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Sindh Agro Eco System: Major Obstacles and Remedies

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Abstract:

Sindh southern province of Pakistan at present is faced with a serious food crisis due to population explosion and under-developed state of agriculture. The Agro-Eco System of the province is defined as a dynamic association of crops, pastures, livestock, other flora and fauna, atmosphere, soil, and water. The Agro ecosystems are also contained within larger landscapes that include uncultivated land, drainage networks, rural communities, wildlife and markets.

The study contributes significantly in the existing body of knowledge on this subject. The major obstacles within the Agro Ecosystem have been summed up by examining it through in-depth analysis. The secondary data sources have been used. Using both quantitative and qualitative approaches, the study concludes that mismanagements in land distribution and water resources are on high level. Supply of inputs is also inadequate in bowing seasons and needs dire attention of policy makers not for the welfares of the growers, but also for food security of the rapid population. The study also suggests dynamic policy insights for Sindh agriculture sector to meet future economic trends/demands in the sector.

Keywords: Agro ecosystem, policy insights, growth, development, MAF

1. Introduction

1.1. An Analysis of Sindh Agro- Eco System

The Agro-Eco System is defined as a dynamic association of crops, pastures, livestock, other flora and fauna, atmosphere, soil, and water. The Agro ecosystems are contained within larger landscapes that include uncultivated land, drainage networks, rural communities, wildlife and markets.

It is further explained in a systematical way that the land, labour, water resources, seed, fertilizer, pesticides, mechanization, credit, infrastructure, marketing, taxation, environment and culture are the key components of the system. The forest, fisheries and livestock are also allied sub sectors of the above system and interconnected with agriculture.

This study is intended as a concise overview of the Sindh agriculture sector for those concerned with agricultural economics and interested in its potential. This study also aims at providing an in-depth analysis, which may be required by an individual, growers, agri-business / research organizations and policy makers.

The study has considerable importance for devising a suitable policy for the agriculture sector development of Sindh/Pakistan, where agriculture sector is by far the most important sector in the national economy.

The figure 1 of Sindh Agro-Eco System shows as to how all components are connected with each other and play their due role in agricultural development process.

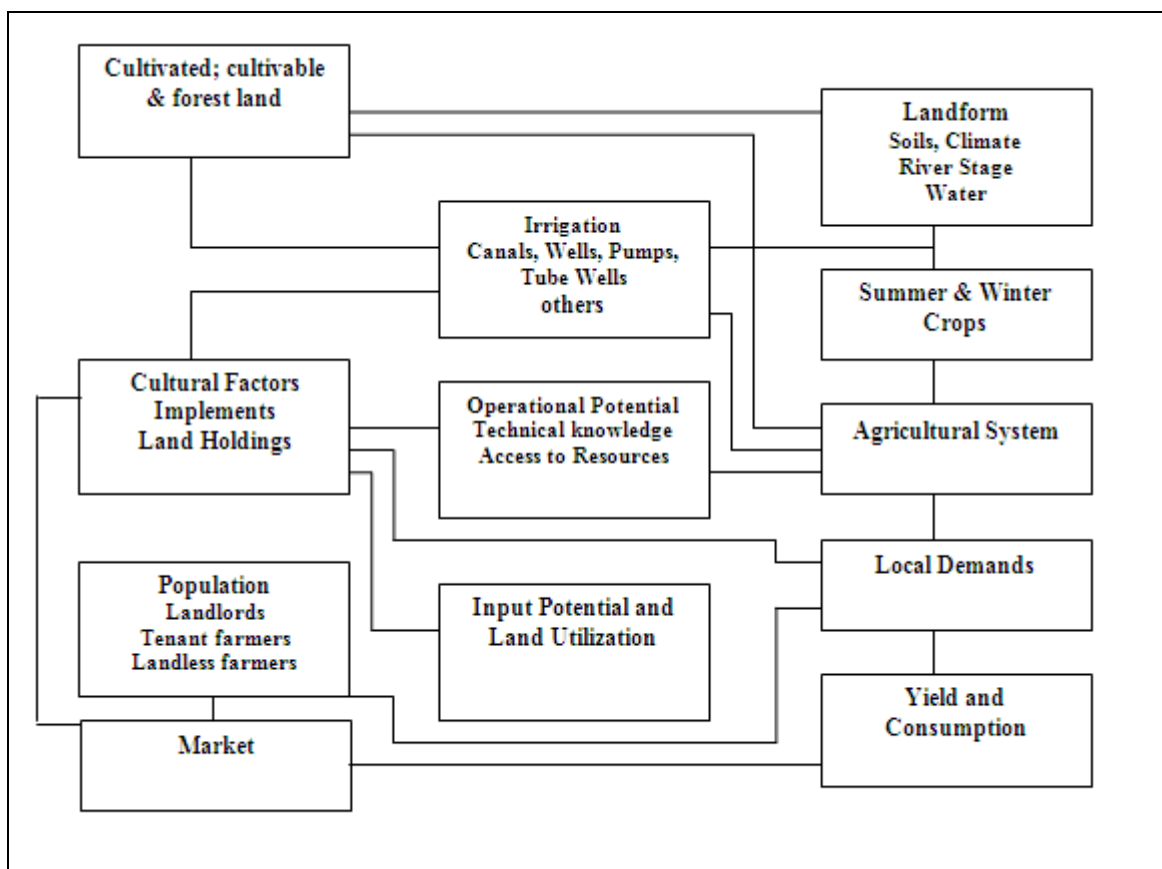


Figure 1: Sindh Agro-Eco System

Source: Mushtaq-ur-Rehman: *Land and Life in Sindh Pakistan* (1993, page.132)

2. Methodology

The qualitative approach of research has been used in this section, mainly depending on personal observations, interviews of specific groups and some kind of available primary and; secondary data to make the study a unique policy document in all respects. The above mentioned objective can not be achieved until and unless we evaluate all elements of agro- ecosystem of the region in detail. The second quantitative strategy has been employed while sort outting major obstacles in agricultural development of Sindh by evaluation of most important /dependent variables of Sindh Agro-Ecosystem. In this section published data of various organization are used, i.e. Sindh bureau of statistics, agricultural census and agriculture statistics of Pakistan.

3. Discussions & Results

The study discovers quite a few important new facts and figures. First, it describes the importance of agriculture to the economy and concludes that it provides food to consumers and fibers for domestic industry; it is a source of scarce foreign exchange earnings; and it provides a market for industrial goods. It also concludes that the agriculture serves as a backbone of any economy, particularly in less developed countries and plays a crucial role as compared to industries and service sectors. Its wider impacts have been acknowledged by prominent economists on economic growth and development and also human resource development and emphasis with great concern that, the agriculture is a predominant activity that affords the burden of national development and employment creation in far flung rural areas. It provides a strong base for economic development and helps the less developed nations to achieve higher standards of living and other development objectives. It is also concluded that agriculture and economic development is interrelated and for the future economic and social welfare of the world, the countries will continue to depend for progress on agriculture sector particularly in less developed regions. Its contribution to Sindh-Pakistan economy is also impressive and measured with help of available data and finds that the agriculture sector is still working as the largest single sector of country's economy and contributes one fourth to GDP, provides employment to 42 % of the country's labour force and directly accounting for 35% of the export earning. Sindh, southern, eastern province of Pakistan is predominantly an agrarian structural and ranks second in total agricultural production of the country; in several commodities and contributes at least 25 percent in country GDP. The 68% of rural and 05% of the urban population is engaged in it directly.

The statement of the problem also concludes the Sindh agriculture is faced with age long multidimensional problems. The crises in this important sector of the economy are on the rise since 1990s. Presently, the Sindh province is facing serious crises such as; speedy land degradation, declining of water resources, inadequate supply of quality seed, fertilizers, pesticides, slow process of

mechanizations, constraints in credit, poor infrastructures ill-conceived agriculture marketing taxation policies, environmental and cultural hurdles, problems in allied sectors, forest, fisheries and livestock.

These crises lead to instability in growth and hamper development process. The grower's community of the region has always apprised the authorities of their problems but in vain. But unfortunately, those at the helm lack will power and expertise in this sector. They never ever put a process in action that may help farmers, their rhetoric does not match with their practices, and as a result, negative growth rate has also been measured in the last two decades.

The fluctuations in agric-growth affected economic growth and development, destabilized country's economy and are also a major cause of food inflation currently measured nearly in double digit, unfavorable balance of payments, unemployment, poverty, hunger, malnutrition and other social ills in the society. It is high time the authorities dealt this sector on priority bases; or else we may find it hard to avert the current food crisis and future challenges of globalizations. It is the central question of economic planning and development that has been tackled and addressed in the study.

The Sindh province covers 17.70% of geographical area of Pakistan. Cultivated area stands at 25.92 % and cultivatable waste at 15.01 % of the country. Rice in northern Sindh zone, wheat cotton and different kinds of fruits and vegetables in central Sindh and sugarcane are dominant crops of lower Sindh. Per hectare rice yield and sugar cane is still highest among four provinces of Pakistan; and has great potential to increase in other commodities if major obstacles are removed. Intensity of land is higher in summer than winter, it falls as farm size increases; big landlords seem to have lowest use of land intensity. Land and cropping intensity is lower at owner's farm than tenant's farm. Average intensity is also higher in irrigated farms than un-irrigated. It is an alarming situation that 75% of Pakistan land degradation has been found annually in Sindh; salinity and water logging being the main cause stands at 67% that needs immediate attention of policy makers.

The land fragmentation is also a problem in Sindh. 270150 farms are fragmented, from 02 to 10 fragmentations are measured. The study found that 13% of people own 56% of land area in Sindh and this situation creates poverty and inequality in rural society and also encourages traditional methods of cultivation as per the data of agric-census 2000. Above uneven distribution of land creates several socioeconomic problems in society and rural economy; without abolition of such strong feudal holdings, all efforts of Governments for economic development of rural areas are in vain since long due to policy failures at implantations level. All land reforms could get little success, due to strong holds of feudalists in country with the help of civil and military bureaucracy and needs immediate implementation for general economic development in the area. These are unique facts and figures discovered by the study that in land tenure system owner cultivated farms are more productive than share cropping farms. Large farms are less productive than medium.

The value added per head an hour is also higher on owner's farms than tenant farms. Share cropping system also creates bondage labour issue in agriculture sector. Large percentage of increasing population in rural areas is naturally adjusted in this manual and old system. So people of the rural Sindh could not become skilled labourer just like, plumbers, mechanics, electricians, carpenter, mesons, brokers' defense personnel and other industrial labourer and this system has reduced the migration rate of Sindhi people towards urban areas giving rise to rural poverty. Only implementation of land reforms and establishment of agro based industries at farm level make them skilled and prosper.

The study of livestock finds that Sindh province, mostly depends regarding the livestock on two agro ecological regions, i.e. desert areas of Thar and hilly areas of Kohistan and have absolute advantage in this sector, the value added of livestock is round about 50%. The drought impact in above regions is high as compared to central cropping region, during the drought situation; 5 million animals were affected in the above areas in the year of 2000 alone and needs small dams' constructions immediately. The opportunity cost of the labour and fodder is very high in livestock breeding as compared to farming in the central cropping zone. So policy makers need to focus on above areas for dairy development.

The constructions of dams in upper areas reduced down flow of water of Indus, which proved harmful for the growth of forests and also accelerate environmental hazards and reduced wetland areas. This is an important fact discovered by the study that at present only 15% mangroves is healthy. The rate of degradation of mangroves forests in the Indus delta has been estimated at 6% 1980 to 1995.

In fisheries sub sector, due to lack of awareness and abject poverty, the fishermen kill the hatchery by poison for the feed of poultry farms. Due to auction of farms, the contractors, mostly commit irregularities in the fish catching to earn actual cost of already paid money, and maximum profit earning. Due to old feuds among various tribes, poisonous items are dropped commonly in the inland fish farms and scarcity of water creates several kinds of fears and reduces further investment in this sector.

Canal system irrigates 12293121 acres agricultural land in Sindh province. This system creates silt problems that reduce capacity of water for channels, and also creates seepage problems. This seepage accelerates water logging and salinity. The 38.5% of the fertile land of the province is degraded by water logging and salinity. The total share of Sindh in Indus water is 44 MAF but 24 MAF water is seeped and evaporated, so wastage percentage has been counted as 55%, improper application at farm level is 6.6 MAF, 15% of wastage. It also shows important significance of the study towards water resources of the region that 70% of canal irrigation water is wasted. This should paid proper attention of policy makers to best use of available resources. The tussle between Sindh and Punjab province on the share of Indus water and construction of dams in northern areas lead to fears and uncertainty in growers of Sindh and this fear and uncertainty constitute one of the greatest obstacles in long term investment in the agricultural sector that seriously affects the development process. The Ground Table Water has very little potential in the province only 20% water can be used for irrigation. That is why, 80% of water is sodic and saline; this little source could not be utilized still properly due to inefficiency of public sector organizations, high cost and difficult process of electric connection for tube wells. Generally, the province receives 5 inches rainfall in summer and 2 inches in winter season. The received rainfall in Sindh region is 1723 mm, whereas required is 10752 mm; but above

single source could not be managed properly and huge quantity of water is wasted in drains and can easily be collected with simple effort of the state if taken seriously.

The study also finds in inputs and output markets that only 15 to 20 percent good quality seed is accessible to farmers, if it increases; it will impact positively and will also bring greater change in yield. Imbalanced use of fertilizer, inadequate supply in peak season, availability of fake & substandard fertilizer in the market & little use only 8% in the whole province, less among all provinces of Pakistan reduces growth of farm sector.

In the Pesticides only 35% of the cropped area covered & 65% remains at the mercy of nature. Little awareness about uses, rapid increase in prices and sale of second quality pesticides also increase the loss of growers.

Mechanization process is too slow as compared to Punjab province, its basic reason being traditional farming, poverty and constraint in credit system. The study also concludes an important fact that 83% of growers depend on noncredit institutions, institutional credit beneficiaries are only 4% in Sindh-Pakistan due to several hindrances in the system.

The Small growers receive fewer shares in credit distribution, poor performance of Sindh provincial Cooperative bank. Corruption in loans given by Revenue Department also creates hurdles in the institutional credit.

The Poor infrastructure facilities, political priorities in development schemes, low literacy ratio of farmers, poor healthcare facilities in villages reduce the growers working performance and keep them out of market and reduce the opportunities of capital accumulation.

The scarcity of professionals in public sector organizations, improper utilization and scarcity of public funds allocation for socio-economic and agricultural infrastructure reduces benefits of education, research and extension services for further development in the sector.

The creation of environmental problems are based on two main causes i.e. use of chemical in crops and reduction in forest area and leading to infertility, salinity, water logging & other land degradation causes.

The past cultural glory of Sindh has been destroyed and at present different communities of the region are up in the arms that affect investment process. The strong feudal culture strengthens socio economic power of landlords, slows down process of mechanization and encourages old traditional/ cultural methods of cultivation and above all creates social unrest and poverty among rural masses.

The Poor and illiterate small growers bear the incidence of all the agricultural taxes, round about 25 to 40 percent of total collections and feudal lords easily get off scot-free .

The existing system is working totally against the basic cannons of taxation given by Adam smith, and other economists. It has been concluded with great concern that the mismanagement and non-functional marketing institutions of public sector leave the growers at the mercy of fate reducing them to abject destitution.

For the broadest vision of sorting out of obstacles in the agriculture sector development complete 'agro eco system' of Sindh has been examined in above mentioned and finds greater implementation gaps between pre-requisites of development empirical situation in the field and study also concludes that empirical situation is in sharp contrast with modern views regarding agricultural development. The situation also needs short and long run remedies / policy implications with immediate attention of policy makers for implementation at the grass roots level as early as possible.

5. Conclusion & Remedies

The study suggests various pathways for agricultural sector development in policy recommendations according to the need of global competitions of post World Trade Organizations (WTO) implications within agriculture economy and for the prosperity of farmer community in the region; and also for the real welfare of rural households, they are in grip of unending poverty, malnutrition, illiteracy and other socio-economic ills for ages. These pathways are efficient land and water management strategies, improvement in socio-economic institution, i.e. credit intuitions, supply of seed, fertilizers, machination tools, socio-economic infrastructure in rural areas, change of culture through education and technology, environmental, betterments, marketing improvements with price incentive policies, export friendly environments for agricultural commodities to improve farm productivity and crop diversity for further development of the sector.

It also recommends improving rural labour skills and markets through vocational trainings and investment in the rural areas. This strategy is aimed at poverty alleviation and implies that income earning from non-agriculture sector be increased so that the people who do not own lands are absorbed in non-farm activities to earn their livelihood. To make this pathway an effective tool for poverty reduction, it is imperative that policies are also oriented towards non-farm occupations in the rural areas. It also suggests remedies in detail, as medium scale land holdings that can be created by implementation of land reforms and anti land fragmentation law with great force. The corporate farming has been recommended to cultivate frontier lands where small-scale farming is not possible with capital mode of production instead of feudal mode. The better organized irrigation system the lesser technology for land leveling, lining of water courses, minors, canals and construction of small dams in arid zones of the province, especially at hilly areas of Kohistan and desert area of Thar; and these all will work as great agents of change. Infrastructure in rural areas with special emphasis on agricultural education, research and extension services, establishment of agro based and cottage industries at farm level will also accelerate the development process. Easy access of institutional credit on cheap rates and introducing agric- credit card for growers, insurance schemes for crop, live- stocks and inland fish farms is direly needed for agric-prosperity. Recommended system of agriculture taxes are essential to enhance growers' empowerment and their capital accumulation for further prosperity of their lives.

The study also recommends the availability of seed, fertilizer and pesticides through establishment of new organization of public sector at town level and aerial spray during large scale pest attacks will create boom in the sector for long term growth and culture of sustainable development .Better use of available natural resources for better environment, and development of allied sectors of

agriculture i.e. extensions in Forest resources also suggested for global warming hazards. Agricultural production of the Sindh region reaches market forty days before the Punjab and other regions of the country due to geographical differences. So the situation demands to make policies in advance and separate level. At policy level when we analyzed the Pakistan agriculture history with particular reference of sustainable policies, we found that the policy makers have not accorded proper attention towards agriculture sector as an effective development strategy in the past, as a result, the agriculture sector was put on the backburner incurring the country an irreparable loss in past.

This is primary sector of any economy and can not be ignored at any cost to feed our ever increasing population, which currently stands at 180 million and rapidly increases at the average rate of 2.8 % growth annually according to last population census of 1998, in rural areas it is more than this. The study suggests that there is a dire need to shift the focus back to agriculture as a vehicle for rural development and poverty reduction as the short and long term development strategies.

The policies formulated by provincial / federal governments should be comprehensive in nature and aim at achieving development objectives, as establishment of efficient markets, accelerating small land holders' entry into agriculture markets and improving livelihood and food security in subsistence agriculture.

The most effective policies in this regard need to be formulated for improving the quality of land, decreasing land concentration, enhancing technical capacity of the rural people, widening scope and outreach of insurance schemes and facilitating access of small farmers to formal credit institutions. If provincial / federal policy makers fail to respond, agricultural sector of the region and its rural areas will suffer more and could not able to sustain in up coming global scenario. These people have only single large source of income that is agriculture sector, which needs immediate attention of policy makers for implementation of reforms mostly are discussed and suggested in this paper.

As Sindh / Pakistan has been considered into transforming economies, such economies can be offered 'structural change approach' to transform agriculture into a vehicle of change according to modern views of agric development through new proposed agriculture development model and it can be predicted with great concern that much of Sindh- Pakistan economic success can be attributed to the country's thriving agriculture sector. The study has discussed various facts of agriculture in regard to its role as a means of development and poverty alleviation, especially in the rural areas of Sindh. The proposed policy recommendations in the study will bring large scale positive changes in the sector if implemented with true spirit and big push.

The most important element in our society is reduction of income disparities and high rural poverty. This can be done easily through proposed agricultural development strategies in the study, due to the dominance of the agricultural sector in the economy and its linkages with other sectors i.e. Reduction in food inflation which is round about 20 % and concerned import bill, changes in input cost, crop output, profitability, value added, employment, and incomes in this field. The standard of living and poverty level in the country in general and in rural areas of Sindh in particular is also positively affected by such proposed changes. Other benefits are as follows. For instance, by increasing out put and productivity of the sector the province would be able to reduce the explosive growth of its large cities.

A buoyant agriculture sector should help to direct rural to urban migration towards cities and towns more. This should release demographic pressure on such cities as Sukkur, Hyderabad and particularly Karachi. The above said recommendations have valuable significance to boost the provincial economy and have the potential to reduce menace of poverty and improve income distribution. These all will also create a high sustainable rate of growth in the provincial gross domestic product (PGDP) in short run and GDP of the country in long run.

When we discuss the future economic trends and their impacts on the economy of Sindh - Pakistan with especial reference to agriculture sector, we found that domestic trends affecting agriculture sector of the economy are particularly significant in this respect but there will also be important global changes impacts. The followings are some feasible options available to Sindh / Pakistan with regard to these domestic and global trends in the future.

The policy making in developing countries including Sindh/Pakistan have long concentrated on industry because this was thought to be modern and future-oriented while agriculture was considered old, traditional and non-dynamic. This view is out-dated now due to global environmental changes, food requirements of rapidly increasing world population and their changing consumption patterns. In addition to the global trends that have an impact at the national level, there are also other important domestic changes namely domestic population growth, speedy urbanization, changing nature of labour resources, changed local consumption habits and competition for local natural resources within the regions, such as, water, land, forests etc. The future of Sindh / Pakistan economic development is closely linked with agriculture sector and dynamic global markets requirements.

It has been concluded with great concern of globalizations impacts that surplus manual labour with low wages and the presence of large scale natural resources could not be sustained and does not offer any long-term competitive advantages in global scenario particularly after World Trade Organization (WTO) implications. The investment in knowledge based agriculture, technological change, education and vocational training and advancement in research will also impact positively to set excellent technical standard for tough competition ahead and to meet several other challenges of globalization. The climate change will play a key role in setting new trends in agrarian economies around the world including Sindh and country's economy with particular reference to global warming. Acute water shortage, droughts, soil erosion may pose a challenge to Sindh/ Pakistan agriculture. The Local policy planners at provincial and federal level need to start work in advance for problem identification, policy formulations and implementation with close consultation of stakeholders at grass roots level for future global environmental conditions and agricultural development of the region in view of important evidences mentioned in the study.

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