

## **Special Section 2: The State of Food Security in Pakistan**

Food security deals with the state of having reliable access to sufficient quantity of affordable, nutritious food. Essentially a pressing social concern, the lack of food security has strong economic implications. First, ensuring food security within the country may entail large fiscal costs as governments incentivize farm sector to ensure food self-sufficiency, and also resort to social safety net programs (including direct transfers) to keep purchasing powers of poor population intact. In case the food self-sufficiency is not achieved, the country has to bear balance of payments cost to ensure food availability.

And second, the state of food security has strong linkages with the state of human capital in the country. According to the Food and Agriculture Organization (FAO) of the UN, high rate of malnutrition can cost an economy around 3-4 percent of GDP. In case of Pakistan, estimates suggest that malnutrition and its outcomes cost the economy 3 percent of GDP (US\$ 7.6 billion) every year.<sup>1</sup> In particular, high child mortality rates, prevalence of zinc and iodine deficiencies, stunting, and anemia, lead to deficits in physical and mental development that weakens labor productivity and loss of future labor force in the country.

This section will focus on the state of food security in Pakistan and highlights challenges the country is likely to face going forward. The analysis suggests that despite the fact that Pakistan produces vast quantities of major staple and non-staple food crops, the state of food security in the country is unsatisfactory. Moreover, a high population growth and unfavorable water and climatic conditions in the country mean that concerns regarding food security may increase manifolds over the next two to three decades. More importantly, the overall fiscal and BoP cost will also escalate just to maintain the current level of food security in the country.

### **S2.1 The Concept of Food Security**

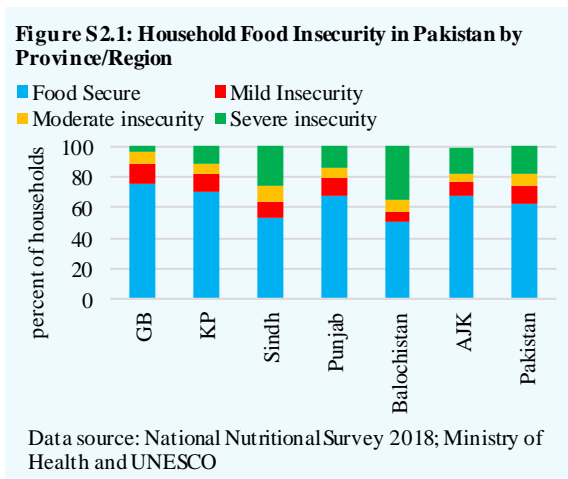
According to the UN's Food and Agriculture Organization (FAO), the concept of food security is flexible, but is widely believed to “exist when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life.” Major dimensions include:

- (i) *Food availability*: The availability of sufficient quantities and appropriate quality of food, supplied through domestic production or imports (or aid).

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<sup>1</sup> Report on “The Economic Consequences of Undernutrition in Pakistan: An Assessment of Losses” (2017), launched by the Pakistan Scaling Up Nutrition (SUN) Secretariat at the Ministry of Planning, Development and Reform, in collaboration with UN’s World Food Program.

- (ii) *Food access*: Access/entitlement by individuals to adequate resources for acquiring appropriate foods for a nutritious diet.
- (iii) *Stability*: Population, household or individual should not risk losing access to food as a consequence of sudden shocks (e.g., climatic crisis) or cyclical events (e.g., seasonal food shortages). In short, the stability concept can refer to both the availability and access dimensions.
- (iv) *Utilization*: Utilization of food through adequate diet, clean water, sanitation and health care to reach a state of nutritional well-being where all physiological needs are met (this reflects importance of non-food inputs in food security).



## S2.2 The Current State of Food Security in Pakistan

Pakistan is presently self-sufficient in major staples – ranked at 8th in producing wheat, 10th in rice, 5th in sugarcane, and 4th in milk production. Despite that, only 63.1 percent of the country’s households are “food secure”, according to the Ministry of Health and Unicef’s National Nutritional Survey 2018. The survey incorporates the Food Insecurity Experience Scale developed by the Food and Agriculture Organization (FAO) of the United Nations. The scale trifurcates insecurity along the following dimensions: mild (worrying about the ability to obtain food); moderate (compromising variety/quantity of food and often skipping meals); and severe (experiencing hunger on a chronic basis). Alarming, of the 36.9 percent of the households in Pakistan labelled as “food insecure”, 18.3 percent face “severe” food insecurity.<sup>2</sup> Across the provinces, KP and Gilgit-Baltistan are relatively more food secure than Sindh and Balochistan (**Figure S2.1**).

Furthermore, the latest available estimates of FAO suggested that the country lags behind the progress of lower-middle income countries in all four dimensions of

<sup>2</sup> The remaining 11.1 percent and 7.6 percent of the households face mild and moderate food insecurity, respectively.

food security (**Table S2.1**). With per capita income of US\$ 1,497, Pakistan is still struggling with issues such as under-nourishment, micronutrient (iron, calcium, vitamin-A etc.) deficiencies,<sup>3</sup> and a deficit of safe drinkable water. Per capita consumption of food products that possess high-nutritional value like beef, chicken, fish, milk, vegetables and fruits is almost 6-10 times lower than that of developed countries.

**Table S2.1: Indicators of Food Security**

Group	Variables	Unit	Year	World	Lower-middle income	Pakistan
<b>Availability</b>	Avg. dietary energy supply adequacy	percent	2015-17	120	113	108
	Average value of food production	\$ per capita	2014-16	313	210	196
	Average protein supply	gr/caput/day	2011-13	80	55	74
	Average fat supply	gr/caput/day	2011-13	79	64	64
<b>Access</b>	GDP per capita (PPP)	const. 2011\$	2016	15080.4	6298.5	4857.2
	Prevalence of undernourishment	percent	2015-17	10.8	13.9	20.5
	Share of food expenditure of poor	percent	2015-16			48.52
	% of population undernourished	percent	2017	10.6	13.7	20.1
<b>Stability</b>	Cereal import dependency ratio	percent	2011-13	0.9	-1.5	-17.3
	% arable land equipped for irrigation	percent	2013-15	23.3	32.8	66.3
	Food imports / total exports	percent	2011-13	5	9	16
	Political stability and absence of violence/terrorism	Index	2016			-2.47
	Per capita food prod. variability	Const.2004-06	2016	2200	3600	2500
	Per capita food supply variability	kcal/caput/day	2013	6	18	21
<b>Utilization</b>	People using at least basic drinking water services	percent	2015	88.5		88.5
	People using safely managed drinking water services	percent	2015	71.2		35.6
	People using at least basic sanitation	percent	2015	68.0		58.3
	Children under 5 years of age affected by wasting	percent	2012			10.5
	Children under 5 years of age who are stunted	percent	2012	24.9		45.0
	Prevalence of anemia among women (15-49 years)	percent	2016	32.8		52.1

Data source: Food and Agriculture Organization of United Nations: <http://www.fao.org/economic/ess/ess-fs/ess-fadata/en/>

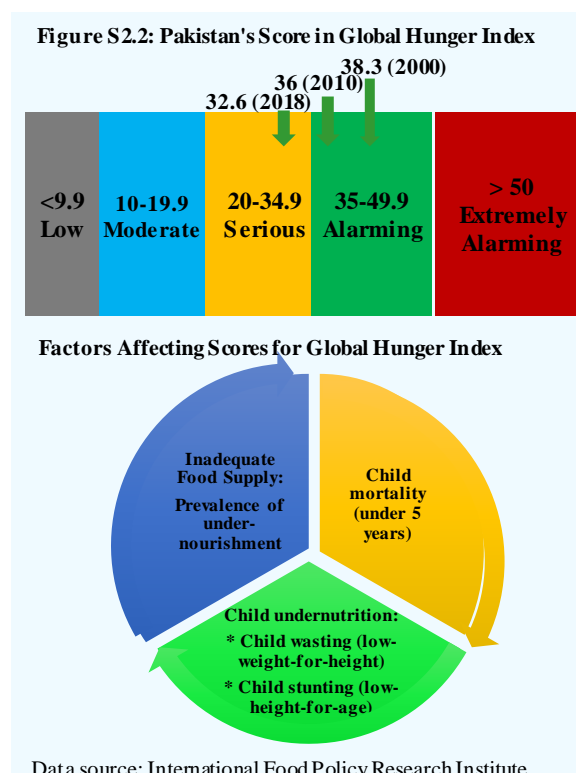
More worryingly, almost half of the children under 5 years are stunted (low-height-for-age) and one in ten has been suffering from wasting (low-weight-for-height) in the country. Incorporating these factors, Pakistan was ranked 106th among 119 countries surveyed for the Global Hunger Index, and has been characterized as facing a “serious” level of hunger (**Figure S2.2**). In fact, Pakistan is among those seven countries that cumulatively account for two-thirds of the

<sup>3</sup> Source: National Food Security Policy, Government of Pakistan, June 2017

world's under-nourished population (along with Bangladesh, China, Congo, Ethiopia, India and Indonesia).<sup>4</sup>

While country rankings are important to view things in relative terms, it is also crucial to understand the economic implications of a large malnourished population. The SUN Secretariat at the Ministry of Planning, Development and Reform in collaboration with the UN's World Food Program, launched its report containing assessment of malnutrition in Pakistan and estimates of its cost to the economy.

According to this report, under-5 malnutrition costs around US\$ 7.5 billion every year, which is equivalent to 3 percent of GDP. This cost is comprised of the following components: (i) US\$ 2.24 billion is estimated as the loss of future labor force resulting from under-5 mortality; (ii) US\$ 1 billion is the estimated healthcare expense, which the families incur to address diarrhea and respiratory infection among children; (iii) US\$ 3.7 billion is the estimated cost of low labor productivity emanating from stunting, anemia or iodine deficiencies in childhood; and (iv) US\$ 657 million is the estimated cost of prevalence of chronic weakness and fatigue among 10 million working adults with anemia experience.



### S2.3 Reasons behind the current state of food security

In overall terms, the dismal state of food insecurity in Pakistan can be traced primarily to the limited economic access of the poorest and most vulnerable to disruptions in the food chain. A part of this can be explained by the prevalence of poverty in the country: almost a quarter of Pakistan's total population lives below the poverty line (set at Rs 3,030.3 per adult equivalent per month). This means

<sup>4</sup> Food and Agriculture Organization of the United Nations

that around 50 million people in the country are unable to access basic needs given their incomes. Most of these people dwell in rural areas of the country where the poverty rate is 30.7 percent. According to a World Bank's report, the incidence of under-5 malnutrition rates (which includes stunting and wasting) in Pakistan is "considerably higher among poorer quintiles" of the expenditure distribution.<sup>5</sup>

Another factor that contributes to food insecurity in the country is the import-dependence for certain items, which is partly responsible for significant variations in their prices. In particular, limited (if any) attention has been paid to the local production of minor crops and livestock produce, such as pulses, fruits, vegetables, nuts and oilseeds, which not only contribute around 50 percent of dietary energy, but also significantly contribute to the nutritional food security.<sup>6</sup> Furthermore, prices of meat and dairy products have increased steadily. In contrast, a large physical and financial infrastructure of government-run commodity operations works in the country to implement the support/ indicative prices for major food crops (especially wheat) to ensure their availability. Although these operations entail a large fiscal cost, these have proved helpful in maintaining commodity stocks and stabilizing the prices of these commodities over the years.

This approach had two major fallouts. First, with population growing at a rapid pace amidst changing consumption behaviors, food imports rose consistently over the years, which reinforced the already stressed balance of payments. Second, domestic prices of these food items have been governed by global trends. As shown in **Figure S2.3**, while prices of major food crops (wheat, rice and sugar) have remained fairly stable within and across years, prices of minor crops have exhibited strong seasonal variations during the past few years.

This, coupled with the fact that the bottom 60 percent of households in the country spend a substantial part of their incomes (45 percent on average) on food, has compromised their nutritional security.<sup>7</sup> Furthermore, it is important to note that even if prices are relatively low and stable, poorest families still lack the purchasing power to buy food. Thus, like other developing countries, Pakistan also has to resort to in-kind and cash transfers to stabilize and increase the real

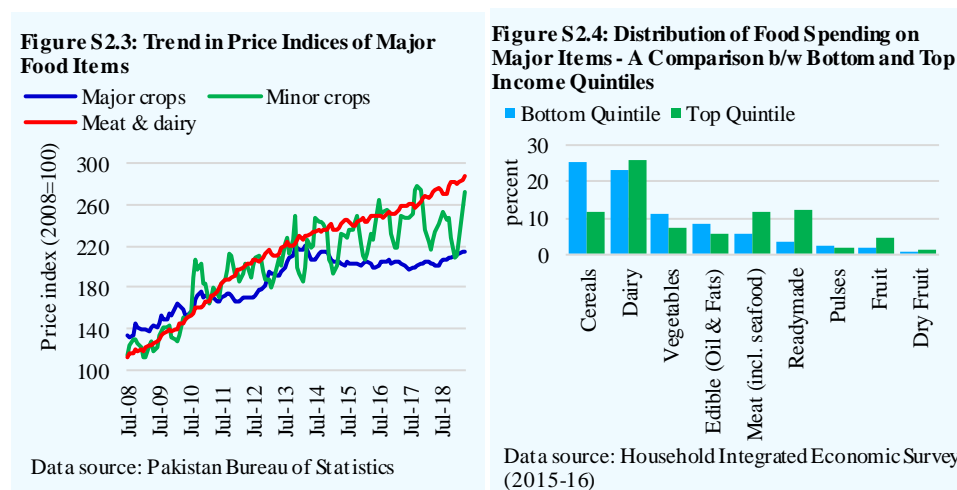
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<sup>5</sup> Mansuri, Ghazala; Sami, Mohammad Farhanullah; Ali, Muhammad; Doan, Hang Thi Thu; Javed, Bilal; Pandey, Priyanka. 2018. "When Water Becomes a Hazard: A Diagnostic Report on The State of Water Supply, Sanitation and Poverty in Pakistan and Its Impact on Child Stunting". WASH Poverty Diagnostic Series. Washington, D.C.: World Bank Group.

<sup>6</sup> Source: Draft National Food Security Policy, MNFSR, Government of Pakistan

<sup>7</sup> Source: Household Income and Expenditure Survey 2015-16

incomes of the poor. Unfortunately, the effectiveness of these transfers has often been questioned due to governance issues and poor service delivery.<sup>8</sup>



Furthermore, the level penetration of these social programs also varies across the regions/provinces. For instance, only 0.3 percent of the population in Balochistan and 1.8 percent of the people in Punjab benefit from social protection programs of some kind.<sup>9</sup> This ratio, however, is relatively higher for the people in Sindh (12.7 percent), Gilgit-Baltistan (10.3 percent), and KP (5.1 percent). The combined effect of these developments is that there exists a huge disparity in dietary composition across households of various income groups (Figure S2.4).

### S2.3 Pakistan may not even sustain staple self-sufficiency in coming years

Food self-sufficiency per se does not guarantee food security. A country is considered food secure if food is not only available, but is also accessible, nutritious, and stable, regardless of its origin. Despite this, countries still make efforts to achieve food self-sufficiency (by increasing production and imports, and

<sup>8</sup> For instance, the government has set up utility stores all across the country to provide necessary food items (wheat flour, edible oil/ghee, sugar, pulses, etc.) to the poorest households at subsidized rates. However, anecdotal evidence points toward issues of poor service delivery in these stores, some of which are often out-of-stock on crucial items, and customers also complain of substandard quality of the items available for sale.

<sup>9</sup> The survey distinguishes between three types of social protection programs: nutrition-sensitive (protecting against all forms of malnourishment, explicitly incorporating nutrition objectives and targeting the nutritionally vulnerable); risk responsive (reducing disaster risk vulnerability); and shock responsive (strengthening livelihoods against the impact of a range of shocks and ensuring that the households develop more resilience). Source: National Nutritional Survey 2018; Government of Pakistan and Unicef.

constraining exports) in order to buffer themselves from volatility in global food markets. In effect, self-sufficiency helps countries improve on at least the availability and stability dimensions of food security.

Pakistan, too, provides support to its farm sector at various levels, in order to encourage sufficient production levels of major food crops (particularly wheat and sugarcane). As mentioned before, although the country relies heavily on imports for certain food items such as edible oil, tea and pulses, it is able to provide for major staples on its own. Following analysis will show that if population increases at the existing pace over the next couple of decades, it will become extremely challenging for Pakistan to sustain even the food self-sufficiency.

*Land extension is not an option anymore*

Pakistan experienced more than 65 percent land extension during 1947-80, when the most fertile available land was brought into cultivation. Beyond this period, cropping area did not exhibit any significant expansion. Furthermore, the available agriculture land has been facing degradation caused by water and wind erosion, depletion of soil fertility, deforestation, unsustainable livestock grazing and water logging practices. According to latest estimates, water logging and salinity affects 11 and 5 million hectares, respectively, in the country. Moreover, the area affected by water erosion has increased by 27.3 percent in the period 1998-2007, whereas, degradation related to wind erosion increased by 17.4 percent during the same period.<sup>10</sup> According to the Economic Survey 2013-14, the cost associated with loss of soil fertility alone is estimated to the extent of Rs 70 billion per year in Pakistan. Furthermore, rapid urbanization also works as an important factor in limiting the odds of land extension for agriculture purposes.

*In the presence of current cropping practices, water shortages and expected climatic changes, it will be challenging to improve yields substantially*

In the absence of land extension, focus on yield improvements is the sole alternative to sustaining the agriculture growth in the country. Table S2.2 compares the yield required to meet the domestic need of different agriculture products (with current cropping practices), with respect to population growing at different rates of 1.8, 2.1 and 2.4 percent (keeping the per capita consumption unchanged). In case of sugarcane and wheat, even the combination of maximum level of crop area and yield that the country has ever achieved, would not result in production rising to a level sufficient to meet the growing domestic demand beyond 2020.

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<sup>10</sup> Source: Pakistan National Biodiversity Strategy and Action Plan for achieving Aichi Biodiversity Targets and Sustainable Development Goals

Here it is important to acknowledge that non-traditional cropping techniques such as Hydroponics (growing plants without soil), Aeroponics (growing plants with no soil and very little water), and Aero Farms (vertical farming), all may bring a drastic improvement in crop yields in Pakistan.

However, not only would this require large financial capital (infrastructure and R&D), but also a significant amount of time to introduce these techniques on a mass scale and bring desirable results. In the absence of these techniques, prospects of sizable yield improvements are limited keeping in view the deteriorating water conditions and rising temperatures in the country.

Currently, water productivity of most of the crops in Pakistan is lower than the desirable range. For instance, sugarcane and wheat use around four times the global average of irrigation water, while rice consumes more than six times the world's average. Going forward, growing water shortages are expected to drag down yield of different crops on considerable scale. The latest estimates of 'Aqueduct Projected Water Stress Country Rankings' suggest that Pakistan will fall to the rank of 18th most water-stressed country in 2020, compared to the current ranking of 31.

#### **S2.4 A focus on population control and timely implementation of policies would be vital to ensure food security in the country**

It appears that the state of food security in Pakistan may deteriorate further over the next couple of decades. The major concern is that the fiscal cost of ensuring food security – in the form of food subsidies, cash transfers through BISP, nutrition interventions program, school feeding/Tawana Pakistan – would escalate steadily if the population continues to grow at a rapid pace.

It is important to note that due to low and stable global and domestic food prices, the government spending of Rs 95.7 billion during the previous 5 years (FY14 – FY18) on food-related subsidies was quite modest compared to Rs 142.5 billion spending in the preceding 5 years. However, with food prices now rising and import-dependence growing, fiscal costs may increase substantially if the government adheres to its food security objectives.

**Table S2.2: Yield Required to Meet Domestic Demand With Different Projected Estimates of Population Growth**  
thousand MT per Hectare

Yield	Population growth (%)	Max. Yield achieved	Required Yield		
			2020	2030	2040
Wheat	1.8	2.973	2.7	3.3	3.9
	2.1		2.8	3.4	4.2
	2.4		2.8	3.5	4.5
Sugarcane	1.8	61.972	48.9	58.4	69.9
	2.1		49.3	60.7	74.8
	2.4		49.8	63.1	80.0

Data source: Economic Survey of Pakistan



Similarly, the demand-supply gap in the domestic market is likely to emerge in major food crops going forward, even if population growth subsides. This implies that the country will likely face a steady increase in its import bill of food and non-food farm products. Food imports currently stand at US\$ 6.2 billion (FY18), constituting 10.2 percent of the country's total import bill. More importantly, these imports have more than doubled in the span of only 12 years – food bill was only US\$ 2.7 billion in FY07 – representing the impact of growing domestic demand, limited availability of locally-produced food items, and rising global prices.

Taking stock of these concerns, the Ministry of National Food Security and Research of Pakistan announced and published a Draft National Food Security Policy in 2018. This has been considered as a major development in terms of solving an issue of significant importance. The policymakers have realized that food security is an issue that warrants immediate attention, and have highlighted main challenges that need to be resolved, such as an inadequate focus on nutrition; supply-side constraints pertaining to agricultural inputs; slow rate of technological diffusion; trade restrictions; degradation of land; alarming water scarcity levels; and the impending impact of climate change. The draft also stressed on the poor state of public sector investment in Pakistan's agricultural R&D compared to other countries and limitations of concerned authorities to achieve goal of modern agriculture.

Resultantly, the policy lays out twenty different qualitative and quantitative goals, stretching from 4 percent per annum growth in agriculture sector and eradication of poverty, to the achievement of the zero hunger SDG and implementation of provincial agricultural policies.<sup>11</sup> Other objectives pertain to the enhancement of legislation for food safety and the associated trade regime.

As much as it is necessary to appreciate the announcement of the draft food security policy as a timely and ambitious silver lining, it is equally, if not more, important to urge that the agenda included therein is implemented in its full spirit. It is understandable that this would not be an easy task for the authorities, especially in terms of acquiring funding amidst the current atmosphere of limited fiscal space and persistent balance of payments constraints. However, gauging the stock of existing situation and communicating clear objectives is a good start, and

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<sup>11</sup> SDGs refers to Sustainable Development Goals came into effect in January 2016; these include 17 different goals aimed to end poverty, protect the planet and ensure that all people enjoy peace and prosperity.

the government now needs to build on that. Furthermore, the policy does not factor in the case of population growth and its impact on the food security over the long term. This is important, considering that the country's population is estimated to double over the next 25 years at the present annual growth rate of 2.4 percent. With that, the urgency of addressing food security concerns would also commensurately escalate.