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Exposing Indigenous Punjab to Modern Technology: An Anthropological Analysis

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I. Introduction

The main theme of the paper is to conceptually discuss the term development as visualized by various social scientists. The thrust of paper is to throw light on the human aspects of development that focuses development with a humanistic point of view. The development to us is something that puts human on top while bringing sustainability and independence of decision making in the large web of options available. According to Bottomore (1971) " in most sociological writings, the term `development' has been used in quite a different way, first to differentiate two broad type of societies, on one side the prosperous industrial society and on other side rural society which is predominately rural, agricultural and poor, and secondly, to describe the process of industrialization and modernization".

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A lot has been written by the various schools of development and modernization about bringing the world to witness a more sophisticated way of life. The promise has not been in effect since we have seen that the interaction of the new models and technologies lag the most important and crucial element of Culture. People of the third world have been influenced and accepted the western techniques and developmental thoughts as something that could bring prosperity to their mother lands. On the contrary, all of them proved to be exploitative and anti cultural and production of the colonial strategy. As endorsed by Laufer (1967), that the term `development' means dams and factories, roads and canals, bush clearing, universities, electrification, land improvement, secondary schools, primary schools, sanitation, research and multitudes of other activities and achievements. But again he argues that all the above development means people, the perpetration and activation of people is the cause of economic and social development.

The paradigm of David Apter (1968) provides four characteristics in his definition of development and they are:

1. Differentiation (i.e., increasing specialization of their role and integration),
2. Stability (i.e., capacity to make decision, that solves the problems without major disruption),
3. Choice (i.e., increasing capacity to innovate & to be flexible), and
4. Emulation (i.e., imitation of foreign models, especially industrial society).

A similar model of Mehta (1984) also describes indicators of development at various levels as below:

1. Individual level: possession of material objects by the individual, families, public laboratories, construction of new houses etc.
2. Community level: mobility of group or individual in social hierarchy, standard of living of people and increased employment opportunities,
3. Societal level: economic growth, industrialization, urbanization, literacy rate, status and health status.

There has a lot been written on the economic face of development without the assurance of putting the improved GNP and GDP figures back on human development. The objective of the research was to discuss the proclaimed improved agricultural methods and their relevance with the farmers' community. The failure of improved agriculture especially the Green

Revolution technologies is portrayed by UNECA (2003) that"it should be noted that the designers of the Green Revolution did not address the issue of malnutrition. They concentrated on one or two crops - rice, wheat or maize. They overlooked the need for a complimentary crop for a balanced diet. The second short coming of the Green Revolution was that the designers overlooked the impact of high levels of fertilizer inputs for rice on the soil structure, and eventually on the ecosystem. In this regard, they focused on irrigated rice, thus encouraging extensive use of the wetlands, which could create long term environmental adverse effects. However the CIMMYT group that bred the improved wheat and maize bred for the uplands which can use rain fed agriculture. The most significant socio-economic constraint that remained unchanged by the Green Revolution forces was the rapid population growth. If the rate of population pressure on the land remains unchecked, experience has shown that the impact of the Green Revolution can easily be eroded away by high populations. It is also argued that the possibility of rice technologies caused rich farmers to buy off poor ones and put them out of land, because poor farmers could not sustainably afford high inputs" [UNECA: 2003].

The same argument was raised by IFPRI (2002) in its report on Green Revolution states that "a revolution of this magnitude was bound to create some problems of its own. Critics charged that the Green Revolution resulted in environmental degradation and increased income inequality, inequitable asset distribution, and worsened absolute poverty. Some of these criticisms are valid and have been or still need to be addressed. But there is a tendency today to overstate the problems and to ignore the appropriate counterfactual situation: what would have been the magnitude of hunger and poverty without the yield increases of the Green Revolution and with the same population growth? The Green Revolution in Asia stimulated a large body of empirical literature on how agricultural technological change affects poor farmers. Critics of the Green Revolution argued that owners of large farms were the main adopters of the new technologies because of their better access to irrigation water, fertilizers, seeds, and credit. Small farmers were either unaffected or harmed because the Green Revolution resulted in lower product prices, higher input prices, and efforts by landlords to increase rents or force tenants off the land. Critics also argued that the Green Revolution encouraged unnecessary mechanization, thereby pushing down rural wages and employment. Although a number of village and household studies conducted soon after the release of Green Revolution technologies lent some support to early critics, more recent evidence shows mixed outcomes."

Having studied the intellectual work of scholars cited above that let the readers and practitioners of development understand that the promises of development approach have not been successful in order to bring the announced outcomes. The adverse effects of development paradigm are now being studied by various researchers in different aspects of social and cultural life. Likewise, Ashby (2003) is cited in edited works of Pound et al (2003) that "The change in concepts and approaches that is represented by 'research for development' is a crucial part of a larger societal process of rethinking several important relationships: between post-industrial, globalizing economies and stocks of natural capital; between human health and the environment; between our food systems and the flora and fauna, soil, water and air on which we depend; and, ultimately, the relationship between human society and nature. This shift in thinking is occurring because the capacity of global ecosystems to support current levels of human consumption of food and environmental goods and services is threatened at local, regional and global scales and has finally become a major political issue and a topic for headline news. Research for development is also part of a movement to promote broad and inclusive participation in determining the goals and direction of societal development".

II. Review of Literature

In many parts of the world, people have questioned the effectiveness of the non local ideas and technologies and so called "bottom-up" approaches of development that were not democratic in their nature. Meanwhile, a group of people commenced to work on studying indigenous knowledge systems to establish the centuries' old repertoire and its relationship with empowerment[1] of local populations and sustainable solutions to development. Many countries in the world are dealing with IKS on several levels, first as a mean for sustainable and self reliant development, second as an alternate source of overcoming the current problems arising out of applying non-local models of development, and third to preserve their own cultural individuality which has long been in question by the capitalist ethos. Peter Parkes did his research in Chitral district of NWFP province of Pakistan. Parkes (1999) in his study quotes Saifullah Jan"in those times (of Ayub Khan in the 1960s) the appointed (Basic Democracy) Members did good work for us. Yet some were still ignorant and mistaken. Their fault was this: outsiders were coming and taking our property, yet they did not

[1] Empowerment:The expansion of people's capacities and choices; the ability to exercise choice based on freedom from hunger, want and deprivation; and the opportunity to participate in, or endorse, decision-making that affects their lives.
http://magnet.undp.org/policy/glossary.htm

say a word against it. People took our trees, and they did not say a word. Because of that we now have serious problems. And with outsiders entering our valleys, our customs began to get weak, becoming mixed with theirs. With this mixing of customs, even our Members began to think: 'Perhaps our custom is wrong, since other people say it is bad!' Like that our customs became endangered, even until now" (Saifullah Jan in Parkes: 1996)

The argument that is presented here is basically to highlight the issue that since the independence, Pakistani society never implemented any model for development which preferred its own resources rather the planners only preferred the foreign models for development. The innovations in agricultural sectors though raised the agricultural yield but in the longer run disturbed the natural cycle of resources. Now it is clearly observed that lots of problems are hindering the agricultural development including soil and land erosion, soil compaction, effects of synthetic fertilizers, pesticides, fungicides and weedicides on human health as well as creating water pollution.

Keeping in view, the long quotable experience of the anthropologists with the rural communities, the present research strived to bring forth an important issue of research in the on-going debates on rural development in Pakistan. Pakistan has seen various phases in her agricultural development cycle with incessant and perpetual shifts in policy further bringing the upshots of not achieving the level of sustainability. Failures in heavily invested programs[2] and projects, fragmentation of rural population, rise of rural rifts, etc were the aftermaths after what has been done by previous political and military set ups to bring revolution in agricultural sector. Unfortunately, the most ignored area was the strengthening of research traditions to benefit the rural farmers willing to adopt newly evolved varieties and practices according to developmental needs of country. Appropriately deemed investments in the domain was severely lacked and resultantly lagged the farming community to arrogate the winning board. Most of the new experiments done in the agricultural research institutes were either restricted to the laboratories, or were a matter of disagreements among the planners at the national and provincial levels. Few of the new innovations made by the scientists were not cost effective. The said problems perplexed the scenario for the rural farmers and made them only thinking of ensuring their own survival. This phenomenon also raised dependency on the agricultural imports that further put farmers out of the developmental priority.

The decade of 1960s was the crucial era of the world in which most of the global agricultures saw huge commercialization of the same. The governments and the people welcomed the newly evolved technologies in agriculture. An important reason among the others could have been the recent cessation of world war two that engulfed millions of precious human lives and unexplainable damages to all countries on the globe that definitely required lots of people regardless of their qualifications and interests to be involved in their respective nation reconstruction efforts and programs. It may be concluded, agriculture (that had been traditionally seen as an enterprise of large number of people and occupations working together) was under a challenging situation to sacrifice people allowing them to take their hands off and being shifted to other national reconstruction efforts. This element required the invention and innovation of new ideas and technologies to replace the farm labor to meet the food and nutritional necessities of the world. The aforesaid technologies were also adopted by Pakistan like other nations under the faith of getting the sustainability in agricultural yield and other related commercial benefits.

The adoption of both labor and land saving technologies brought initially encouraging results but later on the inconsistency in the technical aspects of the technologies was a big hurdle in bringing the results at grass roots. Ali (1978) says that mechanization of agriculture should be according to the material needs of community. Mechanization process should be guarantee non-disruption of the socio-cultural setup of a community. He is in favor of using Land Saving Technologies (chemicals) to be used in Pakistan not the Labor Saving Technologies (mechanical tools) which caused problems of rural urban migration and creation of a new class of land less and jobless peasants.

Heavy machinery was not subsidized by the governments; the purchase of tractors and threshers became matter of being sound in economic terms and largely remained to the clot of big feudal and land lords as endorsed by William's (1981) work on American agriculture. She says when "American agriculture became capital intensive it had an adverse impact on small farmers who were unable to buy the technology, because, they did not have the resources to buy and adopt that technology" (William: 1981).

The same argument was rectified by Erasmus (1976) also found out through extensive endeavors made upon farmers' tendency towards adopting modern and improved cultivation methods. Erasmus says "that farmers appear to be more receptive to improved cultivation practices, when they are being materially aided in other ways, e.g. by the distribution of seeds and tools at cheap costs" (Erasmus: 1976).

[2] Program:Descriptive notice of series of events, including an indication of the intended proceedings. In these guidelines, the term is used for an undertaking structured around a defined *objective,* usually consisting of a number of projects.
http://www.fao.org/documents/show_cdr.asp?url_file=/docrep/W8440/W8440e30.htm

The author also points out that the same hold true for irrigation projects. The farmers are more open to cooperation with extension agents if they receive some kind of material aid. Under such circumstances, they are much more willing to accept new and improved plant species, new cultivation practices and cooperative work tasks.

This course of events also stimulated another class namely the "middlemen" who just got hold on the technical equipments and consequently raised the dependency of small farmers on these for further leftover exploitation. It was due to these policies without checks and balances that the fragmented Pakistani rural society undergone breakage in group solidarities; increased reliance on the cities, and emergence of new power elites, etc. This whole scenario led to the maximization of assets by wealthy, politically influential and resourceful people in the rural areas.

In fact, common to all issues is what Prawl (1969) has mentioned about the planners, policy makers and the administrators' perception about the farming community and the farmers. He opined that the bureaucratic set up wrongly understands these farmers. Prawl says that these people see farmers as "Farmers are ultra-conservative individuals, stepped in tradition, hemmed in by custom, lacking in motivation and incentive, captives of age-old methods, and lacking in ability to make decisions" (Prawl : 1969).

Many people in the communities still believe that the farming community is not active society rather they are the ones strictly relying on the fate and luck without having faith in one's efforts to change the fate. One of the scholars' schools that believed the same is Alatas who has emphasized that the anthropological studies have by now firmly established that "Farmers have all these years been wrongly characterized as lazy, conservative, bound up by traditions and superstitions. Such characterization has been and continues to be helpful only to planners and administrators they are absolved from responsibilities for the project failures" (Alatas: 1976).

It is often felt essential that the development agencies are found complaining about behaviors of rural people as being conservative and lethargic. Whereas, they forget that rural people have got their own understanding of the world and their own unique patterns of worldly dealings. All that is needed is the willingness of the developmental agencies to give worth and importance to the views of the local people.

Dube (1995) in his book states "The naiveté of the earlier developmental strategy is now apparent and the Third World is left with the sober realization that the process of development is infinitely complex and involves a wide range of interpenetrating variables. Development is not a simple matter of making calculated inputs to raise the output to the desired level. The transfer of technology bristles with difficulties: the transfer of institutions, even if desirable, is almost impossible to accomplish. The adaptation of technology is a time-consuming process that needs patient innovation involving a great deal of trial and error. The institutional and motivational frameworks, propitious for development, pose a series of puzzling paradoxes and baffling problems. Countless alibis for failure can be offered, but they are at best a poor consolation, for they do not illuminate the path to attainable progress in a predictable period of time. It is essential now to look retrospectively on the causes of the failure of the western paradigm for development and prospectively to viable alternatives. This task involves serious rethinking of the concept of development itself as well as of its strategies. In this respect, De Silva, et al, (1988) in argues that "the process of economic growth as it has been unfolding in the past quarter century has multiplied the problems of both the industrialized and the Third World countries, as well as those of individuals within each group. In both groups of countries the creativity and potential of people is unlimited, yet life lacks fullness, resources continue to be misused and major social and political contradictions remain unresolved" (De Silva: 1998).

If the quotation given above is critically examined with the current scenario, one would agree that the policy makers and decision takers are not either aware of the ground realities due to which there lies a big gap between the theory that is policy and its practice that is its practicalities in the rural areas or simply they overlook it. Biggest dilemma is that huge programs were designed to bring structural and system changes in the country but the result was not the one as perceived. The lack of political will is another challenge which is faced by the people of Pakistan. It was the environment in which people of Pakistan were made dependent on foreign nations regarding the new ideas, innovation, models of development, and even the dress styles.

While studying the right direction pertaining to the developing countries in South Asia De Silva has appropriately found out the real issues faced to the population of the developing countries. He et al (1988) further states "by borrowing foreign technology, the growth of appropriate local technology was smothered; as a result, the developing nations neglected to foster their own research capabilities and innovativeness, perpetuating a dependent relationship. The very character of development, however, ensured a grossly unequal distribution of the benefits and the disparity grew enormously per cent since 1960, this growth has been very unequally distributed among countries, regions within countries and socio-economic groups" (De Silva: 1988).

This was a feeling that remained with me throughout during the research that people who are requested to talk on their own resources and

technologies were pretending that they were not satisfied with the national talent. The examples quoted by them were mostly from Europe, USA and UK. Otherwise, within South Asia, India and Bangladesh were the countries given priorities. As a matter of fact, people mostly in the policy framing side and higher officials were unhappy with my topic of research. I sought help from the paradigm of Wignaraja as stated below. He et al, (1998) says "ideas regarding the up-gradation of indigenous knowledge and technology, organization and the conceptualizing of experience could be provided by Participatory Action Researchers. These action researchers would be a new breed of "organic intellectuals". They would be identified and absorbed in the culture and knowledge system of the people and also be equipped with scientific training. Such researchers, while engaged in the struggle alongside the people, would be interacting with their creative ideas and knowledge and at the same time helping to conceptualize the results of their collective social, political and productive efforts. Finally, Participatory Action Research could help rediscover folk literature and use it to reconstruct a sense of community identity. Such consciousness could reinforce the contemporary creative quest of the community" (Wignaraja, 1998).

The objective behind the current research to compile few words in order to at least commence the debate of whether or not the local traditional knowledge should be consulted in order to seek sustainability in the developmental efforts. The effort was to explore the possibilities to study the impacts of modern technology on the natural resource base as well as on the human life. We agree with Wignaraja and his colleagues regarding their assumption but further intended to add that this proved to be a very laborious for me to work on the same lines as proposed by him.

III. Materials and Methods

a) Locale

The current study was conducted in the Union Council of Sacha Soda in the Tehsil and district of Sheikhupura district of the Punjab province. The life of this Union Council is characterised by big political players who acted as middlemen in the local power structure.

The village is located on the main Lahore to Sargodha road not being far way from Sheikhupura city and nearby town of Farooqabad. The village is under transition and very much in contact with the urban areas and thus new innovative ideas from all over. In recent years, the village also experienced planned changes from the government of the Punjab that included Second Scarp Transition Project (SSTP), Water Management Program (WMP). In addition, a permanent Adaptive Research Project of Agriculture Department is located within the village. The village is also politically active and also contains local factions which are influential and play an important role in the social and cultural life. The village's rich farmers are more prone to adopt the modern agricultural technology to enhance their capitalistic interests whereas the middle class farmers mostly use a mix of modern and traditional farming methods. The lower quartile mostly prefers their conventional methods of farming.

b) Location

Sheikhupura District lies roughly between North latitudes 31.0 degree and 32.5 degree and East longitudes 73.5 and 74.42 degree. Its shape is roughly that of trapezoid with a triangular off-shoot to the west from the Southwest corner. The village Sacha Soda is 18 km from Sheikhupura city towards North West.

c) Methods

Data collection was done through the exploratory method while using main techniques of participant observation, in-depth interviews, and key informants.

IV. Results

a) Reduction in Soil Fertility

Farmers refer that use of fertilizers for few initial years enhanced the fertility. It was observed later on that soil's natural fertility level was reduced. Whereas this factor raised a situation in which there was a constant demand for more and more synthetic fertilizers for gaining profits out the sown crops. Farmers cited that constant use of artificial fertilizer, together with a lack of crop rotation, reduces the soil's fertility year by year due to which land is facing huge problems as it is losing its fertility and thus becoming barren. As the population in a particular area increased, more of the land had to be cultivated for longer periods to satisfy the peoples' needs. The response sought from the respondents was mainly due to different reason responsible for decline in soil fertility. People opined that increasing pressure of population laid stress on the natural resources for producing more, second, the inclination towards commercialization of crops boasted the utilization of chemical technology for increasing fertility of the land, pesticide and weedicides etc were the ones due to which land's fertility was disturbed and the farmer thus caught in a web where they had to rely heavily on the artificial sources of increasing soil fertility. The danger came when the number of people depending on a particular area of land (the population pressure) became too great for the carrying capacity of that land using existing technology. This fact has further been reinforced by the research findings of Bennett (1939), who had an immense effect on the huge problem of soil exhaustion and erosion in the United States in the 1930s, has described the same process occurring down the ages and throughout the world.

b) Incompatible Fertilizers

Farmers state that agriculture department especially the extension staff advocates for the HYVs for more yield on the average. HYVs demand huge amount of water for irrigation and also high quantity of artificial fertilizers are required for bringing in the required results, instead of by maintaining the natural fertility of the soil.

c) Nitrate [3] run-off

As per the direction of extension staff, nitrate is used which is contained in the fertilizers. After the use, half of the nitrate in the artificial fertilizer used on crops was dissolved by rain. The dissolved nitrate runs off the fields to contaminate water courses. Farmers' community referred that they had witnessed a change in the taste of drinking water due to which they felt that water is not satisfying the thirst. It was rather found to be more toxic for the skins of both human and animals. Another problem was the water being less effective during cloth wash and also changing the hair color of the people and causing baldness among the people. The farmers told that the agriculture department conducted the experiments on several samples of water taken from all corners of the village and their staff told that the negative effects are being observed in the lives of the farmers.

d) Soil Erosion

The agriculture department pleaded for deep tilling as it was thought that deep plough always enhances the yield. The farmers shared that while going after the recommendations, they observed that recommended yield was not achieved which was shared with the staff who visited the village occasionally but they kept on telling farmers that something else might have gone wrong instead of going after real reasons and testing that why newly referred methodology did not produce its anticipated results. The agriculture department proclaimed that repeated deep ploughing was used to turn over the ground, heavy rains can carry away topsoil and leave ground useless for cultivation. The farmer community felt aggrieved when they started going after recommendations of agriculture department. It was reported that "What else we had in our hands. The pressing economic burdens misguided us to go and change our farming methods under the advices given by agricultural extension staff in the mere hopes of economic gains but there was even a deficiency in the previous one. Nobody from the government came to see the agony".

[3] Nitrates:A salt of nitric acid. Potassium nitrate or sodium nitrate used as fertilizers produces nitrates that, if in overabundance, can leach out of the soil into crops and into water supplies or adjacent streams. http://www.ebfarm.com/Organic/Glossary.aspx#C_glossary

e) Soil Compaction

This was a hidden problem that remained out of notice for so many years but sudden discovery of this problem created a bewildered set of responses from farmer community. The areas that were heavily and intensively farmed usually saw a series of problems of Soil Compaction as there was damage to the soil structure. Whereas, conventional tillage involved a tractor passing over land six or seven times, and wheeling can cover up to 90 per cent of a field. Even a single tractor pass can compress the surface enough to reduce porosity of soil by 70 per cent, increasing surface run-off and, therefore, water erosion. In worst cases, surface run-off approached 100 percent and irrigation water did not penetrate the surface. It was observed by the farmers that animal drawn plough was disappeared largely because of tractors; even individual owners provided services due to which farmers opted for mechanical traction. The villagers cited their practical observations while tilling fields that wheels of this heavy machine were pressing soil hard. Later on, upon irrigation, water could not be absorbed by land rather it only evaporated under sun.

f) Threats to Indigenous Seeds, Animal Breeds and other Species

The elders of village told that various local breeds of animals including horses, cows, buffaloes, goats and chicken were completely replaced by the new breeds that were not native. Many native animal breeds are extinct out of which farmers cited various forms of wild life especially jackals and snakes that were totally vanished from scene. The same holds true for many indigenous plant varieties which have disappeared within space of one generation.

g) Habitat Destruction

The wild animals and plants which were once a common sight around farms are deprived of their natural habitat and die out. Mostly the animals were seen in concrete shades without an opportunity to interact with natural habitat. It was also observed during my visits to interact with owners of the goat farms or buffalo farms where animals had no chances of remaining in natural environment. Similarly, milk giving animals were treated with machines. The owners were also concerned that though modern milk blowing practices have saved much time but it is not natural due to which damages are commonly seen in a shape of physical hurts among animals.

h) Contaminated Food

The farmers also cited food items contamination and its residual effects after the crop harvest. Both plant and animal products were told to leave the farm contaminated with the chemicals that were used to produce it. A lot of diseases were now reported to be the result of chemicals in agriculture. For

example, the DDT which has been proved for cancer causing, damage to liver, nerve, brain, extremely persistent, toxic to wildlife. Another example of contamination is Aldrin/Dieldrin/Endrin that is allegedly causing cancer suspect, birth defects, very persistent, and toxic to wildlife. Similarly, the use of chemical pesticides was also known to eliminate the natural enemies of crop pest. In same way, different food items were found to be containing remnants of chemicals being used on them. For instance, Potatoes are tested to be carriers of DDT. Onions carried toxic effects of DDT. Cucumber carry Methamidophos, Endosulfan, similarly, cauliflowers were the carriers of Methamidophos, Endosulfan, etc.

i) Destruction of Traditional Knowledge Systems and Cultural Traditions

Farmers and other followers of rural indigenous knowledge and traditions (both agricultural and non-agricultural) were invariably connected to agriculture and agricultural systems. The new technologies undermined the confidence of traditional farmers in their own abilities and in value of their traditional knowledge. It disintegrated farming communities, impoverished social life of millions of farmers and raised social alienation. The same technologies under promise of bringing prosperity to farming community brought intermingled effects of rural-urban migration, rural depopulation and loss of socio-ecological balance, etc.

j) Control of Agriculture Inputs and Food Distribution Channel

The role of middlemen was also very much visible in rural Punjab since advent of modern agricultural techniques. It is beyond doubt that running business of agro-chemicals is a matter of putting millions of Rupees which these middlemen without any practical experience in agriculture invested to gain three times more benefits. These middlemen clout employed agricultural graduates and engaged them in selling products of their companies for profit margin. The marketing staff was only concerned about selling products and thus making profit without any concerns what so ever for farmer community. I found quiet a few marketing staff while celebrating that they sold medicines to farmers without any prior experience of dealing with a specific disease of the crops. It can safely be concluded that supply and trading in agricultural inputs and produce is in hands of a few large corporations. This threatens food security, reducing leverage and importance of first and the last part of supply chain of farmer and consumer.

k) Threat to individual farmers

In first instance, the mechanization and chemicalization of agriculture was not a matter of small scale farmers. The later experience of small farmers also proved that only rich farmers can adopt improved and modern technologies. The farmers reported that economically they were not in a position to buy and adopt expensive sprays and fertilizers. In other specimens, small scale farmers had to take loans to adopt new methods of farming which later on did not match with their socio-economic conditions. Thus instead of poverty level going down rose with increased dependence on costly external farm inputs and credit which proved to be infeasible and unsustainable. The adoption of new technologies changed life styles of farmers without fulfilling promises of prosperity and sustainability in life of rural population in the Punjab.

l) Financial Constraints of Subsistence Level Farmers

Shortage of capital is a widespread constraint among subsistence level farmers of village. Traditional subsistence very much manipulating in the sense these people provide fertilizers, pesticides and weedicides on installments that is payable after harvest of crop which even multiply economic burdens of farmers because they in this way lessen their profit margin to spend in their other family, brethren and cultivators invest little capital in their farms simply because they cannot afford buying expensive modern farming methods. In this regard, the role of middlemen available in nearby markets was social commitments. Typically, possessions of small scale farmers comprise traditional tools, and some livestock. Big landowners who are wealthier have a considerable amount of capital tied up in livestock. There appears to be an increasing trend to purchase livestock with any profits from crop sales (Haswell 1975; Norman et al. 1981). The importance of livestock for these subsistence level farmers is like an additional benefit in terms of being a source of Milk, butter, village level business (by selling the breed of their animal) in case of an emergency can always be sold to earn a small to medium amount of ready money, animal power for plowing and manure for land (Delgado 1978).

With increased modernization and commercial production for the market, gradually demanded more inputs such as fertilizers, crop-protection chemicals, and machinery, but capital investments for fencing, water supplies, and so forth tend to remain minimal for all but wealthiest farmers. In many areas, poorer farmers may be so short of money that they are forced to sell a substantial proportion of crops such as groundnuts soon after harvest, when prices are often low, to obtain cash, and then to buy food or seed when they become short later in the season at much higher prices. In general, it appears that farmers are more willing to apply inputs such as fertilizers or insecticides if they are provided on credit, the cost being deducted when the crop is sold, but Eicher and Baker (1982) have questioned the real need for credit in many situations.

m) Non Suitability of Modern Agricultural Machinery

This understanding was acknowledged thoroughly in my field that farmers of the village had good understandings of agriculture practices but they were always robbed off by the "Lambi Zaban" [4] (allegedly the marketing staff of agricultural products' selling companies), who promised incredible results and dreams coming true. "It never happened in my sixty years of life" said one respondent. He quoted that few years back when there was large hue and cry for promotion of Combine harvesters (a composite agricultural unit serving many purposes from sowing seeding, harvesting crop, threshing grain, bagging yields, substituting for hundred farm laborers, etc). The machine was failed because of undeniable reason which "Sahib Log" did not accept. He analyzed and gave four main reasons for the failure of combined harvester in the area:

1. Firstly, that mostly people are having small tracts of land meeting only their subsistence. The machine was not successful in small farms because of rent and fuel it consumed during the service. It merely lowered the share of profit to farmers and actually went to owner of combined harvester.
2. Secondly, that during threshing, wheat seeds were badly damaged due to which they were not able to serve purpose of next season crop's seeds.
3. Thirdly, the stalk of crop that was also an asset for farmers because of two reasons, i.e., fodder for cattle and burning in fields as fertilizer because stalk was severely damages through machine use that instead of its being turned in straw, it was damaged in a powder form that did not serve both purposes.
4. Fourthly the social cost of the machines that put hundred people out of farm and further pushing them to cities for seeking employment or making them sit idly doing politics and fighting with fellow young men.

He cited an example of adjacent district of Hafizabad where combined harvester was successful because it was a city of big land owners and feudal having two to three thousand of acres of land on the average. "The machine was for big land holdings" said Mr. A.D but officials of agricultural department refused to accept. They kept on blaming us as somebody resistant of new technologies and thus change. "You do the justice which is wrong and who is right" he left the decision on me.

Another view regarding modern pesticides and fertilizers was also shared by respondents in village. They said to make farmers ready to accept attractive offers, companies dealing in modern sprays adopted different methods of attracting farmers through gift schemes, etc. The comparison made by respondents was that precondition of promised high yield was need for massive doses of synthetic fertilizers and agro-chemicals which were too expensive and environmentally destructive, both at production as well as consumption stages. One respondent quoted a research which highlighted that "chemical fertilizers poison micro-and macro-organism in soil, these cause diseases and pests in plants and indirectly affecting the health of the farm animals and human beings. Any chemical fertilizer not absorbed by plants may increase the percentage of particular chemical in the soil and may eventually make the soil infertile. Chemical fertilizers particularly nitrogen and phosphorous caused leaching of nutrients from the soil,so they decreased the soil fertility in the longer run". He also quoted his discussion with one agricultural scientist that if chemical fertilizer was used once, it had to be used every year in order to maintain a high yield. If chemical fertilizers were not used in consequent years, production goes down even below the original yield.

V. Discussion

In many parts of the current day world, people have questioned the effectiveness of the western ideas and technologies and "bottom-up" approaches to development that were not democratic in their nature. We see that people have commenced to work on their indigenous knowledge systems to develop their centuries' old repertoire to benefit their communities and nations. Almost all developed countries in the world are dealing with IKS on several levels, first as means for sustainable and self reliant development, second as an alternate source of bringing self reliance, third to preserve their own cultural individuality which has long been threatened by the capitalist ethos. The present status of IK is that these forms of knowledge have been suppressed because of the new innovations being introduced in the local communities promising high performance, increased inefficiency, facilities and leisure in life. This finding holds true of itself when applied to the policy level.

The situation on ground seems a bit different as most of the rural population is either not capable of adopting the new technologies as these are expensive or they adopt them in a competition against the fellows in villages. Therefore, IKS may be brought into the mainstream of knowledge in order to establish its place within the larger body of knowledge. There is still a need to discuss that revitalization of IK would be in holistic approach to cover both its economic and non-economic aspects. Applied researches are also required to explore IKS, and should be carried out with the participation of the communities that once practiced its unique cultural heritage.

It is worth noting that the scholars especially the Anthropologists have thoroughly worked and analyzed the failures of the development that is to put

[4] literally means "big mouth"

into practice from just a profit maximization view point. The current debate of development practices in the Punjab also presents the case of big failures in setting the urgencies regarding a sustainable rural development especially sustainable agriculture. Similarly, the whole world nations are now desperately looking for having a sustainable agriculture which lessens burdens from the ever decreasing natural resources. The development has been described as a process of change by which people who, in a certain social and ecological milieu and at a given historical; movement, while seeking their liberation, transforms their structure of "production" establish new social relationships, set up appropriate political and administrative institutions for themselves and redefine their own culture in order to achieve a better existence.

Rural Development is essential for accelerating Economic Growth, boosting agriculture and non-farm sectors productivity, expanding the coverage of social, economic and community services, building the capacity of rural institutions and improving rural infrastructure. Pakistan like other developing countries also faces many problems of rural development, particularly inequality of assets' ownership, physical and financial resources, vulnerability to shocks and poor governance which are the root causes of under-development, low level of agricultural productivity and rural poverty.

The common problems and issues faced by different rural areas with variation in magnitude and intensity can be categorized as low education, low income, high population growth rate, poor infrastructure i.e. education, health and other institutions (school, colleges and health centers etc), poor communications i.e. telephone network, roads transport etc., rigidity in attitude and poor organizational and managerial capabilities. Keeping in view the discussion in the previous pages there is a need for consulting the society's once used and needs fulfilling IKS to be revived and allowing it to be the long term remedy in terms of sustainable development

VI. Conclusion

The survey of relevant literature and primary data from the research locale qualifies and persuades that today the indigenous knowledge systems are at risk of becoming extinct because of the natural environments being altered and economic, political, and cultural changes occurring in the world due to new approaches being testified. The new approaches require a new mode of responses from the people who put them in to practice thus making the local practices disappear simply because that they then become hurdles for the new innovations. There is another issue involved that these new approaches often term the local and traditional methods as low in productivity and being innately slow to adjust with new scenario. What we can see is that introduction to new methods and techniques also ask round the people to abandon the older ones due to which the local methods swiftly get obsolete. I believe that IKS is not only a recipe for the people of a specific place rather it is a uniqueness of a particular culture that makes the people different from other which in my view is the beauty of world cultures. Indigenous knowledge is not yet fully utilized in the on-going development process in the Punjab. One can only see conventional approaches imply that development processes always require technology transfers from locations that are perceived as more advanced. This has led often to overlooking the potential in local experiences and practices.

Pakistan has seen various phases in her agricultural development cycle with incessant and perpetual shifts in policy further bringing the upshots of not achieving the level of sustainability. Failures in heavily invested programs and projects, fragmentation of rural population, rise of rural rifts, etc were the aftermaths after what has been done by previous political and military set ups to bring revolution in agricultural sector. Unfortunately, the most ignored area was the strengthening of research traditions to benefit the rural farmers willing to adopt newly evolved varieties and practices according to developmental needs of country. Appropriately deemed investments in the domain was severely lacked and resultantly lagged the farming community to arrogate the winning board. Most of the new experiments done in the agricultural research institutes were either restricted to the laboratories, or were a matter of disagreements among the planners at the national and provincial levels. Few of the new innovations made by the scientists were not cost effective. The said problems perplexed the scenario for the rural farmers and made them only thinking of ensuring their own survival. This phenomenon also raised dependency on the agricultural imports that further put farmers out of the developmental priority.

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