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2019



# PAKISTAN OVERVIEW OF FOOD SECURITY AND NUTRITION

IMPROVING ACCESS  
TO FOOD





**2019**

# **PAKISTAN OVERVIEW OF FOOD SECURITY AND NUTRITION**



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# FOREWORD

This report is the combined effort of four UN agencies and the Government of Pakistan coming together to present the overall picture of where Pakistan stands in the efforts to eliminate hunger and malnutrition. It is the first time a country level report has been attempted for Pakistan backed by the methodology of the UN's global series on the State of Food Security and Nutrition in the World. FAO, WFP, WHO, UNICEF, the Ministry of National Food Security and Research (MNFSR), the Pakistan Bureau of Statistics (PBS) the Ministry of Planning, Development and Reform (MPDR) and Ministry of National Health Services, Regulation and Coordination (MNHSRC) have collaborated to produce it with the cooperation of provincial governments and many other stakeholders.

Regular monitoring of Pakistan's food security and nutrition situation can support good policy and programme design. This report is one piece of a holistic food security and nutrition information system for the country. The intention is to support a well-informed, action-oriented dialogue about food security and nutrition, relevant to decision-makers with responsibility for the health and wellbeing of Pakistan's rapidly growing population. As a joint publication, it is a consensus of the information and understanding we have in 2019 of the problem, where and why it is most prevalent, what needs further analysis and what the most promising pathways are to its eventual eradication. This consensus is a stepping-stone to evidence based formulation of positive solutions and concerted action to correct pervasive hunger and malnutrition and reach towards prosperity and sustainability.

Pakistan is facing a major challenge of meeting food security and nutrition targets of SDG 2 by 2030. FAO estimates show that the Prevalence of Undernourishment (PoU) in Pakistan is 20.3 percent, and the marginal reduction has been erased by population growth such that 40.0

million Pakistanis are not getting enough food. The absolute number of hungry people in Pakistan is rising every year, driven by its status as the sixth most populous nation on earth and a population growth rate of 2.4 percent.

In recent times, regular natural disasters, conflict and economic slow-downs and down turns, have negatively affected Pakistan of continuity in its food availability and accessibility through time. Communities have repeatedly faced setbacks in their ability to secure a diverse, nutritious, quality, year-round food supply at household level, and to acquire and maintain infrastructure to support health and water systems, sanitation and hygiene. A changing climate, migration and urbanization threaten more instability in the future.

Pakistan is one of the slowest countries in the Southern Asia region to improve on statistics related to child stunting, wasting and underweight, with no significant progress in the last decade, despite substantial funds committed to development efforts aimed either directly or indirectly at undernutrition and micronutrient deficiencies. Based on the National Nutrition Survey 2018, stunting of children under five years is nationally at 40.2 percent, while wasting is at 17.7 percent and underweight at 28.9 percent. There is no significant difference in either stunting or wasting by gender; boys and girls are almost equally affected. The lack of achievement in reducing stunting has a particularly strong bearing on the Asia Pacific region's progress towards zero hunger.

The nutritional status of Pakistani women of childbearing age poses huge challenges to overcome the incidence of underweight babies (31.5 percent) and malnourished children. Pakistan also has a rapidly emerging multiple burden of nutrition, with rising overweight and obesity in all age groups and the prevalence of

overweight children almost doubling in seven years, a problem which has been largely ignored.

Four of the known drivers and determinants of food insecurity and malnutrition are explored in some detail in this report in the Pakistan context: poverty; climate related disasters; food safety and quality; and water, sanitation and hygiene (WASH). Poverty, with which food security is closely connected, is steadily declining in Pakistan, but there are considerable disparities and divides between different provinces, and between urban and rural settings. As with food insecurity and malnutrition, the report shows that Sindh and Balochistan are most affected by poverty. Pakistan's high climate change vulnerability and its dependence on agriculture and livestock activities means that better preparedness and adaptive responses to a hotter, drier climate with more variable rainfall will be essential to managing food insecurity and malnutrition during natural disasters. Much work remains to be done throughout Pakistan to improve food safety and quality, and particularly WASH. Gains in these two areas will heighten the impact of other work aimed at arresting malnutrition in the population.

The special theme of this first Pakistan Overview of Food Security and Nutrition, 2019 report is 'Improving Access to Food'. As a lower-middle-income country that has stabilised its availability of staple crops, Pakistan can do more to improve the access dimension of food security by working to remove inequalities in physical, economic, social and knowledge access. These inequalities are most obvious between urban and rural settings, but also exist between provinces, socio-economic groups and genders. Enlargement of government-run social protection programs is a very promising development that can be leveraged by increasing information provided along with training and education outcomes. Similarly, improvements in market arrangements, and policies that have desirable impact on prices of healthy and nutritious food, both hold high potential to open up access to affordable food in Pakistan and at the same time contribute to the development of sustainable food and agriculture systems.

The contributors to this report hope that it is both useful and inspiring in deciding future analysis, policies and programs for better food security and nutrition in Pakistan, and an acceleration towards meeting SDG2.

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# ACKNOWLEDGEMENTS

Under the aegis of MNFSR in the Government of Pakistan, the first Pakistan Overview of Food Security and Nutrition 2019 has been prepared by the FAO in Pakistan, in collaboration with Statistics Division of the Economic and Social Development Department, and a team of technical experts from WFP, WHO, and UNICEF. A technical and oversight committee established under Pakistan's Food Security and Nutrition Information System (FSNIS) and chaired by MNFSR guided the production of the report. Membership of both committees was from collaborating UN organizations, IFPRI, and federal and provincial government representatives. Under the overall leadership of Muhammad Hashim Popalzai, Secretary MNFSR, Javed Hamayun and Waseem ul Hassan played a critical role in the coordination of the whole exercise. Minà Dowlatchahi (FAO Representative, Pakistan) led the preparation of the report, the direction of the publication was carried out by Aamer Irshad, the coordination by Raja Ajmal Jahangeer and Genevieve Hussain was the Editor (FAO, Pakistan). Contributions were provided by Minà Dowlatchahi, Aamer Irshad, Genevieve Hussain, Raja Ajmal Jahangeer, Nomeena Anis, Faisal Syed, Asifa Ghani, Muhammad Afzal, Muhammad Waheed Anwar, Marium Zia Khan, Areesha Asghar, Mehwish Ali, Henriette Bjorge, Mehr Hasan and Shahid Ahmad (FAO); as well as Yasir

Ehtisham, Iftikhar Abbas, Aman ur Rehman and Syed Razak (WFP); Eric Etegebo, Naureen Arshad, Thewodros Mulugeta, Prakash Raj, Mubashara Iram and Kamran Naeem (UNICEF); and Noureen Aleem Nishtar and Muhammad Naseer (WHO). Mission heads of all the collaborating UN organizations under the leadership of Knut Ostby, United Nations Resident Coordinator supported this undertaking in Pakistan from a One UN perspective. Muhammad Azeem Khan and Umar Farooq from Pakistan Agriculture Research Council (PARC), and Ghulam Muhammad Arif and Ikram Saeed (FAO Consultants) provided technical input and valuable historical information to some sections of the report.

The report benefited from the comments of participants of consultations held in Islamabad, Karachi, Quetta, Peshawar and Lahore during November 2019.

Technical guidance was provided by Carlo Cafiero (FAO, OCS), Abdul Sattar, Sara Viviani and Marinella Cirillo (FAO, ESS) and Aziz Elbehri (FAO, RAP).

The financial support of Swiss Development Cooperation (SDC) for this report is acknowledged and appreciated.

# KEY MESSAGES

1. Prevalence of Undernourishment and of food insecurity are slowly declining in Pakistan but are challenged by low resilience to shocks such as climate-related disasters, economic slow downs and down turns and food price hikes. Inequality needs to be addressed in order to lift both the accessibility and the utilisation of food in Pakistan. The provinces of Sindh and Balochistan are becoming more food insecure. Rural households are more food insecure in terms of economic access and have lower dietary diversity. Additional data expected to be available next year from new waves of surveys may help to better address the causes and consequences of food insecurity and malnutrition, but it is clear that poverty reduction is a main lever out of both hunger and food insecurity in Pakistan.

2. The persistent malnutrition statistics of Pakistan are at odds with its status as a lower-middle-income country, risking failure to gain the demographic dividend of a youthful population because almost half of the future workforce is stunted and may be unable to reach their potential productivity, health and wealth. The provinces of Sindh and Balochistan are the worst affected by child malnutrition. Overweight and obesity are rapidly increasing, especially in urban areas of Pakistan, indicating a nutrition transition.

3. Urgent attention is needed on the care of the health and nutritional status of women of childbearing age to overcome the alarming rates of underweight, anaemia, zinc deficiency, vitamin A deficiency and vitamin D deficiency and their effect on unborn children. Low birth weight children have an increased likelihood of becoming stunted in the short term and/or overweight and vulnerable to non-communicable diseases in the long term. Such inter-generational malnutrition is costing the economy of Pakistan 3 percent of its

GDP a year in lost productivity.

4. Dietary habits in Pakistan require realignment to balanced, fresh and nutritious ingredients, through making a diverse range of foods more accessible to the poor and through educating both the poor and the rich on the health consequences of a diet dominated by energy-dense, low-nutrient foods. Diets based mainly on wheat that are consumed due to poverty, subsidies, or lack of knowledge, should be supplemented through government programs for wheat, oil and salt fortification, while fruits, vegetables, dairy, pulses, eggs, fish and meat should be made more accessible and more desirable through changes in food and agriculture systems, including government interventions on price, food safety, market structure and social protection, and through promoting the recommendations in the Pakistan Dietary Guidelines for Better Nutrition.

5. Climate-related disasters and the ability to prepare for and withstand them are an important lens through which to consider food security and malnutrition in Pakistan. The impact of climate-related disasters on the losses to the crucial agriculture sector, which employs 39 percent of the overall workforce and two-thirds (67 percent) of women who work, cannot be overstated. While cyclical drought conditions and large-scale floods are the main natural disasters faced, Pakistan is also in an active earthquake zone. The adoption of climate-resilient agriculture and water management practices is a promising approach to strengthen food security in Pakistan, in particular when coupled with improved land access and tenure arrangements.

6. Water, sanitation and hygiene (WASH) remain critical and are an important determinant for

improving maternal and child health including stunting. WASH is a crucial area of public infrastructure investment and knowledge access for Pakistan, if any gains are to be made in malnutrition. Contaminated water supplies and unsafe drinking water are urgent problems to resolve in both urban and rural contexts. Major scaling up of integrated nutrition-sensitive WASH interventions (e.g. water supply including quality and quantity; sanitation, particularly excreta disposal; and hygiene promotion) is warranted, and will facilitate improved infant and young child feeding practices necessary to overcome malnutrition.

7. Notwithstanding the WASH challenges, the pathway of a national food safety coordination mechanism, harmonizing food safety standards and food safety regulatory control at the national and provincial level, will enhance food security and nutrition, particularly in urban Pakistan.

8. Physical access to food in Pakistan is a challenge. Transport and communication infrastructure and logistics performance are not adequate and market infrastructure and enhanced market support services are needed to improve food accessibility in Pakistan to the desirable level.

Social access to food in Pakistan is provided through a mix of traditional, charitable disbursements of food and money to the needy, both in rural and urban settings, and more formal and modern government welfare programs, which until recently have had limited coverage. Integration of these two streams, additional data and an assessment of the joint funding adequacy and targeting effectiveness is needed, especially for urban settings where self-production of food is grossly limited and social access to food not fully captured.

# ABBREVIATIONS AND ACRONYMS

AKU	Agha Khan University
BISP	Benazir Income Support Program
BMI	Body-Mass Index
CV	Coefficient of Variation
DEC	Dietary Energy Consumption
FAO	Food and Agriculture Organization
FATA/FR	Federally Administered Tribal Area/Frontier Regions
FIES	Food Insecurity Experience Scale
GAM	Global Acute Malnutrition
GB	Gilgit-Baltistan
GDP	Gross Domestic Product
HDI	Human Development Index
HIES	Household Integrated Economic Survey
KP-NMD	Khyber Pakhtunkhwa - Newly Merged Districts
MAM	Moderately Acute Malnutrition
MDER	Minimum Dietary Energy Requirement
MDG	Millennium Development Goal
MNFSR	Ministry of National Food Security and Research
MoCC	Ministry of Climate Change
MPDR	Ministry of Planning, Development and Reform
MNHSRC	Ministry of National Health Services, Regulation and Coordination
MPI	Multi-dimensional Poverty Index
NCD	Non-Communicable Disease
NDMA	National Disaster Management Authority
NNS	National Nutrition Survey
NoU	Number of Undernourished
PBS	Pakistan Bureau of Statistics
PCRWR	Pakistan Council of Research on Water Resources
POFI	Pakistan Overview of Food Security and Nutrition
POU	Prevalence of Undernourishment
PSLM	Pakistan Social Standard Living Measurement Survey
SDG	Sustainable Development Goal
SOFI	State of Food Security and Nutrition in the World
USD	United States Dollar
VAD	Vitamin A deficiency
UNICEF	United Nations International Children's Emergency Fund
WASH	Water, Sanitation and Hygiene
WFP	World Food Program
WHA	World Health Assembly
WRA	Women of Reproductive Age
WHO	World Health Organization



# THE SETTING

Situated in South Asia, Pakistan covers an area of 796,095 km<sup>2</sup> with a population exceeding 212 million people, making it the sixth-most populous country in the world. Around 64 percent of the population (136 million) live in rural areas. Pakistan has a very high population growth rate, at 2.4 percent. The literacy rate is 72 percent, with large urban-rural and gender gaps. The overall unemployment rate is 5.1 percent. Pakistan has a labour force of 65.5 million and a labour force participation rate of 44 percent. Around 39 percent of the country's labour force is engaged in the agriculture sector (30 percent of men and 67 percent of women), 24 percent in industry and 24 percent in the services sector. With a medium score on the Human Development Index, Pakistan is a Lower Middle Income Country and has the 43rd largest economy in the world in terms of nominal GDP and the 25th largest in terms of Purchasing Power Parity (billions of international). The per capita

income is around USD 1,500 with large inequalities measured by the Gini Index, which is at 36.2.

Out of the total area of 79.6 million hectares, the cropped area constitutes 22.6 million hectares. Almost 80 percent of the cultivated area is irrigated by one of the largest contiguous irrigation systems in the world. Out of a total 8.3 million farms, around 90 percent are less than 5 hectares, and these small farms amount to 48 percent of the arable land. The share of the agriculture sector in the country's GDP is 18.5 percent made up of contributions from livestock (60.5 percent), crops (35 percent), fisheries (2.1 percent) and forestry (2.1 percent). Besides its significance to the economy, the agriculture sector has been pivotal for domestic food availability and self-sufficiency. However, full food accessibility has not been achieved in Pakistan, mostly for economic and social reasons.



A review of the economic planning documents of the Government of Pakistan suggests that the country has historically not had a standard yardstick to measure the level of food insecurity. The 11th Five Year Plan 2013-18, therefore, did not include food security targets and made only an objective statement about reducing food insecurity while setting five-year targets. Similarly, the Vision 2025 could not find any appropriate benchmark for food security, and indicated the level of food insecurity as 58 percent, which was obtained from National Nutrition Survey 2011, although this was neither computed on the basis of standard methodology nor was the NNS intended to determine food insecurity in the country. Later this information was withdrawn from the Vision 2025 in the revised version and a corrigendum was issued. Still the country could not find any appropriate figure to denote the level of food security in the country in the revised version and mentioned only about improving access and increasing food production as measures to reduce food insecurity in the country. In 2015, the Sustainable Development Goals (SDGs) were adopted across

the globe, with SDG 2 Zero Hunger using the Prevalence of Undernourishment (PoU) and Food Insecurity Experience Scale (FIES) as the key indicators. The Government of Pakistan has now also adopted these and included them in its 12th Five Year Plan 2018-23 to target and measure the level of food security in the country.

In this context, the preparation of this Pakistan Overview of Food Security and Nutrition is a timely contribution to a more standardised and regular reporting of the food insecurity situation in the country. It provides an overview of the available statistics and challenges in measuring and eradicating food insecurity and malnutrition. It needs to be seen as first report to identify the areas for which more data or analysis are needed to be able to understand the true situation of food insecurity and its linkages with poverty and malnutrition. The report points to the areas where more information is required to better understand the relationship between food insecurity and poverty, and food insecurity and malnutrition.













## Part 1

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# FOOD SECURITY AND NUTRITION IN PAKISTAN

# FOOD SECURITY AND NUTRITION IN PAKISTAN



Meeting food security and nutrition targets of SDG 2 by 2030 will be a challenge for Pakistan, with marginal reductions in hunger and food insecurity over the past decade; almost no change in stunting, wasting and underweight among under 5 children; and a rapid rise in overweight and obesity. The number of hungry people in Pakistan is rising every year since 2008-09, driven by a stagnation in the prevalence of undernourishment and a rapid population growth rate of 2.4 percent per year, which has made it the sixth most populous nation in the world. This, coupled with the lack of achievement in reducing stunting, has a particularly strong bearing on the Asia Pacific region's progress towards zero hunger and the eradication of all forms of malnutrition.

## 1.1 RECENT TRENDS IN HUNGER AND FOOD INSECURITY IN PAKISTAN

This part of the report provides information on the Prevalence of Undernourishment (PoU-SDG indicator 2.1.1) and the Prevalence of Moderate and Severe food Insecurity in population based on the Food Insecurity Experience Scale (FIES-SDG indicator 2.1.2). These are the two indicators used to monitor Target 2.1 under the global SDGs monitoring framework. The PoU was also the main indicator used to monitor the World Food Summit target and the Millennium Development Goal (MDG) 1C target: Eradicate extreme hunger and poverty. Globally, three-year averages are used in reporting PoU for each country.

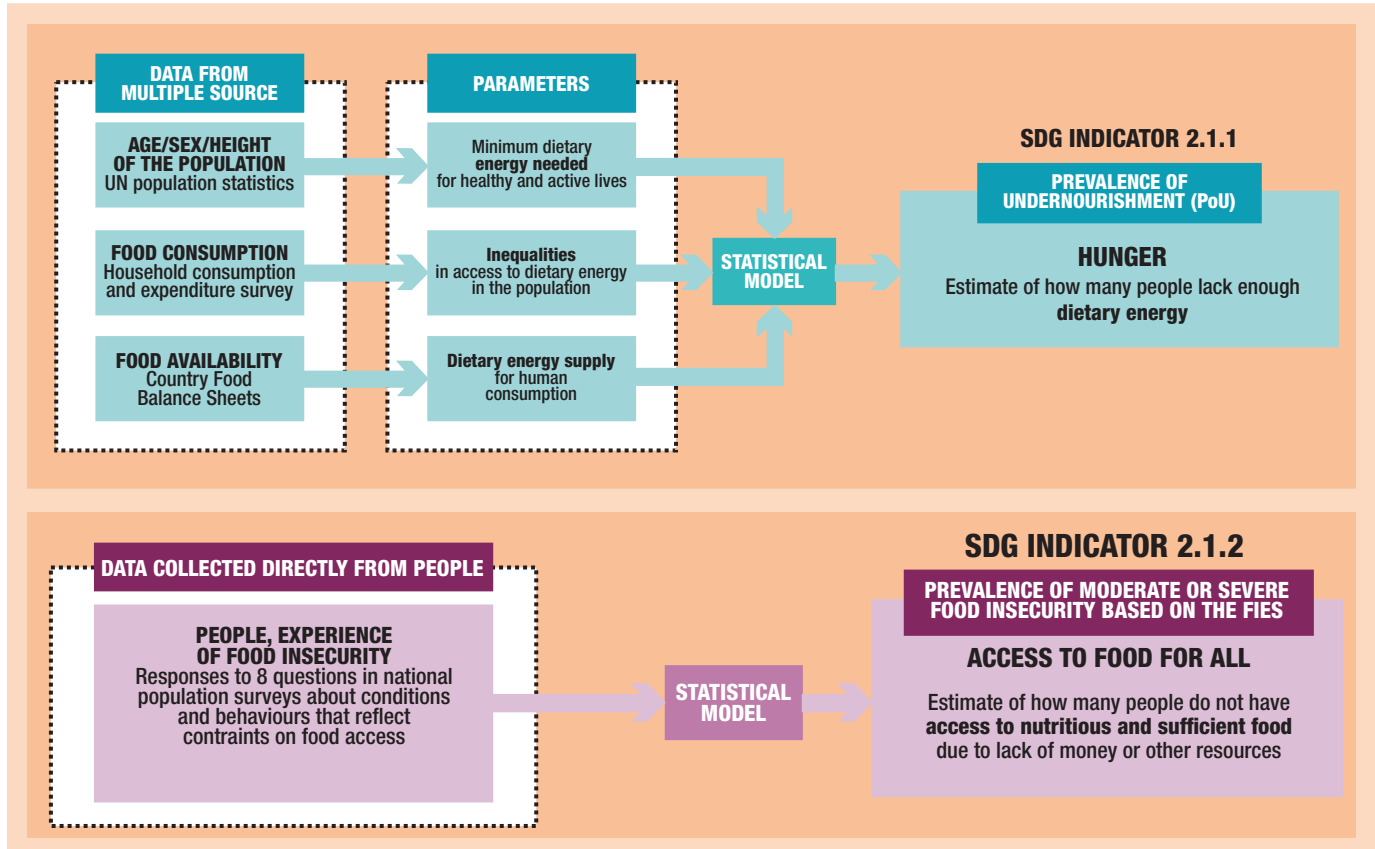




The PoU estimates are based on information on the level and distribution of dietary energy consumption in the population, which are contrasted with the expected distribution of dietary energy requirements given the composition of the population by sex, age, body masses and physical activity level, to establish the probability that the habitual food consumption of the average individual in the population may fail to cover the dietary energy needs for an active and healthy life. PoU allows estimation of how many people lack enough dietary energy. It does not give information about the quality of the diets, only dietary energy adequacy.

While the PoU has been FAO's traditional indicator used to monitor hunger for many years, in 2017 Prevalence of Moderate and Severe food Insecurity based on the FIES began also to be reported in the global State of Food Security and Nutrition in the World (SOFI) report as another, complementary indicator of food insecurity. Unlike the PoU, FIES is calculated based on people's direct responses to questions regarding their access to food of adequate quality and quantity, and the stability of such access. Use of FIES allows estimation of how many people do not have access to nutritious and sufficient food, due to lack of resources or other reasons. Both PoU and FIES are further explained in figure 1.

Figure 1: Indicators for SDG Target 2.1 to Monitor Progress on Ending Hunger and Ensuring Access to Food for All



Source: FAO, 2019

### 1.1.1 Prevalence of Undernourishment in Pakistan

As per FAO estimates, which use an internationally agreed statistical model<sup>1</sup> for computing PoU, the trend over the past 15 years

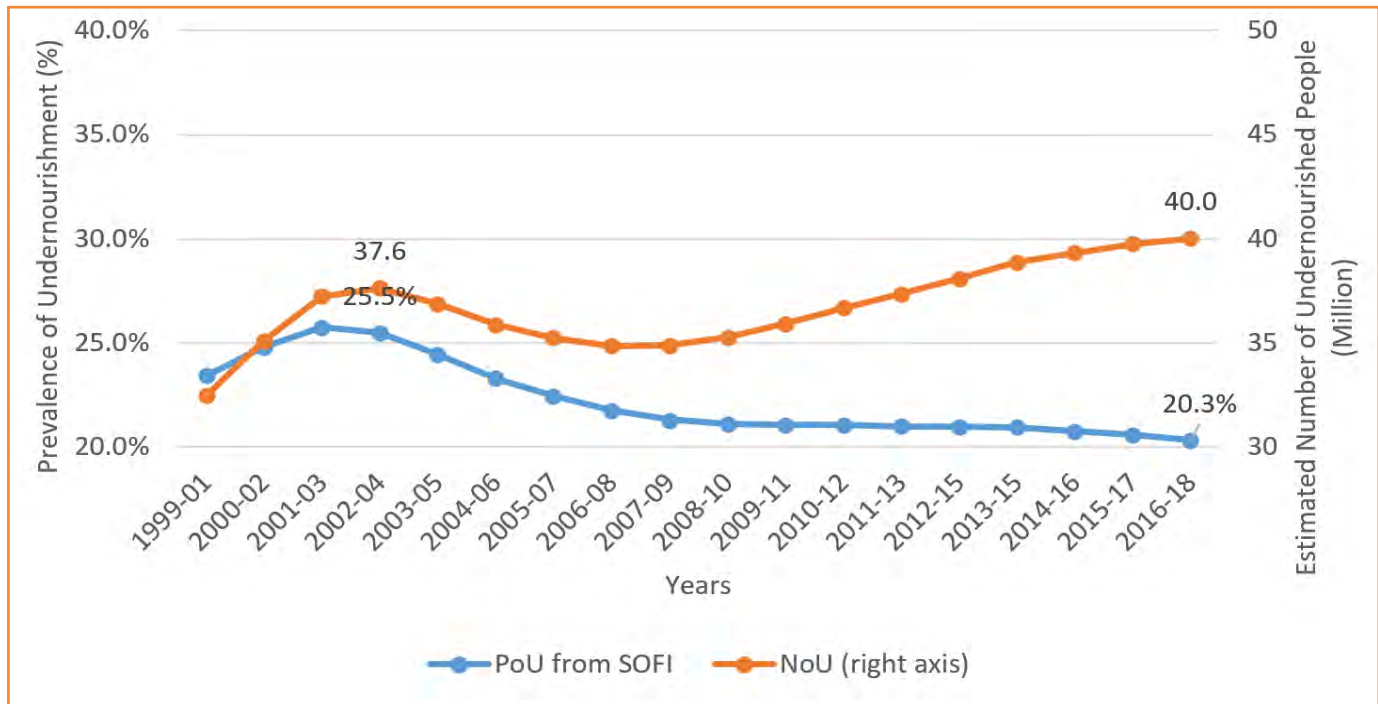
shows that PoU in Pakistan has fallen from 25.8 percent in 2001-03, to 20.3 percent in 2016-18 (Figure 2). The PoU has declined since 2001-03 with a reduction that has been more pronounced up to 2007-09, then remaining at around 20 percent since.



1. See Technical Annex.



Figure 2: Trend in Prevalence of Undernourishment in Pakistan<sup>2</sup>



Source: FAO, Statistics Division

Despite the reduction in PoU, the estimated Number of Undernourished people (NoU) has increased from 37.6 million in 2002-04 to 40 million in 2016-18, as a result of steady population growth over the same period. The stagnation in the PoU and the rise in the undernourished population since 2008-10 can be

explained by a series of events, such as climate related disasters (floods in 2010-2013 and drought in 2013-14 and 2017-18 in parts of Pakistan) and high inflation during 2008-14, which have defied efforts to reduce hunger in the country.

### Box 1: Food Balance Sheet (FBS)

FBS data is used to improve the estimates of PoU obtained from survey data, when there are reasons to believe that the survey may fail to account for all sources of household food consumption. The FBS presents a comprehensive picture of the pattern of a country's food supply during a specified reference period, usually one year. The food balance sheet shows for each food item - i.e. each primary commodity and a number of processed commodities potentially available for human consumption - the sources of supply and its utilization.

The total quantity of foodstuffs produced in a country added to the total quantity imported and adjusted to any change in stocks that may have occurred since the beginning of the reference period, gives the supply available during that period. On the utilization side, a distinction is made between the quantities exported, fed to livestock, used for seed, put to manufacture for non-food uses, losses during storage and transportation, and food supplies available for human consumption.

The per capita supply of each such food item available for human consumption is obtained by dividing the respective quantity by the size of the population partaking of it. Data on per capita food supplies are expressed in terms of quantity and - by applying appropriate food composition factors for all primary and processed products - also in terms of dietary energy, protein and fat content.

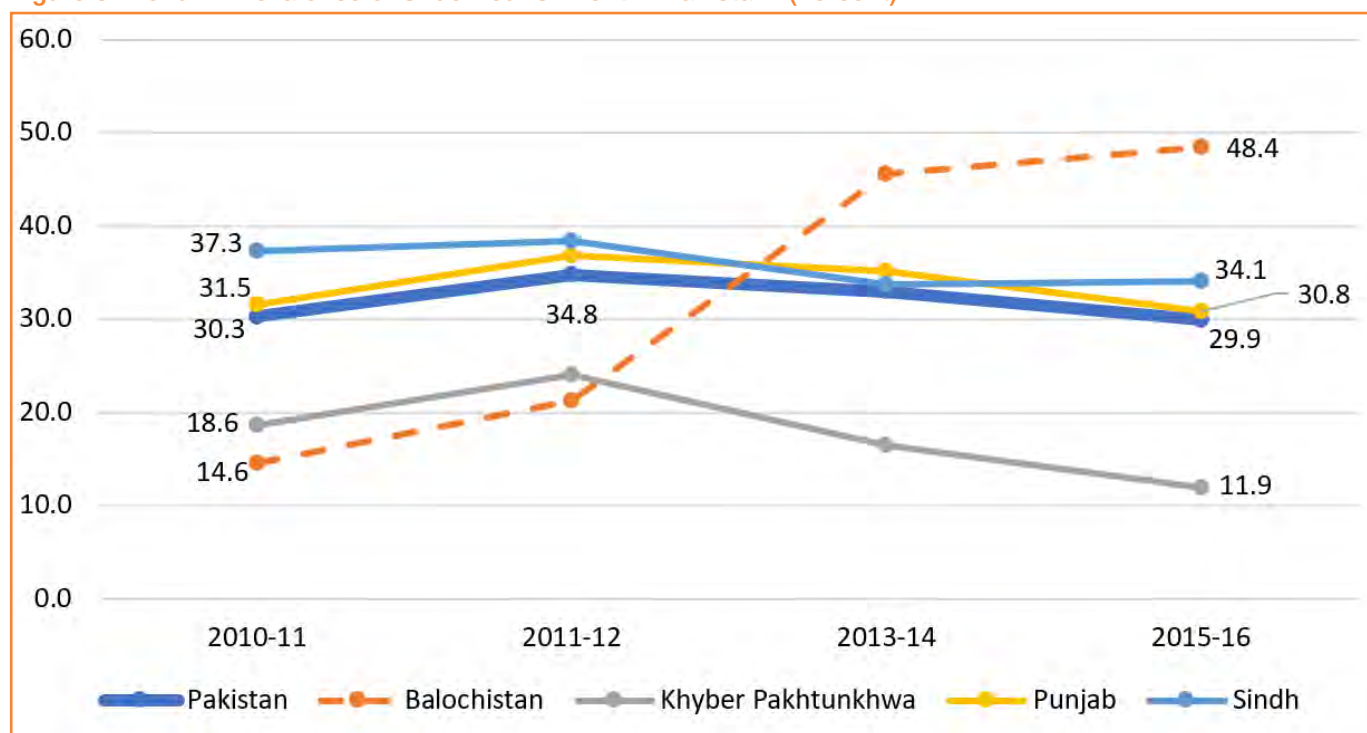
Source: FAO.

2. As per FAO Global Report on State of Food Security and Nutrition in the World. These estimates are based on Food Balance Sheet data.

As most of the data needed to estimate the PoU is obtained through household surveys that collect information on food consumption, this report also presents a series of results based on data from the Household Integrated Economic Survey (HIES), a survey conducted by Pakistan Bureau of Statistics (PBS), the national statistical organization, every second year<sup>3</sup>. The data of various rounds of HIES were used to produce PoU

estimates that, contrary to official FAO estimates, are fully based on survey data. The analysis showed PoU values that are more volatile and much higher than official FAO estimates (around 30 percent in 2015-16, the last available survey), and that declined from around 35 percent in 2011-12, a reduction of almost 5 percentage points since 2011-12 (Figure 3)<sup>4</sup>

Figure 3: Trend in Prevalence of Undernourishment in Pakistan\* (Percent)



\*PoU (fully based on HIES survey DEC)



3. HIES was last conducted in 2015-16 and data of HIES 2018-19 will be available early 2020.

4. Analysis of PoU trend has been conducted by ESS team at FAO HQ in Rome, Italy.



**Box 2: Different Sources of Data for PoU Estimation**

As detailed in the technical annex, the parameters needed to compute PoU estimates using the FAO methodology can be informed by different sources of data. While survey data remain the only source for a direct estimate of the coefficient of variation (CV), an estimate the average dietary energy consumption (DEC) can be obtained either from survey data or from Food Balance Sheets (FBS). In this sense, independently from the source that is used, the method for estimation of the PoU is unique.

Official FAO estimates for Pakistan are reported every year in the State of Food Security and Nutrition in the world report, based on data from Food Balance Sheets to estimate the mean (DEC) and from national household surveys to estimate the CV. They are reported as three-year moving average to control for possible year-to-year uncertainty in capturing some of the FBS components. FAO promotes the use of surveys to the maximum possible extent, as this is the only way to produce also estimates at sub-national level. This is the case of this report as there are surveys available in Pakistan that describe the patterns of food consumption in the country. Nevertheless, it also recognized that the average DEC estimated from survey data may be affected by serious bias, in cases when the food consumption data collected in the survey fail to fully capture all sources of household food consumption. As a result, PoU estimated based on survey data only are usually affected by a considerable bias. This is the case of the HIES-based estimates of PoU presented in this report at subnational levels.

One key recommendation to enhance the quality and reliability of PoU estimates for Pakistan is to improve the current modules included in household surveys to better capture all sources of food consumption.

**For further details, please refer to methodological note in Annex**

The difference between the PoU estimates computed using the average Dietary Energy Consumption (DEC) estimated from the HIES survey data only and the one computed by FAO estimating the mean from FBS data, reveals that either the HIES survey data underestimates food consumption, that FBS data overestimates the average DEC in the country, or both. The difference in PoU based on Food Balance Sheet data and household survey data has been also found in other countries in the region such as India, Myanmar, Mongolia, Sri Lanka, Vietnam and Philippines. One convincing reason for why survey data may underestimate total food consumption in Pakistan, is found in the relevance that consumption of food received for free, at work, at school, or at the charitable

institution has in the country, but which does not get captured fully in the survey data. Particularly relevant, for example, seems to be the food consumed by visitors at Sufi shrines present in many parts of the country<sup>5</sup>. A detailed food consumption module in future editions of the HIES may better capture this important alternative source of food consumption, which is expected to be particularly relevant especially for the poorer strata of the population<sup>6</sup>. Based on the above consideration, and pending further inquiries on the discrepancy between food consumption accounted for in surveys and apparent food consumption estimated from FBS, a safe conclusion is that the true PoU in Pakistan in 2015-17 is around 20 percent.

5. See: <http://www.ipsnews.net/2018/11/sufi-shrines-public-private-partnership-improve-food-security-nutrition/>

6. See World Bank publication which highlights the problems in fully capturing total food consumption through household economic surveys. [http://surveys.worldbank.org/sites/default/files/publications/6\\_Guidebook\\_final\\_Web2.pdf](http://surveys.worldbank.org/sites/default/files/publications/6_Guidebook_final_Web2.pdf)



As the HIES surveys are designed to be representative at the provincial level and by urban or rural area of residence, survey data would allow, in principle, to conduct a disaggregated analysis of PoU. This is obtained by treating the subset of data belonging to each area (urban or rural) or to each province as a separate survey, and estimating all parameters separately.

Given the very likely underestimation of total food consumption obtained from survey data, the resulting series of PoU should be considered only with reference to the trends they show over time, and the relative differences between sub-national units (e.g., provinces, and urban/rural area of residence), but not with reference to the absolute level.

The analysis of PoU by provinces (Figure 3) shows that except in Balochistan, PoU has declined in other three provinces since 2011-12. Many parts of the country faced extensive floods in 2010, which seem to have contributed to the rise in high PoU between 2010-11 and 2011-12. In 2015-16, the PoU was lowest in Khyber Pakhtunkhwa, followed by Punjab, Sindh and Balochistan. Punjab and Khyber Pakhtunkhwa registered consistent decline since 2011-12, in Balochistan PoU increased, whereas Sindh has a mixed picture, as after an initial decline, PoU in Sindh increased since 2013-14. The results for

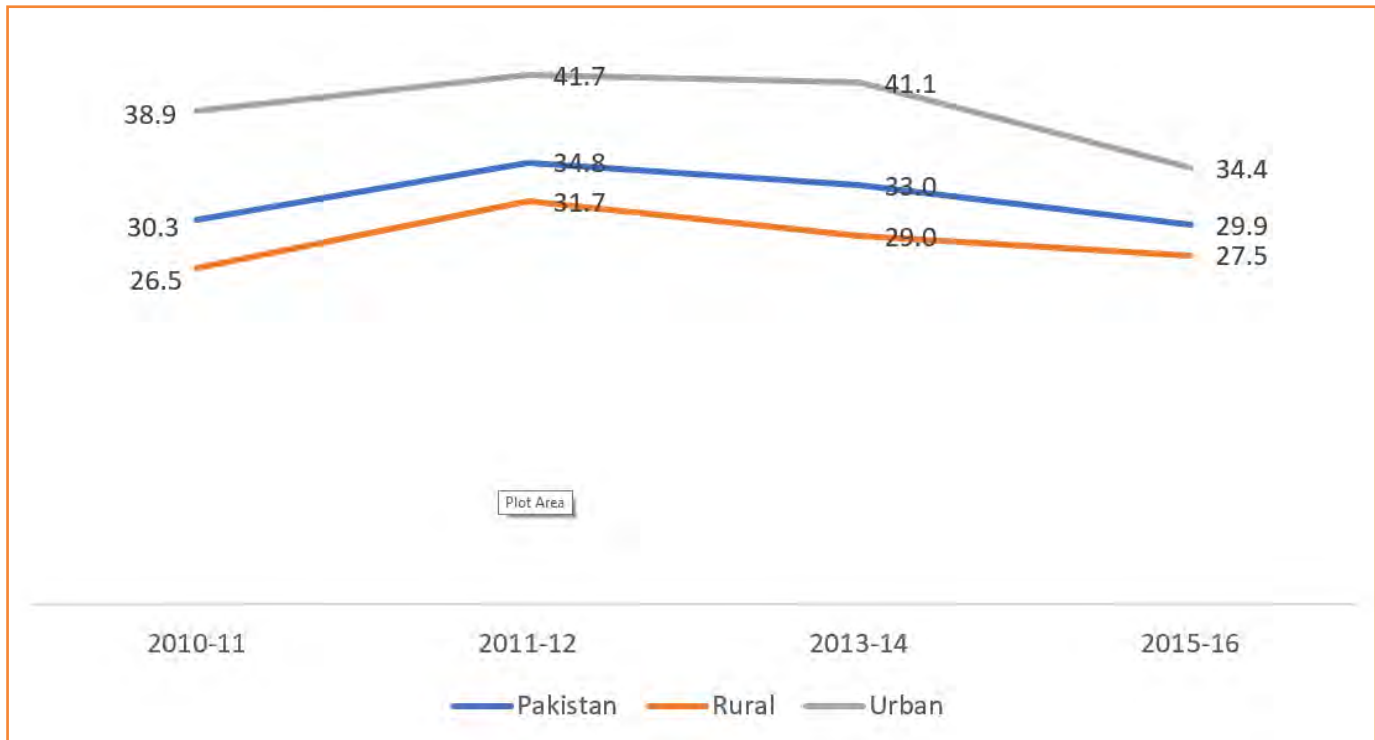
Balochistan are particularly problematic, yielding incredibly low values of the PoU in 2010-11 and 2011-12, compared with those of the other provinces<sup>7</sup>.

An analysis of the PoU by area of residence of the household (urban-rural) based on the survey data (Figure 4) would show that the proportion of the population in rural areas that is undernourished is consistently lower than it is in urban areas. However, this finding may be due to larger underestimation of food consumption data of urban households, relative to that of rural households. While it is possible that rural population engaged in agriculture will have access to self-produced cereals, vegetables and milk, thus having higher levels of dietary energy consumption than the urban poor. It must also be considered that, given the current design of the food consumption module, survey data may fail to fully capture the contribution of food consumed away from home in urban areas, in particular of consumption of food received for free. However, given the rapid urbanization of areas near large cities, it is possible that many of the households that are still classified as “rural” in the more recent surveys are actually living in what are nowadays urban or peri-urban contexts. This may explain the observed closing gap<sup>8</sup>. An infographic on PoU in Pakistan is given in figure 5.

7. One reason for the questionable reliability of survey data from Balochistan in those years may be linked to difficulties in accessing the area in that period due to conflicts. It may have resulted in being able to collect data only in the relatively safer, and arguably better off, areas of the province, while in more recent years data collection has been more systematic.

8. PBS uses the local government's notification to classify the areas as urban or rural. If a semi-urban area is still notified as rural by the local government authority, PBS considers it as rural.

Figure 4: Trend in Prevalence of Undernourishment in Pakistan and Urban-Rural Regions\* (Percent)



\*PoU (fully based on HIES survey DEC)

Furthermore, the same analysis of urban-rural by provinces shows that the proportion of the undernourished population in rural areas is always lower than in urban areas except in Balochistan and Sindh in 2015-16 and that the urban-rural gap is lowest in Khyber Pakhtunkhwa, and highest in Punjab, as per 2015-16 round of HIES. The urban-rural differences might be affected by possibly different bias in different provinces, due to the problems noted in capturing total food consumption, particularly in urban areas.

This is the first attempt to present a trend analysis on PoU using the HIES survey data. FAO has used the global methodology to compute PoU using the household survey data. The trend analysis will be updated after data of HIES 2018-19 is available for analysis next year. Similarly, the global series on PoU and the number of undernourished people will be also updated next year.

For the remainder of this report, we will refer to the latest FAO estimate of PoU for Pakistan of 20.3 per cent.





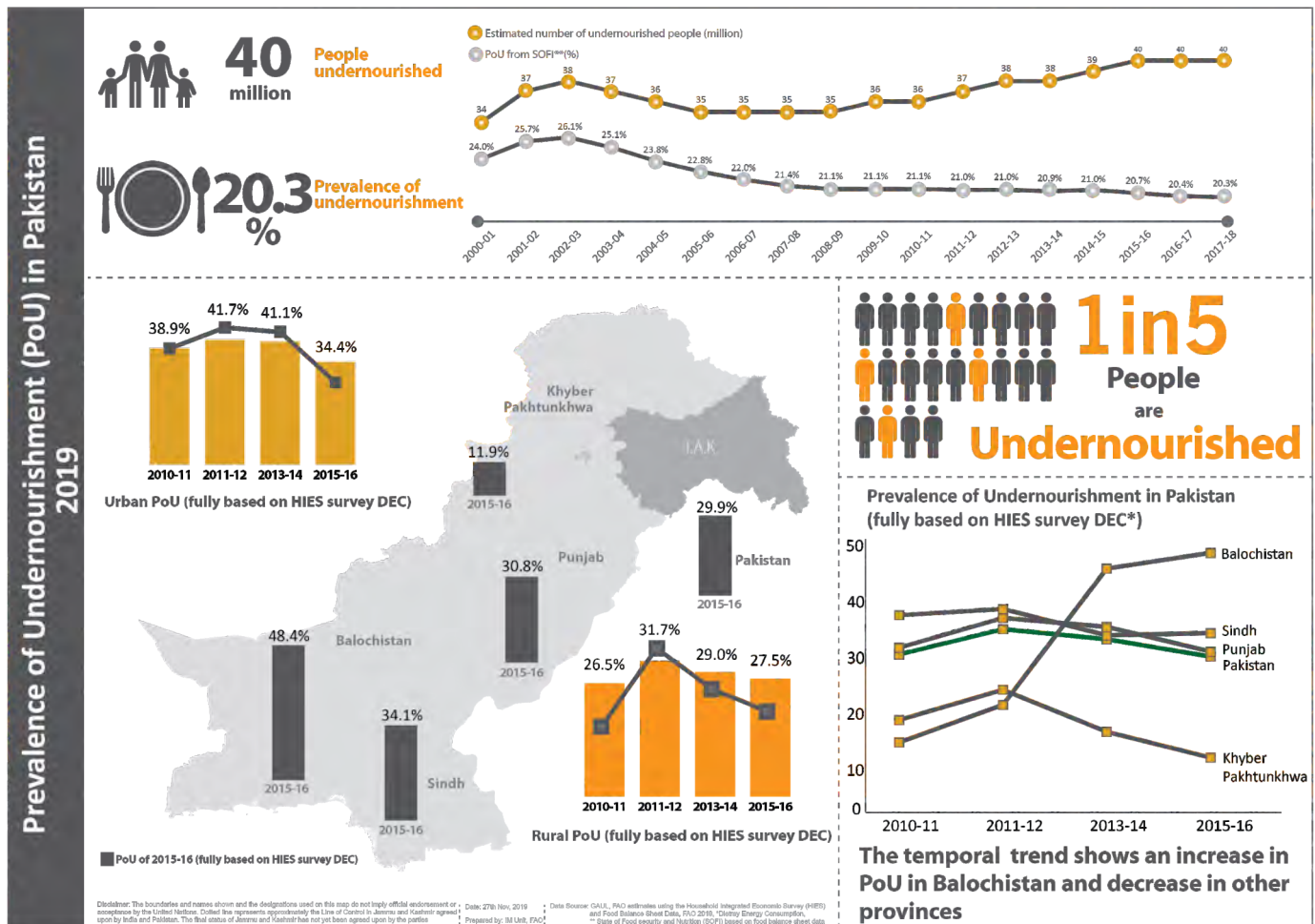
### Box 3: Definition of Food Security

- A situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life. Food insecurity exists when people are not able to secure access to an adequate and safe diet which constrains them from leading an active and healthy life today. In addition, those who are currently food secure may become vulnerable to food insecurity in the future. Based on this definition, four food security dimensions can be identified: food availability, economic and physical access to food, food utilization, and stability over time.
- Food security dimensions
- Refers to the four dimensions of food security:
- Availability – This dimension addresses whether or not food is actually or potentially physically present, including aspects of production, food reserves, markets and transportation, and wild foods.
- Access – If food is actually or potentially physically present, the next question is whether or not households and individuals have sufficient access to that food.
- Utilization – If food is available and households have adequate access to it, the next question is whether or not households are consuming food of adequate nutritive value. Achieving sufficient dietary energy and nutrient intake by all individuals of different sex and age depends on the extent of good care and feeding practices, food preparation, dietary diversity and intra-household distribution of food. Combined with the absence of health problems that may prevent good biological utilization of the food consumed, this determines the nutritional status of individuals.
- Stability – If the dimensions of availability, access and utilization are sufficiently met, stability is the condition in which the whole system is stable, thus ensuring that households are food secure at all times. Stability issues can refer to short-term instability (which can lead to acute food insecurity) or medium to long-term instability (which can lead to chronic food insecurity). Climatic, economic, social and political factors can all be a source of instability.

Source: FAO



Figure 5: Infographics on Prevalence of Undernourishment in Pakistan (Percent)



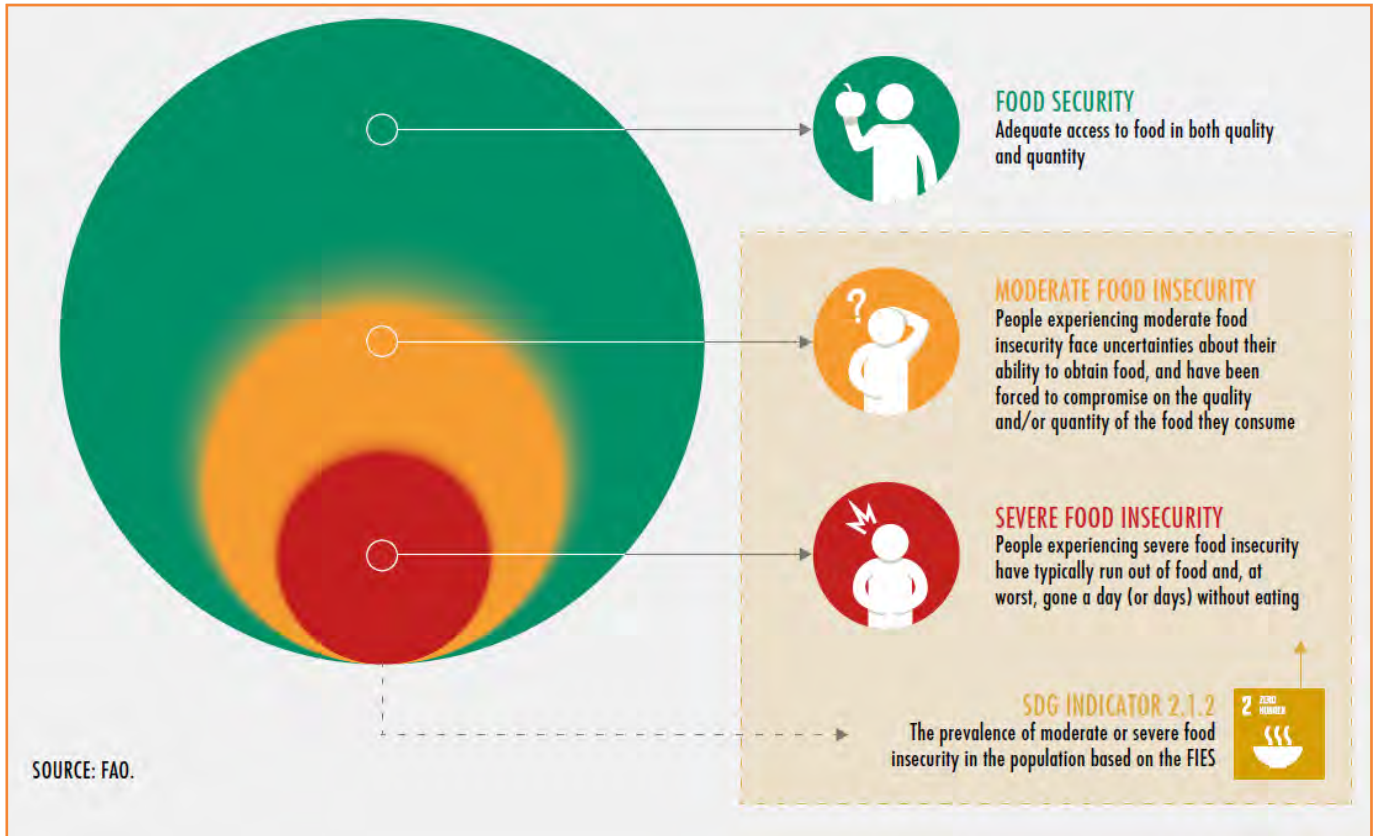
### 1.1.2 PREVALENCE OF MODERATE AND SEVERE FOOD INSECURITY IN POPULATION BASED ON FOOD INSECURITY EXPERIENCE SCALE (FIES)

The Prevalence of Moderate and Severe Food Insecurity based on FIES provides a measure of the severity of the constraints that prevent people from accessing food. It allows assessment of people's overall ability to access a quality diet, embedding a concept of food insecurity that goes beyond hunger, or simply dietary energy inadequacy. This matters, because there are people who may be able to meet their dietary energy needs, but who are still food insecure and are forced to consume mainly cheap, low quality,

poorly diversified, energy-dense foods. In the Pakistan rural context, for example, this usually means having a wheat-dominated diet (Figure 6).

In the context of the Voices of the Hungry project, FAO has collected FIES data on nationally representative samples of the adult population (15 years of age or more) since 2104. Moreover, a FIES module has been recently included in national level surveys such as HIES and the Pakistan Social Standard Living Measurement Survey (PSLM), both conducted by PBS, and also in the 2018 National Nutrition Survey (NNS), conducted by Agha Khan University (AKU) under the aegis of the Ministry of National Health Services, Regulation and Coordination, and with the technical support of UNICEF.

Figure 6: Explanation of Food Insecurity Severity Level Measured by FIES in SDG Indicator 2.1.2

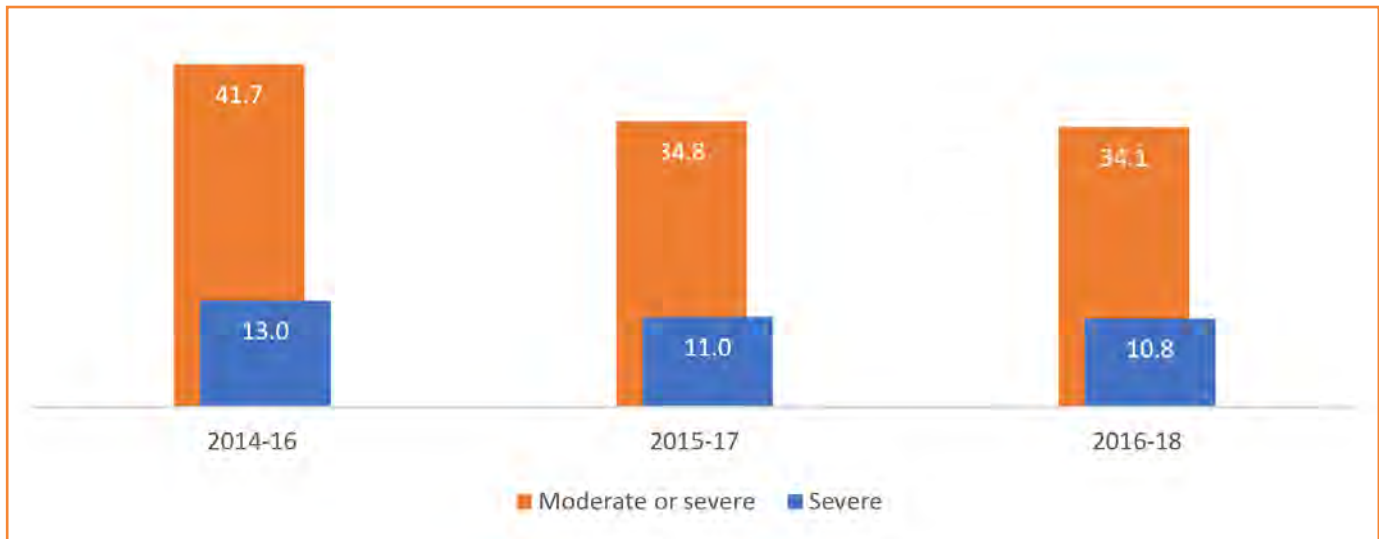


Given the institutional arrangements that give the Pakistani Bureau of Statistics the ultimate responsibility to produce data to inform SDG indicators, the data collected with the FIES module included in the HIES 2018-19 will be the first official source of data to compile the SDG indicator 2.1.2 for Pakistan for the first time in 2020. However, these data are not yet available for analysis at the time this report goes to the press. In this report, we comment on provisional assessments of the prevalence of food insecurity in Pakistan based on FAO data from the Voices of the Hungry project and on data from the 2018 NNS.

The analysis of FIES data collected by FAO through the Gallup World Poll since 2014 reveals a decreasing trend in the prevalence of food insecurity, both at moderate or severe levels combined and at severe levels only (figure 7). According to this provisional assessment, which is based on a very small sample of 1000 individuals, representative only at the national level, 34.1 percent of the population was exposed to food insecurity, at moderate or severe levels over the three-year period 2016-18, down from a level of 41.7 percent in 2014-16. The percentage of those exposed to severe level dropped from 13.0 to 10.8 percent over the same period.



Figure 7. Prevalence of Moderate or Severe Food Insecurity Based on FIES (Percent of Individuals)

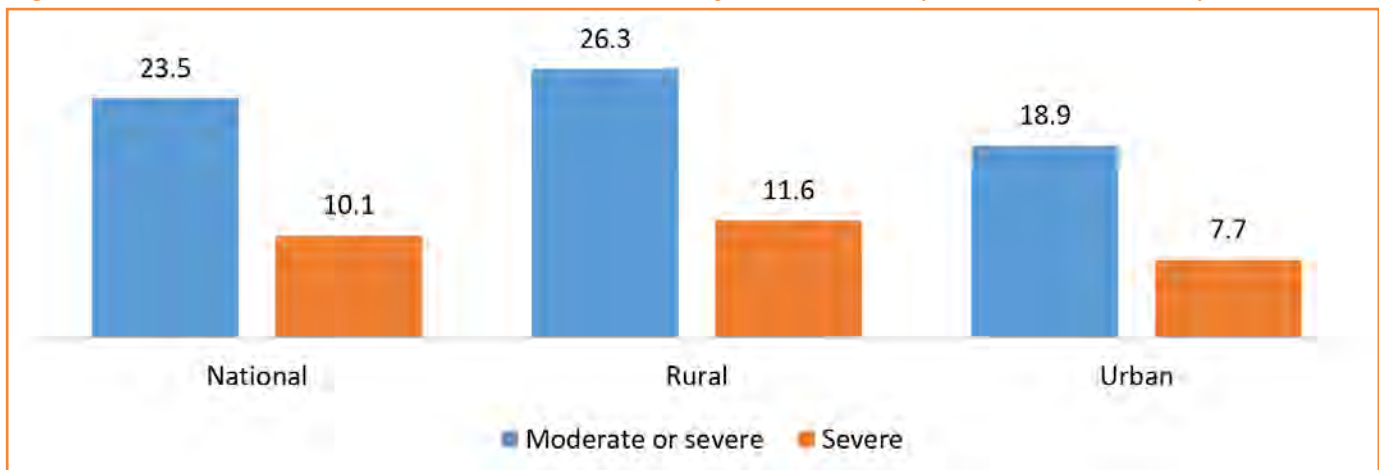


Source: FAO-Voices of the Hungry Project

These results are broadly consistent with those derived from the analysis of FIES data collected in the NNS 2018, which is a much larger survey covering more than 100,000 households, designed to be representative at national, provincial and district level, and by urban/rural

area of residence. These additional results show that in 2018, 23.5 percent of the households in Pakistan have been estimated to be either moderately or severely food insecure, whereas 10.1 percent are severely food insecure (figure 8)<sup>9</sup>.

Figure 8: Prevalence of Moderate or Severe Food Insecurity Based on FIES (Percent of Households)



Source: FAO Estimates Using Data of National Nutrition Survey of 2018

Contrary to the evidence on the PoU as obtained from HIES surveys, here the urban-rural gap appears to be in the opposite direction: the prevalence of both moderate or severe (26.3

percent) and severe (11.6 percent) food insecurity appears to be higher in rural areas than in urban areas (18.9 percent and 7.7 percent, respectively).

9. The analysis of FIES data collected in the NNS has been conducted jointly with Agha Khan University, with the support of FAO Statistics Division in Rome. Estimates from the NNS are reported as percentage of households rather than individuals and are expected to be higher than those based on FAO's data if food insecure households are, on average, larger than non-food insecure ones, a feature that is consistent with the observation that, for example, poorer households tend to have, on average, more children.



#### Box 4: Food Insecurity Experience Scale (FIES)

FIES developed by FAO is used to compute SDG indicator 2.1.2: the prevalence of moderate or severe food insecurity in the population. FIES is a food security measurement scale composed of eight questions to evaluate the level of food insecurity experienced by households.

The responses report on the occurrence of experiences and conditions that are typically associated with food insecurity. The experiences and conditions are that household members: were worried about not having enough food to eat, did not eat healthy and nutritious food, ate only few kinds of food, skipped a meal, ate less food, ran out of food in the house, were hungry but did not eat food, or did not eat food a whole day.

Respondents were asked to report if each of the conditions has been experienced, at times, over the past 12 months, because of a lack of money or other resources to obtain food.

A rigorous statistical analysis based on the Rasch measurement model allows converting the qualitative information conveyed with the responses to the FIES question, into a quantitative measure of the severity of the food security condition of the respondents<sup>10</sup> [www.fao.org/in-action/voices-of-the-hungry](http://www.fao.org/in-action/voices-of-the-hungry)

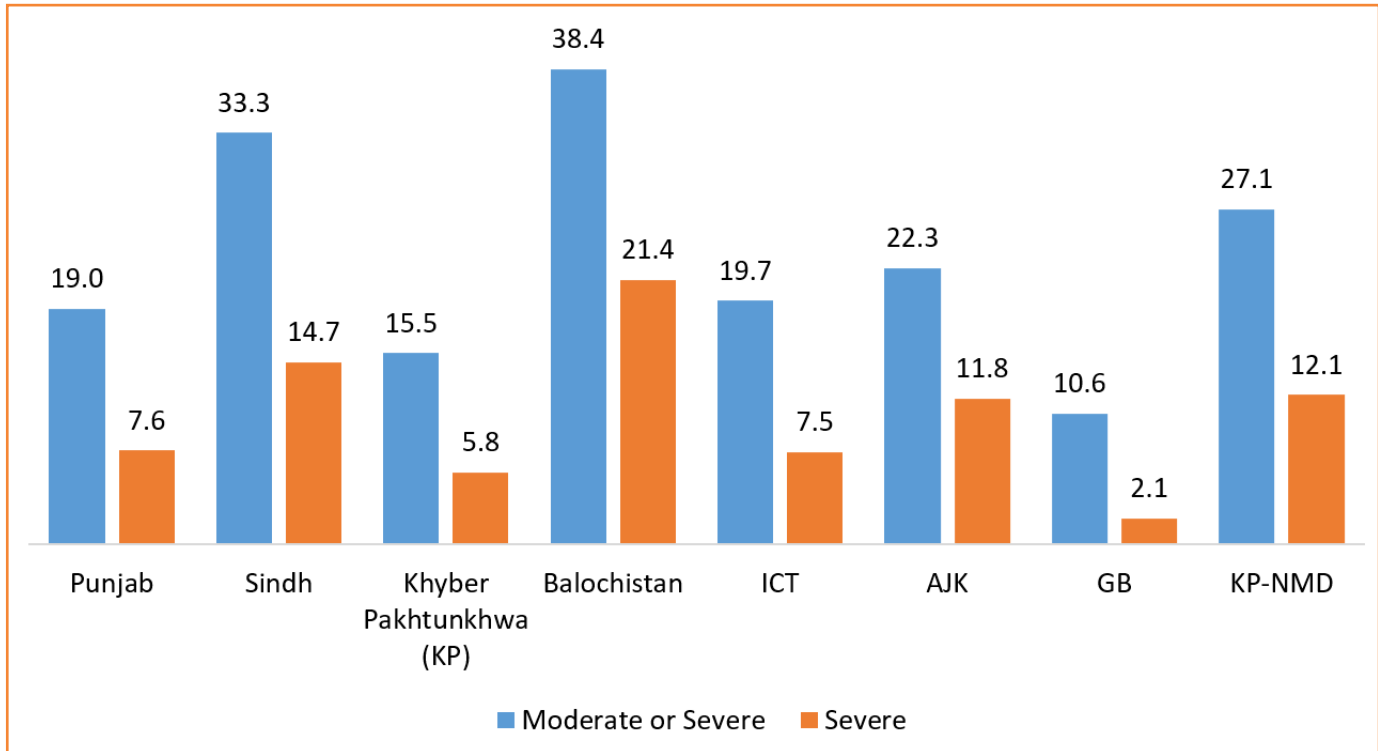
**Source: FAO**

NNS data show also disparities in the prevalence of moderate and severe food insecurity across provinces/regions. The prevalence of moderate or severe food insecurity is highest in Balochistan (38.4 percent) followed by Sindh (33.3 percent) and by the Newly Merged Districts of KP (KP-

NMD, 27.1 percent) (figure 9). The prevalence of severe food insecurity also follows the same trend and is highest in Balochistan (21.4 percent) followed by Sindh (14.7 percent) and KP-NMD (12.1 percent).

10. (see <http://www.fao.org/in-action/voices-of-the-hungry>)

**Figure 9: Prevalence of Moderate or Severe Food Insecurity Based on FIES by Provinces/Regions (Percent of Households)**



Source: FAO Estimates Using Data of National Nutrition Survey of 2018

An urban-rural disaggregated analysis of the NNS-FIES data within each province/region has been also performed. Results show that households living in the rural areas of Sindh have the highest prevalence of moderate or severe food insecurity (46.3 percent) followed by rural households in Balochistan (42.1 percent) and KP-NMD<sup>11</sup> (27.1) percent (figure 10 & 11). In case of severe food

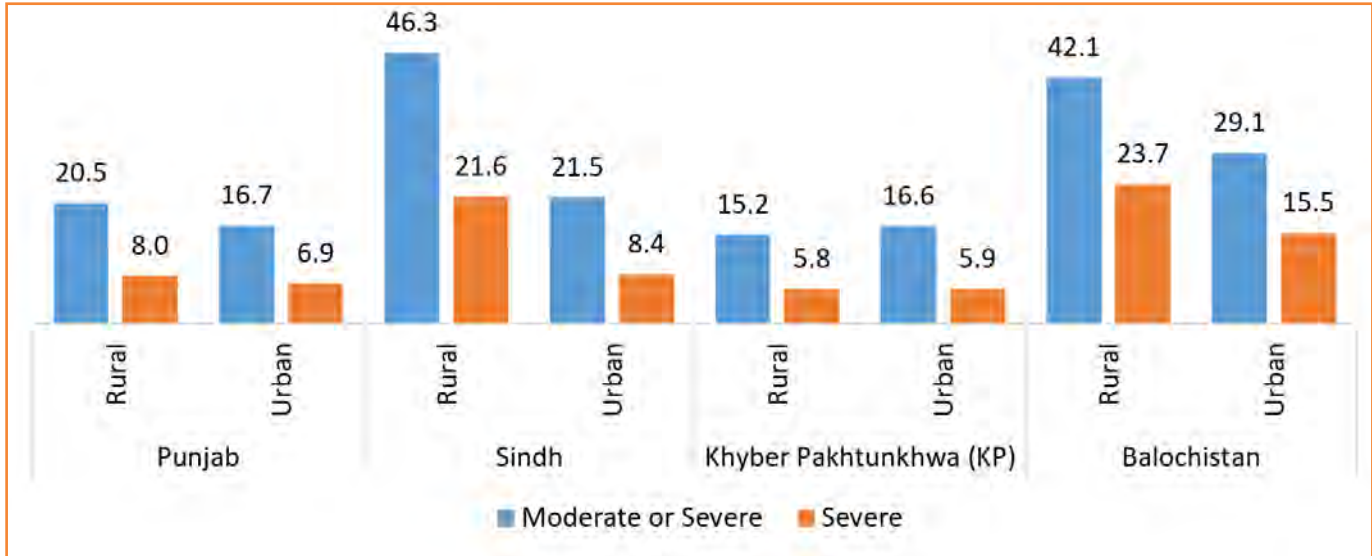
insecurity, 23.7 percent of rural households in Balochistan, 21.6 percent of rural Sindh and 13.0 percent in rural AJK are severely food insecure. The gap between urban and rural households in the case of prevalence of both moderate or severe food insecurity, and severe food insecurity, is largest in Sindh, and the smallest in KP.



11. Due to small sample size of urban areas of KP-NMD, only results for rural areas of KP-NMD are reported.

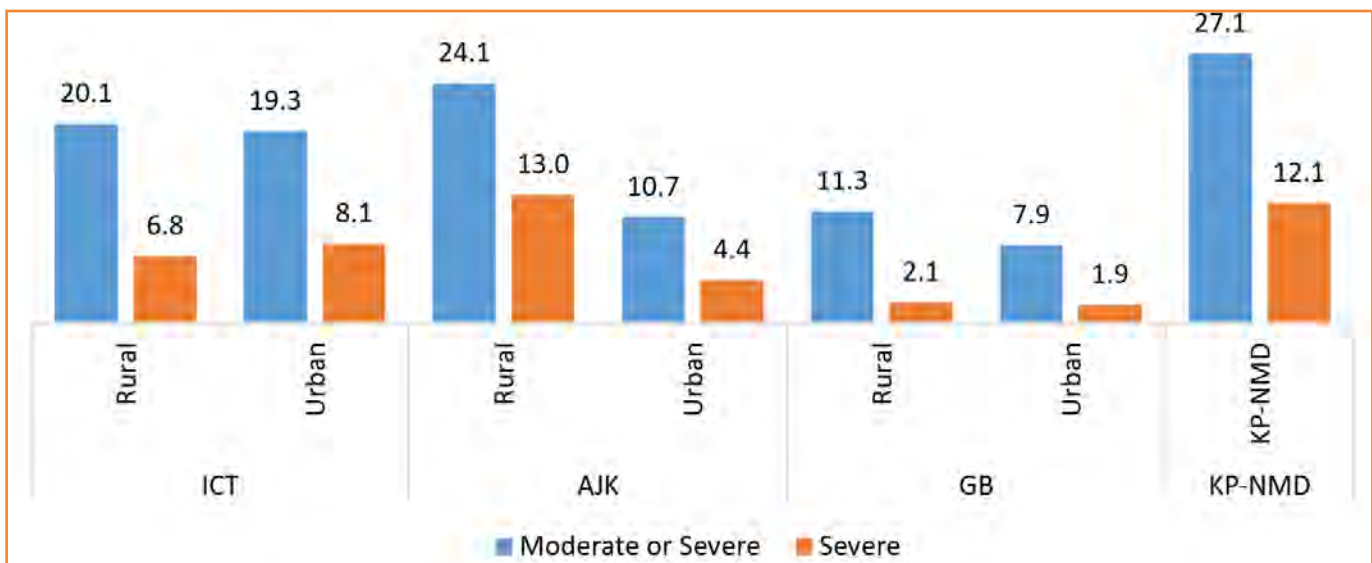


Figure 10: Prevalence of Moderate or Severe Food Insecurity Based on FIES by Urban-Rural and Provinces/Regions (Percent of Households)



Source: FAO Estimates Using Data of National Nutrition Survey of 2018

Figure 11: Prevalence of Moderate or Severe Food Insecurity Based on FIES by Urban-Rural and Provinces/Regions (Percent of Households)

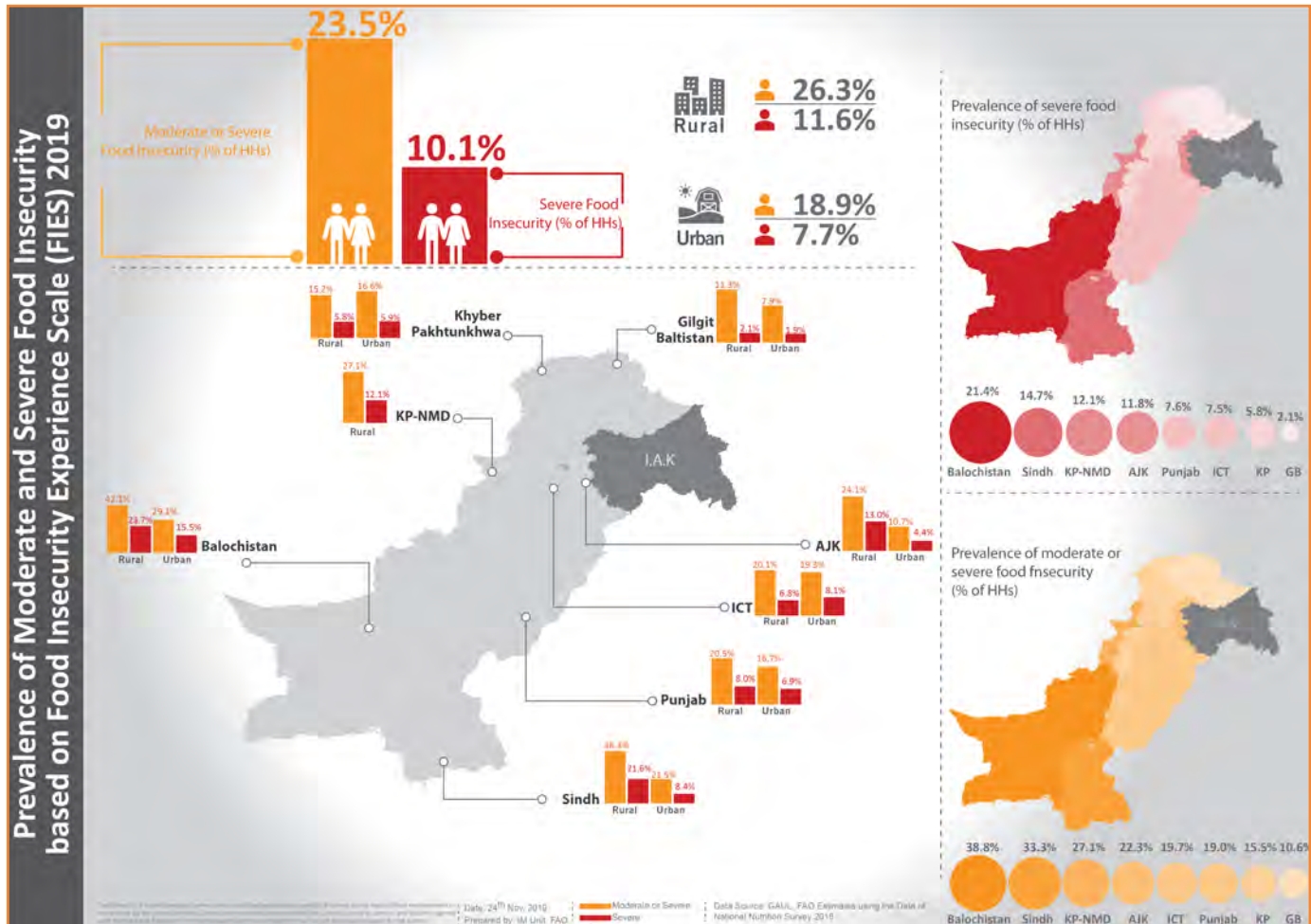


Source: FAO Estimates Using Data of National Nutrition Survey of 2018

FIES data was also included among the set of food security and livelihood relevant information for assessments conducted in drought-affected areas of Sindh and Balochistan and Newly Merged Districts (NMDs) regions during 2016-19. FAO Pakistan contributed to the analysis of those data. The results of these recent household assessments based on FIES data show a very high prevalence of food insecurity, particularly in

drought-affected districts of Sindh and Balochistan. There is thus a strong disparity between the overall, averaged figures for the country, province, urban and rural levels in Pakistan, compared with the actual situation of drought affected/vulnerable districts. We will return to this situation and consider its drivers and determinants in Part 2 of this report, after first considering malnutrition trends.

Figure 12: infographics on Prevalence of Moderate or Severe Food Insecurity in Pakistan (Percent of Households)



Source: FAO using data of NNS 2018

## 1.2 RECENT TRENDS IN MALNUTRITION IN PAKISTAN

SDG 2 target 2.2 calls for an end to all forms of malnutrition by 2030. Malnutrition covers a broad spectrum ranging from severe undernutrition to overweight and obesity. A multiple burden of malnutrition, where undernutrition, micronutrient deficiencies and overweight/ obesity coexist in the same country, same household, and even the same person through life, is a serious and growing concern in the Asia Pacific Region, including in Pakistan. To track global progress on ending malnutrition in all its forms, several nutrition indicators are normally

measured: three that form part of the SDG monitoring framework for 2030; six that refer to global nutrition targets as agreed by the World Health Assembly (WHA) for 2025; and one from the WHO global voluntary Non-Communicable Disease (NCD) targets.

This part of the report provides an assessment of Pakistan's national and provincial trends to track progress towards the SDG nutrition indicator 2.2.1 stunting among children under five years of age; and SDG indicator 2.2.2 wasting and overweight among children under five years of age. It also looks at micronutrient deficiencies in children and at the nutritional status of women of



reproductive age<sup>12</sup>. The NNS 2018 data were used rather than the PDHS data because they were more recent and because some key contributing factors were measured<sup>13</sup> in the same survey. The Government of Pakistan conducted the NNS in 2001, 2011 and 2018, providing a snapshot of three points in time on malnutrition.

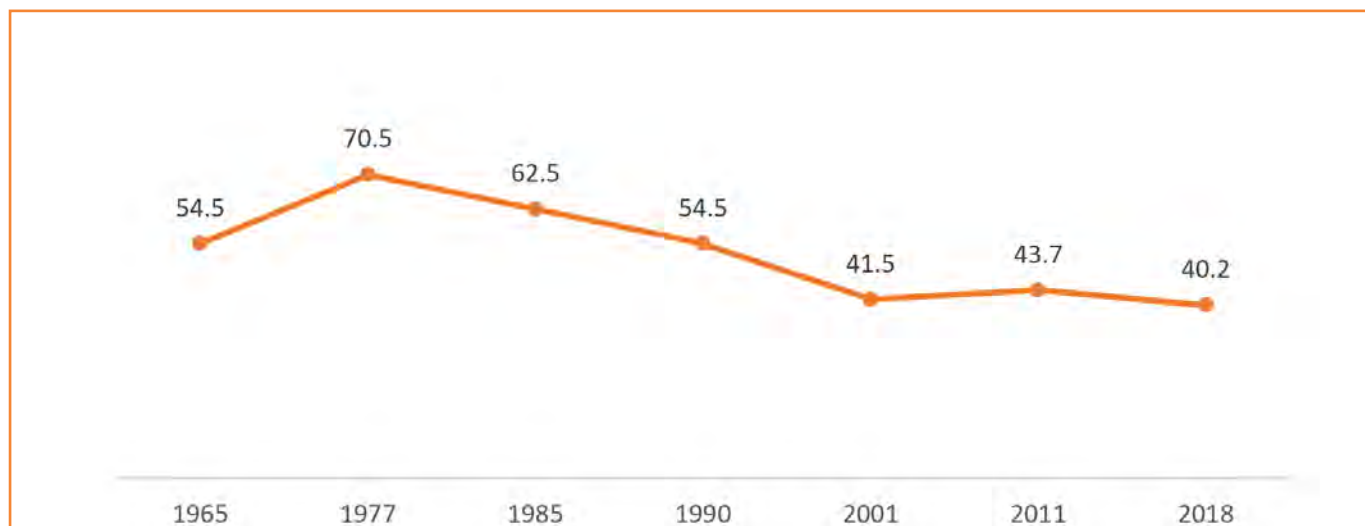
### 1.2.1 Stunting among Children under Five Years of Age

Stunting is a reflection of children failing to achieve their genetic potential for height, with stunted children too short for their age. It is the cumulative effect of irreversible physical and cognitive damage caused by chronic undernutrition, repeated infections and inadequate childcare and feeding practices. Stunting early in a child's life may also increase the risk of being overweight and developing NCDs later in life.

South Asia has the largest number of stunted children in the Asia Pacific, with 61 million, or 34 percent of children suffering from stunted growth. This is in the WHO category of Very High Prevalence. As reported in the Asia and the Pacific Regional Overview of Food Security and Malnutrition 2018, Pakistan has a higher prevalence of stunted children than any other country in South Asia (higher even than Afghanistan). The burden of stunted children in Pakistan is estimated at 12 million, which is the third highest in the world<sup>14</sup>.

The NNS 2018 found that nationally, stunting in Pakistan was still at 40.2 percent, this being a slight decrease of 4 percentage points from 2011 to 2018<sup>15</sup> (Figure 13). A trend analysis of the past three NNS surveys illustrates persistent and prominent levels of stunting in Pakistan (the global critical level is 40 percent).

Figure 13: Trend in Prevalence of Stunting among Children under Five Years of Age in Pakistan (Percent)



Source: NNS 2018

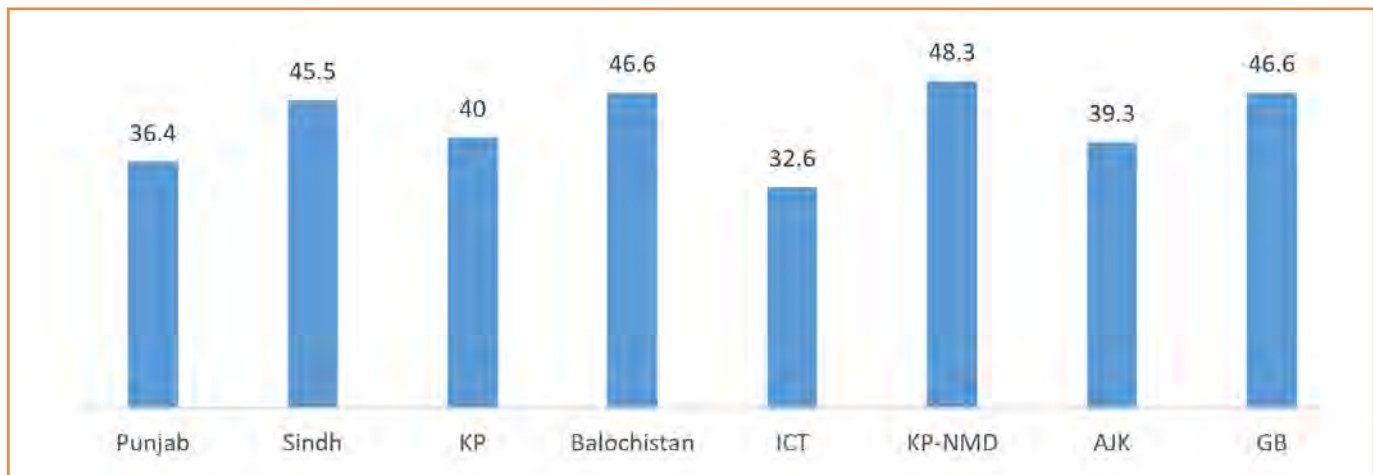
12. The response rate for under 5 children was 69 percent in KP-NMD and 69 percent in GB, whereas it was above 80 percent in other provinces/regions.  
 13. According to the findings of Pakistan Demographic Health Survey 2017-18, the percentage of stunted children has declined from 45 percent in 2012-13 to 38 percent in 2017-18 at the national level, and a similar downward trend, from 30 percent to 23 percent, has been observed for underweight children as well.  
 15. Demographic results of the 2017 population census when analysed in conjunction with the findings of the National Nutrition Survey (NNS) 2011 suggest that the number of stunted children in Pakistan is in excess of 13 million. If the latter places Pakistan 2nd on the global stunting burden, ahead of Nigeria with 10.3 million stunted children.  
 16. The values reported for child and women malnutrition reported in this report are based on findings of NNS 2018, unless reported otherwise, and differ from those published in the Global SOFI Report 2019. Results of Pakistan Demographic Health Survey (PDHS) 2017-18 were reported in the Global SOFI Report.

NNS 2018 revealed that stunting in Pakistan had a slightly higher prevalence in boys (40.9 percent) compared to girls (39.4 percent). The prevalence of stunting in rural areas was significantly higher (43.2 percent) compared to urban areas (34.8 percent). Regarding age distribution, stunting was lowest (28.6 percent) at 0 to 5 months of age and highest (46.6 percent) at 18 to 23 months of age. This implies that stunting among new-borns probably rises with exposure to environmental factors such as poor WASH and lack of a healthy and nutritious diet. Stunting was highest (51.4 percent) in children where the household belonged to the poorest quintile, however a substantial proportion (29.2 percent) was also found to be stunted in the richest quintile. This points not only poverty, but also lack of

knowledge, as well as widespread deficiencies in WASH, food safety and food quality in Pakistan.

Among the four provinces, stunting prevalence was highest in Balochistan (46.6 percent), followed by Sindh (45.5 percent), KP (40.0 percent) and Punjab (36.4 percent). In all provinces, rural children were more likely to be stunted compared to urban children. Among other regions of Pakistan, stunting prevalence was found to be highest (48.3 percent) in KP-NMD, followed by 46.6 percent in GB, 39.3 percent in AJK and 32.6 percent in ICT (Figure 14 &15)). Regarding the pattern observed in Balochistan, we note that data collection is more difficult in this province due to access and security issues.

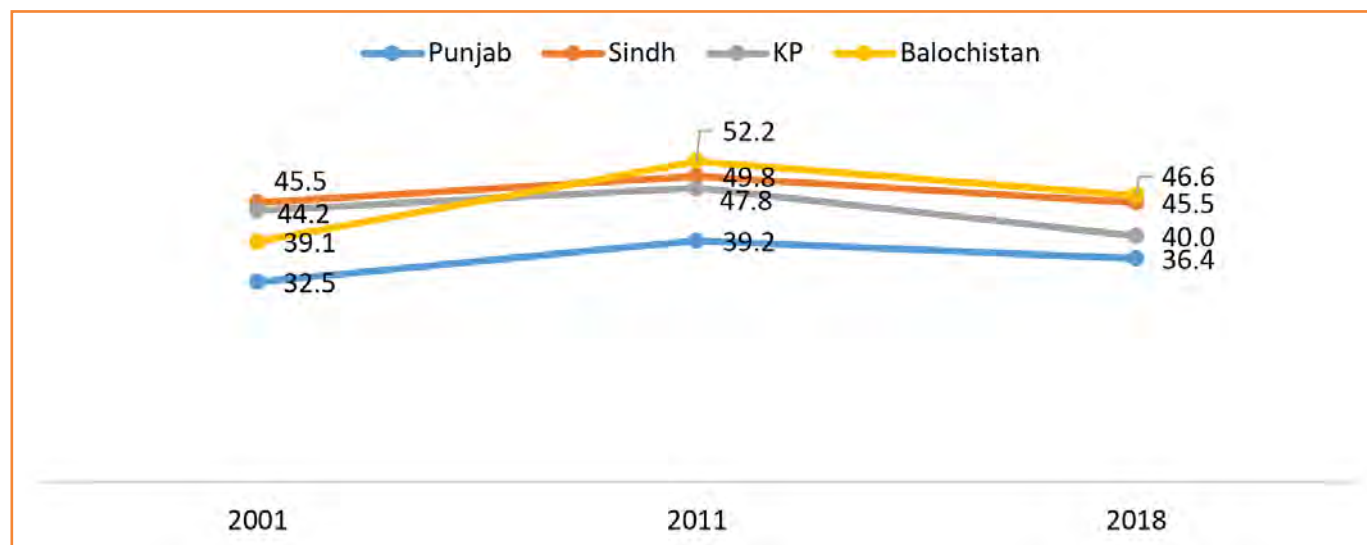
**Figure 14: Prevalence of Stunting among Children under Five Years of Age by Provinces/Regions (Percent)**



Source: NNS 2018



Figure 15: Trend in Prevalence of Stunting among Children under Five Years of Age by Provinces (Percent)



Source: NNS 2018

### 1.2.2 WASTING AMONG CHILDREN UNDER FIVE YEARS OF AGE

Childhood wasting is a reflection of acute malnutrition in children, with wasted children being too thin for their height. This indicator refers to acute undernutrition caused by recent nutritional deficiency due to changes in the availability of food and/or infectious diseases such as diarrhoea. It occurs when children rapidly lose weight and is often the result of illness coupled with inadequate care and feeding practices with diets that do not meet the child's nutritional needs. Wasting, particularly prolonged severe wasting, is a life-threatening condition that has serious adverse effects on growth and brain development.

The Asia and the Pacific Regional Overview of Food Security and Nutrition 2018 reports that the Asia Pacific has the highest prevalence and burden of wasted children in the world. South Asia, in turn, has the largest burden of wasted children in the Asia Pacific, such that half of the

world's wasted children live in South Asia, with India having the highest prevalence at over 20 percent in 2018. This is in the WHO category of Very High Prevalence. In that publication, Pakistan was reported as being in the WHO High Prevalence category for prevalence of wasting, at just over 10 percent. The source of these data was the UNICEF, WHO and World Bank Group Joint Child Malnutrition Estimates 2018.

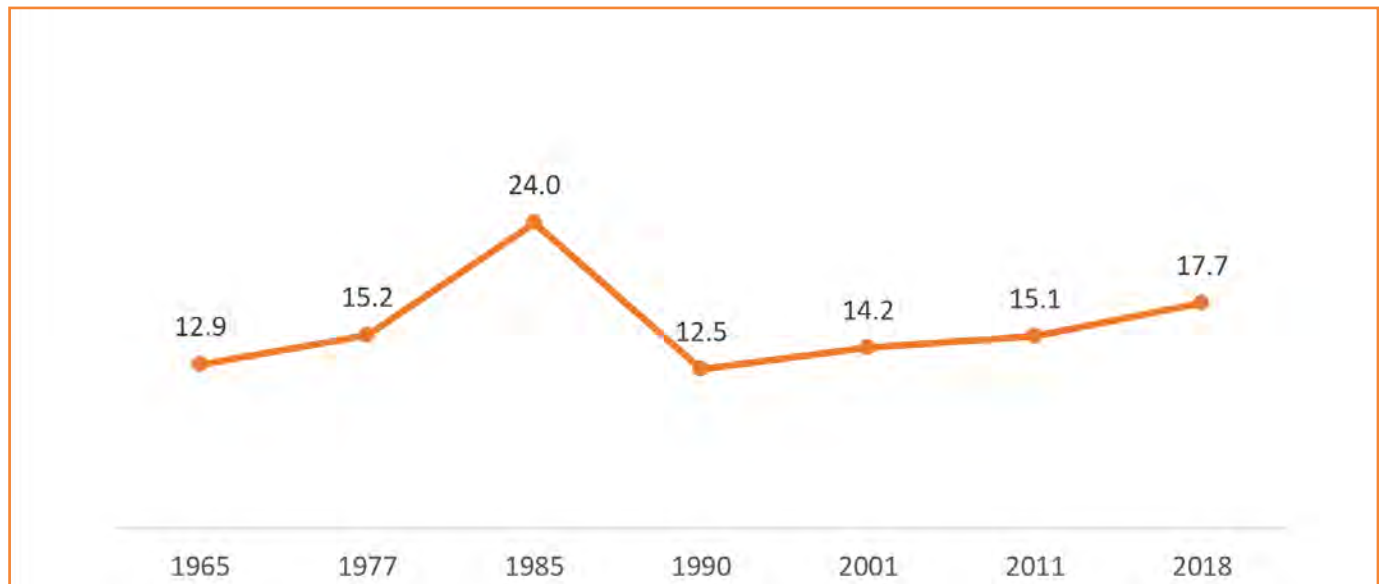
The NNS data series available in Pakistan has been used to report FIES, stunting, and now wasting. It gives a higher prevalence than either PDHS or the Joint Child Malnutrition Estimate on wasting, but as mentioned it is preferred because it is more recent, and furthermore it contains provincial level information, and in the latest survey, district-level information<sup>16</sup>. Using the NNS, we can look at the trend of wasting in the country. Over the past eighteen years, the wasting rates in children under age five have consistently increased from 14.2 percent in 2001 to 15.1 percent in 2011 and 17.7 percent in 2018<sup>17</sup>.

16. We note that while the NNS findings we are using show the prevalence of wasting increasing, the PDHS findings show the percentage of children who are wasted has declined from 11 percent to 7 percent since 2012-13.

17. The values reported in this report are based on findings of NNS 2018 and differ from those published in the Global SOFI Report 2019. Results of Pakistan Demographic Health Survey (PDHS) 2017-18 were reported in the Global SOFI Report.



Figure 16: Trend in Prevalence of Wasting among Children under Five Years of Age in Pakistan (Percent)

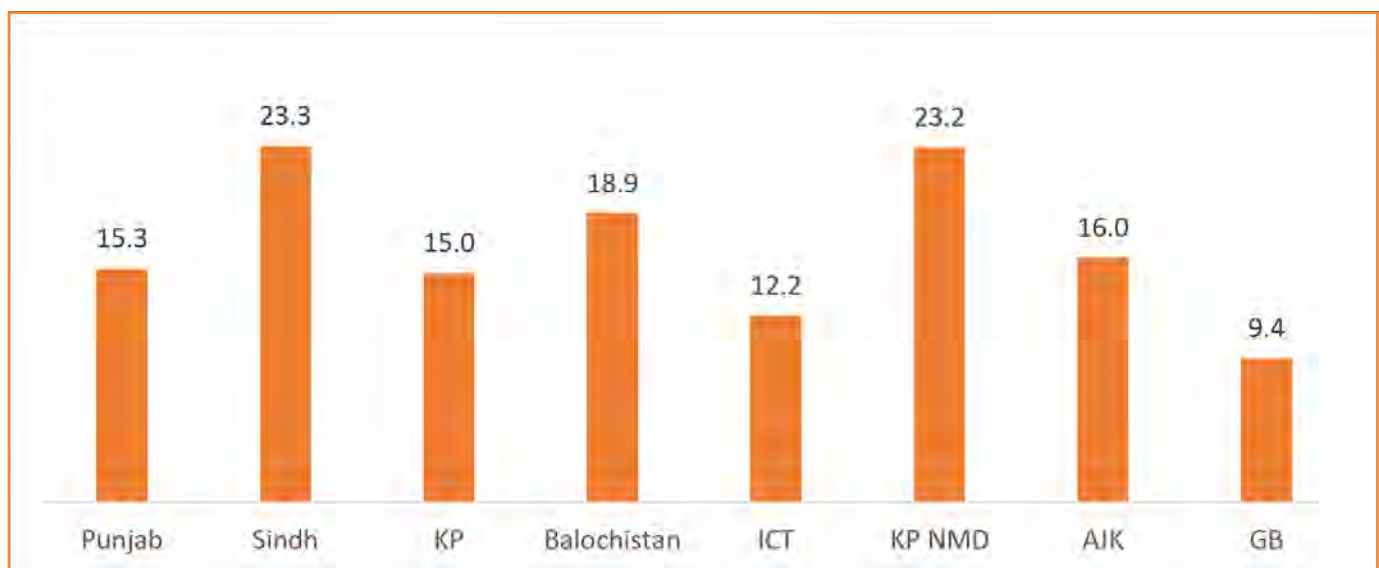


Source: NNS 2018

The NNS 2018 showed that the wasting prevalence in Pakistan was 17.7 percent with a slightly higher prevalence in boys (18.4 percent) compared to the girls (17.0 percent). The prevalence of wasting in rural areas was higher (18.6 percent) compared to urban areas (16.2 percent).

Analysis by provinces show that the prevalence of wasting among 6-59 months children is highest in Sindh, followed by Balochistan and Punjab and KP, whereas among the regions, it is highest (lowest) in KP-NMD (GB). The recurring dry spell in southern parts of Sindh and most parts of Baluchistan has further aggravated the high burden of acute malnutrition.

Figure 17: Prevalence of Wasting among Children under Five Years of Age by Provinces/Regions (Percent)

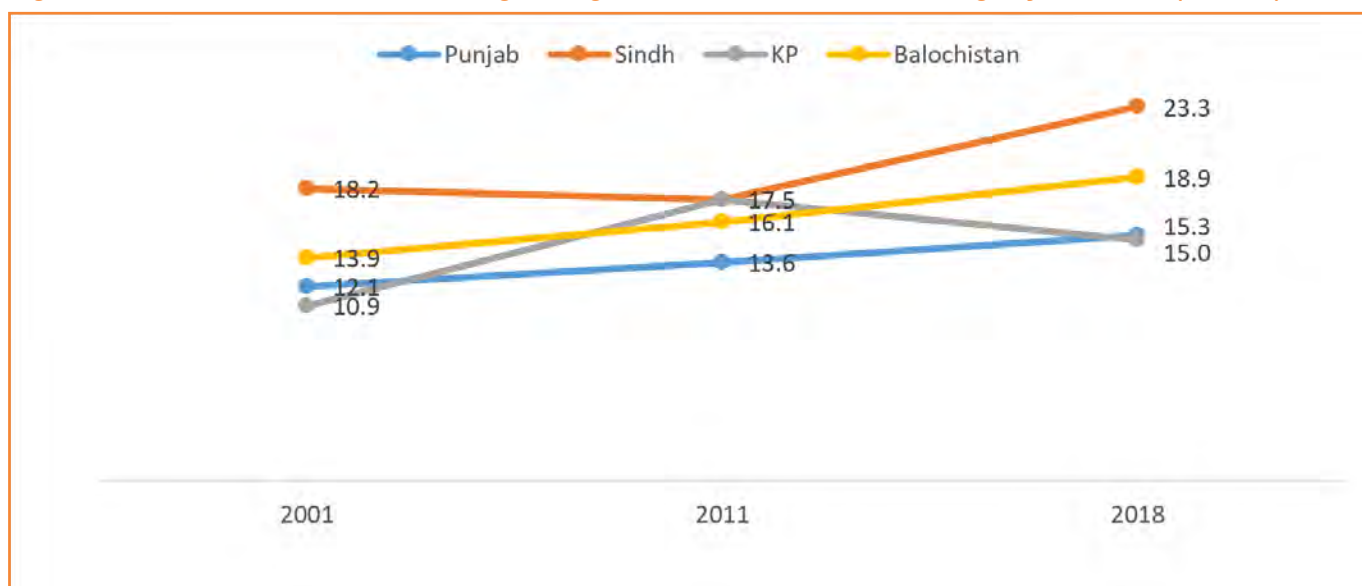


Source: NNS 2018

Further, trend analysis reveals that the prevalence of wasting has increased steadily in Punjab and Balochistan since 2001, in Sindh it

declined between 2001 and 2011 and then increased whereas in KP it initially increased and then declined since 2011.

**Figure 18: Trend in Prevalence of Wasting among Children under Five Years of Age by Provinces (Percent)**



Source: NNS 2018

Regarding age distribution, a trend of decreasing wasting rate with increasing age has been seen. Wasting was found to be highest (26.6 percent) in 0 to 5 months of age and lowest (14.7 percent) in 48 to 59 months of age. Wasting was highest (23.0 percent) in children where the household belonged to the poorest quintile, however, a substantial proportion (14.6 percent) was also found to be wasted in the richest quintile. Wasting was also found to be high (19.4 percent) among children whose mothers were illiterate.

The NNS 2018 for the first time presented concurrence of stunting and wasting, largely clustered in the south of the country and indicative of a close relation between these two forms of malnutrition. The concurrence of stunting and wasting in 5.9 percent of children

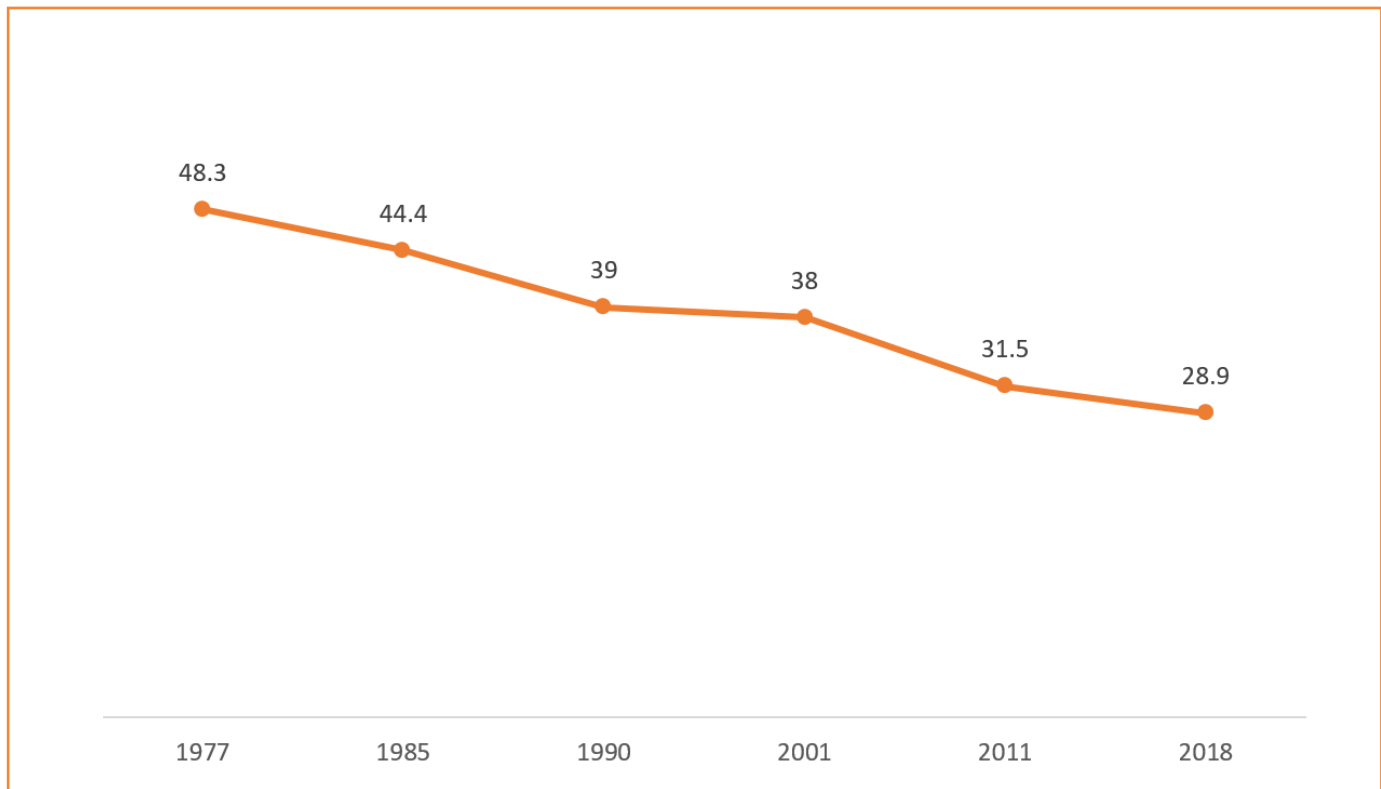
suggests that malnutrition is rampant across the life course and that integrated strategies for prevention and management will be needed. The age distribution of wasting and stunting differs, but both conditions may already be present at birth (in underweight babies) and persist concurrently in the first year of life.

### 1.2.3 UNDERWEIGHT, OVERWEIGHT AND OBESITY AMONG CHILDREN UNDER 5 YEARS OF AGE

The high prevalence of underweight children in Pakistan remains a concern. The prevalence of underweight among children under five years of age over the past three NNS surveys is in decline, with 38 percent in 2001, 31 percent in 2011 and 28.9 percent in 2018<sup>18</sup>.

18. The values reported in this report are based on findings of NNS 2018 and differ from those published in the Global SOFI Report 2019. Results of Pakistan Demographic Health Survey (PDHS) 2017-18 were reported in the Global SOFI Report.

Figure 19: Trend in Prevalence of Underweight among Children under Five Years of Age in Pakistan (Percent)

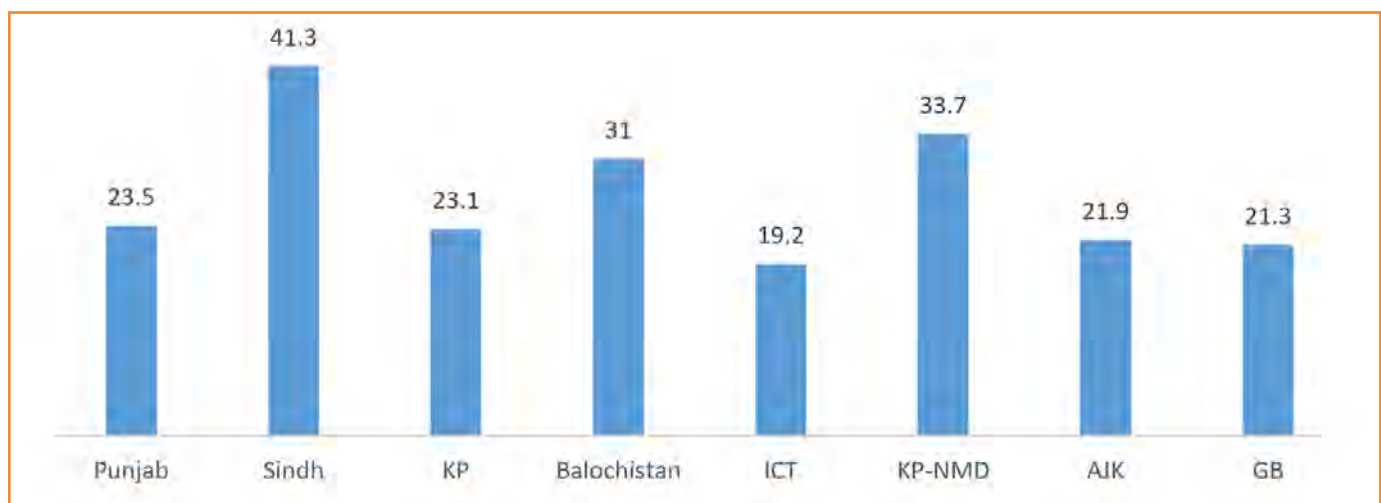


Source: NNS 2018

However, the NSS 2018 showed remarkable regional and provincial disparities, with the

prevalence of underweight ranging from 19.2 percent in ICT to 41.3 percent in Sindh.

Figure 20: Prevalence of Underweight among Children under Five Years of Age by Provinces/Regions (Percent)



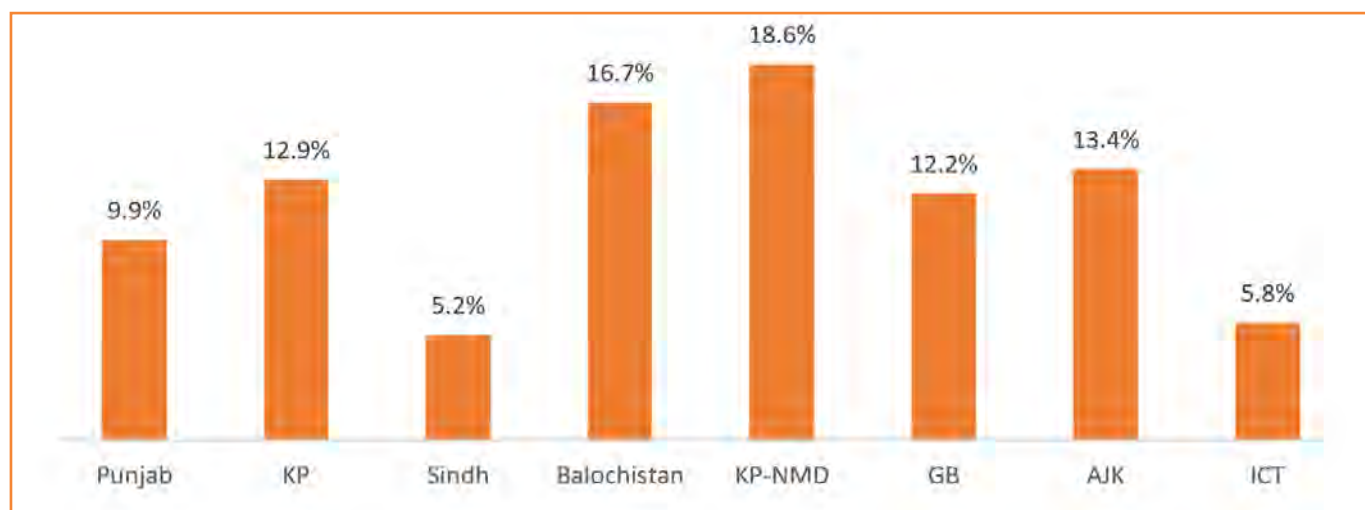
Source: NNS 2018



Childhood overweight, or being too heavy for one's height, reflects a result of chronic excessive weight gain. Overweight children are at higher risk of developing serious health problems in later life. As per NNS 2018, overweight among children under five in Pakistan was 9.5 percent with a slightly higher prevalence in males (9.7 percent) compared to the females (9.2 percent). The prevalence of overweight in the urban areas was slightly higher (9.6 percent) compared to rural areas (9.4 percent). When looking at the age distribution, the overweight prevalence was highest (12.4 percent) in 0-5 months and lowest (7.8 percent) in 24-35 months of age.

Overweight prevalence was highest (10.5 percent) among children belonging to households falling in the richest quintiles, however a proportion (7.9 percent) of children were also found to be overweight among the poorest quintiles. Overweight prevalence was found to be high (10.1 percent) among children whose mothers belonged to the highest income quintile. Overweight disparity by province is shown in the map below. Again, we note that the perhaps surprising result for Balochistan should be considered in light of the difficulty in collecting data in this remote and less accessible province.

**Figure 21: Prevalence of Overweight among Children under Five Years of Age by Provinces/Regions (Percent)**



Source: NNS 2018

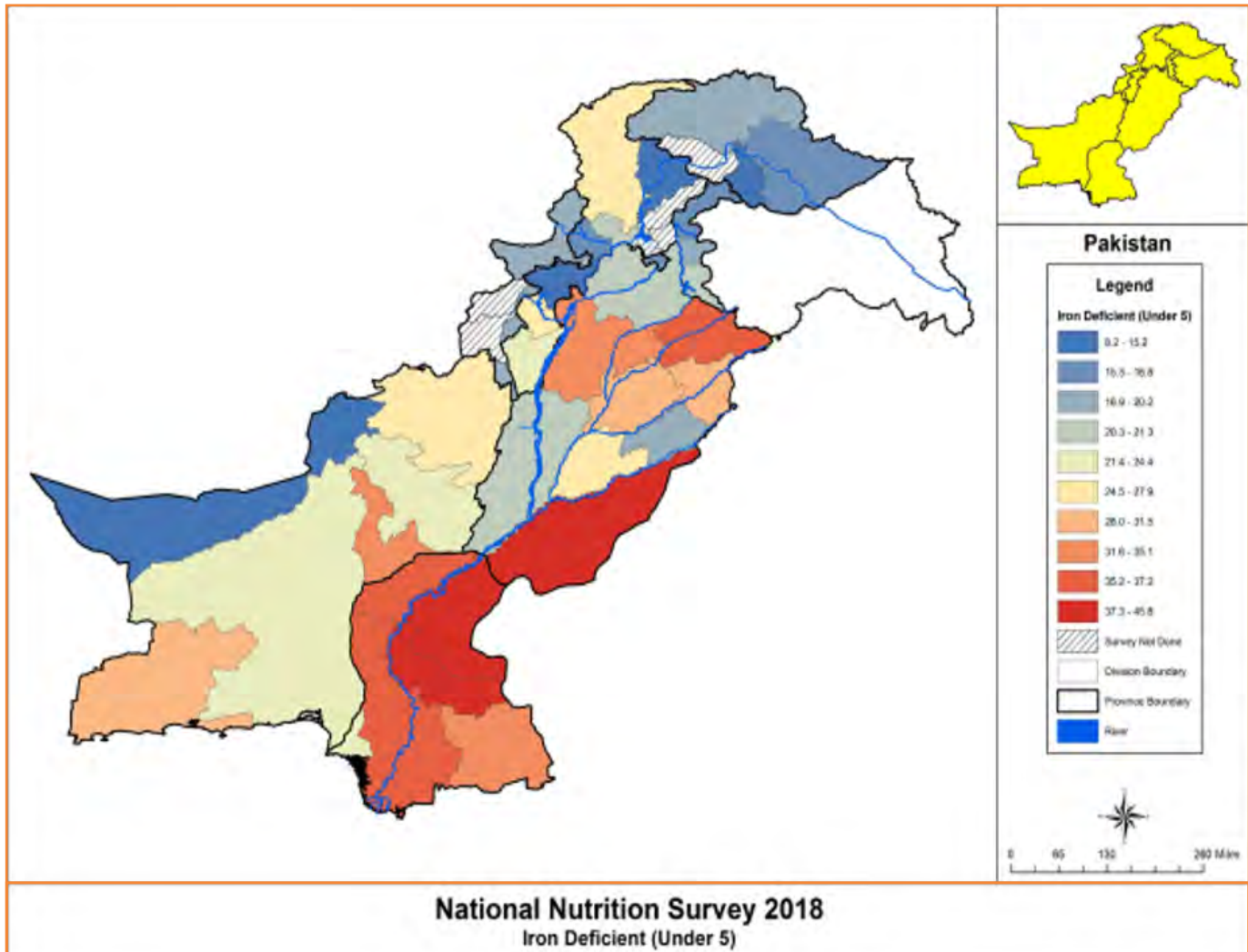
### 1.2.4 MICRONUTRIENT DEFICIENCIES AMONG CHILDREN UNDER FIVE YEARS OF AGE AND ADOLESCENTS

Micronutrient deficiencies are not only confined to children. They are occurring across age groups, but particularly among women of reproductive age (WRA). More than half of Pakistani women and two-thirds of children are suffering from micronutrient deficiency, widespread vitamin A, vitamin D, zinc, folic acid, and iron deficiency anaemia in Pakistan.

### Anaemia Deficiency among Children

According to NNS 2018, among children under five, the prevalence of anaemia has been consistently high since 2001 when it stood at 50.9 percent, then rose to 61.9 percent in 2011, and declined to 53.7 percent in 2018. More than half (53.7 percent) of Pakistani children are anaemic and 5.7 percent are severely anaemic. The prevalence of anaemia is slightly higher (54.2 percent) amongst boys than girls (53.1 percent). Children in rural areas are more likely to be anaemic (56.5 percent) than in urban areas (48.9

Figure 22: Iron Deficiency among Children under Five Years of Age in Pakistan (Percent)



Source: NNS 2018

### Vitamin A Deficiency among Children

NNS 2018 reveals that 51.5 percent of children age 6-59 months have Vitamin A deficiency (VAD), of which 12.1 percent have severe VAD. VAD prevalence is slightly higher (51.7 percent) in boys compared to the girls (51.3 percent), while severe VAD is also higher (12.4 percent) in boys compared to girls (11.8 percent). Children in rural areas have slightly more (51.7 percent) VAD compared to the urban areas (51.2 percent).

### Vitamin D Deficiency among Children

The prevalence of vitamin D deficiency reveals a high prevalence (62.7 percent) among Pakistani

children of which 13.2 percent have severe Vitamin D deficiency. The prevalence of vitamin D deficiency is also slightly higher (63.1 percent) in boys compared to the girls (62.4 percent), with severe deficiency also being higher (13.5 percent) in girls compared to boys (12.9 percent).

### Zinc Deficiency among Children

The prevalence of Zinc deficiency among children in Pakistan is 18.6 percent with a similar proportion among boys and girls. Zinc deficiency is found to be slightly higher (19.5 percent) in the rural population compared to 17.1 percent in urban.

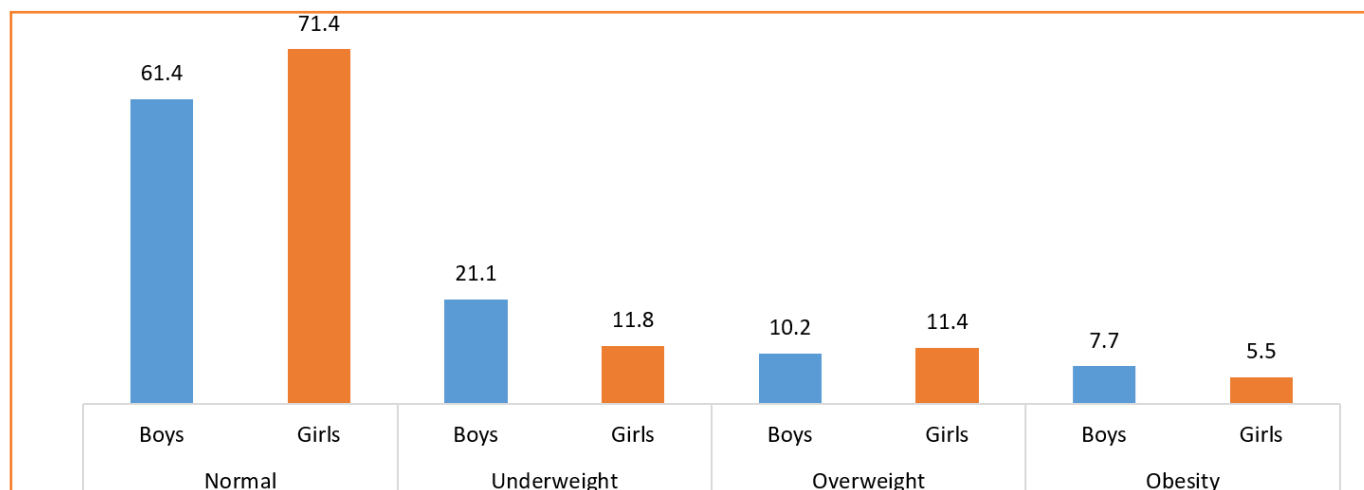


### Nutrition Status of Adolescents

The NNS 2018 shows considerably more adolescent girls than boys are of normal weight based on BMI; slightly more are overweight;

significantly fewer girls are underweight; slightly less are obese compared to boys. A similar pattern is observed in both rural and urban areas of Pakistan and by province.

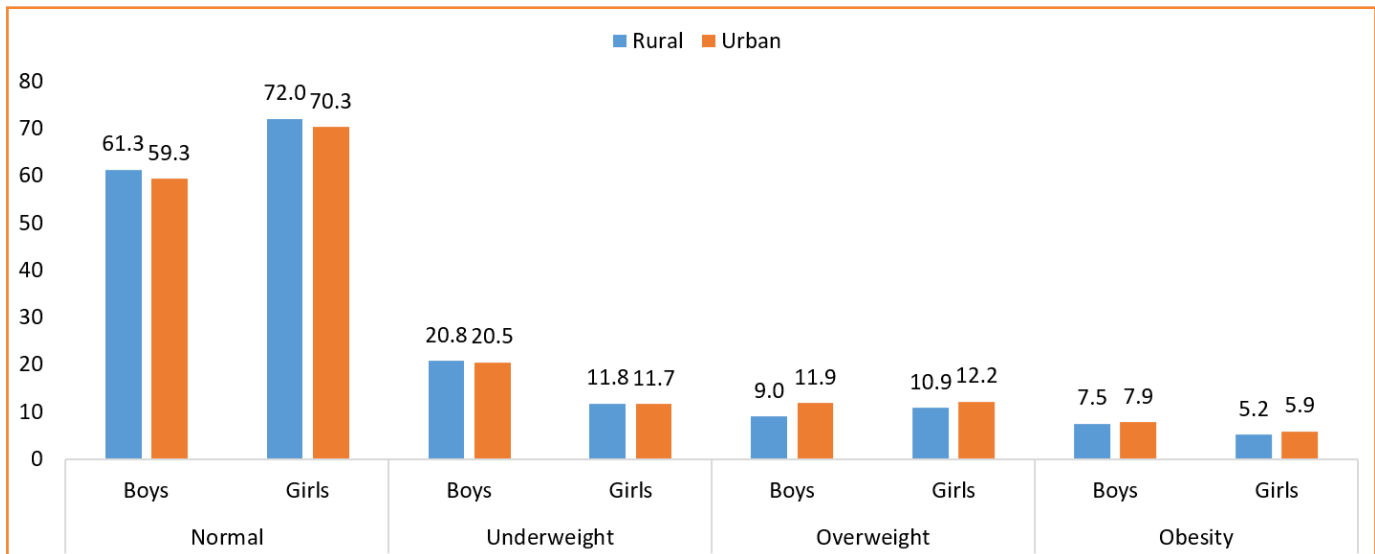
Figure 23: Nutritional Status of Adolescents in Pakistan (Percent)



Source: NNS 2018

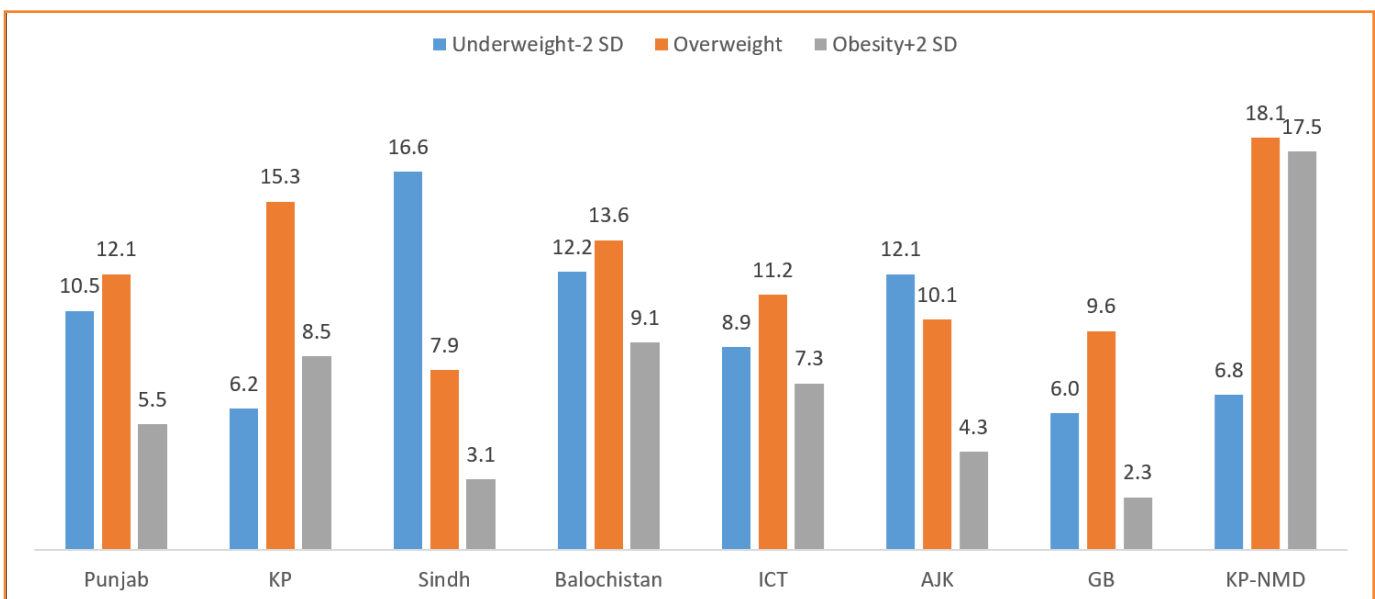


Figure 24: Nutritional Status of Adolescents by Urban-Rural Region (Percent)



Source: NNS 2018

Figure 25: Nutritional Status of Adolescent Girls by Provinces/Regions (Percent)



Source: NNS 2018

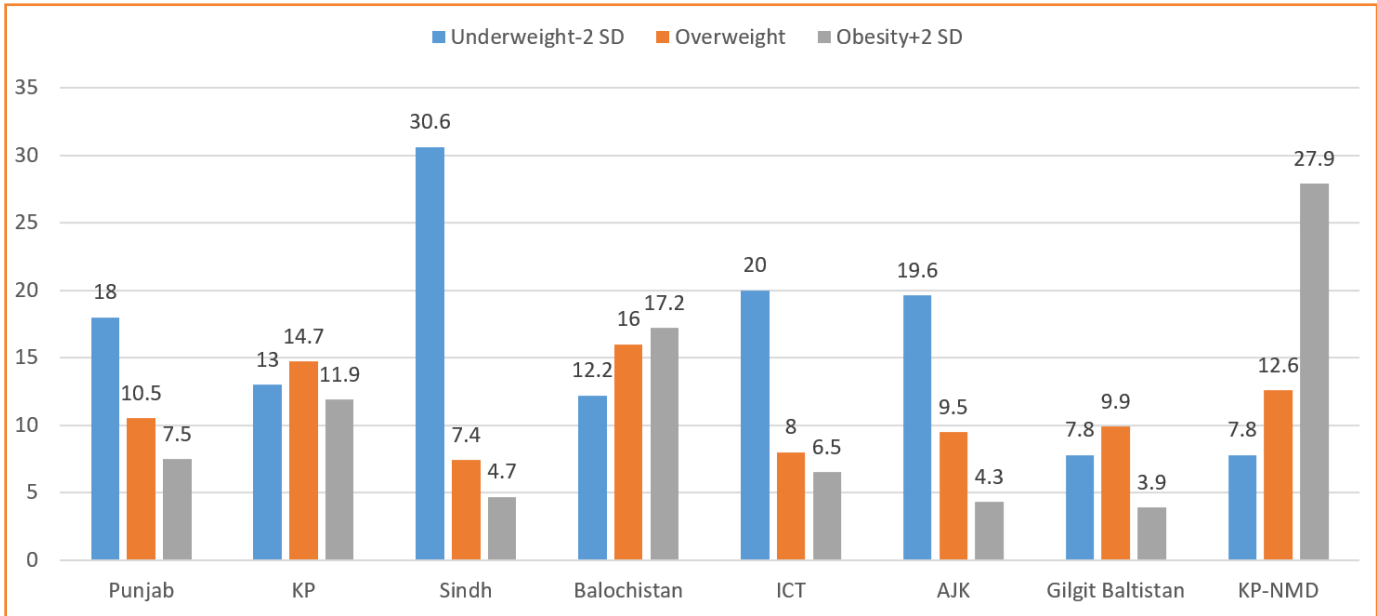
Further, more than half (56.6 percent) of adolescent girls in Pakistan are anaemic; adolescent girls in rural areas are more likely (58.1 percent) to be anaemic than their counterparts in urban areas (54.2 percent). This fact has strong implications for child nutrition given the trend of early marriage and child marriage in Pakistan, particularly in rural areas,

and the consequent incidence of pregnancies to anaemic women.

### 1.2.5 BREASTFEEDING AND COMPLEMENTARY FEEDING

High levels of malnutrition have serious consequences on the health and survival of

**Figure 26: Nutritional Status of Adolescent Boys by Provinces/Regions (Percent)**

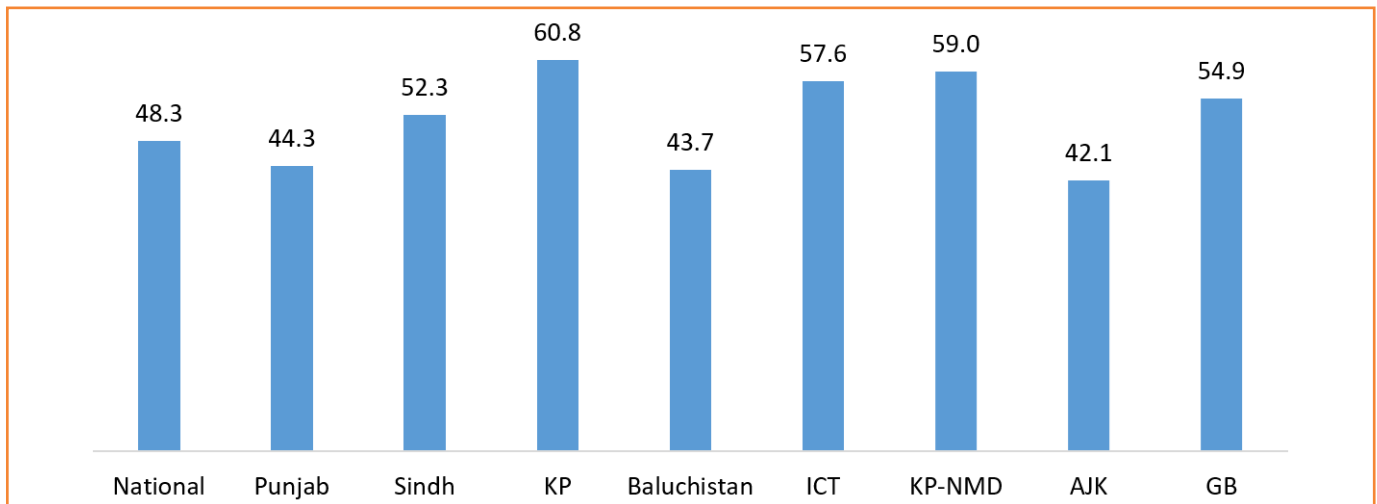


Source: NNS 2018

infants and young children. Appropriate infant and young child feeding (IYCF) practices have been identified as important for appropriate child growth and development. Children in Pakistan still experience high rates of malnutrition, indicating a likely need for improved IYCF practices, which includes exclusive breastfeeding for the first six months and then appropriate complementary feeding and continued breastfeeding up to two years of age. While there has been a steady increase in the proportion of

children receiving breastmilk during the first hour after birth between 2011 and 2018, the trend for exclusive breastfeeding is not linear. From 50 percent in 2001, it decreased to 37.7 percent in 2011 and increased again to 48.3 percent in 2018, bringing Pakistan close to the WHA target of 50 percent. The proportion of children who are exclusively breastfed for the first six months of life is highest in KP (60.8 percent) and KP-NMD (59.0 percent), and lowest in AJK (42.1 percent) and Balochistan (43.7 percent) respectively.

**Figure 27: Exclusive Breastfeeding for First Six Months by Provinces/Regions (Percent)**

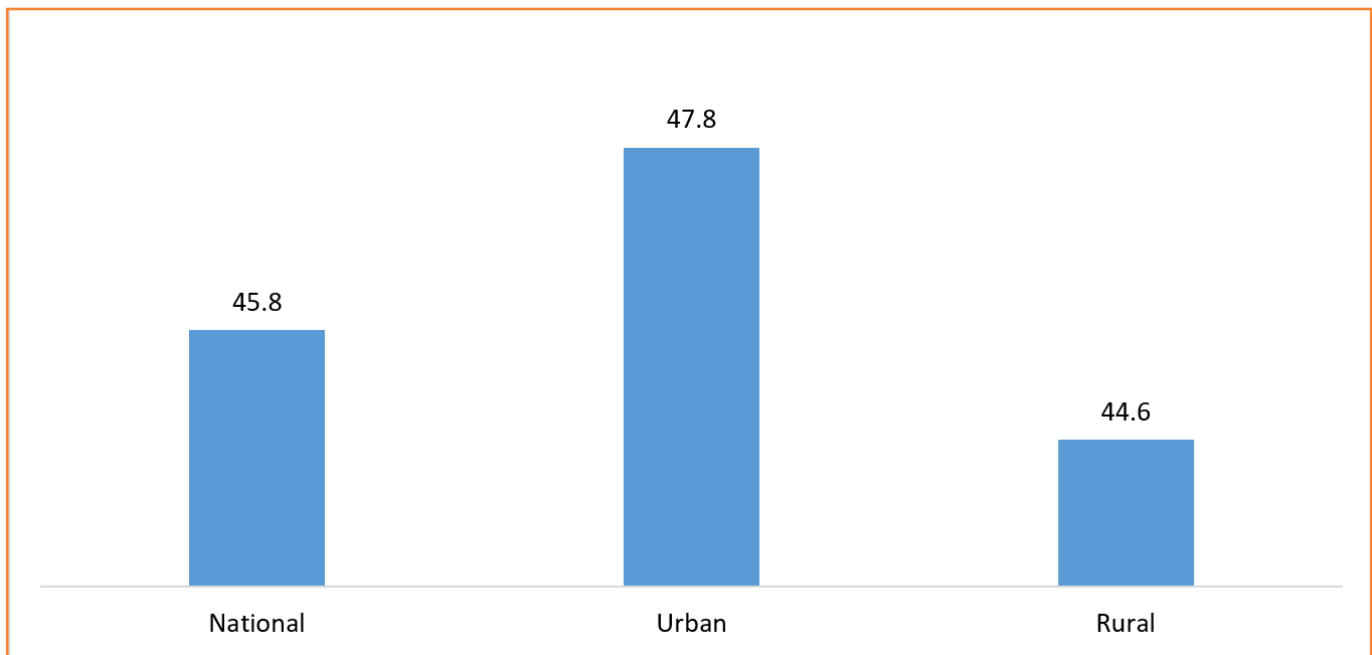


Source: NNS 2018

Nearly half (45.8 percent) of Pakistani babies start breastfeeding within the first hour of birth, an improvement of 5 percentage points from 2011. The practice of early initiation of breastfeeding is only three percentage points higher in urban

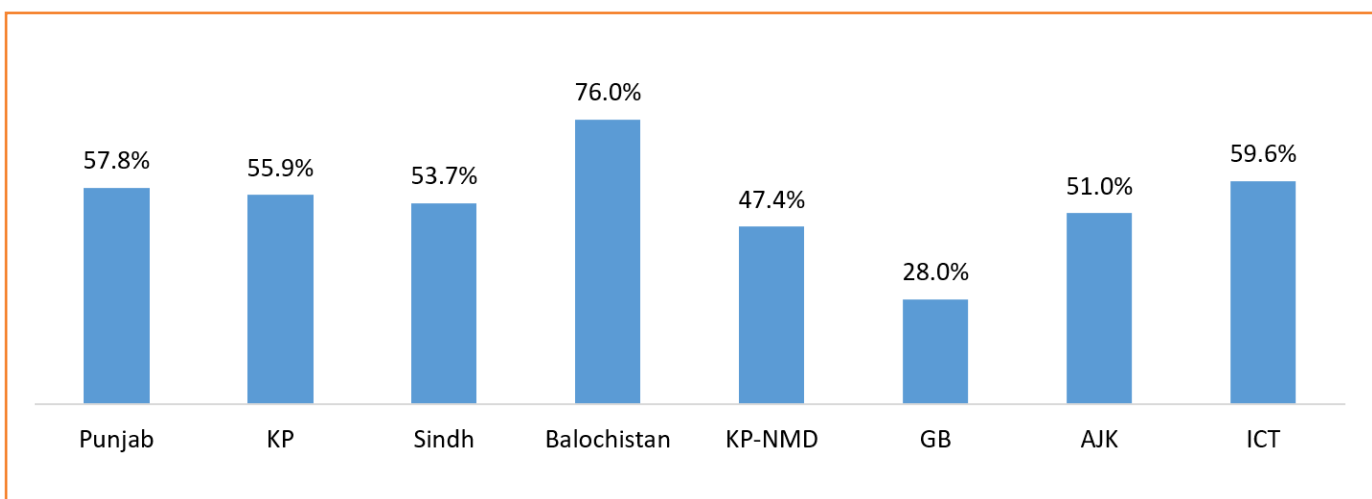
areas than in rural areas. Among the provinces, early initiation of breastfeeding is highest in Balochistan (76.0 percent) and lowest in GB (28.0 percent).

Figure 28: Early Initiation of Breastfeeding (within one hour of birth, percent)



Source: NNS 2018

Figure 29: Early Initiation of Breast feeding (within one hour of birth) by Provinces/Regions (Percent)



Source: NNS 2018



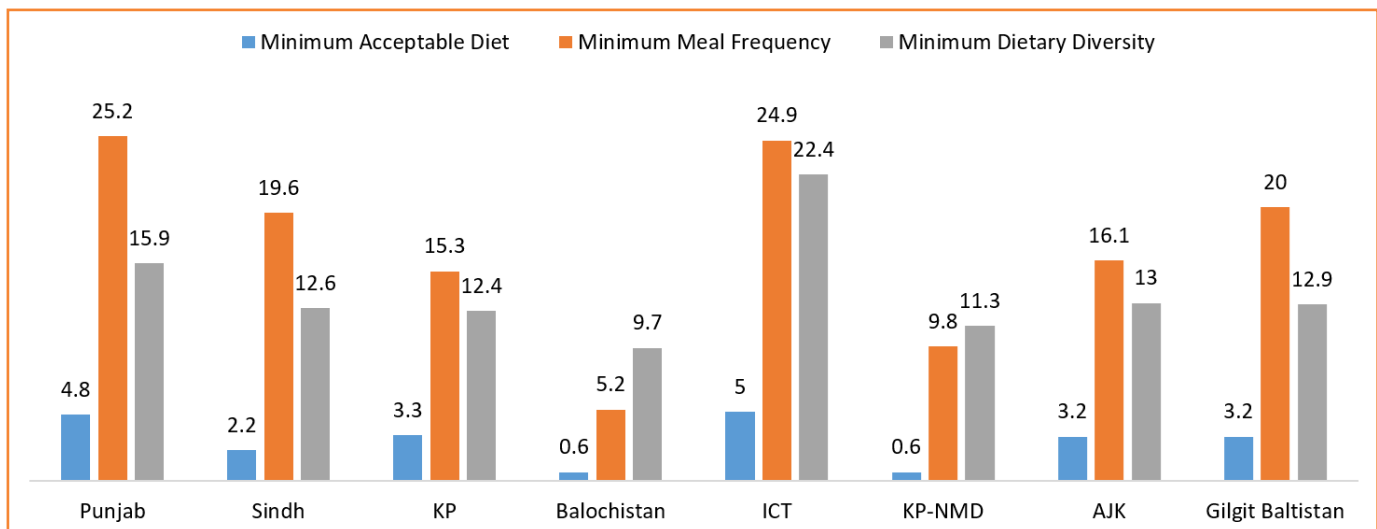


Prevalence of the practice of continued breastfeeding is highest at one year of age (68.4 percent) and thereafter decreases to 56.5 percent at two years of age, with no significant difference by gender and locality. Relative to the rates in 2011 this represents a decrease from 77.3 percent at one year of age and an increase from 54.3 percent at two years of age, respectively.

Age-appropriate complementary feeding is an essential addition to breastfeeding after a child is six months of age. Quality complementary feeding is measured using three indicators: minimum dietary diversity, minimum meal frequency, and minimum acceptable diet. NNS 2018 found all indicators to be far below acceptable levels. The results show that 54 percent of children aged 6 to 8 months receive timely complementary foods; the quality of

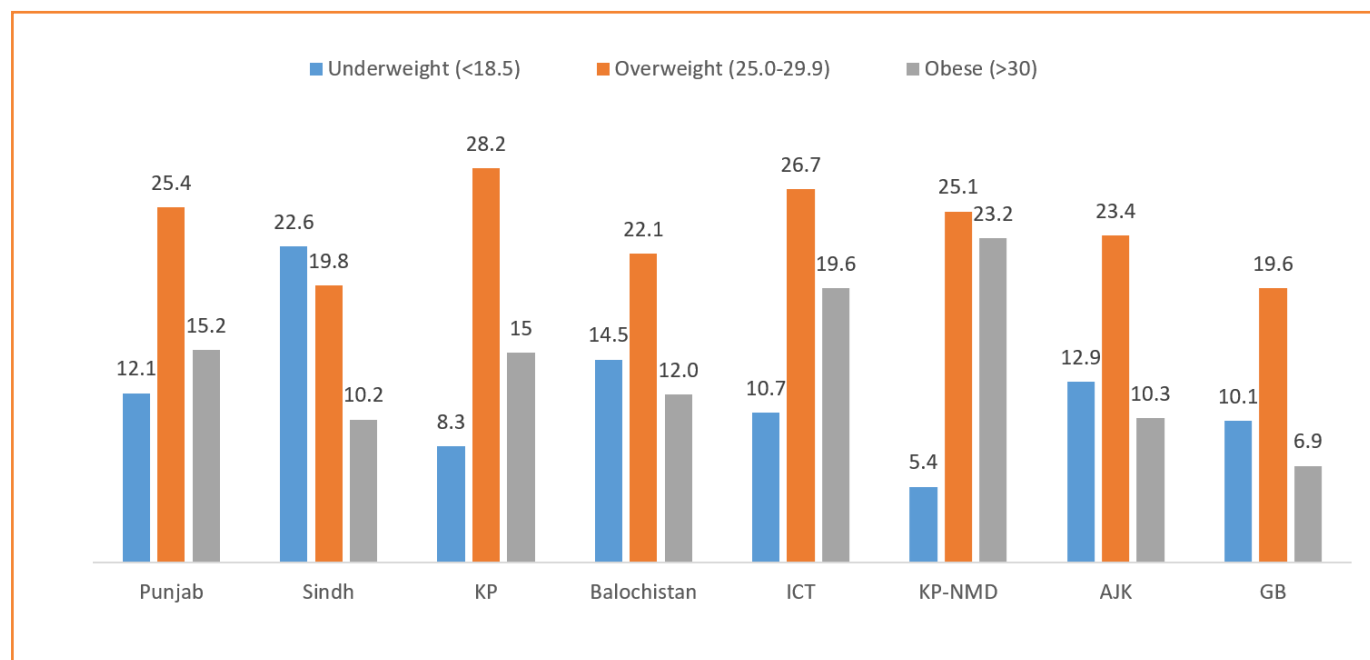
home-based foods tends to be poor. Some provinces/regions (Sindh and KP-NMD) perform better than others do but the timely introduction of complementary feeding needs significant improvement across Pakistan. Only one in seven children (14.2 percent) aged 6–23 months receive a meal with minimum dietary diversity, with at least four different food groups. One in four children (18.2 percent) receive the minimum number of meals a day. Complementary foods that meet the requirements of a minimum acceptable diet to ensure optimal growth and development for children aged 6 to 23 months are provided to less than one in 20 children (3.6 percent). More children in urban areas receive adequate complementary foods than their peers in rural areas, but rates are critically low in both localities.

Figure 30: Complementary Feeding Practices by Province/Regions (Percent)



Source: NNS 2018

Figure 31: Nutritional Status of Women of Reproductive Age (WRA) by Provinces/Regions (Percent)



Source: NNS 2018

According to the National Complementary Feeding Assessment (NCFA) completed in 2018, minimum meal frequency<sup>19</sup> for children aged 6–23 months was 63 percent and only 22 percent received meals with minimum dietary diversity<sup>20</sup>.

Only one of every three young children receive complementary food between 6 to 8 months of age. A smaller proportion of boys (34.6 percent) are introduced to complementary food at the right age compared to girls (37.3 percent)<sup>21</sup>.

### 1.2.6 NUTRITIONAL STATUS OF WOMEN OF REPRODUCTIVE AGE (WRA)

Among women of reproductive age (WRA, age 15-49 years), nearly half (46.4 percent) of the assessed had normal weight as per Body Mass Index (BMI), 14.5 percent were underweight, 24.2

percent were overweight, and 13.9 percent were obese. Regarding provincial distribution, the highest number of underweight WRA live in Sindh (22.6 percent) whereas the least are from KP-NMD (5.4 percent) where obesity was more prevalent (23.2 percent). The prevalence of overweight was also highest in KP (28.2 percent) and the least in GB (19.6 percent); where the minimum number of obese WRA (6.9 percent) and the maximum number of normal BMI WRA (62.5 percent) resided.

Obesity and overweight were more prevalent in urban areas as compared to rural areas across all provinces. Women who are not educated were more likely to be underweight (15.2 percent) or have a normal weight (47.1 percent). Those who came from the richest wealth index are more prone to be overweight (28.8 percent) or obese

19. When a child eats the minimum recommended number of meals per day based on age and breastfeeding status.

20. When a child, during a day, eats from more than four out of the seven food groups recommended by WHO

21. The 2017-18 PDHS also collected data on infant and young child feeding (IYCF) practices for all children born in the two years preceding the survey. The findings reveal that only 48 percent of the infants under age 6 months were exclusively breastfed, this shows an improvement over the past 5 years when 38 percent of children under 6 months were exclusively breastfed in 2012-13. In addition, fifty-four percent of children age 6-8 months receive timely complementary foods, and 44 percent of children age 18-23 months have been weaned. Among children 6-23 months, only 12 percent are fed in accordance with the criteria for a minimum acceptable diet.



(20.3 percent) as compared to underweight WRA (24.2 percent) who largely belong to poorest quintiles.

Trend analysis shows that the proportion of underweight WRA has almost remained unchanged between 2001 (13.3 percent) and 2018 (14.4 percent) with a slight spike in 2011 (18 percent). On the other hand, a consistent decline was observed in WRA with normal weight from 2001 to 2018; with less than half of the WRA (46.1 percent) having normal weight in the 2018 survey. In 2011, overweight and obesity were lower than what was observed in the 2001 NNS data. However, both overweight and obesity rose in 2018. Women in urban areas are more likely to be overweight and obese, while in rural areas women are more likely to be underweight.

As per the findings of PDHS 2017-18, over the past 5 years the proportion of underweight women has decreased from 14 percent to 9 percent. Overweight/obesity increases with increase to economic and education access. The findings are evident that 40 percent of women in the highest wealth quintile are overweight compared with only 16 percent in the lowest wealth quintile. Similarly, 12 percent of women with no education are underweight (12 percent) compared with only 4 percent of those with secondary or higher education. The prevalence of women who are underweight is highest in Sindh

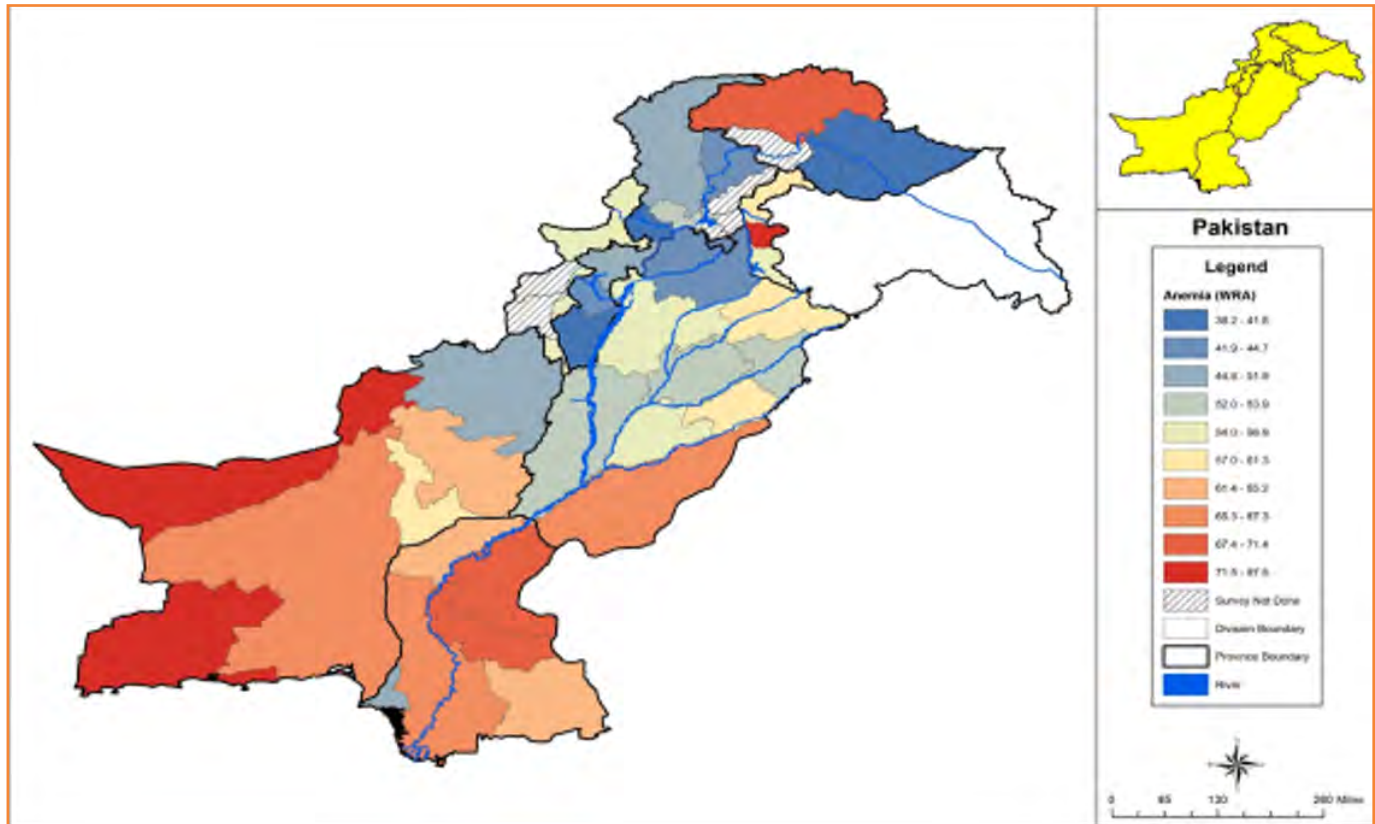
(15 percent), and in rural Sindh more than a quarter of women (26 percent) are underweight. Whereas, regions with a high prevalence of overweight and obese women include ICT Islamabad (68 percent), NMDs (58 percent), Khyber Pakhtunkhwa (57 percent), and Punjab (56 percent).

### Anaemia among WRA

NNS survey 2018 reveals that 42.6 percent of WRA were anaemic with higher proportion coming from rural areas (44.2 percent) than the urban settings (40.1 percent). The prevalence of severe anaemia was 1.0 percent and was more prominent among rural women (1.2 percent). When taking provincial distribution into account, it was evident that the highest prevalence of anaemia was present in Balochistan (61.3 percent) followed by AJK (55.8 percent) and KP-NMD (52.1 percent) with severe anaemia prevalence of 4.7 percent, 0.3 percent and 1.0 percent respectively.

Iron deficiency anaemia among WRA was 18.2 percent, which was more pronounced among those residing in rural areas (18.7 percent versus 17.4 percent among urban). Sindh was found to have a higher proportion of iron deficiency anaemia i.e. about a quarter (22.8 percent) of all WRAs, whereas Balochistan (18.6 percent) and Punjab (17.9 percent) followed closely.

Figure 32: Prevalence of Anemia among Women of Reproductive Age (Percent)



Source: NNS 2018

### Vitamin A Deficiency among WRA

NNS 2018 revealed that 27.4 percent of WRA had notable Vitamin A deficiency with 4.9 percent found to have severe and 22.4 percent mild Vitamin A deficiency. This was also more prevalent among WRA living in rural settings (29.3 percent). Among provinces, Balochistan (34.6 percent) had the highest proportion at 7.7 percent of WRA with severe Vitamin A deficiency and 26.9 percent noted to have a mild deficiency. Vitamin A deficiency was mostly found among WRAs living in rural areas.

### Vitamin D Deficiency among WRA

According to the findings of NNS 2018 survey, majority of the WRA i.e. 79.7 percent are affected by vitamin D deficiency with 25.7 percent

showing severe and 54.0 percent moderate Vitamin D deficiency. Vitamin D deficiency was more prominent in urban areas (83.6 percent) as compared to rural settings (77.1 percent). Likewise, the severe deficiency was observed in urban areas (32.5 percent), higher than rural settings (21.4 percent), suggesting potential differences due to lifestyle mostly where women have limited mobility and exposure to sunlight and open air. These findings are also consistent with Vitamin D deficiency trends among children under 5. There were also provincial differences, that could relate to more traditional and conservative customs coupled with geography, with WRA living in KP more affected (85.9 percent), by vitamin D deficiency (severe deficiency 43.3 percent) compared with other provinces.













## Part 2

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# **FOOD SECURITY AND MALNUTRITION: DRIVERS AND DETERMINANTS**

# Food Insecurity and Malnutrition in Pakistan – Drivers and Determinants



Food insecurity and malnutrition have multiple drivers and determinants, and many of these are present in the Pakistan context. Insufficient dietary intake and diseases reflect the direct reasons for insufficient nutrients at an individual level. The underlying causes of that are of a more complex nature, and include poor care practices and eating habits, household food insecurity, and lack of access to health services and facilities. Finally, structural causes refer to basic resource allocation at societal level, over and above unchangeable factors such as geography and climate. They may reflect long-term problems requiring interventions to change policies and societal attitudes.

While recognizing these many different causes, this report considers four selected sets of factors that are contributing to the food security and nutrition situation:

1. Poverty
2. Climate related natural disasters
3. Food quality and safety
4. Water, sanitation and hygiene (WASH)





## 2.1 POVERTY

The link between poverty and food security has been widely studied across Asia, notably for India, Indonesia and Vietnam (Maitra and Rao, 2014; Mahendevan and Hoang, 2015). It has been argued in these studies that if empirical evidence shows an effect of poverty on food insecurity, then focusing on poverty alleviation programs would address both the problem of poverty alleviation and food insecurity. But, if the set of food insecure is larger than the set of poor, then 'the poor anti-poverty policies might lose sight of the food insecure, nested in apparently non-poor households.

Pakistan is an interesting case to examine the link between poverty and food insecurity. While about a quarter of its population was found in 2015-16 living below the poverty line, it has halved between 2005-06 (50.4 percent) and 2015-16 (24.3 percent) period. Despite this sharp decline in poverty, a considerable proportion of households is still food insecure, based on the Prevalence of Moderate and Severe Food Insecurity based on FIES and PoU presented above in the first of this report. A recent report of the State Bank of Pakistan termed it as 'the dismal state of food security'. The report also considered poverty, at least partly, as one of the reasons for food insecurity in Pakistan (SBP, 2019).

Another noteworthy dimension of food insecurity in Pakistan is that its prevalence varies across the provinces and regions of the country, as the NSS 2018 shows that Sindh and Balochistan are relatively less food secure than other provinces and regions of the country. Although the Government of Pakistan has not provided information on the province-level incidence of poverty, the independent studies carried out at provincial, regional, zonal and district levels support the NNS data by showing relatively higher incidence of poverty in areas of Sindh and Balochistan than in areas of other provinces and regions. The 10-year decline in poverty noted above has been witnessed across the provinces (World Bank, 2018). Nevertheless, the rate of change in poverty incidence and contributing factors in poverty reduction varies across the provinces.

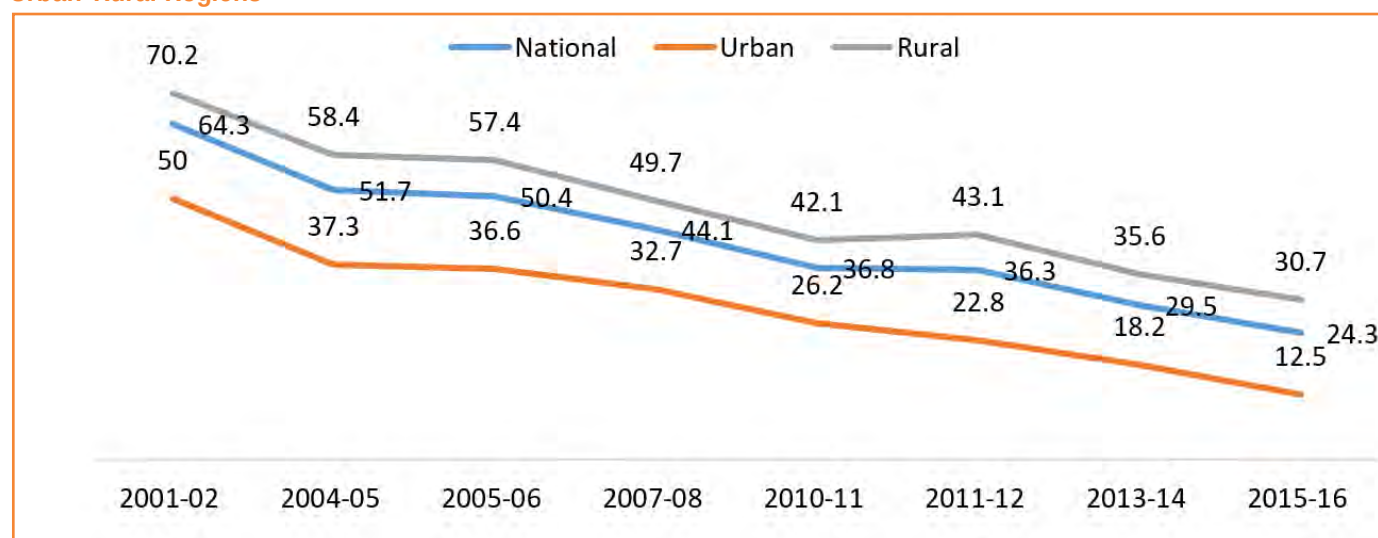
The major focus of Pakistan for ensuring food security has historically remained on the supply side, covering the food availability dimension and to an extent food accessibility. It has primarily focused on national self-sufficiency in wheat (Ahmed and Farooq, 2010; SBP, 2019). However, national self-sufficiency does not per se

guarantee food security, particularly for the poor. Pakistani governments have designed some safety net programs for the poor, including the Benazir Income Support Program (BISP), Pakistan *Bait-ul-Mal*, and *Zakat and Usher*<sup>22</sup>. The main criterion for identifying recipients for these programs is poverty, which may exclude many food insecure households.

### 2.1.1 POVERTY TRENDS IN PAKISTAN: NATIONAL AND PROVINCIAL DIMENSIONS

Poverty estimates based on Cost of Basic Needs (CBN) method, the official poverty line, show a linear decline in poverty at the national level between 2001-02 and 2015-16 period; in fact, poverty incidence halved overall from 50 percent to 24 percent in the ten years from 2005-06 to 2015-16. Poverty declined in both urban and rural areas, although the decline is more pronounced among urban population than their rural counterparts (Figure 33). In 2015-16, rural poverty (30.7 percent) was two and half times higher than the urban poverty (12.5 percent).

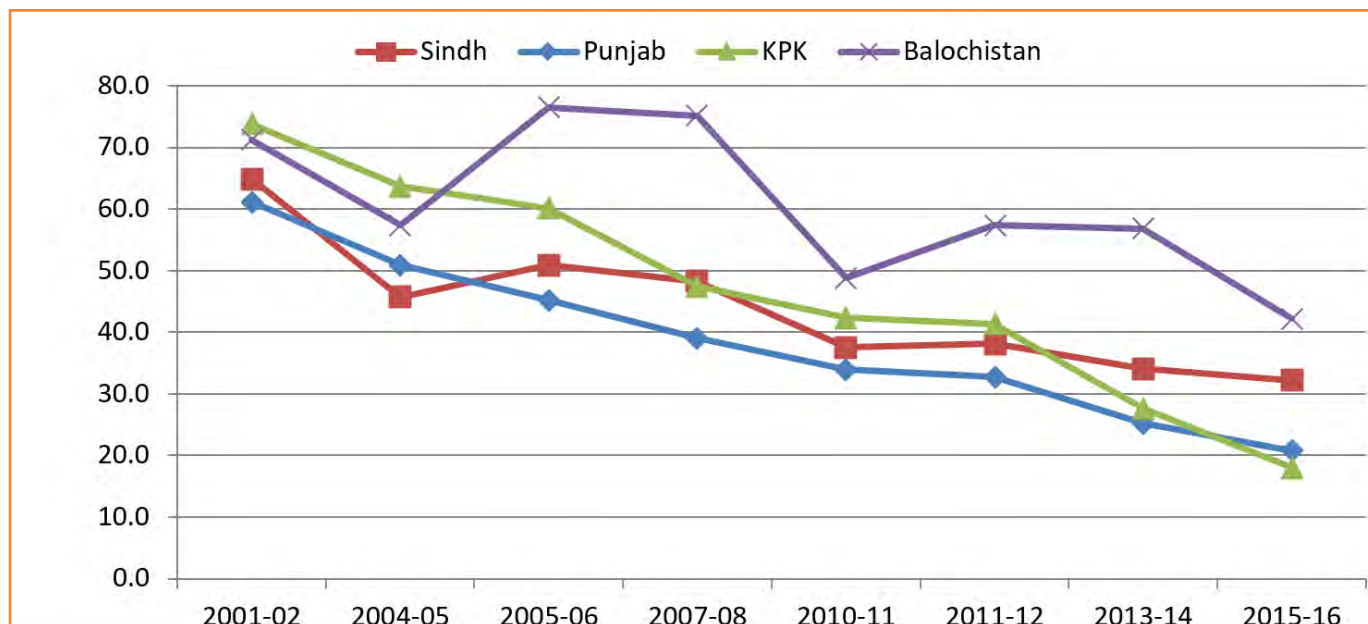
**Figure 33: Trend in Poverty Incidence based on Cost of Basic Needs (CBN) Method in Pakistan and Urban-Rural Regions**



Source: Planning Commission 2017

22. The other programs mainly by provinces include school feeding, safe motherhood and child nutrition etc.

Figure 34: Trend in Poverty Incidence based on Cost of Basic Needs (CBN) Method in Provinces (Percent)

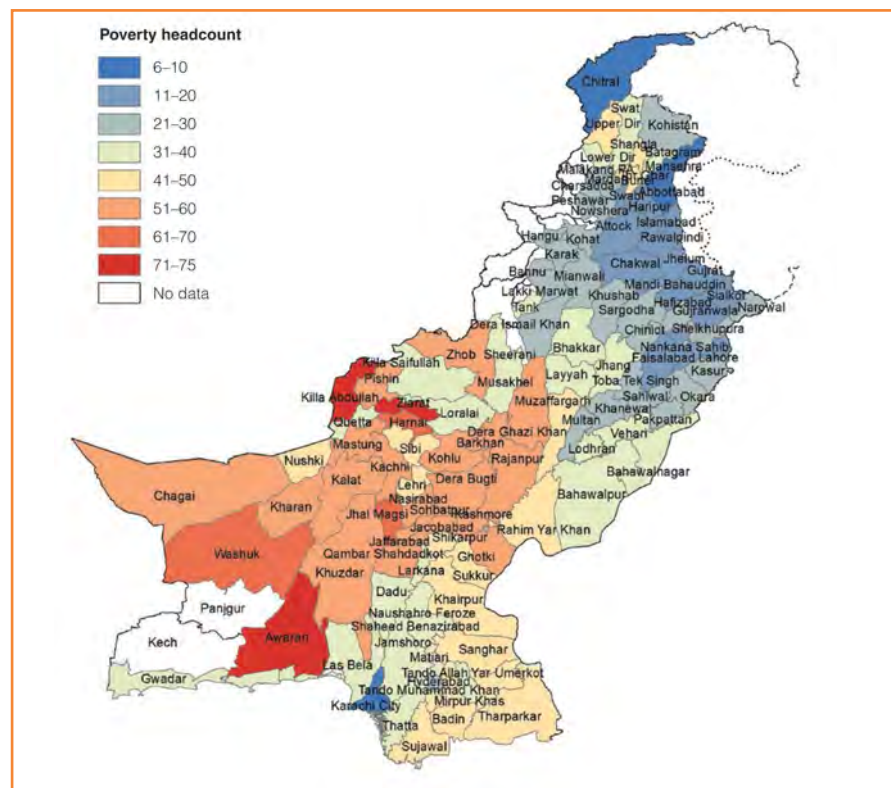


Source: \*World Bank (2018), \*\*authors own estimates

The district level poverty incidence using the small area estimation technique shows that incidence is very high (above 40 percent) in

Southern Punjab, in most of the districts in Sindh, and in Balochistan (Figure 35).

Figure 35: Poverty Head Count by District 2014-15, percent of Population



Source: World Bank (2018)

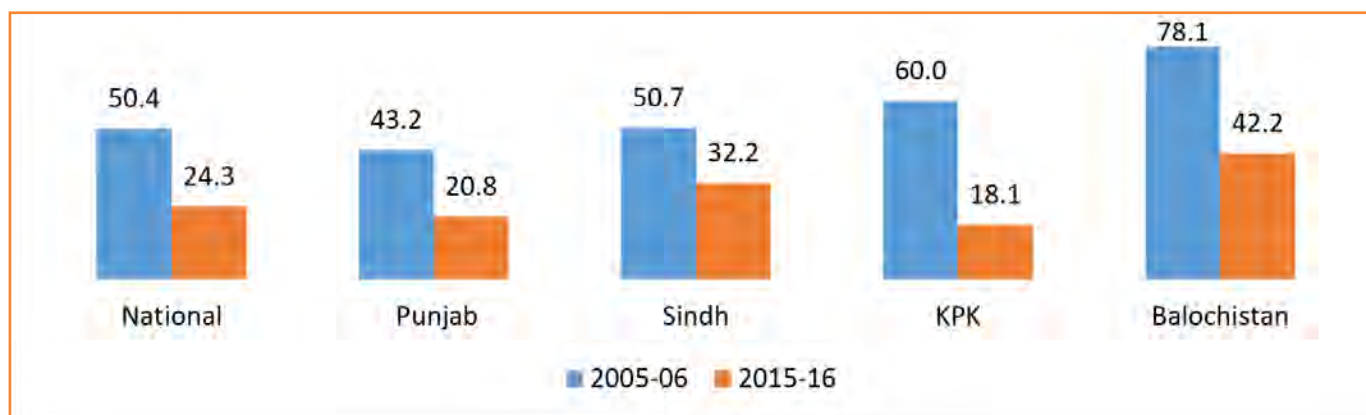




There is an encouraging and consistent decline in poverty across the four provinces of Pakistan and in their urban as well as rural areas, though it not of uniform magnitude across the provinces. The four main features of province-level poverty decline are as follows. First, the decline in poverty is much faster in Khyber Pakhtunkhwa than in other provinces. In Khyber Pakhtunkhwa, it declined by 70 percent in one decade - from 60 percent of the population in 2005-06 to only 18 percent in 2015-16, whereas in other provinces,

the decline is fifty percent or less (Figure 36). The fastest decline in Khyber Pakhtunkhwa poverty is witnessed in both urban and rural areas. At present, the poverty level is lowest in KP while a decade ago (in 2005-06), it was third in the ranking. The incidence of urban poverty in Khyber Pakhtunkhwa (10 percent) is like urban poverty incidence in Punjab (9.9 percent), while rural poverty in Khyber Pakhtunkhwa is lowest among the four provinces of the country.

**Figure 36: Incidence of Poverty by Province (Percent)**

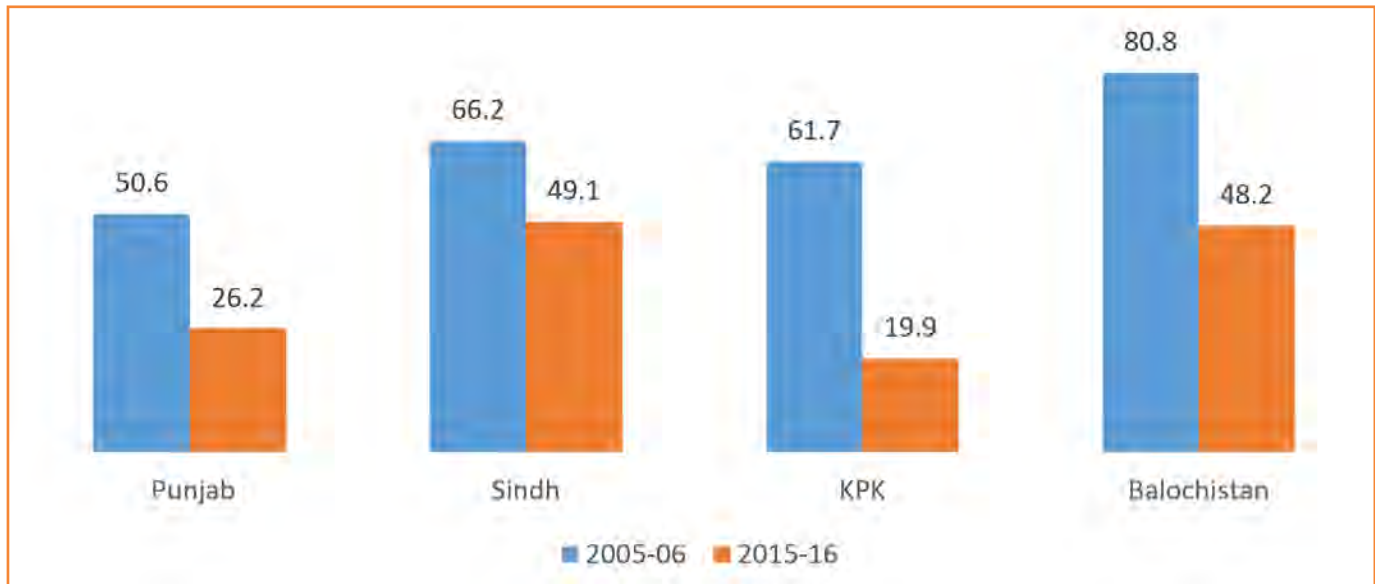


Source: World Bank (2018), Authors own estimates

Second, the slowest poverty decline, 26 percent, is witnessed in rural Sindh (Figure 37). Poverty in rural Sindh is presently (2015-16) the highest among the provinces, even higher by one percentage point from poverty in rural Balochistan. About half of the rural population of these two provinces (Sindh and Balochistan) live below the poverty line. Third, urban poverty is

highest in Balochistan, where at least one in four households is found below the poverty line. Urban poverty in Balochistan is two and half times greater than urban poverty in Punjab and KP. Fourth, the urban and rural gap in poverty has widened during the last decade in all provinces of the country.

**Figure 37: Incidence of Rural Poverty by Provinces (Percent)**

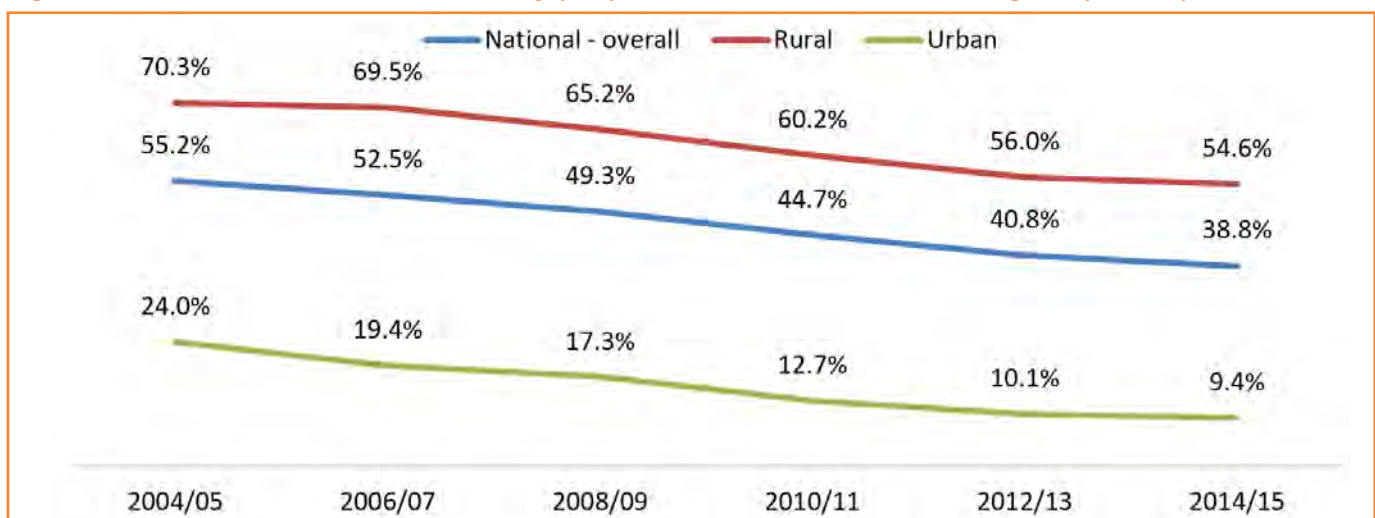


Source: \*World Bank (2018), \*\*Authors own estimates

The MPI<sup>23</sup> also shows a consistent decline in poverty during the last decade across the provinces (Figure 38). The MPI declined from 55 percent in 2004-05 to 39 percent in 2014-15. However, the decline was much sharper in urban areas of the country than in its rural areas. In fact, the rural-urban gap in MPI increased from three times in 2004-05 to about six times in 2014-15. Three features of MPI at the province level are noteworthy. First, there is no change in the

ranking of provinces: it remained lowest throughout the decade in Punjab and highest in Balochistan, whereas the positions of Sindh and KP remained unchanged, second and third respectively. Second, the MPI headcount of 71 percent in Balochistan in 2014-15 indicates a dismal state of health and education in this province. Third, KP, which has shown a sharp decline in consumption poverty during the last decade, could not make similar progress in MPI.

**Figure 38: Trend in Multidimensional Poverty (MPI) in Pakistan and Urban-Rural Regions (Percent)**

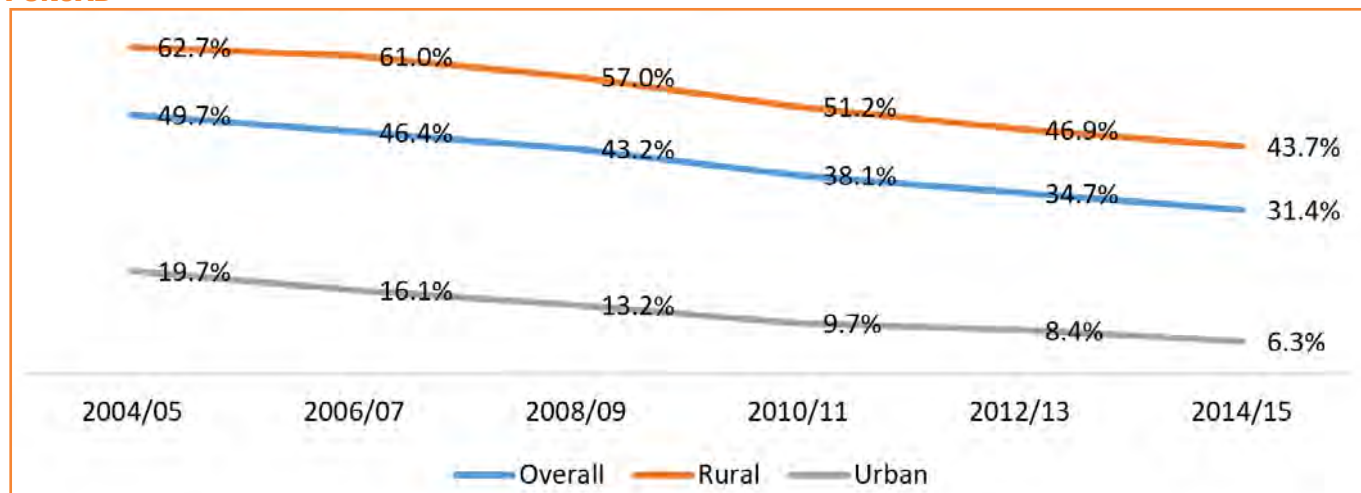


Source: Planning Commission (2016)

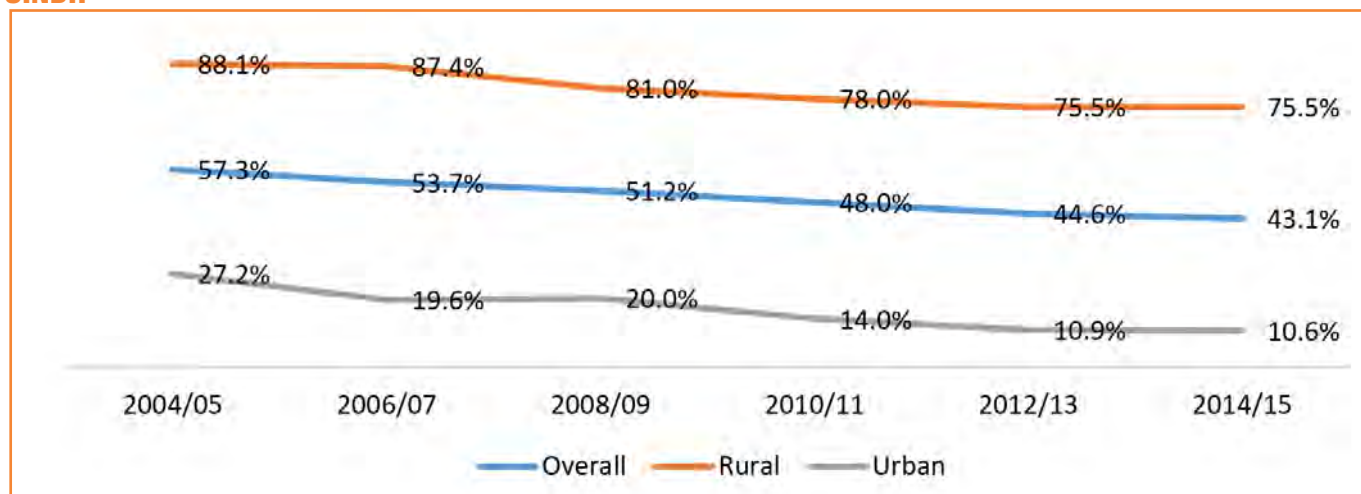
23. MPI is a measure based on three dimensions: health, education and standard of living.

Figure 39: Trends in Multidimensional Poverty (MPI) by Provinces (Percent)

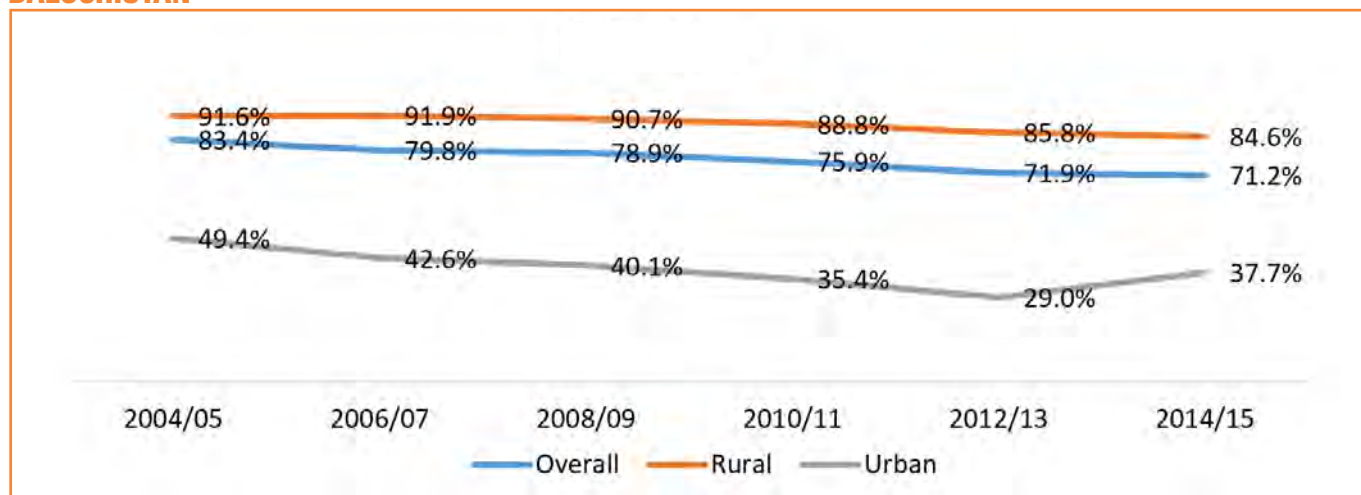
**PUNJAB**



**SINDH**

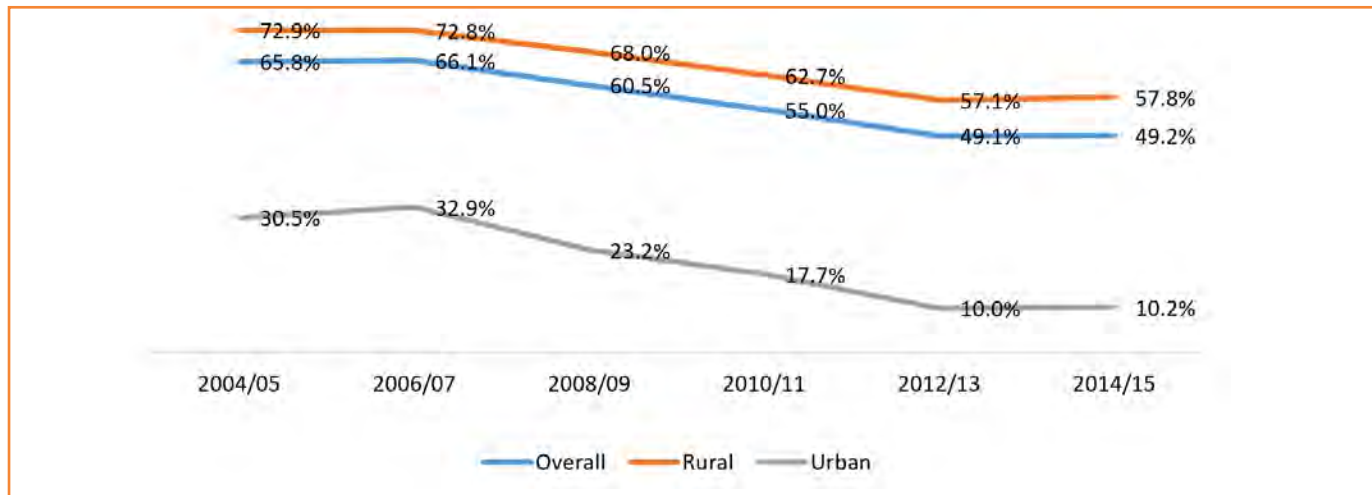


**BALUCHISTAN**





## KHYBER PAKHTUNKHWA



Source: Planning Commission 2016

A close look at the trends in both MPI and consumption poverty by province shows the reality that many households which escaped poverty during the last decade could not invest in health and education, likely because they still did not have enough resources for such investment. This indicates that the achievement of health and education related SDGs would not be possible without a very strong intervention by the government.

Poverty in Pakistan is considered largely a rural phenomenon, although urban poverty is visibly

present. The factors, which contributed in poverty reduction or improvement in the standard of living of population during these ten years, according to the Government of Pakistan, include targeted poverty reduction programmes like BISP, relative political stability, peace and tranquillity, strong economic recovery, continued higher inflows of remittances and a more inclusive characteristic of economic growth (GoP, 2018). The widening rural-urban gap in both consumption poverty and MPI signifies a lack of opportunities in rural areas.



## 2.2 CLIMATE RELATED DISASTERS – VULNERABILITY AND FOOD SECURITY IN PAKISTAN

The frequent cyclic nature of droughts, floods and diseases/pathogens incidence is an important driver of food insecurity. Climate-related risks, uncertainties and environmental degradation are also critical factors, which exacerbates soil loss, deforestation and pest incidence, all of which affect food availability and subsequently food security. Climate change has its effect via increasing variations in weather including temperature and precipitation<sup>24</sup> affects humanity by disturbing food production, the natural ecosystem, health and water supply. The impacts of global climate change on food systems are expected to be widespread, complex, geographically and temporally variable, and profoundly influenced by socioeconomic conditions. Climate induced disasters impact human well-being in ever increasing ways and complex manners.

Climate change affects food production both directly - by changes in agro-ecological conditions and indirectly by affecting agricultural access<sup>25</sup>. Climate change can also affect the food utilization ability of the individuals by altering the conditions for food safety and changing the disease pressure from the vector, water, and food borne diseases. The most important worry about climate change and food security are that changing climatic conditions can initiate a vicious circle where infectious diseases cause hunger, which in turn, increases the vulnerability of the population to more infectious diseases. Its impact may lead to a substantial decline in labour

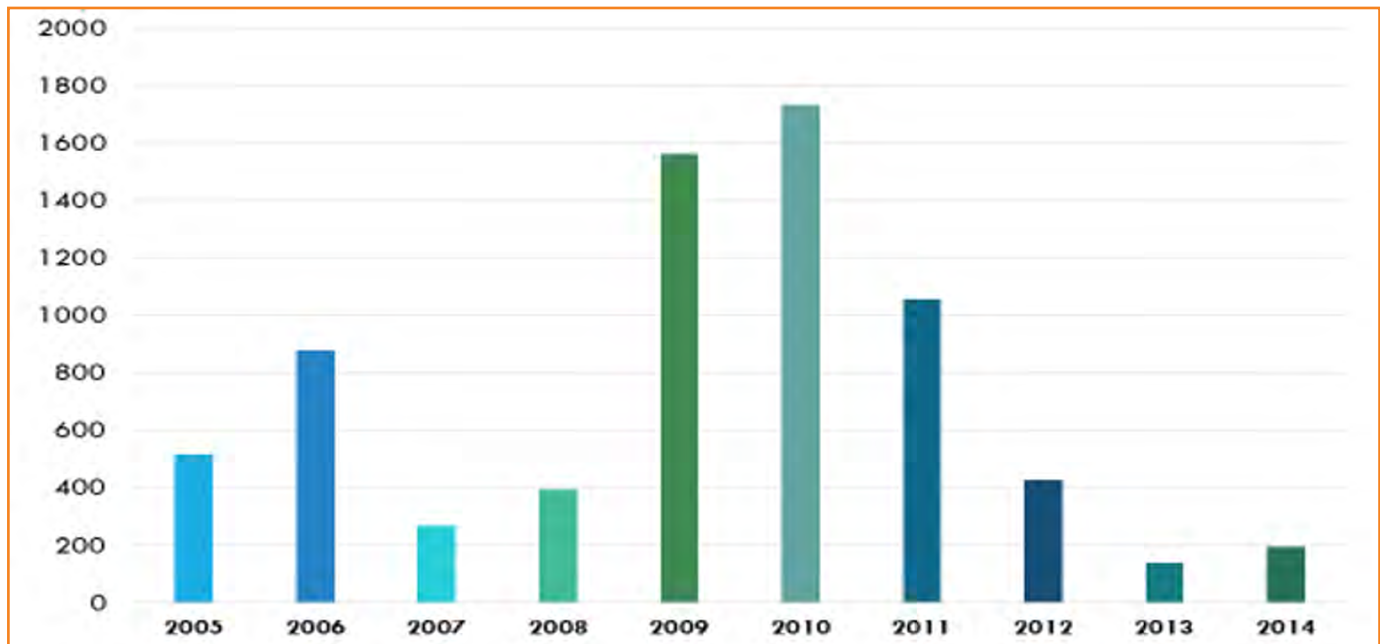
productivity and an increase in poverty incidence and even mortality. Thus, all manifestations of climate change like drought, higher temperature, and heavy rainfalls have an impact on disease pressure and there is also growing evidence that these changes affect food safety and food security.

Pakistan is ranked as the country 8th most vulnerable to climate change. Pakistan has also experienced extreme climatic events in the recent past. Pakistan has faced around 150 freak weather incidents attributed to climate change in the past 20 years, in the form of flash floods, drought, smog in winter, forest fires in summer, melting glaciers, unusual heat waves with devastating heat indices, landslides and displaced populations. The agriculture sector in Pakistan has faced huge losses due to disasters, and annual losses reached up to USD 1,700 million in 2010, mainly due to floods (Figure 40). During the 2010-11 floods, almost 10 percent of the population was displaced in both Sindh and KP provinces, with South Punjab also very affected. Droughts (meteorological and hydrological) are a form of environmental stress originating from deficient precipitation over an extended period of time long enough to cause moisture stress for crops, biotic loss, loss of human and animal lives and a general increase in hardships (Ngaira, 2004). Droughts have direct and indirect effects on livelihood, especially where they are more weather dependent. Overgrazing, poor water management, desertification, rain-fed agriculture, poor services, and weak environmental management are common issues of drought prone areas of Pakistan.

24. Changes in temperature and precipitation associated with continued emissions of greenhouse gases effects that will bring changes in land suitability and crop yields.

25. If climate fluctuations become more pronounced and widespread, droughts and floods, the dominant causes of short-term fluctuations in food production in semi-arid and in sub-humid areas, it will become more severe and frequent. In semiarid areas, droughts can dramatically reduce crop yields and livestock numbers and its productivity.

Figure 40: Direct Agriculture Loss Attributed to Disasters in Pakistan (Current USD Millions)

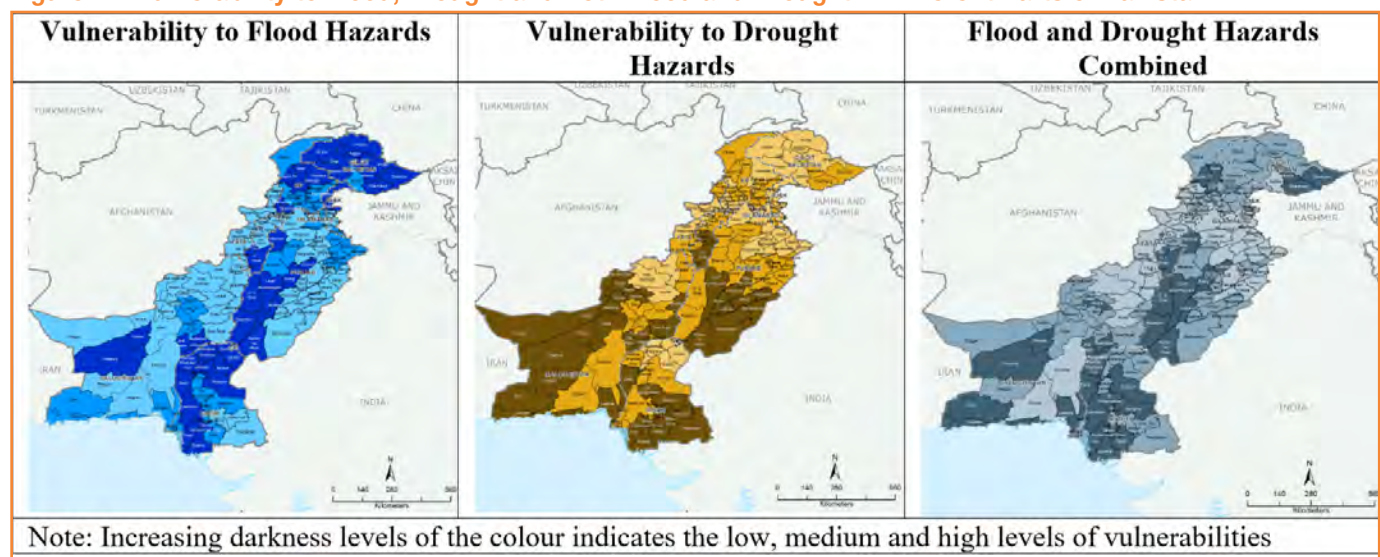


Source: United Nations Office for Disaster Risk Reduction (UNISDR) and FAO

In Pakistan, floods and droughts prevail to varying extents. Generally, higher vulnerability to regular flood prevails in high rainfall zones of the northern regions of Pakistan and in the districts along the major rivers, particularly the Indus River. Similarly, the districts falling in Southern Punjab, Lower Sindh and lowlands of Western Balochistan are relatively more vulnerable to

regular droughts. The regions facing a relatively higher incidence of both the floods and droughts fall in eastern most districts of GB; Swat, Dir and D.I. Khan districts of Khyber Pakhtunkhwa; the larger part of southern Punjab and some western districts of central Punjab; most parts of Sindh; and the districts of south-western Balochistan (Figure 41).

Figure 41: Vulnerability to Flood, Drought and Both Flood and Drought in Different Parts of Pakistan



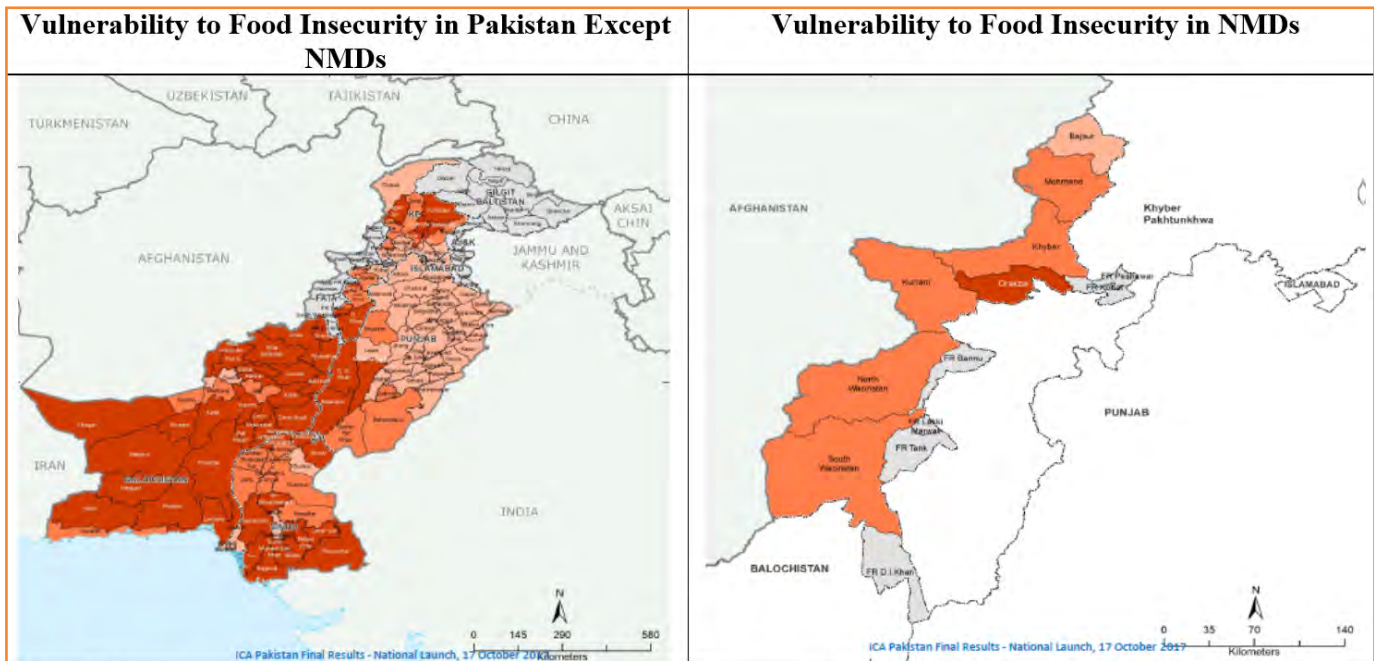
Source: WFP-NDMA-GOP (2017). Integrated Context Analysis (ICA) on Vulnerability to Food Insecurity and Natural Hazards



Considering the regional distribution of vulnerability to or recurrence of food insecurity in Pakistan, relatively higher concentration can be observed in almost entire Balochistan followed by lower Sindh and south-western Khyber

Pakhtunkhwa. On the other hand, a medium level of vulnerability to food insecurity exists in almost all FATA regions except the Orakzai agency, where its prevalence is noticed at the highest level (Figure 42).

Figure 42: Vulnerability to Food Insecurity in NMDs and Remaining Pakistan



Note: Increasing darkness levels of the colour indicates the low, medium and high levels of vulnerability to food insecurity

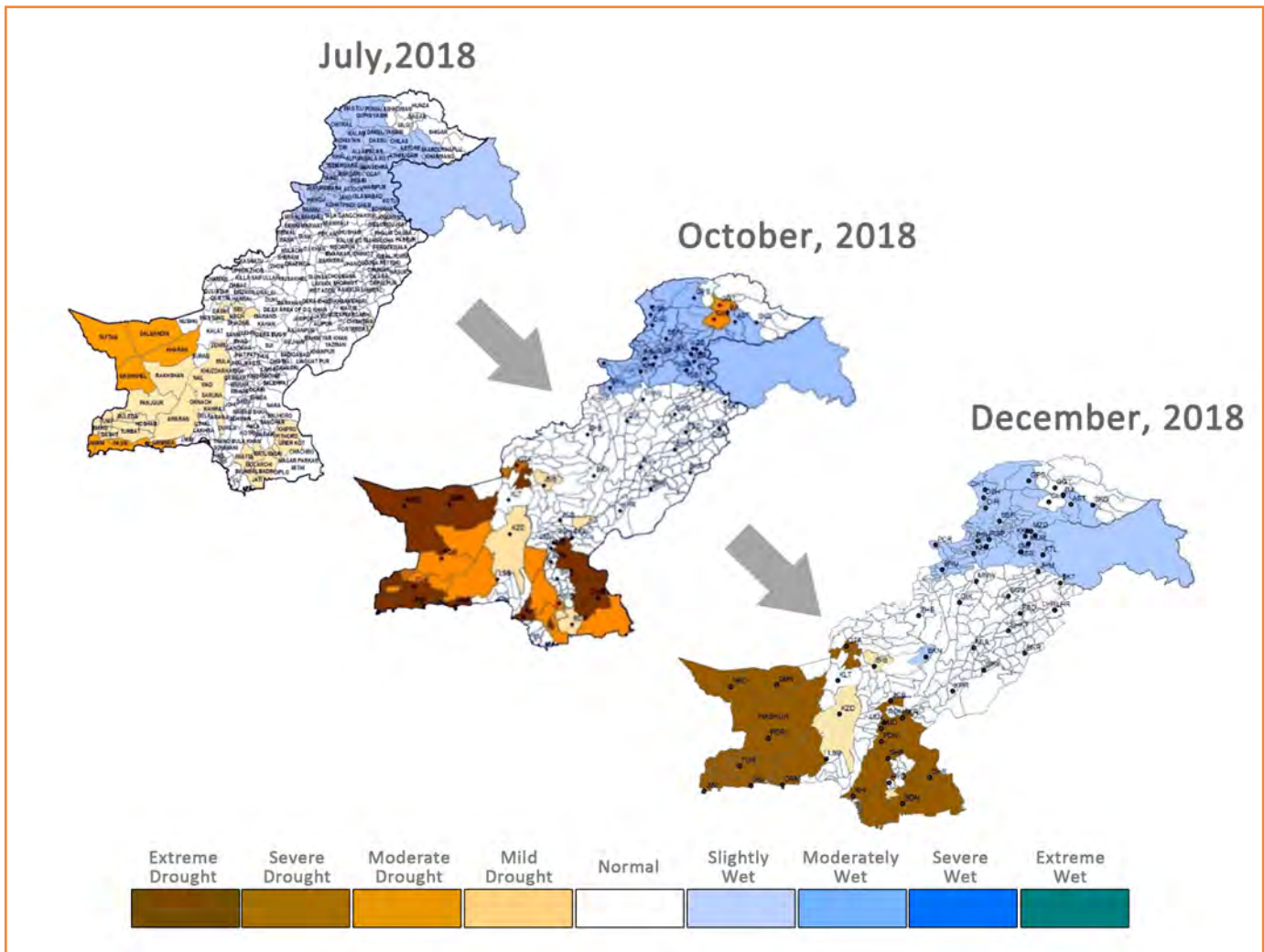
Source: WFP-NDMA-GOP (2017). Integrated Context Analysis (ICA) on Vulnerability to Food Insecurity and Natural Hazards



In 2018, several districts in Sindh and Balochistan experienced moderate or severe drought due to no or very low precipitation and persistent dry conditions, which had worsened since July of

2018. The drought conditions in Pakistan, reflected by the Standardised Precipitation Index (SPI), for selected months in 2018 are shown in Figure 43 below.

Figure 43: Drought Condition in Pakistan in 2018



Source: Drought Bulletins of Pakistan Meteorological Department



**Box 5: Integrated Food Security Phase Classification (IPC)**

IPC has the specific objective of identifying populations in need of urgent action. To achieve this, IPC is based on convergence of evidence from a number of sources. To reach technical consensus on the classification of the severity of the food insecurity situation, a team of analysts conducts a critical evaluation and analysis of all available evidence on food security, which is compared against global standardized indicators and then interpreted with reference to local contexts. As a result, IPC analyses provide evidence needed to support emergency response planning. IPC analysis can be a snapshot of the food insecurity status in subnational areas – typically using the recent data (typically not older than two or three months) – to give an overview of the current and projected situation and to provide information to decision-makers on ongoing and upcoming response needs. While extremely valuable for strategic response, IPC numbers are not intended to be used for monitoring achievements towards global development goals, unlike numbers based on Prevalence of Undernourishment and Prevalence of Moderate and Severe Food Insecurity Based on FIES indicator.

Source: FAO, 2018

**THE INTEGRATED FOOD SECURITY PHASE CLASSIFICATION (IPC) ACUTE FOOD INSECURITY ANALYSIS FOR DROUGHT AFFECTED AREAS OF SINDH AND BALOCHISTAN**

Several districts in Sindh and Balochistan experienced drought during 2018. In this context, the Integrated Phase Classification (IPC) Acute

Food Insecurity Analysis for drought affected areas of 7 districts in Sindh (Tharparkar, Umerkot, Sanghar, Jamshoro, Badin, Dadu and Qambar Shahdadt) and 14 districts in Balochistan (Awaran, Chagai, Dera Bugti, Gwadar, Jhal Magsi, Kacchi, Kech, Kharan, Killa Abdullah, Loralai, Nushki, Panjgur, Pishin and Washuk) was conducted in April 2019 (Figure 44) . The summary findings of IPC analysis for both Sindh and Balochistan districts are reported below<sup>26</sup>.

**Figure 44: Summary Findings of IPC Acute Food Insecurity Analysis for Drought Affected Districts of Sindh and Balochistan**

SINDH-CURRENT PERIOD (OCTOBER 2018 – July 2019)			SINDH-PROJECTED PERIOD (JULY – OCTOBER 2019)		
<p><b>1.28 Million</b> (57% of the rural population in drought-affected areas in 7 districts)</p> <p>People facing severe acute food insecurity (IPC Phase 3+) IN NEED OF URGENT ACTION</p>	Phase 5	0 People in Catastrophe	<p><b>1.25 Million</b> (56% of the rural population in drought-affected areas in 7 districts)</p> <p>People facing severe acute food insecurity (IPC Phase 3+) IN NEED OF URGENT ACTION</p>	Phase 5	0 People in Catastrophe
	Phase 4	593,240 People in Emergency		Phase 4	527,660 People in Emergency
	Phase 3	686,298 People in Crisis		Phase 3	726,691 People in Crisis
	Phase 2	491,545 People in Stress		Phase 2	564,775 People in Stress
	Phase 1	458,341 People minimally food insecure		Phase 1	410,298 People minimally food insecure

26. Detailed reports on IPC acute analysis for drought affected districts of Sindh and Balochistan are available on IPC website <http://www.ipcinfo.org/ipc-country-analysis/> and Food Security Cluster's website <https://fscluster.org/pakistan>.



BALOCHISTAN CURRENT PERIOD (JANUARY – JULY 2019)			BALOCHISTAN PROJECTED PERIOD (JULY – NOVEMBER 2019)		
<b>1.79 Million</b> (48% of the rural population in 14 drought-affected districts)  People facing severe acute food insecurity (IPC Phase 3+) <b>IN NEED OF URGENT ACTION</b>	Phase 5	0 People in Catastrophe	<b>1.78 Million</b> (48% of the rural population in 14 drought-affected districts)  People facing severe acute food insecurity (IPC Phase 3+) <b>IN NEED OF URGENT ACTION</b>	Phase 5	0 People in Catastrophe
	Phase 4	418,674 People in Emergency		Phase 4	490,288 People in Emergency
	Phase 3	1,369,493 People in Crisis		Phase 3	1,294,235 People in Crisis
	Phase 2	904,155 People in Stress		Phase 2	861,509 People in Stress
	Phase 1	1,039,337 People minimally food insecure		Phase 1	1,085,627 People minimally food insecure

Source: IPC Reports 2019

In Sindh, around 1.28 million people (57 percent of the rural population) in drought-affected areas of seven districts (Tharparkar, Umerkot, Sanghar, Jamshoro, Badin, Dadu and Qambar Shahdadkot) were estimated to be in Crisis and Emergency (IPC Phase 3 and Phase 4). Four out of the seven drought-affected districts analysed (Tharparkar, Umerkot, Sanghar and Jamshoro) were classified in IPC Phase 4 (Emergency), whereas drought-affected areas in 3 districts (Badin, Dadu and Qambar Shahdadkot) were classified in IPC Phase 3 (Crisis).

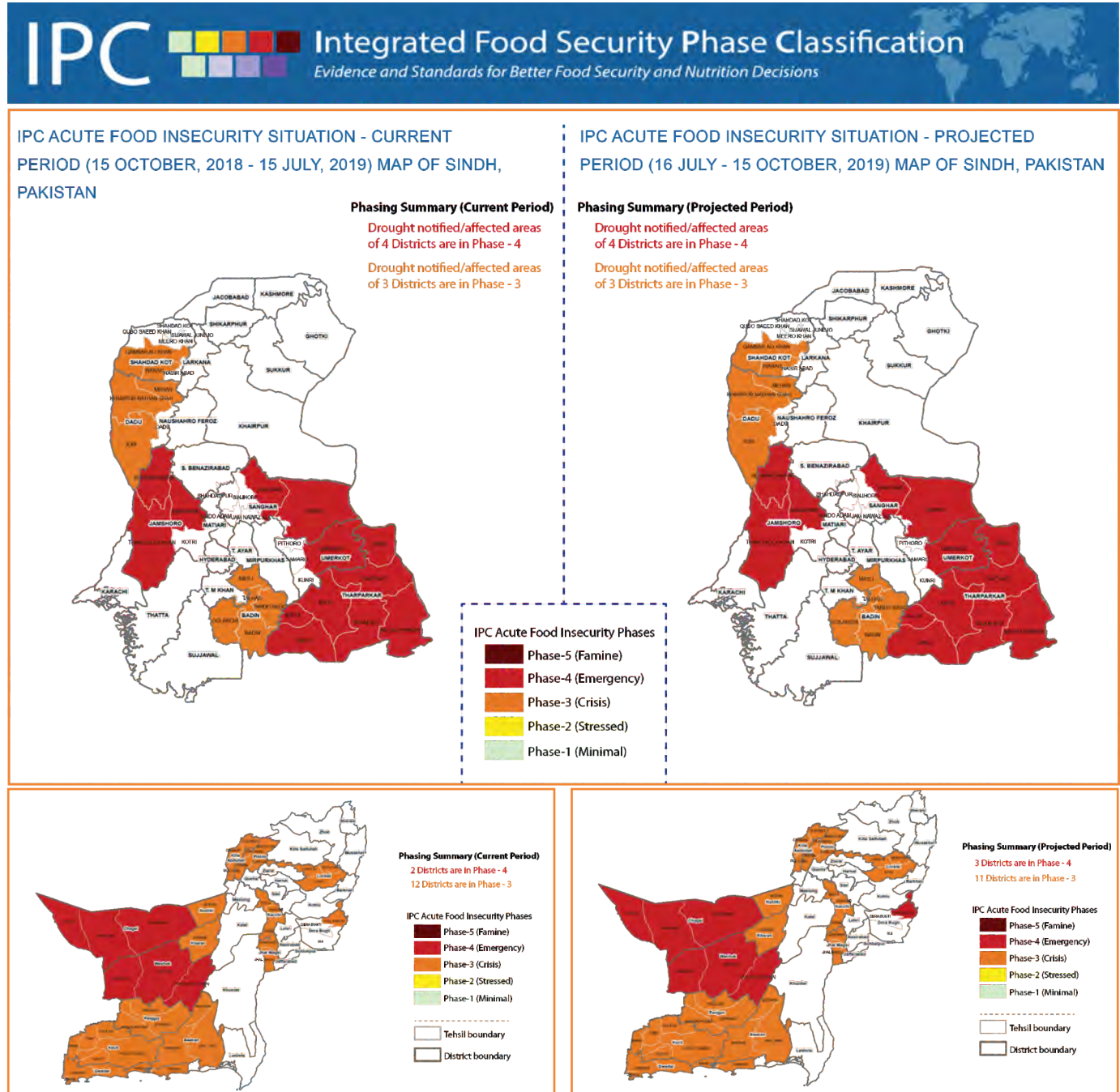
In Balochistan, around 1.79 million people (48 percent of the rural population) in 14 drought-affected districts (Awaran, Chagai, Dera Bugti, Gwadar, Jhal Magsi, Kacchi, Kech, Kharan, Killa Abdullah, Loralai, Nushki, Panjgur, Pishin and Washuk) were estimated to be in IPC Phase 3 (Crisis) and Phase 4 (Emergency). Out of 14 districts analysed, rural areas of two districts (Chagai and Washuk) were classified in IPC Phase 4 (Emergency), whereas drought affected areas in 12 districts (Awaran, Dera Bugti, Gwadar, Jhal Magsi, Kacchi, Kech, Kharan, Killa Abdullah, Loralai, Nushki, Panjgur and Pishin) were

classified in IPC Phase 3 (Crisis).

From the above discussion, it can be concluded that Pakistan is situated in a natural induced disasters prone region, where floods and drought frequently occur and cause negative impacts on the food security and livelihoods of millions of people. Recurring disasters considerably damage the coping capacity of the people causing huge losses to national GDP and people's livelihoods making them more vulnerable to food insecurity. This clearly calls for adopting a well-coordinated approach to deal with the situation suddenly arising in case of floods and gradually aggravating in case of drought.

The experience of well-coordinated efforts of Pakistan's national agencies; Space and Upper Atmosphere Research Commission (SUPARCO) and the National Disaster Management Authority (NDMA) in mitigating damages will continue to be very important in responding to future natural disasters. Inclusion in the post-disaster rehabilitation process of MNSFR and other relevant government ministries and financial institutions is equally important in order to

Figure 45: IPC Acute Food Insecurity Situation in Drought Affected Districts of Sindh and Balochistan



Source: IPC Reports 2019

restore the agriculture production systems at the earliest following any disaster. Continued substantial public investments are warranted for constructing protective infrastructures, developing early warning and preparedness systems and programs to build resilience at the household level (e.g. capacity building of local people for income diversification, identification of

various adaptation options) can play a critical role in minimizing the impacts. An increase in public investment on climate-smart agricultural R&D is also important. Considering Pakistan's vulnerability to natural disasters, there is a need for agriculture diversification as part of disaster risk reduction and climate change adaptation.

### Box 6: Climate Change and Food Security

During 2014 and 2015, a series of ten climate change working papers were published by the Pakistan Institute of Development Economics, Islamabad. The findings of the analysis showed a statistically significant association between climate change and food security. The households who adapted climate change strategies are more food secure as compared to those who did not. The farm size and land ownership matter a lot in arresting food security, other factors like crop diversification and non-farm income improve household food security. Due to relatively higher non-farm income in total household income, the cropping systems of the farmers from cotton-wheat, rice-wheat, and rain-fed are more food secure than those in mixed cropping systems. During the formulation of the GCF Funding Proposal, a number of reviews and feasibilities were undertaken, which clearly indicated that the agriculture production is declining due to the climate change factors. This will have strong repercussion on the food security and local livelihoods

For safeguarding national food security interest against erratic climate changes, it is crucial to invest in agriculture research for developing agro-ecology and farming system-specific climate-smart varietal and crop management related technologies. There is also a need to employ various informatics tools for early meteorological warning preparedness, transfer, and adoption of appropriate generated technologies from lab-to-land through expert agricultural advisory service providers (adaptive extension research approaches). Moreover, policy implications are warranted with the focus on i) increasing the climate change awareness programs about its coping strategies tailored through increasing access to agricultural extension education; and ii) strengthening the affordability capacity of the poor farm households in order to cope the chronic cyclic climatic changes via augmenting the farm assets as well as lowering the cost towards changing climate adaptations (e.g. endowment facilities --- services of advisory through developing effective information communication technologies (ICT), as well as generating alternative feasible livelihood opportunities. The GCF Funding Proposal also reveals that there is a need for creating enabling environment for private sector and financial institutions to support the farming communities

**Source: PIDE Climate Change Working Papers and FAO-GCF Funding Proposal on Transforming Indus Basin with Climate Resilient Agriculture and Water Management.**

## 2.3 FOOD SAFETY AND QUALITY

Food safety is a driver and determinant for achieving the utilization aspect of food security. Ready access to safe and nutritious food is a basic human right. Unsafe food takes a huge toll on human health and the economy. Every year around the world, over 420 000 people die and some 600 million people – almost one in ten – fall ill after eating contaminated food. In fact,

foodborne hazards are known to cause over 200 acute and chronic diseases from digestive tract infections to cancer (FAO, 2019). Children below the age of five are more affected by contaminated food, with a consequent impact on nutrition and health. Urban populations who consume street food from vendors with unsafe food standards are also at increased risk of illness and poor nutritional outcomes.

Food safety includes all steps and procedures that apply from food production to consumption. It



requires good agriculture practices (GAP) starting from primary production i.e., pre-harvest (soil, water, seed, fertilizers, integrated pest management, livestock management, disease prevention and control) to postharvest (storage, transportation, handling, processing storage, maintaining cold chain etc.) good hygiene practices (GHP), good manufacturing practices (GMP) and good sanitation practices (GSP) (FAO and MNFSR, 2019).

### 2.3.1 FOOD SAFETY SITUATION IN PAKISTAN

Food safety is integral to SDG 2 and an important part of Pakistan's 2018 National Food Security Policy. The policy recognizes that levels beyond globally recognized maximum residue limits for pesticides have been a problem in the food supply chain, especially in fruits and vegetables. The policy intentions include safe food production, strengthening the food production system, legislating food safety regulatory laws, awareness raising on the safe use of pesticides, and curtailing the indiscriminate use of pesticides in order to ensure that food complies with Codex standards.

Food grains, vegetables, fruits, milk, meat, and

eggs constitute the main national diet, however, the safety of the food chain from producer to consumer is compromised for a number of reasons. Food safety issues in the country pose a challenge to human health, especially for infants, the young, elderly and sick. This, in turn, creates a burden on the economy of health-related costs. A review of food safety challenges in Pakistan documented that the prevalence of pathogens was common in several foods; poor processing and storage of milk, cereal grains, and nuts caused contamination especially with aflatoxin and proliferation of mould. In addition, lack of monitoring and enforcement of food standards, particularly of milk, poses risk to the health of the population.

The environmental conditions of Pakistan, with its mostly hot climate, are conducive to the growth of toxigenic fungi resulting in mycotoxin production in different food items. Moreover, the poor conditions of storage and deficiency in regulatory measures in food quality control exacerbate the situation in the country (Akhtar, 2015). Food handlers also contribute to food contamination in many ways, with poor personal hygiene and handling of foodstuffs having a role in transmitting many intestinal enteropathogenic bacteria.



### Box 7: Food Safety Authority Agencies in Pakistan

During the early years of the ongoing decade, the significance of food safety and hygiene was realized in Pakistan. Initially, the Punjab Government came up with the idea of the setting of Punjab Food Authority with main functions of food surveillance, food standards and food licensing. It has established its own food-testing laboratory.

- The Punjab Food Authority Act, 2011 entrusts the following functions and responsibilities to the Punjab Food Authority:
- Punjab Food Authority regulates and monitors the food business in order to ensure compliance by formers, manufacturers, distributors, importers and other stake holders in orders to provide safe food.
- Formulate standards, procedures, processes and guidelines in relation to any aspect of food including food business, food labelling, food additive, and specify appropriate enforcement systems.
- Enforcement of food safety and quality standards.
- Specify procedures and guidelines for setting up and up-gradation of food laboratories.
- Specify licensing, prohibition orders, recall procedures, improvement notices and prosecution in the court of law.
- Provides scientific advice and technical support to the Government in matters relating to food safety.
- Establishment of food laboratories.
- Organize training programs in food safety and standards.
- Promote general awareness regarding food safety and standards.
- Certify food products/items for export.
- Forward and backward traceability of food items.
- Surveillance including collection, integration, analysis, interpretation and dissemination of data related to food and nutrient intakes.

Seeing the success of the initiative, other provinces (Sindh, Khyber Pakhtunkhwa and Balochistan) also followed the suit and set up their own independent food authorities with similar functions.

Unsafe milk is an issue that has plagued the dairy sector of Pakistan, causing not only economic losses for the processing industry, but also health risks for consumers. Due to the lack of proper equipment and training of smallholding farmers, milk-handling processes in the traditional system may be unhygienic, and the cold chain not maintained properly. In order to keep milk temporarily “fresh”, there has been a practice of adding ice to the milk, which results in dilution of milk solids by up to 30 percent. In addition,

sellers may attempt to counter the dilution by adding vegetable oil, whey powder, and other ingredients to improve the solid content of the milk, affecting the purity of the product.

### 2.3.2 STRATEGIES FOR INTERVENTION

The current situation in Pakistan calls for improving food safety along the food supply chain and reducing food quality losses, also paying

special focus to aflatoxins. In particular, in order to ensure that food supply is healthy for the consumer, retailers and food outlet owners, including street food vendors should be incentivized and encouraged to sell safe foods, made with less sodium, a higher proportion of fruits and vegetables, and using healthy oils for cooking. It is also very relevant that except for the large-scale corporate farms and at the cattle colonies, women play an active role in livestock production and therefore the milk supply chain. This entails that both women and men livestock holders be trained in safe milk production and sale. A robust monitoring system and traceability is the missing link in the food supply chain to reduce chemical and microbiological contamination of food and water supplies.

For improving food safety governance and control along food supply chains, close collaboration is

required between ministries, departments and food safety authorities, as well as through innovations and technologies, labelling and standards, monitoring and surveillance in a harmonized manner (HLPE, 2107). Food safety is the base for preparing and serving a healthy diet and providing good nutrition. It is therefore important that the governments adopt food safety as a national and public health priority; develop policies, strategies, regulatory frameworks and coordinating mechanisms; establish and implement effective food safety systems that ensure food producers and suppliers along the whole food chain operate responsibly and supply safe food to consumers. The recommendations in the Pakistan Dietary Guidelines for Better Nutrition developed by MPDR and FAO should be widely disseminated and used in policy making and programming directed at health and nutrition.





## 2.4 WATER, SANITATION, AND HYGIENE (WASH)

Safe drinking water, sanitation and hygiene (WASH) are important to public health in general and the health of infants and young children in particular. Globally, food security challenges cannot be met until safe WASH are available to the poorest and marginalized communities. Furthermore, the WHO estimates that 50 percent of malnutrition is associated with repeated diarrhoea or intestinal worm infections because of unsafe water, inadequate sanitation, or insufficient hygiene (WHO, 2008). There is a vicious cycle between diarrhoea and undernutrition – children with diarrhoea eat less and are less able to absorb the nutrients from their food, and undernourished children are more likely to get diarrhoea when exposed to poor sanitation conditions. Hence, WASH interventions play a critical role in reducing or preventing malnutrition (Gleick, 2012).

### 2.4.1 WASH AND NUTRITION NEXUS AND VARIOUS STAGES OF LIFE CYCLE

Poor sanitation and hygiene practices are essential determinants in the causal pathway and cycle of infectious disease burden and undernutrition. WASH includes adequate and sustainable water supply, sufficient means of sanitation (encouraging 'total sanitation' to eliminate the practice of open defecation) and improved hygiene practices (handwashing with soap). The World Bank estimates the economic cost of poor water and sanitation services to be around 4 percent of the GDP of Pakistan. These costs are around USD 12 billion per year and are dominated by inadequate domestic water supply and sanitation, but also include the costs of floods and droughts. Poor sanitation and a lack of wastewater treatment cause water-borne diseases that kill around 40,000 children each year (World Bank, 2019).



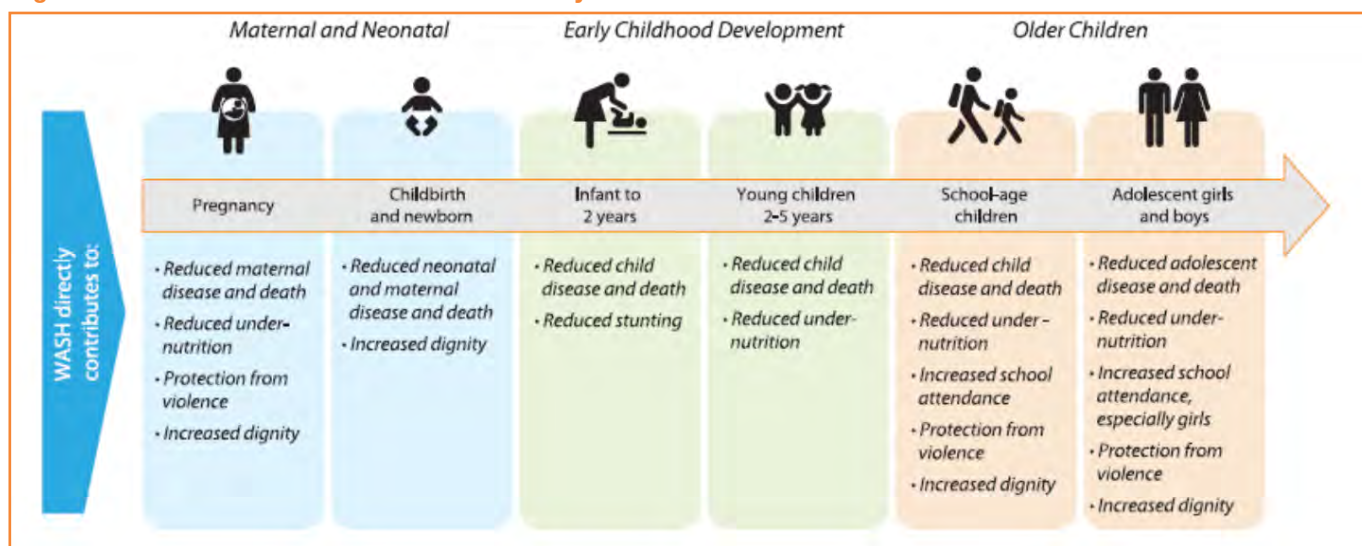
WASH infrastructure has significantly improved in Pakistan, but what has not improved, and has arguably worsened considerably, is the level of bacterial contaminants in water and in the soil. Only 35 percent the population has access to safely managed water, which is free of contamination. Water quality remains a major setback in Pakistan – mostly contaminated water is used for drinking purpose, largely without any treatment, as well as for food production, creating powerful oral transmission mechanism for faecal waste to find its way into both adults and children.

In Pakistan, access to improved water has come primarily from greater reliance on groundwater, and access to improved latrines has come from an increase in flush toilets connected to leaching pits or septic tanks connected to open drains. The combination of these two types of infrastructure can provide a perfect recipe for the source contamination of drinking water when the distance between the point of intake of water and the point of disposal of human waste is below recommended levels and the groundwater aquifer is shallow. This is far too often the norm in rural Pakistan. In rural Sindh, for instance, poor

faecal sludge management combined with a high reliance on water from hand pumps that extract water from shallower depths had led to contamination rates as high as 57 percent at the source. Drinking water contaminated with *E. coli* leads to permanent and irreversible damage to the intestinal villi of children, which hinders their ability to digest nutrients and their long-term life and growth prospects (World Bank, 2018)

WASH interventions contribute to improve the health and nutrition status of vulnerable groups at various stages of the lifecycle, and therefore, contribute to stunting reduction (Figure 46). The UNICEF WASH Strategy 2016-2030 and the Stunting Reduction Framework for South Asia, both highlight the need for integrated Nutrition and WASH programming as a step forward to address malnutrition. Undernutrition can span across generations. Girls suffering from undernutrition are likely to become undernourished mothers who are, in turn, more likely to give birth to low birth weight infants. Adolescent girls are particularly vulnerable to undernutrition because they have high nutrient needs due to growth and because they are at risk of becoming pregnant (Black et al., 2013).

Figure 46: WASH Contributions to UNICEF's Key Outcomes for Children across the Life Course



Source: UNICEF, WASH Strategy 2016-2030

## 2.4.2: INTEGRATED ACTION TO IMPROVE NUTRITION

WASH interventions represent a key nutrition-sensitive approach in preventing undernutrition. If implemented at large scale as part of public works and education programs, they offer a major opportunity to reduce water borne, faecally transmitted diseases, and thence malnutrition. The Lancet 2013 series highlighted

that achieving 100 percent coverage of the set of 10 nutrition specific interventions to address malnutrition will only lead a 20 percent reduction in stunting. The other 80 percent will be contributed by structural changes and nutrition-sensitive interventions, including WASH. WASH is, therefore, part of the set of actions required to achieve optimal foetal development and nutrition.

### Box 8: What is Nutrition Specific and Nutrition Sensitive Programming?

**Nutrition Specific Interventions and Programmes:** Interventions or programmes that address the immediate determinants of foetal and child nutrition and development – adequate food and nutrient intake (diets), feeding, caregiving and parenting practices, and low burden of infectious diseases.

**Examples:** Adolescent, preconception and maternal health and nutrition; maternal dietary or micronutrient supplementation; promotion of optimum breastfeeding; complementary feeding and responsive feeding practices and stimulation; dietary supplementation; diversification and micronutrient supplementation or fortification for children, treatment of severe acute malnutrition, disease prevention and management, and nutrition in emergencies.

**Nutrition Sensitive Interventions and Programmes:** Interventions or programmes that address the underlying determinants of foetal and child nutrition and development – food security; adequate caregiving resources at the maternal, household and community levels; and access to health services and a safe and hygienic environment – and incorporate specific nutrition goals and actions. Nutrition sensitive programmes can serve as delivery platform for nutrition specific interventions, potentially increasing their scale, coverage, and effectiveness.

**Examples:** Agriculture and food security, schooling, water, sanitation and hygiene (WASH), health and family planning services.

**Source:** Ruel, M., H. Alderman and Maternal and Child Nutrition Study Group. 'Nutrition-sensitive Interventions and Programmes: How Can They Help to Accelerate Progress in Improving Maternal and Child Nutrition?' – Lancet, 6 June 2013

## 2.4.3 ACCESSIBILITY AND AVAILABILITY OF WATER

Safely managed water under the SDG indicator framework comprises water accessible at premises, available when needed, and free from

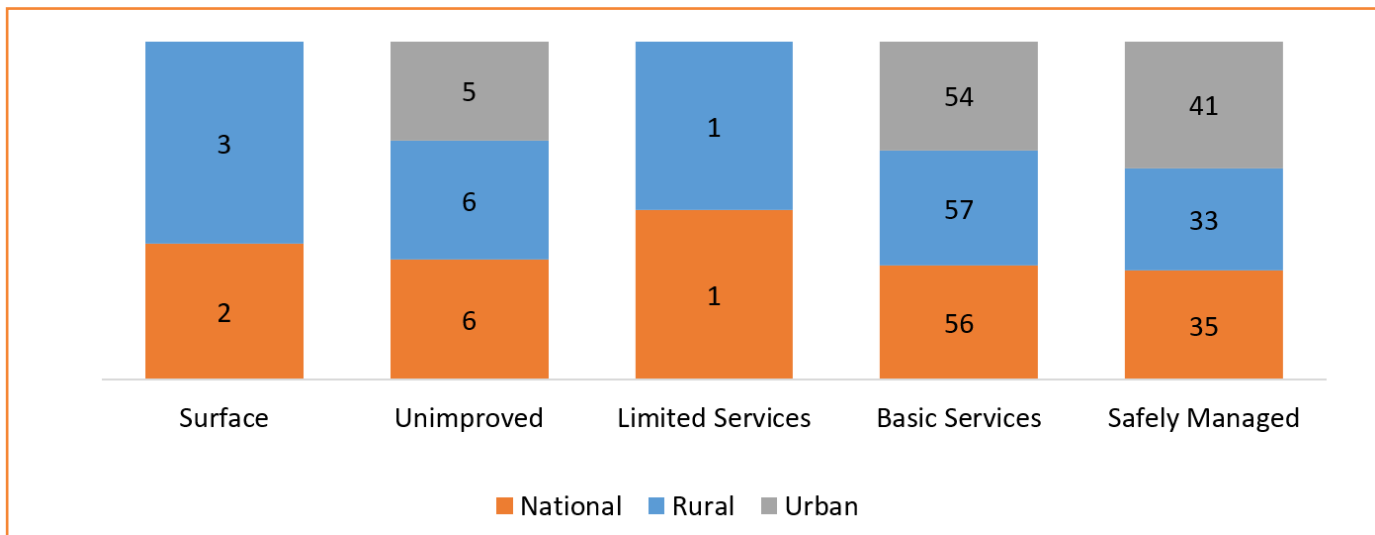
contamination. As per different data sources (e.g. JMP, PCRWR and PDHS), about 91 percent of the population in Pakistan has access to improved water sources (JMP, 2017). This largely consists of motorized pumps, hand pumps, piped water and closed wells. Around one-fourth (26.7 percent) of



the population in Pakistan has access to piped water. High reliance of drinking water in the form of hand pumps or motor pumps (self-provision of water) is leading primarily in Punjab and Sindh, as compared to Balochistan and KP where there is high reliance is on piped or surface water. The lack of water availability in existing piped water infrastructure further highlights the lack of

quality of service delivery. As per JMP estimates 2017, around 56 percent population of Pakistan has access to basic services while 35 percent has access to safe water. In figure 47, the description of drinking water sources as per the JMP 2017 report is given with overall, rural and urban estimates.

Figure 47: Access to Drinking Water Types (Percent)



Source: JMP Estimates 2017



**Box 9: WASH Definitions**

WASH typically refers to activities aimed at improving access to and use of safe drinking water and sanitation as well as promoting good hygiene practices (e.g. handwashing with soap at critical times) and interventions can include;

- **Water Quantity:** Provision of facilities and services that increase the amount of water available for drinking, cooking and maintaining good hygiene practices within households, health care facilities or schools; and reduce the time and effort required to collect the water.
- **Water Quality:** Improvement and protection of the microbiological or chemical quality of drinking water through water treatment and safe storage or by improving existing water sources to protect them from outside contamination. Improved water sources, as defined by the Joint Monitoring Programme (JMP) for Water Supply and Sanitation, include piped water on-site, public taps or standpipes, tube wells or boreholes, protected dug wells, protected springs and rainwater.
- **Sanitation:** Provision and use of facilities and services that safely dispose of human urine and faeces, thereby preventing contamination of the environment. Improved sanitation facilities are defined by the JMP are those that hygienically separate human excreta from human contact and include flush or pour-flush toilets to piped sewer systems, septic tanks or pits, ventilated improved pit latrines, pit latrines with slab, and composting toilets.
- **Hygiene:** Practice of handwashing with soap after defecation and disposal of child faeces, prior to preparing and handling food, before eating, and, in health care facilities, before and after examining patients and conducting medical procedures.

**Source: WHO, UNICEF, USAID, Improving Nutrition Outcomes with Better, Sanitation and Hygiene,**

**2.4.4 WATER QUALITY**

According to the Pakistan Council of Research on Water Resources (PCRWR), more than 60 percent of drinking water samples have been found to be unfit for drinking because of bacterial contamination. Similarly, only eight percent of the population reported using an appropriate treatment method for drinking water at household levels (PDHS 2012-13). JMP 2017 estimated that only around 35 percent of the population in Pakistan has access to water that was free from any bacterial contamination, and this is broken down into 33 percent in the rural areas and 41 percent in the urban areas.

**2.4.5 BASELINE FOR SAFELY MANAGED WATER**

Based on the national WASH data, a diagnostic study conducted by the Ministry of Climate Change (MoCC), and literature review, deliberations were held at national and provincial levels through SDG localization and technical collaboration with the JMP team. The improved water/accessible is 91 percent, available in premises when needed is 77.5 percent, basic service is 56 percent and free from contamination is 35 percent. The lowest figure of all three is free from contamination i.e. 35 percent which is the baseline figure of safely managed water in Pakistan. The national, provincial and regional break-up is given in Table 1. The worst rates of contamination-free water are found in Sindh and Balochistan.

**Table 1: Access to Water in Pakistan Baseline in SDGs Context in Pakistan (Percent)**

Area	Improved Water Source Accessible - percent	Available in Premises and when needed - percent	Free from Contamination -percent
Pakistan	91	77.5	35
Khyber Pakhtunkhwa	69	73.4	53
Punjab	95	82.7	35
Sindh	86	75.7	19
Balochistan	58	37	19
Gilgit Baltistan	79.5	63.6	NA
AJK	52	22	NA

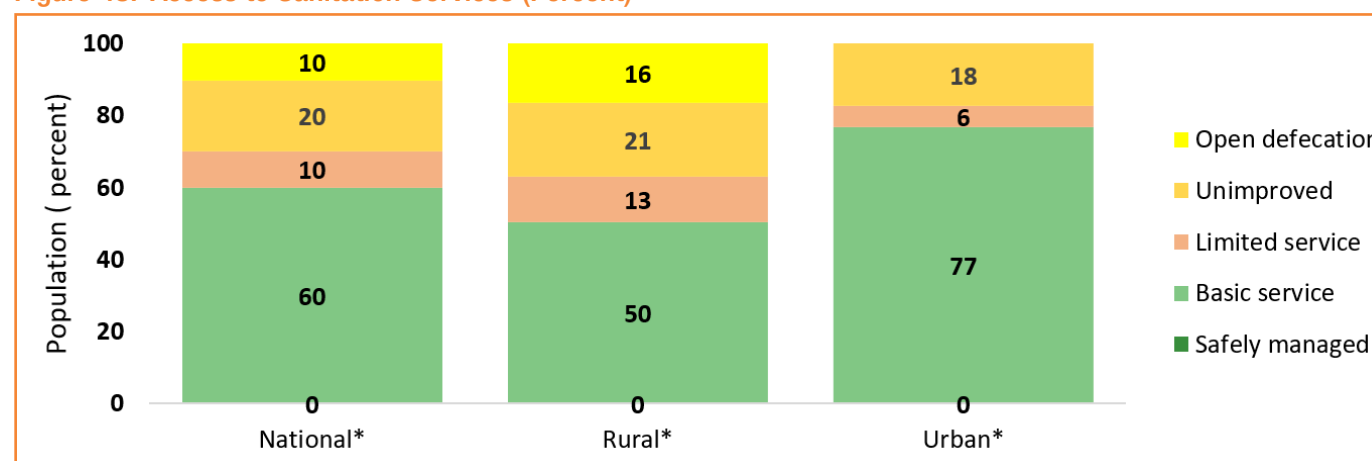
Source: Diagnostic Study conducted by the Ministry of Climate Change to Localize SDGs

### 2.4.6 SAFELY MANAGED SANITATION SERVICES IN SDGS CONTEXT

The newly defined safely managed sanitation includes improved sanitation (toilets), on-site and off-site disposal/treatment, along with handwashing with water and soap. According to

JMP estimates for 2017, about 60 percent households in Pakistan have basic sanitation services (appropriate type of latrines), 10 percent have shared latrines categorized as limited services, 20 percent fall under unimproved and around 10 percent live without any toilets and are practicing open defecation (figure 48).

**Figure 48: Access to Sanitation Services (Percent)**



Source: JMP Estimates, 2017

There are no reliable data about the on-site treatment as the septic tanks are not constructed or linked with the system as per the defined criterion. Generally, in urban areas sewage is collected through both piped sewers and open surface drains. The sewage is disposed to either

nearby water bodies, or to open depressions and fields. In areas where there is no collection system, soakage wells are used which often contaminate the groundwater. There is a high risk of disease outbreak in the neighbourhood where human excreta pass through open drains or open



places. There are few wastewater treatment plants in urban localities, and less than one percent of urban sewage is being treated in Pakistan. While such services do not exist in rural

areas of Pakistan except for pilot projects, which have not, been scaled up yet. Based on a sampled survey, JMP agreed to report this as zero because of non-availability of reliable data.

**Box 10: Sanitation and Handwashing Ladders**

**Handwashing Ladder**

**Basic:** Availability of a handwashing facility on premises with soap and water

**Limited:** Availability of a handwashing facility on premises without soap and water.

**No Facility:** No handwashing facility on premises.

**Sanitation Ladder**

**Safely Managed:** Use of improved facilities that are not shared with other households and where excreta are safely disposed in situ or transported and treated off-site.

**Basic:** Use of improved facilities that are not shared with other households.

**Limited:** Use of improved facilities shared between two or more households.

**Unimproved:** Use of pit latrines without a slab or platform, hanging latrines or bucket latrines.

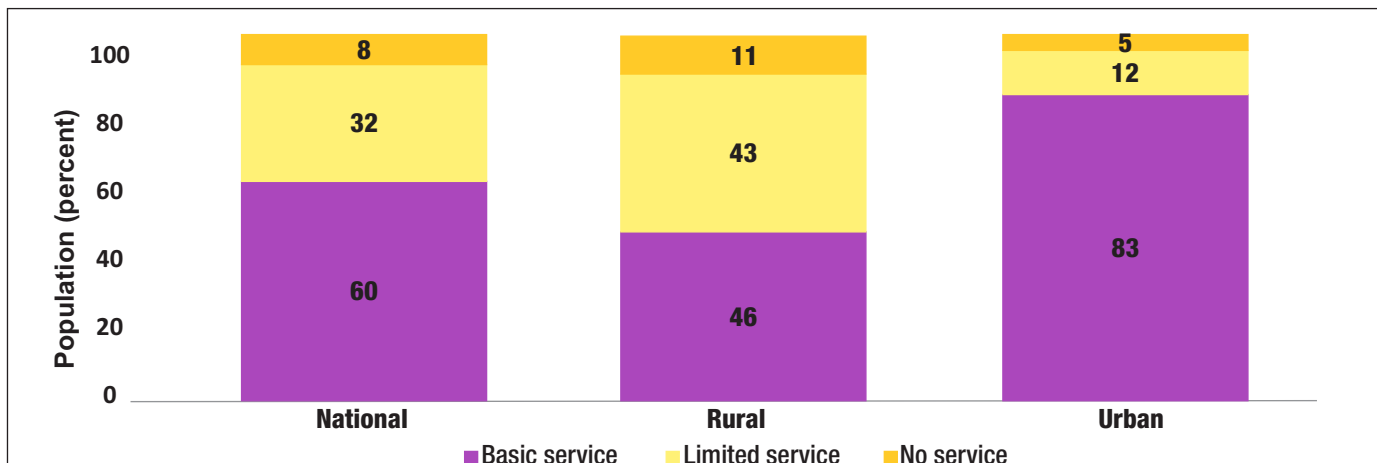
**Open Defecation:** Disposal of human faeces in fields, forests, bushes, open bodies of water, beaches and other open spaces, or along with solid waste such as household rubbish.

**Source: Joint Monitoring Programme (JMP) – WHO and UNICEF**

As per JMP 2017 estimates for Pakistan, around 60 percent of population indicated the practices of handwashing with water and soap, whereas, another 32 percent also reported to use water only for washing hands and 8 percent population

has no access to services to practice handwashing with soap during the critical times and practice personal hygiene. Rural and urban coverage is also indicated in figure 49 below.

**Figure 49: Hygiene Coverage (Percent)**



Source: JMP Estimates 2017

## 2.4.7 BASELINE FOR SAFELY MANAGED SANITATION

Though improved sanitation is 73 percent as per PSLM (it is 60 percent as per JMP 2017),

handwashing with soap is 60 percent, on-site and off-site treatment is not available or is less than one percent. For Pakistan, no data is available for safely managed sanitation. The provincial and regional break-up are given below in table 2.

Table 2: Baseline for Safely Managed Sanitation in SDGs Context Pakistan (Percent)

Area	No Toilet percent	Not Improved percent	Improved percent	Hand Washing with Water and Soap percent
Pakistan	15	22	63	60.0
Khyber Pakhtunkhwa	13	19	68	56.7
Punjab	17	8	75	72.6
Sindh	12	49	39	51.5
Balochistan	23	55	22	36.0
Gilgit Baltistan	7.7	10	82	22.4
AJK	5	20	75	

Source: Diagnostic Study conducted by the Ministry of Climate Change to Localize SDGs

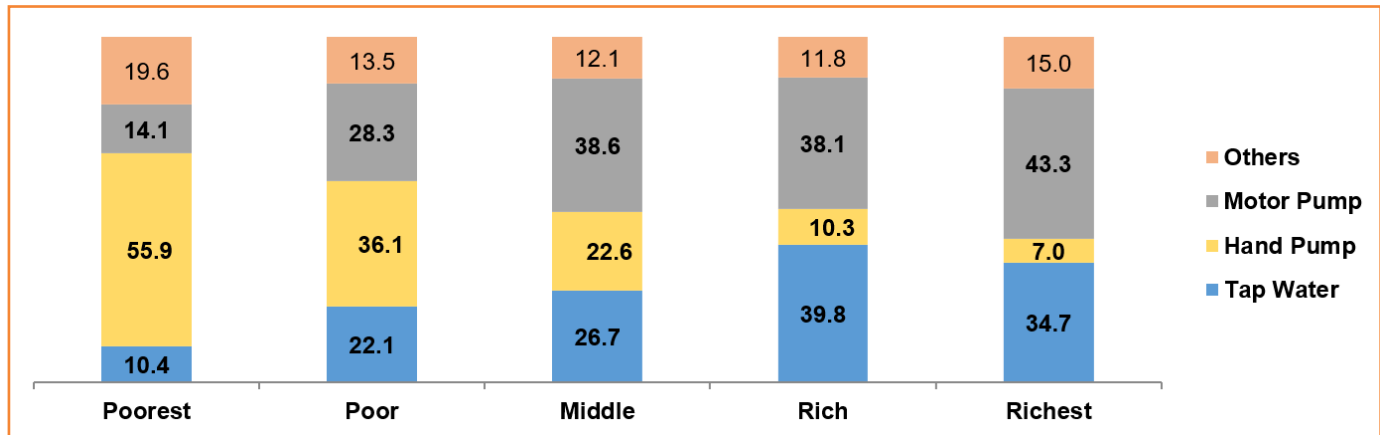
## 2.4.8 INCLUSION AND DISPARITIES

Access to safe and clean water and sanitation facilities is a basic right of all people, including the people who are the most marginalized and hard to reach in remote areas in different parts of the country. Equity in programmes may include special measures to address the needs of people who are discriminated and disadvantaged. Globally, recent data of improved water and sanitation shows disparities among different income levels, geographic locations, social groups and marginalized segments.

There are no significant disparities between rural and urban settings for access to improved water

sources. Pakistan has access to a piped water supply that stands around 26 percent. There is a significant difference between access to piped water in urban areas with coverage of 48 percent and rural areas with 13 percent respectively. Regarding the type of water supply, the below figure as per PSLM, 2014-15 data shows that only 10 percent of the poorest have access to piped water supply compared to 39 percent rich people and 35 percent of the richest groups. More than half of the rural population use hand pumps for extracting drinking water while 43 percent of the richest use motorized pumps (Figure 50).

Figure 50: Access to Drinking Water Sources in Pakistan (Percent)

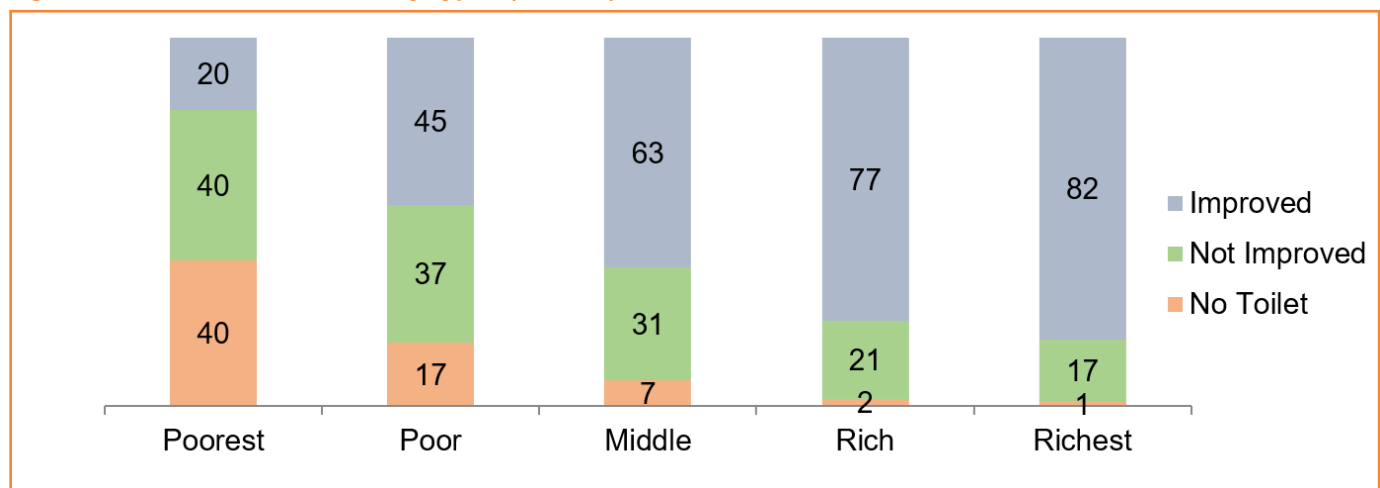


Source: PSLM 2014-15

Less than half of the rural population in Pakistan uses improved sanitation. A sharp contrast is also visible between income groups as only 20 percent of the poorest have access to improved sanitation compared to 82 percent richest. Similarly, 40 percent of the poorest have no toilets compared to only one percent of the richest as per PSLM 2015 as shown in Figure 51. Either latrines are often connected to open drains or unlined drains

leading to nearby fields or pit/dry raised latrines. Often sector investments are primarily used for infrastructures, such as drinking water supplies and urban wastewater treatment that is not likely to disproportionately benefit the poor especially when higher number of the poor reside in rural areas or slums of the urban areas, which are not, recognized settlements in the urban development.

Figure 51: Access to Sanitation by Types (Percent)



Source: PSLM 2014-15

Compared to 83 percent population of urban areas using water and soap for handwashing, only 46 percent population in rural areas practice handwashing with soap. This is also linked with

poverty and behavioural change as another 43 percent of the rural population reported to wash their hands with water only, or other cleansing materials.









Part 3

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**FOOD  
SECURITY:  
IMPROVING  
ACCESS TO  
FOOD**

# FOOD SECURITY : IMPROVING ACCESS TO FOOD



### 3. IMPROVING ACCESS TO FOOD

The second dimension of food security, access, has been recognized as particularly challenging in Pakistan, both in the sense of moving beyond an understanding of food security as being mainly about staple food availability and consumption at national level, and in the sense of improving access for all parts of society.

In 2018, the Federal Government of Pakistan adopted a new food security policy, with a vision “to ensure modern and efficient food production

and distribution system that can best contribute towards food security and nutrition, in terms of availability, access, utilization and stability”.

In view of this, Part 3 of the report features 'Improving Access to Food' as a special theme. The purpose is to highlight the different aspects of food accessibility and how they are having an impact on the ability to acquire food at the individual and household levels, as well as to describe some relevant policy and program initiatives in Pakistan to date.



The four aspects considered for improving access to food are:

1. Physical access
2. Economic access
3. Social access
4. Knowledge access

### 3.1 PHYSICAL ACCESS TO FOOD

Physical access to food is determined by domestic production, import capacity of the country, existence of food stock and food aid, transport, and lastly market infrastructure. As Pakistan does not possess enough capacity to import food, its food security mainly depends on domestic production. Therefore, Pakistan's food availability heavily depends on agriculture growth (particularly food crops and livestock) measured against its population growth. Like several other countries, Pakistan has historically utilized agriculture policies that were intended to increase supplies of staple foods (cereal crops), rather than the total food consumption basket.

#### 3.1.1 COUNTRY POPULATION, PAKISTAN'S FARMING PROFILE AND IMPLICATIONS ON ACCESS TO FOOD

Farm size and farming households' composition in terms of their population and the proportion of farmland operated by them needs to be considered before any discussion of physical access to food. Acreage and land per capita are also important for understanding the food supply

patterns from various production regions/provinces of the country, particularly for analysing, designing and developing of targeted agricultural R&D programs and plans, and for improving backward-forward market linkages, food supply and distribution across regions/provinces of the country.

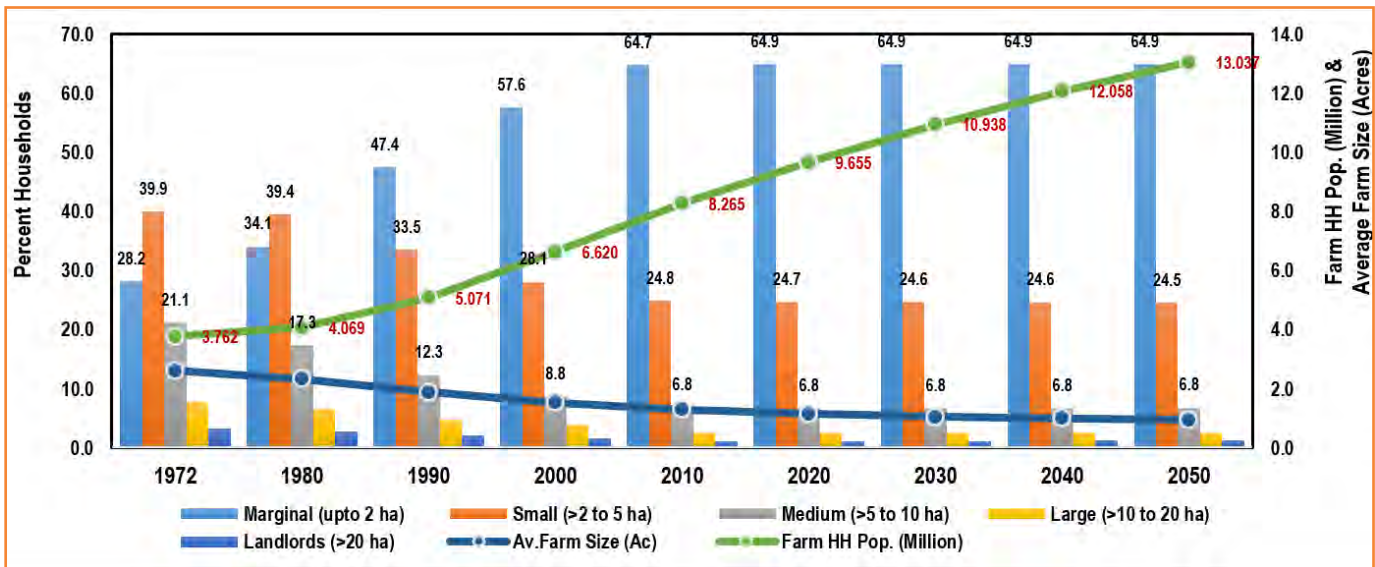
Population trends play an important role in the food security of the country. In the past 70 years, the country's population has increased almost six-fold, and is becoming more urbanised. Punjab was and will remain the most populated province followed by Sindh, Khyber Pakhtunkhwa and Balochistan of Pakistan. It is anticipated that the ratio of population found in Punjab and Khyber Pakhtunkhwa will decline in favour of Sindh and Balochistan provinces. The country's population may increase to 253 million by 2030, nearly 300 million by 2040 and 350 million by 2050. In other words, the country's population will increase by about 70 percent compared with 2019.

In the past four Agriculture Censuses, the absolute number of farming households has increased from 3.8 million in 1972 to 8.26 million in 2010. The average farm size halved during this time to 6.40 acres per farm in 2010, and at this rate, is expected to decline to 4.72 acres per farm by 2050 (i.e. by 26.25 percent compared to 2010). By farm size groups, the farming population are comprised of marginal (up to 5 acres), small (>5 to 12.5 acres), medium (>12.5 to 25 acres), large (>25 to 50 acres) and landlord categories (>50 acres) that constituted to the extent of 64.7 percent, 24.8 percent, 6.8 percent, 2.6 percent and 1.1 percent, respectively. The proportion of total agricultural lands operated by

these farm size groups are 19.5 percent, 28.8 percent, 17.7 percent, 12.7 percent and 21.5 percent, respectively. This implies that nearly 90 percent of farming households, belonging to small sized farming category, are cultivating

nearly 48 percent of agricultural land, whereas only 10 percent of total farming households are operating 52 percent of farmland in the country (Figure 52).

Figure 52: Farm size and Farm Number in Pakistan



Source: Agriculture Censuses of Pakistan from 1972 to 2010 and Further Projections Based on Inter-Census Growth Rates



**Box 11: Agro-Ecology and Crop Production Systems in Pakistan**

Pakistan has diversified agro-ecological zones, that have changed over the years due to climate. The ecologies of Khyber Pakhtunkhwa and Northern Areas range from semi-arid to humid. The Sindh province is primarily arid, while Punjab and Balochistan having arid to semi-arid ratios as 58 percent to 42 percent and 43 percent to 57 percent, respectively. By ecologies, 51.5 percent of total area is arid, 36.9 percent is semi-arid, 5.4 percent is sub-humid and 6.2 percent is mixed. About 41 million hectares is solely arid including about 11 million hectares comprises of deserts where the climate is hyper-arid. These ecologies suit to the production of nearly 100 field and horticultural crops --- more than 30 including 5 major and 25 minor crops, 30 vegetables (in decreasing order of their production in 2017-18 are: potato, peas, tomato, sugar beet, turnips, carrot, cauliflower, radish, okra, spinach, squash, brinjal (eggplant), cabbage, bitter gourd, cucumber, bottle gourd, pumpkin, arum, luffa, sweet potato, beans, long melon, field vetch, garden peas, fenugreek, lettuce, knol khol, lotus roots, purslane, ginger and many others), nearly 30 fruits (in decreasing order of their production in 2017-18 are: citrus, mango, dates, apple, guava, melons, banana, apricot, grapes, peach, almond, pomegranate, plum, jujube/'ber', persimmon, Chico, pear, walnut, papaya, coconut, falsa, loquat, cherry, jambolan/jaman, mulberry, litchi, fig, pistachio, olive and many others) and 5 condiments (onion, garlic, chilies, coriander, turmeric) and numerous medicinal herbs. The introduction of Green Revolution technologies that emphasized enhancing the production and diffusion of five major crops --- wheat, rice, cotton, sugarcane and maize --- led to the emergence of distinct crop rotation-based production systems in Pakistan, a needed shift.

The crop rotation are mainly cotton-wheat, rice-wheat, mixed cropping and horticultural crop-based systems. The other crop production systems attributed to their specific agro-ecologies with distinct cropping patterns are practiced in different regions of the country, like rainfed, coastal plus desert, and mountainous terrains. Some food items and their value-added forms produced in these regions are also marketed in the entire country for their consumption.

According to the feasibility studies by the GCF project, it was noticed that the projected increase in temperature and shift in the precipitation pattern would affect major crops like wheat, rice, sugarcane and cotton, and therefore appropriate climate resilient technology packages to be adapted.

The GCF project will take steps to foster the development of new production related services to facilitate adaptation. In particular, the project will inform and train input companies, input processors and other buyers to enable them to adapt their productive or their sourcing strategies to climate change.

**Source: Farooq, 2015a, FAO-GCF Funding Proposal on Transforming Indus Basin with Climate Resilient Agriculture and Water Management.**



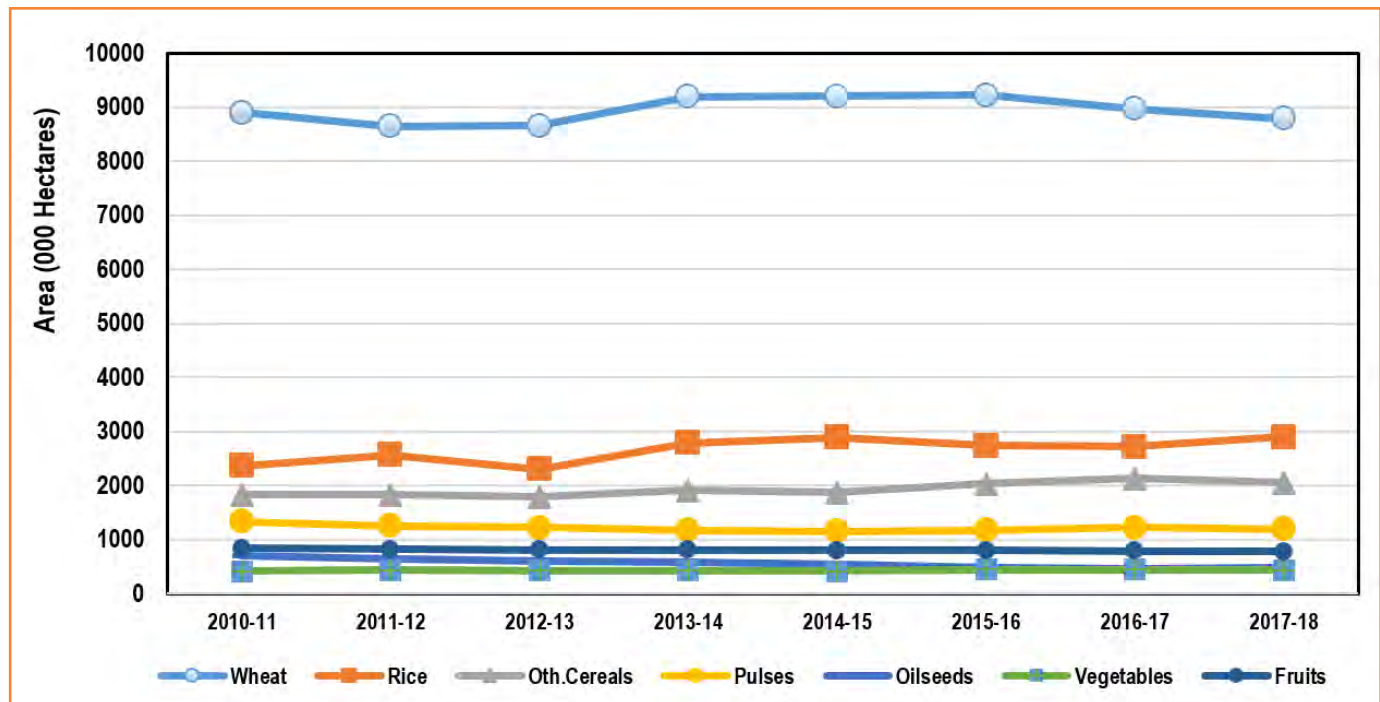
### 3.1.2 PHYSICAL ACCESS TO FOOD IN PAKISTAN

Regarding physical access to food, three indicators can be used: i) trends in the production of food groups at the national and provincial level and ii) levels of self-sufficiency in production of various food groups across provinces in Pakistan; and iii) per capita food production across provinces and production systems in Pakistan.

Crop production in Pakistan revolves around the production of cereals (mainly wheat followed by rice and other cereals like maize). Though wheat is the most commonly consumed staple food item

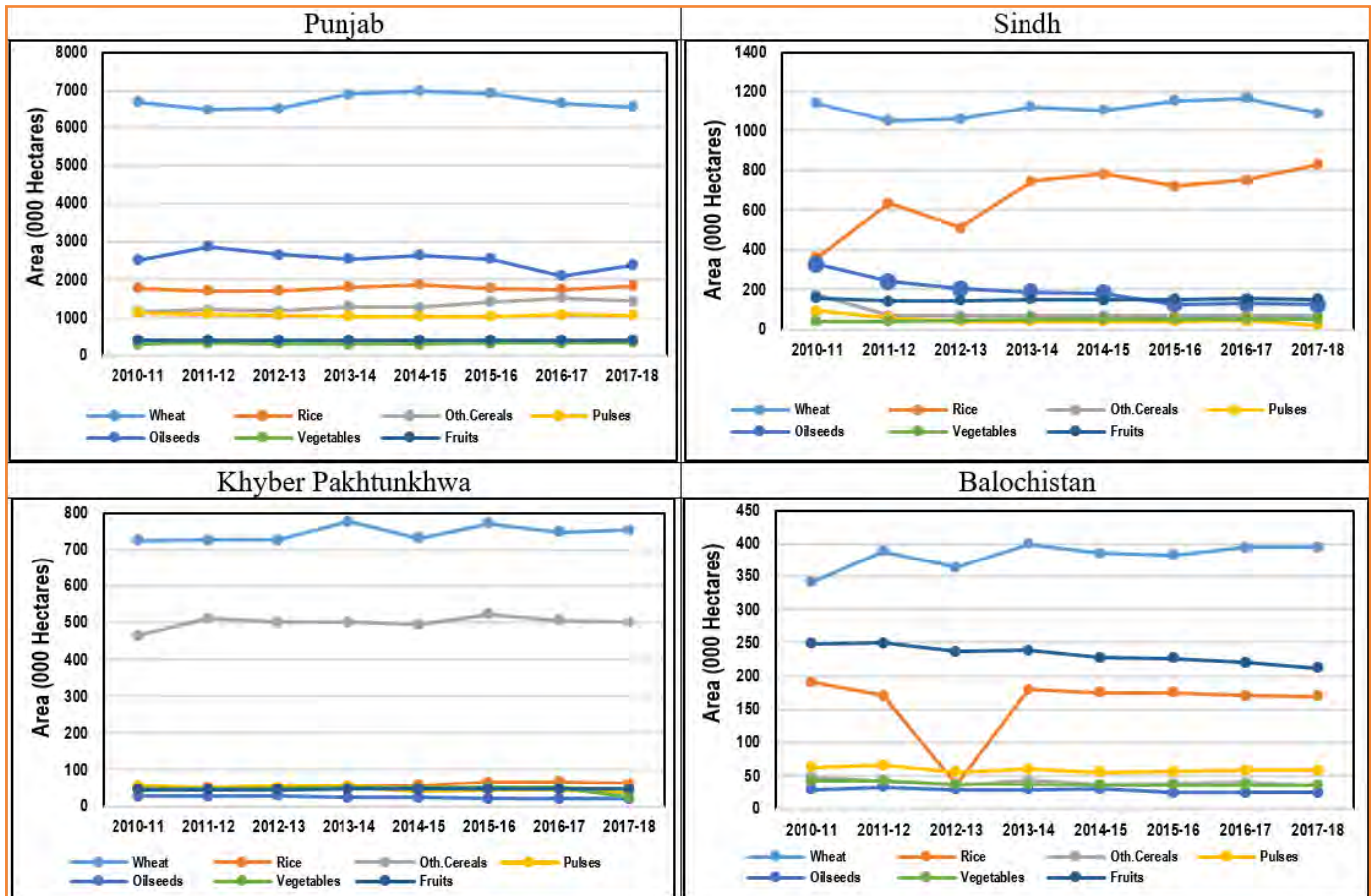
across all four provinces of the country, it is mainly produced in Punjab and Sindh provinces. Rice is the second major cereal, grown mostly in Punjab and Sindh provinces. In Pakistan, 25.5 Million hectares of land is available for farming purposes, of which nearly 9 Million hectares (over 35 percent) is used for wheat cultivation during winter. About 90 percent of wheat cropland cultivation is irrigated, and during the wheat season, major water competitive crops are sugarcane, potato and citrus. Trends in area under various food crops among the provinces and provincial shares for each food crop/groups are depicted in figures 53-58.

Figure 53: Trends in Area Under Various Food Crops/Groups in Pakistan (000,Hectares)



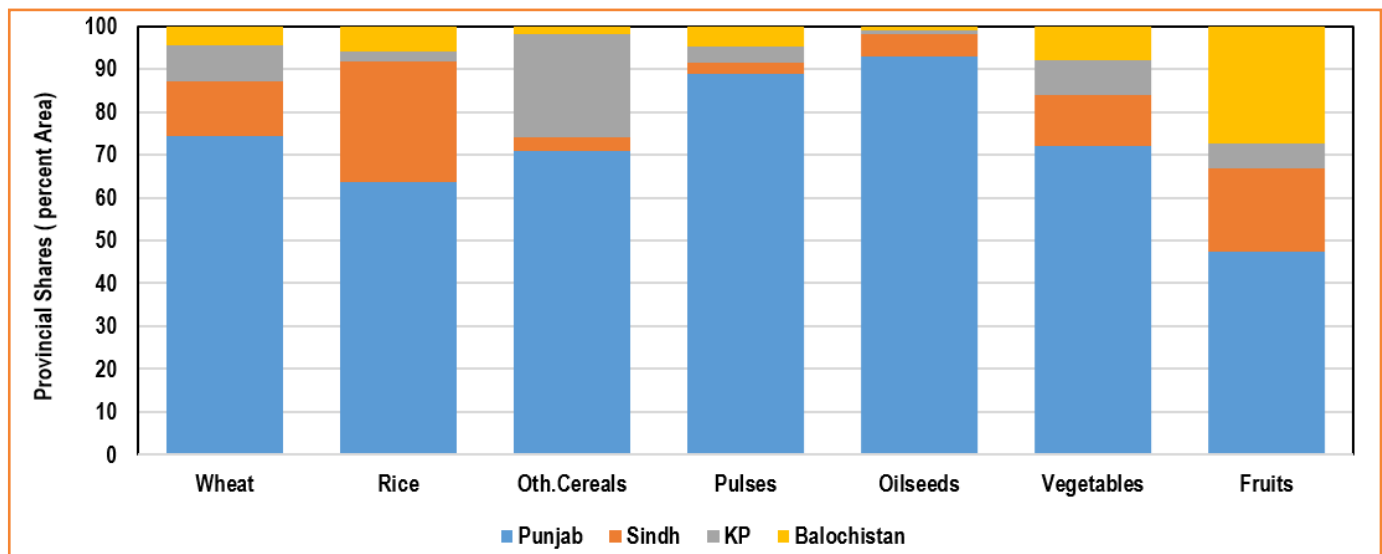
Source: Agricultural Statistics of Pakistan, MNFSR

Figure 54: Trends in the Area under Various Food Crops/Groups in Pakistan (000, Hectares)



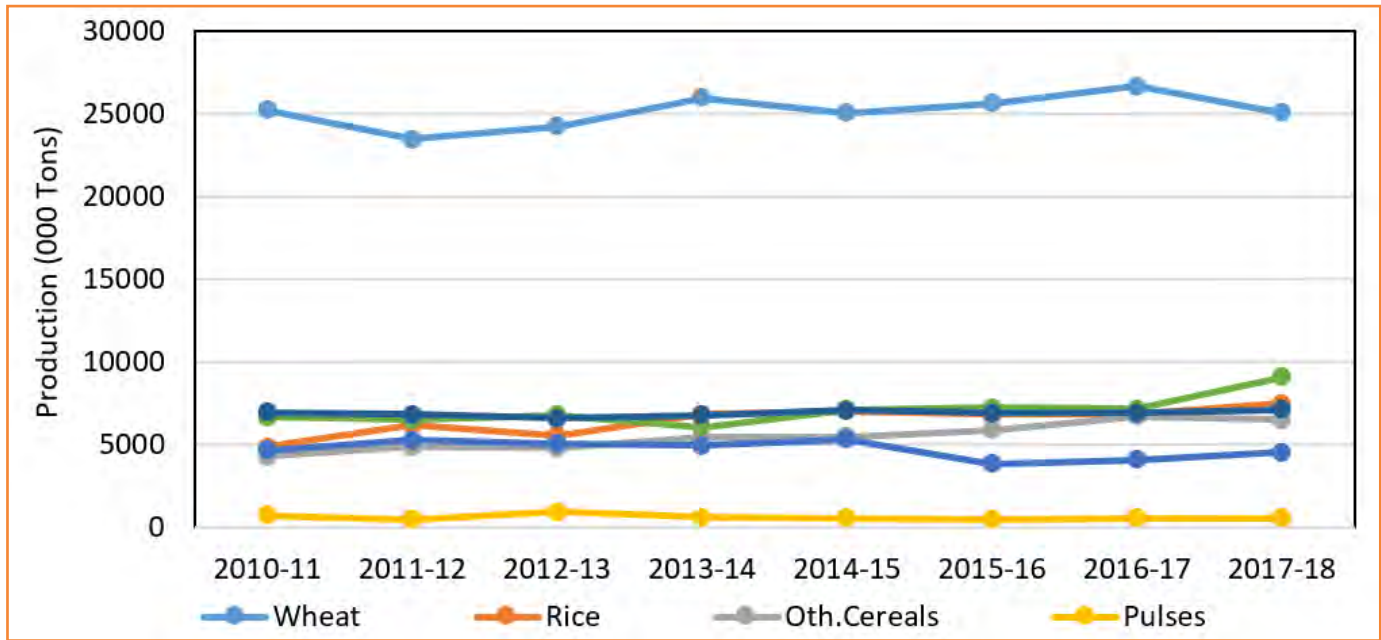
Source: Agricultural Statistics of Pakistan, MNFSR

Figure 55: Provincial Shares in Area Under Various Food Crops/Groups in Pakistan (Percent)



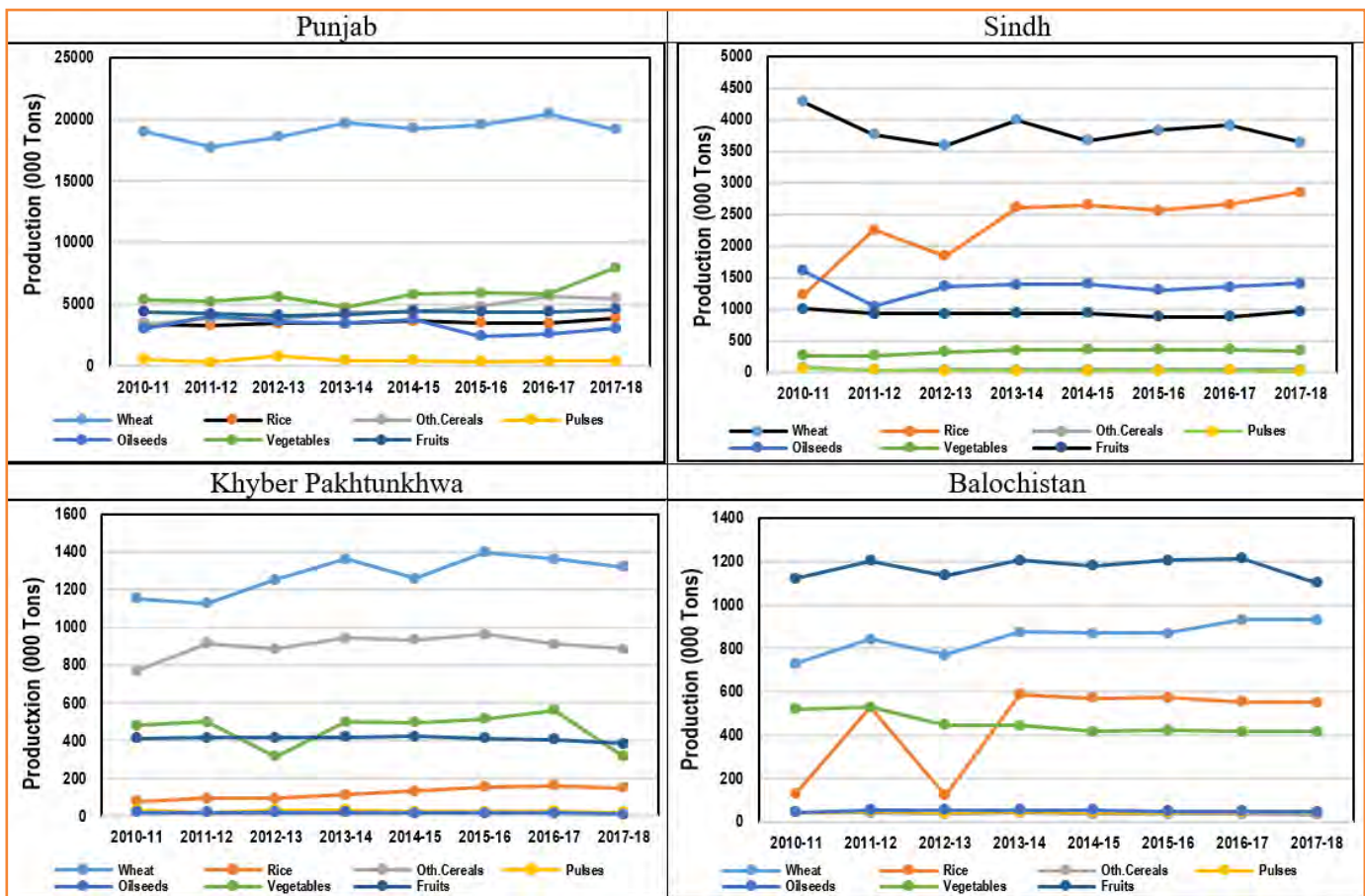
Source: Agricultural Statistics of Pakistan, MNFSR

Figure 56: Trends in the Production of Various Food Crops/Groups in Pakistan



Source: Agricultural Statistics of Pakistan, MNFSR

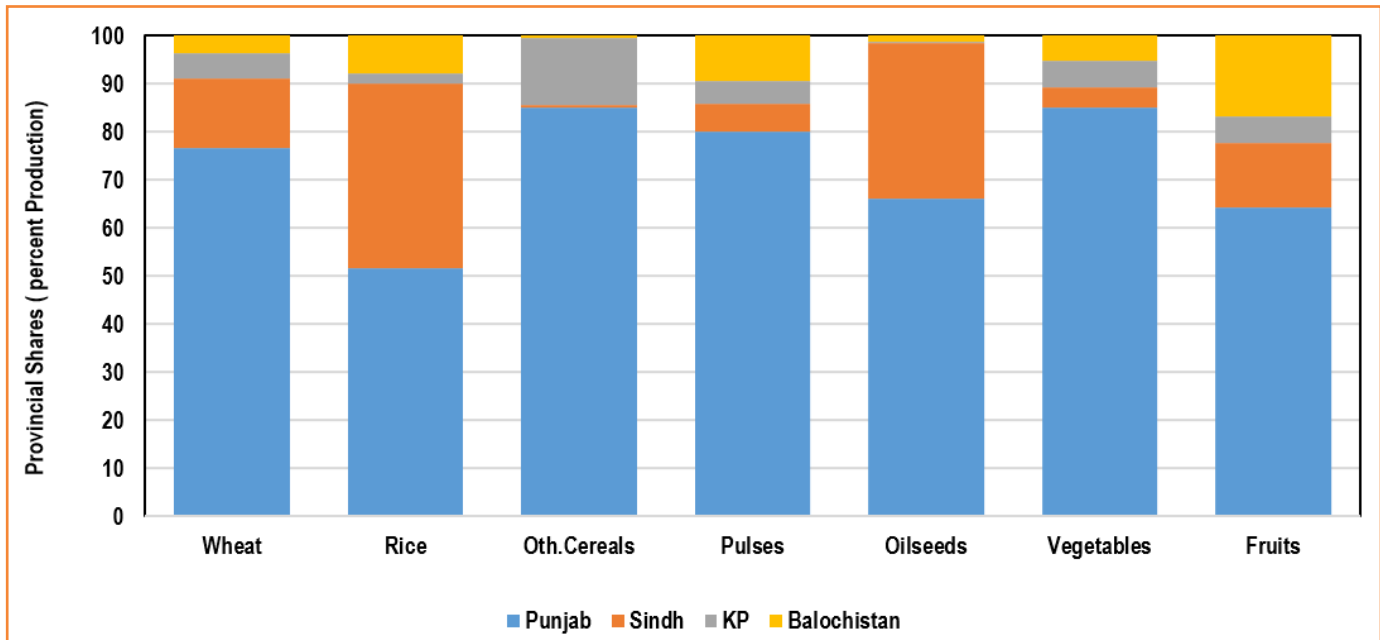
Figure 57: Trends in the Production of Various Food Crops/Groups by Provinces in Pakistan



Source: Agricultural Statistics of Pakistan, MNFSR



Figure 58: Provincial Shares in the Production of Various Food Crops/Groups in Pakistan



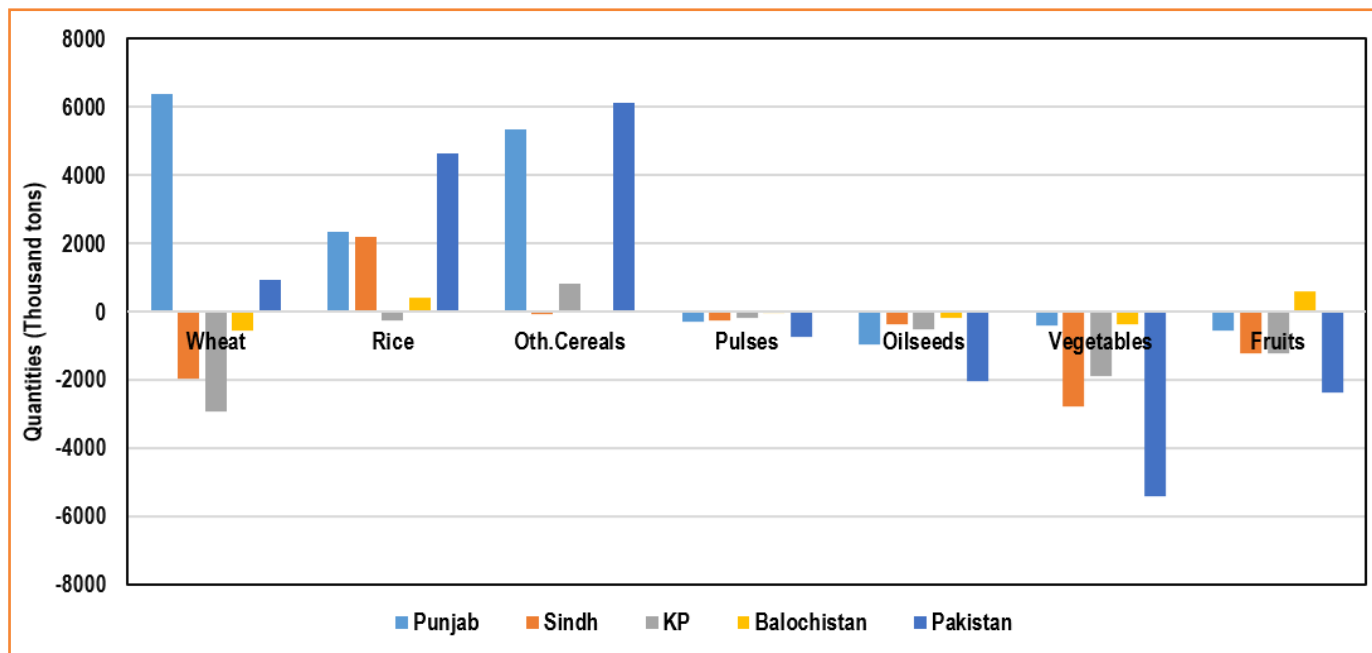
Source: Agricultural Statistics of Pakistan, MNFSR

Pakistan is net-surplus producing in wheat, rice and other cereals. However, it is net-deficient in producing pulses, oilseeds, vegetables and fruits (Figure 59). Across provinces, Punjab is significantly net-surplus in producing wheat and other cereals; Punjab and Sindh are net-surplus in rice production. All provinces of Pakistan are net-deficient in yielding pulses, oilseeds and vegetables. In fruits, only Balochistan is net-surplus in production. This picture partly explains

why the prices of vegetables and fruits remain unstable, generally, high in slack and low in peak crop seasons across the consumer markets of the country; although a good road, transport connectivity network exists across the provinces. Long distances sometimes reinforce rising prices – particularly when there is seasonal production shortage of some commodities manifested – making both physical and economic access more difficult for the consumers.



Figure 59: Product Surplus Status of Provinces in Selected Food Crops/Groups



Source: Computations using Agricultural Statistics of Pakistan, MNFSR



The year-wise trends in per capita availability of various food crops/groups (in KGs/annum) in Pakistan are presented in Table 3 below. Per capita availability of wheat, pulses, milk, fruits and vegetables has declined between 2006-07 and 2017-18, with fluctuations during this period, whereas it improved in the case of rice, edible oil

and ghee, meat and sugar. The growing population and other factors such as climate related disasters, low production and low imports might have contributed to reduction/fluctuation in the per capita availability of these food crops/groups.

**Table 3: Per Capita Availability of Food Crops/Groups in Pakistan (kgs/annum)**

Years	Wheat	Rice	Pulses	Edible Oil & Ghee	Milk	Meat <sup>27</sup>	Sugar	Fruits & Vegetables
2006 -07	114.5	12.5	6.7	13.4	114.4	16.4	25.5	43.8
2007 -08	135.8	15.0	7.1	13.5	114.4	16.6	29.2	47.0
2008 -09	127.3	23.2	5.5	12.6	115.6	16.9	19.1	44.2
2009 -10	125.7	13.2	6.6	11.6	117.2	17.3	20.6	41.6
2010 -11	109.8	4.9	6.7	13.0	112.3	16.8	28.7	40.1
2011 -12	124.6	13.8	6.5	13.1	96.5	18.1	25.1	39.4
2012 -13	120.5	17.8	6.3	13.2	97.6	18.6	27.0	37.8
2013 -14	125.3	14.2	5.2	12.6	121.9	19.0	29.2	35.3
2014 -15	122.0	14.2	4.9	12.4	122.4	19.3	26.4	38.6
2015 -16	116.5	11.0	4.9	14.2	170.5	20.0	25.6	36.7
2016 -17	119.1	14.6	5.7	14.6	102.6	20.8	33.8	36.9
2017 -18	101.2	14.0	5.6	14.5	100.0	21.1	34.3	39.3

Source: Computations using Agricultural Statistics of Pakistan, MNFSR

27. Meat includes beef, mutton and poultry meat



**Box 12: Wheat Policies in Pakistan**

Wheat is a staple diet and it contributes most of the food calories of Pakistan population. Resultantly most of the country's agricultural resources (land, water, and inputs) go to cultivating wheat all over Pakistan in the winter season. Wheat has had a special place in the public policy of the Government of Pakistan.

The cornerstone of the policy is to provide price control by ensuring cheaper wheat flour to the consumer and as well as reasonable prices to the wheat-growers. Although agriculture is a provincial subject, for the wheat crop federal government itself still takes a policy decision and oversees its implementation. Before the start of the wheat cultivation season, the federal government/cabinet, announce wheat support price and procurement targets for the ensuing season. This support price, however, is announced taking into consideration of analysis carried out by the Agriculture Policy Institute. For the implementation of this policy decision, provincial food departments, Pakistan Agricultural Storage, and Services Corporation (PASSCO), a federal agency, procures wheat directly from farmers. Generally, procurements are kept at around 20 percent of production. This is intended to directly benefit the farmers it reaches, and stabilise the market. Both food departments and PASSCO have a storage capacity of over 4 million tons. Procurement operations run for a couple of months in April and May until the achievement of procurement targets. The procured wheat is stored for a few months and then released to flour mills on subsidized rates based on quota issued to each flour mill. The government has a price monitoring mechanism through which reasonably priced flour is ensured to the citizens of Pakistan.

Recently, the impact of the wheat policy has begun to be reconsidered, both in terms of the nutritional impacts of subsidising and encouraging an imbalanced diet dominated by wheat, as well as with regards to whether the budgetary allocations that go to the wheat policy could be redirected to other priority policy and program areas in the budget, for example WASH, education, health services and knowledge to address climate change for small holder farmers, men and women, that, as drivers of food insecurity and malnutrition, deserve more emphasis.

### 3.1.3 TRANSPORT AND COMMUNICATION INFRASTRUCTURE

Presently no country in the world is fully reliant on its domestic production, due to different factors of production and food choices of the people. Similarly, not all regions of Pakistan produce enough food of sufficient variety to support local people. Punjab is a food basket of the country and has a good production base, followed by Sindh province. All other regions are deficient for staple foods i.e. wheat and other kitchen food items. To ensure food for all, good

transport and communication infrastructure are necessary so that people can access the food in timely manner.

Over time, Pakistan has improved its infrastructure, which includes roads, railways, ports and shipping, aviation and logistics services. Road transport, with a share of 96.7 percent of freight traffic, dominates the sector. The railways, which were a cheap and effective means of transportation, lost their competitiveness to road transport, and are now left with only 3.32 percent of freight traffic. This imbalance is not only over-burdening road systems, causing congestion,

creating pollution, damaging roads, but also contributing towards the high cost of transportation (Draft 12th Five Year Plan 2018-23).

In addition to the existing private setup, the

government of Pakistan has separate specialized arrangements to transport wheat to the Gilgit-Baltistan region, which is distantly located from the production hub and difficult to access due to rugged terrain and uncertain weather.

**Table 4: Overview of Transport and Communication of Pakistan**

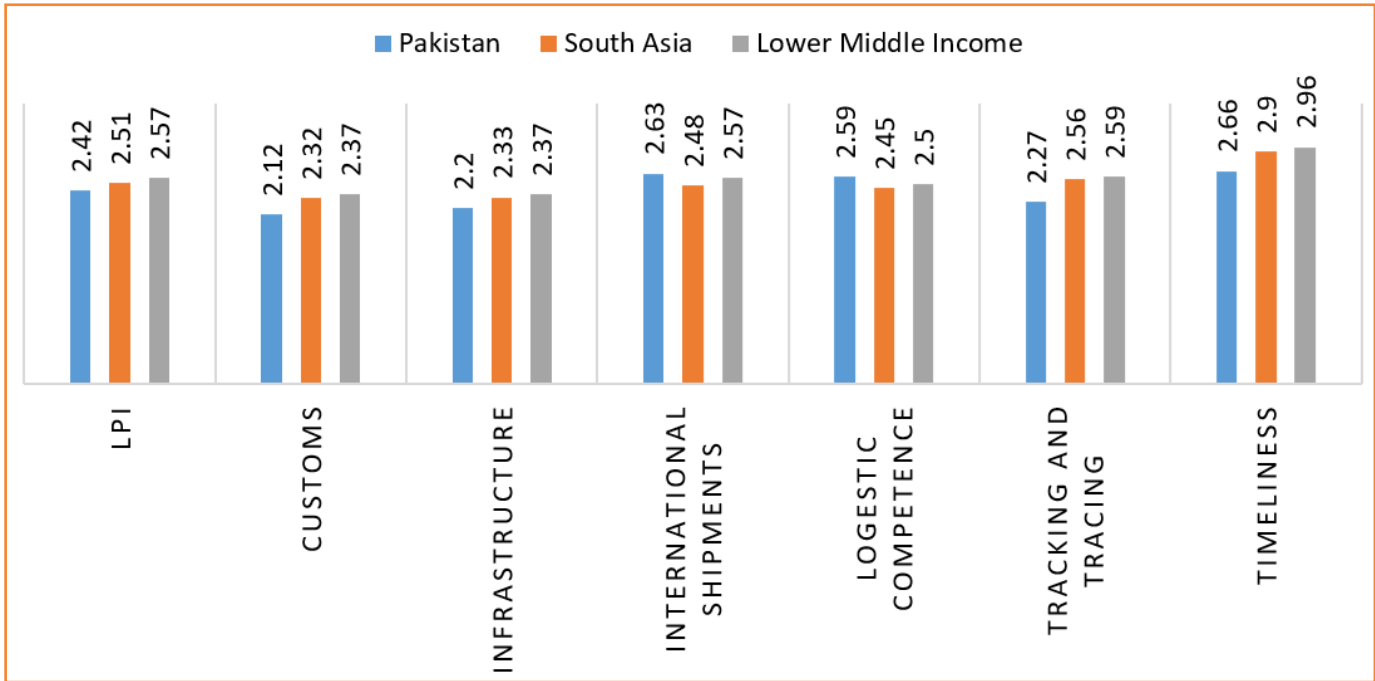
<b>Roads (Length of network):</b>	268,935 km (Feb 2018) with 73.4 percent high type
<b>National Highway &amp; Motorways length:</b>	12,131 km
<b>Motorways Length:</b>	2,362 km
<b>Railways:</b>	
Locomotives (Dec 2017)	481 Nos.
Route Length	7,791 km
Freight wagons	16,436
No. of passengers carried in 2016-17	52.4 million
Freight carried in 2016-17	5.6 million tons
<b>Ports &amp; Shipping:</b>	
Cargo handled at Karachi Port in 2016 -17	52.5 million tons
Cargo handled at Port Qasim in 2016-17	37.4 million tons
Cargo Handled at Gwadar Port in 2016 -17	80,400 tons
<b>Aviation:</b>	
PIA fleet (2017) – No. of Planes	37
Route Km (2017)	360,937
Passengers carried	5.342 million

Source: Economic Survey of Pakistan 2017-18

The World Bank publishes the Logistic Performance Index (LPI) every year to compare the countries in the world based on six indicators, which include customs, infrastructure, international shipments, logistics competence, tracking & tracing and timeliness. It is an

interactive benchmarking tool, which helps to identify the challenges on trade logistics and provide an opportunity to countries to improve the performance. The position of Pakistan is not very good compared to the South Asian region as well as lower-middle-income countries. (Figure 60)

Figure 60: Logistics Performance Index of Pakistan



Source: World Bank Logistics Performance Index (LPI) Report, 2018

### 3.1.4 MARKET INFRASTRUCTURE

To make food products physically available, market infrastructure is needed along with the transport infrastructure. Agriculture marketing is a provincial subject in Pakistan. Legal framework for the marketing of agricultural commodities has evolved over time in accordance with change in the production, information dissemination, transportation and consumer preferences. Generally, the protection of the farmers from exploitative practices of intermediaries has been an important policy concern and has been provided in legislation but not practiced much.

Initially, produce markets were designed as places where prices were set through auction by market agents for a commission. In return, these markets were obliged to provide the infrastructure and regulatory environment. With the passage of time, however such markets did not remain

efficient for consumers and farmers. For producer particularly these markets transformed into a trap where taxes are charged and services in return become very poor. Agricultural markets are being run with old colonial legislation called agricultural produce market act 1939 and with little amendments since then though some efforts were made in the various provinces, but implementation could not reach the desired level.

Very recently few changes were observed in legislation in Punjab (The Punjab Agricultural Marketing Regulatory Authority Act, 2018), Sindh (The Sindh Wholesale Agricultural Produce Markets Act, 2010), Balochistan (The Balochistan Agriculture Produce Market Act 1991) and Khyber Pakhtunkhwa (Khyber Pakhtunkhwa Agricultural and Livestock Produce Markets Act, 2007). Under this arrangement, the situation of agriculture markets and market committees is given in table 5.



**Table 5: Number of Markets and Market Committees (MCs) in Pakistan**

Province	No. of MCs	No. of Markets			No. of markets	
		Grain	Food & Vegetables	Total	Public	Private
Punjab	135	140	122	262	233	29
Sindh	71	13	21	34	27	7
KPK	2	5	31	36	2	34
Balochistan	12	2	10	12	12	-
Islamabad	1	-	1	1	1	-
<b>Total</b>	<b>221</b>	<b>160</b>	<b>185</b>	<b>345</b>	<b>280</b>	<b>65</b>

Source: Rana MA 2014

It seems that an expansion in market infrastructure has occurred over time, but not commensurate with the increase in the value of

agriculture commodities. Data from Punjab explain the increase in produce and opening of the new market over the years (Table 6 to 7).

**Table 6: Public Markets in Punjab by Year of Establishment (Numbers)**

Duration	Grain	New Markets			Relocated	Total
		Food & Vegetables	Both	Feeder		
1939 -62	107	62	-	-	-	169
1963 -70	1	-	1	-	1	3
1971 -80	2	1	2	7	1	13
1981 -89	1	2	-	-	-	3
1990 -99	1	5	-	-	3	9
2000 -09	3	3	-	-	16	22
2010 -17	1	3	-	-	10	14
<b>Total</b>	<b>116</b>	<b>76</b>	<b>3</b>	<b>7</b>	<b>31</b>	<b>233</b>

Source: Rana MA 2014

**Table 7: Private Markets in Punjab by Year of Establishment (Numbers)**

Year/period	New Markets				Relocated	Total
	Grain	Food & Vegetables	Both	Feeder		
1939-62	-	-	-	-	-	-
1963-70	-	-	-	-	-	-
1971-80	-	-	-	-	-	-
1981-89	1	-	-	-	1	2
1990-99	-	-	-	-	-	-
2000-09	-	4	-	-	-	4
2010-17	7	15	1	-	-	23
<b>Total</b>	<b>8</b>	<b>19</b>	<b>1</b>		<b>1</b>	<b>29</b>

Source: Rana MA 2014

### 3.2 ECONOMIC ACCESS

From the economic access perspective, food security prevails when food is available, and people can afford to buy it in sufficient quantities. This leads to the recent development of the concept of food insecurity. Food insecurity prevails when there is insufficient availability of food (i.e. local production + import) and even if food is available, but people are unable to afford or to use, in time.

Availability<sup>28</sup> and access<sup>29</sup> are two important dimensions of food security. Availability indicates year-round sufficient quantities of quality/nutritious food available to all individuals in the country. As mentioned earlier, food availability in any country mainly depends on the growth performance of agriculture (particularly the crop and livestock sectors) against its

population growth. However, agricultural policies of developing countries, generally, revolve around increasing supplies of staple foods in the country, rather than the total food consumption basket. Pakistan is no exception. The country has made significant progress in enhancing food production to feed the growing population. However, household level food security and nutrition remained a significant concern with numerous issues related to economic access to food, its utilization and coping with natural disasters affecting food production and its access to the poor. Lack of purchasing power<sup>30</sup> (or high market prices of food) deprives a person from access to food even though food is available. Economic access to food in a country can be examined from the perspectives like trends in prices of important foods, food price index and trends in per capita availability of various food groups.

28. The availability of sufficient quantities of food of appropriate qualities, supplied through domestic production and marketing systems coupled with timely imports (in case of shortages) and food aids (if any). This is often confused with food security, though it is important part of food security, but not all. The question is not only that food is available in a country, but also whether it is available at right place, at the right time and there must be a mechanism for ensuring that food of the right quality made available.

29. Access by individuals to adequate resources (entitlements) to acquire appropriate foods for a nutritious diet. These resource need not be exclusively monetary but may also include traditional rights, e.g. to a share of common resources. Entitlements are defined as the set of all those commodity bundles over which a person can establish command given the legal, political, economic and social arrangements of the community in which s/he lives.

30. Inadequate livelihood opportunities to the working age group of the people, particularly in rural areas are partly responsible for household food and/or nutrition security.

**Box 13: Land Access and Tenure Security – an important element of economic access and stability**

Access to land, including security of tenure for those who do not own land, is a fundamental determinant of food security in an agriculture-based rural economy. In Pakistan, there are a variety of arrangements whereby small farmers and landless men and women may work on the land of larger landowners, either as sharecroppers, tenants or agricultural labourers. In some areas the practice is that labourers may be at least partly paid in wheat or other staple grains, rather than cash. Large landowners may also follow a custom of setting aside some area of land for their sharecroppers to self-produce food such as vegetables for immediate needs, although with the recent focus on cash crops, this practice is declining. Sharecropping involves the sharecropper farmers and landowners sharing both inputs and outputs to the production system via customary arrangements that are reflected in tenancy legislation in the respective province – this is especially prevalent in Sindh and to a lesser extent in Punjab. The sharecropping system is utilised on acreages of varying sizes from quite small farms of less than 12.5 acres up to very large holdings of above 500 acres.

With the change in agriculture practices required to adapt to climate change and modernize the sector, challenges have increased for sharecroppers in Pakistan, particularly regarding the transition to mechanisation and to widespread use of fertilizers and pesticides. These challenges include debt accumulation due to the higher cost of inputs, land preparation and harvesting operations; greater health risks from exposure toxic agro-chemicals; and uncertainty in yields due to the scarcity of water, changed agro-ecological zones, inadequate access to knowledge and more frequent natural disasters. Compounding these production related challenges are governance issues and a lack of documentation of customary rights, and the details of inputs paid, leading to uncertainty in income, insecure land access from year to year, and ultimately, food insecurity. Lack of documentation is partly related to the still high illiteracy levels and social inequality found in rural society. At a local level, land tenure insecurity for sharecroppers discourages improvements to sustainability of land and water management practices used in the cropping system, because the incentive for a long term approach also requiring some investment is missing. Although a number of reforms to the land access system have been attempted by governments during the history of Pakistan, these have only had limited success, contributing to the persistence of food insecurity.

Good governance of land tenure has implications for social stability, improved human development and a fairer society; more efficient provision of government services with lower risk of malpractice; improved delivery of infrastructure; as a basis for a broader, fairer tax base for government; better care for the environment; and improved resilience and preparedness for natural disasters and climate change. Beginning in 2013, FAO has led some efforts in Pakistan to improve land tenure governance by drawing on the internationally recognised Voluntary Guidelines for Responsible Governance of Tenure of Land, Fisheries and Forestry in the Context of National Food Security that were developed by FAO and agreed by the Committee on World Food Security in 2012. In Sindh, FAO has been trialling an innovative approach of assisting landowners and sharecroppers to have written versions of their customary agreements, along with information and training on climate-resilient approaches to crop production and on farm water management. Potentially, such agreements, if combined with improvements to the administration of the Sindh Tenancy Act, represent an important step towards improved food security for the large number of vulnerable sharecroppers in the province as well as the opportunity for landowners to benefit from a modernised food and agriculture production system.

**Source: FAO, Strategy for Improved Land Tenancy in Sindh**

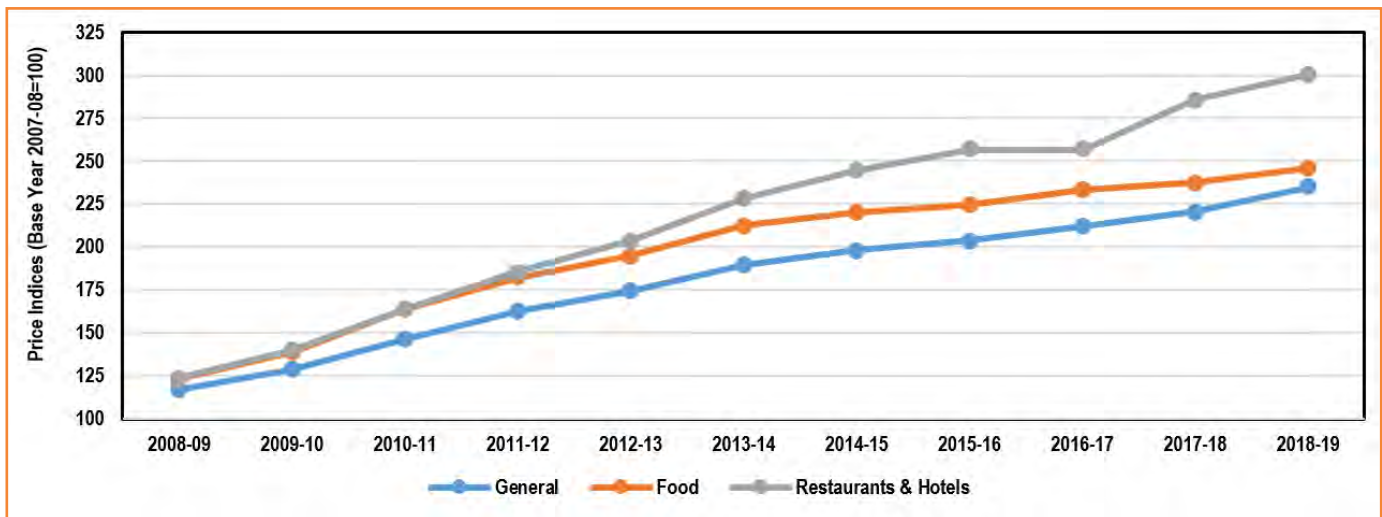


### 3.2.1 TREND IN PRICE INDICES IN PAKISTAN

Trends in general price index, food price index and index of restaurants and hotel groups are depicted in Figure 61, which clearly shows a regular rise for the last ten years. All three indices under consideration were pretty close to one another during 2008-09, but the price indices

for general and food groups, though rising, but remain close to one another, while restaurants and hotel groups rose faster than its counterparts especially beyond the 2016-17 year. This indicates that consuming food away from home is still a luxury in Pakistan and not an integral part of food consumption patterns but steadily picking up by high-income group consumers.

Figure 61: Trend in Price Indices in Pakistan



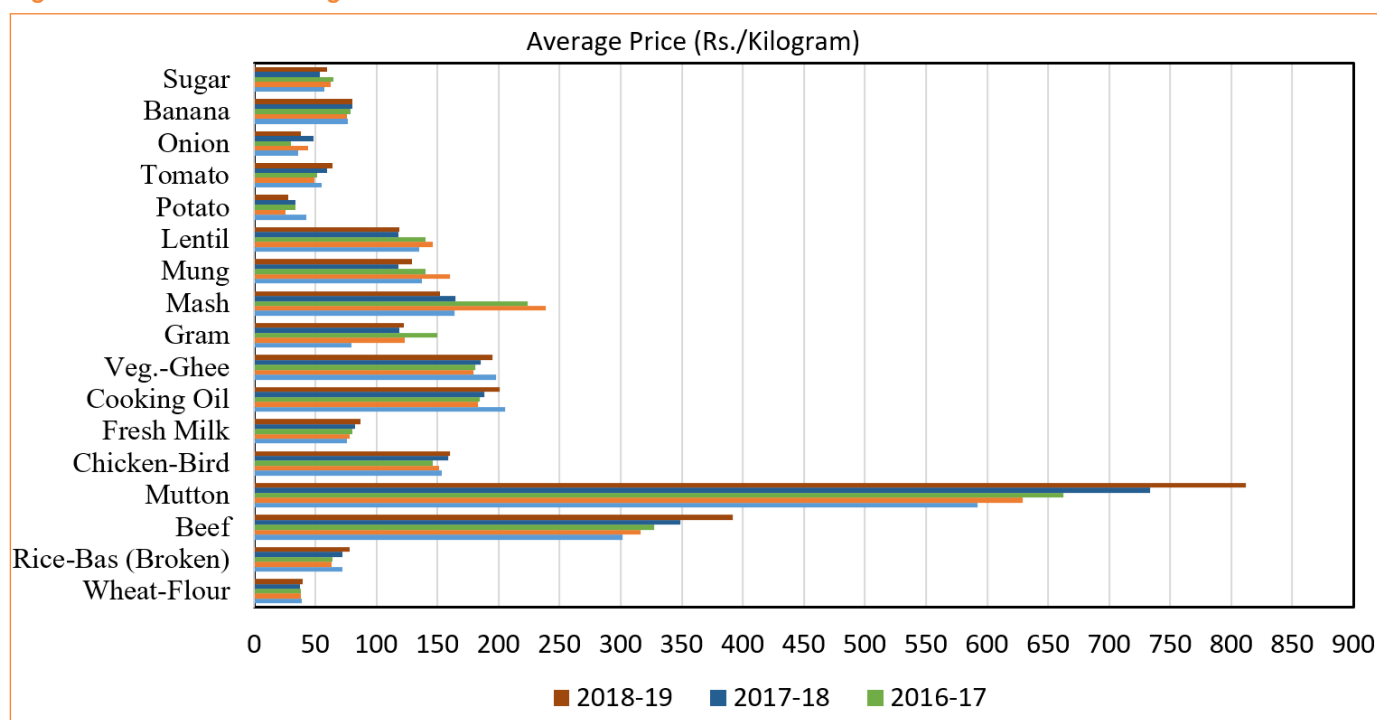
Source: Pakistan Economic Survey Various Issues

### 3.2.2 TREND IN AVERAGE RETAIL PRICES OF VARIOUS FOOD ITEMS IN PAKISTAN

Figure 62 shows the trends in average retail prices for various food items consumed in Pakistan. A regular rise in the prices of rice, meats, milk and fruits was observed between 2014-15 and 2018-19. A rise in prices of sugar, wheat flour, tomato and fruits was observed in 2018-19 compared to 2017-18, however, this rise

was more pronounced for beef, mutton, cooking oil and vegetable ghee. It implies that in Pakistan, the economic access to animal protein and sources of micronutrients (fruits and vegetables) has been relatively more deteriorated in 2018-19 than in the past. Across provinces, the situation varies, because some provinces are net-surplus in the production of some food groups (e.g. fruits, vegetables and some livestock products) than the others.

Figure 62: Trends in Average Retail Prices of Various Food Items Consumed in Pakistan



Source: Monthly Retail Price Statistics Published by Pakistan Bureau of Statistics (Various Issues)

### 3.2.3 FOOD CONSUMPTION PATTERNS BY INCOME GROUPS IN PAKISTAN

In Pakistan, on average more than 1 kilogram of food per capita is consumed daily. Quantitatively, cereals are most consumed followed by milk products + fats and vegetables. Fruits and meats fall in the least consumed groups. In high-income

families, food consumption is 12 percent higher than their counterparts. Moreover, wheat and other cereals are the only groups that are relatively less consumed in high-income households, while for all other food groups, the per capita daily consumption is significantly higher in high-income households than their counterparts (Table 8).

**Table 8: Food Consumption Patterns by Income Groups in Pakistan**

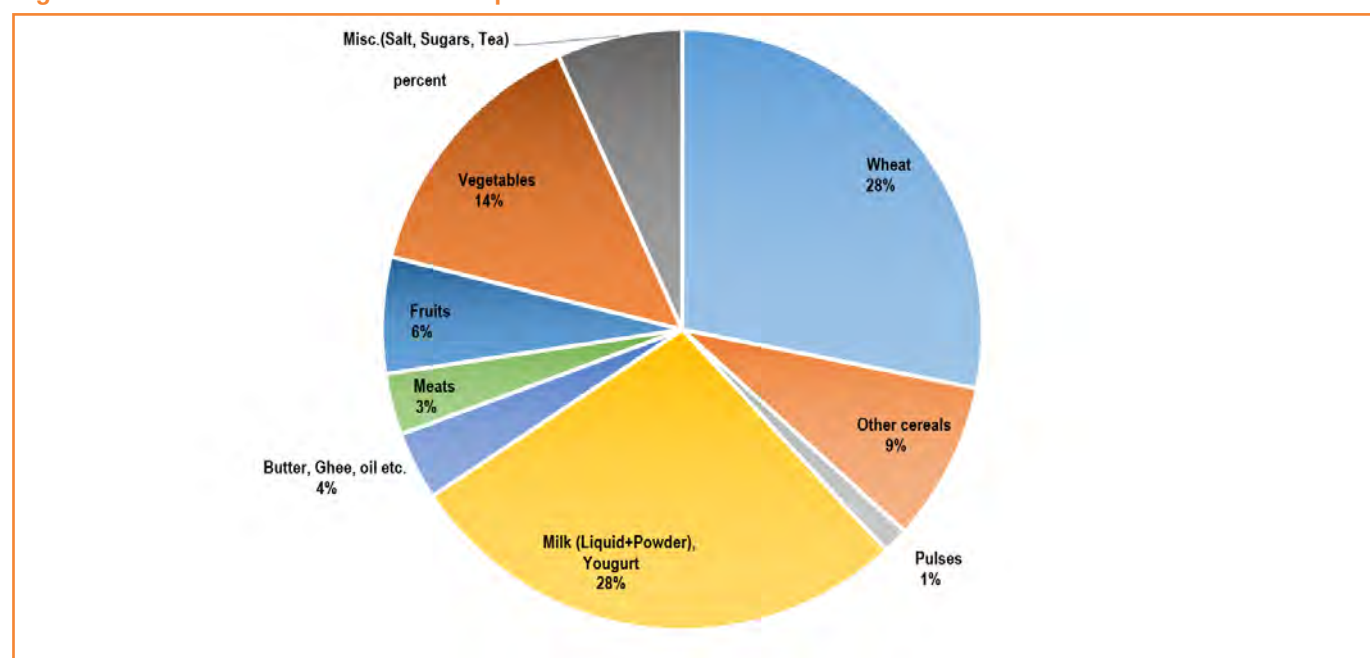
Food Groups	Average Per capita Consumption Per Month (kg.)				Food Groups' Shares in the Diet ( percent)			
	Low income group (1 <sup>st</sup> & 2 <sup>nd</sup> Quintile)	Middle income group (3 <sup>rd</sup> Quintile)	High income group (4 <sup>th</sup> & 5 <sup>th</sup> Quintile)	All income groups	Low income group (1 <sup>st</sup> & 2 <sup>nd</sup> Quintile)	Middle income group (3 <sup>rd</sup> Quintile)	High income group (4 <sup>th</sup> & 5 <sup>th</sup> Quintile)	All income groups
Wheat	6.75	7.15	7.63	7.26	33.92	32.59	23.84	28.14
Other cereals	1.94	2.05	2.50	2.22	9.75	9.34	7.81	8.60
Pulses	0.27	0.29	0.45	0.36	1.36	1.32	1.41	1.40
Milk (Liquid + powder)	4.65	5.36	9.72	7.10	23.37	24.43	30.37	27.52
Butter, Ghee, Cook-oil	0.77	0.84	1.14	0.95	3.87	3.83	3.56	3.68
Meats	0.43	0.53	1.36	0.85	2.16	2.42	4.25	3.29
Fruits	0.81	1.01	2.54	1.62	4.07	4.60	7.94	6.28
Vegetables	2.80	3.11	4.68	3.70	14.07	14.18	14.62	14.34
Miscellaneous (Salt, sugars, tea)	1.50	1.60	2.00	1.74	7.54	7.29	6.25	6.74
<b>Total</b>	<b>19.90</b>	<b>21.94</b>	<b>32.01</b>	<b>25.81</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>

Source: Estimations made from Food Consumption Table for 20 Most Consumed Items Reported in HIES 2015-16 Report.

In other words, the dietary patterns in Pakistan are cereals dominated (Figure 63). Protein intake from plant and animal sources is generally low, whereas vegetables are a major source of

micronutrients. In an era of rising food prices and otherwise, kitchen gardening would be an important source for the consumption of nutrition vegetables.

**Figure 63: Share of Different Food Groups in Diet in Pakistan**



Source: Estimations made from Food Consumption Table for 20 Most Consumed Commodities Reported in HIES 2015-16 Report.



Out of the total food expenditure, 88.4 percent was spent on 20 food items. These items attract 89.1 percent in rural areas and 87.3 percent in urban areas. A comparison of the same 20 food items shows that the major share of consumption

expenditure on food is incurred on wheat, milk, vegetable ghee, vegetables and sugar that have almost 52.1 percent share out of 88.4 percent (Table 9).

**Table 8: Food Consumption Patterns by Income Groups in Pakistan**

Food Items	National	Urban	Rural
Wheat & Wheat Flour	12.55	9.88	14.42
Rice & Rice Flour	3.45	3.35	3.51
Pulses, Split & Whole	2.31	2.11	2.45
Bread and Other Cereals	2.67	2.65	2.69
Vegetable Ghee	4.38	2.93	5.39
Tea (black & green)	2.62	2.31	2.84
Milk, Fresh & Boiled	20.92	18.38	22.69
Milk Tetra Pack	1.23	1.77	0.85
Mutton	1.66	2.44	1.12
Beef	3.01	3.35	2.77
Chicken	3.54	3.87	3.32
Fish	0.8	1.09	0.6
Fruits (fresh & dried)	4.33	5.01	3.86
Vegetables	9.02	8.22	9.58
Salt	0.17	0.17	0.17
Spices	2.49	2.83	2.26
Gur & Shakkar	4.01	3.16	4.6
Water, Soft Drinks, Fruits and Vegetable Juice	0.25	0.11	0.35
Mineral	1.71	2.4	1.23
Hotel & Restaurants	7.25	11.3	4.43
<b>Total</b>	<b>88.4</b>	<b>87.3</b>	<b>89.1</b>

Source: Household Integrated Economic Survey (HIES) 2015-16 Report, Pakistan Bureau of Statistics, 2017

### 3.3 SOCIAL ACCESS TO FOOD

Social access to food is a phenomenon can be observed in both inter-household (in society) and intra-household levels. Generally, in every society, some households suffer from malnutrition while others do not, though both are living under same conditions of physical and economic access to food, indicating the differential cultural access to food in the society. No doubt, the differences in culture, beliefs, religious background and education play a pivotal role in adopting food choices out of the available basket of food. The

cultural, ethnic, social systems and consumer preferences are some underlying factors. Similarly, in some households, men traditionally have the choicest access to cooked food, but may have a lack of knowledge about its preparation, food safety and hygiene challenges in the kitchen facilities. Such observations can be easily made in rural societies of Pakistan. It is still a custom in many households in Pakistan that the breadwinner has advantage in eating over others. Furthermore, the preparation of food is considered the domain of women in these contexts and the workload involved is ignored by

men. Among low-income groups, food access is highly dependent on the ability to buy, charity in various forms, or self-produce food; hence, they are more vulnerable to undernourishment and malnutrition.

In Pakistani traditional rural societies, social access to food is prevailing to an extent that is otherwise rare in urban populations. For instance, the poor households and widows' families are often given grain after the crop harvest. They are also provided food as a charity on different social and religious events. Varieties of foods are also, occasionally, cooked and shared to celebrate rainfalls during hot summer and monsoon seasons.

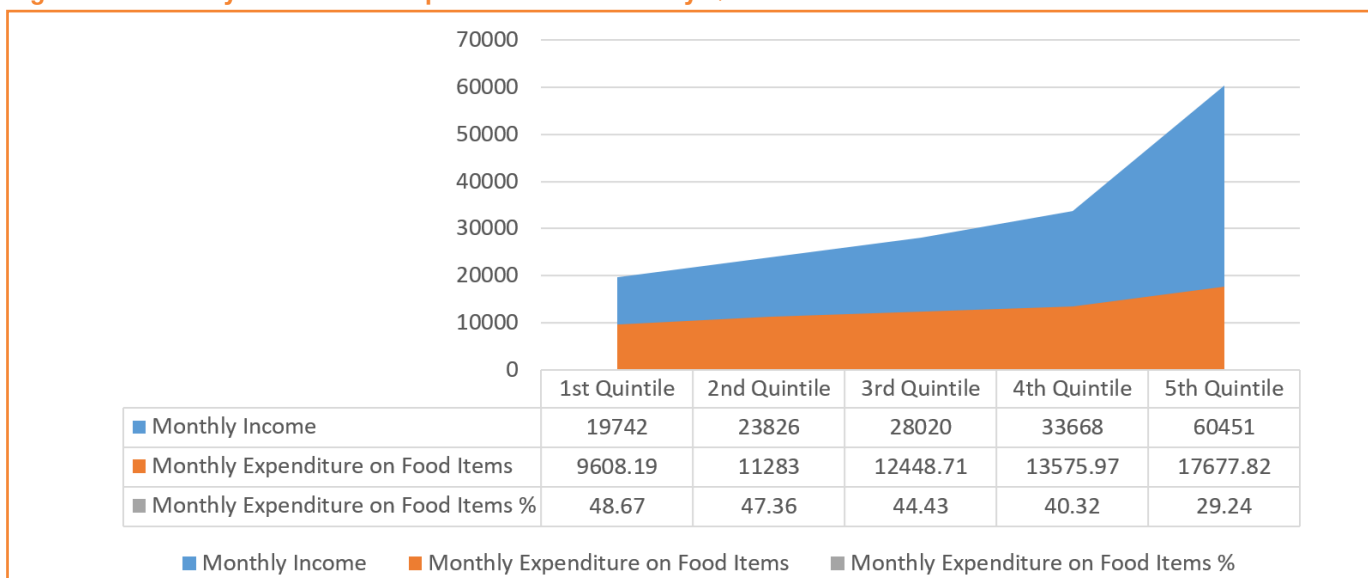
Social safety nets, like food stamps, special ration cards, Benazir Income Support Programme funds initiated in Pakistan, represent effective policy and program elements to achieve food security and eliminate malnutrition, providing relief to the poor. In Pakistan, the UN agency WFP as well as numerous NGOs are active in providing food to the very poor sections of the society, particularly when affected by disasters of various kinds.

Similarly, special monetary assistance packages are available for ultra-poor sections of the rural

and urban population. Civil society organizations are running special programs like *dastar khawan* and *langar khana* (free food centres) and providing free meals especially to poor people at religious saints sites. Though the exact number of such free food places is not known, they are abundantly present in urban centers of larger cities of Pakistan. While formal statistics of this social safety net is currently not captured in the accounting of Pakistan's economy, the HIES data could provide in future information on what proportion of household consumption of food out of homes is sourced from charity or assistance.

Social access to food has been a serious issue due to varied level of access apparently available to different income groups, genders and age groups. Although the poor spend about half their income on food, they still constitute the highest number of hungry people. In Pakistan, the first quintile, which represents the 20 percent of the low-income people, spent around 48 percent of their income, compared to 29 percent expenditure incurred by the fifth quintile, which represent the top 20 percent of the income group (Figure 64).

Figure 64: Monthly Income and Expenditures on Food by Quintiles

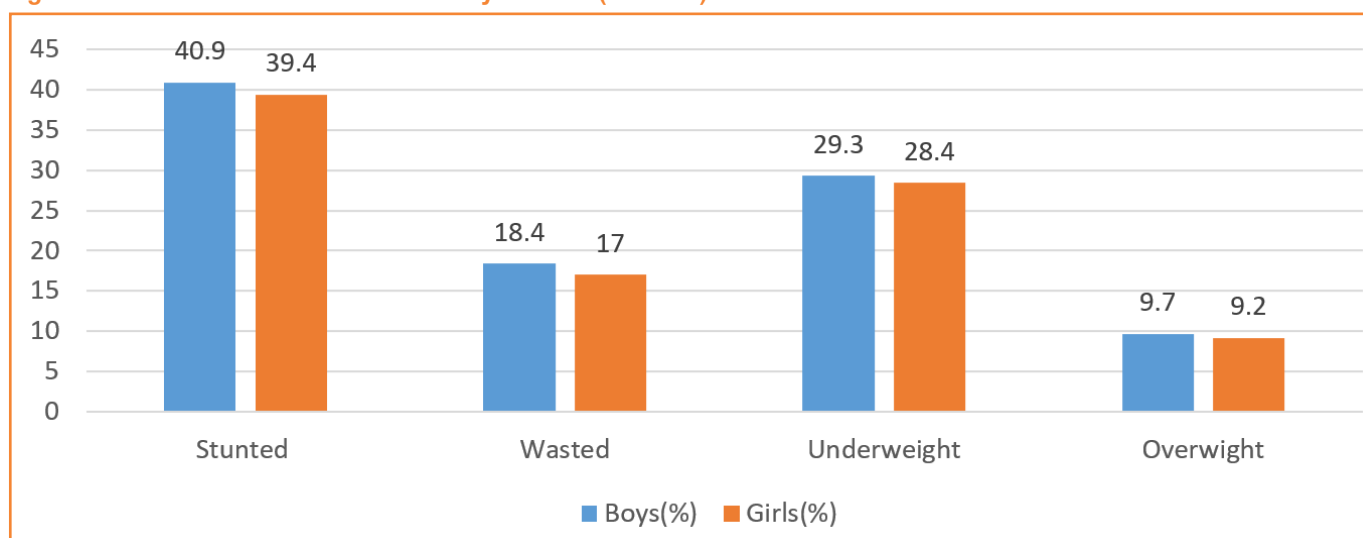


Data Source: HIES 2015-16

We note that the recent survey (NNS 2018) concluded that the boys are slightly more affected than girls by all forms of malnutrition

(Figure 65) suggesting that differential access by genders to food should be further investigated, documented and analysed in Pakistan.

Figure 65: Prevalence of Malnutrition by Gender (Percent)



Source: NNS 2018

On Human Development Index (HDI), Pakistan ranks at 150th position out of 189 countries in the world. The score of Pakistan is 0.562 out of 1

compared to South Asia's average of 0.638 and World's average of 0.728 (Table 10)

Table 10: Human Development Indicators

Country region	HDI Rank	HDI Value	Life expectancy at birth rate	Expected years of schooling	Gross national income per capita (2011 PPP \$)
World	-	0.728	77.2	12.7	15,295
South Asia	-	0.638	69.3	11.9	6,473
Sri Lanka	76	0.770	75.5	13.9	11,326
China	86	0.752	76.4	13.8	15,270
India	130	0.640	68.8	12.3	6,353
Bangladesh	136	0.608	72.8	11.4	3,677
Pakistan	150	0.562	66.6	8.6	5,311

Source: UNDP Human Development Report 2018

The Government of Pakistan has initiated various measures towards protecting the poor and marginalized people from economic, social and environmental shocks. Significant steps taken in this regard are given below (Economic Survey of Pakistan 2018-19):

- Creation of a Poverty Alleviation Coordination

Council to synergize the efforts of various organizations working for poverty alleviation in public and private sector, eliminate duplication and overlap, developing a framework to improve effectiveness and implementing plans for capacity building and performance enhancement of such organizations



- Establishment of Poverty Alleviation and Social Safety Division
- Re-prioritizing PSDP allocations to focus more on pro-poor projects and the projects for less developed areas
- Scaling up activities of BISP and Pakistan Poverty Alleviation Fund (PPAF), re-organizing Pakistan Bait ul Mal, to focus on poverty alleviation and asset transfer to the rural poor to graduate them out of poverty
- Approval of provision of \$82.6 million funds (IFAD funded) as grant to PPAF for disbursement to 320,000 beneficiaries of BISP to help them graduate out of poverty
- Micro-credits for low-cost housing to provide shelter to the homeless and providing free of cost shelters for the poorest homeless
- Employment creation through housing construction and increased access to microfinance under Prime Minister's Naya Pakistan Housing Scheme.
- Expanding coverage of the Prime Minister's Health Insurance scheme through the Sehat Insaf Card scheme to provide free medical treatment to approximately 80 million people.

people, and lift lagging districts. The target of the program is the poor including poor farmers. The strategy is articulated in four pillars and it currently embodies 115 policy actions, which may be expanded as the process of consultations on the program, further widens. The four pillars include addressing elite capture and making the government system work to create equality; safety nets for disadvantaged segments of the population; jobs and livelihoods; and human capital development.

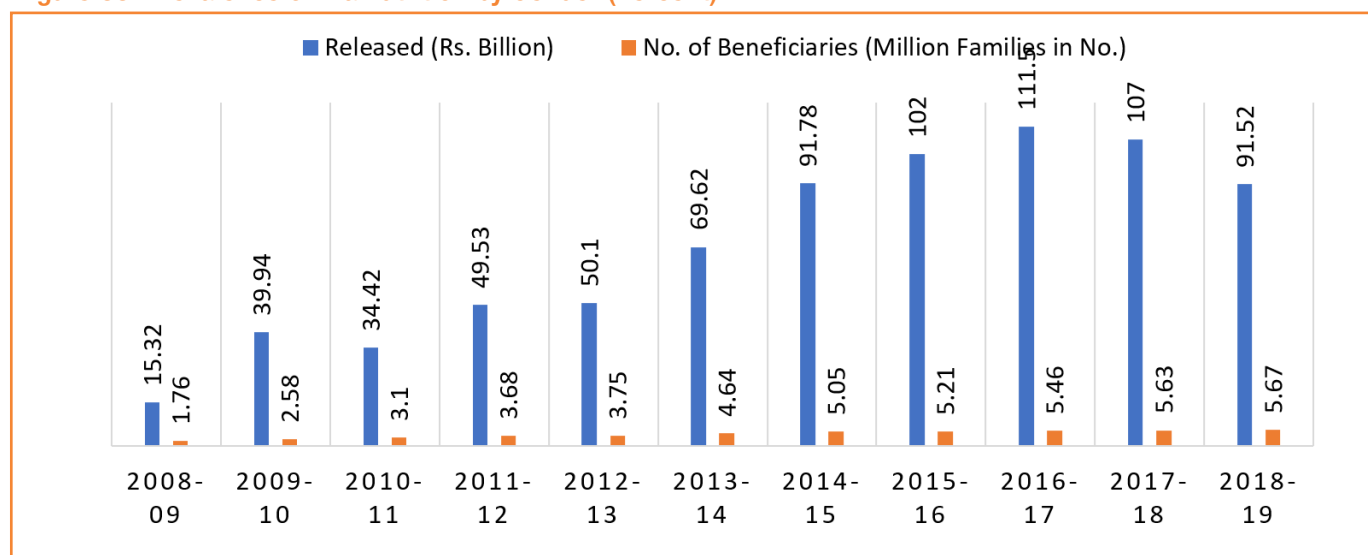
The following types of policy actions may affect social access to food:

- Addressing Elite Capture
- Human Capital Development (Malnutrition)
- Jobs and Livelihood
- Special Programs for Small/Poor Farmers
- Social Safety Programs in Pakistan

The largest social safety program in Pakistan under the public sector is the Benazir Income Support Program (BISP). BISP has run for over ten years. The achievements of BISP with regard to disbursements and beneficiaries are given below (Figure 66).

The new Ehsaas program was launched in 2019 with the objective to reduce inequality, invest in

Figure 66: Prevalence of Malnutrition by Gender (Percent)



Source: Pakistan Economic Survey 2018-19

Along with BISP, several other social protection programs are operating in Pakistan. The main ones are Zakat, Baitulmal Employees' Old Age

Benefits Institution, and Workers Welfare Fund. Zakat is the most significant of these. The situation of Zakat is given in the table (Table 11)

**Table 11: Disbursement of Zakat**

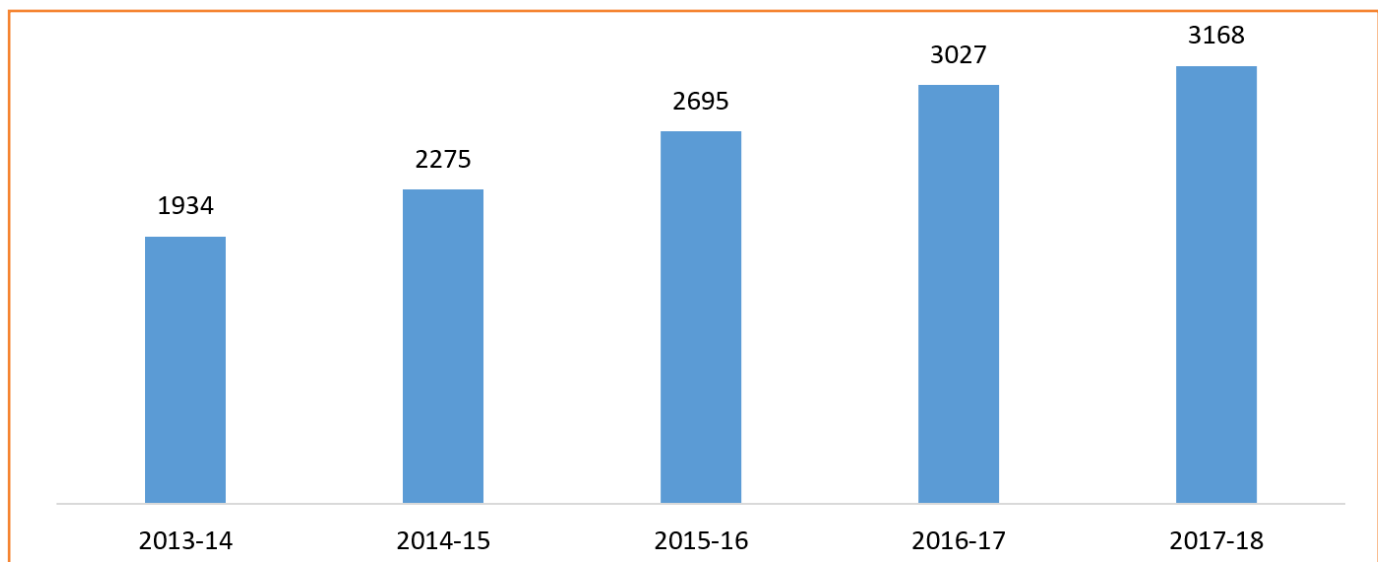
Federal Areas/Provinces	Disbursement (Rs.million)	Share(percent)
Federal areas	516.4	6.99
Punjab	3936	53.30
Sindh	1627	22.05
Khyber pakhtunkhwa	984	12.85
Balochistan	351	4.76
Total	7378	100

Source: Pakistan Economic Survey 2018-19

Poverty oriented programmes including safety nets have been in place for the past several decades. However, most programmes suffer from design limitations, limited coverage, fiscal challenges, weak fiscal capacities and in some

cases, sluggish implementation. Similarly, social pension programmes do not cover informal sectors, even when they employ an overwhelming majority of the workforce.

**Figure 67: Pro Poor Expenditure (Rs. Billion)**



Source: Pakistan Economic Survey 2018-19

With the introduction of systematic targeting mechanism, progressive increase in value of transfer and introduction of complementary services, BISP has improved its effectiveness. These gains have been identified by systematic evaluation: 91 percent targeting efficiency, 7 percent reduction in the poverty rate<sup>31</sup>, PKR 187 increase in adult equivalent monthly expenditure, 10 percent increase in primary enrolment and retention rates, and a slight improvement in asset holding. However, due to its design limitations and an extended focus on consumption smoothing, BISP's potential for reducing malnutrition remains untapped – the malnutrition situation in BISP supported communities is characteristic of an on-going crisis (Oxford Policy Management Institute, 2016).

The poor, living mainly in the rural areas, tend to be unskilled and work in the informal sector. Employment opportunities are limited, and real earnings have declined since the economic slowdown in the 1990s. The poor also lack physical and productive assets and have limited or no access to essential services. Agriculture, a key aspect of Pakistan's rural economy and a major source of employment, is not only excluded from social security, but the laws pertaining to the protection of workers in terms of conditions of employment, health and safety have historically not applied to it. The absence of insurance coverage for crops and productive assets aggravates farmers' vulnerability to extreme climatic events such as floods, droughts and warming.

31. Based on energy-based poverty line. No statistically significant impact on poverty rate if cost of basic needs (CBN) method is applied for poverty estimation.



**Box 14: Urban Poverty**

Although urban poverty is nearly half of what it was in 2004, growing trends in urbanization and unplanned expansion of urban and peri-urban areas would seriously threaten, if not reverse, these gains. By 2030, more than half of Pakistan's population is expected to be living in urban areas – posing additional pressure on already strained resources. Many urban areas already host a larger number of people than what they were originally planned to accommodate. The unprecedented surge in the demand for housing, sanitation and basic services is undermining the quality of life while increasing the cost of living in urban centers. This has resulted in the mushroom growth of slums and poorly planned private housing projects in and around cities. Currently, 46 percent of the urban population lives in shanty towns, inner urban slums and under make-shift arrangements along roadsides, along the railway tracks and under the bridges<sup>32</sup>.

Some studies have been held recently to establish the socio-economic status of the urban slum dwellers. However, there remains a dearth of information on how they negotiate their entry into the mainstream. More challenging is the segregation of data relating to education, health, food security and nutrition between the well-off urbanites and their under-privileged counterparts – even when the divide between them is highly pronounced. While each urban centre has its own unique characteristics, the underlying challenges confronting the poor can be, to the most part, generalized. The urban poor have normally always endured hardships, but several emerging trends are further exacerbating their adversities. First and foremost, the persistent upward surge in food prices, house rent and healthcare in recent years far exceed the trivial increase in wages, leaving the urban poor barely able to afford the household expenditure. The growing rate of urbanization, an influx of the IDPs and the protected presence of Afghan refugees have tightened the labour market situation with the increasing availability of 'cheap' labour. IDPs and refugees are often willing to accept low wages when compared to long-term residents. For example, in IDP and refugee hosting areas of KP province, daily wage rates are reduced by 30-40 percent during the periods of heightened displacements<sup>33</sup>. Similarly, in relatively stable urban areas such as Rawalpindi, Islamabad and Lahore, dwindling private sector investments in real estate and housing and market infrastructure are progressively saturating the labour market and thereby reducing income-earning opportunities for those dependent on them. The urban poor are often hit by severe idiosyncratic and covariate shocks resulting in high consumption volatility. Their dependence on the market to acquire basic food products, even staple, aggravates their vulnerability to income losses, adverse health conditions, loss of a breadwinner, inflationary shocks and disasters. In order to deal with these shocks, the urban poor often resort to negative coping strategies such as reducing the quality, frequency and quantity of food intake, withdrawing children from school, selling household items and assets and accumulating debt. Income volatility can make them the 'transitory poor' since they often move in and out of poverty. Ironically, they are considered to be living above the nationally established poverty line and therefore, very few, if at all, are covered by formal safety nets. A recent study highlights the narrowing disparities between the urban rich and poor in Pakistan. The study shows that Mother Mortality Ratio (MMR) is 2.5 times more amongst the urban poor when compared to the rich<sup>34</sup>.

32. As cited by several sources i.e. UN Statistics Division, Department of Economic and Social Affairs 2014, United Nations Human Settlements Programme (UN-Habitat) and Global Urban Indicators Database 2014.

33. Sanctuary in the City? Urban displacement and vulnerability in Peshawar, Pakistan (Irina Mosel & Ashely Jackson)

34. The Urban Disadvantage – Global study by Save the Children

**Box 15: Gender, Conflict, Food Insecurity and Malnutrition**

Poverty, cultural barriers, limited access to social services, illiteracy and social inequalities, among others, are responsible for widening gender gaps in Pakistan, and further contributing to food insecurity and malnutrition. Growing frequency of human initiated and natural disasters have added new dimensions to the traditional gender roles. Delving deeper into the lives of conflict victims in KP and Newly Merged Districts (NMD) unfold the incontestable link between poverty and conflict. In NMD-KP poverty has been a major impetus for conflict and in return, conflict has aggravated poverty. This 'doom spiral' has a strong gender dimension that is important to recognize. First and foremost, the restricted mobility of men during heightened conflicts forced their family members, including women to adjust and assume a leading economic role in the household. During the periods of heightened displacements, many tribal women started to navigate public spaces, previously denied to them. But a leading economic role in the household does not translate into economic empowerment in these conservative areas. In fact, for many of them, the breadwinning responsibility in addition to their traditional care taker roles only posed an additional strain. Due to the loss of a male household head due to conflict, many women have continued their economic roles upon return to native villages. However, their structural and continued limited access to and control over productive resources (land, capital, life skills), as well as limited mobility, seriously undermines their ability to pursue such roles – aggravating the poverty and food and nutritional insecurity of the entire household. Further, their limited access to safety nets due to minimal coverage in NMDs further compounds their situation of great vulnerability.

**3.4 KNOWLEDGE ACCESS AND FOOD SECURITY**

*“Knowledge is like light. Weightless and intangible, it can easily travel in the world, enlightening the lives of the people everywhere”. Similarly, “Knowledge is critical for Development, because everything we do depends on knowledge” (World Development Report, 1990)*

Tangible evidence suggests that knowledge and information are capable of helping nations to achieve targeted developmental goals. The extraordinary progress in information and communication technology, coupled with the increased speed of scientific, technological advances and global competition along line with changing demands are the reasons why knowledge is becoming more important in the current era. Developments, so far, have been taken place through phases of analysis,

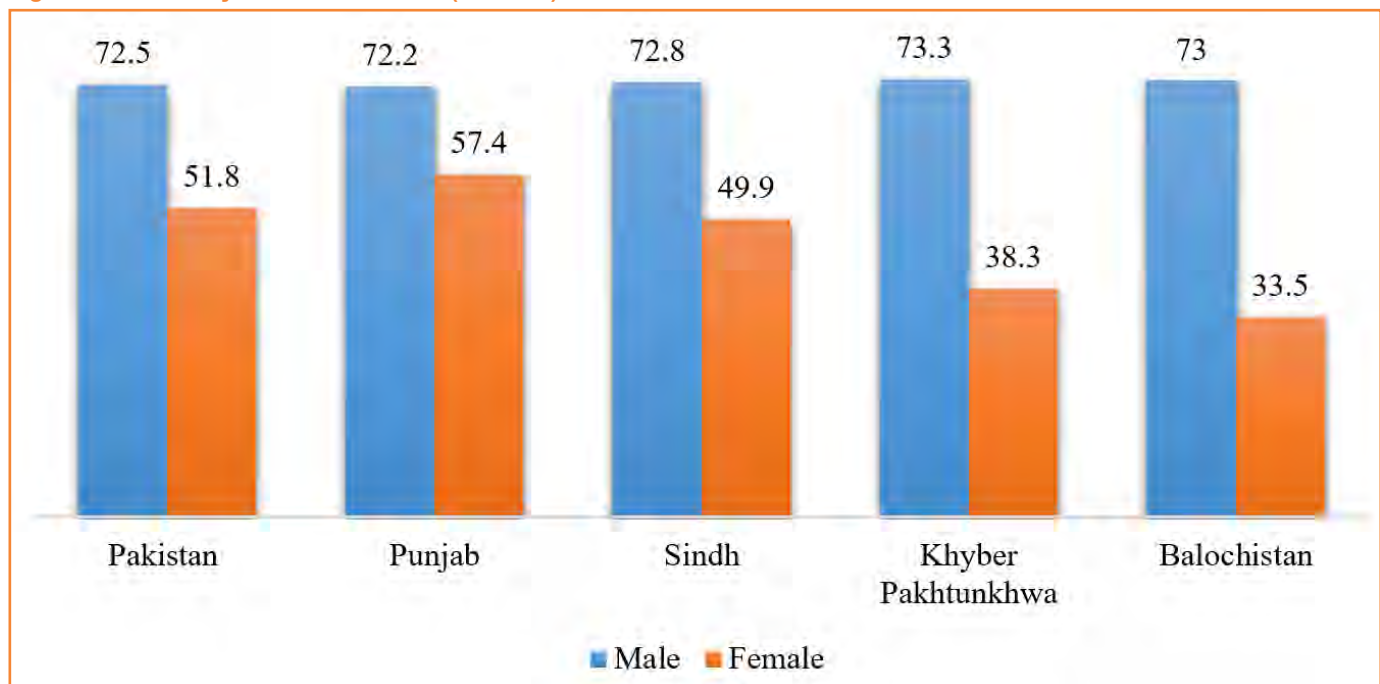
generation, processes, acquisition and dissemination of knowledge and information that covers the supply side only. However, little is known about the demand side of the knowledge and information, what are the actual needs of people regarding food security and nutrition. In other words, it is important to document about extent of available information actually utilized productively. Moreover, the empirical authenticity of available knowledge is also important based on assimilation, capacity and capability levels from the receiving ends.

The education system in Pakistan comprises lower education (school) and higher education (college and university) besides some vocational and technical training. The literacy rate in Pakistan is not up to the mark, which indicates the limited capacity of the country to utilize the knowledge for food production consumption and utilization. Only 62.3 percent of the population is

literate, much worse for women with an abysmal 51.8 percent literacy rate compared to 72.5 percent for men. The National Nutrition Survey (NNS, 2011), established the visible link between maternal education and childhood stunting. According to the NNS 2011, stunting prevalence is highest amongst children of illiterate mothers (38

percent) and lowest (15 percent) where mothers have above secondary school level education (matriculation). Literacy of women in Balochistan was the worst (33.5 percent) compared (57.4 percent in Punjab) with 51.8 percent of the national average (Figure 68).

Figure 67: Literacy Rate in Pakistan (Percent)



Source: Economic Survey of Pakistan 2018-19

Public Expenditure on education has been estimated at just over two percent (2.4 percent in 2017-18). This was too low before 2009-10 but since then it has been rising. Despite an increase in budget allocation on education (Rs. 829 billion in 2017-18), it is still not sufficient to address the high illiteracy among masses (Figure 69). Article 25-A of the Constitution obligates the state to provide free and compulsory quality education to all children aged 5-16 years. Despite a favourable legislative environment, 22.84 million Pakistani children in this age group are out of school - the second-highest number of out-of-school children in the world.

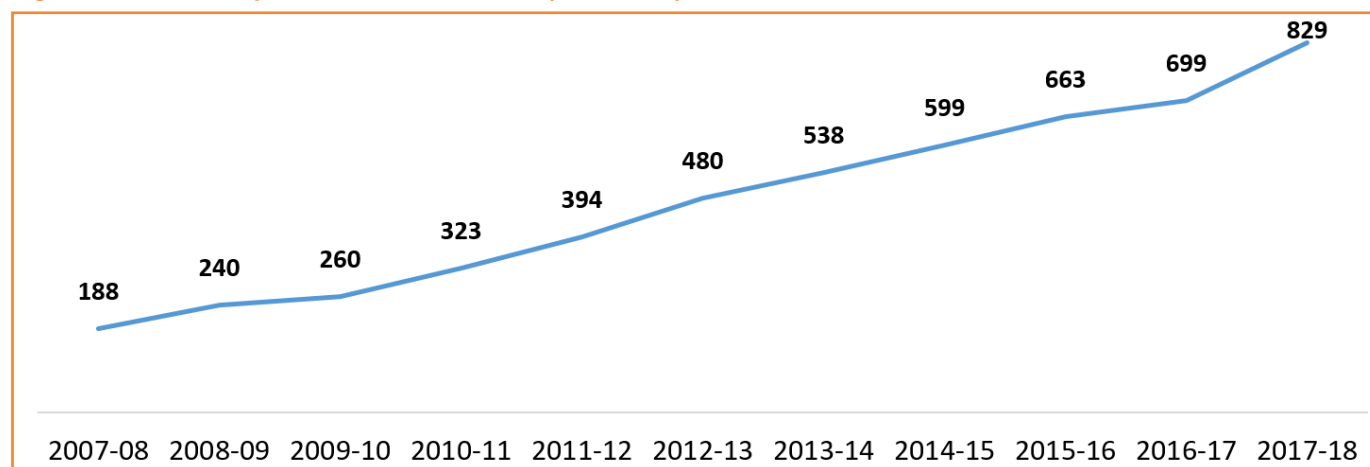
In rural Pakistan, the challenge is not only to

increase the accessibility to science-based information and communication technologies modes, but also how to improve the relevance and adoption of information with specific agricultural production patterns in different agro-ecologies and production systems prevalent in all provinces of Pakistan. The nature and access to food production related information to the farmers is fairly varied across provinces of Pakistan, as well as farmers' capacities to change practices based on information accessed.

In Punjab, besides providing information through conventional agricultural extension approaches (writing slogans on signboards, providing printed material, demonstration plots, organizing



Figure 69: Public Expenditure on Education (Rs. Billion)



Source: Economic Survey of Pakistan 2018-19

farmers' field days, etc.), different smartphone-based applications or “Apps” and web-based helplines/ portals are also being developed and popularized amongst farming communities. How to address the digital divide of rural communities, in particular women, needs careful consideration. The seed, fertilizers and agro-chemicals marketing companies have also developed their own websites for those that can access the internet.

In Khyber Pakhtunkhwa, Telenor Pakistan has launched a program to share agricultural production related information through Short Messaging Service (SMS), called Khushal

Zamindar. Similarly, efforts are also being attempted in Sindh. However, Balochistan province is still mainly resorting to its provincial agricultural extension department's advisory services. A success story from Punjab is given in box 13. Although some farmer's services are coming up rapidly, but it seems, their role is still limited for policy planning and not much used as advisory services for farmers. This gap needs attention and a common platform for integration. and stage in life (physical and mental work, degree of sophistication in living pattern, cross-ventilation, exposure to light, etc.) and seasonality in the availability of different food items.

### **Box 16: 9211 Information System in Punjab for Livestock and Dairy Development**

The 9211 is a system that was created through a unique ICT based dynamic communication platform that uses the simple GSM network and chiefly Unstructured Supplementary Service Data (USSD) to transfer huge amount of data sets right from the field through simple feature cellular phones resulting in a low-cost but high-end database. With the help of this system the Punjab Government generated good deal of empirical evidence that helped formulate the first ever Livestock & Dairy Development Policy of the Punjab in January 2016.

Each service that is delivered by the Department is not only mapped on the 9211 System but a system generated SMS also land on the mobile of the farmer for confirmation of delivered service (for instant social audit), backed by 24/ 7 Call Centre accessible through a toll free number. The System makes 7000 plus field staff of Livestock Department Punjab the largest data entry machine in the world under open skies. The data entry cost is 340 times less as compared to a conventional computer based system with no possibility of hacking as DB is accessed through VPN tunnels only. In the system, all of 25,892 villages of the Punjab are codified. The system has created a live database of 7.4 million livestock farmers and their 65 million plus livestock.

Now Government of the Punjab is initiating branchless financial digital access to livestock farmers by using 9211 System so that financial inclusion could be facilitated as 73 percent potential banking market in Pakistan does not have access to banking products. It will have direct bearing on gender development as well as livestock is intrinsically a part of rural women's lives that spend 59 percent of their daily time in livestock related activities.

In Pakistan, there is still a big gap in working on shifting food consumption habits to achieve healthy diets, and sustainable food production. In fact, if at present, consumers are provided information about preparing different local dishes and globalized cuisines, the nutritional value of different food items in terms of macro and micro-nutrients through the electronic (talks and programs on radio, television, cable channels and internet) and print media (newspapers and magazines) , these do not address the needs for behavioural changes. Transformation to healthy diets by 2050 will require substantial dietary shifts in Pakistan. Consumption of fruits,

vegetables, nuts and legumes will have to significantly increase, and consumption of foods such as sugar, cereals, fats and oils will have to significantly be reduced.

Recently FAO Pakistan in collaboration with the Government of Pakistan published dietary guidelines for better nutrition (Box 16). The goal of this work is to improve the nutritional wellbeing of the people by promoting examples of healthy eating practices by age groups and provinces, reduce nutrition deficiency and improve the quality of life.

**Box 17: Pakistan Dietary Guidelines for Better Nutrition (PDGN)**

The PDGN are intended to help in maintaining healthy body weight and reduce the incidence of under-nutrition, overweight, obesity, premature deaths, and infectious and non-communicable chronic diseases by promoting healthy diets. It recommends the daily consumption of basic food groups including cereal, cereal grains and grain products, meat, pulses and eggs, milk and milk products, vegetables and fruits. The guidelines suggest that the consumption of refined cereals should be reduced and substituted by wholegrain cereals while the consumption of fresh fruits, vegetables, pulses, meat, and milk be increased as per body requirements. In addition to diet, regular physical exercise and physical activity are crucial for the prevention and management of diseases through the guidelines. The essence of PDGN is to provide updated dietary recommendations to the general population by age groups for promoting good nutrition, safe food handling/ management practices and adoption of healthy lifestyles for quality life and economic productivity. An e-learning course has also been developed for mass awareness raising, covering the important aspects of the dietary guidelines for reinforcement of dietary messages.

The PDGN will be useful for professionals and policy makers to formulate appropriate policy, plan and programmes directly or indirectly. It will facilitate provincial food and drug authorities to implement food quality standards in their respective provinces for ensuring that all type of food is safe and of better quality.

**Source: Pakistan Dietary Guidelines for Better Nutrition**

## FOOD SECURITY AND NUTRITION INFORMATION SYSTEM

During 2007-08, a wave of food price inflation moved across the globe leading to food shortages in domestic markets. Pakistan in that particular year harvested record wheat but due to lack of global information, exported the wheat. In the same year when the crisis hit the country, Pakistan had to import wheat to meet local demands, at a higher price than the export price. The Prime Minister Task Force on Food Security identified that in Pakistan, there was inadequate awareness of these type of disruptive factors to food security and nutrition, and therefore no policy response to the emerging crisis could be anticipated. Until recently there was no system available to make the data easily retrievable and develop analytical products. Access to reliable information on food security in an integrated

format and in a timely manner has been a challenge for forward planning and decision-making.

A detailed assessment made by FAO on existing data and sub-systems related to food security and nutrition in Pakistan revealed a strategic gap in integrated data and information management to support evidence based policy making: weak or time consuming data reporting and processing, limited data reliability, non-representative sampling frames, non-coverage of critical indicators and provincial disparities in data collection mechanisms, and that existing data on indicators of food security and nutrition and analytical capacities were scattered in Pakistan.

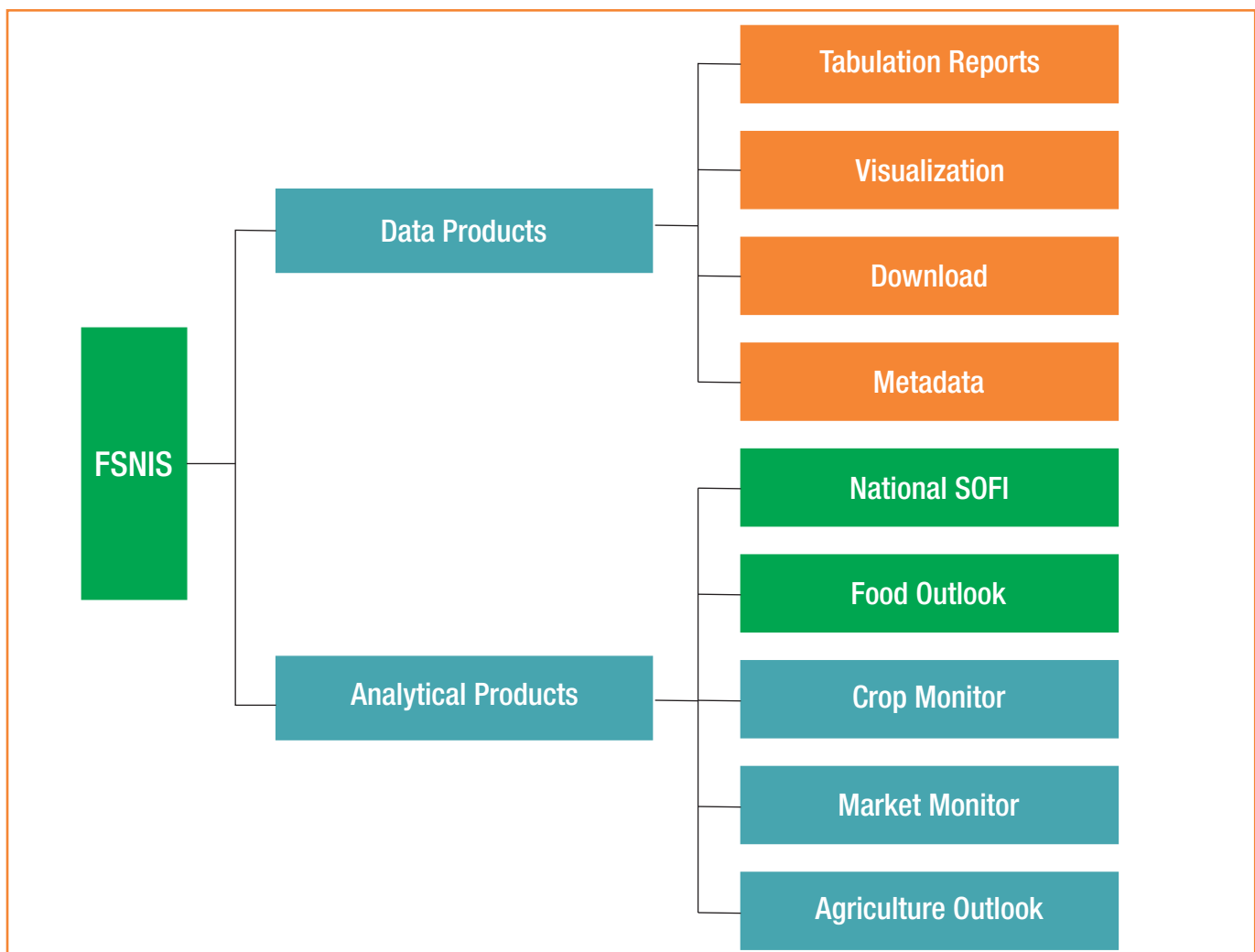
The Government of Pakistan, with the technical assistance of FAO, has inaugurated in July 2019 the establishment of a Food Security and



Nutrition Information System to provide timely information for monitoring, advisory and planning purposes on food security and nutrition related matters in Pakistan that encompass the data availability and exchange and forward looking analytical products, supported by

effective communications. This first Pakistan Overview of Food Security and Nutrition, 2019 report is the first analytical product of the Food Security and Nutrition Information System, and a major step forward in the fight against hunger and malnutrition. (Figure 70).

**Figure 70: Food Security and Nutrition Information System**



Knowledge in understanding and making the right choices at each stage of sustainable and safe agriculture and food production, processing, storage, marketing, and consumption is fundamental to achieve food security and better nutrition. The significance of knowledge in the 'utilization' dimension of food security is what allows healthy food choices, food quality, personal hygiene and food safety. For this aspect

of knowledge access, awareness, education and behavioural changes as well as standards setting are extremely important and require policy makers, private sector and civil society to each play their role in contributing to the necessary shift in food consumption habits to achieve healthy diets, and sustainable food production. Keeping in view the low literacy rate in Pakistan, it is nevertheless a challenging task.

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# ANNEX. METHODOLOGICAL NOTE

## PREVALENCE OF UNDERNOURISHMENT (POU)

PoU is an estimate of the percentage of individuals in the total population that are in a condition of undernourishment. To compute it, the probability distribution of habitual dietary energy intake levels (expressed in kcal per person per day) for the average individual is modelled as a parametric probability density function (pdf),  $f(x)$ . The indicator is obtained as the cumulative probability that the habitual dietary energy intake ( $x$ ) is below the Minimum Dietary Energy Requirements (MDER) (i.e., the lowest limit of the range of energy requirements for the population's representative average individual that is consistent with an active and healthy life) as in the formula below:

$$PoU = \int_{x < MDER}^{\infty} f(x|\theta) dx,$$

where  $\theta$  is a vector of parameters that characterizes the pdf. Typically, the distribution is assumed to be lognormal, so that it can be fully characterized by only two parameters: the mean dietary energy consumption (DEC), and its coefficient of variation (CV).

Estimating the PoU therefore requires estimating three different parameters: MDER, DEC and CV.

**Minimum dietary energy requirement (MDER):** Human energy requirements for an individual in a given sex/age class are determined on the basis of normative requirements for basic metabolic rate (BMR) per kilogram of body mass, multiplied by the ideal weights that a healthy person of that class may have, given his or her height, and then multiplied by a coefficient of physical activity level (PAL) to take into account physical activity. Given that both healthy BMIs and PALs vary among active and healthy individuals of the same sex and age, a range of energy requirements applies to each sex and age group of the population. The MDER for the population as a whole, that is the parameter used in the PoU formula, is obtained as the weighted average of the lower bounds of the energy requirement ranges for each sex and age group, using the shares of the population in each sex and age group as weights.

**Dietary energy consumption (DEC):** The average, per capita daily dietary energy consumption in a population can be estimated either from the total food available for human consumption, derived from national food supply and utilization accounts used in compiling the so-called national Food balance Sheets (FBS), or from the data on food consumption as reported in a nationally representative survey of the population. While, in principle, the estimates obtained from the two alternative sources for a given population in a given year should converge, they may differ due to different data problems. Typically, estimates of DEC from FBS tend to be higher than the corresponding estimates obtained from survey data. Reasons for the discrepancy can be found in the fact that FBS-based estimates may be overestimated, failing to properly account for the amount of food wastage that occurs after the food has been made available for human consumption (e.g., during storage, retail distribution, including by restaurants, and at the household level) and/or that reported food consumption in surveys may be incomplete, due to failure to capture all sources of food consumption by all household members (e.g., food consumed away from home, at work or at school, or received by charitable institutions).

**Coefficient of Variation (CV):** The variability in the distribution of habitual, daily per capita DEC, is the most difficult parameter to estimate for two reasons. First, when food consumption data are only available at the household level, the observed variability across households will largely underestimate the variability due to differences in sex, age, body mass, physiological status (e.g., sickness, pregnancy, lactation, etc.) and physical activity levels in the population. Second, the average consumption measured from survey data, be it at the household or at the individual level, is notoriously affected by non-

negligible measurement errors. While these errors may not be relevant to estimate the average DEC in the population, they will almost certainly inflate estimates of the variance of DEC across individuals, as the variance of measurement errors will add to the variance of true DEC. To reduce the impact of measurement errors on estimates of the CV, the variance of DEC for the average individual in the population is decomposed into two components, and the two components (which are assumed to be independent from each other) are estimated separately.

$$CV_{usual\ DEC} \cong \sqrt{(CV|y)^2 + (CV|r)^2}$$

The first component,  $CV|r$ , reflects variation in DEC due to differences in sex, age, body mass, physiological status and physical activity levels in the population. As these are essentially the same factors that determine the variability in dietary energy requirements, the  $CV|r$  is estimated from the same information used to estimate the MDER. The second component,  $CV|y$ , represents the variation in DEC resulting from differences in access to food induced by socio-economic characteristics of individuals and households, geographic location, and other relevant factors that are independent from the sex-age, body mass and physical activity levels of the households' members. .

In estimating  $CV|y$  from household survey data, one needs to control for the variability induced by seasonality and by measurement error. This is achieved by referring to the mean and standard deviation of the predicted values of the seasonality adjusted DEC<sub>h</sub>, obtained from a regression like the following one :

$$DEC_h = \beta_0 + \beta_1 \times Ln(inc_h) + \beta_2 \times Ln(inc_h)^2 + \beta_3 \times province_h + \beta_4 \times region_h + \beta_5 \times (province_h)$$

where 'h' refers to the household; DEC is the daily dietary energy consumption per capita in household h; Income is seasonality adjusted in household h; region and province is a set of dummy variables indicating the region or province in which the household h is located.

Trend analysis of the PoU in Pakistan based on different rounds of HIES.

In this report, we compute all parameters needed to estimate the PoU using, to the maximum possible extent, microdata from different rounds of the Pakistan Household Integrated Economics Survey (HIES), integrating them from other sources whenever needed, as detailed below.

- The information on the population level and its structure by sex and age in each period, needed to estimate both the MDER and the  $CV|r$  is obtained from the respective rounds of the HIES, for all of which the sampling design was based on population data from the fifth Census of the Population, conducted in 1998.
- As HIES do not convey anthropometric information, the median height in each sex and age group needed to estimate the MDER and the  $CV|r$  is derived from a Demographic and Health Survey (DHS) conducted in 2012-13.
- Several improvements have been introduced in the food consumption module of HIES 2015-16, compared to earlier rounds, that make the estimates of DEC not directly comparable across surveys. For example, a more detailed food consumption module is included in 2015/16 to better capture the food consumed when away from home (FAFH) which is likely to have an impact on the estimated DEC. In fact, the national average daily DEC obtained from the 2015/16 round (1998 kcal) is slightly higher than the one from previous rounds (e.g.: 1929 in 2013/14, 1924 in 1984 in 2011/12). This can hardly be explained only by an actual increase in the households food consumption, and may be a consequence of the improvement in the measurement of FAFH.

Assuming that the FAFH component would be underreported in rounds of the HIES previous to 2015/16,



we adjusted the average DEC for earlier surveys as follows:

In a first step, the contribution of FAFH to food consumption as captured in the HIES data of 2015/16 is modelled as a function of household characteristics

$$FAFH_h = \theta_0 + \theta_1 \times \ln(\text{Income}_h) + \theta_2 \times \ln(\text{Income}_h)^2 + \theta_3 \times \text{province}_h + \theta_4 \times \text{region}_h + \theta_5 \times \text{province}_h * \text{region}_h + \theta_6 \times \ln(\text{Income}_h) * \text{region}_h + \theta_7 \times \ln(\text{Income}_h)^2 * \text{region}_h + \eta_h$$

- The estimated regression parameters are used to predict the FAFH consumption for each household in the previous rounds of HIESs and adjusting the incomes of each previous survey for inflation using the series of consumer price index (CPI) published by PBS.

- The predicted value  $FAFH_h$  is added to the DEC of each household in each previous rounds of HIESs

Even after such adjustment, the national average DEC obtained from the surveys appears to still be possibly underestimated. For example, the DEC estimated from various rounds of HIESs is lower than DEC computed using the Food Balance Sheet (FBS) data compiled by FAO and based on data provided by the Ministry Food Security and Nutrition, by about 300 kcal/per capita or more. One convincing explanation for the discrepancy can be found in the relevance that consumption of food received for free, at work, at school, or at charitable institution has in Pakistan, but that does not get captured in the survey data. Particularly relevant is the food consumed by visitors at sufi shrines present in many parts of the country (see: <http://www.ipsnews.net/2018/11/sufi-shrines-public-private-partnership-improve-food-security-nutrition/>)

Given the persisting uncertainty regarding the level of average DEC, two series of PoU are presented in the report: the first one deriving all information from the surveys, the second one reflecting the estimates produced by FAO Statistics to inform the annual report on The State of Food Security and Nutrition in the world in 2019.

Pending further inquiries on the discrepancy between food consumption accounted for in surveys and apparent food consumption estimated from FBS, a safe conclusion is that the true PoU in Pakistan in 2015-17 may lie around 20 percent in Pakistan.

Prevalence of moderate or severe food insecurity, based on the Food Insecurity Experience Scale (FIES) The official SDG indicator 2.1.2 is defined as the “prevalence of moderate and severe food insecurity in the population based on the FIES” and is used, together with the PoU, to monitor progress towards target 2.1 of the Sustainable Development Goals. Food insecurity as captured by this indicator refers to limited access to food, at the level of households, due to lack of money or other resources. The severity of food insecurity is measured using data collected with the Food Insecurity Experience Scale (FIES) survey module, which is a set of eight questions asking members of the households to self-report conditions and experiences typically associated with limited access to food. Using sophisticated statistical techniques based on the Rasch measurement model, the information obtained in a survey is validated for internal consistency and used to produce quantitative measures along a scale of increasing severity. Based on their responses to the FIES items and two conventional, globally set severity levels used as thresholds, households are assigned a probability to be in one of three classes: food secure or only marginally insecure; moderately food insecure; and severely food insecure.

SDG Indicator 2.1.2 is obtained as the cumulated probability to be in the two classes of moderate and severe food insecurity. A separate indicator (FIsev) is computed by considering only the severe food insecurity class.

**Methodology:** The data consisting of yes/no responses to the FIES questions are validated and used to construct a scale of food-insecurity severity using the Rasch model (Rasch, 1960; Bond and Fox, 2015; Nord, 2016). The model postulates that the probability of observing an affirmative answer by respondent  $i$  to question  $j$  is a logistic function of the distance, between the position of the respondent,  $a_i$ , and that of the item,  $b_j$ , on an underlying scale of severity:

$$Prob(X_{i,j} = \text{Yes}) = \frac{\exp(a_i - b_j)}{1 + \exp(a_i - b_j)}$$

By applying the Rasch model to the FIES data, it is possible to estimate the probability of being food insecure ( $P_{i,L}$ ) at any given level of severity of food insecurity  $L$ , with  $0 < P_{i,L} < 1$ , for each respondent  $i$ . Given a representative sample of  $N$  respondents, the prevalence of food insecurity in a population is then computed as the weighted sum of the probability of being severely food insecure for all households in a sample:

$$FI_L = \sum_{i=1}^N p_{i,L} w_i$$

where  $w_i$  are population weights that indicate the proportion of individuals in the national population represented by each household in the sample.

To produce cross-country comparable estimates, FAO established a global reference scale and set two thresholds that separate “mild” from “moderate”, and “moderate” from severe levels of food insecurity. (Cafiero et al., 2016). As estimates of the Rasch model parameters obtained from a given dataset are defined on a local scale, before a procedure for calibrating them against the FIES global standard, and vice versa, referred to as equating, is needed to make sure that the globally set thresholds are used when the objective is to estimate the SDG indicator.

In practice, the analysis of FIES data involves the following steps:

- Parameter estimation: calculation of the severity of food insecurity associated with each FIES question and each household.
- Statistical validation: The assessment of whether, depending on the quality of the data collected, the measure is valid.

**Calculation of measures of food insecurity:** For each household, the probability of the household experiencing food insecurity above, a given level of severity is calculated, based on their responses to the FIES questions. The probabilities are used to estimate the prevalence of food insecurity at moderate and severe levels in the population.

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# PAKISTAN OVERVIEW OF FOOD SECURITY AND NUTRITION

**IMPROVING ACCESS  
TO FOOD**

The report Pakistan Overview of Food Security and Nutrition is the combined effort of four UN agencies and the Government of Pakistan to present the overall picture of where Pakistan stands in the efforts to eliminate hunger and malnutrition. The special theme of this first Pakistan Overview of Food Security and Nutrition report is 'Improving Access to Food'. It is the first country level report on the lines of UN's Global and Regional Reports on State of Food Security and Nutrition in the World. FAO, WFP, WHO, UNICEF, the Ministry of National Food Security and Research (MNFSR), the Pakistan Bureau of Statistics (PBS), the Ministry of Planning, Development and Reform (MPDR) and Ministry of National Health Services, Regulation and Coordination (MNHSRC) have collaborated to produce it with the cooperation of provincial governments and many other stakeholders.

Regular monitoring of Pakistan's food security and nutrition situation can support better policy and programme design. This report would help the government to assess and monitor the progress on food security and nutrition situation. Using the national data, the report provides an overview of where we are today in terms of the statistics and challenges in measuring and eradicating food insecurity and malnutrition. It needs to be seen as first report to identify the areas for which more data/analysis is needed to be able to understand the true situation of food insecurity and its linkages with poverty and malnutrition. The report also points to the areas where more information is required to better understand the relationship between food insecurity and poverty, and food insecurity and malnutrition.