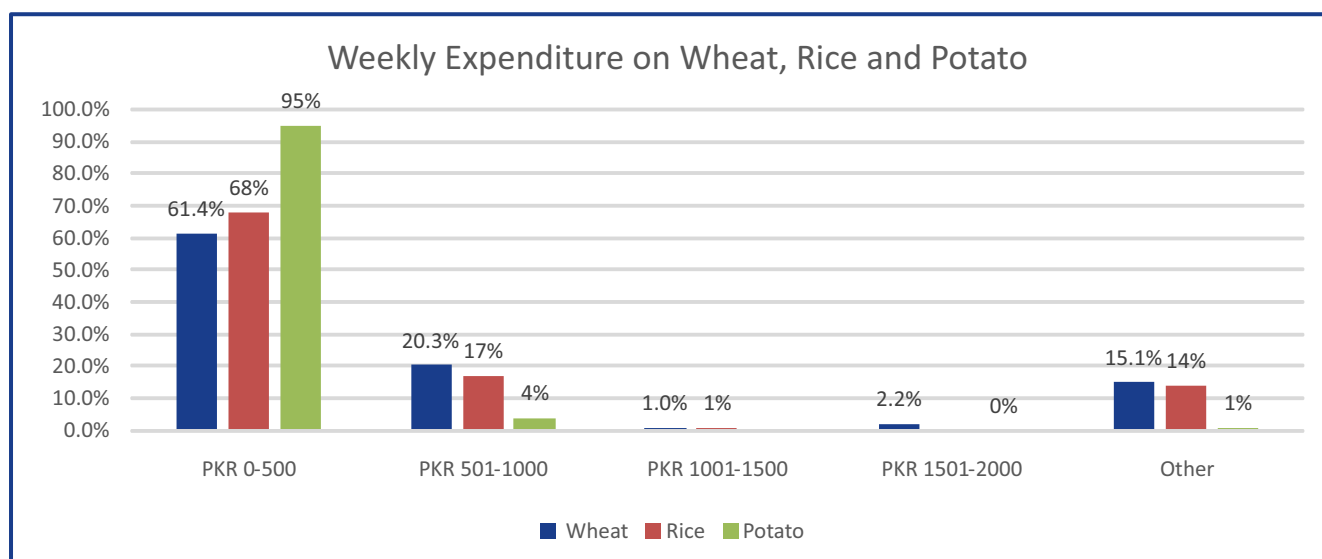
Table 7: Household Potato Consumption and Meal Frequency

Normal Quality - Season Average Price at Different Stages of the Value Chain				
	Famer / Producer Sale Price and Unit	Middlemen Famer/Producer Sale Price and Unit	Wholesaler/Processor Sale Price and Unit	Retailer Sale Price and Unit
Wheat (Whole wheat flour)	PKR 1100/Mann (40Kg)	PKR 1300 / Mann (40 kg)	PKR 1400/ Mann (40 kg)	PKR 45/kg
Rice (Saila rice)	PKR 2200/Mann (40Kg)	PKR 2800 / Mann (40 kg)	PKR 3400/ Mann (40 kg)	PKR 100/kg
Potato (tasteless / medium size / not sorted)	PKR 1000/ Mann (40 Kg)	PKR 1200/ Mann (40 kg)	PKR 1400/ Mann (40 kg)	PKR 40/kg

4.9 Weekly Expenditure on Wheat, Rice and Potato

In terms of weekly expenditure on wheat flour, 61% of the consumers were spending between PKR 201-500 on wheat flour. From monthly expenditure perspective, amongst the poor households, this constituted almost 15% of the whole monthly budget. This is followed by over 20% households who were spending between PKR 501-1,000. In terms of weekly expenditures of households on rice, 68% of the households were spending PKR 500 or less per week on rice. When the research team looked into the income and frequency of rice consumption, there is a strong co-relation. For higher income group, they were eating rice more frequently. In terms of weekly expenditure on the purchase of potato, majority (95%) of the consumers mentioned they are spending between PKR 0-500. From the perspective of a poor and lower middle-income family, this is a substantial re-occurring expense in the family budget.

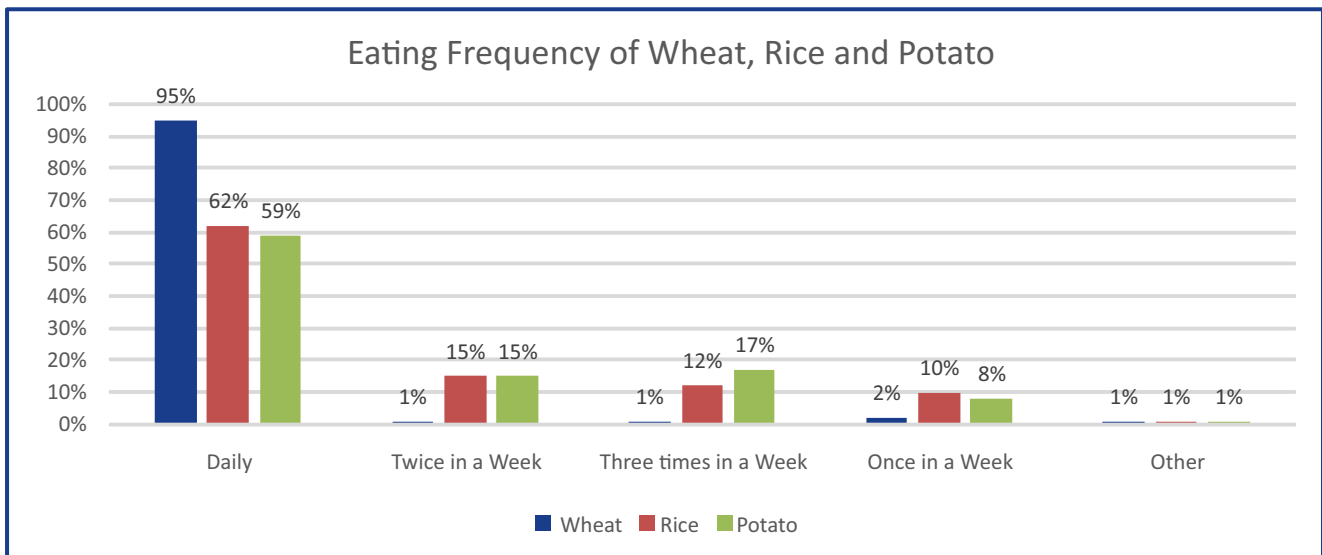
Figure 9: Weekly Expenditure of Wheat, Rice and Potato Purchases



4.10 Frequency of Wheat, Rice and Potato Consumption

When consumers were asked about wheat/wheat flour consumption, it is evident wheat flour is the predominant staple food with 95% of the consumers eating it at least once in a day. Over 97% of the respondents were having two or three meals in a day, and wheat is present in almost each one of these meals. Of the people who are consuming rice, 62% are consuming rice on daily basis, 15% are consuming it twice in a week, and 12% are consuming it three times in a week. This confirms the trend less people are consuming rice as compared to wheat. Still rice is a major part of people's everyday diet. In terms of potato, it is frequently used as part of every day's meal. It is cooked in different ways – such as part of the curry, part of rice and cooked as separate item. On average, each household is using potato at least 5-7 times every week (out of 14 times). There is a huge consumption of potato. 59% of the families are using potato on a daily basis, which 17% are using it at least three times, 15% are using it twice and eight percent are using it once in a week.

Figure 10: Wheat, Rice and Potato Consumption Frequency



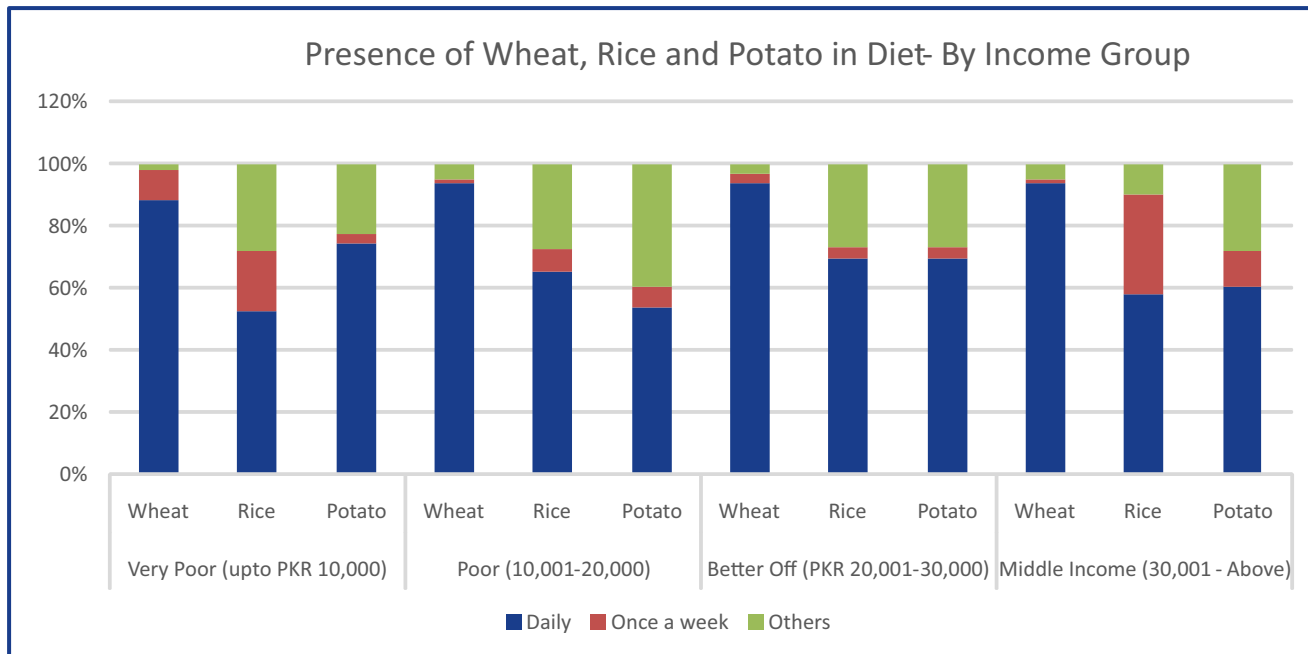
4.11 Frequency of Wheat, Rice and Potato Consumption – by Income Group

For wheat flour consumption, the research indicates there are no direct linkages between the income level and usage as consumer from all income groups are using wheat as their staple food. When the research team looked into the income and frequency of rice consumption, there is a strong co-relation. For higher income group, they are eating rice more frequently. Thus, it can be concluded that there will be an increase in rice usage as household income increases. When we look into the relationship between income and daily usage of potato it is clear the usage is linked with income. For higher income groups, usage of potato decrease indicating higher income group are replacing potato with other food items.

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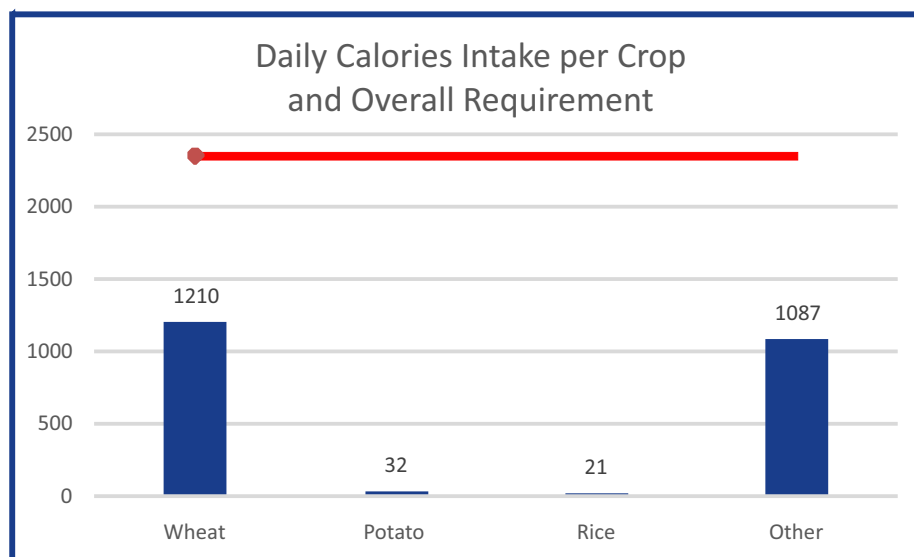
Figure 11: Presence of Wheat, Rice and Potato in Diet - By Income Group



4.12 Calories intake in the Food - Wheat, Rice, Potato and Other Items Contribution

Wheat constitute the biggest calories contributor to the daily calories in take for people in Sindh, followed by potato and rice. This is calculated based on average consumption of wheat, rice and potato per person per year. For wheat, whole wheat flour is assumed for calories calculation while for long grain rice is used for rice calculation. The research indicates there is still an unmet need of 1087 calories which has to be filled by other food items. It also indicates a decrease in access to staple food will negative impact average calories in take for people in Sindh.

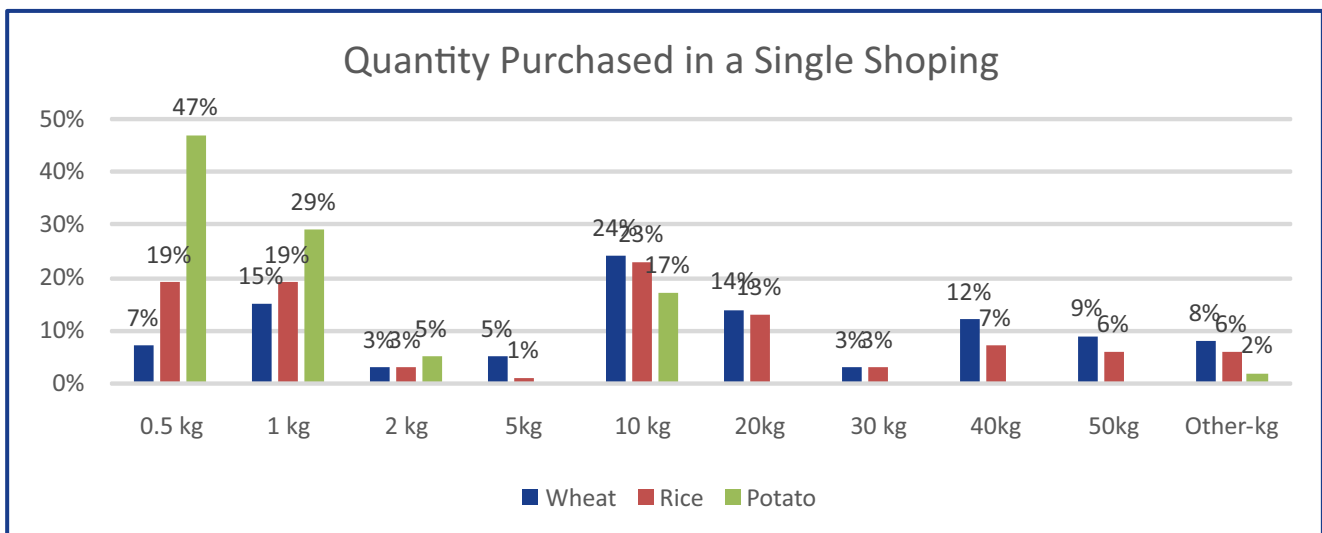
Figure 12: Daily Calories intake Per Crop



4.13 Purchase Quantity of Wheat Flour

To understand what consumers were buying in a single shopping event, the research indicated 0.5 kg, 1 kg, 10 kg, 20 kg, 40 kg and 50 kg are the most common sizes for the wheat procurement. Further during the FGDs and KILs, respondents indicated that the traditional grinding mills of Wheat Flour (Chakki) sell both packed as well as open flour mills. The bag consists of five to 10 kg of wheat flour whereas flour mills do not sell flour without necessary packages. In terms of rice, it is sold mostly in open bags or in the packages of 0.5 kg all the way to the full bag of one mann (40 kg). Branded rice (e.g. Kernel Basmati Rice) is sold in the packages of 5 kg and 10 kg. When purchase quantity is analysed, it is evident 10 kg is the most common purchase quantity for rice, followed by one kg and half kg. It is clear sizes of the rice bags are different as compared to wheat bags. In terms of quantity of potato bought in a single shopping, the usual purchase quantity in a single shopping is 0.5KG (47%) and 1 KG (29%) followed by other quantities depending on the household size and frequency of shopping. For example, those households who are purchasing potato once a week are buying more quantity of potato as compared to those who are buying it more frequently.

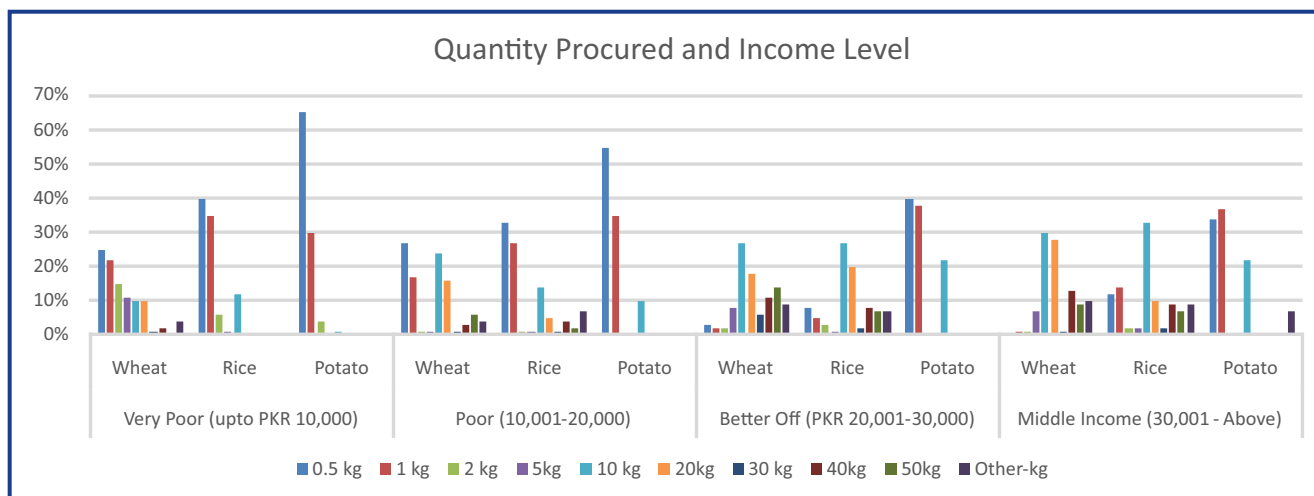
Figure 13: Usual Purchase Quantity of Wheat, Rice and Potato in a Single Shopping



4.14 Income Level and Quantity Purchased

There is a direct linkage between the income, size of the purchase at a single time and number of purchases in a month. The higher the income, the higher the number of kilos a person will buy in one shopping event while for poor households, they buy smaller quantity of wheat flour when they are doing their shopping. Similarly, the higher the income, the lower the number of frequencies of shopping events in a month where they purchase wheat flour whereas poor households buy wheat flour on multiple occasions. This difference in shopping frequency and quantity of wheat procured between higher and lower income groups can be directly linked with purchasing power of the households. There is a direct linkage between income level and size of the procurement where those with higher income tend to buy higher quantities. For example, those having income below PKR 10,000, they are buying on daily basis. It is likely these people fall in the daily wage bracket. In terms of packing, 10 kg and 20 kg is the most commonly used packing for wheat flour whereas for potato it is 0.5 kg and 1 kg weight.

Table 8: Income Level and Quantity Purchased



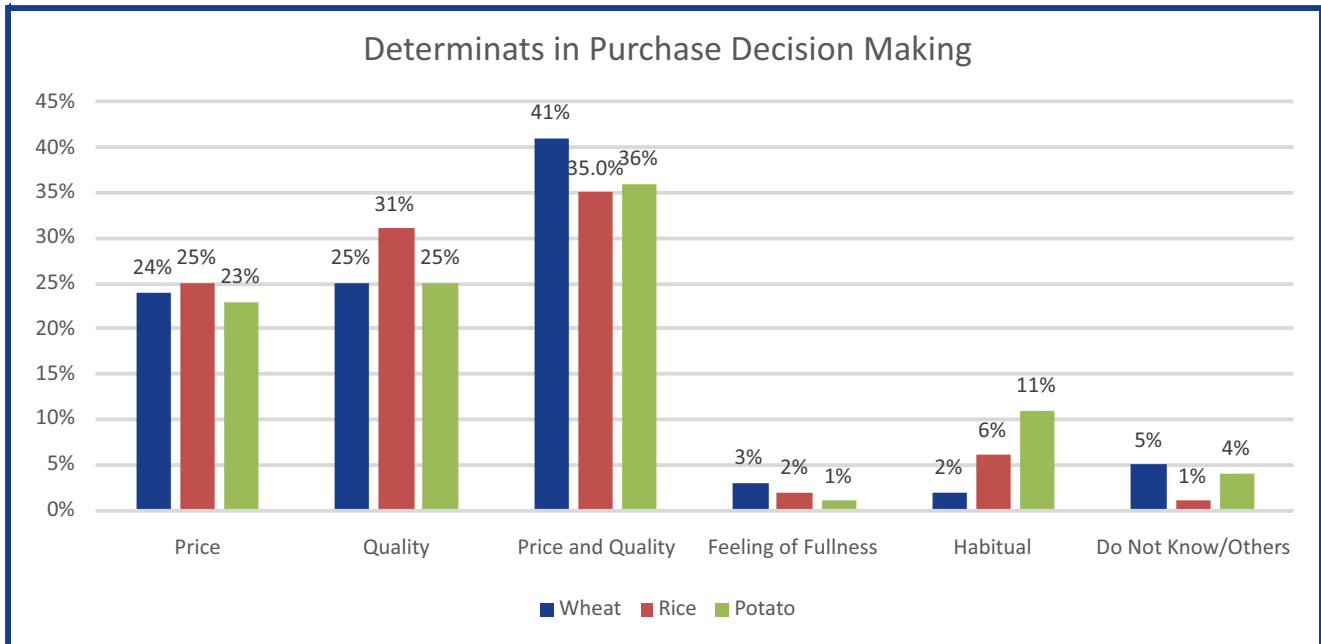
In terms of area of purchase and quantity purchased, it is clear more people in rural areas buy smaller quantities of wheat and rice as compared to urban areas. This can be linked up with the income level where people in urban areas can afford to buy rice as compared to rural areas. From the perspective of quantity of potato purchased and rural / urban linkages, 0.5 kg is the most used frequently used quantity purchased by consumers both in rural and urban areas. More consumers (54.67%) in urban areas are buying 0.5 kg of potato as compared to rural areas (44%). In terms of higher quantities i.e. 10 kg and other quantities, more people buy it in rural areas. This can also be linked with the higher family sizes and also highlight the fact potato is more important part of households in rural areas as compared to urban areas.

Based on the survey findings it is thus safe to conclude poorer households, especially those who have to rely on daily wages, are likely to have hunger periods. This is the case when they are unable to find work in the market. As a result, they are unable to feed their families which in turn leads to poor nutritional status of the families. Further available of cash to buy food items is the major impediment both in rural as well as in urban areas, affecting access to food items. These households were having no saving nor any insurance. As a result, in the event of income loss or increase in prices, poor households were facing serious issues in terms of access to food. Please note Poor households are mostly landless or have very limited land. They also have limited access to agricultural produce. As a result, they do not have sufficient food to eat nor have the money to buy it.

4.15 Key Determinants in Wheat, Rice and Potato Purchase

In terms of the key determinants affecting their purchase decision around wheat, rice and potato, it appears price, quantity or both are the main determinants. For wheat price (24%) and quality (25%) or both (41%) are the two main factors which people were using when deciding what to buy. It is pertinent to mention consumers find it difficult to express their feeling as how to describe their sense of fullness. For rice, the key determinants during their purchasing decision is also price and quality. There is a positive correlation between the income and quality meaning people with higher income are more quality conscious while those with lower income group are more price conscious. For potato, 23% mentioned price, 25% quality while 36% mentioned both price and quality. At the same time, 11% mentioned habitual preference, 1% mentioned giving a feeling of fullness while 3.3% gave other reasons which contribute to their decision making.

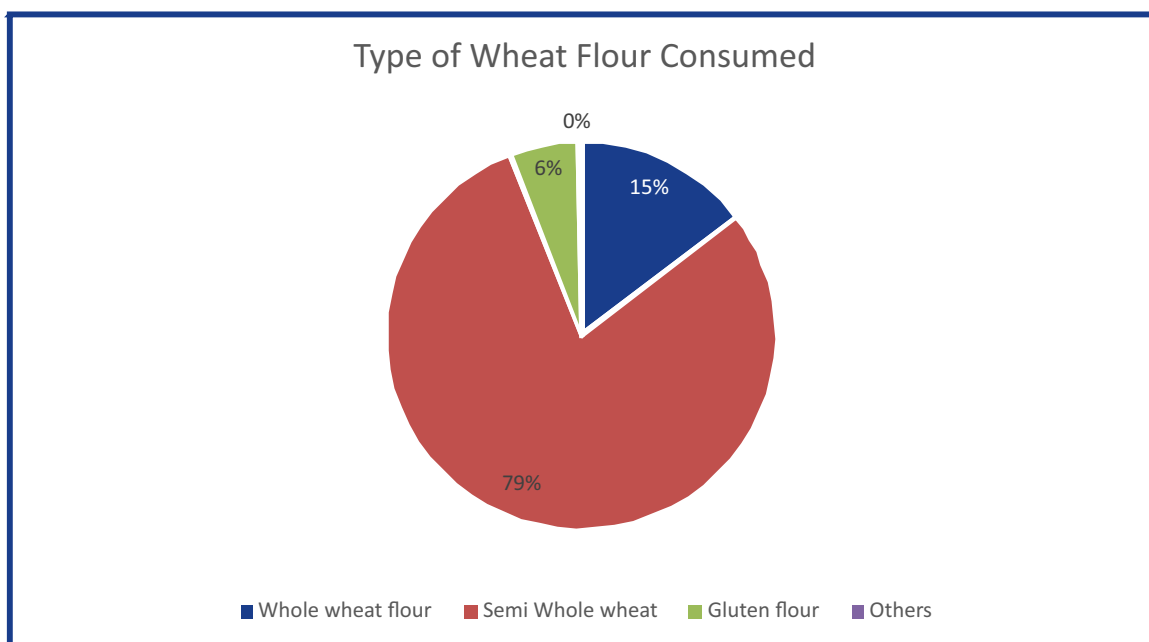
Figure 14: Key Factors Affecting Wheat, Rice and Potato Purchases



4.16 Quality Parameters for Wheat, Rice and Potato Purchase

The quality parameters for all the three crops differ from each other. In terms of wheat it is the type of wheat which is one of the key quality parameters. Semi whole wheat flour with 79% purchase is the most commonly used flour followed by whole wheat flour which is used by 15% consumers. During the FGDs and KIIs, the participants indicated there is a clear trend of moving away from traditional flat bread to loaf bread. Similarly, in urban areas, consumers are using more bread cooked outside as compared to homemade flat bread.

Figure 15: Type of Wheat Flour Consumed



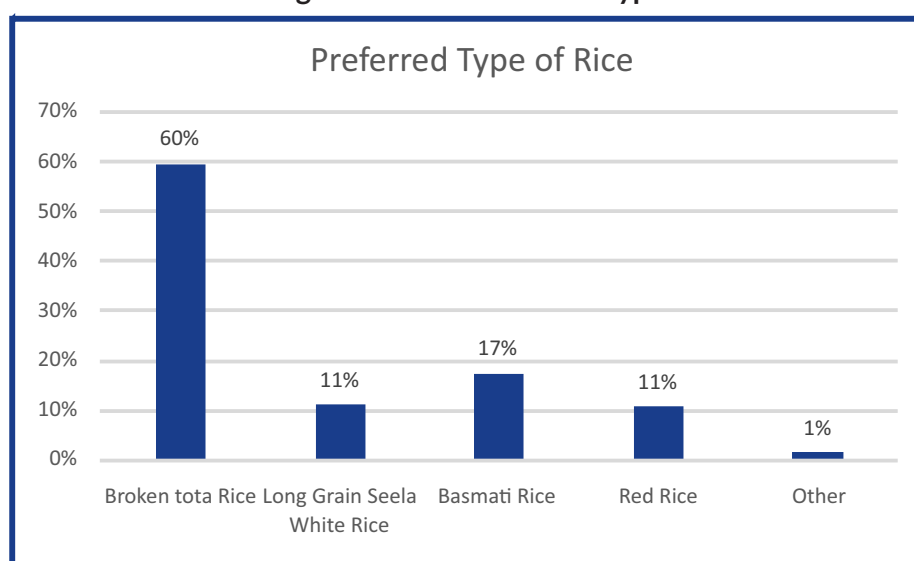
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There is a direct linkage between the type of wheat purchased and purchasing frequency. Those who are purchasing wheat on a daily basis or on monthly basis, they buy comparatively more whole wheat flour.

When consumers were asked what type of rice they prefer, 60% mentioned they prefer broken toota rice, followed by Basmati rice (17%) and long grain saila rice (11%) and finally red rice (11%). In fact, amongst the poor households, red rice is most commonly used, including its flour, while in lower middle-income grounds broken toota rice is used whereas in middle and upper middle-income ground long grain saila and basmati rice is used. On their preferred rice, people on average are spending around PKR 750 in a week.

Figure 16: Preferred Rice Type

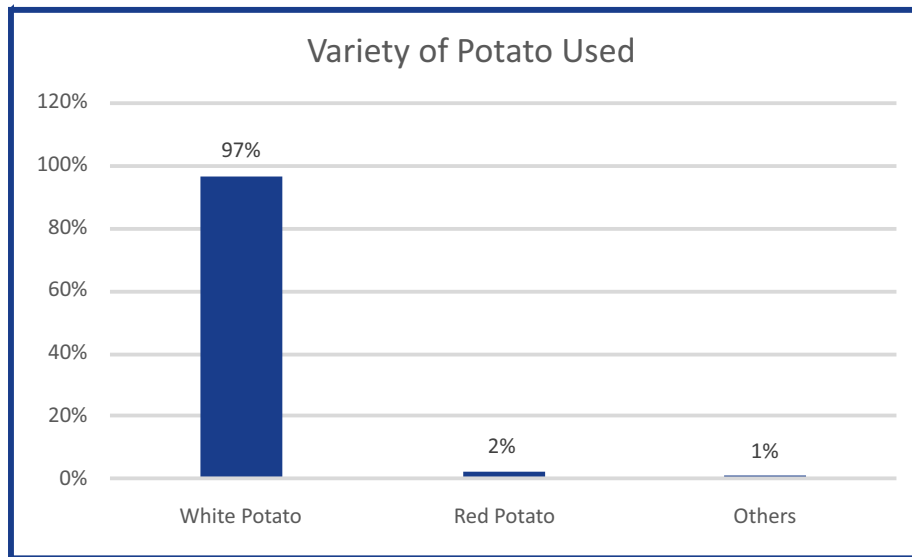


During this research, people were mainly defining potato quality on the basis of following characteristics:

- Size- where the potato is usually place in different sizes as described above;
- Colour - where the preference is towards light brown or whitish against reddish;
- Fresh – where fresh is determined whether on the basis of firmness of the potatoes;
- Sprouts – the potato should not have any sprouts;
- Sweetness – the potato should be tasteless.

When consumers were asked about the type of potato they are using, 97% mentioned they are using white potato, which only 2% said they are using red potato while 1% said they are using other types of potato.

Figure 17: Potato Variety Used by Consumers



4.17 Place of Purchase of Wheat Flour, Rice and Potato

From the place of procurement, it is clear majority of the respondents (84%) are buying wheat flour at their usual market which is a shop closer to their homes. From urban rural perspective, there is no difference in the findings. Similarly, there is no difference between men and women. At the same time, during the interviews people indicated that in villages, more people buy wheat flour from local grinding mills commonly (Chakkis) whereas in the urban areas, people are buying wheat flour produced by flour mills. The research also showed men (over 90%) in general were having the shopping responsibilities for wheat flour. In fact, more men were buying wheat as compared to potato and rice. This can partly be linked with the fact that wheat is sold in bigger sizes bags and have more weight and thus this responsibility has been assigned to men. It is also clear in general the respondents were aware of the price and the price is same across the ten PINS districts i.e. in between PKR 40-50 / kilogram. Most of the efforts in terms of wheat flour fortification is directed towards flour mills and only limited efforts are going into traditional Chakkis. Since significant majority of the consumers are buying items from these Chakkis, this leaves them without taking benefit from the fortification. There is a need to support nutritional interventions. For example, consumption of un processed rice or brown wheat should be promoted.

In terms of rice, the villagers buy rice from local shops. In case of rice flour, usually people are milling their own rice. Markets were functioning efficiently. There were no villages where which were experiencing any issue related to the availability of rice. In terms of the people who were moving to other markets for the shopping, one important urban/rural difference is the fact more people in the villages were going to larger towns for the purchases as compared to the urban areas. This may indicate in the larger markets, rural communities were finding better deals, better quality and more choices as compared to their villages.

For potato, there were two main buying patterns. Middle and high-income people were buying potato every week – mostly along with their other household shopping. They buy it usually during first half of the day. In case of poor households, people were buying potato mostly in the evening when they are returning from work. For very poor households they were getting it in the morning without paying the price as the shopkeepers used to treat leftover potatoes as garbage. When consumers were asked to identify the retail market from where they usually buy, 90% mentioned their neighbourhood retail

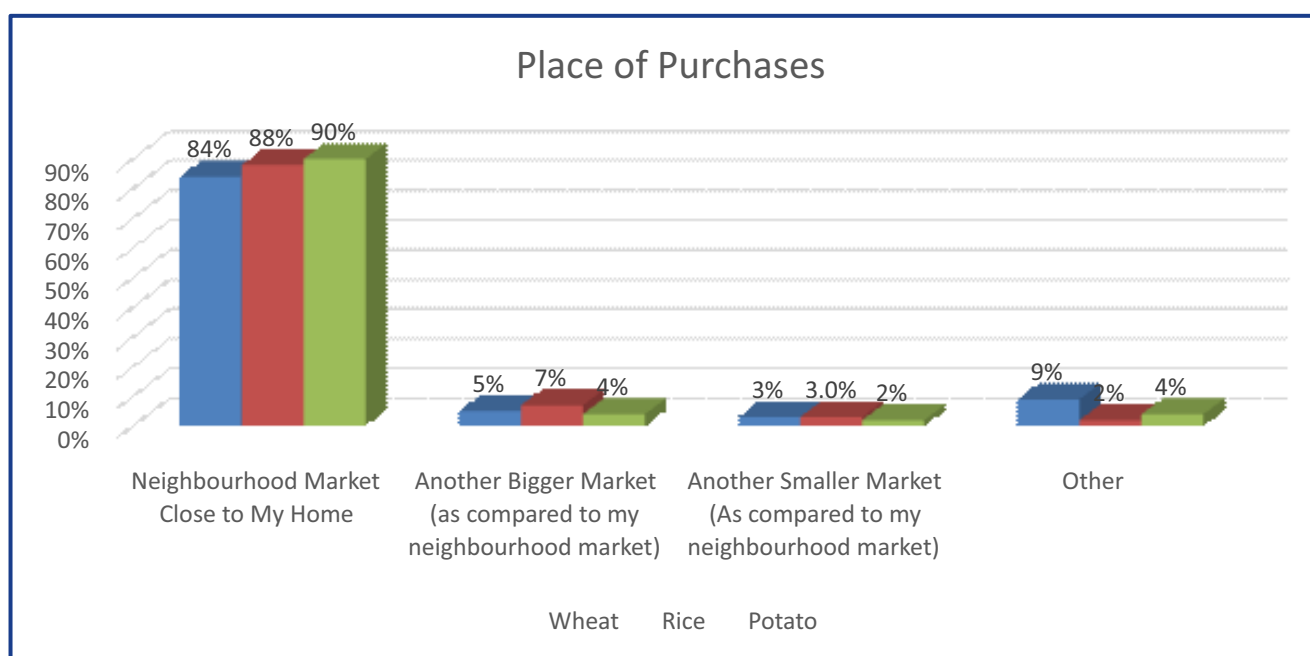
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market for usual shopping. In addition, 4% also mentioned they do their procurement in a bigger market while 2% mentioned they buy it in smaller market. During the FGDs, when consumers were asked why they buy in their neighbourhood market, consumer responded they have long term relationship with the shopkeepers and it is also convenient for them to buy it. At the same time those who mentioned they are buying it in bigger market mentioned it is because of increased availability of variety. Further, when we look into urban/rural differences in terms of shopping, it seems consumers from rural areas are more likely to move to bigger markets for bulk purchases where these bigger markets provide more quality, choices and possibility better prices as well.

Finally, overall, in urban areas, the consumers were solely dependent on external purchases for food items as they were not producing anything by themselves. As a result, there were no self-production, no cost-substitution and no access to additional food.

Figure 18: Usual Place of Wheat Flour Purchase

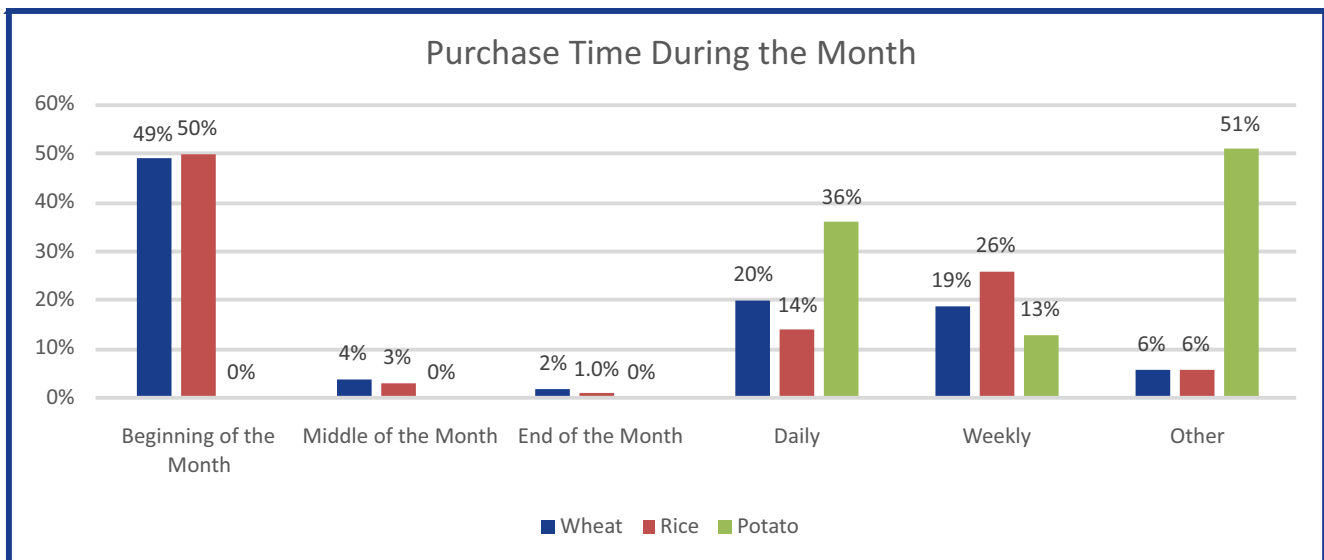


4.18 Purchase Time and Purchaser of Wheat, Rice and Potato

When respondents were asked about the time of the purchase, almost half of them were purchasing wheat flour and rice at the beginning of the month, while for potato they were mostly buying it on daily basis. When respondents were asked why they buy at a particular time of the month, 52% said they buy it at this particular time because they receive their salary / income. Availability of money, which is also linked closely with the income is cited by 10% respondents as the reason they buy at that particular period of time. Some respondents (3%) even linked it with the availability of debt as reason behind purchases at this particular time. This again reflects two important dimensions: Firstly, consider wheat as one of their most important household need and buy it as soon as they get their income. Secondly, not everyone can afford to buy essential food in bulk rather they also buy it at the end of each day once they get their daily income. When consumers were asked why they buy at a particular time, the main reason is the receipt of salary. This included both monthly salary as well as daily wages. In fact, it is possible that those who will not be able to get their daily work, they may go without food as they will not have money to pay for the wheat flour. During the research it is obvious men (over 80%) are the main actors who purchase, especially for wheat and rice. From gender perspective it is

evident only 20% of females are involved in groceries shopping. From rural urban analysis perspective, more women are buying in cities as compared to villages. Women are dependent on male members to buy food items for them (mostly rice and wheat flour). This limit their choice in terms of what type of wheat rice and flour they would like to have. It also means they have limited access to food markets or distribution networks.

Figure 19: Monthly Calendar for Purchase of Wheat, Rice and Potato



For wheat and rice, there is no effect on quality in terms of time of the day when people buy. This said, the daily wages are usually buying when returning from their work, once they receive their daily wage. For potato, the time of the day has an impact on the quality of the product. when the respondents were asked as what is the usual time of day when they purchase potato, 66% of the respondents mentioned they buy in the morning, 17% mentioned in the evening while 12% mentioned they buy in the noon. Those who were buying in the evenings were mostly buying it while returning from work. In the morning time, usually women and children were buying or were buying during the weekly markets. In the urban areas, people were also buying in the market from the street vendor.

4.19 Effect of Price Increase in Wheat, Rice and Potato Demand

The demand for wheat is inelastic both in rural as well as in urban areas' consumers. This trend is observed in both poor and non-poor households. There is a comparatively less increase in the demand of wheat as the income rises. Similarly, there is no decrease in wheat demand with an increase in price or decrease in income. In terms of effect of price increase on consumers, 66% mentioned there is no effect on them, thus reflecting low price elasticity for wheat flour. However, for 33% of the consumers they reduce wheat consumption or consumption of other items. Given wheat flour is the staple food for 95% of the population in PINS district, thus an increase in wheat flour prices will negatively affect the nutritional status of consumers. During the discussion consumers mentioned when they are not eating wheat, they consume rice. They also mentioned for rice they can eat without any additional food item whereas for wheat they need to have another food item. In poor households, consumers mentioned they eat roti with lassi (a drink made of yogurt) or chattni (a paste made of tomato and chilly).

For rice, when there is an increase in the price, 44% of the consumer reduce their rice consumption. The demand for rice is comparatively more elastic as compared to wheat. The consumers were willing to replace rice with wheat if there is an increase in price. However, they were not switching to different

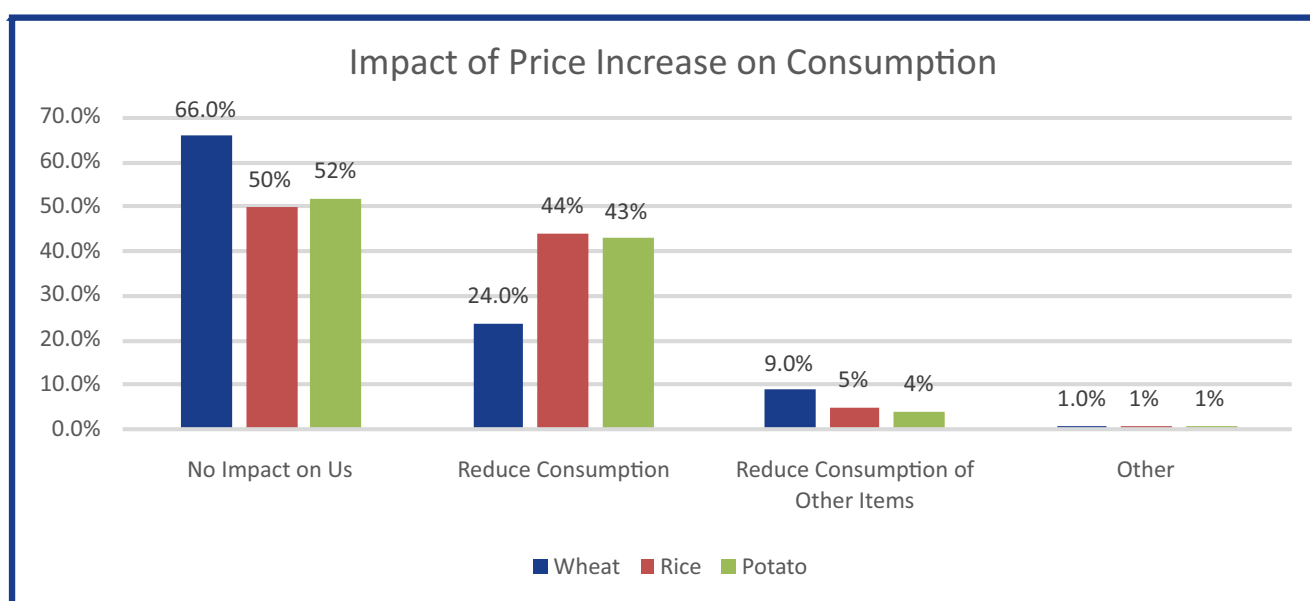
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types of rice in case of an increase in rice prices i.e. from Basmati to IRRI to toota or red rice. This trend is observed in both poor and non-poor households. There is a more positive impact on the demand of rice with an increase in income.

There is an inverse relationship between potato price and its demand. Whenever there is an increase in the price of the potato, its demand decreased. At the same time, there is a direct relationship between income and demand for potato where an increase in income led to an increase in potato demand, even though for the higher income groups they are also replacing potato with other food items as their income increase. Similarly, with an increase in family size, demand for potato decreases indicating a negative relationship between the two, while keeping the family income constant. This may also indicate a decrease in the household income will lead to an increased demand in other essential items while decreasing the demand for items which are considered less essential by the family. During the survey 52% of the respondents mentioned there is no effect on them when there is an increase in the price. At the same time 43% mentioned they reduce their consumption. This is a significant percentage reflecting high sensitivity on part of consumer to the increase in potato prices. In other words, an increase in the price of potato will result in a decrease in potato consumption.

Figure 20: Impact of Price Increase on Wheat, Rice and Potato



4.20 Price Differentials for Wheat, Rice and Potato

As such there were no price differential between different markets for wheat flour – both in urban as well as in rural areas. The price differential for prices is the result of quality of wheat flour usually defined as full grain wheat flour (brownish in colour), semi-refined (half brown) and refined (whitish). Even the size of the packages of the wheat flour had little impact on the price. Government controlled the price of wheat flour through the release of wheat grain quota to the flour mills and Atta Chakkis. This ensure consumers have access to subsidised wheat flour. In terms of price differential on the basis of location, 82% of the respondents were of the opinion there is no price differential on the basis of location. In other words, it means price of the wheat flour is almost same across the similar type of markets for similar type of wheat flours. In terms of wheat flour price differential, 72% of the respondents mentioned there is no difference. It reflects the fact for same type of wheat flour with generally accepted quality parameters, prices remain the same and there were fewer additional factors which contribute to the price variation.

For rice, as such there is no major difference between the retail prices in villages as compared to retail prices in urban areas. Unlike wheat there is no price subsidy provided by the government. The real difference in the prices is about the type of the rice and the size of the market. For example, broken rice cost almost 50% less as compared to Basmati rice. Similarly, in retail markets the prices are almost 10-20% higher as compared to major grain market at the district level. The markets are working efficiently and there is no major price differential between similar markets in different PINS districts for rice. Rather it is the type of rice which resulted in price differential. Rates of rice also varies as a result of the season – where the price is more linked with the high temperature i.e. month of June and July when people prefer to eat rice as compared to winter. As a result of high demand, the prices for rice also goes up. When consumers are asked if there were any differential prices based on the prices, 81% said no meaning rice price is the same across the same type of markets for same type of rice. In terms of rural and urban divide, prices in rural areas for rice were slightly higher as compared to rural areas. This may be linked with the limited number of shops present in the rural areas. In addition, majority of the consumers (61%) also mentioned same type of rice has no price differential meaning prices are the same for same type of rice. Still 40% did mention a difference in price based on the quality of rice. This difference in price can be linked with branding and perceived quality persecution around certain product bands, even if the product is same or similar.

There is no difference in the retail prices of similar types of markets in the villages across the ten PINS districts. The price variation is mainly determinant by the perceived quality of potatoes and type of market. When consumers were asked about the size of potato used, 91% said they are using medium size potato while 5% said they use large while 4% said they use small size potato. In case of potato, there were major differences in the price depending on the market. This price differential also translated into the availability of quality of potato. For example, in the main markets (mandis), the price for quality potato is on average PKR 20/kg whereas in comparatively smaller markets, it is sold at PKR 30/kg, while at retail level it is sold at PKR 40 KG/Kilo. Another key determinant in the price of potato is the size of the potato where price of the potato is directly linked with the size of the potato i.e. larger the potato size, the more price it will fetch. Similar poor households were more likely to buy smaller size of the potato as compared to households with better income group. In terms of season, the prices were lower just before and after the harvesting season for potato where either people were interested in selling their stored potato crops or were not interested in storing their potatoes as it could have meant more cost for them.

When consumers were asked if there are differential pricing for potato based on outlet/shop, 83% said there are no such difference while 17% said yes, the price differential exists. It reflects the fact prices are common across similar type of markets and the actual difference is based on the outlet/shop. Of the 17% who said there is a price differential between similar types of markets, consumers cited cities offer reduce prices event at retail level as there are more outlets and more competition. When consumers were asked if there is differential pricing for potato based on time of day, 86% of the consumer mentioned there is no difference in the price of the potato based on the time of the day while 14% mentioned prices are low at in the evening as shopkeepers want to maximize their daily sales before they close their shops. For the 86% consumers who mentioned there is no price differential based on the time of the day, this can be link up with the fact potato has longer shelf life and or not easily perishable. This allow shopkeepers to maintain relatively constant price throughout the day. During the interviews, sellers mentioned they can easily keep potatoes from five to seven days in the shop and therefore are less inclined to sell it off at reduced price. At the same time sellers mentioned they prefer to dispose all their potatoes before they become soft. When respondents were asked about differential prices based on the quality of the potato, 40% consumers mentioned there are

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different prices for different qualities of the potato. Further discussions with the consumers and sellers revealed the term quality is very broadly defined for potato and there is no finer definition for it. It is important to highlight almost all sellers and consumers only deals with tasteless potato where as long as the potato is firm (linked with freshness), white colour (linked with taste by consumer) and fall in the medium size range (over 90% consumers opt for this type), it is defined as acceptable quality. As the sellers are usually dealing with only this type of potato, thus consumers expect same quality across all the shops and expect same price. If there are very large or small potatoes or potatoes are sweet, consumers are no longer even buying it.





SECTION 5
Recommendation

SECTION 5

Recommendation

The recommendations are formulated to help in addressing the key constraints to a better functioning value chain for all the three crops, understanding how value chains can be re-programmed to enhance food security and counter price inflation for poor households in PINS supported districts and identifying how ACF, EU, other development agencies, national authorities and the private sector can support value chain activities. A multidisciplinary 'whole of the value chain' approach addressing the production, processing, marketing, and socio-cultural constraints identified in this analysis can improve the access of poorer consumers to the target food commodities of greater nutritional value without compromising the interests of any supply chain stakeholders. Partnerships of both public and commercial institutions throughout the testing and application of 'agreed' value chain interventions are vital to sustain ongoing impacts. Specific set of proposed interventions for various actors of value chain are listed hereunder.

5.1 Overall Recommendation

- There is a need for policy-makers, practitioners and researchers to work together to have thorough understanding of the nature and functioning of individual value chains of wheat, rice and potato, especially from the poor household perspective. This requires new research such as nutritional value loss during the value chain process, labour market dynamics, dietary requirements, value chain performance, hunger gaps and other related issue. Even more importantly, while having a pro-poor approach, all these researches should be based on open markets philosophy thus avoiding any artificial incentives in the value chains.
- There is a need to investment in agriculture research to improve wheat, rice and potato crops productivity and suitability to different climates including in PINS districts. This will help in ensuring constant supply of wheat, rice and potato to the millers, markets and consumers. Agricultural research institutes will help in developing new high yielding and more resilient varieties helping constant food supplies thus ensuring helping prices remain low, especially for poor segments of the society. This research should also allow farmers to produce multiple crops in a year. Other consideration such as people preferences for quality and taste, geographical consideration and market needs should be considered as part of this research.
- Climate related research, especially at the production stage for potato, should be actively considered, especially for the introduction of potato in Sindh. At the production stage, increase temperature in Sindh can only be addressed through new research in this sector.
- Different actors and stakeholders in the wheat, rice and potato value chain needs to enhance their engagement with each other such as by exchanging of information between research institutes and farmers, farmers and exporters, government extension services and farmers etc. Specific examples will include further understanding on new varieties, provision of quality seeds, pest control, irrigation, and storage, market prices and other related activities.
- There is a need to develop new brands in all the three crops, especially for wheat flour and potato. The brand-based approach will help in fetching better prices for the farmers and facilitate better quality crops to the consumer.
- Product diversification within the existing crops such as parboiled rice or whole wheat flour can help in attracting new customer, improve nutrition status amongst the consumer and help in

exporting to new markets. This will require working with the marketing companies as well as with the millers to develop operations and standardize procedures to cater for the emerging demands and markets.

- Efforts should be made to create a more conducive working environment for farmers and provide them with alternative opportunities from where they can get loans and supplies for their farming activities. This will help in reducing dependency on exploitative input supplier.
- Efforts should be made to come up with innovative land sharing arrangements so that new land can be brought under cultivation and in the existing land, productivity increase can mean more benefit both the landlord as well as to the farmer. Only a win-win solution on land holding problem can lead to a positive outcome.
- Introduction of new short duration variety and other aspects such as promoting direct seed planting (for rice) can help in further productivity improvement. Similarly, provision of harvesting machinery, especially for wheat and rice, will also decrease wastage and increase productivity.
- Increase collective bargain power, which is absent right now, such as by having producer groups or incorporating contract farming will help in improving quality for the end consumer as well as fetching better price for farmers.
- Formalizing informal credit will go a long way in terms of provision of financial input to the farmers. This should be accompanied by easy access to financial market for the formal credit markets. Introduction of Information Technology Based Solutions providing information on prices to the farmers and this system can also be extended to the end consumer.
- Engage policymakers in Sindh in preparing development plans that encourage potato production as well as introduction of high-quality rice varieties. These plans may include introduction of new affordable technologies as well as fully utilising land yielding capacity i.e. wheat production can go up to 100 man / acre in a season. Simple measures such as tax brackets on agricultural machinery will help in increasing import of new agricultural machinery in Sindh.
- Training government extension workers on new approaches to enhance their capacity to engage with the private sector as well as in new crops or varieties. These extension workers can help with the adoption of technologies, irrigation equipment in drought-prone areas, support with postharvest losses as well as with market linkages.

5.2 Specific Recommendation

Input Suppliers:

- Efforts should be directed to provide quality agricultural products to the producers. This will help in providing better quality seeds, fertilizer and pesticides. This will be the first and basic step in the value chain resulting in quality produce for the farmer and for the market.
- Efforts should be made to provide agricultural and farm machinery to the producers; thus, reducing manpower requirement, improve productivity and bring the potential areas, which are still not under cultivation, under cultivation
- Introducing new varieties suitable for the changing climate and climatic conditions.
- Introducing urban agriculture to support people living in urban areas including kitchen gardening and urban gardening.
- Provide easy financial support / loans to the farmers to reduce interest rate on the farmers to remove the need for high yielding interest

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- Financial institutions should be encouraged to develop new financial instruments to cater for the needs of different actors in the value chains, e.g., the processor may be providing a line of credit so that s/he can make timely payment to the farmer. Or provide insurance to the farmer thus helping him to withstand a shock such as natural disaster or price-shock.
- Financial institutions consider the value chain dynamics while making their financial decisions and these financial decisions should be tied to specific products. This will help the farmers move beyond his exiting role i.e. producer to processor or wholesaler.
- Commission research to understand specific requirements of farmers in relation to input supplier related to agribusinesses thus helping in developing a minimum understanding of market demand and how their outputs are positioned to respond to that demand.
- Instead of investing in one aspect of the value chain, financial institutes should contribute to the strengthening of whole value chains. This can be achieved by building knowledge and expanding lending opportunities at different steps of the value chain.

Producers:

- Educating and supporting poor farmers on modern agricultural techniques and facilitating their access to finance and agricultural inputs at affordable prices.
- Supporting small farmers to gain access to the market and get fair price for their produce.
- Providing alternative livelihoods opportunities, including provision of training.
- Making structural changes such as ensuring availability of Bardana to the small farmers and landholders.
- Awareness raising amongst the farmers should be organised to guide them how to store their agricultural produce and how to acquire quality seeds and other agricultural input.

Middlemen

- Encouraging to share knowledge with the producers and other stakeholders, without the fear of losing market competitiveness thus bringing increased transparency.
- Linking farmers through mobile and internet with the wholesalers and end-consumer thus reducing the need for a middleman.

Wholesaler/ Processor:

- Provision of fortified wheat flour while developing new networks with traditional flour Chakki as well as with nanbais (bread makers).
- Introduce new packaging to cater for different segments of the consumer.

Retailer:

- Efforts should be made to increase proper storage facilities for the retailers. This will allow reducing wastages and decreasing transportation costs for the retailers.
- Direct linkages between retailer and farmers will help in reducing transaction costs, thus the value chain can provide better quality product to the consumer at lower price.
- Retailers should be organised so that they can develop themselves from a less traditional system to more modern operating structures.

Consumer:

- Form consumer protection groups to act in support of price and quality control.
- Promotion of organic food and organic vegetables can help poor households earn additional money, and thus can promote their access to food.
- Build alliances with other likeminded groups in support of protecting consumer rights.
- Work with farmers to protect their rights and facilitate their access to better input.
- Commission high quality value chain study, especially for rice, that use primary data to move away from low end rice production to high end rice production and also to identify root cause of non-production of potato in Sindh.
- Income generation for poor households should also be researched and developed in order to ensure staple levels of income for longer periods of time. Different measures can be taken to organise poor households in PINS districts. This can include bringing them together under Village Saving and Loan Association or in Saving Committees. This will help participating households to access cash in the event that they need it or when they are without income.
- Identify specific market opportunities in rice, potato and wheat that can be taken advantage and identify the success factors that will help with the competitiveness in the identified target market and result in competitive advantages.
- Awareness campaigns for consumption of healthy and nutritious food instead of bulk eating.
- Consumer education on kitchen gardening can particularly help marginalised communities / households for production and consumption of their own nutritional food.

• Retailer:

- Efforts should be made to increase proper storage facilities for the retailers. This will allow reducing wastages and decreasing transportation costs for the retailers.
- Direct linkages between retailer and farmers will help in reducing transaction costs, thus the value chain can provide better quality product to the consumer at lower price.
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Association or in Saving Committees. This will help participating households to access cash in the event they need it or when they are without income.

- Identify specific market opportunities in rice, potato and wheat that can be taken advantage and identify the success factors that will help with the competitiveness in the identified target market and result in competitive advantages
- Urban agricultural should be introduced and promoted. This can include traditional activities such as kitchen gardening or more new ventures such as urban gardening. This will allow saving of the costs related to vegetables which can be directed to other food items such as rice and potato.
- As majority of the people are buying at the start of the month when they receive their salary, any nutritional message can be directed towards the end of the month, thus maximising its impact.
- Women should be promoted to accessing market. Currently less than 20% of the consumers are women, and in bigger markets this number is even lower than 1%.





Annexes

ANNEX 1

Wheat, Rice and Potato Production Areas in Sindh

Figure 21: Wheat Production in 10 PINS Districts

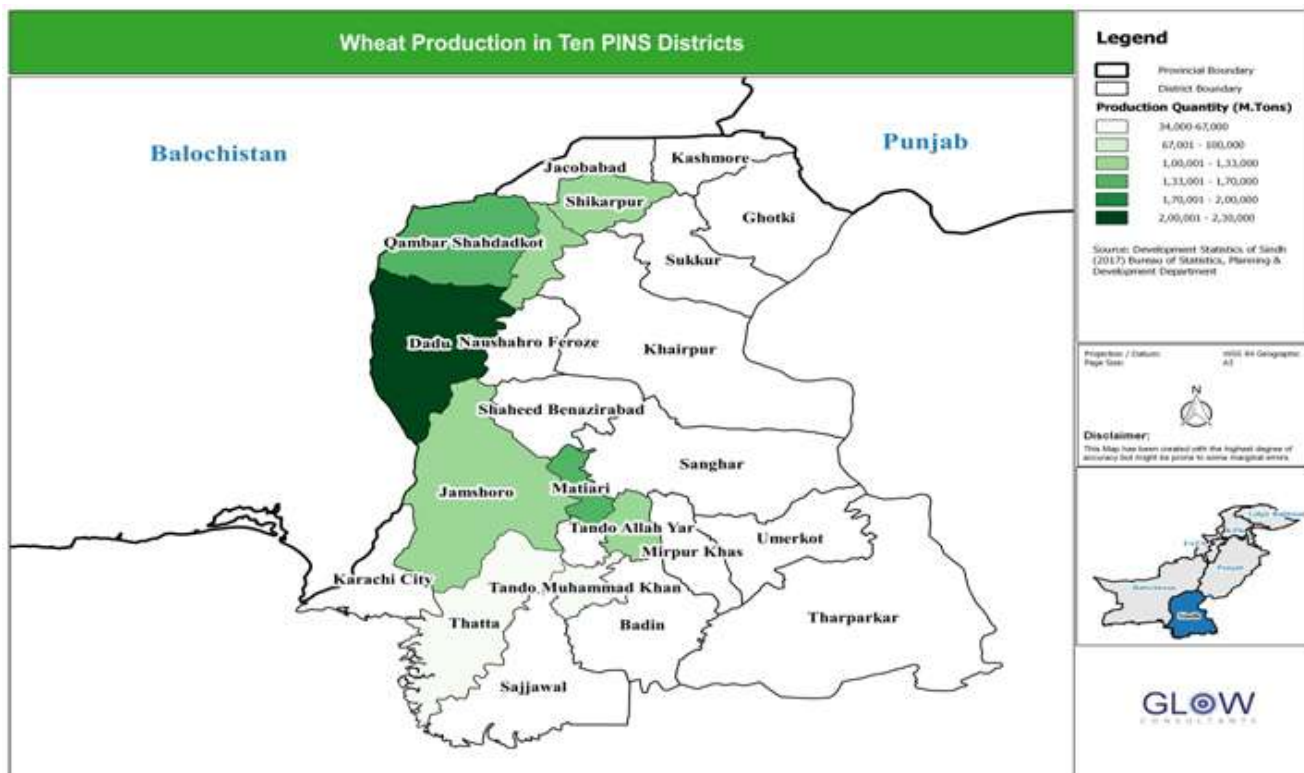


Figure 22: Rice Production in 10 PINS Districts

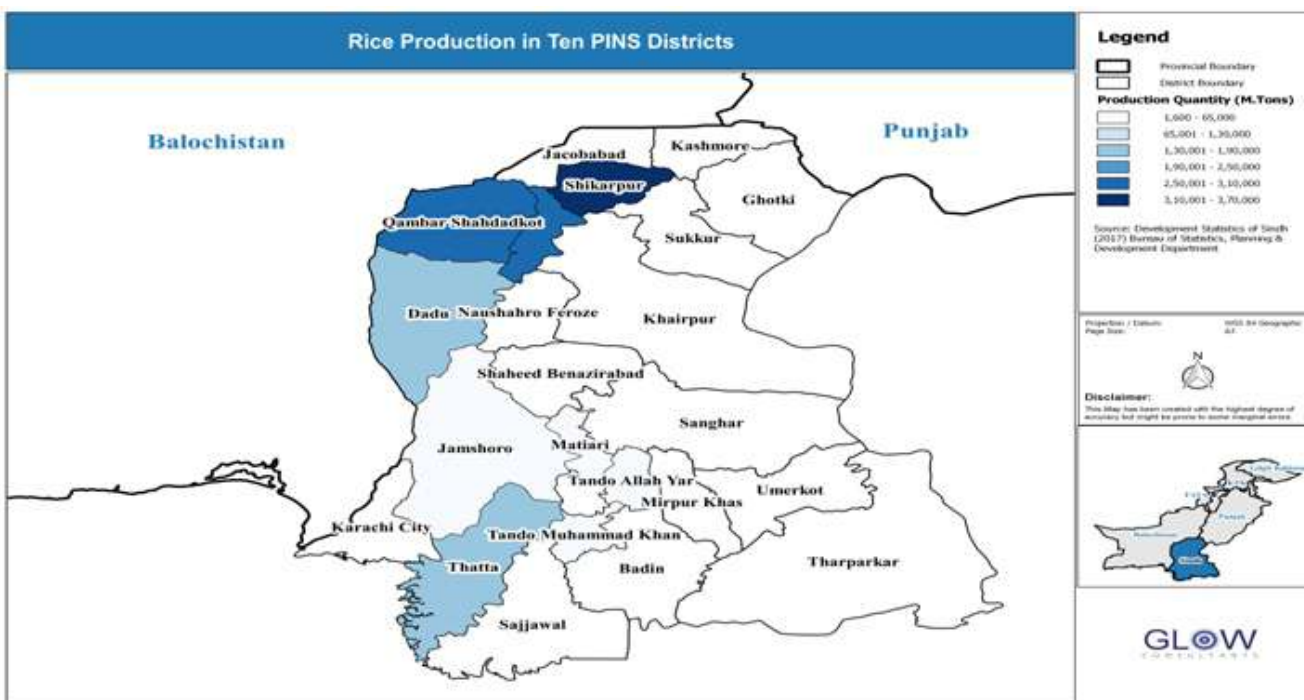
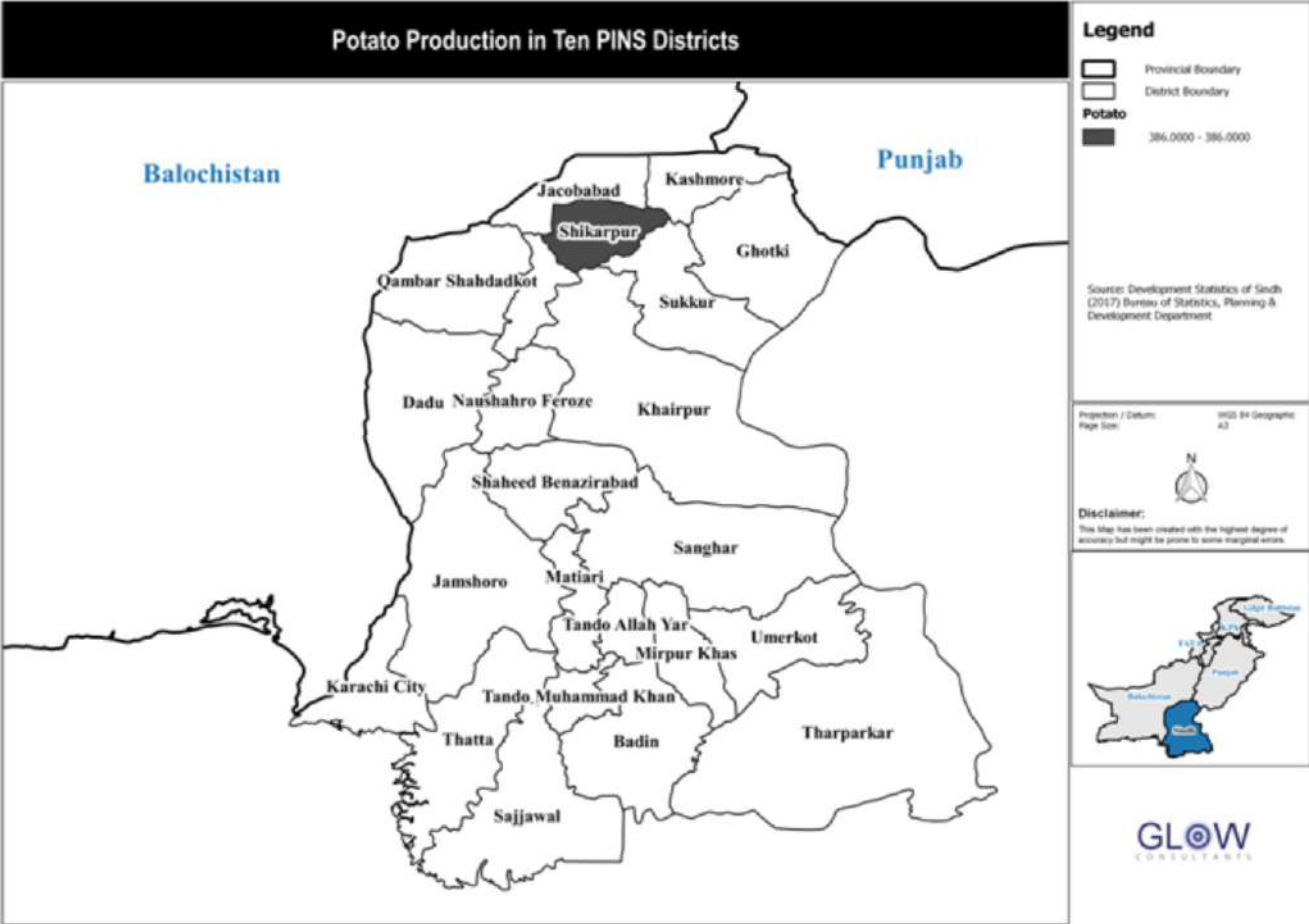


Figure 23: Potato Production in 10 PINS Districts



ANNEX 2

List of FGDs

Table 9: Summary Table on FGDs

Description.	Type of FGDS				Total # of Participants in FGDs		
	Male	Female	Mix	Total FGDs	Male	Female	Total
Grand Total	18	1	11	30	227	70	297

Table 10: Detailed Table on FGDs

Sr. No	District	Type of FGDS				Total # of Participants in FGDs		
		Male	Female	Mix	Total FGDs	Male	Female	Total
1	Jamshoro	2	0	1	3	20	3	23
2	Matiari	0	0	3	3	20	7	27
3	Thatta	3	0	0	3	26	0	26
4	Larkana	3	0	0	3	40	0	40
5	Sajjawal	1	1	1	3	15	16	31
6	Qamber Shadat Kot	3	0	0	3	27	0	27
7	Sheikhupura	1	0	2	3	19	14	33
8	Dadu	0	0	3	3	12	24	36
9	Tando Muhammad Khan	3	0	0	3	28	0	28
10	Tando Allahyar	2	0	1	3	20	6	26
Grand Total		18	1	11	30	227	70	297

ANNEX 3

List of KIIs

Table 11: Summary of KIIs

Description.	Type of KIIs				
	Government Officials	Producers	Processors	Sellers	Total KIIs
Grand Total	17	28	20	28	93

Table 12: Detailed of KIIs

Sr. No	District	Type of KIIs				
		Government Officials	Producers	Processors	Sellers	Total KIIs
1	Jamshoro	2	2	3	2	9
2	Matiari	2	2	1	2	7
3	Thatta	2	2	2	2	8
4	Larkana	2	4	2	4	12
5	Sajawal	2	2	2	2	8
6	Qamber Shadat Kot	2	4	3	4	13
7	Shikarpur	2	2	2	2	8
8	Dadu	2	5	4	5	16
9	Tando Muhammad Khan	0	3	0	3	6
10	Tando Allahyar	1	2	1	2	6
Grand Total		17	28	20	28	93

ANNEX 4

Research Implementation

Training of Field Teams

Training was organised for field teams in Hyderabad District (Sindh province) after the formal approval of the inception report and before the data collection started in the field. All research study materials including data collection tools and targets were shared with the data collection teams.

Data Analysis

All quantitative and qualitative data gathered at field level for the purposes of this assignment was triangulated in order to address desired output and to develop meaningful conclusions and recommendations. Once clean and quality data was available, statistical analysis was performed and analysed data was presented in forms of tables, charts and graphs. The research team dealt with both nominal and ordinal data.

The research team consisted of both qualitative and quantitative experts as well as technical specialist. The analyses took place in two phases:

- First data was entered in customized computer software and then it was analysed along with the qualitative findings to draw the conclusions. The first stage involved analysing the normality of the data frequencies and tabulations.
- In second stage, cross-tabulations were generated and discussed among the team members and data were analysed to understand dynamics of each value chain.
- The data processing cycle combined the latest software and experienced professionals to generate the clean data set. Following software were used.
 - Quantitative Data: CPro, SPSS, and Excel
 - Qualitative Data: Nvivo

For qualitative data, the team described the phenomena which involved transcribing all interviews/observations. It helped in providing information on the context, intentions, actors, process which are relevant with the three food groups. It also helped in understanding the sample population such as who were the key informants, whether or not s/he was representative of the group s/he represented, how observations were carried out and who was observed and who was not observed. Finally, classification of the data involved looking for and coding key words and phrases that were similar in meaning. They were categorized by topics. They were grouped together, i.e., separate similar or related data. Interconnect the concepts. Research team compared responses from different groups to determine patterns and trends in the responses. It was followed by summary statements of the patterns, trends and responses. Research team cited key quotations, statements and phrases from respondents but no names were mentioned. The data was presented in a form a matrix, diagram or flow chart). The qualitative findings were examined by team specialists to identify key trends occurring in the responses from structured in-depth Key Informant Interviews and Focus Group Discussions. The quantitative data included descriptive measures such as proportions, frequencies and ratios and present measures of central tendency i.e. mean, median, mode. It will also present measures of dispersions such as range, standard deviation, percentiles. Database were developed in CPro 7.1 and analysis was carried out in SPSS or Excel. The statistical significance is measured through chi-squared

test and z test to understand the distribution and whether or not hypothesis is true.

Through the analysed data critical observations were made, key findings prioritised, trends in data spotted, working hypothesis developed, and existing hypothesis tested and finally reasoned conclusions arrived at and recommendations formulated.

Team Composition and Field Enumerators

The research study was conducted by the four core team members with expertise in food security, agriculture and value chain development. They were joined by 10 field enumerators (50% females) who were all proficient in Sindhi and Urdu (local languages). A residential enumerators training was organised in Hyderabad including field testing of the tools.

Ethical Consideration

- Informed consent was sought from the respondents
- No personal data was collected
- No by name attribution was made in the report
- All team members were required to sign data confidentiality, code of conduct and child protection policy.
- Respondents were allowed to quit the interview if they wished to do so.
- No pictures were taken or presented in the report without consent.
- Anonymity of the respondents was to be preserved.

ANNEX 5

Traditional Market Hubs in PINS Supported District

Table 13: Main Markets in PINS Districts

S. No	District Dadu	District Shikarpur	District Jamshoro	District Matiari	District Qamber Shadat Kot
1	Khair Pur Nathan Shah	Jano Town	Sonwalhar	New Saeedabad	Jakhar
2	Nari	Wazirabad	Morho Jabal	Bhitshah	Sajjawal
3	Sita Road	Abdul Rahim Dakhan	Railo	Sekhat	Tharo Wadho
4	Nao Goth	Chiman Sukhpur	Dahbrai	Wasan	Silra
5	Johi Town	Mungrani	Kalo Khohar	Oderolal	Thariri Hashim
6	Kakkar	Nimoro		Sultanpur	Pakho
7					Yaro Dero
S. No	District Sajjawal	District Tando Allah Yar	District Tando Muhammad Khan	District Thatta	District Larkana
1	Chach Jehan Khan	Visarki	Nango Shah	Jhampir	Bagi
2	Sajjawal	Ghab	Chando Katiar	Keti Bunder	Warisdino Machhi
3	Relo	Sheikh Moosa	Nazar Pur	Makli	Dhamraha
4	Jhoke	Daro Qubi	Singhr	Gharo	Dokri
5	Soheki	Lakhiar	Fateh Pur	Thatta	Arija
6	Dhandhi	Bukerani	Kari	Buhara	Naudero
7	Chou-Bandi	Charki	Jarki	Duhro	Seehra
8	Khanpur	Kario Gul Sher	Sh Bhirkio	Khanghan	Bagi
9	Samani	Missan		Tando Hafiz Shah	Warisdino Machhi
10	Wali Shah	Chach Jehan Khan			
11	Abral	Sajjawal			
12	Bhudo Talpur	Relo			
13	Chumar Jamali	Jhoke			
14	Shah-Pur	Soheki			

ANNEX 6

Geographical Representation of PINS Supported Districts

Figure 24: Dadu District Food Market Map

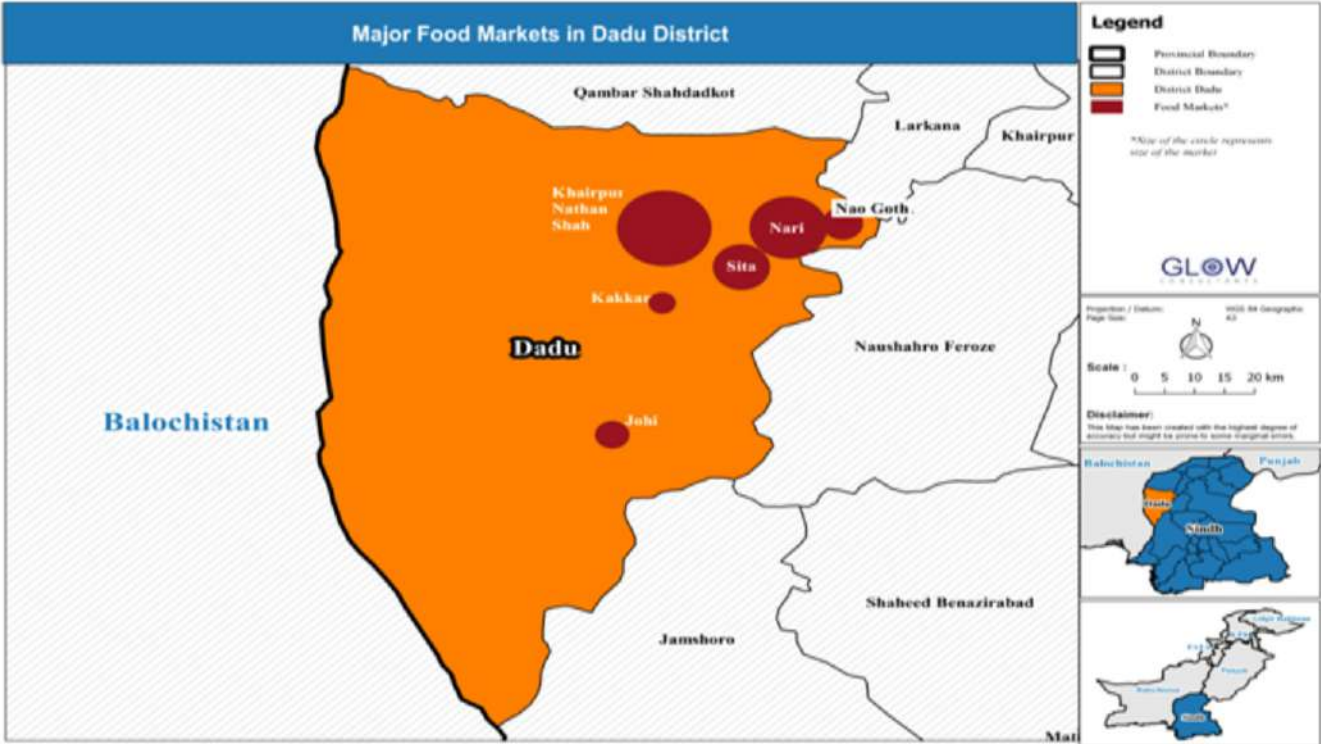
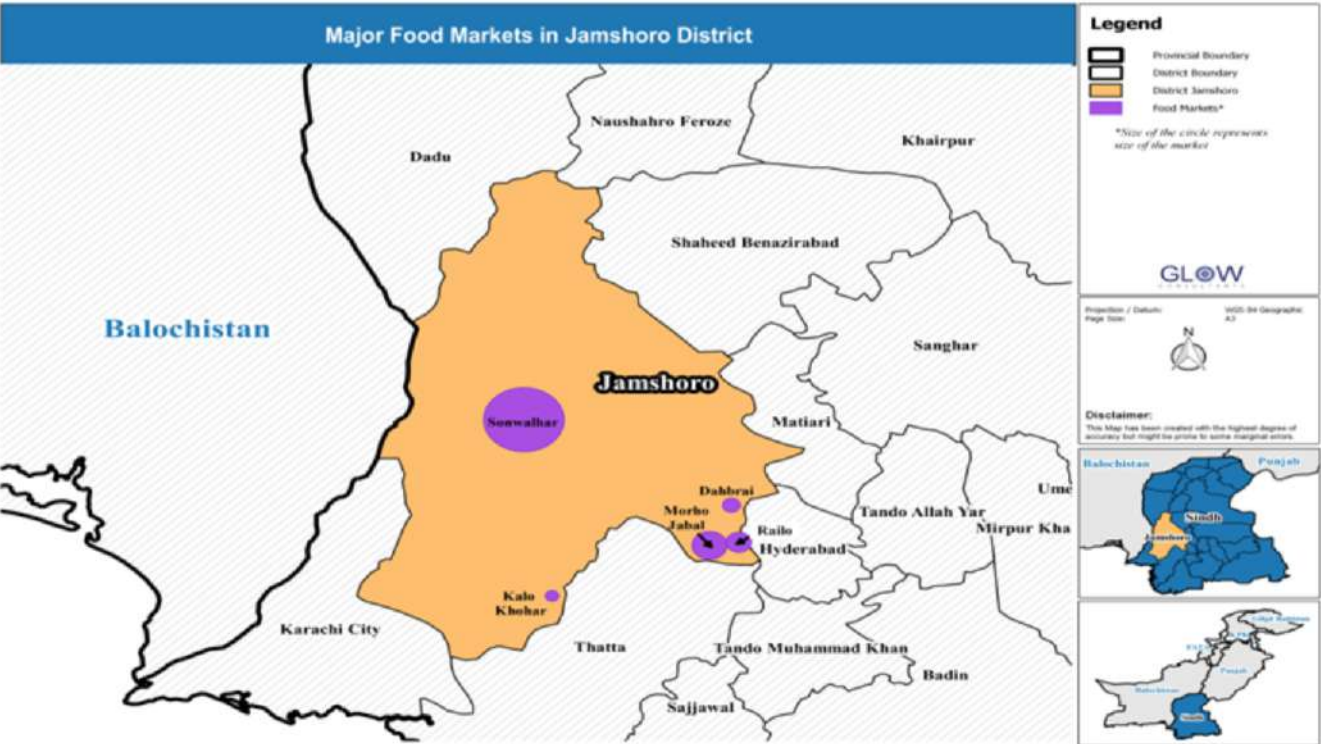


Figure 25: Jamshoro District Food Market Map



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Figure 26: Larkana District Food Market Map

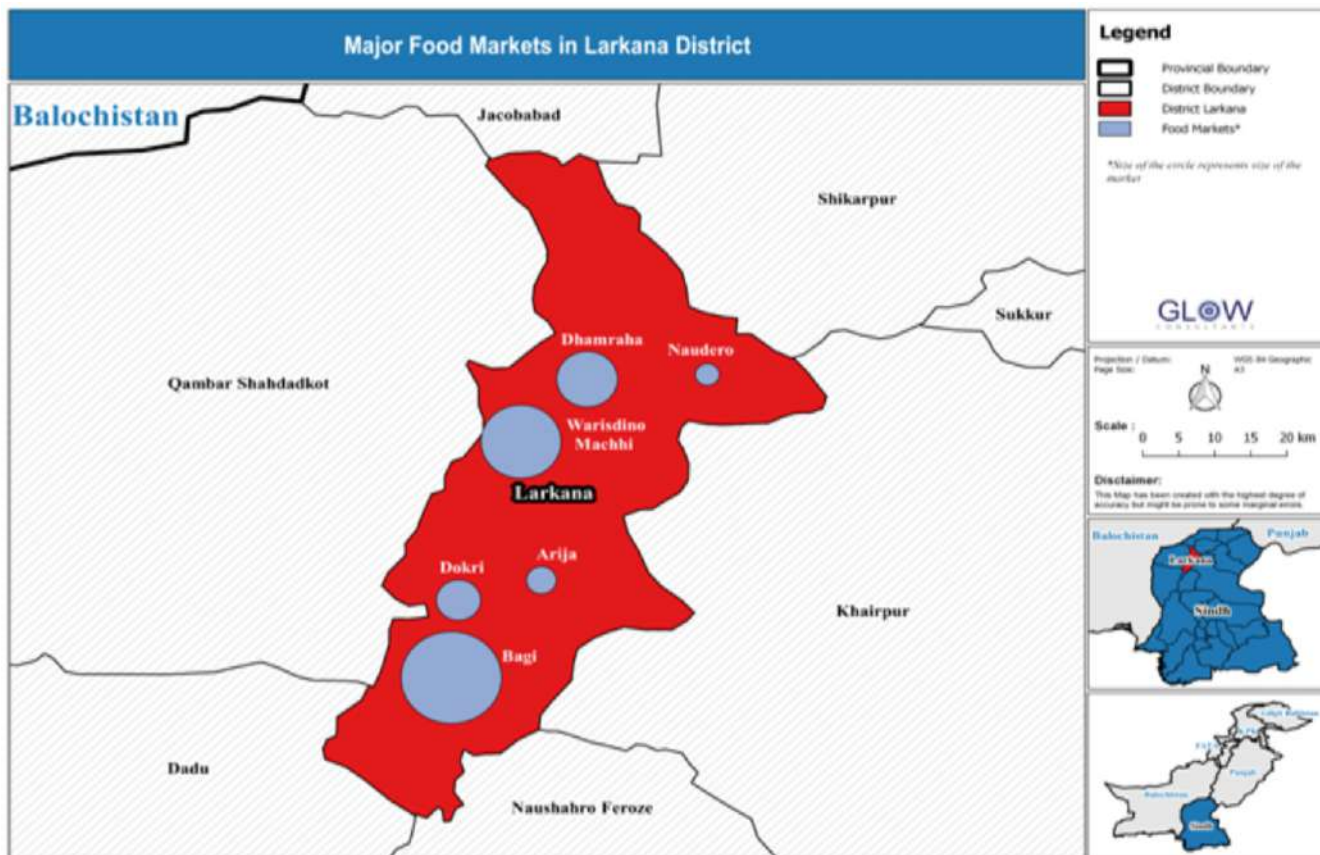


Figure 27: Matiari District Food Market Map

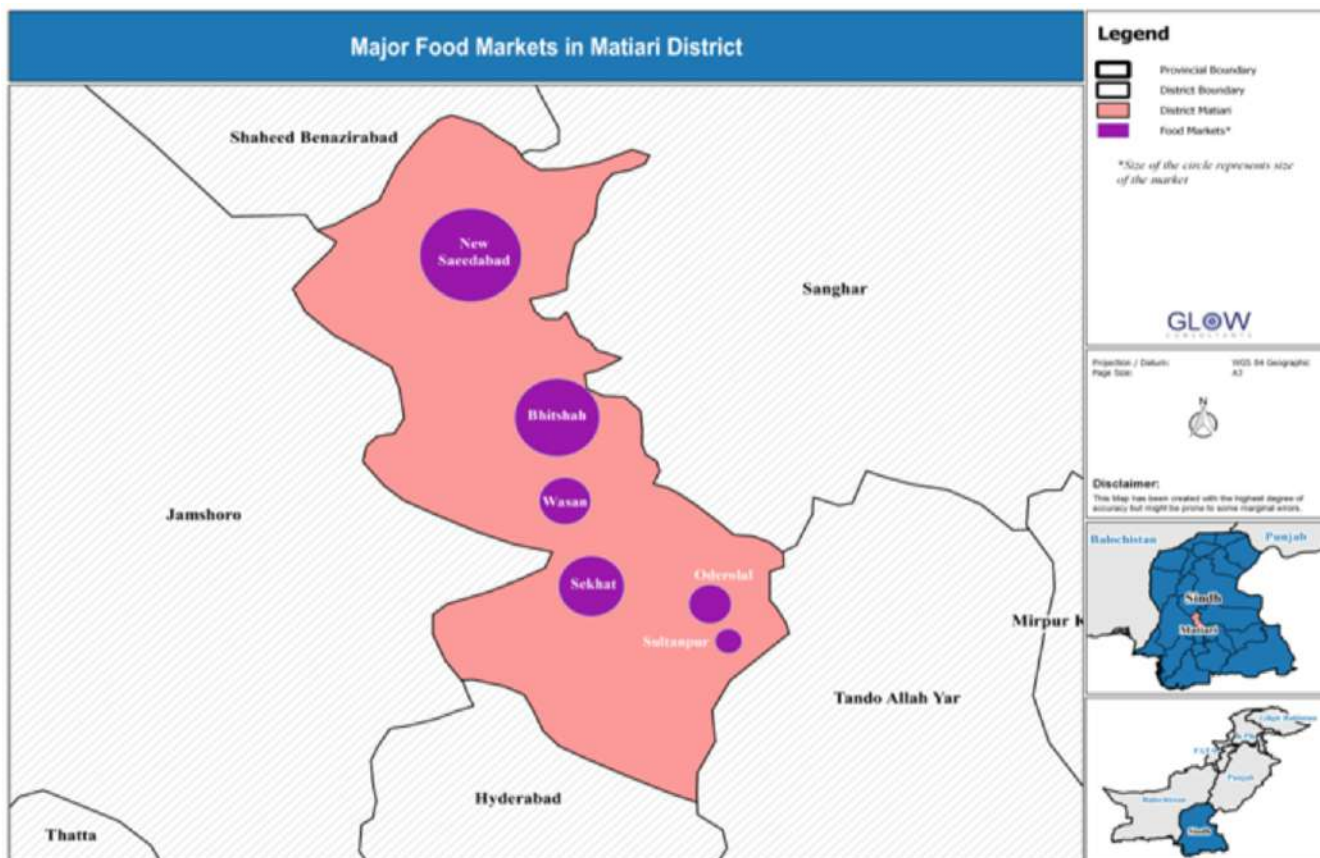


Figure 28: Qambar Shadat Kot District Food Market Map

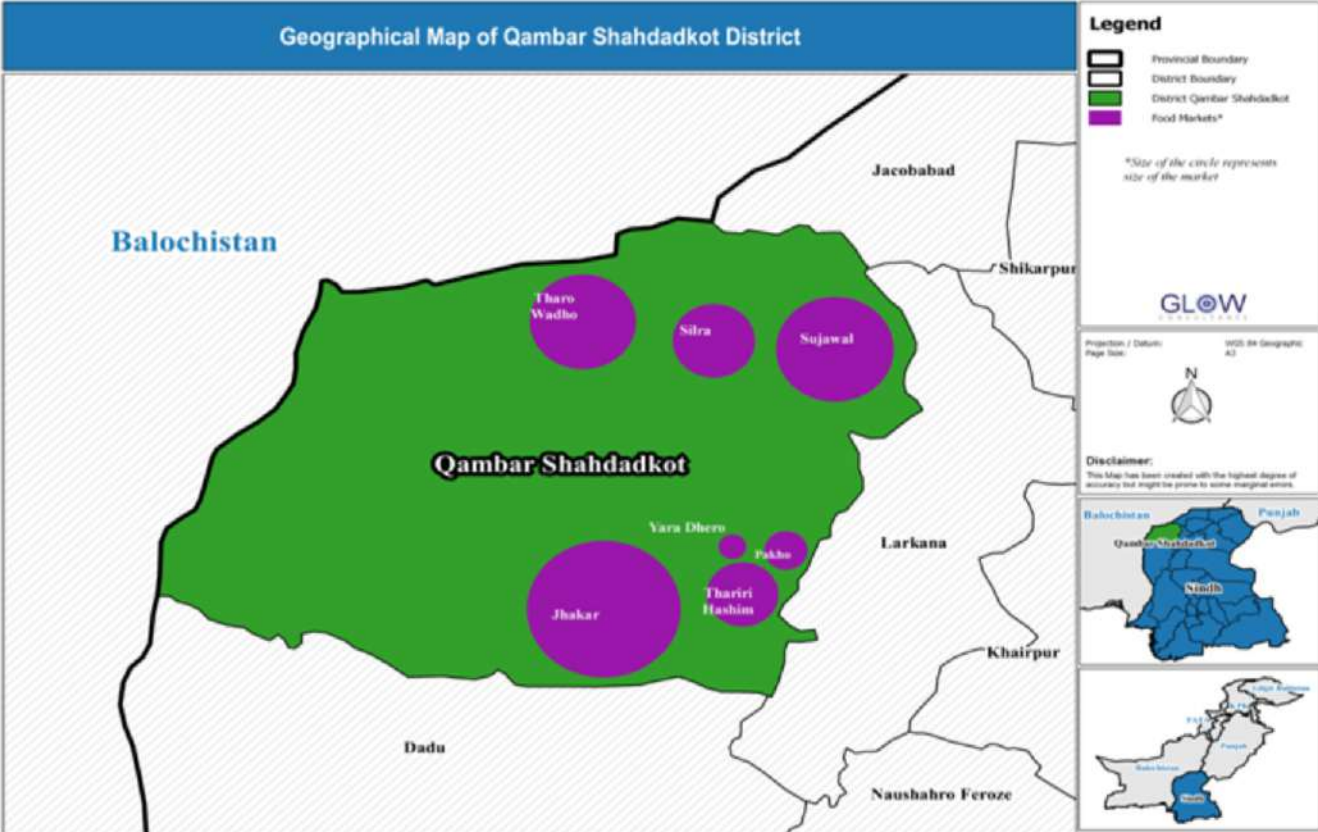
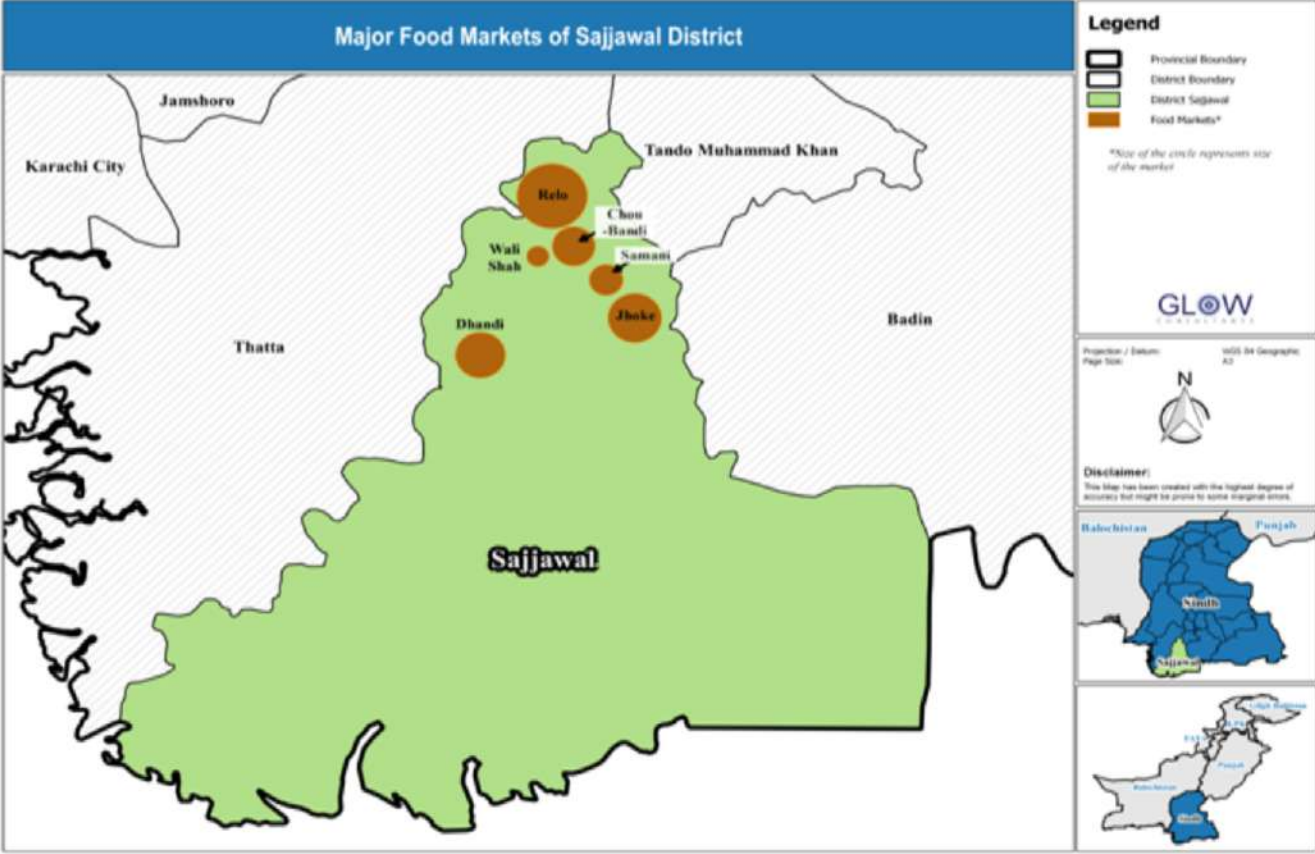


Figure 29: Sajawal District Food Market Map



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Figure 30: Shikarpur District Food Market Map

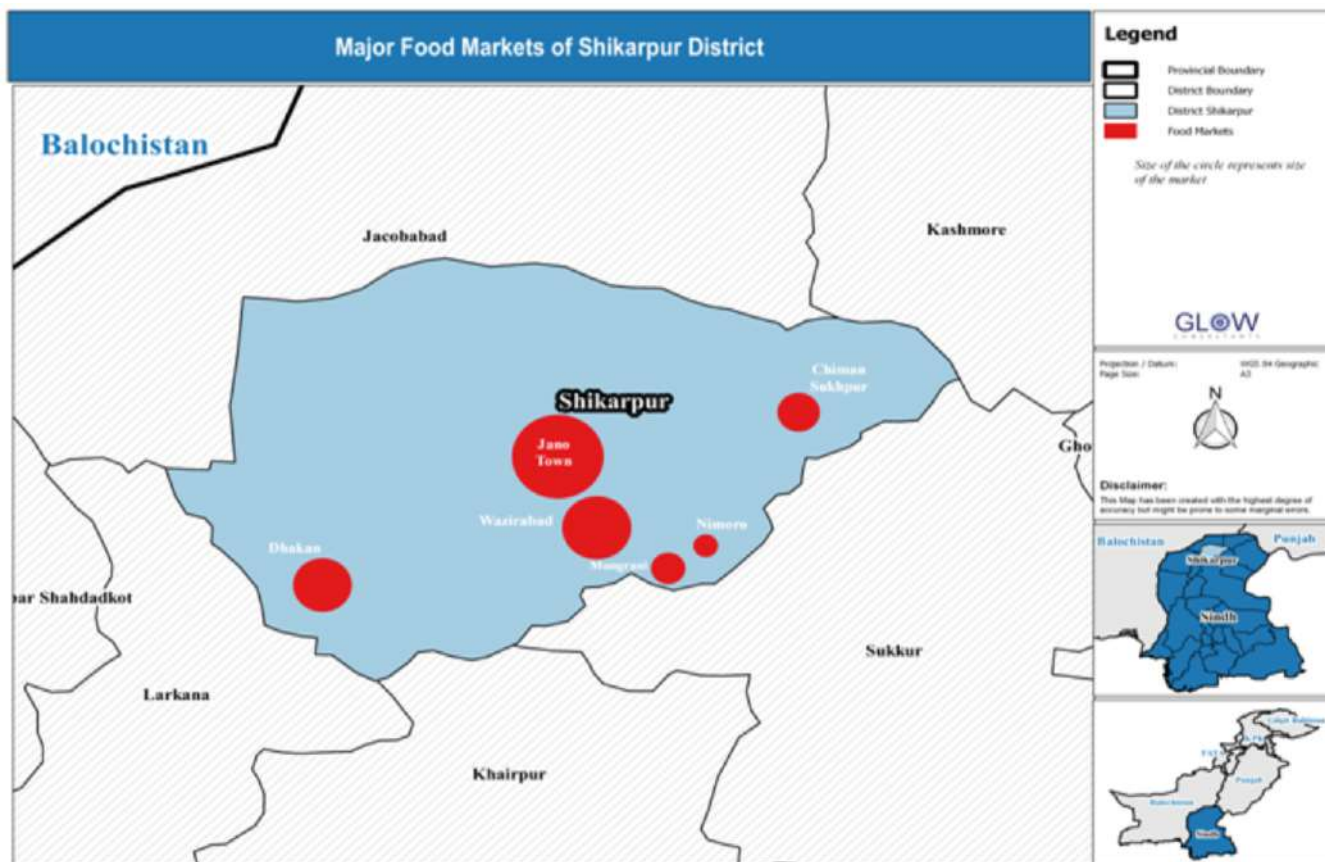


Figure 31: Tando Allah Yar District Food Market Ma

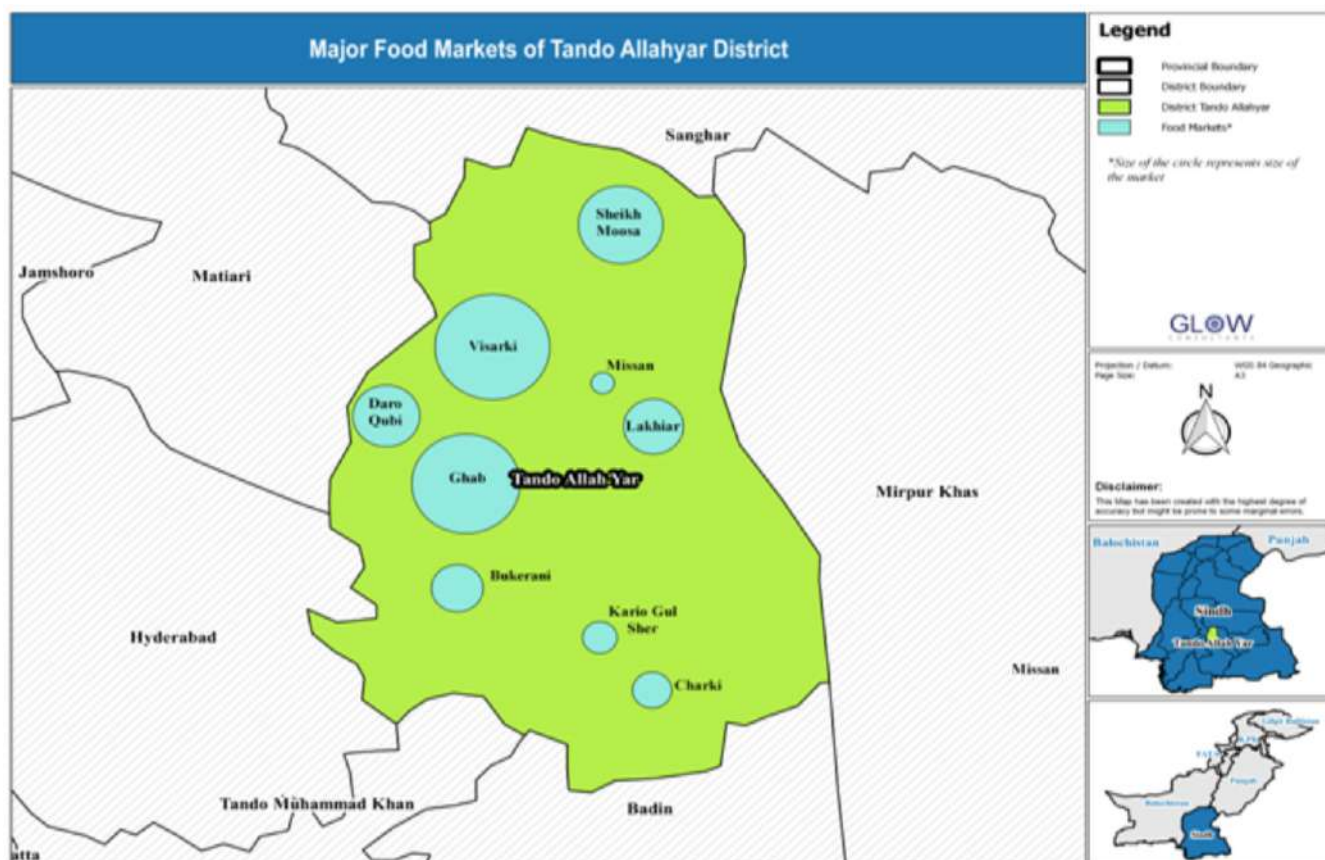


Figure 32: Tando Muhammad Khan District Food Market Map

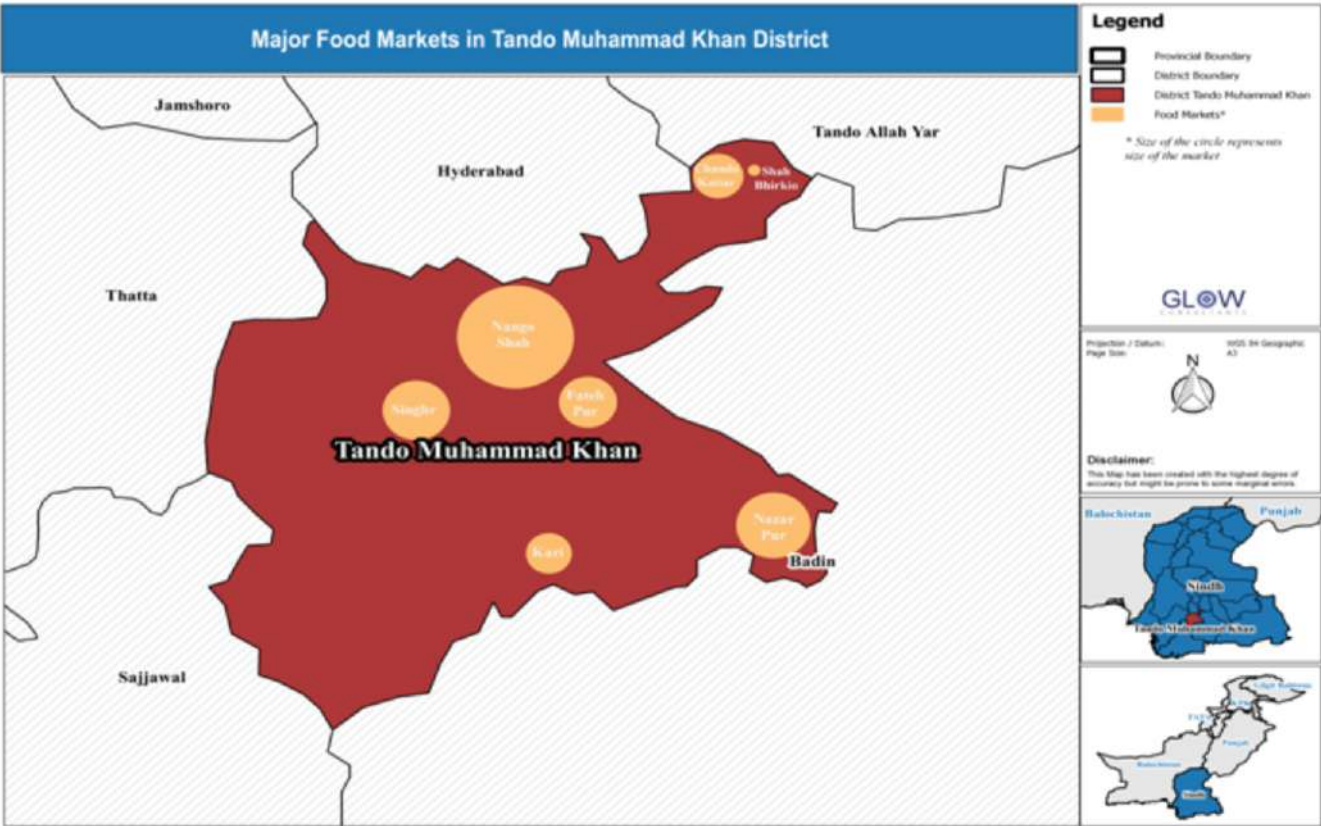
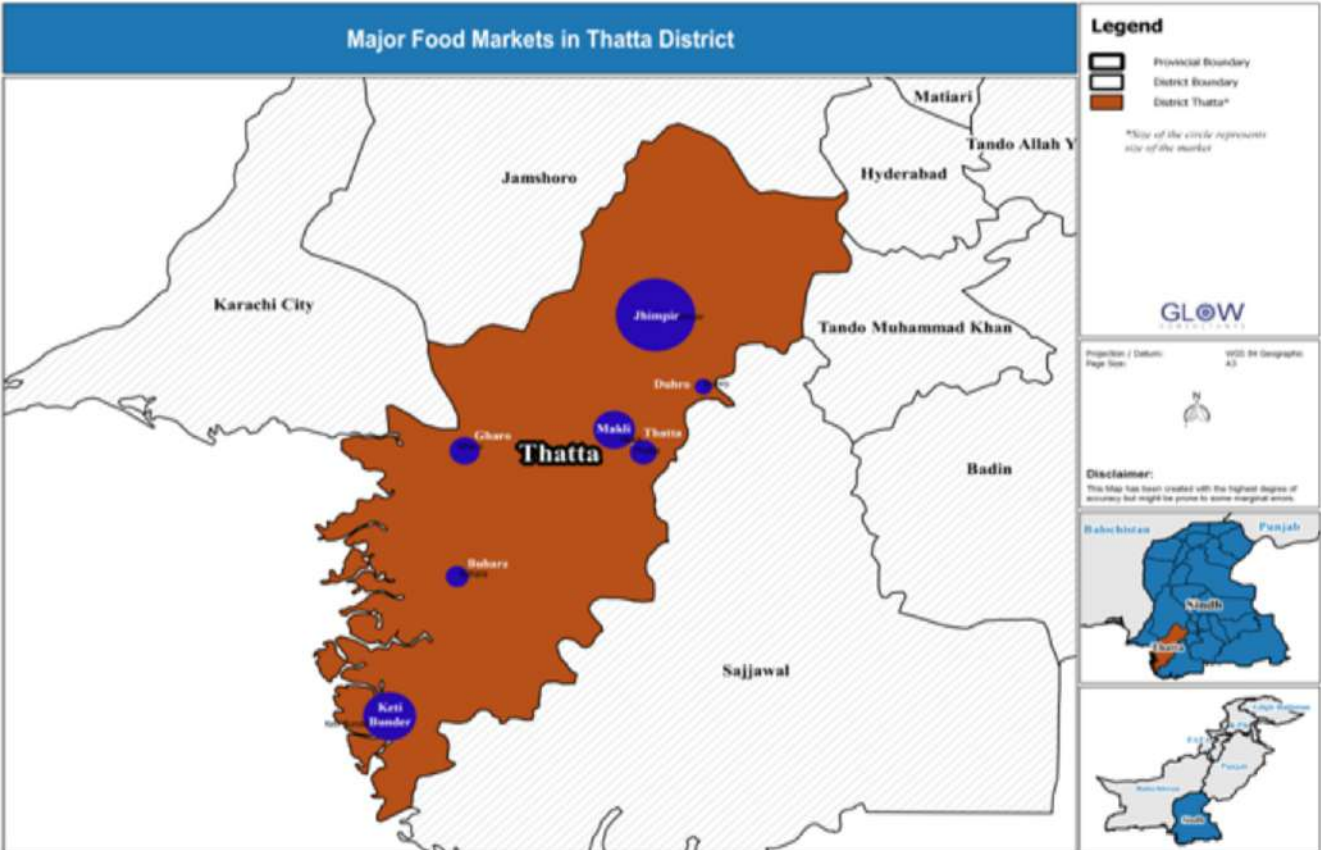


Figure 33: Thatta District Food Market Map



ANNEX 7

Percentage Market Share in PINS Supported Districts

%Age Market Share Relative – PINS Supported Districts							
S. No	Town	District	% Market Share	S. No	Town	District	% Market Share
1	Dadu City Market	Dadu	5.94%	45	Tando Allahyr City Market	Tando Allah Yar	5.43%
2	Khair Pur Nathan Shah Town Market	Dadu	1.43%	46	Visarki Town Market	Tando Allah Yar	0.55%
3	Nari Town Market	Dadu	1.33%	47	Ghab Town Market	Tando Allah Yar	0.49%
4	Sita Road Town Market	Dadu	1.08%	48	Sheikh Moosa Town Market	Tando Allah Yar	0.46%
5	Nao Goth Town Market	Dadu	1.05%	49	Daro Qubi Town Market	Tando Allah Yar	0.46%
6	Johi Town Market	Dadu	1.01%	50	Lakhiar Town Market	Tando Allah Yar	0.45%
7	Kakkar Town Market	Dadu	0.79%	51	Bukerani Town Market	Tando Allah Yar	0.42%
8	Hala City Market	Matari	2.28%	52	Charki Town Market	Tando Allah Yar	0.42%
9	New Saeedabad Town Market	Matari	0.73%	53	Kario Gul Sher Town Market	Tando Allah Yar	0.40%
10	Bhitshah Town Market	Matari	0.56%	54	Missan Town Market	Tando Allah Yar	0.39%
11	Sekhat Town Market	Matari	0.45%	55	Tando Muhammad Khan City Market	Tando Muhammad Khan	3.53%
12	Wasan Town Market	Matari	0.43%	56	Nango Shah Town Market	Tando Muhammad Khan	0.52%
13	Oderolal Town Market	Matari	0.41%	57	Chando Katiar Town Market	Tando Muhammad Khan	0.47%
14	Sultanpur Town Market	Matari	0.40%	58	Nazar Pur Town Market	Tando Muhammad Khan	0.41%
15	Buhari City Market	Jamshoro	5.49%	59	Singhr Town Market	Tando Muhammad Khan	0.35%
16	Kotri City Market	Jamshoro	3.51%	60	Fateh Pur Town Market	Tando Muhammad Khan	0.32%
17	Sonwalhar Town Market	Jamshoro	1.30%	61	Kari Town Market	Tando Muhammad Khan	0.31%
18	Morho Jabal Town Market	Jamshoro	1.22%	62	Jarki Town Market	Tando Muhammad Khan	0.29%
19	Railo Town Market	Jamshoro	0.83%	63	Sh Bhirkio Town Market	Tando Muhammad Khan	0.26%
20	Dahbrai Town Market	Jamshoro	0.73%	64	Shadat Kot City Market	Qamber Shadat Kot	4.13%
21	Kalo Khohar Town Market	Jamshoro	0.67%	65	Jakhar Town Market	Qamber Shadat Kot	0.37%
22	Chach Jehan Khan Town Market	Sajjawal	0.24%	66	Sajjawal Town Market	Qamber Shadat Kot	0.37%
23	Sajjawal City Market	Sajjawal	0.22%	67	Tharo Wadho Town Market	Qamber Shadat Kot	0.36%
24	Relo Town Market	Sajjawal	0.22%	68	Silra Town Market	Qamber Shadat Kot	0.33%
25	Jhoke Town population	Sajjawal	0.22%	69	Thariri Hashim Town Market	Qamber Shadat Kot	0.33%
26	Soheki Town Market	Sajjawal	0.21%	70	Pakho Town Market	Qamber Shadat Kot	0.31%
27	Dhandhi Town Market	Sajjawal	0.21%	71	Yaro Dero Town Market	Qamber Shadat Kot	0.29%
28	Chou-Bandi Town Market	Sajjawal	0.20%	72	Larkana City Market	Larkana	17.02%
29	Khanpur Town Market	Sajjawal	0.20%	73	Naudero City Market	Larkana	1.70%
30	Samani Town Market	Sajjawal	0.19%	74	Bagi Town Market	Larkana	1.18%
31	Wali Shah Town Market	Sajjawal	0.18%	75	Warisdino Machhi Town Market	Larkana	0.90%
32	Abral Town Market	Sajjawal	0.18%	76	Dhamraha Town Market	Larkana	0.85%

33	Bhudo Talpur Town Market	Sajjawal	0.17%	77	Dokri Town Market	Larkana	0.77%
34	Chumar Jamali Town Market	Sajjawal	0.17%	78	Arija Town Market	Larkana	0.72%
35	Shah-Pur Town Market	Sajjawal	0.17%	79	Naudero Town Market	Larkana	0.70%
36	Jhimpir Town Market	Thatta	2.41%	80	Seehra Town Market	Larkana	0.63%
37	Keti Bunder Town Market	Thatta	1.89%	81	Shikarpur City Market	Shikarpur	6.78%
38	Makli Town Market	Thatta	1.64%	82	Jano Town Market	Shikarpur	0.44%
39	Gharo Town Market	Thatta	1.52%	83	Wazirabad Town Market	Shikarpur	0.38%
40	Thatta Town Market	Thatta	1.04%	84	Abdul Rahim Dakhan Town Market	Shikarpur	0.36%
41	Buhara Town Market	Thatta	0.45%	85	Chiman Sukhpur Town Market	Shikarpur	0.32%
42	Duhro Town Market	Thatta	0.30%	86	Mungrani Town Market	Shikarpur	0.32%
43	Khanghan Town Market	Thatta	0.29%	87	Nimoro Town Market	Shikarpur	0.31%
44	Tando Hafiz Shah Town Market	Thatta	0.24%				
			44.20%				55.80%
	Total						100%

ANNEX 8

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