TOWARD IRRIGATION MANAGEMENT IMPROVEMENT

VERS AMELIORATION DE LA GESTION D'IRRIGATION

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ABSTRACT

Irrigated agriculture is a dominant user of water accounting for 80% of water consumption (Peter, 2004). Since 1965, the irrigated area has almost doubled making irrigated agriculture the main source of food security, higher farm income and increasing welfare of the rural population in Asia (Barker, 2002). Iran achieved remarkable progress in water resources development during the last 50 years through governmental efforts. A number of policy adjustments on water resources had been enacted and Irrigation Management Reforms (IMRs) have been carried out. These attempts have brought benefits including empowerment of local communities, improved quality of maintenance and lower management costs to the government in the last two decades in Iran. However, the local institutional involvement to sustain this progress got insufficient attention. As a result, irrigation management could not reach up to the desired level. Experiences point out to the need of replacing the mechanism, which is solely a government endeavour by a mechanism that ensures participation of the stake holders in the process. There are enormous challenges and complex set of issues facing irrigation management improvement. This paper provides an overview on the challenges, essentials strategies and plans towards Irrigation management improvement in Iran.

Key words: *Irrigation, Management, Improvement, Iran.*

RESUME

L'agriculture Irriguée est un usager principal de l'eau représentant 80% de la consommation d'eau (Peter, 2004). Depuis 1965, la région irriguée a presque doublé, l'agriculture irriguée devanant la source principale de la sécurité alimentaire, du revenu élevé agricole tout en augmentant le bien-être de la population rurale en Asie (Barker, 2002). Durant les 50 dernières années, grâce aux efforts gouvernementaux, l'Iran a réalisé des progrès remarquables dans le développement des ressources en eau. Un certain nombre de rajustements de politique concernant les ressources en eau et les Réformes de la Gestion d'Irrigation (IMRs) ont été

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effectués. Dans les deux dernières décennies, grâce à ces efforts, il était possible de conférer le pouvoir aux communautés locales, d'améliorer la qualité de maintenance, et de réduire le côut de gestion. Cependant, la participation institutionnelle locale pour soutenir ce progrès n'a pas retenu assez d'attention, et la gestion d'irrigation n'a donc pu atteindre le niveau désiré. Il est constaté de remplacer le mécanisme actuel – effort gouvernemental – par un mécanisme qui assure la participation des parties prenantes à ce processus. Ce rapport présente un aperçu général des défis, des stratégies et des plans pour améliorer la gestion d'irrigation en Iran.

Mots clés: *Irrigation, Gestion, Amélioration, Iran.*

1. INTRODUCTION

Since 1965, the irrigated area has almost doubled so that irrigated agriculture is now a main source of food security, higher farm incomes and increasing welfare of the rural population in Asia (Barker, 2002). Rapid development of modern irrigation networks is an obvious example of the governmental effort in such activities in developing countries, including Iran (Sekher, 2001; Heydarian, 2007a; Hu et al. 2007; Magombeyi et al. 2008; Meinzen-Dick et al. 2009; Azizi Khalkheili and Zamani, 2009; Saravanan, 2010). In such efforts, the real stake holders, i.e., the farmers were not involved in the planning process involving location of the developed resource (dams, barrages, etc.), water allocation to different competing sectors, water supply, layout of water conveyance and distribution networks, but also there was a lack of foresight on the probable problems of operation and maintenance of irrigation networks (Mvungi et al. 2005; Heydarian, 2007a; Karahan Uysal and Atış, 2010).

The success of irrigation projects generally depends on the involvement of the concerned communities and when the project plan has been made on the basis of a comprehensive analysis of the technical, economical, social and environmental factors (Martin, 2006). Mexico is one of the pioneering countries to have made reforms in irrigation management, such as ensuring irrigation management stability in the region, reducing the financial burden of the government, transferring responsibility for operation and maintenance to farmers, increasing water use efficiency, improving the performance in Irrigation systems, and reducing the number of government employees in the irrigation management of the areas. While the efforts in Mexico could improve the maintenance quality of facilities, however, the issue of equity in water distribution has been playing truant. The equity problems have remained unchanged causing an inefficiency of irrigation and has decreased productivity (Ochoa and Garces-Restrepo, 2007). Irrigation management reforms, if not implemented well, can lead to further constraints rather than improving irrigation performance (Kendy, et. al. 2003). Regarding support for the process, the most common lessons mentioned in the worldwide efforts were: the need for more financing for IMT; the importance of pilot projects, study tours, sharing of experiences, public awareness campaigns; and efforts to ensure more democratic election of WUA (Garces-Restrepo et al., 2007).

Of the potential to irrigate 4 million hectares (Mha) of land from the available water resources in Iran, the constructions made so far can cater to the irrigation need of less than 2 Mha. The limited budget for construction and the conflicts between social perceptions and the designed schemes are the main constraints in these projects. Moreover, inappropriate management of

irrigation has contributed to environmental problems, operational and maintenance constraints caused the social problems and physical deterioration.

The government of Iran faces the challenges of optimizing allocation and utilization of the limited water resources for food production, and rural livelihoods. However, the lack of farmers' participation in the rural affairs has been one of the reasons for the failure of the irrigation management improvement and development. From 1960s, many practices have been done on participation as one of key element of irrigation improvement, but the paradigm of such an approach could not have been understood well, and caused a failure to achieve the intended result.

Local issues derived from social and structural features do not match with global perception of water resources development and management. Thus imposition of experiences gained from elsewhere has not augured well with the perceptions of the Iranian communities. Thus the progress of the IMT activities in Iran has faced a series of fluctuations without a positive trend, but sometimes with a negative trend. These have sometimes been further aggravated due to aimless changes in the policy (Heydarian et al, 2010).

Thus, it is important to diagnoses the common and general issues from local Irrigation management reforms' exercises and take them into consideration for deciding upon the future strategy. Keeping in view the above points, this paper provides an overview on the challenges, essentials strategies and plans towards Irrigation management improvement in Iran.

2. WATER SECTOR REFORMS IN IRAN

In the past, the farmers could manage their own traditional irrigation systems even at the times of water shortage during the draught years. The rapid development of Irrigation systems in 1960-50 changed the local social structures of water management and disturbed the traditional cooperation and social cohesion suddenly. Governmental organizations and the relevant agencies (GOs) as external players became active in the economic and social life of the villages.

From that time, the government has been constructing dams and Irrigation networks. Further to such planning and development revolutions in water resource management, which emphasized the "top-down" approach, the entire management of irrigation networks became a governmental affair, with very limited involvement of the farmers.

During the past decade Government initiated the exercise of management reforms in the modern irrigation systems. In the early nineteen nineties, the first 5-year plan for the economic, social and cultural development (5YDP) wass initiated. The general trend of the 5YDP was toward privatization. According to 5YDP policy, farmers had to pay the majority of Irrigation networks' construction costs. On those times, strategies of Irrigation Management reforms were not clear and the government was not succeeding in budget sharing policy for irrigation development.

In 1991 the government of Iran sought to provide more independence in the operation and maintenance practices from public sector and decided to establish a new private company

- the Operation and Maintenance (O&M) of Irrigation networks Company (OMIC) - as an autonomous body under the Ministry of Energy (MOE). With the establishment of OMIC, the decision was made to make part of its mandate to transfer of the operation, maintenance and administration of the Irrigation network (INet) to the local communities.

By early 1992, the number of OMICs established was 20 with the aims to perform following tasks:

- Improving the quality of Operation and maintenance of Irrigation networks;
- Increasing water use efficiency;
- Improving the efficiency of water fee collection;
- Irrigation agency structure's reforms and reducing the number of employees;
- Improving the water users' structure, in order to promoting the Irrigation management systematically;
- Enhancing the collaboration and communication between water users and related public sectors;
- Developing the participatory Irrigation management.

At the beginning, the ownership of OMICs should be shared between water users (51%) and governmental organizations (49%). In reality, this kind of shared stocks was not liked by the farmers due to deteriorated Irrigation network, which they were reluctant to tackle. Actually, 100% of ownership was shared between governmental organizations (GOs).

Although in most of the INet, the quality of O&M and communications improved, but the government body became bigger and water users' management structures became weaker. In addition, most of the initial objectives were forgotten.

Due to the reasons mentioned above, government sought to provide new strategy. In 2009, the government decided to transfer the ownership of those OMICs to the private sectors entirely. During 2010, most of the OMICs were transferred to the private sectors.

Additionally, in the early 2011 a set of laws on the National 5-year development plan (5YDP) were approved by Congress but not yet officially implemented, as the required bylaws have not been prepared to remove constitutional discrepancies regarding water property definition. This new legal framework could allow a more decentralized water management in the provinces. However, currently the constitution only allows a central government agency to perform this task.

With regard to Articles 127 and 128 from fifth 5YDP (2011 to 2016), imports and exports of water became legal and local water markets got legal permission to sell water allocated to them.

Furthermore, with a view to improving water productivities and water use efficiency, in Article 127, developing new structure for local water management were recommended and private sectors could have permission to sell the own saved water (due to efficient consumption) in the local markets.

3. THE CHALLENGES AND NEED STRATEGIC FRAMEWORK

Now a day, there are incentives to transfer the responsibilities of development of Irrigation systems, but there are no sufficient incentives in private sectors for investing in the Irrigation network construction and O&M. The currently unclear bylaws for financers and for shearing ownership and management of Irrigation systems, need public sector reorientation; otherwise the unclear legal framework for such reforms will remain as the main constraints towards improvement.

Furthermore, inadequate institutional bodies to perform such reforms, insufficient capabilities in the private sectors to handle the construction, operation and maintenance of Irrigation systems and inadequate capacities in local communities' structures are impediments in effecting reforms. Hence, according to the existing strategies, private sectors and water users couldn't initiate and play real roles on construction, operation and maintenance as well.

Looking for solution to the above-mentioned constraints, it is felt that government should first attempt to make a comprehensive and adoptable policy to empower the private sector and the bodies of the farmers' elected representatives in consultation with them to develop a workable mechanism to develop and efficiently manage the country's water resources.

Furthermore, the government should make the WUAs to be more responsible (of course, with adequate authority) for providing services related to water distribution and a wider range of agricultural services to their members. The government is to suitably encourage the private sector to provide for some of the basic support services with local communities' budget sharing. In addition, according to government expectation, construction of new Irrigation networks must be done through private sectors and water users' budget sharing.

An analysis of the current situation in this regards reveals that the earlier projections for water resources development and use were either too optimistic or poorly conceived, and often the private sector and water users did not or would not react to fit in. For the time being, there are two major constraints as follows:

(1) Lack of political support for holistic Irrigation management improvement plan.

(2) Lack of legal flexibilities.

It is clear that adaptation of the new strategies with stakeholders' perceptions is the key element of success.

According to early research (Safdary and Heydarian, 2009), the key elements for improving Irrigation management are social and economic factors (Fig. 1).

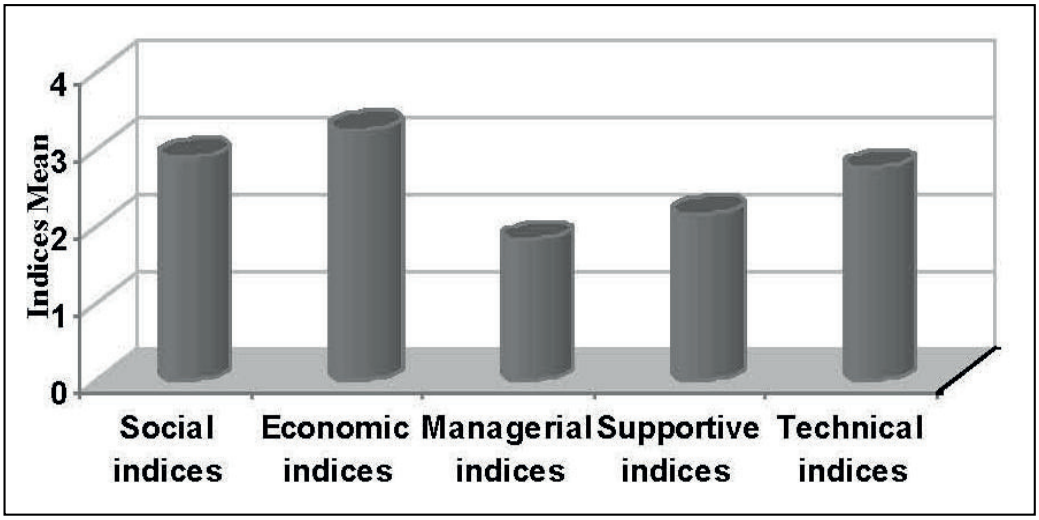

Figure 1: Mean values of the Key factors in each of the groups

This study indicated that financial power of private sector and water users are the most important factors for their cooperating with the public sector.

Data related to important factor for transferring the management to the water user in Iran, indicates the key factors regarding managers' and experts' perceptions (Table 1: Safdary and Heydarian, 2009).

Table 1. Important factors regarding managers' and experts' perceptions

Factors*	(%)
WUA should be able to make profits	88.50
Need to reorient Irrigation agency	67.75
Need clarity on roles, responsibilities, authority of the stakeholders	56.75
Multi-stakeholder involvement important	47.25

* There are some more factors, but were not important in this paper.

In addition to the need to reorient Irrigation agency and goals of the private sectors and WUAs to make profit in this field, one of the most common lessons stated by the informants was that more clarity and details are needed on the actual roles, responsibilities and authority of WUA, the irrigation agency and local governments after transfer such management (Garces-Restrepo et al. ,2007; Heydarian, 2007).

Despite the common relevance of similar lessons across continents and the local results (pilot scale), there is a consensus on improvement of indicators such as; quality of operation and maintenance of Irrigation networks; after transferring of irrigation management to the water users. Distinctive and common relevance of similar lessons could help to develop

strategic framework for better use of national and global lessons learned and of the various recommendations for Irrigation management improvement.

In the summery, it could be say that there were a lot of efforts on framing legal background using the valuable lessons learned on water resources development and management, but the final strategies haven't been approved yet. Most of the approved Articles in congress of Iran from third to fifth 5YDP are waiting for the required bylaws and strategy framework regarding agricultural water use and management.

4. CONCLUSIONS

In the agricultural water sector, the importance of Irrigation management improvement is now widely recognized by governments and other stakeholders. As Irrigation management progresses, issues continue to emerge and models and strategic frameworks in diverse local environments continue to develop.

Execution of Irrigation management improvement in national level needs holistic plan for enhancing the institutional capacities (including: GOs, NGOs, private sectors and local communities) at all levels and local managerial empowerments. In this regards we need some more investments.

Due to insufficient professional experts and lack of proper methodology adaptable to different social-physical characteristics of Irrigation networks, to conduct any plan of Irrigation management improvement needs a holistic program with conducting the process-oriented improvement plan in selected pilot experiments.

It is clear that there are enormous challenges and complex set of issues facing irrigation management improvement. The forum emphasizes the need for increased investments from both private sectors and local communities not only for irrigation development, but also for reforming the management of existing irrigation.

In general, the impact of the irrigation management improvement is important on the public sectors but not on the private sector. It means the solution of such constraints lies in looking for more local sources by expanding livelihoods for more benefit of private sectors' investment and the way to make WUAs profit earning institutions.

In addition, empowering the water users for better system maintenance and service lead to reduction of cost of irrigation to the government and private sector, then improves productivity of agriculture and water use. In this case, private sector investments could be considered in Irrigation management improvement.

Monitoring and Evaluation with emphasis on private sector and water users' involvement is also important.

According to the findings, in addition to the necessity of strict attention to the mentioned constraints of irrigation management improvement, "Holistic program for irrigation management improvement through "High-level political commitment" is suggested.

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