

Food Security and Nutrition Quality Status: A Review Explanation of Pakistan

Sajid Ali, Ayesha Siddiqua, Muhammad Zain Mehboob, Saba Yousafzai, Ammar Ahmed, Hafiz Khuzaima Ishaq, Umer Farooq, Muaaz Tariq

Department of Environmental Sciences, Faculty of Sciences, University of Gujrat, Pakistan

Abstract— Now-a-days, reduction in poverty and global food insecurity are becoming more challenging. Such challenges are more complex as compare to three decades ago. The recent challenge that hinder to get food security includes food price instability. It is related to increase in energy costs, uncertainty in financial markets as well as impact of climate changes this paper will discuss about food security issue related to Pakistan. Food availability, accessibility and utilization in Pakistan. In order to improve the child health, mother's education in poor families is more conspicuous than in non-poor families. Pakistan's economic growth mainly depends on agriculture sector. Due to this sector, income of small farmers increases. Rural development, improvement in agriculture and rural industries as well as the employment opportunities enhances.

Index Terms— food, security, Pakistan, nutrition

1 INTRODUCTION

ABOUT 800 million people are facing hunger all over the world [1] but South Asia is most vulnerable and intimidating regions because its 299 million people face shortage of nourishment that is 40 percent undernourished population of world. In the past decade, there had been annual decline in the commonness and popularity of undernourishment in South Asian region by 1.7 percent. Major cause of reduction in undernourishment is government failure. Food and Agriculture Organization of the United Nations (FAO) estimated that Asia is popular for one-half of world's undernourished population from which two-third is from South Asia [2].

In South Asia, Pakistan is the second largest nation where half of its population face hunger and deal with food insecurity (Sulehri and Ramay, 2009). Pakistan's large population is deal with the risks of food security. According to food security risk indices, 148 nations were ranked by Maplecroft in 2009. Pakistan was at 11th which showed that Pakistan is at peak of food security risk. On the other hand, India was ranked as 25th that is considered at high risk of food security [3]. Pakistan's own food production capacity and people's competency and capability to access food items directly depends on level of Pakistan's food security.

It is accepted that country's food production remained stable recently but people's access to food items had decreased specifically. The main reason of it, is shortfall in people's purchasing power. In order to reduce the world's hunger by half, the First Millennium Development goal was set in 2015 but this goal was set without any religion, race and gender discrimination [4]. Moreover, it is assumed that the condition and situation in Pakistan would prosper, food production will be stable.

Food prices will be affordable hopefully. In order to achieve the food security in Pakistan, many agricultural programmes and different marketing strategies has started under its national food policy (NFP) by Government of Pakistan but unfortunately, the driven results of these efforts had not been accomplished satisfactorily.

But three goals were achieved Under Pakistan's NFP which are: adequate food production, food prices stability and consumer's access to food items [5].

Since 2006 to last few years, although growth in food production has not done sufficiently but fluctuation in food prices done frequently. This mad the country's condition worst because number of food insecure districts increased from 74 in 2004 to 95 in 2008. Therefore, Pakistan's huge population is already food insecure which can become more hostile and frightening if inflation rate continues to rise and fluctuation in food prices occurs frequently [6].

Food security is much important issue worldwide either its developed or developing country. Say for instance, in USA, during a year, more than 14 percent people were food insecure [7] similarly; the proportion of food insecure population was 10 percent in Canada In the same way, 5 percent of Australian households were food insecure and higher among vulnerable groups [8].

On the other hand, in developing countries, the situation is much bad and getting worse. For example, Africa is notorious for food insecurity. Hence, round about 239 million people are undernourished [9] In other developing regions like South Asia, East Asia and Latin America, the situation is a little bit better as compared to Africa [10].

However, since 2008, due to inflation in food items, low-income population are effected everywhere. For instance, in Indonesia, soybeans that is key staple food of that country, the prices of soybeans are doubled in one year. Due to this inflation, people faced many problems because their earning power was not enough. This results in street protests. Likewise, in Egypt, the prices of bread and cooking oil rose. So, people made strike to stop it. India and Vietnam also faced tough situation due to food price hikes. Strikes and protests are also done in Senegal due to inflation. Similarly, in China, food prices were increased 20 percent. That caused many problems

• Sajid Ali is currently pursuing BS degree program in Environmental Sciences in University of Gujrat, Pakistan, PH-+923055790998. E-mail sajidali78790@gmail.com

for Chinese people [10].

Since the start of 2011 [11] inflation moved to record level globally and this resulted another crisis for the whole world in less than three years' time (Krugman, 2011) due to which protests broke out worldwide especially in Arab countries (Anonymous, 2011). Inflation at oil and cereals put terrific impact on low-income people because their basic need is food but due to high prices at food items, they were unable to buy enough food to satisfy their needs [12].

The population of Pakistan is about 170 million and it is 6thmost populous country in the world [13] The present growth rate of Pakistan is 1.8 percent. So, it is expected that the population will double in the year 2045 as it grows continuously. The average annual rates of change in food and population growth during 1995-97 and 2001-03 were 1.9 and 2.6 respectively [14] The economy of Pakistan is the 26th largest economy of the world ([15] Agriculture is largest sector of Pakistan and it contributes in Pakistan's economy. Agriculture sector give 45 percent employment opportunities and it contributes over 21 percent to GDP. Almost 62 % rural population of Pakistan heavily dependent on agriculture for their livelihoods [16]. Pakistan is one of the leading producers of many agricultural commodities. Except of all these facts, the percentage of undernourished population is much high in Pakistan that is 26% [17]. Especially, the rural areas are most affected areas that face food insecurity as they have to deal on daily basis with provisioning uncertainty in their food items [18].

In developing countries, livestock production plays vital role in the life of farmers because it provides food, employment opportunities as well as income. In Asia, livestock contributes in agriculture through manure products as well as draught power additionally. For instance, eggs, milk, meat etc. on the other hand, poultry products provide required nutrition to rural population and daily cash income also. Hence, livestock plays vital role in country's economy. During 2011 - 2012, this sector contributed 54.6 % of agriculture value added and approximately 11.6 % to national GDP. Moreover, during 2011 - 2012, at constant factor cost, the gross value added of livestock sector has grown from Rs. 672 billion (2010 - 2011) to Rs. 700 billion (2011 - 2012). The revenue earned from export products, the growth in population and increase in per capita income, all these factors put the demand of livestock and livestock products up [16].

Food insecurity is imperil and global jeopardize that every country of the world faced. Food security occurs when all people, at all times, have sufficient physical and economic access to safe and nourished and nutritious food in order to meet the food needs and diet preferences for healthy, wise and active lifestyle [19].

1. Food security can be studied under these three basic and core areas which are following:
 - Food availability
 - Food accessibility
 - Food reliability / Food utilization

Food availability is ensured when adequate food quantities are systematically and consistently available to all people

within a country. Such food can be supplied through mercantile trade or commercial imports, clan or tribe production, household or domestic output, food assistance and provision of resources.

Food accessibility is achieved when all individuals have sufficient and adequate resources to get proper, suitable and pertinent foods for appropriate diet. Food accessibility depends upon income and earnings of household, price of food and allocation of earnings and income within household individuals.

Food utilization means the biotic use of food, demands for a diet that ensure adequate and necessary energy, extremely important nutrients, pure and unpolluted water, and requisite sewage disposal. Potent food utilization depends on knowledge that how to store the food domestically, methods and techniques to process food, core principles of nutrition, precise and accurate child care and sickness management [20] Since 1996 World Food negotiation conference, different countries of world dispatched and showed importance of food production domestically and preserve food security. Despite of all these, food insecurity problem also exists. Almost 20 to 25 % of total population of developing countries is insufficiently nourished and roundabout one third of world's children are undernourished. It is anticipated that the food insecurity will be rise because of growing world population rate. The situation will become worse if invincible and well-intended actions are not taken in order to improve the food security. The solution of this problem is to achieve the upheld growth in food production. Food insecurity is reciprocal to agriculture sector of any country. It means that if agriculture sector will be better, the food insecurity will be low because both have indirect relationship. Pakistan's per capita income is \$ 830 per annum [21] So it is low-income developing country. Although its economy is impermanent phase and heavily dependent on agriculture sector. Therefore, this sector contributes about 23 % to national income (GDP). Also it provides 42 % employment opportunities nationwide. Moreover, it supplies raw material to Pakistan's other industries, most importantly textile industry which is largest industrial sub-sector of the economy. Pakistan's 67.5 % population lives in rural areas and heavily dependent on agriculture sector for their livelihood, either directly or indirectly.

1.1. Food Availability

In order to judge the total food availability, comparison between cereal production and cereal consumption has done. Cereals (barley, paddy rice, maize and wheat) were selected because they are major sources of food. Table 1 shows the food grain production and consumption of the aggregated cereal crops.

During 1990 - 2004, there was consecutive transcend in output and production of cereal rather than consumption. Hence, there was notable increase in cereal reserves. Due to these reserves, surplus of surplus of cereal over demand occurred and remained unchanged overall. Therefore, production exceeded consumption. This trend continued except the wheat (During 1994, 1997 & 1999) and maize (during 2002) when demand triumphed it and vanquished (Table 1).

Table 1. Production and Consumption of Cereal Crops (1990-2004)

Years	Total Cereal Production	Total Cereal Consumption	Balance
1990	20,522.50	15,500.00	5,022.50
1991	20,774.75	15,768.10	5,006.65
1992	21,681.85	16,867.80	4,814.05
1993	23,519.85	17,369.50	6,150.35
1994	21,846.55	16,531.10	5,315.45
1995	24,620.15	18,506.40	6,113.75
1996	25,030.00	18,398.40	6,631.60
1997	24,817.00	18,167.50	6,649.50
1998	27,544.50	20,359.00	7,185.50
1999	27,380.42	19,509.60	7,870.82
2000	30,043.20	22,721.80	7,321.40
2001	26,610.00	20,688.10	5,921.90
2002	26,781.15	19,963.60	6,817.55
2003	28,326.30	20,954.30	7,372.00
2004	29,931.50	22,296.80	7,634.70

Source: FAO 2005.

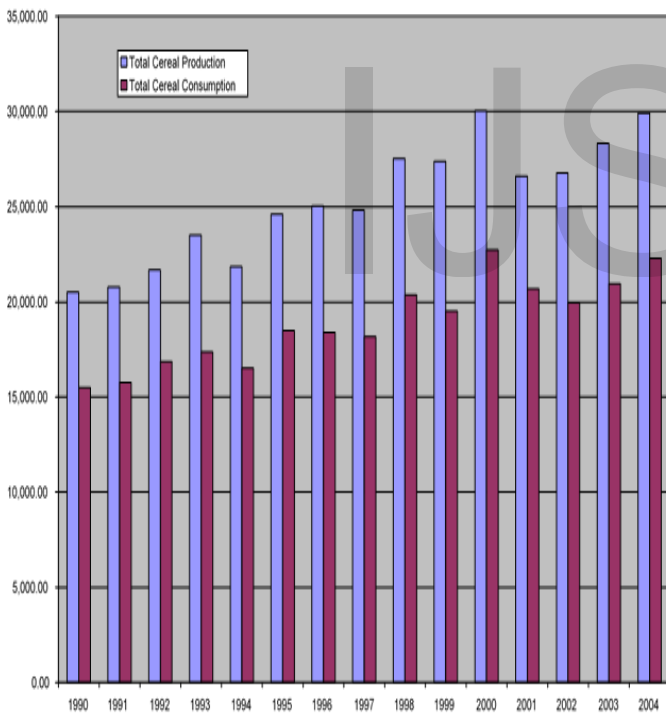


Figure 1. Production and Consumption of Cereal Crops.

Source: FAO 2005.

1.2. Food Accessibility

If a country has surplus of food production than food consumption, it doesn't mean that the country's population is food secure. Although Food security depends upon access of food but it indicates that the population of country has enough purchasing power to but that food easily. If it is so, then it is called food security. This is helpful to define food security at national, domestic and individual levels. If at reasonable and approachable prices, a satisfactory balance exists between food

demand and food supply, it shows national level of food security. The imbalance between them due to inflation indicates that some households are food insecure. So, they reveal their full wants and needs to market places. Therefore, market mechanism expresses the food security at national level. Food security at household level is most important. It indicates the individual consumption level. If food demands are greater than their needs, it expresses food security at household level. Household consumption is divided among its members according to their needs. Food security at individual level occurs when food consumption is always greater than the food needs and wants. Food security at one level doesn't indicate the food security at all levels.

Years	Population (Millions)	Undernourished (Millions)	Undernourished (%)
1989-1991	110.9	26.6	24
1990-1992	113.7	27.8	24
1991-1993	116.5	28.1	24
1992-1994	119.3	26	22
1993-1995	122.2	25.4	21
1994-1996	125.2	24.7	20
1995-1997	128.4	24.8	19
1996-1998	131.9	26	20
1997-1999	135.4	27	20
1998-2000	139	28.2	20
1999-2001	142.6	29.2	20
2000-2002	146.3	32.1	22
2001-2003	149.9	35.2	23
2002-2004	153.6	37.5	24

Although there has recorded poise increase in per capita income. But this doesn't indicate the fact that in Pakistan, majority of population is food secure. Despite food sufficiency, under nourished population (24%) which is quite high. This indicates that food security issues and problems can be very serious and terrible.

Table 2. Undernourished Population (1989-2004).

Source: FAO 2005.

1.2. Food Reliability (Food Utilization)

With the help of demand-supply differences and calorie intake, food reliability can be ensured and measured. Production-consumption gaps has already been discussed in food availability section. Table 1 shows that with the exception of few years, there was surplus of food supply over demand. On the other hand, the calorie intake is concerned, figures show that an average individual take superabundance and excessive amount of calories as compared to minimum dietary requirements.

Table 3. Food Consumption Kcal/person/day (1989-2004)

Years	Food Consumption (Kcal/per/day)	Minimum Dietary energy requirements
1989-1991	2,310.00	1,750.00
1990-1992	2,300.00	1,750.00
1991-1993	2,310.00	1,750.00
1992-1994	2,370.00	1,750.00
1993-1995	2,390.00	1,750.00
1994-1996	2,420.00	1,750.00
1995-1997	2,440.00	1,760.00
1996-1998	2,430.00	1,760.00
1997-1999	2,420.00	1,760.00
1998-2000	2,420.00	1,760.00
1999-2001	2,420.00	1,760.00
2000-2002	2,380.00	1,760.00
2001-2003	2,340.00	1,770.00
2002-2004	2,320.00	1,770.00

Source: FAO 2005.

2. Child Health and Poverty in Pakistan

During the last two decades, two major socio-demographic have been noticed in Pakistan. First is poverty while second is health and fertility transition. There was rapid steady decline in poverty in 1980's. The reasons were rapid economic growth in agriculture sector and greater inflow of remittances and flow of money from Middle East. In 1990's, increase in poverty rate was recorded. The reasons were decline in economic growth, frequently Government changes, oscillation in crop production especially in cotton, decline in inflow of foreign remittances, drought and economic sanctions and limits after Pakistan's nuclear exposition in 1998. In order to protect the real income of population and to control the prices of food as well as non-food items, no policy could be made and implemented effectively.

Child, new born and infant mortality has been thoroughly scrutinize and inquired in Pakistan. Like in other developing countries, most of studies focused on diarrheal disease because it was believed that diarrheal disease was cause of child morbidity, malnutrition [22] [23] [24] The cause of malnutrition and undernourishment is poverty and low income because people are unable to get sufficient food to fulfill their needs [25] [26] [27] Anyways, in order to find the relationship between poverty and child health especially malnutrition, the World Bank (2002) used the Pakistan Rural Household Survey (PRHS) and found positive relationship between household income and child nutritional status. But these finding are not

authentic because this data is based on rural sample where, due to lack of identifiers or reliable information on height and weight of children, more than 50 % of sampled children were dropped [27].

2.1 Poverty and health indicators in Pakistan in the 1990

During 1990, wide fluctuation in GDP growth has been encountered. For example, in 1990-91, GDP grew by 5.6 percent while in 1992-93, 1996-97 and 2000-01 it was around 2 percent or even lower (Table 1). During fiscal years of 2003 and 2004, GDP grew by 5.1 and 6.4 percent respectively. During 1990s, there was no consistent growth in agriculture production. Especially in case of cotton that is major cash crop, there was bad production that lead to rural household into poverty. Despite some methodological differences, emerging consensus in latest poverty literature indicates that the percentage of population living below the poverty line has increased over time, especially since the mid-1990s. Approximately, one-third of total population was below poverty line (Table 1). Distribution of income has become worse as well [28] Moreover, poverty in rural areas has been higher than urban areas. Within rural areas, southern Punjab and Sindh are most poor areas [29] [30] [31].

Approximately 3000 children were selected as sample in order to get information according to the anthropometric and health modules of the PSES 2000-2001. Table 2 shows that the sample demonstrates male and female children equally. At the time of survey, roundabout one-tenth of the children were less than six months old (0-5). Similarly, one-tenth of the children were less than 12 months old (6-11). Children of higher age groups were between 19 to 25 %.

3. Agriculture growth

Until late 1960s, Pakistan produced surplus of food items and become exporter of food products as well as cash crops. But this situation was for short time period. The average annual agriculture growth rate was 4.54 % in 1990s. This growth rate was too low than in 1980s. Reasons of this are high population growth, frequent natural calamities like floods, import of food items and water shortage etc. but agriculture output rate varied from year to year. During 1992-1993, although the growth rate was low but it remained positive. During 2000-2001 and 2001-2002, there was negative growth. In 2004-2005, remarkable growth achieved as 7.5 % [32].

4. Population growth

Pakistan is seventh most populous country of the world. At the time of independence, population of Pakistan was 33 million. In 2005, population was 153.95 million. Population grew at an average rate of 3 % per annum from 1951 till mid-1980s. Between 1985 to 2000, population growth rate slowed down to average rate of 2.6% per annum. Since 2000-2001, population growth rate was 2.2%. As comparison to other developed and developing countries, the current growth rate is high which is 0.9 and 1.7% respectively [32].

4.1 Agricultural growth and poverty

Empirical evidence shows that agricultural growth effects poverty rate. incomes of 20 % poorest population increase with every 1 % increase in per capita agricultural output. [33] con-

cluded that every 1% increase in agricultural yields reduced the number of people living on less than US\$ 1 a day by 0.83%. Growth in agricultural productivity raises the income level of households either these are poor farmers or landless laborers. Moreover, agricultural productivity growth put impact on food prices [34] The poor people spend high share of their earnings on staple food. In this way, they get benefit by its production that led to low price of staple food. Urban poor and landless laborers get greater benefit rather than poor farmers. Hence, increase in incomes and earnings of farmers and farm workers reduce poverty. Moreover, it provides market for labor-intensive consumer goods.

Agriculture contributes to food security, nutrition and macroeconomic stability [35] At the micro level, insufficient and asymmetrical access to food results decline in labor productivity as well as reduce investment in human capital [36] With a sample of 97 countries [37] narrated that nutritional levels had influence on economic growth. [38] stated that with the increase of caloric intake results to reduce in mortality and raised productivity. The hunger and malnutrition is acknowledge as the first Millennium Goal.

5. Poverty and gender aspects

In rural development, women were considered as supplement to their husbands or as daughters or mothers. It was predicted that with the economic growth of their husbands, women's position would prosper ultimately. But this speculation contradict the unequal power relationship between men and women of different classes, castes and races [39]. Gender discrimination is very common in Pakistani society. Even though, women and girls face discrimination about education, health-care as well as in food distribution at homes. Statistics show the data that female literacy rate is only 42% whereas 65% for men [40].

In Pakistan, women's participation in the labor market is intended by social and cultural restrictions and curtailment on women's mobility, occupational segregation and rigid gender role ideologies. For women, another barrier is time burden and management due to domestic tasks and works. Mostly women work for their survival because the pauperization is very severe in rural communities. As a result, it's very difficult for women to survive and get approach on social and productive parameters and get equality with men.

5.1 Poverty reduction strategy

Over the past several decades, it was accepted that for reduction of poverty, rapid economic growth is essential. At macro level, In order to enhance quantity and quality of education, health and other services, accessibility of public resources are crucial and vital for economic growth. At micro level, economic growth implies employment opportunities; enhance income level of people and henceforth poverty. Although rapid growth is essential in order to reduce poverty. Only those countries become successful to deduct poverty that attained rapid economic growth over long period of time. Best example is East Asia.

As agriculture is that one sector who configure the wellbeing and welfare of urban population as well as in urban population [41] Pakistan has made noteworthy and remarkable ef-

forts by lowering tariffs in order to improve the economic growth but economic performance was dreary in 1990s due to which poverty rose. In 2001, Government made strategies to reduce the poverty. The strategies were:

1. Investment in human capital
2. Sharpening economic growth and maintaining macroeconomic stability
3. Improving governance
4. Escalating earmark interventions
5. Amplifying and boosting up social safety nets (GOP, 2003).

6. Conclusion

Data demonstrates that Pakistan is food sufficient country at national level but food security isn't big problem. Undernourished population place questions about food and income distribution.

To cope up with these problems, following initiatives should be taken:

- Boost up and endure the food production for which farmers and researchers must be given some temptation and stimulus
- The gaps between incomes of different /social groups must be shortened.

Child malnutrition depends upon food, health and medical care but it faces multi problems in Pakistan which includes lack of nutrition education, household food insecurity, infectious diseases and poverty etc. Illness, sickness and malnutrition measured by weight-for-age and height-for-age are two indicators of child health.

Mother's education has a positive role in child health. Children of literate mothers are healthier than children of illiterate mother. In order to improve the child health, mother's education in poor families is more conspicuous than in non-poor families.

Pakistan's economic growth mainly depends on agriculture sector. Due to this sector, income of small farmers increases. Rural development, improvement in agriculture and rural industries as well as the employment opportunities enhances. Overall, with the agriculture growth, income level of individuals and life standard of people intensify. Moreover, poverty level reduces due to economic growth.

7 References

- [1] IFDP (2002), "Food sovereignty: a right for all, political statement of the NGO/CSO forum for food sovereignty", Institute for Food and Development Policy, World Food Summit, Oakland, CA, June 14.
- [2] Mittal, S. and Sethi, D. (2009), "Food security in South Asian: issues and opportunities",
- [3] Working Paper No. 240, Indian Council for Research on International Economic Relations, Islamabad.
- [4] Maplecroft (2009), Food Security Risk Index 2009, Maplecroft Risk, Responsibility and Reputation.
- [5] United Nations (2000), United Nations Millennium Declaration, paper presented at 8th Planery Meeting, United Nations Headquarters, New York, NY, September 8, 2000, Resolution Adopted by General Assembly.

- [6] Khan, M.A. (2000), Food Security in Pakistan, Asian Productivity Organization, Tokyo.
- [7] Sulehri, A.Q. and Ramay, S.A. (2009), Food Security Where We Are (Current Status) and Where We Want to Go (Way Forward), Parliament of Pakistan, Strengthening Democracy Through Parliamentary Development, UNDP, Islamabad.
- [8] Nord, M., Andrews, M. and Carlson, S. 2008. Household food security in the United States, 2008. Che, J. and J. Chen. 2002. Food insecurity in Canadian households. Health Reports, Vol. 12 (4) pp. 11-22.
- [9] Booth, S. and A. Smith. 2001. Food security and poverty in Australia – challenges for dietitians. Australian Journal of Nutrition and Dietetics, Vol. 58 (3), pp.150-156.
- [10] FAO, 2004. FAO statistics. Food and Agriculture Organization of the United Nations, Statistic Division, Socio-Economic Statistics and Analysis Service.
- [11] Brown, N., J. Laffan and M. Wight. 2008. High food prices, food security and the international trading system. Presented to the Informa National Food Pricing Summit, Sydney, 29-30 September.
- [12] MacFarquhar, N. 2011. Food prices worldwide hit record levels, fueled by uncertainty, U.N. Says. NYT, February 3, 2011.
- [13] Krugman, P. 2011. Droughts, floods and food. NYT, February 13, 2011.
- [14] GOP. 2010. Economic survey of Pakistan, 2007-08. Ministry of Food and Agriculture. Finance Division, Economic Advisor's Wing, Islamabad, Pakistan.
- [15] FAO, 2006. Food security statistics-Pakistan. Food and Agriculture Organization of the United Nations.
- [16] WB. 2011. Gross domestic product 2010, PPP. World Development Indicators database.
- [17] GOP (2011-12). Economic Survey of Pakistan. Ministry of Finance, Government of Pakistan. Federal Secretariat, Islamabad, Pakistan.
- [18] FAO, 2011a. Country rank in the World, by commodity. Food and Agriculture Organization of United Nations.
- [19] Yasin, M.A. 2000. An investigation into food security situation in rain-fed areas of district Rawalpindi. M.Sc. (Hons.) Thesis (Unpublished), Department of Agricultural Economics. University of Agriculture Faisalabad, Pakistan.
- [20] FAO, 2005, FAO statistics. (Available at <http://faostat.fao.org/site/291/default.aspx>).
- [21] Riely, F., N. Mock, B. Cogill, L. Bailey, and E. Kenefick. 1999. Food Security Indicators and Framework for Use in the Monitoring and Evaluation of Food Aid Programs. Food Aid Management (FAM), Washington D.C.
- [22] Government of Pakistan (GOP), 2007. Economic Survey of Pakistan: 2005–2006. Ministry of Finance. GOP, Islamabad.
- [23] Arif, G. M., and Sabiha Ibrahim (1998) Diarrhoea Morbidity Differentials among Children in Pakistan. The Pakistan Development Review 37:3, 205–230.
- [24] Mahmood, M. Arshad (2001) Determinants of Growth Retardation in Pakistani Children under Five Years of Age. The Pakistan Development Review 40:4, 1009–1032.
- [25] Pakistan Institute of Development Economics (PIDE)/UNICEF/Planning Commission (2004) National Nutrition Survey 2001-02. Islamabad: Pakistan Institute of Development Economics/UNICEF/Planning Commission.
- [26] Alderman, H., and Marito Garcia (1994) Food Security and Health Security: Explaining the Levels of Nutritional Status in Pakistan. Economic Development and Cultural Change 42:3, 485–508.
- [27] Martorell, Reynaldo, and Teresa J. Ho (1994) Malnutrition, Morbidity and Mortality. Population and Development Review, A Supplement to Vol. 10.
- [28] World Bank (2002a) Poverty and Nutrition in Bolivia. Washington, D. C.: The World Bank.
- [29] Jamal, Haroon (2003) Poverty and Inequality during the Adjustment Decade: Empirical Findings from Household Surveys. The Pakistan Development Review 42:2, 125–136.
- [30] Malik, Sohail Jahangir (2004) Agriculture Growth and Poverty in Pakistan. A Draft Report prepared for the Asian Development Bank, Islamabad.
- [31] Arif, et al. (2001) An Introduction to the 1998-99 Pakistan Socio-economic Survey (PSES). Pakistan Institute of Development Economics, Islamabad.
- [32] Malik, Sohail Jahangir (2004) Agriculture Growth and Poverty in Pakistan. A Draft Report prepared for the Asian Development Bank, Islamabad.
- [33] Government of Pakistan (GOP), 2005b. Pakistan Social and Living Standards Measurement Survey 2004–2005. Statistics Division, Federal Bureau of Statistics, Government of Pakistan, Islamabad.
- [34] Thirtle, C., Irz, X., Lin, L., McKenzie-Hill, V. and Wiggins, S., 2001. Relationship between changes in agricultural productivity and the incidence of poverty in developing countries. Report commissioned by Department for International Development, London.
- [35] Timmer, P., 2002. Agriculture and economic development. In: Gardener, B., Rausser, G.
- [36] Timmer, P., 1997. How well do the poor connect to the growth process? CAER Discussion Paper No. 178. Harvard Institute for International Development (HIID), Cambridge, MA.

- [37] Fogel, R.W., 1994. Economic growth, population theory, and physiology: The bearing of long term processes on the making of economic policy. *American Economic Review*, 84(3): 369–395.
- [38] Nadav, C., 1996. Nutritional thresholds and growth, mimeo, Department of Economics, Ben-Gurion University, Israel.
- [39] Fogel, R.W., 1991. The conquest of high mortality and hunger in Europe and America: Timing and mechanisms. In: Higonnet, P., Landes, D.S., Rosovsky, H., (eds.) *Favorites of Fortune: Technology, Growth, and Economic Development since the Industrial Revolution*. Cambridge, MA: Harvard University Press.
- [40] Commonwealth Secretariat, 2001. *Gender Mainstreaming in Agriculture and Rural Development; A Reference Manual for Governments and Other Stakeholders*.
- [41] Government of Pakistan (GOP), 2003. *Accelerating Economic Growth and Reducing Poverty: The Road Ahead. Poverty Reduction Strategy Paper*, Ministry of Finance, GOP, Islamabad.
- [42] Coxhead, I. and Jayasuriya, S., 1994. Technical change in agriculture and land degradation in developing countries: A general equilibrium analysis. *Land Economics*, 70(1): 20–38.

IJSER