

Assigned by Ministry of Agriculture, Forestry and Fishery

Survey on Agricultural and Rural Development based on Population Issues

— Pakistan —

**Focus on
North West Frontier Province**

March 2004

**The Asian Population and Development Association
(APDA)**

PAKISTAN



N.W.F.P

Include following three regions

- ① N.W.F.P
- ② F.A.T.A.
- ③ Gilgit Agency

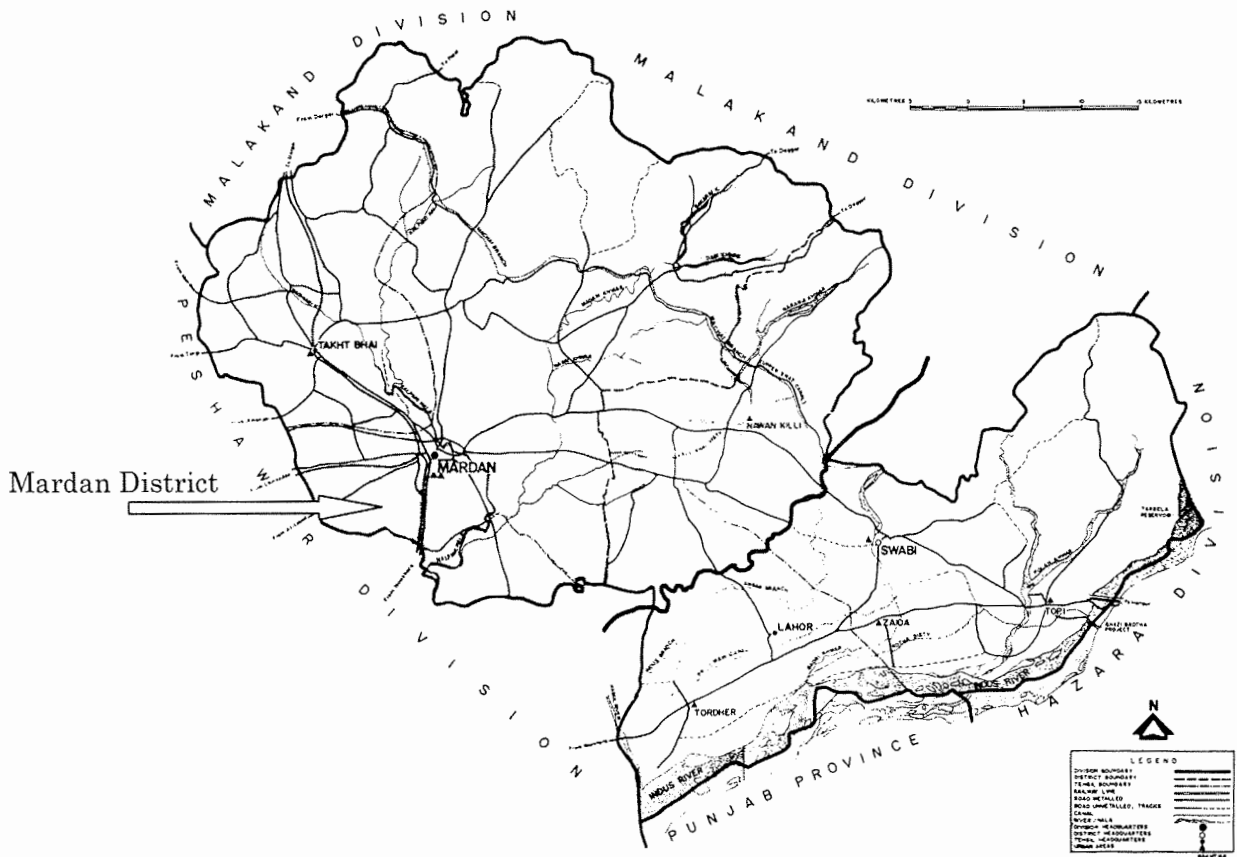
North West Frontier Province

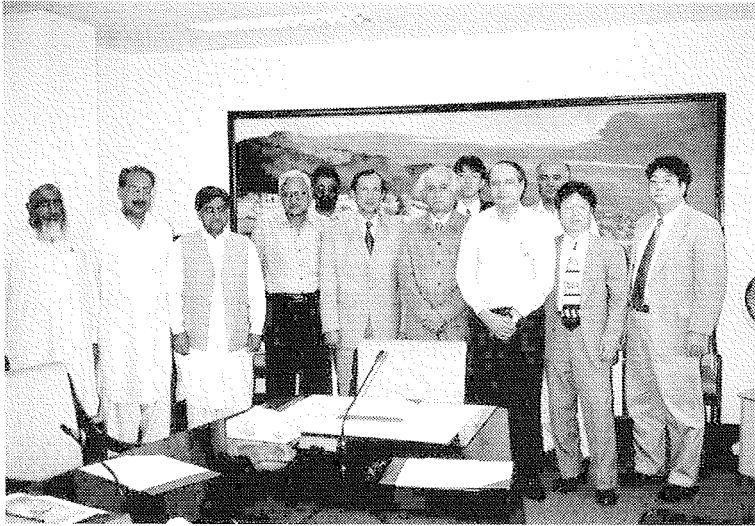
(N.W.F.P.)



Mardan Division

(N.W.F.P.)





Ministry of Food, Agriculture and Livestock (MINFAL)

Front from right

- Mr. Osamu Kusumoto Team Member
- Dr. Seiichi Fukui Team Member
- Mr. Saleem Rhan Joint Secretary MINFAL
- Dr. Mohamad Nagizade Team Leader
- Mr. Sarik Nagir Ahmad Secretary MINFAL

Rear center

- Mr. Masanori Takemoto Team Member

Left side

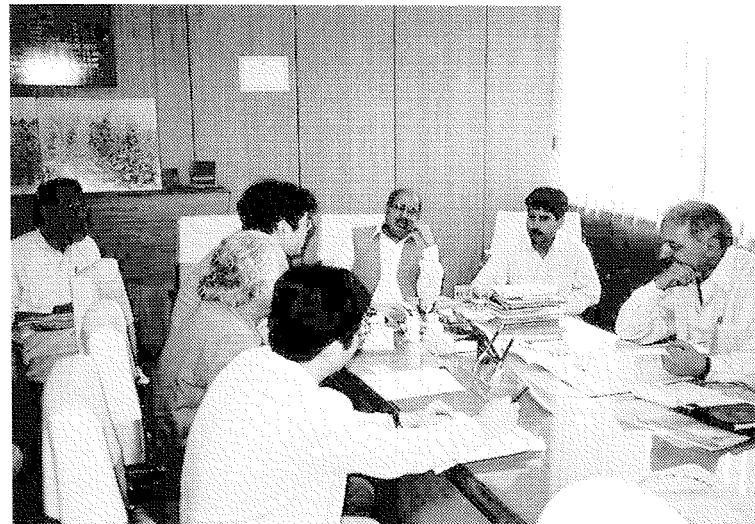
- Mr. Ifrahim Bhatti MINFAL Deputy Secretary



Ministry of Finance

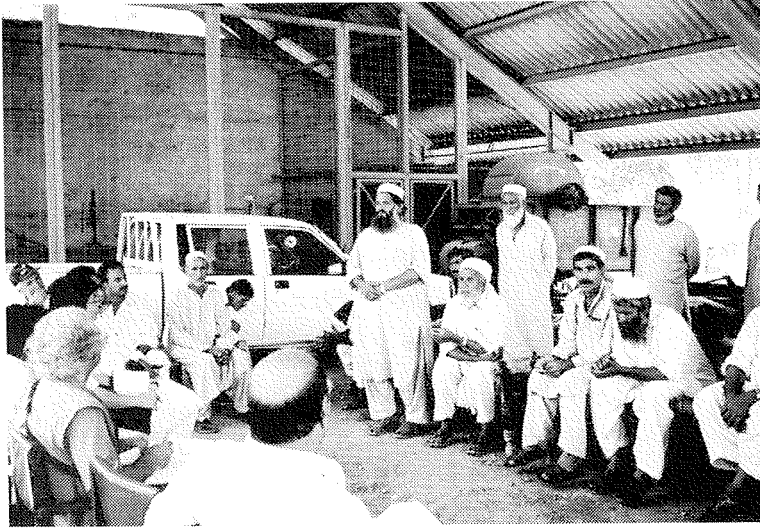
Second from right

- Dr. Ashfaq H. Khan Economic Advisor



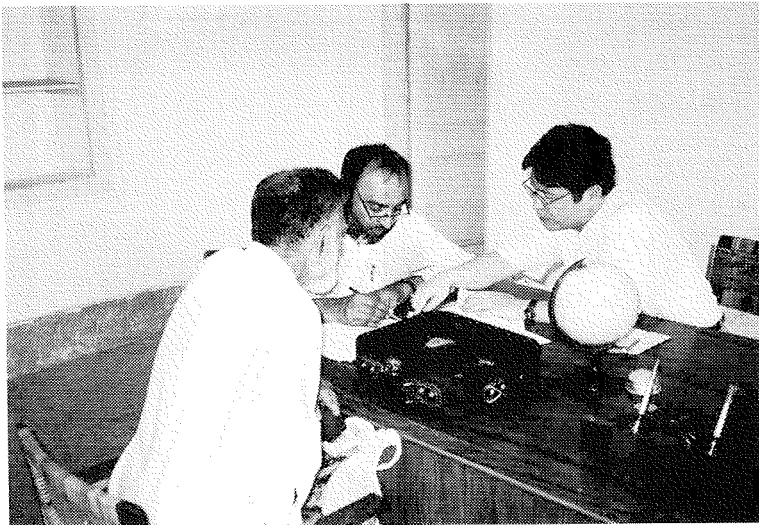
Department of Agriculture, N.W.F.P. From right side

- Mr. Fareed Khan Secretary
- Mr. Muhammad Zulfiqar Planning Officer
- Dr. Zar Quresh
Director Out-Reach, NWFP Agricultural University



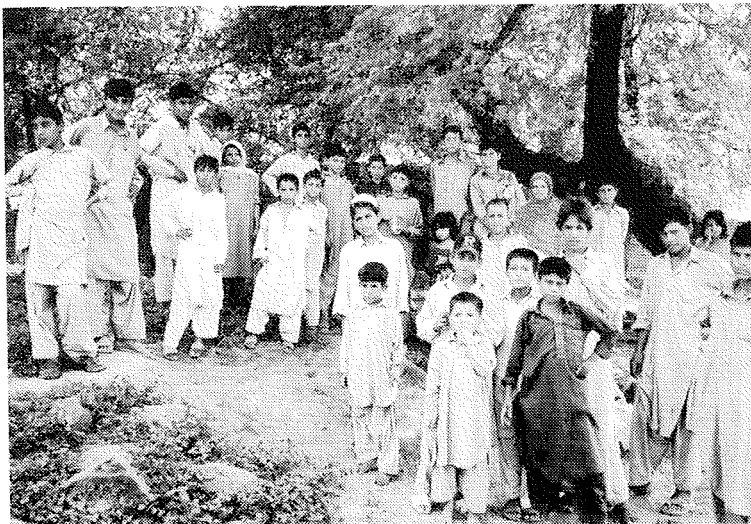
Hearing survey at Mardan

Hearing on Agricultural situation at Mardan from Farmers



Hearing survey at Mardan

Questionnaire survey



Children at surveyed area

Situation of rapid population increase

Foreword

This report presents the results of the “Survey on Agricultural and Rural Development based on Population Issues”, a project implemented in Pakistan by the Asian Population and Development Association (APDA) under the consignment from Ministry of Agriculture, Forestry and Fisheries in 2003. The survey and compilation of the results were mainly carried out by the members of the APDA Survey Committee (Chairperson: Dr. Shigeto Kawano, Professor Emeritus, the University of Tokyo).

This survey was conducted under the concept that “Japan’s cooperation in the field of agriculture, forestry and fisheries positions contribution to stability of global food supply and demand as its important measure whose further promotion is expected. Meanwhile, in implementing international cooperation, strong demand for efficient and effective implementation and transparency exists for ODA in view of the country’s difficult economic and financial condition in the recent years. For this purpose, a study of subjects such as problems related to assistance in the major target countries of this survey, grasping of assistance needs, agricultural and rural development and the relationship between assistance and agricultural produce trade is indispensable. The study therefore must be performed from the viewpoint of changes in agricultural/rural population and employment structure in the developing countries.” The field survey in Pakistan was conducted with the guidance and cooperation of Mr. Salik Nagir Ahmad, Secretary, Ministry of Food, Agriculture and Livestock (MINFAL), Mr. Hiromichi Kitada, First Secretary, The Embassy of Japan, and other cooperators.

In Japan, guidance regarding the content of the survey and assistance for the arrangement of field survey were offered by the International Cooperation Division, General Food Policy Bureau, the Ministry of Agriculture, Forestry and Fisheries and South Asia Division, Ministry of Foreign Affairs. In addition, Ms. Nighat Mehrose, Commercial Counsellor, Embassy of the Pakistan in Japan had made all the arrangements for the field survey in Pakistan. I would like to take this opportunity to extend my deepest gratitude for their support.

I sincerely hope that this report will contribute to the advancement of the rural community and agricultural development programme in the Pakistan and support effective assistance by the Japanese Government in this country.

Lastly, I would like to note that this report has been compiled under the sole responsibility of APDA and does not necessarily reflect the view or policies of the Ministry of Agriculture, Forestry and Fisheries, or the Japanese Government.

March 2003

Dr. Taro Nakayama,
Chairman,
The Asian Population and Development Association

Contents

Foreword

Chapter 1 Economy of Pakistan	1
1. Viewpoint for Analysing the Economy of Pakistan	1
(1) Development and economics	1
(2) Market mechanism and policy	2
(3) Framework of social science and importance of institutional analysis	2
Chapter 2 Agriculture in Pakistan	3
1. Conditions for agricultural development in Pakistan	4
(1) Role of non-technical factors in improving the efficiency of farming productivity and resource allocation	5
(2) Meagre government support and the issue of credit availability for small farms	6
(3) Need for farmer organisation	7
(4) Conclusion: small farmers and tenant farmers are beneficiaries of general agricultural cooperatives	8
2. Accession to WTO and Pakistan's agricultural strategy	10
Chapter 3 Population	13
Introduction	13
1. Main results of 1998 census	16
2. Internal Migration	18
3. Population structure and unemployment rate	19
4. Literacy rate and enrolment ratio	21
5. Population by religion and regional disparity	25
6. Fertility and infant mortality rate	28
(1) Trends of fertility	28
(2) Infant Mortality Rate	30
Chapter 4 Agriculture and Socio-Economics of Surveyed Villages	33
1. Outline of Mardan District and regions included in the study	33
2. Result of Farm household economics in the surveyed area: Rural poverty and agricultural development in NWFP	39
(1) Outline of surveyed households	41
(2) Farming of surveyed farm households	45
(3) Poverty in surveyed regions and their factors	49

3. Population of surveyed area and hearing survey results	51
(1) Outline of population in surveyed area	51
(2) Attributes of study subjects	54
(3) Social structure	55
(4) Public health and others	70
(5) Child fertility and mortality/ideal number of children	72
Chapter 5 Tasks of Cooperation - from the result of survey findings-	77
1. From the viewpoint of macro economy	77
2. From the results of farm household budget survey	78
3. From the viewpoint of WTO accession and Pakistani agriculture	79
4. From the viewpoint of population and social structure	80
Appendix :	83
1. Survey Committee	83
2. Cooperators	84
(1) The Embassy of Japan	84
(2) Government and Agencies	84
(3) United Nations and International Organization	86
(4) Other cooperator	86
3. Survey Schedule	88
4. Collected Material	90

Chapter 1 Economy of Pakistan

1. Viewpoint for Analysing the Economy of Pakistan

Analysis based solely on economic viewpoint is not sufficient when discussing agriculture in Pakistan and its development. An interdisciplinary and institutional discussion is needed for effective analysis of socio-economic, political Issues, and conventional factors involved in Pakistani agriculture and its development.

Such viewpoint becomes particularly important when taking up the subject of Pakistani agriculture and its development from the standpoint of Japanese aid. It is not possible to take responsibility for the outcomes of aid unless institutional factors that are hindering agricultural production and livelihood of farmers are identified. For this reason, there is concern that such aid will generate misunderstanding among neighbouring countries and international community that aid to Pakistan is being offered based on political judgment and in response to requests from foreign countries. Based on information obtained at this hearing survey, we will raise several issues in conducting analysis in line with reality.

(1) Development and economics

According to historical school economics, economy of a country is a historical phenomenon defined by society and by various institutions and natural conditions unique to that country, negating existence of general or universal economic theory that can be applied to all countries over different periods of time. In contrast, neoclassical economists eliminate social and institutional conditions. It assumes an abstract economic unit called homo-economics that acts in a rational manner based on purely economic motivations in an attempt to identify the law of dynamics for the entire national economy.

From the viewpoint of studying and assisting the true economic and agricultural development of developing countries, however, the first step of action shall be to unveil the factors that are hindering

socioeconomic development in that country. Agriculture may develop and poverty may be solved automatically over a long term once the obstacles are removed and the country's economy grows. If this interpretation (hermeneutics) is valid, identifying the factors hindering socioeconomic development in a country would become a key issue in implementing aid in an effective manner and conducting an analysis from an institutional viewpoint.

(2) Market mechanism and policy

For instance, do market mechanism and existing institutions unconditionally and automatically lead to smooth agricultural development, as pointed out by neoclassical economists? Reality that we have seen to date tells us otherwise. Rather, the social institutions and government policies represent the important factors that lead to development and self-supporting economy because agricultural development in reality is largely dependent on not only physical conditions such as resources, technology and foreign financial aid but also customs and various institutions.

(3) Framework of social science and importance of institutional analysis

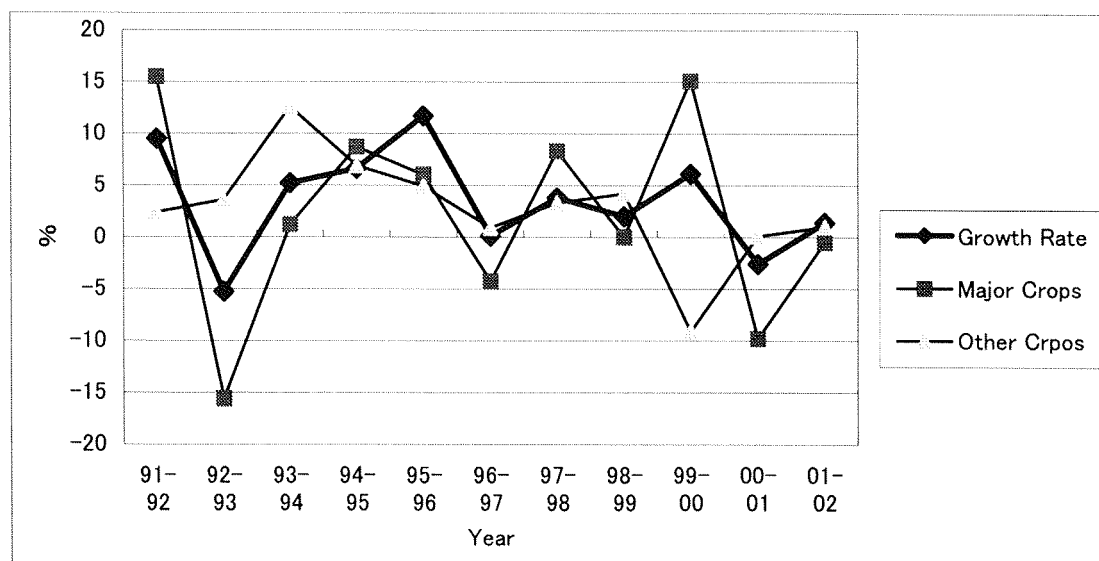
Socioeconomic theories to date, particularly economics of any school, are based on the experience of Europe and America during their highest stage of development, or have been at least theorised with such experience as the starting point. However, these theories often do not work when applied to other societies and regions. In this sense, existing theories are not capable of fully analysing all countries.

Inability of existing theories to perform sufficient analysis and leaving unanswered questions appears to indicate the difference in fundamental institutions and behavioural patterns including the prerequisites for materialisation of socioeconomic theory. If that were the case, we must determine whether they are complementary or substitutional in connection with the existing institutions and customs and their development process. While various definitions of "institution" exist, one such definition would be "restriction of actions that are non-technically determined (by law, policy and customs) and has self-restraining characteristics." When an economic society is seen as a "system," i.e. an "aggregate of various schemes" comprising the economy, the existence of economic market system and the process of its development are not by any means uniform with a wide range of economic market systems existing based on traditions and systems of each country.

Chapter 2 Agriculture in Pakistan

Agriculture is the principal industry of Pakistan that accounts for one-fourth of her GDP and 44% of employed population. It also exerts large influence on the country's export and contributes to industrial commodities using processed agricultural commodities in addition to export of raw materials. As majority of Pakistan's poverty exists in rural areas, agriculture can be positioned as an important industry in the country's battle against poverty. Although the government has included agriculture as one of the country's four major industries along with energy, small-scale manufacturing and IT, development of agriculture is facing difficulties owing to institutional issues. Agriculture is also inevitably subject to instabilities from non-artificial causes such as climate. (Figure 2-1)

Figure 2-1 GDP Growth Rate in Agriculture



Source: Prepared by the data from Government of Pakistan, *Economic Survey 2001-02*.

The 12 chief crops in Pakistan listed in Figure 1 are rice, wheat, oats, jowar (sorghum), bajra (millet), maize, gram, mustard, sesamum, sugar cane, tobacco, and cotton. Particularly important among them are wheat, rice, sugar cane and cotton. Wheat is Pakistan's staple food, rice is Pakistan's main export item, sugar cane is an important agricultural raw material that meets the domestic demand for sugar, and cotton is the most important raw material for the manufacturing industry and export.

An analysis of Figure 2-1 shows that growth rate remains unstable, ranging from as high as 11.7% to as low as -5.3%. Such fluctuations in growth rate are caused by natural causes such as abnormal weather and pests. Use of low quality pesticides and lack of attention for secondary crops compared to main crops resulted in lower growth rate for agriculture as a whole. These are regarded as more of an institutional problem than shortage of agricultural chemicals. In concrete terms, knowledge and technology about agriculture have not spread among small farmers and tenant farmers owing to lack of effective farmers' organisations, resulting in useful knowledge and skills not being introduced to the society.

Nevertheless, Government of Pakistan is hardly aware of this problem. For instance, when massive water shortage occurred due to drought in 2001, Pakistani Government only stressed the examples of such natural disasters and did not make any attempt to make reference to fundamental problems¹. Even if it were caused by natural disaster, measures such as improvement of irrigation facilities are needed to make provisions against such disaster. Moreover, the damage can be significantly reduced if the farmers formed farmers' organisations to implement self-defence measures. However, agriculture has become a fragile key industry subject to natural fluctuations because farmers are unable to utilise knowledge about agriculture.

1. Conditions for agricultural development in Pakistan

Speaking from our experience to date and the results of our study, one cannot expect development of agriculture through government policy alone.

Government of Pakistan has continued to set out policies with emphasis on supply to overcome food shortage. However, there is unceasing criticism of the government's very capacity in implementing such agricultural policy. Policy is not effectively implemented because the public agencies in Pakistan are burdened with bloated and inefficiently-managed organisations in addition to the problem of government and military intervention.

Ministry of Food, Agriculture and Livestock itself admits that production is declining due to the

¹ Refer to Government of Pakistan, *Economic Survey 2001-02*, Chapter 2 Agriculture

faulty policy that gives priority to consumers over producers. For instance, the ministry's expert indicated, after mentioning that it is his personal opinion, that "subsidy to consumers for the money they spent on wheat would be used more effectively if it is diverted to producers. However, subsidy for wheat is not permitted under IMF's structural adjustment demand which is intended to continue the import of wheat from the U.S."²

(1) Role of non-technical factors in improving the efficiency of farming productivity and resource allocation

Productivity of agriculture in Pakistan is low. In contrast, population growth rate is high, making it impossible for food production to cope with population pressure. Meanwhile, food consumption is increasing not only in areas with food shortage but also in areas with food surplus. It is not sufficient to merely increase agricultural production through technical means. Poverty reduction and alleviation of disparity in food consumption can only be attained by combining improved efficiency in resource allocation through non-technical means such as institutional reform.

All production factors are linked with agricultural productivity. For this reason, farmers of all classes must have access to these factors, particularly farmland, to improve their productivity. While reallocation of farmland and expansion of production factors are requirements for increasing agricultural productivity, there are other conditions involved including the existence of farmer organisations.

The conclusions drawn by a wide variety of case studies that exist on the theme of farming scale and productivity are not consistent. One study asserts that no clear disparity exists among different scales of farming while others insist that productivity is high in small- and large-scale management but low in farms of intermediate-scale. In addition, one case study has concluded that small-scale farming is more efficient than large-scale farms in Northwest Frontier Province (NWFP) and that productivity and farming scale are in inverse relation.

One can see by summing up the results of a field study that productivity in NWFP is dependent on the education level of farmers, availability of credit and the extent of land dispersion³. Therefore, farmer education, improvement of credit availability and diffusion of farming techniques would play a large role in solving the problem of inefficient agricultural productivity⁴. Small farms demonstrate higher productivity in NWFP because they can realize high productivity per unit by deploying intensive production factors, particularly family labour, to limited farmland.

² Pakistan Institute of Developing Economics, 2003,7,22.

³ Parikh, A. and K. Shah, "Measurement of the Technical Efficiency in the North West Frontier Province of Pakistan", *Journal of Agricultural Economics*, 45: 132-138, 1994.

⁴ Parikh, A., F.Ali, and M.K.Shah, "Measurement of Economic Efficiency in Pakistan Agriculture", *American Journal of Agricultural Economics*, 77:675-685.

Furthermore, small farms have resistance against temporary financial difficulties as they own more livestock per person compared to large farms.

Agrarian reform was carried out twice—in 1959 and 1972—to improve the productivity of farmland but could not dissolve the feudalistic land ownership. Since the majority of parliamentarians were landowners, they were reluctant about establishing a strict system that would have negative effect on their land ownership. According to our hearing survey, landowners are able to evade reallocation of farmland through various legal means in reality. An example of such means is to give the title of land ownership to a child that is not even born. This serves as evidence for the fact that the government has not so much concern about the land reform.

(2) Meagre government support and the issue of credit availability for small farms

According to our field survey, larger farms have the tendency to take advantage of their political clout and economic strength to not repay their loans while small farms have high repayment rate as their non-repayment will lead to the risk of not being able to take any credit in the future. For this reason, the support schemes of international financial institutions that offered credit to large-scale farms are seen to have failed. Farming is no longer an economically viable vocation in Pakistan unless one owns a large plot of land or has enough political influence to obtain agricultural credit.

Majority of farmers do not have access to credit despite the existence of branch network of Agricultural Development Bank of Pakistan (ADBP) which is a public agency for offering credit to farmers. Therefore, the majority of small farmers rely on their friends and relatives for their funding. Even though availability of low-interest loans would increase their income and create opportunities for their children to receive education, they are placed in a situation where they are compelled to rely on informal high-interest credit because powerful landowners are monopolising the credit from government agencies. As a result, small farmers have less income and cannot send their children to school⁵. Despite the fact that farms smaller than 5 hectares account for overwhelming majority of all farms in Pakistan, they received less than half of entire ADBP loans offered. The rest went to farms owning 5 hectares or more land.

Small farmers in Pakistan have no choice but to rely on personal networks as a result of ineffective measures by the government and the lack of strong farmers' organisation. This has given rise to the present situation where kinship and informal credit play an important role in protecting the economic activities and livelihood of the farmers instead of collective farmer activities and the government.

As a result, shortage of funds invested in agriculture, decline in land productivity, meagreness of government support and non-existence of farmer organisation are placing the small farmers of

⁵ A landless goat-raising farmer expressed his dissatisfaction during a study conducted in Mardan region of AWP.

Pakistan in difficult conditions and threatening the country's food security. Hardships of small farms that are supporting almost the entire population of Pakistan—which is currently increasing at the rate of 2.16% a year from the present 140 million—is affecting the overall food production in the country and manifesting in the form of rise in poverty line.

As Food and Agriculture Organisation of the United Nations (FAO) pointed out in the year 2000, food shortage is also becoming increasingly severe in Pakistan. Nevertheless, authorities have ignored such indication by saying that food shortage is caused by groups of people that hide and smuggle food, not by agricultural production. So far, the government has not been able to present a long-term plan for overcoming food shortage that has caused 19% of the country's population to suffer from malnutrition. Based on comparison of increase in food demand and increase in food production, it has been estimated that demand for wheat will increase by 29% by 2010 while its production will increase only by 22%.

(3) Need for farmer organisation

Considering the willingness, policy and implementing capacity of the Government of Pakistan, it is necessary to stress the importance of an intermediate institution (farmers' organisation connecting small farmers with national and state governments) in attaining improvement of the agricultural sector.

In the case of Pakistan, the level of farming techniques including farming and economy is high enough to make the existence of technical shortage unlikely. The laboratories we visited in our study were full of researchers with doctorate degrees from top European and American universities. In addition, a wide variety of research organisations exist on national and state levels, offering sophisticated presentations of their activity results. However, it is doubtful whether the outcome of such research in the fields of economy, society, information and technology are reaching the family-run small farms and tenant farmers at the other end of the spectrum. At present, the findings from research at laboratories are intended for large-scale farms and are not contributing to diffusion of information and technical know-how to smaller farms.

A system that understands the demands of the farmers and meets such demands by transforming that knowledge into practical form is required to diffuse research results and improve the livelihood of small farmers. Intermediate organisations would correspond to such system, although they are faced with very difficult situation. Numerous organisations including those that are community-based currently exist but their foundation is very weak. Moreover, as our hearing survey has shown, government and large landowners are reluctant about fostering intermediate organisations and institutions participated by farmers and are operating as disincentives in many cases. This is creating distortion in the allocation of resources and opportunities of all sorts while

disparity in technology diffusion is expanding, as technology developed and analysed at laboratories remain undiffused and socialised.

Majority of experts and literature stress the importance of farmer education in improving agricultural productivity, diffusing technology including information and alleviating the poverty problem.⁶ Although education is a major premise, it is clear that sufficient effect cannot be expected by simply promoting such policy and strategy. In the case of Pakistan, offering aid without conducting sufficient analysis of her social institutions may not lead to improvement of livelihood for people living on the edge.

Rural areas of Pakistan is predominantly comprised of small farms and are characterised by feudalistic form of land ownership, large number of landless farmers and interventions from political and illegal power relationships. In view of this situation, collective activities of farmers as intermediate organisation, i.e. the so-called multipurpose general agricultural cooperative-oriented institution, would become important if one is to place importance on fostering self-supporting agricultural production among small farmers.

(4) Conclusion: small farmers and tenant farmers are beneficiaries of general agricultural cooperatives

When dwelling on agriculture in Pakistan in view of the results of the field study, one can conclude that agricultural cooperatives with farmer participation that can play the role of farm manager education on a rural level, giving priority to small farmers than agricultural corporations and large farms, are of utmost importance. Technical support, equal access to information, group purchasing of production supplies and effective utilisation of credit can be realised once such farmer participation-oriented agricultural cooperatives are formed. According to our hearing survey, 80% of price increase in production supplies are passed on from landowners to tenant farmers.

While group purchasing of production supplies has clear benefits for small farmers and tenant farmers, it is not an easy task. Efforts to form strong agricultural cooperatives in Pakistan are encountered by disincentives even on the community level. Such disincentives include undeniable existence of restrictions from firmly spread social structure, discrimination between landowners and landless and discrimination against women that rule out the possibility of forming efficient community-based farmer organisations. On the other hand, there must be opportunities to gradually dissolve these factors that hinder the formation of farmer organisations when implementing policy intervention for formation of farmer participation-oriented agricultural cooperatives.

⁶ Social Science Institute, *Assessment of Resource Conservation Technologies in Punjab*, p.53, June 2003.

The Government of Pakistan is conducting various forms of research on problems faced by agriculture and is carrying out technical interventions that are accompanied by high cost. Cooperatives Act is already in existence as well. However, these policies have not attained their purpose owing to insufficiency of government's implementing capacity and absence of powerful farmer organisation. As indicated in the UNDP report, long-term development of agriculture in Pakistan depends on whether comprehensive farmer participation, including its technical effect, is attained⁷.

For this reason, there are no long-term prospects for Pakistani agriculture as long as it continues to be based on the existing farm ownership system. Socialisation of service, information and technology would advance on national, state and community levels once a powerful farmer-participated organisation is realised, and is expected to benefit all parties concerned including landed farmers, landless farmers, women, local governments and NGOs⁸.

Group activities have the function of improving the productivity of wide-ranging management styles of small farmers through collaborative activities (e.g. shipping, facility use, technical guidance, purchase of production and livelihood supplies and sales) and reducing their cost, while bolstering their competitiveness and equipping them with resistance against inadequate resource allocation. This is attributed to increased competitiveness in capturing the market as well as to its long-term food supply function that would maintain the subsistence line and alleviate the poverty of farmers and non-farmers in addition to enabling continuation of food production. Advancement of Japanese agriculture under decentralised and small-scale management conditions through the existence of collective farmer activities (general agricultural cooperatives) offers a clear example of this fact.

Manpower, land, water, traditional techniques and organising power of farmers comprise the most important resources in rural areas. It appears that poverty alleviation can be realised by attaining agricultural development if these elements are organised in a comprehensive manner and combine it with a system that steers various groups of small farmers, tenant farmers and landless farmers in the direction of agricultural production activities. In particular, community (i.e. rural and regional) based agricultural production activities not only generate employment and income but also realizes regional integrity and socialisation of technology in many rural communities, thereby contributing significantly to easing of tensions that exist in multiethnic society.

⁷ UNDP, Project of the Government of Pakistan, 1998/3, p.27.

⁸ *ibid.* p.29

2. Accession to WTO and Pakistan's agricultural strategy

The Government of Pakistan is currently envisioning to "leverage" the country's agriculture through accession to WTO and liberalisation of agriculture association with it. Very optimistic views were dominant with regard to this point. However, careful examination is needed to determine whether this accession to WTO would benefit the Pakistani agriculture.

To begin with, WTO agreements consist of "formulation of rules," which covers trade-related investment measures and intellectual property, and "improvement of market access," which is intended to improve foreseeability in the market through elimination of trade barriers. In particular, improvement of market access aims to improve certainty in business environment by clearly quantifying trade barriers through justification of tariffs as border measures in return for elimination of non-tariff barriers. It aspires to turn both producers and consumers into beneficiaries by eliminating all sorts of trade barriers through WTO agreements.

The fundamental spirit of WTO is derived from the so-called "theory of free trade" which strives to increase industrial competitiveness by expanding the market through lowering and elimination of trade barriers and improving the welfare of national economy as a result. The theoretical support for this policy is the theory of comparative advantage in which trading countries mutually realize higher economic welfare through trade by specialising in areas of manufacturing they are strong in. However, in cases where the industry that the trading partner is specialising is same as the industry being promoted in that country, such free trade system would allow inexpensive products to flow in from the other country, which, in turn, leads to problems such as hindered advancement of industry at home and failure in lowering of production cost through economy of scale and improved worker skills. This gave rise to an effort to prevent influx of manufactured goods from trading partners by taking government measures to impose tariff on such goods and realize internationally competitive domestic industries through expansion of domestic production. This is the essence of the so-called "protectionism." Protectionist policy can also give rise to by-product of enabling the government to use the tariff income generated as a result to increase its expenditure to foster competitive industries by way of building roads and harbours and offering technical education.

As have been pointed out earlier, WTO agreements rely in principle on the theory of free trade realised through lowering and elimination of trade barriers. As shown in "improvement of market access," however, it is an attempt to create favourable business environment worldwide by quantifying tariff barriers and phasing out such barriers.

Not all of this is intended to increase the profit for the so-called developed countries. For instance, as in the case of cotton in Egypt, a country can export the majority of its world-famous

extra-continuous fibre cotton to earn foreign currency and import low-quality cotton products for domestic use. An argument of utilising the opportunity of WTO accession as means of earning foreign currency and using it to lay the groundwork for industrialisation is fully justified. However, a plan of this sort requires full precaution as it is limited to cases where obvious disparity exists in addition to difference in quality and marketability to compensate for the cost of import and export.

Cotton and wheat are typical farm products in Pakistan that can earn foreign currency. Cotton is of medium fibre which is not as high in quality as the cotton grown in Egypt and is used mainly as raw material for low- to moderate-priced towel cloth. On the other hand, quality of wheat from Pakistan is recognised worldwide. However, Pakistan has an extremely high population growth rate, ranking second to Nigeria among countries with population of 100 million or more. Tremendous population increase is predicted in the future with another 50 million and 200 million being added to the present population by 2025 and 2050, respectively. Domestic demand will become stringent in the future amidst such population pressure and reserve for export will be lost. Needless to say, Pakistan has an option of following the example of Egyptian cotton and meeting domestic demand by exporting high-quality wheat and importing inexpensive low-quality wheat. Such effort is already being made in reality, although it is not very efficient when food demand is increasing nationwide.

A question remains as to whether wheat and cotton, the two major agricultural export items of Pakistan can continue to increase their production and maintain export competitiveness after these problems are mitigated to some extent. The future of such endeavour is destined to be very challenging for the following reasons.

Firstly, there is population increase. As analysed in detail in the population section of this report, agricultural productivity of Pakistan is low in terms of unit per yield. Laboratories in Pakistan have abundance of researchers with doctorate degrees from top European universities that are able to perform the level of research comparing favourably with the researchers in developed countries. However, the form of land ownership reflects the traditional social class characterised by *latifundism*, making it difficult to apply the technology developed at these laboratories to smaller farmers that account for the vast majority of the country's agriculture. Furthermore, diffusion of technology is unlikely as there are no farmer organisations and intermediate organisation to adequately take in the laboratory-developed technology and convey such technology to the farmers. They represent phenomena that are ingrained into Pakistan's social structure and can hardly be improved through simple technological intervention or support. For this reason, improvement of agricultural productivity will not be an easy task.

Another problem is external condition for agriculture such as limited water resources and

salinisation that results from it, as well as water logging caused by irrigation. It is said that 1,000 tons of water is needed in average to produce 1 ton of wheat. Cotton is another crop that requires large water input, as exemplified by cotton production in Uzbekistan becoming the main cause of the shrinking of the Aral Sea. Pakistan is also located in semiarid to arid region, and relies almost entirely on the Indus River System for her water resources.

Although the situation is slightly different from NWFP where this study was conducted, Punjab Region—the main bread basket of Pakistan—has a crisscrossing network of irrigation canals that were built during the British colonial days that supports the wheat production in Pakistan. However, this irrigation network is causing rise in groundwater level and cause the salt in ground to precipitate to the surface owing to poor maintenance and insufficient lining. Drastic improvement can only be made by building a concrete-lined drainage all the way down to the Indian Ocean. However, as agriculture does not currently generate enough profit to recoup such large sum of investment, the impact of salinisation will become increasingly serious along with the problem of water shortage.

The Government of Pakistan is aware of this reality and has plans to pour energy into export of fruits and other crops. Potentials do exist in this area. For instance, Pakistan is the place of origin for mangoes and produces high-quality mangoes for this reason, although they cannot be exported to Japan as fresh fruit because of problems related to post-harvest treatment and appearance. Even if these problems did not exist, the quality required for export cannot be maintained as undeveloped domestic distribution system causes the quality of fruit to deteriorate before it is exported. While possibility does exist in processing mangoes and exporting them in the form of mango ice cream and mango juice, it requires investment in processing plant and development of domestic transportation network.

In NWFP, efforts are being made to plant olive trees and sell olive oil produced from these trees to the international market. Worldwide marketing would incur enormous cost for quality control, packaging and outlet in addition to numerous problems that need to be solved.

In this hearing survey, we calculated the profitability of selling price in developed countries by using the retail sticker price. However, divergence between trade prices and retail prices naturally exists in developed countries as well. Raising quality to the level acceptable for selling in developed countries requires large cost including investment in plant facilities. It remains unclear whether such manufacturing cost can be recovered after selling at trade prices at which the items are distributed.

Another unfortunate problem for agriculture of Pakistan is the negative image accompanying the

country's name. Strong demand exists for brand name exists even during the recession. On the other hand, even inexpensive products are completely ignored by consumers if they do not meet their needs. In today's market, only brand name items that can determine their own price can make large profit while others are impoverished in the price war.

Considering these circumstances of the international market, one must think whether agricultural products from Pakistan have such powerful and positive brand image. For instance, when you look at olive oil (which is an item whose NWFP is attempting to increase), olive oil from Pakistan will have to have some special added value when oils from Italy, Spain and Greece are being sold on the market at same price. Unfortunately, we have not been able to identify such added value at this stage.

Reviewing the impact of trade liberalisation that resulted from WTO accession along the lines of these points gives rise to a concern that it may not have much merit for agriculture in Pakistan. Attaining full liberalisation under the present condition in which subsidised export crops from the developed countries are sweeping across the international market may lead to deterioration of domestic agricultural production and cause unemployment of farm workers.

Considering the realities of population and agriculture in Pakistan, priority must be given to efforts for supporting the population that would continue to increase in the future through improvement of agricultural production based on establishment of self-supporting agriculture and organisation of farmers.

Chapter 3 Population

Introduction

Pakistan is one of the countries where future population increase is of foremost concern. According to a United Nations estimate, the country's population is predicted to reach 350 million by the year 2050 (Table 3-1). Pakistan's population size, which ranked 19th in the world in 1950, is now 6th largest after China, India, United States, Indonesia and Brazil, and is expected to go up to 4th after India, China and United States in 2050. Pakistan also continues to maintain the second highest population growth rate after Nigeria among countries with population in excess of 100 million⁹. Although the growth rate analysed by the Statistics Bureau of Pakistan based on 1998 census has remained slightly lower than this estimate, massive population increase is still predicted in the future (Table 3-2). Population will continue to increase significantly from now on even if it were to reach the replacement level at present. In this sense, population problem in Pakistan is one of the most pressing problems in the world. This chapter will be devoted to the present situation of population in Pakistan and its implications.

Feudalism that originated from the caste system in India and is characterised by strong regionality, and a tribal society that originated from nomadic culture coexist in Pakistan. Generally speaking, feudalism is more prevalent in Sind Province located near the Indian border while the tint of tribal society becomes stronger as you go west. It is said that police authority does not extend to the western part of Northwest Frontier Province (NWFP) and Federally-Administered Tribal Areas (FATA).

Owing to such wide variations of cultural characteristics among regions, effort will be made to present data for each province to the extent possible in addition to national data.

⁹ Calculated from Population Division, Department of Economic and Social Affairs, United Nations, *World Population Prospects The 2000 Revision*.

Table 3-1 Projection of Pakistan Population Unit:1000

	1950	2000	2015	2025	2050
Pakistan	39,659	142,654	204,465	249,766	348,700

Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (2003). *World Population*

Prospects: The 2002 Revision. Highlights.

New York: United Nations.

Table 3-2 Pakistan Population Estimate 2003-2023

	High variant	Medium variant	Low variant
2003	149,913	149,487	149,126
2008	167,901	166,615	165,033
2013	186,869	184,384	180,663
2018	206,143	201,768	194,847
2023	224,922	217,987	207,793

Source: Statistics Division, Government of Pakistan 2003.

1. Main results of 1998 census

Population census was conducted in Pakistan in 1998. As the census prior to that was conducted back in 1981, a complete picture of population was grasped for the first time in 17 years. Present population based on this census amounted to 148.83 million (estimated as of September 2003). The figure will exceed 150 million sometime between the end of 2003 to 2004.

Annual average population growth rate between the censuses of 1981 and 1998 is calculated at approximately 2.69%. A very unique feature of population composition is the very high percentage of population under age 15 (43.4%) and extremely low percentage of population aged 65 and above (3.5%). As can be seen from Table 3-3, ratio of dependent population is as high as 88.34% and consists primarily of young dependent population.

Literacy rate is 43.92% among population aged 10 years and above. Female literacy rate is merely 32.02% as opposed to male literacy rate of 54.81%. Economically active population is only 22.24%, reflecting the cultural resistance against employment of women. High unemployment rate of 19.68% also shows that population is excessive.

The present urban population ratio of 32.50% is also on the increase. An increase in urban population ratio implies a decline in population absorbing capacity in rural areas.

Table 3-3 Demographic Indicators 1998 Census

Indicators	Pakistan	NWFP	FATA	Punjab	Sind	Balochistan	Islamabad
Area(km ²)	796,096	74,521	27,220	205,345	140,914	347,190	906
Population (in 1000)	132,352	17,744	3,176	73,621	30,440	6,566	805
Rate of Population (%)	100.00	13.41	2.40	55.63	23.00	4.96	0.61
Male (%)	52.03	51.22	52.01	51.74	52.88	53.4	53.93
Female (%)	47.97	48.78	47.99	48.26	47.12	46.60	46.07
Urban proportion	32.50	16.87	2.70	31.27	48.75	23.90	65.70
Population Density (person /km ²)	166.30	238.10	116.70	358.52	216.02	18.90	880.80
Sex ratio (Male/Female)	108.50	105.02	108.40	107.23	112.24	114.60	117.00
Average annual growth rate 1981-1998 (%)	2.69	2.82	2.19	2.64	2.80	2.47	5.19
Population Under 15 (%)	43.40	47.20	25.90	42.52	42.76	46.67	37.90
Population 15 – 64 years (%)	53.09	49.79	24.3	53.46	54.47	50.81	59.40
Population 65and above (%)	3.50	3.01	1.80	4.02	2.77	2.52	2.70
Age Dependency ratio	88.34	100.83	114.00	87.07	83.58	96.79	68.40
Literacy Rate (10+)	43.92	35.41	17.42	46.56	47.29	24.83	72.40
Male	54.81	51.39	29.51	57.20	54.50	34.03	80.64
Female	32.02	18.82	3.00	35.10	34.78	14.09	62.39
Enrolment Ratio (5-24)	35.98	31.46	-	39.38	32.78	23.53	57.50
Male	41.19	40.99	-	43.83	37.35	29.49	57.70
Female	30.35	21.30	-	34.63	27.70	60.40	57.30
Economically Active Population (%)	22.24	19.41	-	22.55	22.75	24.05	23.00
Labour Force Participation Rate (10 years and above)	31.98	31.98	-	31.98	32.73	36.45	30.68
Un-employment Rate (%)	19.68	26.83	-	19.10	14.43	33.48	15.70
Disabled Population (%)	2.54	2.12	-	2.48	3.05	2.23	1.05

Source: Statistics Division, Government of Pakistan 2003.

FATA stands for Federally-Administered Tribal Areas.

2. Internal Migration

The fact that population absorbing capacity of rural areas in Pakistan is nearing its limit is also shown statistically. When Pakistan is seen as a whole, the balance obtained by subtracting annual average increase rate from annual average natural increase rate in 1981 through 1998 showed that population increased by 0.7 to 1.9% in urban areas of respective provinces and decreased by 0.7% to 1.2% in rural areas. These figures indicate that 23% of the population that were added during this period migrated from rural to urban areas. Considerable inter-provincial migrations are also taking place, with more than 400,000 people flowing out of NWFP (Table 3-4). Meanwhile, people are flowing into Sind Province and Islamabad. In the case of Sind Province, 30% of population that has been added in rural areas are flowing out of rural areas and are being concentrated in the urban areas of Karachi and Hyderabad (Table 3-5).

Table 3-4 Internal migration

	Population	%	Out migration		In migration		Net-migration
			Number	%	Number	%	Number
Punjab	73,621,290	55.60	467,830	41.37	326,671	28.89	-141,159
Sind	30,439,893	23.00	130,376	11.53	500,223	44.23	369,847
NWFP	17,743,645	13.40	418,819	37.04	81,736	7.23	-337,083
Balochistan	6,565,885	5.00	56,968	5.04	55,894	4.94	-1,074
Islamabad	805,235	0.60	11,451	1.01	166,334	14.71	154,883
F A T A	3,176,331	2.40	45,414	4.02	0	0	-45,414
Pakistan	132,352,279	100.00	1,130,858	100.00	1,130,858	100.00	0

Source: UNFPA, *Pakistan Population Assessment 2003* (modified).

Table 3-5 Twelve largest urban and average family size

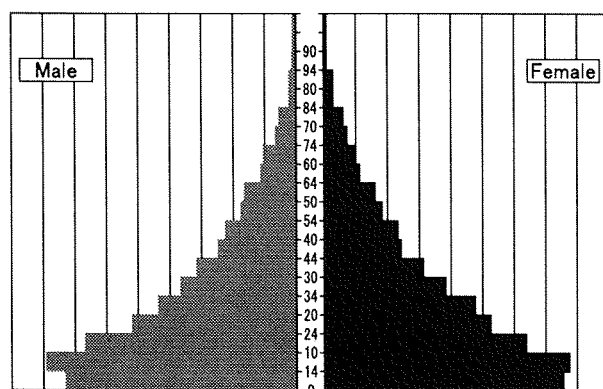
Urban	1998 Population				Population 1981	Average increase rate 1981-98	Intercensal Increase rate
	Total	Male	Female	Average family size			
Karachi	9,339,023	5,029,900	4,309,123	6.83	5,208,132	3.49	79.32
Lahore	5,143,495	2,707,220	2,436,275	7.12	2,952,689	3.32	74.20
Faisalabad	2,008,861	1,053,085	955,776	7.33	1,104,209	3.58	81.93
Rawalpindhi	1,409,768	750,530	659,238	6.64	794,834	3.43	77.37
Mulatan	1,197,384	637,911	559,473	7.47	732,070	2.93	63.56
Hyderabad	1,166,894	612,283	554,611	6.70	751,529	2.62	55.27
Gujranwara	1,132,509	588,512	543,997	7.62	600,993	3.79	88.44
Peshawar	982,816	521,901	460,915	8.22	566,248	3.29	73.57
Quetta	565,137	307,759	257,378	8.60	285,719	4.09	97.79
Islamabad	529,180	290,717	238,463	6.11	204,364	5.76	158.94
Sargodha	458,440	239,837	218,603	6.93	291,362	2.70	57.34
Sialkot	421,502	227,398	194,104	7.34	301,609	1.99	39.75
Total	24,354,967				13,793,787	3.52	77.83
Pakistan	132,352,279				84,253,644	2.69	57.09

Source: Statistics Division, Government of Pakistan 2003 (Modified).

3. Population structure and unemployment rate

Reflecting a extremely large proportion of young population, population structure of Pakistan has a impressive pyramid shape (Figure 3-1). It shows that the population is literally increasing exponentially and that the pressure of population growth will increase further in the future (Table 3-6).

Figure 3-1 Population Pyramid of Pakistan



Source: UNFPA, *Pakistan Population Assessment 2003*.

Table 3-6 Population by age (%) Population by selective age groups (Unit: %)

Administrative Unit	Age						
	Less than 5 Years	Less than 10 Years	Less than 15 Years	18 Years and above	15 to 64 Years	65 Years and above	dependency ratio.
Pakistan	14.80	30.45	43.40	51.25	53.09	3.50	88.34
Rural	15.69	32.18	45.06	50.05	51.16	3.78	95.46
Urban	13.00	26.98	40.07	53.66	56.98	2.94	75.50
NWFP	16.25	33.29	47.20	47.25	49.79	3.01	100.83
Rural	16.68	34.10	48.05	46.39	48.84	3.11	104.67
Urban	14.17	29.27	43.00	50.76	54.51	2.49	83.46
Punjab	14.24	29.48	42.52	52.00	53.46	4.02	87.07
Rural	14.90	30.73	43.62	51.33	52.01	4.36	92.24
Urban	12.77	26.74	40.10	53.50	56.62	3.28	76.62
Sind	15.00	30.50	42.76	52.21	54.47	2.77	83.58
Rural	16.94	34.21	46.10	49.95	50.99	2.92	96.13
Urban	12.95	26.61	39.25	54.59	58.13	2.61	72.01
Balochistan	16.64	34.01	46.67	48.69	50.81	2.52	96.79
Rural	17.09	35.02	47.72	47.79	49.63	2.65	101.50
Urban	15.20	30.82	43.31	51.58	54.59	2.10	83.17
Islamabad	11.93	25.04	37.9	55.43	59.38	2.73	68.42
Rural	13.38	27.73	41.23	52.06	55.79	2.98	79.26
Urban	11.17	23.63	36.16	57.19	61.25	2.60	63.27

Age Dependency Ratio = Ratio of persons in the “dependent” age (under 15 and over 64 years) to those in the “economically productive” ages (15-64 years).

Source: Statistics Division, Government of Pakistan 2003.

As for sex ratio, male population ratio shows a noteworthy figure of 108.5 against 100 of women. Generally speaking, male babies are born in slightly larger numbers under natural conditions but are offset by their higher infant mortality rate, resulting in nearly one-to-one sex ratio by the time they reach reproductive age. However, the difference in sex ratio at birth will be reflected as is in population difference at reproductive age in countries like Japan where infant mortality rate has gone down to an extremely low level. On the whole, however, female population stays at around 106 against 100 of male population owing to difference in survival rate between the two among elderly population.

In the case of Pakistan, however, sex ratio will not change in Pakistan because infant mortality is about 90 for every 1,000 births. Partly due to the existence of dowry system in connection with marriage in Indian cultures, sex selection takes place in some form or another. In the case of

Pakistan, mortality rate of girl child increases because of the lower rank that women are culturally placed and the ratio of men increases as a result. Low status of women, inadequate medical care and high mortality during pregnancy and delivery owing to cultural barriers are among other reasons. At any rate, this index represents the harsh social condition that women in Pakistan are faced with.

Ratio of dependent population is also high at 88.34 and exceeds 100 in NWFP, which means that the number of dependent population is greater than the economically active population of ages 15 to 64. A comparison between urban and rural areas shows that dependent population ratio is higher in rural regions compared to urban areas in all provinces. It shows that the population migrating from rural to urban areas are in economically active age group and that rural youth are migrating to cities for employment opportunities.

As shown in Table 3-3, economically active population only accounts for 22.24% of total population in Pakistan. It signifies the existence of extremely large dependent population (particularly young dependent population) and shows that advancement of women into workplace is very limited. It demonstrates that women are discouraged from working outside of their home for cultural reasons, and that they are isolated from social relationships outside of the community that exists around them. For this reason, women are deprived of the very opportunity for changing their mode of thinking despite the principal role they play in childbirth.

In addition, unemployment is at high levels of 19.68% for the entire country, 33.48% in Balochistan and 26.83% in NWFP (Table 3-3). When seen on a national level, the percentage of employment in agriculture, forestry and fisheries is largest at 44.15% while 11.10% are employed in manufacturing. Such high level of unemployment rate signifies that agriculture, forestry and fisheries is not offering sufficient employment opportunities at least for young workers of Pakistan that are entering the labour market. It clearly shows that manufacturing industry for absorbing surplus population has not grown much while primary industry is nearing its saturation owing to population increase.

4. Literacy rate and enrolment ratio

Social development in Pakistan represents an extremely difficult situation in areas such as literacy rate. Social index ratio is also the lowest among the countries that belong to the Indian subcontinent and were once part of India that won independence from Great Britain such as India and Bangladesh. According to Human Development Report 2003 issued by UNDP, Pakistan's human development index is 0.499 compared to 0.590 of India and 0.502 of Bangladesh. While India and Bangladesh are categorised among "countries with medium human development index," Pakistan is categorised as "countries with low human development index."

Wide disparity in literacy rate also exists among provinces and between the sexes. Literacy rate on a national level went up from 26.17% in the 1981 census to 43.92%. The situation is not by any means desirable although some improvement is being witnessed (Tables 3-7 and 3-8). However, literacy rate in rural areas is only 33.64% as opposed to 63.08% in urban areas, and the literacy rate goes down to as low as 20.09% for rural women. While literacy rate of rural women is low in all provinces, it is a mere 3% in FATA, 7.94% in Balochistan, 12.23% in Sind Province, and 14.69% in NWFP, and goes up to only 24.78% in Punjab Province where the rate is highest. These figures show that the majority of women cannot read or write (Table 3-9).

Table 3-7 Literacy rate by Male/Female (%)

Unit	Census 1998			Census 1981
	Total	Male	Female	
Pakistan	43.92	54.81	32.02	26.17
Rural	33.64	46.38	20.09	17.33
Urban	63.08	70.00	55.16	47.12
NWFP	35.41	51.39	18.82	16.70
Rural	31.29	47.65	14.69	13.18
Urban	54.33	67.48	39.10	35.77
FATA	17.42	29.51	3.00	6.38
Rural	16.8	28.59	2.75	6.38
Urban	39.27	59.69	12.01	-
Punjab	46.56	57.20	35.10	27.42
Rural	37.95	50.40	24.78	20.01
Urban	64.48	70.94	57.23	46.72
Sind	45.29	54.50	34.78	31.45
Rural	25.73	37.89	12.23	15.57
Urban	63.72	69.75	56.66	50.77
Balochistan	24.83	34.03	14.09	10.32
Rural	17.47	25.75	7.94	6.18
Urban	46.86	58.14	33.08	32.16
Islamabad	72.88	80.64	62.39	47.80
Rural	62.52	75.09	48.78	32.50
Urban	77.25	83.20	69.68	57.60

Source: Statistics Division, Government of Pakistan 2003.

Table 3-8 Trend of Literacy Rate 10 years and above by sex 1981-1998

Census	Total		Male		Female	
	Population 10+	Literacy Rate (%)	Population 10+	Literacy Rate (%)	Population 10+	Literacy Rate (%)
1961	26,129,939	16.7	14,411,914	25.1	12,110,099	6.7
1972	42,916,910	21.7	23,351,460	30.2	19,565,450	11.6
1981	56,338,856	26.2	30,077,890	35.1	26,260,966	16.0
1998	89,842,800	43.9	46,889,751	54.8	42,953,049	32.0

Source: Population Census Organisation, *Population Censuses of Pakistan. 1961, 72. 81. 98.*

Table 3-9 Five-year education completion rate (%)

	Pakistan	Urban	Rural	Male	Female
1991	33	47	27	46	19
1996-97	37	54	28	49	25
1998-99	37	56	28	49	25

Source: Government of Pakistan , *Pakistan Common Country Assessment.*

In terms of percentage of those completing the 5-year education course that represents the actual literacy rate, the percentage for women was only 25%. In view of the fact that female literacy rate in 1998 census was 32.02%, it is presumed that more than 20% of those included among the literate in rural areas above have not reached the level of actually being able to read and write. In other words, the percentage of women capable of doing the necessary reading and writing can be estimated as approximately 16%.

For rural Pakistani women who are detached from modern society in terms of literacy, making decisions about bearing children and using family planning by doing away with conventionalities would be extremely difficult even if the need for them was there.

This fact is supported by the data on population by level of education which shows that more than half of women in Pakistan do not complete primary school education or do not receive education beyond primary school (Table 3-10). Most of them do not even graduate from primary school in FATA and NWFP where strong tribal community traditions remain. In other words, the percentage of women that have not received public education amounts to 31.03% in FATA and 24.90% in NWFP, both of which are higher than the national average of 20.07%. In Sind Province which is said to be feudalistic, the percentage is lower at 16.32%, thanks to high percentage of urban population in the province (48.75%). As mentioned earlier, however, female literacy rate in Sind Province is only slightly better than FATA and NWFP at 12.23%. In the case of Sind Province, urban areas seem to be floating like islands on a sea of feudalistic rural areas.

Table 3-10 Population by Level of Education and Sex

(%)

Administrative Unit /Sex	Below		Middle	Matric	Inter- mediate	BA./BSC	MA./MSC	Diploma/ Certificate	Others
	Primary	Primary				& equivalent	& equivalent		
Pakistan									
Total	18.30	30.14	20.9	17.29	6.56	4.38	1.58	0.41	0.44
Male	17.35	28.62	22.05	18.2	6.55	4.50	1.79	0.52	0.42
Female	20.07	33.00	18.74	15.58	6.59	4.16	1.20	0.19	0.47
NWFP									
Total	19.78	29.64	19.94	18.61	6.09	3.43	1.56	0.40	0.54
Male	18.01	28.01	21.00	20.06	6.42	3.70	1.76	0.48	0.55
Female	24.90	34.35	16.90	14.41	5.16	2.62	0.99	0.15	0.53
FATA									
Total	21.51	35.35	22.26	13.36	3.98	1.69	0.76	0.24	0.84
Male	20.76	35.51	22.69	13.64	3.97	1.71	0.75	0.22	0.73
Female	31.03	33.30	16.82	9.74	4.13	1.39	0.81	0.51	2.28
Punjab									
Total	19.16	31.73	21.81	16.78	5.63	3.23	1.07	0.32	0.28
Male	18.16	29.93	23.56	17.73	5.53	3.28	1.17	0.41	0.24
Female	20.93	34.92	18.72	15.10	5.79	3.15	0.88	0.17	0.33
Sind									
Total	15.56	27.14	19.2	17.84	9.00	7.43	2.65	0.61	0.58
Male	15.13	26.49	19.08	18.17	9.02	7.70	3.06	0.81	0.54
Female	16.32	28.31	19.41	17.25	8.95	6.95	1.91	0.25	0.65
Balochistan									
Total	19.23	25.91	20.05	18.58	6.48	4.43	2.37	0.47	2.49
Male	17.99	24.74	20.29	20.07	6.71	4.68	2.60	0.54	2.37
Female	22.82	29.29	19.37	14.24	5.80	3.72	1.70	0.26	2.81
Islamabad									
Total	14.05	22.68	18.91	17.90	9.84	10.26	5.24	0.69	0.41
Male	12.73	20.68	20.34	18.98	9.57	10.23	6.01	0.94	0.51
Female	16.13	25.83	16.67	16.21	10.27	10.31	4.04	0.31	0.24

Source: Statistics Division, Government of Pakistan 2003.

Although the situation surrounding literacy rate of women in Pakistan is difficult, sign of change can be observed. Although this figure mainly concerns girls in urban areas, enrolment ratio index of girls relative to boys increased from 25.5% in 1971-72 to 64.5% in 2000-01. This may shed a little light on the whole issue of low female literacy rate (Table 3-11).

Table 3-11 Enrolment Ratio by gender (Male=100): 1971-72~2000-01

Year	Inter-				
	Primary	Middle	Matric	mediate	University
1971-72	35.8	25.5	25.7	35.8	28.4
1981-82	49.7	35.2	32.1	49.7	21.7
1991-92	52.9	40.4	37.0	51.9	23.9
2000-01	68.2	64.5	58.5	71.5	31.6

Source: Federal Bureau of Statistics: 1998, and *Economic Survey of Pakistan, 2000-01*.

5. Population by religion and regional disparity

Pakistan is a country that broke away from India for the cause of Islam solidarity after British India won independence from Great Britain. The separatist war caused enormous bloodshed mainly in Punjab Province. It is still the cause of strife with India over Kashmir and is compelling Pakistan to spend 22.5% of government budget on defence even though the percentage has declined over the years. Many people still remember that Pakistan sought nuclear development in 1998 to counter the nuclear development in India.

It was this separatist movement that gave rise to the tension that still exists between the two countries. Many Hindus migrated to India and many Muslims moved to Pakistan that upheld Islam as the pillar for the construction of new nation at that time. For this reason, Muslims still account for overwhelming majority of 96.28% in population ratio by religion in Pakistan today. In Punjab, the percentage of Muslim population is higher than national average at 97.21% as a result of migration in religious population at the time of separation from India.

High percentage of Hindu population in Sind Province is worthy of note. Sind Province and Islamabad are regions having lower percentage of Muslim population than the national average. The second largest religious force in Islamabad is Christianity, probably connected in some way to the cosmopolitan nature of Islamabad as the national capital. Sind Province has strong influence of Indian culture in general and is said to be a region that is still under the strong influence of feudalism.

After studying Pakistan, it appears that the eastern part of the country is strongly affected by Indian culture and the characteristics of nomadic and tribal community similar to Afghanistan increases as you move westward. Punjab has higher percentage of Muslim population than the national average owing to the migration of religious population following the separation to demonstrate the complex and composite nature of Pakistani society.

Islam is said to be counteracting the solution of population problem in Pakistan. Vast majority of Muslims in Pakistan are said to belong to the Sunni sect. Al Azhar University in Egypt, the highest authority in interpretation of Sunni doctrine, has performed a clause-by-clause review of the International Conference on Population and Development (ICPD) Programme of Action (PoA), which is regarded as the fundamental approach to the present population problem, and came to a conclusion that it has no problems in the light of teachings of Islam. Approach towards population problem in the Islamic world made dramatic progress when this interpretation was announced prior to ICPD. Nevertheless, Islam community in Pakistan continues to avoid coming to grips with the population problem. The change in interpretation at Al Azhar University must have large impact from the viewpoint of consistency between religion and action stressed in the teachings of Islam. However, the renewed interpretation has had little impact in Pakistan even though the majority of population are Sunni.

The key to solving this mystery can be found in the traditions of tribal society and feudalism prevalent in Pakistan. It is said that the western part NWFP and FATA are still outside of police authority of the Pakistani Government today. In reality, police control is limited to the area along main roads and other areas are governed by the traditional tribal communities including public order. In such areas, disputes are not brought to government courts; instead they are discussed by *jirga* which is comprised of tribal elders. Decisions reached by *jirga* becomes the final decision. This can be paraphrased as each tribe having its autonomy with no room for infiltration of new Islam interpretation. In addition, although further study is needed before drawing any conclusion, Sunni sect is seen to follow a fundamentalist approach of being faithful to the sayings and doings (Sunna) of prophets and disciples in the Koran. While it is uncertain as to whether Islam and Christianity can be compared on the same footing, emphasis on bible that started with Luther's Protestant Reformation gave rise to fundamentalism along with various fundamentalist factions. This can be seen from the fact that, while Catholics stay together under Catholic faith by containing various forms of faith under different orders with different characteristics, the so-called new religions have ramified into innumerable sects.

Although fundamentalists are presumed to be free from the need to factionalize if they were to literally follow the words written in the scripture, interpretation becomes necessary in reality when applying religion over different periods of time and gives rise to countless factions as a result of

interpretations based on the "truth of the believer."

Table 3-12 Population by Religion (%)

Administrative Unit	Islam	Christian	Hindu	Ahmadi	Scheduled	
					Caste	Others
Pakistan	96.28	1.59	1.60	0.22	0.25	0.07
Rural	96.49	1.10	1.80	0.18	0.34	0.08
Urban	95.84	2.59	1.16	0.29	0.06	0.06
NWFP	99.44	0.21	0.03	0.24	*	0.08
Rural	99.65	0.03	*	0.22	*	0.08
Urban	98.42	1.06	0.11	0.31	0.01	0.09
FATA	99.60	0.07	0.03	0.21	0.03	0.07
Rural	99.63	0.04	0.03	0.21	0.03	0.06
Urban	98.16	1.17	0.32	0.10	0.007	0.23
Punjab	97.21	2.31	0.13	0.25	0.03	0.07
Rural	97.66	1.87	0.15	0.19	0.05	0.08
Urban	96.25	3.27	0.06	0.37	0.02	0.03
Sind	91.31	0.97	6.51	0.14	0.99	0.08
Rural	88.12	0.14	9.77	0.12	1.79	0.06
Urban	94.67	1.84	3.08	0.17	0.14	0.10
Balochistan	98.75	0.40	0.49	0.15	0.10	0.10
Rural	99.42	0.06	0.15	0.14	0.12	0.10
Urban	96.61	1.49	1.58	0.16	0.05	0.10
Islamabad	95.53	4.07	0.02	0.34	*	0.03
Rural	98.80	0.94	*	0.23	*	0.03
Urban	93.83	5.70	0.03	0.40	*	0.03

* refers to a very small proportion

Source: Statistics Division, Government of Pakistan 2003.

Unregulated formation of factions seen in Christianity is not permitted in the case of Islam, although it is theoretically possible for interpretations of ulamas (religious leaders) to be allowed in areas that are not important in the religious context. The long-awaited renewal of interpretations at Al Azhar may not function at all when such interpretations of ulamas are bound by the traditions of tribal society and values of feudalistic society. In other words, Islam in Pakistan has not gone beyond protecting the traditional values and rules as the renewed interpretation by the Sunni sect of Islam failed to permeate. It is also difficult for women to become the instrument of change under the present circumstance where their literacy rate and social participation is so low, posing as a

bottleneck in solving the population problem in Pakistan.

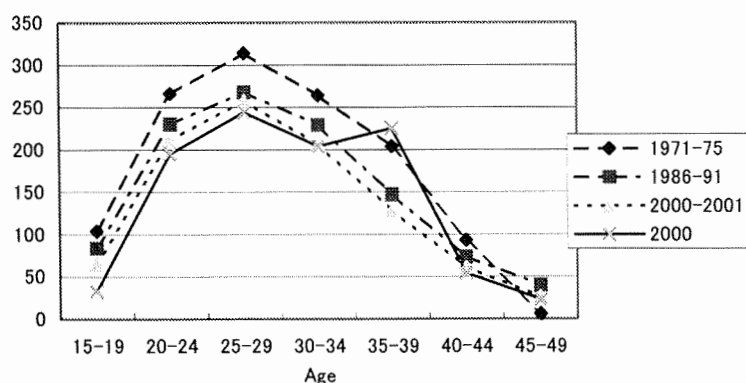
6. Fertility and infant mortality rate

(1) Trends of fertility

In terms of TFR (total fertility rate), the figure has dropped from 6.0 in 1984-84 to 4.8 in the 1997-2000 period. While TFR represents the total of age-specific fertility rate, it refers to the number of children a woman gives birth to in her lifetime. This TFR value of 4.8, although it has decreased, means that each couple is still has an average of 4.8 children, which, when seen in the context of a single cohort (generational group), represents doubling of population in a single generation.

When seen in terms of age-specific fertility rate, the figure is declining on the whole but has not changed in content. No dramatic decline can be expected in the future as it suggests that ages of marriage and child-bearing have not changed (Figure 3-2). What is noteworthy about Figure 3-2 is the fact that a study conducted around the same time is showing a different trend. The two segments labelled as "2000-01" and "2000" are the results of *Pakistan Reproductive Health and Family Planning Survey 2000-01* (hereafter "2001 study") and *Pakistan Demographic Survey 2000* (hereafter "2000 study"), respectively. In the 2001 study, fertility has declined on the whole by following the pattern of fertility up to that point. In contrast, fertility for age group of 36 to 39 years has increased in the 2000 study. It is not clear at this point whether this is the sign of a tendency toward later marriage or the result of a mere statistical error.

Figure 3-2 Changes of ASFR 1971-2000



Source: *Pakistan Reproductive Health and Family Planning Survey 2000-01*.
Pakistan Demographic Survey 2000.

Meanwhile, infant mortality rate (IMR), which has important influence on child-bearing behaviour of women (currently 92 out of every 1,000 births), correlates very closely with education. Literacy rate of reproductive age population, particularly that of women in their late teens to early twenties, shows a strong inverse correlation in general. As shown in Table 3-16, infant mortality rate drops by almost half from 104 to 51 between those born from uneducated mothers and those born from mothers that received secondary education and above in the case of Pakistan. It suggests the extreme importance of education for rural women in solving the population problem and in attaining social development in Pakistan.

Table 3-13 Changes of TFR 1984-2000

Area	1984-85	1986-91	1992-96	1997-2000
Major Urban	5.5	4.7	3.9	3.4
Others Urban	6.1	5.2	4.8	4.0
Rural	6.2	5.6	5.9	5.4
Pakistan	6.0	5.4	5.4	4.8

Source: National Institute of Population Studies, *Pakistan Reproductive Health and Family Planning Survey, 2000-1*.

Table 3-14 CBR, CDR, and Natural Increase Rate: 1984-2000 (Unit : ‰)

Period	CBR	CDR	NIR
1984-88	43	11	32
1990-93	40	10	30
1994-97	35	9	26
1999-2000	30	8	22

Source: Federal Bureau of Statistics, *Pakistan Demographic Surveys*.

Table 3-15 Percentage of Currently Married Women who are Currently Using Specific Methods

Method	PCPS	PDHS	PCPS	PFFPS	PRHFPS
	1984/85	1990/91	1994/95	1996/97	2000/01
Any Method	9.1	11.8	17.8	23.9	27.6
Any Modern Method	7.6	9	12.6	16.9	20.2
Pill	1.4	0.7	0.7	1.6	1.9
IUD	0.8	1.3	2.1	3.4	3.5
Injectable	0.6	0.8	1	1.4	2.6
Vaginal Methods	0.1	0	0	0.1	0
Condom	2.1	2.7	3.7	4.2	5.5
Female Sterilisation	2.6	3.5	5	6	6.9
Male Sterilisation	0	0	0	0	0
Any Traditional Method	1.5	2.8	5.2	7	7.4
Periodic Abstinence	0.1	1.3	1	1.9	1.6
Withdrawal	0.9	1.2	4.2	4.6	5.3
Others	0.5	0.3	-	0.5	0.5
Number of Respondents	7405	6364	7922	7582	6370

Source: PCPS : *Pakistan Contraceptive Prevalence Survey, 1984-85.*

PDHS : *Pakistan Demographic and Health Survey, 1991.*

PFFPS : *Pakistan Fertility and Family Planning Survey, 1996-97.*

PRHFPS : *Pakistan Reproductive Health and Family Planning Survey, 2000-01.*

(2) Infant Mortality Rate

A study of cases in NWFP and FATA in Pakistan shows that diarrhoea, at 43.3%, is the greatest cause of infant death except for deaths that occur during the neonatal period of first 28 days after birth. As it once was in Japan, neonatal deaths are commonly seen as "something that cannot be helped" in many developing countries. In this sense, it is the deaths of infants that have survived the neonatal period that has strong psychological impact on mothers. Unlike acute respiratory infections, the impact of diarrhoea can be significantly reduced by boiling drinking water and improving the hygienic condition of toilets. In this sense, boiling drinking water before drinking (e.g. as tea) and making toilets more hygienic would have large impact.

Table 3-16 Differentials in Infant Mortality Rate(IMR) by Background
Characteristics: 1992-96

Background	Characteristics	IMR(‰)
Pakistan		92
Province		
	Punjab	97
	Sind	91
	NWFP	69
	Balochistan	106
Education		
	No Education	104
	Informal or Quranic	98
	Primary	65
	Middle	51
	Secondary or higher	40

Source: National Institute of Population Studies, *Pakistan Fertility and Family Planning Survey, 1996-1997*.

Table 3-17 Clinical causes of neonatal, postneonatal and infant deaths in Balochistan and North-West Frontier Province (NWFP), including Federally Administered Tribal Areas (FATA), Pakistan 1990–94

Clinical cause	All Infant		Neonatal		Postneonatal	
	No.	%	No.	%	No.	%
Diarrhoea syndrome ^a	246	21.6	33	5.1	213	43.3
Tetanus	133	11.7	119	18.3	14	2.8
ARI ^a	132	11.6	39	6.0	93	18.9
SGA/LBW	111	9.7	99	15.3	12	2.4
Birth injury/asphyxia	79	6.9	78	12.0	1	0.2
Congenital anomaly	33	2.9	23	3.5	10	2.0
Sepsis	25	2.2	20	3.1	5	1.0
Prematurity	25	2.2	25	3.9	0	0
Cyanosis	22	1.9	21	3.2	1	0.2
Meningitis ^b	19	1.7	11	1.7	8	1.6
Breathing syndrome ^c	19	1.7	13	2.0	6	1.2
Others ^d	48	4.2	16	2.5	32	6.5
Unknown	249	21.8	152	23.3	97	19.7
Total death	1141	100	649	100	492	100

Note:

ARI = acute respiratory infection; LBW = low birth weight; SGA = small size for gestational age.

^a Acute watery diarrhoea, dysentery and persistent diarrhoea.

^b Brain infection + meningitis.

^c Asphyxiation, suffocation, noisy breathing and breathing problems.

^d Malnutrition including wasting, pertussis, seizure disorders, fits and convulsions, measles, epidermolysis bullosa, rashes, skin eruptions and chicken pox, electric shock, jaundice, hypothermia, snake bite, fever, powdered milk/aspiration of food.

^e Verbal autopsy interview questionnaires for 391 infants (221 neonates; 170 post-neonates) were excluded owing to incomplete information or lack of proper identification coding.

Source: 273 Bulletin of the World Health Organisation 2002, 80 (4)

Chapter 4 Agriculture and Socio-Economics of Surveyed Villages

1. Outline of Mardan District and regions included in the study

The subject selected for this study was Mardan, the central city of Mardan District located almost in the centre of NWFP. It is located northwest of the provincial capital Peshawar, at a little less than 60km in a crow line. Mardan can be reached after 1 hour drive from downtown Peshawar.

According to the 1998 census, Mardan District has a population of approximately 1.46 million (750,000 male, 700,000 female), accounting for about 8% of the entire population of NWFP. The district has slightly lower literacy rate and enrolment ratio (primary education only) compared to other urban and rural areas. However, the district's infant survival rate and immunisation coverage rate are both high, which is presumed to be the result of relatively high real GDP per capita.

Mardan District has about 6.7% of arable land in NWFP. Agriculture is the main industry of the district with farm workers accounting for about 42% of the labour force.

Table 4-1 Human Development Index for Pakistan, NWFP District, Rural/Urban, Mardan and Peshawar districts in NWFP(1998)

	Literacy Rate (%)	Enrolment Ratio * (%)	Immunisation Ratio ** (%)	Real GDP per capita (PPP US\$)
Pakistan	45	71	49	1715
NWFP	37	70	54	1364
Urban	53	90	77	2074
Rural	34	66	51	1241
NWFP Districts				
Mardan	36.5	32.6	79.1	1835
Peshawar	41.8	49.6	83	1450

*Enrolment ratio is for primary level only.

**Immunisation refers to fully immunised children based on record and recall having received BCG, DPT (Diphtheria, Tetanus, Pertussis)1, DPT2, DPT3, Polio1, Polio2, Polio3, and Measles.

Source : *Pakistan National Human Development Report 2003*.

Table 4-2 Land Utilisation Statistics in N.W.F.P., 1998-99 to 2000-2001. (hectares)

	Total Cultivated			
	Reported Area	Area	Net Area Sown	Current Fallow
1998 – 1999				
NWFP	5,700,350	1,731,829	1,866,892	3,968,521
Mardan District	162,085	112,790	134,749	49,295
1999 – 2000				
NWFP	5,581,229	1,659,225	1,763,533	3,922,004
Mardan District	162,085	112,790	138,413	49,295
2000 – 01				
NWFP	5,619,307	1,665,520	1,803,224	3,953,787
Mardan District	162,085	112,790	139,585	49,295

Source: *NWFP. Development Statistics 2002*.

**Table 4-3 District Wise Employed Population (10 years & above) by Industry Employment
Statues of N.W.F.P., 1998 Census (In person)**

	Total	Agri- culture	Mining & Quarrying	Manufac- turing	Elec. Gas & Water	Construc- tion	Whole Sale	Transport	Financing	Commu- nity Activities	Others
NWFP	2,530,418	1,060,260	4,163	67,632	17,889	378,722	236,191	140,793	24,208	542,703	57,857
Mardan District	237,171	98,680	163	6,272	1,785	36,828	19,606	12,179	2,286	52,009	7,363
Ratio to Mardan**		41.61%	0.07%	2.64%	0.75%	15.53%	8.27%	5.14%	0.96%	21.93%	3.10%

Note: **Employed Population Ratio to Mardan Industry Employment

Source: *NWFP. Development Statistics 2002.*

Crops such as wheat, maize, rice, jowar (sorghum), oats, tobacco, sugar cane, and cotton are grown in Mardan District. Their acreage under cultivation, production and unit yield per hectare are as follows.

Table 4-4 Area, Production, Yield Per Hectare and Percentage Variation of Major Crops in N.W.F.P. and Mardan District 1998-99 to 2000-01

	1998—99			1999—2000			2000—01		
	Area (in hec.)	Production (in Tonnes)	Yield per Hectare in Kg	Area (in hec.)	Production (in Tonnes)	Yield per Hectare in Kg	Area (in hec.)	Production (in Tonnes)	Yield per Hectare in kg
①Wheat									
N.W.F.P.	750,850	1,080,233	1,439	673,387	954,813	1,418	662,616	699,455	1,056
Mardan District	43,966	87,550	1,991	44,541	90,105	2,023	44,578	85,304	1,914
Mardan District Ratio in N.W.F.P.*	5.9%	8.1%		6.6%	9.4%		6.7%	12.2%	
②Maize									
N.W.F.P.	493,692	700,081	1,418	491,870	768,241	1,562	489,433	819,374	1,674
Mardan District	28,350	50,874	1,794	30,992	56,629	1,827	31,702	59,669	1,882
Mardan District Ratio in N.W.F.P.*	5.7%	7.3%		6.3%	7.4%		6.5%	7.3%	
③Rice									
N.W.F.P.	56,455	116,109	2,057	55,383	111,732	2,017	54,537	113,482	2,081
Mardan District	1,303	2,138	1,641	1,295	2,115	1,633	1,339	2,185	1,632
Mardan District Ratio in N.W.F.P.*	2.3%	1.8%		2.3%	1.9%		2.5%	1.9%	
④Gram									
N.W.F.P.	84,828	33,290	392	61,174	17,928	293	58,037	9,930	171
Mardan District	6	4	667	8	3	375			
Mardan District Ratio in N.W.F.P.*	0.0%	0.0%		0.0%	0.0%				

Table Continued

⑤ Jowar (Sorghum)									
N.W.F.P.	7,824	4,978	636	8,083	4,952	613	7,738	4,479	579
Mardan District	870	589	677	806	549	681	1,113	757	680
Mardan District Ratio in N.W.F.P.*	11.1%	11.8%		10.0%	11.1%		14.4%	16.9%	
⑥ Barley									
N.W.F.P.	25,723	30,650	1,192	24,398	28,039	1,149	21,499	19,121	889
Mardan District	2,732	2,543	931	2,731	2,558	937	2,712	2,307	851
Mardan District Ratio in N.W.F.P.*	10.6%	8.3%		11.2%	9.1%		12.6%	12.1%	
⑦ Tobacco									
N.W.F.P.	34,509	78,819	2,284	35,682	80,352	2,252	26,548	61,186	2,305
Mardan District	5,553	13,491	2,429	5,897	13,945	2,365	4,417	11,099	2,513
Mardan District Ratio in N.W.F.P.*	16.1%	17.1%		16.5%	17.4%		16.6%	18.1%	
⑧ Sugar Cane									
N.W.F.P.	99,921	4,629,128	46,328	103,284	4,838,108	46,843	106,497	4,705,141	44,181
Mardan District	28,525	1,211,770	42,481	29,562	1,256,916	42,518	30,894	1,328,805	43,012
Mardan District Ratio in N.W.F.P.*	28.5%	26.2%		28.6%	26.0%		29.0%	28.2%	
⑨ Cotton									
N.W.F.P.	401	113	282	344	99	288	205	61	295
Mardan District	12	3	281	13	4	308	11	3	297
Mardan District Ratio in N.W.F.P.*	2.9%	2.9%		3.8%	4.0%		5.5%	5.5%	

Source: NWFP. Development Statistics 2002, * calculated by author

Water used for irrigation in Mardan District is mainly supplied by waterways, followed by wells.

Table 4-5 District Wise Area Irrigated By Different Sources in N.W.F.P., 1998-99 to 2000-2001. (Area in hectares)

1998-99								
	Total	Canal		Tanks	Tubewells	Wells	Left Pump	Others
		Govt:	Private					
N.W.F.P.	751,238	281,902	338,061	290	41,068	36,799	29,204	23,914
Mardan District	79,450	72,793	-	-	130	3,490	2,170	867
Mardan District Ratio in N.W.F.P.	10.6%	25.8%			0.3%	9.5%	7.4%	3.6%

1999-2000								
	Total	Canal		Tanks	Tubewells	Wells	Left Pump	Others
		Govt:	Private					
N.W.F.P.	763,007	310,539	321,877	352	39,619	37,076	29,371	24,173
Mardan District	14,057	7,272**	-	-	130	3,492	2,293	870
Mardan District Ratio in N.W.F.P.	1.8%	2.3%			0.3%	9.4%	7.8%	3.6%

2000-01								
	Total	Canal		Tanks	Tubewells	Wells	Left Pump	Others
		Govt:	Private					
N.W.F.P.	852,313	397,871	311,481	361	45,888	38,633	29,838	28,241
Mardan District	79,498	72,712	-	-	130	3,493	2,290	873
Mardan District Ratio in N.W.F.P.	9.3%	18.3%			0.3%	9.0%	7.7%	3.1%

Values of government waterways for 1999-2000 were largely different from other years but the statistics are shown here as they are.

Source: *NWFP. Development Statistics 2002.*

2. Result of Farm household economics in the surveyed area: Rural poverty and agricultural development in NWFP

Poverty problem in Pakistan was alleviated in the first half of the 1990s but worsened again in the latter half (Table 4-6).

Table 4-6 Changes of Poverty Index in the 1990s (head count ratio)

Province	Urban			Rural			Pakistan		
	90-91	93-94	98-99	90-91	93-94	98-99	90-91	93-94	98-99
Punjab	29.4	18.4	26.5	38.5	31.9	34.7	35.9	28.2	32.4
Sind	24.1	13.9	19	30.8	31.5	37.1	27.6	23.4	29.2
NWFP	37	26.5	31.2	40.6	39.8	46.5	40	37.9	44.3
Balochistan	26.7	16.5	28.4	20.9	37.5	24	22	35.2	24.6
Pakistan	28	17.2	24.2	36.9	33.4	35.9	34	28.6	32.6

Source : World Bank, *Pakistan Poverty Assessment*, October 28, 2002, ch. 1

Poverty problem worsened in rural areas owing to the drought that occurred in fiscal 2000-01 (Poverty Reduction Strategy Paper ch.3). NWFP has high percentage of population living below poverty line and lower average income compared to other provinces such as Punjab (Table 4-7). This tendency is particularly conspicuous in rural areas.

In the case of NWFP, the main causes are:

- 1) percentage of cultivated acreage is small at 12% (national average for Pakistan is 26%) and irrigated area ratio is also low at 50% (national average for Pakistan is 80%), resulting in low agricultural productivity¹⁰
- 2) average area of farms are small at 4.12 acres (national average for Pakistan is 9.38 acres) and farmland is not necessarily allocated equitably (Table 4-8)
- 3) industries other than agriculture are not sufficiently developed and cannot absorb employment (agriculture, public sector and construction employ about 80% in total)
- 4) education level is low compared to other provinces, particularly among women who are said to have large influence on agricultural productivity and education of children (Table 4-9)
- 5) wide-area distribution system for central market in Peshawar remains undeveloped

¹⁰ NWFP, *Development Statistics 2002* and *Pakistan Agricultural Statistics 2002*.

Table 4-7 Average household income (Rp/month) 2001/2002

Province	Average household income	Income per capita
Punjab	7,757	1,188
Urban	10,127	1,530
Rural	5,965	918
Sind	7,111	943
Urban	8,734	1,234
Rural	5,894	749
NWFP	6,164	806
Urban	8,115	1,075
Rural	5,270	687
Balochistan	11,635	1,515
Urban	15,845	1,991
Rural	9,266	1,216
Pakistan	7,807	1,122
Urban	10,128	1,476
Rural	6,261	894

Source: FRS, *Household Integrated Economic Survey, Round 4:2001-02*, April, 2003.

Table 4-8 Inequality of land distribution

Land ownership	NWFP			National average
	Central Region	Rainfed (Barani)	Average	
Max (acre)	295	245.9	245.9	513.1
Average (acre)	2.3	3.2	2.7	3.4
Gini index	0.82	0.87	0.85	0.83
Farm Area (Acre)*	-	-	4.12	9.38

Source: World Bank, *Pakistan Poverty Assessment*, October 28, 2002, ch, 4

*Bureau of Statistics, Government of N. W. F. P., *N. W. F. P. Development Statistics 2002*.

Table 4-9 Education Level and gender disparity in NWFP by Human Development Index (HDI) (2000-01)

Province	Punjab	Sind	NWFP	Balochistan	Pakistan
Adult Literacy Rate					
Male	59	64	60	54	60
Female	38	36	21	16	31
Primary School or more					
Male	49	51	47	41	49
Female	31	26	16	11	27

Source : PIHS 2000-01, *Pakistan Demographic Survey, 2001*.

It is believed that agriculture and agro-industries (sugar, wheat and rice milling, transportation, distribution) as well as agriculture-related public servants account for a large percentage in the economy of NWFP. For this reason, agricultural development is indispensable for alleviation of poverty.

While it is necessary to grasp the reality of rural areas when exploring the direction of agricultural development, room for agricultural development is limited in rain-fed paddy regions. For this reason, we will examine the direction of poverty reduction and agricultural development in rural areas through hearing survey of individual farms by selecting Mardan District where irrigation is relatively developed as the survey area.

(1) Outline of surveyed households

The survey was conducted at 54 households in 36 villages of Mardan District in the form of hearing survey through individual interview. All of the surveyed households owned farmland that could be irrigated. Attention was given when selecting the sample households for consistency in farm ownership scale distribution with the census.

Sample farms produced agricultural products such as wheat, sugar cane, maize, tobacco and vegetables in addition to raising an average of 2.5 head of cow or buffalo, 1 goat and 6 chickens per household. Mechanisation has advanced to a certain degree in cultivating and threshing with 10% of households owning a tractor and a thresher. Number of household members and family labour averaged at 6.67 and 1.9, respectively, to indicate high percentage of nonworking dependents. Householders were relatively young with average age of 46 years and were educated for 7.3 years which is longer than the average (Table 4-10).

Table 4-10 Outline of Surveyed Households

No. Villages	36
Households	54
Average size of household (person)	6.67
(No. of Family worker)	(1.9)
Average age of head of Household (year)	45.58
Average educational year	7.35
Average size of Farm land (acre)	6.86
Average size of cropland(acre)	6.64
Irrigation Rate (%)	100
Major Crops	Wheat, Sugar cane, Maize
Average production of Wheat (kg)	2828.94
Average production of Sugar cane (kg)	12622.96
Average number of livestock by household	
Cattle	1.7
Buffalo	0.82
Goat	0.98
Sheep	0.1
Chicken	5.72
Others	0.02
Average number of agricultural machineries	
Tractor	0.12
Irrigation Pump	0
Sprayer	0.46
Thresher	0.12

Source: Hearing survey

Scale of farm ownership varied widely from "0" of pure tenant farmers that do not own and farmland to large-scale farmers that owned up to 69.5 acres. Average ownership and farmed area including tenanted land amounted to 6.86 and 6.69 acres, respectively.

As for the distribution of farm ownership scale, small-hold farmers that owned less than 5 acres accounted for 80% to show that the percentage of small-hold farmers is high. On the other hand, area ratio of small-scale farms is 29% while farms owning more than 20 acres own 48% of farm area even though they account for only 6% in terms of number of households (Table 4-11).

Table 4-11 Average Farm Size of Surveyed Households

Size (Acre)	No. Households	Share (%)	Farm Size	Share (%)
0-5	42	77.8	92	26.5
5-10	5	9.3	47	13.5
10-20	4	7.4	52	15.0
20+	3	5.6	156	45.0
Total	54	100.0	347.00	100.0

Source: Hearing survey

Farms engaged in tenant farming were relatively small in number at 14 to reflect the characteristics of NWFP which is said to have relatively large number of landed farmers. Ten of these tenant farmers were leasing the land and 4 were renting out. Forms of tenancy included 6 sharecropping and 2 fixed tenancies on leased land and 1 sharecropping in rented land. Considering the importance of risk diversification between landowners and tenants when sharecropping is selected, dominance of sharecropping despite the prevalence of irrigation may suggest that irrigation facility is not functioning fully and that yield is unstable (Table 4-12).

Table 4-12 Land Tenancy Contract

No. of Lease in	10
of which	
Sharecropping	6
Fixed rent contract	2
Others	2
No. of Lease out	4
of which	
Sharecropping	1
Fixed rent contract	2
Others	1

Source: Hearing survey

Main occupations of householders were farming (41) and public servants (10). Although the number of public servants may appear to be unusually high, samples were not biased toward public servant households as they accounted for 20% of employment in the statistics of employed population for the entire Mardan District (see previous section).

Common non-farm employment opportunities include public servant, daily wage labour including farm wage labour and driver. Opportunities for steady wage labour aside from public servant

include factory labour but few people are employed by private sector. Some migrate to Malaysia and Middle East to work overseas. Income level of these steady wage workers range between Rp.30,000 and 100,000 which is significantly high compared to wages of day workers and other odd jobs (Table 4-13).

Table 4-13 Non-Agricultural job opportunity (In person)

Job description	Number
Public Officer	13
Transportation	8
Factory worker	2
Worker in Foreign country	3
Dairy wage worker	11
Retail and whole sale	4
Craftsman	4
Others	2
Total	47

Source: Hearing survey

Regarding rural credit, 7 households were using formal credit such as banks and government agencies and 8 households were taking loans from friends and relatives (Table 4-14). No significant difference in the amount of loan was observed between formal credit and informal credit. A comparison of average household incomes of household taking loans from formal credit and household taking loans from informal credit shows that the first clearly has higher income than the latter, suggesting that households with higher income level and repayment capacity have better access to formal credit and that the poor are facing credit restrictions.

Table 4-14 Rural Credit

Borrower	Formal credit	Informal credit
Number of household	7	8
Amount of loan (Rp)	34,857	37,150
Household income (Rp)	175,472	77,980
Interest rate (%)	14-16	0

Source: Hearing survey

(2) Farming of surveyed farm households

In average, field husbandry sector of agriculture manages 3 parcels of land corresponding to 6.7 acres of farmed area. Main crops include wheat, maize, rice, sugar cane, tobacco, vegetables and potatoes and mustard and a common cropping pattern consists of double cropping of wheat and maize, sugar cane, vegetables and mustard (Table 4-15).

Wheat is important as food for farm households and maize is important as livestock feed. Almost all farm households are growing wheat. Sugar cane, tobacco, vegetables and mustard are commonly grown in NWFP as cash crop.

Sugar cane is the second most important crop after wheat and is grown by 60% of farms. Prices of these two crops remain stable through the price-support system of the government. Being one of the leading tobacco growing regions in Pakistan, there are many tobacco factories in the region. Price of tobacco appears to be relatively stable owing to contracted cultivation with these factories.

Table 4-16 estimates net profit and production cost per area to compare the profitability of main crops such as wheat, sugar cane maize and tobacco. Estimation of rent is of critical importance for estimation of production cost. Here, average farm rent for growing wheat under sharecropping, which is the most common form of tenancy, was used as market farm rent. As for maize, sharecropping farm rent for growing maize was used as market farm rent since maize is usually grown as secondary crop.

The surveyed households are characterised by relatively high proportion of rent as well as cost of chemical fertilisers and seeds in production cost. The percentage of labour cost is not very high owing to low wage rate of Rp.60 per day. Capital cost is also not significant because rental cost of agricultural machinery and draft animals is hardly expensive.

Wheat and maize had relatively high profitability when measured in terms of net profit per unit area, followed by sugar cane and tobacco. Profit per land area of wheat is significantly high compared to national average of Rp.347.26 (2000-01)¹¹. This is presumably due to the fact that the surveyed area is blessed by irrigation conditions and has a yield level of 969kg/acre which is higher than the national average.

While it may seem unreasonable that farmers are growing crops with relatively low profitability such as wheat and maize, they may be a reasonable choice for farmers considering the importance of

¹¹ Mustafa,U., Malik,W. and Sharif M., "Globalisation and Its Implications for Agriculture, Food Security, and Poverty in Pakistan", *The Pakistan Development Review*, 40-4 PartII, (Winter 2001)pp.767-786.

these crops as food and feed crops, relatively low cost of chemical fertilizers and seeds and low requirement for production capital.

Table 4-15 Outline of Surveyed Household

No.	Village	Farm Land (acre)	Gross Income(Rp)				
			Wheat	Sugar Cane	Maize	Tobacco	Vegetable /Potato
1	TR	10.00	32,000	68,000	1,750	0	4,600
2	LK	36.10	80,000	304,000	?	66,000	0
3	NA	8.00	24,000	0	0	0	0
4	SZ	0.00	0	0	0	0	0
5	KK	50.00	160,000	300,000	10,500	0	80
6	SD	5.00	32,000	212,000	0	8,000	0
7	GPB	2.50	12,000	67,000	7,600	0	0
8	LP	13.00	64,000	33,200	0	0	0
9	KG	15.00	32,000	105,000	0	100,000	0
10	KJ	8.50	31,980	64,950	7,000	0	0
11	KJ	8.50	30,200	25,980	7,200	0	0
12	NA	69.50	338,000	0	0	0	0
13	JG	2.50	27,440	0	6,800	0	0
14	JG	0.90	17,800	0	0	0	0
15	SD	2.00	10,200	0	0	0	0
16	PK 16	4.00	14,700	0	5,250	7,500	0
17	SD	2.50	0	13,000	0	0	4,000
18	JG	14.00	48,000	12,600	8,400	50,000	0
19	JG	1.20	16,000	0	4,200	0	0
20	JST	2.00	12,000	18,000	7,000	0	0
21	LK	0.50	0	9,024	0	0	0
22	AD	3.50	30,400	16,800	9,600	0	0
23	CG	3.00	25,600	22,010	6,200	0	0
24	GD	5.00	24,800	22,000	15,750	52,000	0
25	LK	2.15	17,000	4,000	10,500	0	0
26	UA	5.00	20,000	33,600	0	60,000	24,500
27	SLK	7.50	40,000	50,400	0	0	46,880
28	UA	10.90	24,000	44,400	0	180,000	0
29	LK	2.02	0	35,000	0	0	0

Table continued

Cont.

No.	Village	Farm Land (acre)	Gross Income(Rp)				
			Wheat	Sugar Cane	Maize	Tobacco	Vegetable /Potato
30	KS	0.69	2,400	1,300	0	0	0
31	CD	2.50	18,000	5,840	10,500	0	2,610
32	BP	1.00	4,400	7,000	0	0	0
33	BC	2.00	26,000	0	0	0	0
34	GDZ	1.00	14,400	0	0	0	0
35	GIZ	2.50	30,200	0	0	0	0
36	SK	2.40	18,000	28,450	3,500	0	0
37	BK	0.75	0	0	0	0	0
38	SK	1.00	0	0	0	0	0
39	SK	2.40	18,000	25,000	0	0	0
40	YK	1.25	5,640	473	0	0	0
41	MWK	4.00	18,000	0	0	0	0
42	SK	2.50	15,120	6,000	6,300	0	0
43	BJ	2.00	8,640	17,500	4,500	0	0
44	AD	5.00	21,000	32,000	12,600	0	0
45	AP	0.75	5,760	0	0	0	0
46	BS	4.00	15,250	0	9,000	12,000	0
47	RM	7.00	39,400	0	0	0	0
48	GA	6.75	51,000	0	0	0	0
49	GA	1.80	36,300	0	4,500	0	0
50	CG	0.45	6,000	0	0	0	12,000
51	ACR	10	102,500	0	48,000	0	0
52	CG	0.9	6,000	0	2,400	0	0
53	ZKDK	3	40,250	24,000	12,240	0	0
54	QKC	1	12,000	0	7,000	0	0
Average		6.69	31,081.1	29,787.5	4,307.4	9,916.7	1,753.1
Rate of Gross income			0.404461	0.387627	0.056052	0.129046	0.022813841

Source: Hearing survey

Table 4-16 Profitability of Major Crops

	Sugar			
	Wheat	Cane	Tobacco	Maize
Gross Income (Rp/acre)	10,152.9	12,720.8	30,837.6	7,460.0
Total Production Cost (Rp/acre)	8,304.6	10,249.4	15,493.0	6,730.0
Labour input	1,164.5	2,213.9	5,393.4	914.0
Capital	797.8	646.7	758.6	528.0
Current input cost	2,014.4	4,327.4	5,014.0	1,558.0
Land	4,327.4	4,327.4	4,327.4	4,327.4
Net profit (Rp./Acre) (Gross Income) – (Total Production Cost)	1,848.9	2,471.4	15,344.6	830.0
Production cost per weight (Rp/Kg)	9.2			
Sales Price (Rp/Kg)	8.8			

Source: Hearing survey

Farms growing tobacco and vegetables are relatively large in scale and have average farming area of 8.7 acres while farms that do not grow these crops have smaller average farming area of 5.98 acres. This fact shows that, assuming a rational action of farm household to grow cash crops with high profitability if they have some leeway after growing wheat and maize (which are their top priority crops), expansion of farm area is needed to seek improvement of income level through cultivation of crops with high profitability.

While expansion of farming scale appears to be necessary for impoverished people to grow highly-profitable cash crops, liquidity is hardly advancing with regard to farmland. In the case of sharecropping which is the dominant form of tenancy in the surveyed region, level of farm rent is high and comes to Rp.4,327 per acre which is more than twice the rent for fixed tenancy (Rp.1,850).

On the other hand, many farms are leasing tractors, threshers and draft animals. Going rates of Rp.250/hour for tractors and Rp.300/day for buffaloes have been established and there are no large fluctuations in market price among individual contracts by reflecting the relationship between the parties. These rental markets appear to be growing.

Net profit of farms may be high when seen in average but is negative for one-third of farms when individual farms are studied. This may be attributed to high risk of farmers incurring loss after paying the rent owing to unstable yield and high cost of fertilizers and seeds. For this reason, there are no incentives for small-scale farmers to rent farms from large-scale farmers to expand the scale of their farming.

(3) Poverty in surveyed regions and their factors

Average annual income per capita of sample households was Rp.100,000 of which agricultural income accounts for nearly half (Table 4-17).

Table 4-17 Income and poverty of sample households

Average annual family income (Rp)/ family	100,100.6
(Agricultural income)	(50,327.3)
(Non-agricultural income)	(49,921.4)
Income per capita (Rp/person)	16,479.1
Poverty Line (Rp/Person)	9,584.6
Household below Poverty Line	25
Average land size of below Poverty Line (acre)	2.9
Educated years of heads of household under the Poverty Line (years)	4.12

Source: Hearing survey

Table 4-18 shows the distribution of income per capita among surveyed households. According to this table, the number of households living below the poverty line for 2002-03 (Rp.9,584.6 per year), which was calculated by multiplying the 2000-01 poverty line from FRS by the rate of increase in consumer price index, was 25 out of 54 households. Average farm ownership of these 25 households was 2.9 acres, which was far smaller compared to overall average of 6.4 acres. In addition, education level of householders (4.1 years) was significantly lower compared to average of households living above poverty line (9.4 years).

Based on the facts observed above, we hypothesize that farm ownership and level of education are important factors that determine income and estimate income determining function to verify this.

Table 4-18 Sample household (Rp)

Income Stratum	Number of household
~10,000	25
10,000~49,999	25
50,000~99,999	2
100,000~	2

Source: Hearing survey

Age and family labour were added as explanatory variable based on the notion that household income depends on the resources possessed by households (human resources, land resources) (see Table 4-19).

Table 4-19 Average and standard deviation of variables

	Average	Standard deviation
Household Income (Rp)	100100.6	116445
Agricultural Income (Rp)	50327.3	80410
Owned land area (acre)	6.86	12.17
Family worker (Person)	1.89	1.27
Years of education of head of household received (years)	7.35	5.33
Age of head of household	45.3	11.97

Source: Hearing survey

Regression equation is as follows.

$$LN(\text{Household income}) = C + \alpha_1(\text{Land size}) + \alpha_2(\text{Family Worker}) + \alpha_3(\text{Education years of head of household}) + \alpha_4(\text{Age of head of household}) + \varepsilon$$

$$LN(\text{Agricultural income}) = C + \alpha_1(\text{Land size}) + \alpha_2(\text{Family Worker}) + \alpha_3(\text{Education years of head of household}) + \alpha_4(\text{Age of head of household}) + \varepsilon$$

Whereas $\alpha_1 \sim \alpha_4$ represent coefficient for explanatory variable and ε refers to disturbance term.

The results of estimation are shown in Table 4-20. These results show that the value of estimated coefficient became significant in positive for both land and education level and suggest that land ownership and education have effect on income level. On the other hand, coefficient for land size became significant in positive while for agricultural income while the coefficient for education was positive but not significant. This point is consistent with the existing research results that conclude general education does not necessarily improve agricultural income.

Table 4-20 estimation result of Income determination function

Independent variable	Dependent variable	
	LN (Household income)	LN (Agriculture income)
Owned land area (acre)	0.011 (2.42)*	0.023 (2.56)*
Family worker (Person)	-0.006 (-0.128)	0.058 (0.66)
Education years of head of household (Year)	0.026 (2.44)*	0.02 (0.91)
Age of head of household (Years)	0.003 (0.525);	-0.009 (-0.91)
Constant	4.437 (18.16)**	4.316 (8.86)**
No.	54	54
Adjusted R ²	0.227	0.112
F	4.90**	2.67*

Numbers in parentheses indicate t value

*significant at 5% level

**significant at 1% level

Source: Hearing survey

3. Population of surveyed area and hearing survey results

(1) Outline of population in surveyed area

We conducted a field survey of Mardan District in NWFP in July 2003. This section will analyze the results of hearing survey. The data mentioned in this section refer to the aggregated and analysed results of the hearing survey unless noted otherwise. The survey included about 100 samples in total. The samples were not selected randomly using local resident register because one of the purposes of this survey was to explore ways of dealing with rural development. For this reason, many landless and small farmers were included in the survey and the percentage of those owing 0.5 to 1 hectare was small.

Table 4-21 Land size: hearing survey result and Mardan statistics

Survey results			Mardan		
Size	Number	%	Size	Number	%
Below 0.5 ha					
Including landless	28	32.94	Less than 0.404 ha	10,888	17.72
0.5~1 ha	10	11.76	0.404~1.01 ha	24,323	39.59
1~2 ha	22	25.88	1.01~2.02 ha	14,076	22.91
2~3 ha	6	7.06	2.02~3.03 ha	6,294	10.24
3~5 ha	11	12.94	3.03~5.05 ha	3,463	5.64
5~10 ha	5	5.88	5.05~10.1 ha	1,354	2.20
10~20 ha	2	2.35	10.1~20.2 ha	748	1.22
20~40 ha	1	1.18	20.2~40.4 ha	201	0.33
40~60 ha	0	0.00	40.4~60.6 ha	52	0.08
60 ha and above	0	0.00	60.6 ha+	44	0.07
	85	100		61,443	100

Source: hearing survey and *Agricultural Census 2000-North West Frontier Province, Agricultural Census Organisation 2001*.

Note: Land size was converted from acre to hectare. Number of farm household was converted according to this conversion.

Reflecting the limited number of farms with cultivated area of 0.404 to 1.01 hectares (which account for approximately 40% of farms in Mardan District) in the survey, average land ownership area of the farms included in the survey (including landless farms) was slightly high at 2.23 hectares as opposed to average land ownership area in Mardan District of 3.7 acres (1.49 hectares). Inclusion in the survey of farms in the rain-fed rose farming area that requires large area to earn a living appears to have had some effect.

Table 4-22 Average land size of surveyed person (ha)

Average	2.23ha
Average excluding landless	2.52ha
Average 1ha or more	3.75ha
Number	85
Max	28.34
Min	0
Confidence interval (95.0%)	0.893682

Source: Hearing survey

Reflecting the introduction of irrigation, Mardan District has four times the population density of NWFP. Population growth rate for NWFP as a whole from 1981 to 1998 was 60.34% while that of Mardan District was 54.64%. As can be seen from the sex ratio of 107 in Mardan District compared to an average of 105 in NWFP, it is not far removed from the provincial average although population growth is slightly high.

Table 4-23 Population and population-related statistics of NWFP and Mardan

	Area Km ²	Population		Increase rate (%)	Population Density		Ave. Pop.	SEX Ratio*
		1981	1998		1981	1998	Increase rate 1981-1998 (%)	
		NWFP	74,521	11,061,328	17,735,912	60.34%	148.43	238.00
Mardan	1,632	881,465	1,460,100	65.64%	540.11	894.67	3.01	107

*Women=100

Source: 2002 NWFP Development Statistics, Bureau of Statistics, Planning & Development Department, Government of NWFP, 2003.

This is also true in terms of urban and rural ratio. While rural population accounted for 81.12% in NWFP in 1998, the same ratio for Mardan District was 79.79% to indicate that urbanisation has advanced slightly more compared to other districts. Slightly higher population growth rate and urban population are understandable when high productivity from irrigation and the accompanying high population density are considered.

Table 4-24 Population by Urban/Rural (NWFP-Mardan)

NWFP	1972	1981	1998
Total	8,388,551	11,061,328	17,735,912
Urban	1,195,655	1,665,653	2,994,084
Rural	7,192,896	9,395,675	14,741,828
Rate of Rural Population	85.75%	84.94%	83.12%

Mardan	1972	1981	1998
Total	696,622	881,465	1,460,100
Urban	127,263	166,302	295,128
Rural	569,359	715,163	1,164,972
Rate of Rural Population	81.73%	81.13%	79.79%

Source: 2002 NWFP Development Statistics, Bureau of Statistics, Planning & Development Department, Government of NWFP, 2003.

The fact that HDI of Mardan District is 32nd among the 91 districts throughout the country and is slightly higher than that of NWFP can be explained by the high percentage of its urban population ratio (4%). For this reason, Mardan District can be seen as an average district in NWFP except for the existence of irrigation. While it is not possible to assert that the results of this sample survey represents the situation in NWFP with statistical significance, the selection of study subjects was adequate for speculating the general situation in NWFP.

Table 4-25 Human Development Index (HDI) of Pakistan 1998

	Literacy Rate (%)	Enrolment Ratio (%)	GDP/Capita (PPPUS\$)	HDI
Pakistan	45	71	1,715	0.541
Punjab	46	75	1,770	0.557
Sind	51	64	1,804	0.540
NWFP	37	70	1,364	0.510
(Mardan)				(0.519)
Balochistan	36	64	1,677	0.499
Islamabad	72	58	1,743	0.612

Source: *Pakistan National Human Development Report 2003*, UNDP Pakistan 2003.

(2) Attributes of study subjects

The subject of this study is biased towards males because female researchers are needed to perform any study of women in Pakistan and because it is difficult to find such female researchers in rural Pakistan. Although we managed to hire a female researcher and conducted a survey of some 20 rural women, this section will focus on the hearing survey we conducted on the male population of Mardan District for the sake of consistency of study subjects. Hearing survey of 20 women will be used for reference and comparison where appropriate.

As shown in the table, average age of study subjects was 42.65 years. Median mode was 40 years with the youngest and oldest subjects of 20 years and 73 years, respectively.

Table 4-26 Basic Information

	Age
Average	42.65
Standard deviation	1.36
Median	40
Mode	40
Min	20
Max	73
No.	85

Source: Hearing survey

(3) Social structure

i. Form of inheritance

It goes without saying that form of inheritance is one of the indices of social structure. Equally divided inheritance based on the Islamic law, which accounted for nearly 80% of the response, provides that female heir shall receive 50% of the property inherited by male heir. Although it is often referred to as a typical example of Islamic gender inequality, husband does not inherit property from wife but wife inherits one-eighth of husband's property upon his death. Children inherit the remaining seven-eighth in the manner described above. Some argue that there is not much difference in value of property inherited.

Table 4-27 Form of inheritance

	No.
Equal	5
equal by Islamic Law	56
equal by boy	7
Eldest son	1
last children(no preference)	1
Others	2
Total	72

Source: Hearing survey

In addition, vast majority of response on place of residence after marriage showed that wives lived with their husbands' parents to demonstrate a clear contrast with the form widely observed in Southeast Asia of husbands living in the compounds of their wives' family. It is a clear indication of paternal society.

Table 4-28 When you married, where did you live

Form	Response
With Male's parents	73
Nearby male's parents	2
Nearby female's parents	2
Total	77

Source: Hearing survey

Preference for boy child is also clear. In response to a question, "If you could only have one child, would you rather have a boy or a girl," 81 out of 83 valid responses said that they wanted a boy and only 2 desired a girl child. Also in response to a question, "If you could send either your son or daughter to secondary school because of limited family budget, which would you send," 81 out of 83 valid responses said that they would send their son and only 2 said they would send their daughter. Although this response is understandable to some extent because preference for boys also exists in Japan, many respondents in Southeast Asian countries said that they would send brighter of the two or that they preferred to send their daughter because they are more reliable.

There was a question sheet that came back with a comment "What a stupid question" with regard to this question. It showed that it was natural for them that it was "stupid" to ask such a question and that it has become a premise to the extent that they felt it was "stupid" to ask such a question. Both of the respondents that expressed preference for girls had sons. The reason for their response is not known.

ii. Marital relation

The relationship from which a marriage partner is found has much significance in studying the social structure. While "parallel-cousin marriage" and "cross-cousin marriage" are clearly distinguished, number of "parallel-cousin marriage" and "cross-cousin marriage" among married men were almost same at 22 and 24, respectively. Number of cousin marriage accounted for a clear majority with 44 person. In this sense, it is a society in which "cousin marriage" is playing a central role regardless of whether it is "parallel" or "cross." As can be seen from the fact that "cousin marriage" is approved by the Koran, it is a community with strong internal bond with close overlapping of locality and blood relation.

Other 35 respondents included daughter of father's acquaintance and father's student to suggest that they were acquainted in some way or another. Some responded that they married a person from other tribe. However, details of their relationship was not known.

Table 4-29 Relationship to your spouse before marriage

Marital relation	
Friend to Sisters	1
Parallel-cousin	22
Cross-cousin	20
Others	35
Total	78

Source: Hearing survey

iii. Education and educational background

The results of educational background which is an important index in the context of rational thinking in a modern sense, demographic transition, access to information and use of technology are as described below. Most common response from the male respondents was "no school attendance" (17). There were same number of respondents that had completed 10th to 12th grade which corresponds to completion of high school education in Japan. "Others" refer to religious school *madrasah*. There were 13 respondents with university degrees including those with master's and doctor's degree. Considering their average age, their educational background was high compared to average male in Pakistan.

Table 4-30 Final educational background

Education	No.	%
No Education	17	20.00
Less than 4th grade	1	1.18
4th~6th grade	6	7.06
7th~8th grade	6	7.06
9th~10th grade	12	14.12
11th~12th grade	17	20.00
Diploma	5	5.88
University or more	13	15.29
Others	8	9.41
Total	85	100.00

Source: Hearing survey

However, response to "educational background of your wife" takes on a completely different picture with the most common response being "no school attendance," (59%) followed by "others" referring to *madrasah* (21%). Only 12 wives (15%) had received formal education of 7th grade and above, presenting a clear contrast with 53 husbands (62%) having received formal education of primary

education and above.

Table 4-31 Final educational background of your wife

Education	No.	%
No Education	46	58.97
Less than 4th grade	3	3.85
4th~6th grade	1	1.28
7th~8th grade	1	1.28
9th~10th grade	7	8.97
11th~12 th grade	1	1.28
Diploma	1	1.28
University or more	2	2.56
Others	16	20.51
Total	78	100.00

Source: Hearing survey

The gap becomes even greater for ideal educational background for children with 96% of respondents considering high school education and above to be ideal for sons compared to 66% respondents desiring same level of education for their daughters. What is noteworthy is the fact that 11 respondents (15%) said that school education is not necessary for their daughters in response to the question about ideal educational background. The percentage goes up to 20% when those who said that primary education would suffice are included. These results were quite shocking when given in response to a question about ideal educational background as it shows that not a few people are of the opinion, based on their free will, that girls do not require any education.

Table 4-32 Ideal Education for boy child

Education	No.	%
No education	0	0
Less than 4 th grade	0	0
4th~6th grade	1	1
7th~8th grade	3	4
9th~10th grade	0	0
11th~12th grade	7	9
Diploma	5	7
University or more	60	79
Total	76	100

Source: Hearing survey

Table 4-33 Ideal Education for girl child

Education	No.	%
No education	11	15
Less than 4th grade	1	1
4 th ~6 th grade	3	4
7 th ~8 th grade	4	5
9 th ~10th grade	6	8
11 th ~12th grade	15	21
Diploma	3	4
University or more	30	41
Total	73	100

Source: Hearing survey

Putting these factors through a regression analysis leads to interesting results. Literacy rate and infant mortality rate of women in reproductive age show a clear correlation when measuring population control. A clear correlation is also witnessed between infant mortality rate and demographic transition index to support the infant survival hypothesis. These correlations alone demonstrate the close link between female literacy rate and demographic transition. It is also a "common sense" in the field of development that high income of parents would raise the ideal educational background of their children with no difference in ideal educational background raised with increase in income between sons and daughters. There is also some correlation between educational background of husband and wife.

However, the results of our survey proved contrary to these expectations. Since farm income was not available, we calculated various correlations using land size as coefficient of income. The results showed that there was hardly any correlation between land size and ideal educational background for girls (0.115280) and between land size and ideal educational background for boys. Correlation was particularly low for ideal educational background of girls. In other words, the reason for not educating girls is not based on economic reasons but on customs or cultural values.

Education normally brings about modernisation and internalisation of modern values. Some degree of correlation is therefore expected between "educational background of parents and ideal educational background for boys" and "educational background of parents and ideal educational background for girls." At 0.18 and 0.27, respectively, they have not reached the level of showing the existence of clear correlation. The only correlation that can be identified among the parameters is that between educational background of husband and wife (0.3) although it is not at the level of asserting any significant correlation.

The implications of all this is serious as the survey results show that economic development is not leading to social development, particularly to human development of women, and that the growth attained through economic development may be offset by increased population in some cases.

Table 4-34 Regression analysis of educational background

Observed number:77	Multiple correlation R
Correlation between Owned land size and Ideal education for girl child	0.088706
Correlation between Owned land size Ideal education for boy child	0.115280
Correlation between parents' educational background and Ideal education for boy child	0.186072
Correlation between Ownership of land and educational background	0.262922
Correlation between parents' educational background Ideal education for girl child	0.274851
Correlation between Owned land size and educational background	0.276350
Correlation between Ideal education for boy child and Ideal education for girl child	0.306151
Correlation with education among husband and wife or wives	0.307966

Source: Hearing survey

iv. Ideal occupation

Gender disparities are also obvious in ideal occupation as well. Ideal occupations that are most common among boys include doctor, military officer and engineer. Meanwhile, overwhelming majority (45%) of girls wish to become a housewife, followed by teacher (31%). Teacher in this case refers to those teaching at primary school and junior high school in the village. Girls are therefore expected to stay in their village. Doctor is the third most common ideal occupation for girls. In Islam, women cannot expose their skin to opposite sex unless they are their husband or children. For this reason, there is a compelling demand for female doctors to examine female patients. These 3 occupations account for 93%, making other occupations almost negligible. These results clearly show that women are expected to remain within the village community.

Table 4-35 Ideal occupation for their children (Boy)

Occupation	No.	%
Farmer	1	1.20
Teacher	6	7.23
Engineer	12	14.46
Technician	3	3.61
Policeman	1	1.20
Military service	13	15.66
Medical doctor	23	27.71
Official	8	9.64
Businessman	9	10.84
Others	7	8.43
Total	83	100.00

Source: Hearing survey

Table 4-36 Ideal occupation for their children (Girl)

Occupation	No.	%
Housewife	37	44.58
Teacher	26	31.33
Engineer	1	1.20
Nurse	1	1.20
Business person	1	1.20
Medical doctor	14	16.87
Government official	2	2.41
Others	1	1.20
Total	83	100.00

Source: Hearing survey

v. Family planning

Almost all respondents were aware of the family planning method to a certain degree with 82 out of 85 respondents replying that they are "aware of family planning" and only 3 replying that they are "not aware of family planning." The following table shows their response to a question asked to those who knew about family planning about the source of their information. Most common source was TV program (35%), followed by the activities of the Ministry of Population and Welfare. TV and radio programs accounted for 39%, and, together with 37% of the activities of the Ministry of Population and Welfare, comprise the two major source of information.

Table 4-37 Sources of information among those who knew

Source	No.	%
Ministry of Population ad Welfare	39	24.53
Ministry of Health	20	12.58
Public Hospital	9	5.66
Private Hospital	2	1.26
Health Unit	4	2.52
Women's Union	0	0.00
NGO	5	3.14
TV Program	56	35.22
Radio Program	6	3.77
Friends	13	8.18
District Office	1	0.63
Others	4	2.52
Total	159	100.00

Note: Do not match with the number of respondents because of multiple response.

Source: Hearing survey

We asked about the desire to use family planning and requests related to use of family planning. Among 84 respondents, number of those "using family planning and wishing to use family planning" and those "not using family planning and not wishing to use family planning" are about the same at 43 and 41, respectively. The following responses were obtained from a group of respondents excluding those that no longer require family planning to a question, "Do you wish to use family planning? If you are already using family planning, what are the methods that are you using?" Responses consisted of common methods such as condom (23%), pills (17%), IUD (13%) and injection (17%), together accounting for 70% in total.

Table 4-38 Method of Family Planning

	No.	%
Condom	11	23.40
Pill	8	17.02
IUD	6	12.77
Injection	8	17.02
Withdrawal	5	10.64
Sterilisation	1	2.13
Periodic Abstinence	1	2.13
Others	7	14.89
Total	47	100.00

Source: Hearing survey

While meeting the needs of those utilising family planning, such as delivery of family planning commodities, is important in itself, ways of dealing with the matter is clear and relatively easy to solve. However, it is necessary to find out why family planning is not required from those that replied that family planning is not needed.

Table 4-39 Reasons for not requiring family planning

Reason	No.	%
Family planning is sin	6	14.63
Number of children is a will of God and not for humans to decide	11	26.83
More children strengthen society through increased economic opportunities	2	4.88
More children strengthen society through improved opportunities in the future	3	7.32
Family planning is harmful for health	3	7.32
No longer needed (age reason)	3	7.32
Not interested	5	12.20
Others	8	19.51
Total	41	100.00

Source: Hearing survey

Among the reasons for not requiring family planning, there were 25 valid responses after excluding responses that could not be analysed such as "No longer needed," "Not interested" and "Others." Most common reasons were "Family planning is sin" (11) and "Number of children is a will of God and not for humans to decide" (6), together accounting for about 70% of total. The remaining 30%

consisted of responses based on economic rationality and lack of understanding such as "More children strengthen society through improved opportunities in the future," "More children strengthen society through increased economic opportunities" and "Family planning is harmful for health." Measures can be taken against responses based on economic rationality and lack of understanding as they are of nature that may change under different economic conditions and with education. However, changes in rational conditions will not change responses that account for 70% of total respondents such as "Number of children is a will of God and not for humans to decide" and "Family planning is sin" are based on religious faith and will not be affected by changes in rational conditions.

Understanding this problem requires religious and sociological analysis to gain insight into the mechanism of salvation in Islam. No religion can validate itself without salvation. One of the main conditions shaping a religion is the existence of salvation mechanism that transcends mundane rationality. The character of religion's salvation mechanism differs between those that have distinct scripture to rely on such as Judaism, Christianity and Islam and those that draw from a wide range of scriptures such as Hindu and Buddhism. Max Weber referred to Buddhism as exemplary prophecy and distinguished it from ethical prophecy such as Judaism. In terms of form of salvation, one can argue that the necessary and sufficient condition for salvation in religions that originated from Judaism is to act exactly as prescribed in the scripture which is different from the form of salvation taught in Buddhism.

For instance, the necessary and sufficient condition for a Muslim to attain salvation is to sacrifice his or her life by engaging in jihad (holy war) according to the teachings of the Koran. In other words, following the Koran and Sunna is the religious requirement for salvation instead of mundane rationality. Since this means that pursuing mundane rationality (i.e. choosing rational act) does not lead to salvation, following a mundanely rational approach would not solve these problems.

Items related social norms that were included in the survey clearly reflect this situation.

vi. Social norm

Regarding social norm, degree of consent to the indices was measured by quantifying the response (Totally agree = 1, More or less agree = 2, More or less disagree = 3, Totally disagree = 4). In other words, 1 point is added when a person totally agrees while 4 points are added when a person totally disagrees.

This survey produced extremely interesting results as it supported the perception of those who responded that they would not use family planning in the foregoing question. Needless to say, the survey was conducted for all survey respondents and reflects their views.

It is possible to conclude that the respondents have positive outlook towards their society as a whole. However, their criteria vary widely from one culture to the other and their response is altered by cultural bias and background. What becomes important then is the relative physical relationship. For instance, an item that received the greatest consent was "An honest person will be rewarded in afterlife," receiving 1.02 points in average. These results naturally show that salvation is guaranteed as long as one follows the rules of the Koran and that such salvation is not of the worldly nature but salvation in the afterlife or heaven.

In contrast, items referring to worldly and mundane salvation such as "Our society is fair to all" and "Tomorrow will be better than today" received the least consent with 2.43 and 2.07 points, respectively, representing people's conviction that salvation in afterlife is guaranteed by following the rules of the Koran even if one feels irrationality in the real world. Efforts that bring about rational improvement in this world such as family planning will not have much significance in under these circumstances.

Table 4-40 Social Value

Ranking	Item	Average
1	An honest person will be rewarded in afterlife	1.0235
2	It is a social responsibility to work hard.	1.0824
3	Dedication to work is a virtue.	1.1412
4	Working hard makes us successful in our life.	1.1429
5	An honest person will be rewarded someday.	1.1647
6	One should carry out one's work to the best of one's ability.	1.1905
7	More leisure is bad for society.	1.2118
8	Some say that spending money for educating children pays in the long run.	1.2471
9	Laziness is a vice.	1.2588
10	Can you get help from friends when needed?	1.4000
11	Do you help a workmate beyond job description?	1.4000
12	Do you feel valued in society?	1.4118
13	Do you have many friends in the workplace?	1.5181
14	Tomorrow will be better than today	2.0714
15	Our society is fair to the all	2.4353
Average		1.3800

Source: Hearing survey

vii. Deviance of social values (deviance between respect and trust)

A survey on deviance of respect and trust against various subjects supports the mean values of social rules. As in the survey on social values, the respondents were asked to rate their "respect" and "trust" for respective subjects in the scale of 1 to 4. Naturally, "respect" signified simply respecting while "trust" is a concept that anticipates practical measures when something happens. Two tables below illustrate respect and trust by their mean value.

Needless to say, these two concepts share similar meaning and do not represent something completely different. The trend that can be observed from these tables is the profoundness of respect and trust towards Islam, followed by respect and trust towards one's parents, state, friends and community (*jirga*). The high trust and respect won by the government is understandable considering the fact that the survey was accompanied by government officials and subjects who are friendly towards the government must have been selected for the survey. One can also look at this as respect and trust for abstract existence. With the exception of the state, family, friends and community occupied an important position after the Islamic religion to show that the relationship is very immediate. The most poorly rated subject, on the other hand, was "political system," followed by "social fairness." While it is a matter of comparison, it shows that people are not connecting the existing systems and their efforts with their worldly happiness and success (mundane salvation).

Table 4-41 Mean value of respect by item

	Respect
Islam	1.0000
Parents	1.0000
State	1.0941
Friends	1.0988
Your community (<i>Jirga</i>)	1.1071
Your landowner	1.2549
Your tenants	1.3429
Government	1.4235
Your representative to National Assembly	1.6353
Justice system	1.7711
Political System	1.9048
Average	1.3632

Source: Hearing survey

Mean values of trust is as shown below.

Table 4-42 Mean value of Trust by each item

	Trust
Islam	1.0000
Parents	1.0357
Your community (<i>Jirga</i>)	1.1429
State	1.2000
Friends	1.2099
Your landowner	1.2745
Your tenants	1.4571
Government	1.5529
Your representative to National Assembly	1.7176
Justice system	2.0000
Political System	2.0595
Average	1.4650

Source: Hearing survey

This survey also shows how people in the surveyed region are viewing appearance and reality, i.e. the deviance between the two reflects the difference between appearance and reality. For this reason, deviance was examined by using t-test. Regarding Islam, there is no room for deviance as all respondents "completely respect and trust" Islam. Deviance was high among the respondents for "social fairness," signifying that "social fairness," suggesting that social fairness, which represents expectations for realistic efforts, is also underestimated from the viewpoint of appearance and reality.

It also shows that religion has stronger influence than expectations for good results from efforts made in the mundane world. Furthermore, it shows that primary group such as community has greater influence than institutions such as state or government.

It clearly shows that people are living in a community connected by locality and blood relation premised on religious principle of salvation. It is also necessary to take a moment to look at the conditions for salvation in Islam. In our survey, there was not a single exception to "respect" and "trust" towards Islam among the respondents. It is a characteristic of religions having a definite scripture in which deficient or quasi faith cannot possibly exist as faith.

Not long ago, Prime Minister Mahathir of Malaysia sought clear distinction between terrorism and fundamentalism by saying, "You talk about fundamentalists, but I am also an Islam fundamentalist," when Islam fundamentalists were criticised in connection with the terrorist incident in Afghanistan. The Sunnis that account for the majority of Islam population are the people that act according to the

memoir (Sunna) of the prophets and are fundamentalists in this regard. For them, the requirement for salvation is to live by the Koran that contains the precepts for Muslims and to observe the Sunna. For this reason, faith that is deficient or quasi does not meet the requirements for salvation and is regarded as having no faith at all.

In the case of Christianity it is difficult to determine whether a person is abiding by the rules prescribed externally by the religion as it has shifted its course to internal salvation. A principle of keeping off the issue of faith emerged in Europe after experiencing bitter religious war after Martin Luther's religious war to avoid such catastrophe and became the basis for today's international law. For this reason, the concept of universal priesthood advocated by Martin Luther was interpreted in numerous ways, giving rise to room for quasi faith, habitual faith and breaking away from Christianity following modernisation.

However, this is not the case with the Islam Sunnis. The rules that need to be followed exist undeniably as letters in the Koran and Sunna, and breaking the rules means being disqualified as Muslim. A major characteristic of Islam not seen in other religions is the rule that sentences those who abandoned the religion to capital punishment. This is also explicitly stated in the Koran and is irrevocable. It is no wonder that no one responded "somewhat trust" or "somewhat respect."

Table 4-43 T Value (by disparity)

	T Value
Justice system	-3.0376893
Nation	-2.5776988
Friends	-2.3904572
Political System	-2.1846537
Government	-2.1622333
Parents	-1.7533038
Your representative to National Assembly	-1.4695225
Your community (<i>Jirga</i>)	-1.3481536
Your tenants	-1.2762220
Your landowner	-0.5735393
Islam	0

Source: Hearing survey

The following results were obtained to a question "What is the most important matter in your life?" "Money" was the most common response, followed by "honour" and "enjoying life." With the exception of "honour," the responses were very practical in addition to being short-sighted and utilitarian. However, the importance of other people's eyes can be inferred from the value system

that gave more importance to "honour" than "family and children." It may indicate a context in which parents could murder their children for honour could occur.

Table 4-44 What is the most important matter in your life?

Important matter	No.	%
Money	25	29.41
Social Status	10	11.76
Family Relationship	8	9.41
Honour	19	22.35
Children	5	5.88
Friends	3	3.53
Enjoying life	15	17.65
Total	85	100.00

Source: Hearing survey

viii. Social relationship

Survey on social relationship also supported our analysis up to this point, suggesting a condition in which close relatives and friends are helping each other. The questions asked in the survey and their results are as follows.

Table 4-45 An amount of money exceeding the amount you can raise has become necessary due to emergency. Where would you get that money?

	No.	%
From friends, but not relatives	11	12.94
From relatives, but not friends	15	17.65
From both friends and relatives	50	58.82
There are none	9	10.59
Total	85	100.00

Source: Hearing survey

Table 4-46 You need to get assistance from others due to emergency.

Where would you get that assistance?		
	No.	%
From friends, but not relatives	9	10.59
From relatives, but not friends	19	22.35
From both friends and relatives.	51	60.00
There are none	6	7.06
Total	85	100.00

Source: Hearing survey

Table 4-47 Did you rent or supply funds to others in the past 5 years?

	No.	%
To friends, but not relatives	8	9.41
To relatives, but not friends	5	5.88
To both friends and relatives.	57	67.06
There are none	15	17.65
Total	85	100.00

Source: Hearing survey

(4) Public health and others

The fact that infant mortality rate has to be controlled to attain demographic transition has been supported by the infant survival hypothesis. Generally speaking, diarrhoea is the most common cause of infants in developing countries, followed by tetanus and tuberculosis. Data from WHO on cases including NWFP and FATA also show that diarrhoea is the greatest cause of infant mortality. In particular, it accounts for 43.3% of perinatal deaths (between 28th week of pregnancy and 1 week after child delivery), followed by acute respiratory infections (18.9%).¹² While perinatal deaths are largely affected by availability of medical care and safe child delivery, infant mortality outside of perinatal period has significant effect on fertility activities.

The greatest cause of diarrhoea is drinking water with existence of custom for boiling water before drinking as tea making significant difference. Although one villager insisted that there are ways to drink unboiled water hygienically, risk of waterborne infectious diseases is high unless water supply system is developed or a habit of boiling water is prevalent.

The percentage of tap water use was 7% in the hearing survey on source of drinking water with the

¹² Chapter 3 Table 3-17

remaining 93% relying on well water. In addition, all 85 respondents replied "No" to a question "Do you boil water before drinking?"

4-48 Source of drinking water

Source	No.	%
Well	78	90.70
Tube water	6	6.98
Others	2	2.33
Total	86	100.00

Source: Hearing survey

Sixty-five percent responded "Yes" and 35% said "No" to a question "Do you have a lavatory in your home?" Toilets that are generally available in developing countries are usually penetration type instead of combined septic tanks and sewage system. For this reason, the risk of contamination of drinking water by sewage always exists. This is most likely causing diarrhoea among infants whose resistance against diseases is weak and taking their lives. It gives mothers the fear of their child dying as well as losing their security at old age, both working as factors that discourage birth control.

Table 4-49 Do you have lavatory in your home?

	No.	%
Yes	55	64.71
No	30	35.29
Total	85	100.00

Source: Hearing survey

We asked a general question "Where would you go when you get sick?" and "Where would you go when your wife delivers a baby?" Hospitals and clinics accounted for majority in both cases to suggest that they are receiving adequate medical care. In other words, causes of infant mortality outside of prenatal period are presumably linked to poor hygienic environment of people's homes.

We also asked about breastfeeding which is important in securing child-bearing intervals and infant health. The rate of breastfeeding was high, partly because it is encouraged by the teachings of Islam. The 8% that were not breastfeeding appeared to be unable to do so for some reason or another. Average period of breastfeeding was 21.4 months, although both median and mode indicated 24 months to show that the majority of mothers breast-fed their child for about 2 years.

Table 4-50 Did your wife breastfeed?

	No.	%
Yes	71	92.21
No	6	7.79
Total	77	100.00

Source: Hearing survey

Table 4-51 If so, how many months did she breastfeed?

Number of months	
Average	21.45
Median	24
Mode	24
Minimum	11
Maximum	24
Total	1523
No.	71

Source: Hearing survey

(5) Child fertility and mortality/ideal number of children

Let us now take a look at the number of children that are actually born. Average number of births is balanced at 3.25 and 3.26 for boy child and girl child, respectively, resulting in total of 6.51. However, fewer girls survive (2.80) compared to boys (2.92).

**Table 4-52 Number of boy child delivered, their survival and death
(for applicable families only)**

	Number of boy child delivered	Number of boy child survived	Number of boy child deaths
Average	3.2535	2.9155	0.3380
Median	3	3	0
Mode	1	1	0
Total	231	207	24
No.	71	71	71
Maximum (1)	9	8	3
Minimum (1)	1	0	0
Confidence interval (95.0%)	0.4539	0.4229	0.1647

Source: Hearing survey

**Table 4-53 Number of girl child delivered, their survival and death
(for applicable families only)**

	Number of girl child delivered	Number of girl child survived	Number of girl child deaths
Average	3.2615	2.8000	0.4615
Median	3	3	0
Mode	1	3	0
Total	212	182	30
No.	65	65	65
Maximum (1)	8	8	3
Minimum (1)	1	0	0
Confidence interval (95.0%)	0.4883	0.4640	0.1913

Source: Hearing survey

Under natural circumstances, it is said that approximately 105 boys are born for every 100 girls and that sex ratio reaches 100: 100 in early reproductive age owing to higher mortality rate of boys up to that point. However, mortality rate of girls is higher in this case at 141.5‰ compared to 129.9‰ for boys. Disparity in mortality is 11.6‰, as shown below. We conducted a χ square test on a total of 93 persons including female respondents in addition to male respondents to determine if there is any significant deviance in this difference. As a result, we have found that significant

difference is identified at χ square test = 12.984 and asymptotic significance probability = 0.000. It goes without saying that this difference is a statistically significant difference that cannot be ignored. The high mortality rate of girls which is usually low signifies an existence of deviance greater than that found in the statistics. What we can see here is the status of women in the community as the figures show that status of women is significantly low on the level of mortality which is literally a matter of life and death.

Table 4-54 χ^2 test

	Value	Degrees of freedom	Asymptotic significance Probability (Two-Side)	Accurate significance Probability (Two-Side)	Accurate significance Probability (One-Side)
Pearson's χ^2 test	12.984(b)	1	.000		
Continuity correction (a)	11.171	1	.001		
Likelihood ratio	12.344	1	.000		
Fisher 's Direct technique				.001	.001
Linear and linear linkage	12.844	1	.000		
Number of available cases	93				

a Calculated for 2x2 Table only

b 0 cell (.0%) has expected frequency of under 5. Minimum expected frequency is 7.10.

Source: Hearing survey

Needless to say, women are the main entity in child bearing. Since the Conference on Population and Development (ICPD) in 1994, population policies are being developed according to a kind of empirical knowledge that population would decrease to a replacement level by improving the status and health of women and by promoting their education so that they can make informed choices. However, hardly any conditions exist for advancing demographic transition can be found in this region considering the low status, containment in community and low literacy rate of women, nor is there any scope for taking rational measures under the present circumstances where greatest priority is being placed on religious salvation.

Response from male respondents on ideal number of children averaged 5.6, indicating that they want to have up to 5.6 children even after family planning is fully disseminated.

Table 4-55 Ideal Number of Children

	Boys	Girls	Total
Average	3.08	2.51	5.60
Median	3	2	5
Mode	2	2	4
Total	237	193	431
No.	77	77	77
Maximum (1)	10	8	18
Minimum (1)	0	0	1
Confident interval (95.0%)	0.4096	0.3890	0.6741

Source: Hearing survey

An interesting result was obtained when comparing this with the views among women. Among males, 77 out of 85 respondents mentioned the ideal number of children. It corresponds to response rate in excess of 90% despite the fact that there were old men and those that had no intention of marrying. In contrast, the response obtained from women was shocking as 12 out of 20 respondents said that they had "no idea." Most common response among those that did respond was 4 (2 boys and 2 girls), clearly less than the response from men. Women are not making decisions on child bearing which is a process that is vital for them. There was no bias of "considerations for men that were present" because the survey was conducted solely among women by female researcher.

Chapter 5 Tasks of Cooperation

- from the result of survey findings-

It is safe to say that institutional factors surrounding the society of Pakistan was the focus of this study. What kind of recommendations we foreigners could offer against such restraining factor? A different frame of reference must be worked out since it is neither capital nor technology that is conclusively needed in improving the problems confronted by Pakistan. We must come up with a new approach under the present circumstances where much of aid offered to Pakistan by foreign countries has not produced sufficient results. We would like to present several ideas in the following based on the survey results.

1. From the viewpoint of macro economy

In view of the results of the field study, the most needed entity in Pakistan is the farmer participation-oriented agricultural cooperative for smaller farms that can play the role of educating farm managers and disseminating agriculture on a rural level rather than for agro-industries or large farms.

The Government of Pakistan is conducting various forms of research on problems faced by agriculture and is carrying out technical interventions that are accompanied by high cost. Cooperatives Act is already in existence as well. However, these policies have not attained their purpose owing to insufficiency of government's implementing capacity and absence of powerful farmer organisation. As indicated in the UNDP report, long-term development of agriculture in Pakistan depends on whether comprehensive farmer participation, including its technical effect, is attained. Socialisation of service, information and technology would advance on national, state and community levels once a powerful farmer-participated organisation is realised, and is expected to benefit all parties concerned including landed farmers, landless farmers, women, local governments

and NGOs.

Group activities have the function of improving the productivity of wide-ranging management styles of small farmers through collaborative activities (e.g. shipping, facility use, technical guidance, purchase of production and livelihood supplies and sales) and reducing their cost, while bolstering their competitiveness and equipping them with resistance against inadequate resource allocation. This is attributed to increased competitiveness in capturing the market as well as to its long-term food supply function that would maintain the subsistence line and alleviate the poverty of farmers and non-farmers in addition to enabling continuation of food production. Advancement of Japanese agriculture under decentralised and small-scale management conditions through the existence of collective farmer activities (general agricultural cooperatives) offers a clear example of this fact.

Manpower, land, water, traditional techniques and organising power of farmers comprise the most important resources in rural areas. It appears that poverty alleviation can be realised by attaining agricultural development if these elements are organised in a comprehensive manner and combine it with a system that steers various groups of small farmers, tenant farmers and landless farmers in the direction of agricultural production activities. In particular, community (i.e. rural and regional) based agricultural production activities not only generate employment and income but also realizes regional integrity and socialisation of technology in many rural communities, thereby contributing significantly to easing of tensions that exist in multiethnic society.

2. From the results of farm household budget survey

In regions where employment opportunities other than agro-related industry (including commerce) do not exist, improving the access of the poor to farmland is of decisive importance in alleviating the rural poverty problem. For this purpose, it is necessary to create an environment in which landless and small farmers can lease farmland from large farmers and landowners. Reinforcement of the management and operation of irrigation facilities and improvement of land productivity of small farmers are needed to create such environment.

In addition, it is necessary to explore the direction of growing cash crops with high added value to generate high profit from limited amount of land. As vegetables and fruits have been widely grown in NWFP, it will also be necessary to consider improving the distribution infrastructure such as roads and central market to activate wide-area distribution of these agricultural products with comparative advantage.

As is also clear from the fact that general education was not effective in increasing agricultural

income, there is no firm proof that social development project (with the exception of the project for improving social status of women) would play a decisive role in improving the income level of the rural poor. More emphasis shall be placed on measures for creating employment that would benefit the poor through economic growth than giving priority to measures that are directly targeted at the poor. Such direction has also been stressed in Pakistan's Poverty Reduction Strategy Paper announced in February 2004 and is consistent with the guidelines of the Pakistani Government.

3. From the viewpoint of WTO accession and Pakistani agriculture

Whether WTO accession would bring benefit to Pakistani agriculture is a matter that requires careful review. WTO relies on the theory of comparative advantage in which trading countries mutually realize higher economic welfare through trade by specialising in areas of manufacturing they are strong in. Many developing countries are making efforts to find export goods with comparative advantage by implementing strategies for diversification of agricultural products. However, it is difficult to find agricultural products with outstanding advantage over others as many developing countries are faced with the same problem. Although every country should be able to come up with products having comparative advantage in theory, finding them is not an easy task. Even if one succeeds in identifying such item, it is another story whether there is a system for selling such item in the international market.

Cotton and wheat are typical farm products in Pakistan that can earn foreign currency. Cotton is of medium fibre which is not as high in quality as the cotton grown in Egypt and is used mainly as raw material for low- to moderate-priced towel cloth. On the other hand, quality of wheat from Pakistan is recognised worldwide, although question remains as to whether Pakistan could continue to produce surplus from domestic consumption amidst the country's extremely high population growth rate.

The Government of Pakistan is aware of this reality and has plans to pour energy into export of fruits and other crops. Potentials do exist in this area. For instance, Pakistan is the place of origin for mangoes and produces high-quality mangoes for this reason, although they cannot be exported to Japan as fresh fruit because of problems related to post-harvest treatment and appearance. Even if these problems did not exist, the quality required for export cannot be maintained as undeveloped domestic distribution system causes the quality of fruit to deteriorate before it is exported. While possibility does exist in processing mangoes and exporting them in the form of mango ice cream and mango juice, it requires investment in processing plant and development of domestic transportation network.

In NWFP, efforts are being made to plant olive trees and sell olive oil produced from these trees to

the international market. Worldwide marketing would incur enormous cost for quality control, packaging and outlet in addition to numerous problems that need to be solved.

In view of the realities of international market, however, agricultural products from Pakistan has negative image. For instance, when you look at olive oil (which is an item whose NWFP is attempting to increase), olive oil from Pakistan will have to have some special added value to secure its place on the store shelf alongside oils from Italy, Spain and Greece that are being sold in the same price range. Unfortunately, we have not been able to identify such added value at this stage.

Reviewing the impact of trade liberalisation that resulted from WTO accession along the lines of these points gives rise to a concern that it may not have much merit for agriculture in Pakistan. Attaining full liberalisation under the present condition in which subsidised export crops from the developed countries are sweeping across the international market may lead to deterioration of domestic agricultural production and cause unemployment of farm workers.

4. From the viewpoint of population and social structure

Pakistan ranks among the countries with highest population growth rate in the world. Annual population growth rate of 2.16% means that population will double every 33 years and the country's population is believed to have already exceeded 150 million today. Although numerous opinions exist on this issue, there is no doubt that there is limit to the number of population that a region can support. In this sense, such high growth rate cannot be maintained forever. Population of the region known as Pakistan today around 1900 is estimated at 15 million. It has now increased by tenfold with no signs of that growth stabilising in the future.

We conducted an analysis of population based on the results of 1998 census and our questionnaire survey but were unable to identify much promising elements in the results. In many developing countries, supplying the commodities for family planning to people with the desire to practice family planning but are unable to do so becomes a powerful means of population control. Things are not so easy in the case of Pakistan, however. People's code of conduct concerning fertility is placed under enormous constraint amidst traditional values and fundamentalistic interpretation of Islam. Moreover, there is little room for concrete demand to emerge from the settings in which worldly salvation is not necessarily sought.

This happens to coincide with an analysis which concluded that salvation of poor farmers and improvement of productivity cannot be realised without carrying out institutional reform in the field of agriculture. Offering education of female children is predicted to face more difficulties in Pakistan compared to other developing countries. All of this suggests that it is impossible to set out

a clear-cut countermeasure against population increase whose stabilisation is indispensable when thinking about the future development of Pakistan.

If a countermeasure does exist, it would be to have the people of Pakistan spontaneously understand the need for family planning and approach the leaders of Islam to come up with more positive interpretation of family planning. In addition, the government must make an approach towards more positive acceptance of the Al Azhar interpretation given prior to ICPD. Education of women must also be advanced. For this purpose, it is necessary to increase the budget for education and increase opportunities for receiving education in rural areas. Furthermore, it is necessary to supply family planning commodities to people who want to practice family planning but are unable to do so.

So far, the greatest challenge lies in determining the part of Pakistani society which is caught in its own trap inside social norms and interpretation of Islam to set about. For instance, if the importance of girl education is recognized, it will improve all conditions leading to fertility control all at once by raising the literacy rate of girls, allowing them to advance into the workplace, improving their social status, improving public health and increasing options available for women. The same result will be attained regardless of which of these aspects improvement is started. The reality, however, is working in a quite the opposite direction with everything getting caught in a web of their own making.

There is one assistance Japan can offer under these circumstances. It is something similar to Egg Fund (*Tamago yokin*) that may be able to offer the opportunity for Pakistan to carry out dissemination of basic agricultural skills and modernisation of education and awareness of women through implementation of rural livelihood improvement movement and programs aimed at improvement of income-earning opportunities for rural women (*Shin seikatsu undou*).

Forcing changes in system from above only provokes opposition. One idea therefore would be to incorporate programs that can create what little earning opportunities for people living on the verge of survival line in the same package with basic agricultural skill dissemination program and livelihood improvement program including guidance on family planning, and implementing this package for women. Support based on this kind of method may help us find a clue for fundamental improvement in sustainable development including the population problem in Pakistan.

Appendix :

Survey Member, Cooperator, Itinerary and Collected Material

1. Survey Committee

(1) National Committee

Dr. Kawano Shigeto	Emeritus Professor, The University of Tokyo
Dr. Hara Yonosuke	Professor, Institute of Oriental Culture, The University of Tokyo
Dr. Naghizadeh Mohammad	Professor, Meiji Gakuin University
Dr. Hirashima Seibo	Professor, Meiji Gakuin University
Dr. Fukui Seiichi	Professor, Graduate School, Kobe University
Mr. Hirose Tsuguo	Executive Director/ Secretary General APDA (Asian Population and Development Association)
Mr. Kusumoto Osamu	Assistant Secretary General/ Senior Researcher APDA
Mr. Takemoto Masanori,	Researcher, APDA
Ms. Ryoko Kimura	Staff, International Affairs, APDA

(2) Survey Member (July 20, 2003-August 4, 2003)

Dr. Naghizadeh Mohammad	Survey Team Leader
Dr. Seiichi Fukui	Survey Team Member
Mr. Kusumoto Osamu	Survey Team Member
Mr. Takemoto Masanori	Survey Team Member

2. Cooperators

(1) The Embassy of Japan

Mr. Hirmichi Kitada, First Secretary

(2) Government and Agencies

MINFAL

1. Mr. Salik Nagir Ahmad, Secretary.
2. Mr. M. Saleem Khan, Joint Secretary.
3. Mr. Munitaz Sheikh, Additional Secretary,
4. Mr. Ifrahim Bhatti, Deputy Secretary for International Relations.
5. Mr. Mumtaz Ahmad, Assistant Secretary.
6. Dr. Akhlaq Hussain, Director General, Federal Seed Certification and Registration Department
7. Dr. N. Hanif, Agriculture Development Commissioner.
8. Dr. Shakeel Ahmed Khan, Deputy Agricultural Development Commissioner.
9. Mr. Rafiqat Hussain Raja, Animal Husbandry Commissioner
10. Dr. Qaidir Bux Baloch, Wheat/ Cotton Commissioner,
11. Dr. Masood A. Rana, Commissioner Special Crops
12. Mr. Abdul Karim, Director General,
13. Mr. Shavidi Suil, Director Planning
14. S. Ahgabullah Kakakhul, Senior Officer

NARC

1. Dr. Naeem I. Hashmi, Director General, NARC
2. Dr. M. Kamal Sheikh, Deputy Director (Planning), NARC
3. Dr. M. Azeeri Khan, SSO, SSI, NARC.
4. Dr. Iftikher Ahmad, DDG, IPEP, NARC.
5. Dr. M. Ashraf Saluibzada, Director Technology Transfer Institute, NARC.
6. Ch. Muhammad Sharif, Director, Social Sciences Institutes, NARC.
7. Dr. Tariq Hassan, Programme Leader, Gender and Development Programme, SSI, NARC.
8. Dr. Hafeez I. T. Khawaja, Coordinator MOU (Project), NARC.
9. Dr. Dr. Shafaat A. Kahn, PSO/ Director PARC Advisory Services
10. Sardin Shulamm Mustafi, writer Protocol, NARC
11. Dr. Hikhan Ahmad, Deputy Director General, NARC.

PARC

1. Dr. Waqar Malik, Member of Social Sciences
2. Dr. Syed Wajid H. Pirzada, Director Research WTO
3. Dr. Mohammad Afzal, Chief Science Officer
4. Dr. Hafeez I.T. Khawaja, Coordinator MOUs
5. Dr. Mohammad Ashraf, Crop Science Division
6. Dr. Ihram Saeed, Director, Agriculture Business
7. Dr. Sharif Zia, Cso, PARC

Ministry of Population welfare

1. Mr. Shahab Khawaja, Additional Secretary
2. Ms. Zarmina A. H. Khan, Director General
3. Mr. Malik Amanat Rasul, Director Foreign Assistance

PIDE

1. Dr. A. R. Kemal, Director.
2. Dr. Munir Ahmad, Chief research central member
3. Dr. Muhammad Iqbal, Senior Research Economist

Planning Commission

1. Dr. Pervez Tahir, Chief Economist
2. Dr. Aqdas Ali Kazami, Joint Chief Economist

Ministry of Finance

1. Mr. Ashfaq H. Khan, Economic Adviser

Ministry of Finance & Economic Affairs, Statistics Division.

1. Mr. Yousaf Kamal, Secretary to the Government of Pakistan
2. Mr. Muhammad Younis, Commissioner
3. Mr. M. Rashid Salaria, Deputy Director General
4. Mr. Muhammad Sardar Bhatti, Director
5. Mr. Ghulam Ahmed, Deputy Director General

Department of Agriculture, Government of NWFP

1. Mr. Fareed Khan, Secretary Agriculture, Government of NWFP
2. Dr. Saadillah Jan, Director Veterinary Research Institute NWFP
3. Mr. Muhammad Zulfiqar, Planning Department
4. Mr. Ghulam Sarwar, Executive District Officer, Agriculture, Mardan, Department of Agriculture

Extension NWFP

NWFP Agricultural University, Peshawar

1. Prof. Dr. Iqbal Shah, Vice Chanellor
2. Prof. Mr. Abdul Wadud, Director General, Agricultural Research System.
3. Dr. Fazal Hayat Taj, Professor & Dean, Faculty of Crop Production Science,
4. Dr. Fida Mohammad, Director, Livestock Research & Development
5. Dr. Taj Muhammad Kha, Dean FAH&S
6. Mr. Nasrilleh Malik, Planning & Development
7. Dr. Zar Quresh, Director Out-Reach
8. Mr. M. Ayaz, Information Officer
9. Dr. Ghufran Ullah, Physiologist

(3) United Nations and International Organization

The World Bank

1. Mr. Tekola Dejene, Senior Agricultural Economist,

United Nations

1. Ms. Faiza Effendi, Programme Officer, Inter-Agency Support Unit, United Nations Office of the UN Resident Coordinator
2. Ms. Shahida Fazil, Assistant Representative, UNFPA Pakistan
3. Ms. Lena M. Lindberg, Deputy Resident Representative, UNDP
4. Mr. Naeem Ahmad, Programme officer, UNDP
5. Mr. Abdul Qadir Rafiq, Programme officer Environment Unit, UNDP
6. Mr. S. Ahmed H. Naqavi, Programme Resources Manager, UNDP
7. Mr. Adel M. Aboul Naga, Representative, FAO
8. Mr. Syed Mohammad Ali, Assistant Representative, FAO

(4) Other cooperator

1. Mr. M. Tahir Paracha, Managing Director, Agriculture & Animal Services

3. Survey Schedule

July 20th(Sun)

- 11:00 Depart from Narita (TG 641) 15:30 Arrive at Bangkok
- 20:00 Depart from Bangkok (TG505) 22:40 Arrive at Lahore

July 21st(Sun)

- 07:30 Depart from Lahore (PK356) 08:20 Arrive at Islamabad
- Discussion with Mr. Muhammad Ifrahim Bhatti, Deputy Secretary MINFAL a local counter part on survey program.
- Visit the Embassy of Japan. Meeting with Hiromochi Kitada, First secretary, briefing on Agriculture and Rural Development in Pakistan and discussion on the survey program

July 22nd(Tue)

- 9:30 Visit Ministry of Food, Agriculture and Livestock. Briefing on outline, present situation and important issues of Pakistan Agriculture. Meeting with Secretary.
- 11:00 Visit to Pakistan Institute of Developing Economy (PIDE). Discuss about Economy of Pakistan and Agriculture.
- 12:00 Visit to National Agricultural Research Center (NARC). Briefing on the agricultural and rural development.
- 20:30 Dinner will be hosted by MINIFAL at Islamabad Club.

July 23rd(Wed)

- 9:00 Visit UNFPA office. Briefing on population of Pakistan by Assistant resident representative.
- 12:00 Visit World Bank Briefing on the World Bank Project in Pakistan related with agriculture and Population.
- 14:00 Visit Planning Commission. Briefing on the national development Plan of Pakistan.

July 24th(Thu)

- 9:00 Visit UNDP office. Briefing on the International assistances to Pakistan through UN-system.
- 10:30 Visit to FAO Office. Discuss about International assistance to Pakistan Agriculture with Resident Representative
- 12:00 Visit to Pakistan Agriculture Research Council. Briefing on Pakistan Agricultural Research System.

- 14:00 Visit Ministry of Population welfare. Briefing on Population in Pakistan.

July 25th(Fri)

- 10:00 Visit Statistical Center of Pakistan. Briefing on Agriculture and Population Related statistics and material collection.
- 11:00 Visit Ministry of Economics and Finance. Briefing about the macro economic policy of Pakistan.
- Material Collection

July 26th(Sat)

- 7:00 Move from Islamabad to Peshawar
- 10:30 Meeting with Department of Agriculture of NWFP
- 12:00 Meeting with Peshawar Agricultural University. Briefing on Agriculture in NWFP and Peshawar Basin.

July 27th(Sun)

- Visit to income generation project (Livestock for small farmers). Meeting with Farmers.

July 28th(Mon)

- 09:00 Visit to the Mardan District Office. Briefing on Population and Agriculture in Maradan.
- 11:00 Visit to a Maradan agricultural office. Discussion on the field survey programme.

July 29th(Tue)

- Visit to Takht Bai FSU and meeting with Farmers. Conduct Hearing Survey (Dr. Nagizadeh, Dr. Fukui, Mr. Kusumoto, Mr. Takamoto)
- *Land Transport from Peshawar to Islamabad 18:00 Dr. Nagizadeh.*

July 30th(Wed)

- Visit to Katlang Farm Service Center and meeting with Farmers. Conduct Hearing Survey (Dr. Fukui, Mr. Kusumoto, Mr. Takamoto)
- *10:30 Depart from Islamabad (Dr. Nagizadeh) to Teheran Via Karachi.*

July 31st(Thu)

- Shanbhatti Model Farm at Barani Area. Observe edible Oil Production experimental Farm. Move from Shanbhatti to Nawa Killi Meeting with Farmers (Dr. Fukui, Mr. Kusumoto, Mr. Takamoto)

August 1st(Fri)

- 08:45 Depart from Peshawar (PK609) 10:10 Arrive at Lahore
- Depart from Lahore to Boarder of Pakistan (by car) and immigration (depart from Pakistan)

- Visit to Hathian Farm Service center and meeting with farmers. (Dr. Fukui, Mr. Takemoto)

August 2nd(Sat)

- Visit to Mardan and meeting with farmers. (Dr. Fukui, Mr. Takemoto)
- Land Transport from Peshawar to Islamabad (Dr. Fukui, Mr. Takemoto)
- 19:00 Depart from Islamabad (PK 309) 20:55 Arrive at Karachi
- 23:30 Depart from Karachi (TG502)

August 3rd(Sun)

- 06:30 Arrive at Bangkok (Dr. Fukui, Mr. Takemoto)
- 08:40 Depart from Bangkok (Mr. Takemoto) 16:40 Arrive at Narita
- 09:10 Depart from Bangkok (Dr. Fukui) 16:35 Arrive at KIX (Kansai)

- 21:05 Depart from Delhi (Mr. Hirose, Mr. Kusumoto) by JL472

August 4th (Mon)

08:30 Arrive at Narita (Hirose, Kusumoto)

4. Collected Material

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