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PRIVATIZATION AND COMMERCIALIZATION OF IRRIGATION MANAGEMENT : ARE THE NEW STRATEGICS WORKABLE IN PAKISTAN SETTING ?

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PRIVATIZATION AND COMMERCIALIZATION OF IRRIGATION MANAGEMENT: ARE THE NEW STRATEGIES WORKABLE IN PAKISTAN'S SETTING ?

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ABSTRACT

Irrigated agriculture is the mainstay of our national economy. Irrigation Water represents an essential input for supporting agriculture in Pakistan's arid to semi-arid climate. Performance of Irrigation System is, therefore, central to the success and sustainability of irrigated agriculture and well-being of our less privileged rural population.

The apparent declining trends of irrigation management in Pakistan have been engaging the attention of many national and international agencies in the recent past. A number of studies have been conducted to identify the constraints facing irrigation management and to propose strategies for improving the situation. The World Bank has been playing a leading role in this regard. In their latest policy document, the Bank has identified waterlogging and salinity, low irrigation efficiency, over-exploitation of fresh groundwater, inequitable distribution, inadequate maintenance and insufficient cost recovery as the main problems of irrigation management. It has been suggested that the above problems are not the causes but symptoms of a deeper crisis. In the Bank's view, the real problem is that the Government has treated irrigation water as a public good, whereas it is a private tradeable good. They have accordingly proposed a totally new strategy for irrigation management in Pakistan. The core and focus of the suggested strategy is the commercialization and later privatization of irrigation management.

In the above backdrop, the Paper presents an overview of the World Bank strategy for privatization of irrigation management. It also highlights salient features of their subsequent proposal for Participatory Irrigation Management. The merits and demerits of both the above proposals are discussed. The paper concludes that the suggested strategies for irrigation management should be carefully examined in the context of physical constraints of our irrigation system. The relevance and compatibility of these proposals also need to be evaluated in the broader perspective of socio-economic and institutional framework of the society. Recognizing the desirability of improving irrigation management, the paper brings out the need for evolving a national policy on the subject.

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A. INTRODUCTION

The apparently declining standards of irrigation management in Pakistan have been engaging the attention of many national and international agencies in the recent past. A number of studies have been conducted to identify the constraints facing irrigation management and to propose strategies for improving the situation. The World Bank has been playing a lead role for re-defining irrigation management strategies. The main emphasis of the World Bank / USAID strategy during 1980s and early 1990s had been on rehabilitation of irrigation system and on-farm improvements. Adequate maintenance funding for irrigation system, increasing water charges to cover the entire O&M expenditure, and phased disinvestment of fresh groundwater public tubewells were other priority issues on the agenda of the aiding agencies (World Bank, 1988).

The international agencies have now changed their strategy altogether. They consider that institutional issues constrain the overall irrigation management in Pakistan and that the worsening situation can only be improved by privatization and commercialization of irrigation management. This new strategy was first brought out by the World Bank in 1993[4]. Ever since, the Bank has been actively pursuing the suggested strategy by sponsoring a number of studies and seminars. Other International Aiding Agencies (Asian Bank, JICA, German & Dutch Aiding Agencies) also appear to be guided in pressing for adopting the new strategies. Strong pressures are being built for privatization of irrigation management and the international donors appear to make further lending programs conditional to Government's commitment and progress in pursuing these policies. Privatization of irrigation management and Participatory Irrigation Management is, therefore, being made pre-condition by the donors for financing the upcoming Projects like National Drainage Program, D.G. Khan SCARP Project, Sukh Beas / L.B.D.C. Project, and Punjab Privatization of Groundwater Development Project.

The Paper describes the salient features of the new strategies being proposed by the World bank for irrigation management in Pakistan. It presents a critical review of these strategies and discusses the main issues which need to be considered. Lack of a national policy on the subject has been identified as the main issue.

B. PAKISTAN'S IRRIGATION SYSTEM: THE SETTING

General

Although the share of agriculture in Pakistan's economy has been slowly decreasing (from 28.5% of GDP in 1984-85 to 25% in 1993-94), it is still the backbone of national economy. Irrigated lands supply more than 90% of agricultural production. Agriculture sector employs more than 50% of the labour force and accounts for 70% of export revenues (state Bank of Pakistan, 1993-94; World Bank, 1994b).

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[4] Draft SAR of the World Bank entitled "Pakistan - Irrigation and Drainage: Issues & Options."

Pakistan's climate is arid to semi-arid. Annual rainfall over the Indus Plain exhibits high degree of temporal and spatial variability and averages around 150-500 mm, while evapotranspiration is high (1,250-2,800 mm). In this environment, irrigation provides not supplemental but basic needs of agriculture. **For these reasons and historic water rights, canal water is considered to belong to the irrigated land and not to the individuals. Due to overall water scarcity, there is no concept or scope of water markets for canal water.** Pumped water from private tubewells is, however, traded in periods of acute demand (PID Punjab, 1994). Performance of irrigation system is, therefore, central to the sustenance and development of irrigated agriculture and well-being of our less-privileged rural population.

The Irrigation System.

The existing canal net-work is a gigantic and closely interwoven system with limited flexibility. The length of main and distributary canals exceed 60,000 kilometers. It serves over 14 million hectares of culturable commanded area through about 107,000 outlets in 43 main canal systems in the four Provinces of Pakistan. **The irrigation system has been designed as a gravity flow, run-of-the river system, to support subsistence agriculture at low design cropping intensity of 50 to 75 percent. The system design envisaged to serve as large an area and benefit as large a rural population as possible, at low cost and staffing levels, and to ensure equitable distribution of canal supplies with minimum human interference.** The existing storage capacity of reservoirs is rather small, being less than 10% of annual river flows. Further, the time distribution of river flows is highly uneven, as more than 70% of the flows occur during the monsoon period. About 20 - 25% of river flows cannot be utilized and run waste to sea.

Irrigation development has remained frozen since construction of Tarbela Dam in 1976. Canal withdrawals have started declining due to significant reductions in the storage capacities of our existing reservoirs, being caused by natural sedimentation process. It is estimated that by year 2000, about 20% of the existing storage capacity would have been lost, leading to growing shortages of irrigation water in critical crop sowing and maturing periods. This would, in turn, reflect on the agricultural productivity and the crop production deficit would become increasingly severe.

The Rural Society.

About 70 per cent of the population lives in the villages and a large majority earns its livelihood from the agriculture. The level of rural literacy is very low, hardly 15 per cent. A large mass of this population live below the absolute poverty level, and rural per capita average income is less than half that of the urban population. Modern concepts of Cooperatives, Accounting, and Financial Management are hardly known. Farmers involvement in this Socio-cultural environment has been found to be difficult to achieve; mainly because of strong hierarchy of rural society and stratifications depending upon families, land holding sizes, and influences (PID Punjab, 1994)

C. THE WORLD BANK STRATEGIES FOR PRIVATIZATION OF IRRIGATION MANAGEMENT IN PAKISTAN

Issues Identified By the Bank

The World Bank has identified water-logging and salinity, over-exploitation of fresh groundwater, low efficiency in delivery and use, in-equitable distribution, inadequate maintenance, and insufficient cost recovery as the main problems of irrigation system. In addition, overall water scarcity, low water availability during critical crop sowing and maturing periods, and small reservoir capacity are also considered to be constraining factors. The physical capacity of the canal system is an additional limitation during periods of high water demand. The Bank suggests that the above problems are not the causes but the symptoms of a deeper crisis. The real problem, according to the Bank, is that the Government has treated irrigation water as a public good, when it is in fact a private tradeable good. The Government has continued with this approach instead of directly addressing longstanding roots of the technical deficiencies and the failure of markets and administration that has allowed the deficiencies to grow (World Bank, 1994).

The Privatization Strategy.

The World Bank has observed that unless the Government changes its approach, no future strategy for irrigation and drainage will succeed. Any water service that is not a public good should be commercialized and later privatized. Only with market determined incentive for irrigation, a sustained improvement in performance is possible. ***The new strategy proposes to create autonomous and commercially oriented Public Utilities (PUs) at the canal command level until user groups mature and take over the system operation. The first step should be to develop legislation for establishing individual water property rights, free water markets and institutions.*** The next priority is for pilot projects at canal command level, including setting up PUs and developing Farmers Organization (FOs), to be followed by Provincial Water Authorities and strengthening of existing federal water agencies. FOs, as the major water users, will be vital to any market-oriented irrigation system (World Bank, 1994).

Participatory Irrigation Management.

The strategy of privatization and commercialization suggested by the World Bank received severe criticism from all the four Provincial Irrigation Departments (PIDs). The Provincial Governments, though not as strong in their opposition to the concept as PIDs, also found it difficult to agree to the total system transformation. This made the Federal Government, which appeared to be enthusiastic about the proposal initially, less responsive to the suggested strategy. The progress on implementation of new approach thus got somewhat stalled.

Recognizing the general opposition to privatization of irrigation management, the World Bank has introduced the concept of Participatory Irrigation Management (PIM) for advancing their original strategy of privatization of irrigation management. The concept of PIM has a lot of appeal for the farming

community, planners, policy - makers and the politicians. The term refers to the involvement of users in operation and maintenance of the irrigation and drainage systems. The intensity of participatory management may range from minimal user involvement to the transfer of nearly all management functions to them. The Bank considers that the farmers participation in irrigation management has become increasingly appreciated as a means of improving irrigation performance. The experience of Mexico has been cited as the most successful example. The World Bank is actively pursuing the strategy by holding National and International seminars, sponsoring a number of supporting studies, by local and foreign Consultants, pressurizing through other Aiding Agencies, and by working with supportive Federal and Provincial Government Departments / Agencies. These tactics appear to be working, as the Government has been made to agree to implement 'Pilot Projects' to test and refine the suggested new strategies. These pilots are being planned both at the distributary / minor level (as in Fordwah Eastern Sadiqia Project), as well as, at the Canal Command level (L.B.D.C Pilot Feasibility Study).

D. REVIEW OF THE SUGGESTED STRATEGIES.

The Privatization strategy.

The main observations on the various components of the privatization strategy include :-

- The World Bank proposals for privatization of irrigation management reflect the modern concept of 'market economy', which is more relevant in the field of industry and trade in the developed countries. The requirements and considerations of irrigated agriculture in the developing countries may not be essentially consistent with this concept.

- ***The suggested approach does not contemplate to address the existing constraints in the system design and limitations of the river supplies. It is also not expected to bring about any major changes in the socio-political setting, which has suffered due to declining discipline of the society.***

- The basic requirement of the proposed concept, i.e. individual water rights and free water trading are not compatible to and operable in Pakistan's environment. In the semi-arid climate of the country, lands devoid of the irrigation water rights would have no agricultural value. The introduction of individual water rights could upset the age-old water discipline, and the possibility of its misuse by the influential and big landholders is quite real in the context of local setting. Legislation and redefinition of individual water rights is yet another issue, which could pose serious problems. Disputes on individual water rights have still not been resolved in USA even after 50 years, and most of the Civil Cases in Texas, Arizona and California states concern entitlement of water rights. De-linking of water rights from the land proprietary rights could thus reflect very adversely on the irrigated agriculture of the country, and the future of the vast majority of illiterate and poor farming community could be at stake.

- The physical features of the irrigation system (capacity and available supplies) greatly limit the

possibility of free water trading. The canal systems are simply not designed to accommodate flow variations which could be required to run under the scenario of free water trading. Even otherwise canal water is far short of the current requirements. Under these environment, there is little scope for free water trading or development of water markets. There is no previous experience of large-scale irrigation management by the private sector in Pakistan. The practicability of PUs would therefore remain a big question mark, due to socio-cultural setting and complete lack of experience of such institutions in the local irrigation management.

- **While the concept of 'pilot projects' appears to be quite attractive, but the pilot design is the most crucial aspect. It is imperative that the pilots should be truly representative and replicable, and should be backed up with independent evaluation of their performance over a sufficient period. The biggest problem with the pilots is that often the sponsoring agencies put in so much of effort and finances to make them work that the pilots no longer remain representative, replicable or sustainable.**

- The proposed privatization strategy is contradictory in its approach. While advocating decentralization of the Provincial Irrigation Departments, it contemplates to strengthen the existing federal water agencies. This is difficult to comprehend because, according to Constitution of Pakistan, irrigation is a Provincial subject.

Participatory Irrigation Management.

Of all the models proposed by various agencies for improving the irrigation system performance in Pakistan, one common factor is the greater farmers participation in the system management. This is in line with the accepted concept that increasing farmers participation over time has a profound effect on the irrigation management. The level and extent of farmers participation in a particular environment, however, is strongly influenced by the socio-political environment, size of groups, social homogeneity, and past experience with F.Os to act collectively (Chambers, 1988).

The farmers participation in irrigation management has generally been quite successful in the irrigation system which are small in size, have been designed to operate 'on demand' basis, and have storages for the needed flexibility; in addition to the favorable socio-political environment. In case of big irrigation systems with physical and institutional constraints, there is limited experience of farmers management, and the available experience is mixed and divergent in most cases (Asrar et al, 1994).

In Pakistan, history of FOs is not very encouraging. FOs formed under OFWM Projects were not able to sustain after one-time construction activity had been completed. The evaluations carried out by various agencies have expressed concerns and reservations about sustainability of FOs in taking up collective responsibilities. The views of various agencies on their experiences with role of FOs in Pakistan is summarized in Table-1. **This evaluation brings out severe weaknesses in the continuity and sustainability of FOs, once the Government support and subsidies are withdrawn. It also shows the**

inability of FOs to collect / recover the installments of capital investment on watercourse lining. This aspect, being of vital importance for canal system maintenance, raises serious concerns about the ability of FOs to take over Irrigation System Management.

Table-1.

Views of various Agencies about Role of Past Experience of FOs in Pakistan.

Agency	Views / Observations about Role of FOs/WUAs.
World Bank (1990).	o Most WUAs do not have institutional sustainability and did not do much after watercourse lining.
World Bank (1993).	o The performance of WUAs was found to be unsatisfactory. o WUAs failed to assume many of the post improvement responsibilities, including maintenance of works. o Cost recovery from beneficiaries has been problem and a major concern. FOs failed to collect the dues, so the responsibility for collection had to be given to the Revenue Department.
World Bank, (1994).	o Though well-intentioned, OFWM approach to develop WUAs did not work well / sustain.
PERI (1992).	o About 95% sample farmers reported that WUAs did not participate in Scarp transition activities.

ACE at al (1993).	o WUAs appeared to cease operating after the construction activities had been completed. o WUAs are having difficulties in managing improved watercourse. o There was minimal enthusiasm amongst common farmers for distributary management and abiana collection responsibilities.
WAPDA findings (WMED Evaluation' of OFWM Project, Paper by Bashir et al, 1994).	o Voluntary co-operation for collective good is not prevalent in the rural set-up. WUAs have not been able to bring about any plausible change in the irrigators traditional behavior to carry out maintenance activities. o Majority of water users being illiterate, are unable to know and exercise their rights and obligations. The present socio-cultural environment is not conducive for WUAs to grow as a legal entity. o In a faction - laden environment, it is very difficult to get co-operation or to exercise any legal power by chairman of WUA because there are chances of out-break of an open clash between the families, parties or ethnic groups, which could disrupt the village peace. o WUAs become dormant or remained no longer viable after watercourse improvement. They need permanent and constant organizational support.

E. DISCUSSION OF BROADER ISSUES.

Diagnosis of the problem: The Root Cause.

The performance of irrigation systems needs to be reviewed in the context of design parameters and objectives. Pakistan's irrigation system is under tremendous pressure due to growing needs for water and changes in socio-political environment. Over time, there has been substantial increase in the number of users due to growing population and fragmentation of land holdings. The irrigation intensities have also increased beyond design values. In Punjab, for instance, cropping intensities have increased to over

120% as against average design intensity of 63%. The pattern of increase in cropped area in Punjab is depicted in fig.1.

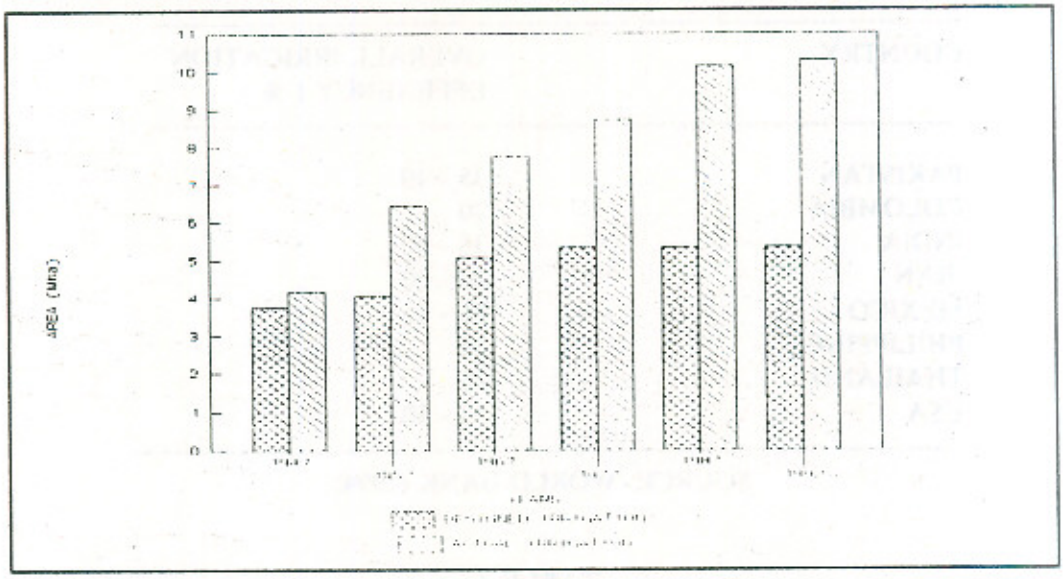


Figure 1. Pattern of irrigation development in Punjab Province.

In addition to the increase in cropping intensities, extensive use of fertilizers, better seeds and higher-delta cash crops have resulted in substantial increase in irrigation water demand. The real problem, as such, is that the current water demands are much in excess of the system capacities, as well as, available river supplies during critical crop sowing and maturing periods. Superimposed over this has been the changing socio-political environment, general decline in law and order and deferred maintenance. These factors greatly reflect on the irrigation management (Asrar, 1995). In this environment, just changing the conceptual and institutional boundaries would be of little value. What is really required under the circumstances is that we should address the root cause of water shortages, to be complemented by institutional measures implementable in the local environment.

Comparison of Irrigation Performance: Pakistan Vs Other Countries.

Pakistan's irrigation management has been described to be in dire straits. The Aiding Agencies consider the system to be inefficient, inequitable, having insufficient cost recovery, and suffering from severe and worsening operational problems.

True that irrigation management in Pakistan has some problems and also true that these problems need to be reviewed in the context of the system design. It may however be of interest to compare some main performance indicators of Pakistan's irrigation system with those of the other countries in order to evaluate general state of irrigation management. This comparison has been brought out in tables 2 and 3. The comparison clearly demonstrate that despite the problems, the irrigation performance in Pakistan compares well with the achievements of other countries.

TABLE-2
OVERALL IRRIGATION EFFICIENCY:
PAKISTAN VS OTHER COUNTRIES.

COUNTRY	OVERALL IRRIGATION EFFICIENCY (%)
PAKISTAN	35 - 40
COLOMBIA	20
INDIA	35 - 40
IRAN	20 - 30
MEXICO	26 - 45
PHILIPPINES	36
THAILAND	28
USA	33 - 50

SOURCE: WORLD BANK (1994).

TABLE-3

O&M COST RECOVERY
PAKISTAN VS OTHER COUNTRIES

COUNTRY	O&M COST RECOVERY (%)
PAKISTAN[5]	55 - 65
INDIA	7 - 8
BANGLADESH	10 - 15
INDONESIA	8 - 10
EGYPT	0
IRAN	60 - 70
MEXICO	UPTO 80

SOURCE: WORLD BANK (1994).

Social Aspects of Irrigation Schemes.

In the developing countries having arid to semi-arid climate with uneven rainfall distribution, the irrigation water is an essential input for sustaining irrigated agriculture. Large public irrigation schemes have been constructed to support very large rural population with small land holdings in Pakistan. These schemes, in addition to supplying irrigation water, also serve as vehicles for social uplift and general welfare of the less-privileged rural communities. In these environment, irrigation schemes can not be

[5] RECOVERY W.R.T. O&M COST OF CANALS AND SALINE TUBE-WELLS.

treated as pure commercial enterprises. Therefore, strict economic criterion need not be applied for evaluating their performance. (Rydzewski, 1987).

Farm sizes and Tenures.

The nature and distribution of farm sizes and owner and operator rights have a considerable influence on the irrigated agriculture. The size distribution of farms in Pakistan, given in Table 4, reveals a strikingly uneven distribution of holding sizes.

TABLE-4.

DISTRIBUTION OF LAND AND FARM SIZES IN PAKISTAN.

Size of Farm (ha)	As % of number	As % of Area
Less than 0.5	13	1
0.5 to 1.0	14	3
1.0 to 2.0	21	8
2.0 to 3.0	16	10
3.0 to 5.0	17	17
Total Small Farms	81	39
5.0 to 10.0 (Medium Farms)	12	21
10.0 to 20.0	5	16
20.0 to 60.0	2	14
Larger than 60.0	0.3	10
Total Large Farms	7	40

SOURCE: CENSUS OF AGRICULTURE (1990).

Over one-quarter of farms are below one hectare, which represents a huge number of marginal farms. Nearly half of all farms are below 2 hectares in size, but occupy just 12% of total land. At the other end of the spectrum, only 7% of farms (more than 10 hectares) account for over 40% of total farm area. Interesting to note that farms larger than 60 ha are only 0.3% by number and occupy 10% of total land area (World Bank, 1994b). As compared to the generally large farm sizes in the developed countries, the farm holdings in Pakistan have entirely different characteristics, which reflect on farming practices, level of mechanization and irrigation management, cropping patterns, and socio-economic perceptions.

In addition, tenancy has a considerable impact on the agricultural productivity due to insecurity of tenure. This is particularly relevant for Pakistan's sizeable number of tenants-at-will, who can be evicted at any time, except during the cropping season. These aspects greatly limit the applicability of the new strategies in Pakistan's setting.

Level of Agricultural Development..

Despite the potential to achieve accelerated agricultural growth, crop yields are substantially below the potential yields that could be attained under Pakistan's physical conditions with improved and ideal management. The level of crop yields of principal crops in Pakistan are compared to those of the other countries in Table-5.

TABLE-5.

AVERAGE YIELDS OF MAJOR CROPS: PAKISTAN Vs OTHER COUNTRIES.

(Kg per ha)

COUNTRY	WHEAT	RICE (PADDY)	SEED COTTON	MAIZE	SUGARCANE
PAKISTAN	1,765	2,364	1,811	1,373	33,118
INDIAN PUNJAB	3,585	3,203	1,439	1,700	60,783
INDIA	2,111	2,523	658	1,405	61,116
USA	2,398	5,576	1,893	6,884	78,714
FRANCE	6,243	5,290	--	6,877	--
MEXICO	4,150	—	2,900	1,690	--
JAPAN	3,486	6,622	--	2,476	68,754
EGYPT	4,952	6,454	2,086	3,963	78,963

SOURCE: John Mellor et al (1994).

This comparison brings out that the crop yields in Pakistan, except for cotton, are considerably lower than those in the developed countries, where agriculture is mechanized and modern farm management practices are employed. The above yield gaps are however not solely due to the inefficient irrigation management, but are attributable to a host of other factors also. These include sub-optimal availability of non-water inputs (fertilizers, pesticides, good quality seed, etc.), market distortions and uncertainties, fragmented land holding, declining law and order situation, and lack of co-operative efforts amongst the farmers due

to stratified nature of society. In fact, some of the 'non-water' factors may have a much deeper and adverse impact on the productivity of irrigated agriculture than the much-publicized inefficient irrigation management.

Performance of Agricultural Institutions.

Commenting on the performance of agricultural institution in Pakistan, the World Bank (1994 b) has observed that these institutions are inefficient with severe problems of overlapping roles and co-ordination. Agricultural Research and Extension are considered to be particularly weak. None of the many research institutions were able to cope with the recent problems that afflicted the cotton crop. Extension has been reported to be the weakest link in the chain and seems to be a key factor in explaining stagnating productivity in most crops. Extension is too centralized and incapable of giving site-specific information to the farmers. Field workers are poorly motivated and lack the necessary skills (World Bank, 1994b). Any new strategies for irrigation management, to be effective and successful, will therefore have to concurrently address these issues.

Concerns about development of Monopolies.

The concept of privatization works well in competitive environment, where institutional infrastructure has developed and the market distortions do not significantly reflect on the economy. In case of the developing countries where these pre-requisites are not met, the privatization process often do not bring about the desired improvements in the system. Yet another dimension of privatization of irrigation management in the developing countries relate to the size of the enterprise and its interaction with the overall socio-political setting of the society. Unlike an industrial concern which is limited in size and can be managed comparatively in isolation; the management of irrigation systems, many times larger in size and dependent on natural / external factors, is much more demanding and complex. Commenting on irrigation management turnover, Vermillion (1992) has cautioned that this is not a kind of change which can be accomplished through rapid, high-level structural adjustments.

The experience with privatization of industrial concerns in Pakistan indicates increasing trends in the commodity prices after privatization. For instance, the prices of cement and vegetable ghee increased by more than 60% within two years of the privatization. In Pakistan's water-scarce scenario, there is a real potential for the pressure groups to establish monopolies for irrigation water distribution. In this way, the water prices would increase manifold, which may not be sustainable for the vast majority of our subsistence - level farmers and tenants. The experience of Mexico and Dominican Republic confirms this apprehension because water charges have increased six to twelve times there after privatization and commercialization of the irrigation management (NESPAK et al, 1994). This may reflect adversely on Pakistan's irrigated agriculture, and therefor calls for careful consideration by the Planners, Policy-makers and the politicians.

F. NEED FOR EVOLVING NATIONAL POLICY.

The World Bank proposals are not being supported by all the four Provincial Irrigation Departments (PIDs). The Aiding Agencies, however, continue to pursue the proposed new strategies. They find it expedient to bypass provincial opposition by pursuing their line through the Federal Ministry of Water & Power, WAPDA, Federal Ministry of Food and Agriculture and Pakistan Agriculture Research Council, etc. Provincial Agriculture Departments, especially its OFWM Project Wing, actively support the concept of farmers participatory management (PIM). The proposal of PIM is appealing to the farmers and policy-makers because the aiding agencies tend to project the brighter side of the strategy. The potential issues and expected problems in implementation of the PIM approach are held back and not discussed. Some of the potential issues and problems have been identified in this paper.

The donors led by the World Bank, are moving towards making the suggested new strategies a pre-condition for future loans in the Irrigation and Drainage Sectors. The Government would thus be subjected to increasing pressure from the Aiding Agencies for implementation of the above strategies.

In view of foregoing and serious implications that the proposed new strategies may have on our irrigated agriculture, it is imperative that we recognize the situation on ground and develop a national strategy for future irrigation management in Pakistan. This strategy should stem from the local experience and should be comprehensive and implementable in the overall setting, taking care that vital national interests are safeguarded. While reviewing the suggested new strategies, it may be worthwhile to look back to our experience with past Projects recommend by the foreign experts. Implementation experience with SCARP may be a good case study in this regard. Under SCARPs, high-capacity deep wells were installed in keeping with the advice of the expatriate advisors / aiding agencies despite opposition to the above design by the local experts. The Project design, however, has proved to be unsustainable, and we are currently transitioning the SCARP tubewells by reverting to the installation of shallow and small-capacity wells, as proposed by the local experts two decades ago.

PIDs have an important role to play in this regard. They cannot afford to remain dormant most of the time and react only when meetings or seminars take place. In order to build their image as alive and forward-looking organizations, PIDs need to make an objective assessment of the situation and pursue effective policies for improving irrigation management. This is essential for sustaining agricultural development in order to meet the growing needs of our rapidly increasing population.

G. MAIN CONCLUSIONS

The apparently declining standards of irrigation management in Pakistan have been attracting attention of international agencies in the recent past. The World Bank has now proposed a total shift in the current management system. It has been suggested to commercialize and privatize the irrigation system, delink water rights from the land proprietary rights, and formalize free water trading. Of late, emphasis has been on Participatory Irrigation Management. The basic concept and objectives however remain unchanged.

Presentation of the concept of privatization and participatory management brings out the brighter side of the picture and does not fully identify the potential constraints and the consequences of its implementation.

The proposed delinking of Water Rights from the land proprietary rights and free water trading pose serious threat to the existing water discipline. Even in the most developed countries like USA, disputes on individual water rights have still not been resolved and most of the Civil Cases in Texas, Arizona and California States concern water rights. Similarly, there is a real danger that commercialization and free water trading would result in development of monopolies and manyfold increase in irrigation water price. This experimentation in Pakistan would thus jeopardize the future of irrigated agriculture.

Despite opposition by the PIDs and serious questions about the workability of the new strategies in Pakistan's setting, the World Bank continues to press for their implementation. Towards this end, they have mustered the support of other Aiding Agencies, as well as, the Federal Ministries and the sponsored Local Institutions. In addition, the Government is being pressurized to implement the suggested strategies by making this a pre-condition for future Water Sector loans.

The performance of irrigation system needs to be reviewed in the context of design parameters and objectives. Irrigation water demand in Pakistan has increased tremendously over the past three decades due to agricultural development much beyond the design parameters. The system and supply constraints limit the capability of the PIDs to respond effectively to increased water demand. The changing socio-political scenario and general decline in discipline of the society also reflect on irrigation management. The availability of the new strategies, without addressing the existing system constraints and changing the over 'context' of the society, is a big question mark.

The concept of Pilot Projects needs to be reviewed with caution. Pilot design, implementation, and monitoring the most crucial aspects that reflect on the applicability of pilot results. A major issue in this regard is that the sponsoring agencies put in so much of effort and finances to make

the pilots work that these no longer remain representative, replicable or sustainable.

* It is recognized that greater farmers participation in irrigation management is of considerable value and needs to be pursued. The extent and arrangement for farmers participation however depends on local environment. The patterns of other countries can serve as useful models, but do not necessarily have universal application. Past experience suggests that in Pakistan, farmers participation can be best achieved through a gradual and a phased process.

* In order to meet the growing requirements of the increasing population and to sustain the agricultural development, the need for improving irrigation management is recognized. However, complete system transformation as proposed by the Aiding Agencies is not called for. It is believed that the system performance can substantially improve if the discipline is restored and external socio-political influences are managed. There is also an overwhelming need to evolve a comprehensive policy on the subject to safeguard vital national interests.

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