ENCOURAGING FARMERS' PARTICIPATION IN PUBLIC IRRIGATION MANAGEMENT IN KOREA

ENCOURAGER LA PARTICIPATION DES AGRICULTEURS DANS GESTION DES SYSTEMES D'IRRIGATION PUBLIQUE EN COREE

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ABSTRACT

The irrigation management system has been revolutionarily changed by the law in 2000 from the participatory irrigation management (PIM) by the Farm Land Improvement Associations (FLIAs) formed by the farmers to the public irrigation management (naming to PubIM) by the Korea Rural Community Corporation (KRC) run by the government.

There have been positive and negative consequences since the law came in force ten years ago. The positive effects include the better management by the high-class professionals, the mitigation of drought damages, the reduction of water conflicts and O&M personnels, due to integrated management at the national level. The negative effects are; First, there have been blames from domestic other sectors and international organizations because of the exemption of water fees which is against beneficiary-burden rule and fair trade competition and so the existing rights to agricultural water has been shrunk. Second, farmers' ownership has been weakened because of the water usage increase and their dependence on government subsidy. Third, participation and representative have been limited, making it difficult for farmers to participate in decision-making. Unlike the days of FLIA management until 1999, farmers cannot participate in decision making for irrigation management in KRC areas, nor can they elect union and regional office leaders. Fourth, there has been a heavy burden on the national budget due to decreases in labor supply and water fees from famers. Fifth, ground work for PIM collapsed as farmers associations began to disband in local villages, signifying that farmers have no duties regarding cost, labor, and decision making in irrigation management.

Therefore, it is important to reduce the negative effects mentioned above and it is time to introduce a PIM program acceptable to the Korean farmers to save water and participate in decision making, supply labor, and share costs. The following recommendations are suggested without returning the ownership of irrigation facilities back to FLIAs. They are; First, WUGs

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should be reorganized to revive the concept of PIM from the discarded water management committee to automonosly reinforced new type of WUGs. The water users committees should be formed by election in the new type of WUGs and given stronger roles in making decisions. Farmers' demands should be reflected in planning water supply and repairing irrigation facilities through the water users committee. Meanwhile the new type of WUGs should have a responsibility to supply labor for weeding and dredging in the tirtiary canals under suitable incentives. Second, KRC can collect water fees from the farmers by law. However, KRC has exempted water fees from small-scale farmers to reduce their finanical burden. But, the exemption of water fee to large-scale agricultural companies is not necessary. Third, a key point of PIM is to make water users organize WUGs, supply labor, share cost burdens and participate in decision making. In order to adopt PIM, it is also important to expand the self-governing districts with such financial support.

Keywords: *O&M cost, PIM, Public Irrigation Management, Self-governing, Water Saving, Water Users Group, Water Fee.*

RESUME

Le système de gestion d'irrigation a été changé de manière révolutionnaire par la loi en 2000. Le changement a été fait à la gestion participative des systèmes d'irrigation (PIM), formée par les associations de l'amélioration des terres arables (FLIA), celles-ci gérées par les agriculteurs. Et donc le PIM a été remplacée par la formation de la gestion de l'irrigation publique (appelé PubIM) par la Société coréenne de la communauté rurale (KRC), celle-ci gérée par le gouvernement.

Il y a eu des conséquences positives et négatives, depuis que cette loi est entrée en vigueur il y a dix ans. Les effets positifs incluent l'amélioration de la gestion par les professionnels de premier rang, l'atténuation des dommages causés par la sécheresse, la réduction des conflits de l'eau et de personnel O & M, grâce à une gestion intégrée au niveau national. Les effets négatifs sont les suivants : Premièrement, il y a eu des reproches de la part d'autres secteurs domestiques et les organisations internationales à cause de l'exemption des frais d'eau qui va à l'encontre de la règle « bénéficiaire-charge » et une concurrence du commerce équitable. Conséquemment, les droits actuels à l'eau agricole ont diminué. Deuxièmement, la propriété des agriculteurs a été affaiblie en raison de l'augmentation de la consommation d'eau et de la dépendance des agriculteurs sur des subventions gouvernementales. Troisièmement, la participation et la représentation ont été limitées, ce qui rend difficile pour les agriculteurs de participer à la prise de décision. Contrairement à l'époque de la gestion de FLIA, qui a duré jusqu'à 1999, actuellement les agriculteurs ne peuvent ni participer à la prise de décision pour la gestion de l'irrigation dans les zones KRC, ni élire les dirigeants syndicaux et régionaux. Quatrièmement, le budget national a eu une grande charge en raison de diminutions de main d'œuvre et des frais de l'eau de la part des agriculteurs. Cinquièmement, la base de PIM s'est effondrée parce que les associations d'agriculteurs dans les villages régionaux ont commencé à dissoudre, ce qui signifie que les agriculteurs n'ont pas de devoirs en matière de coût, de main d'œuvre et de la prise de décision en gestion de l'irrigation.

Donc, il est important de réduire les effets négatifs mentionnés ci-dessus et il est temps d'introduire un programme PIM acceptable aux agriculteurs coréens pour économiser l'eau

et pour participer à la prise de décision, l'approvisionnement de main d'œuvre, et la partage des coûts. Les recommandations suivantes sont proposées sans rendre la propriété des installations d'irrigation aux FLIA. Ils sont les suivantes : D'abord, les WUG devraient être réorganisés pour relancer le concept de PIM du comité de gestion de l'eau jetée à renforcer de manière autonome, les nouveaux types de WUG. Les comités des consommateurs d'eau doivent être élus dans le nouveau type de WUG et ils doivent avoir des fonctions importantes dans la prise de décisions. Les demandes des agriculteurs doivent être reflétées dans la planification de l'approvisionnement d'eau et la réparation des installations d'irrigation par le comité des consommateurs d'eau. Entre temps, le nouveau type de WUG devra avoir la responsabilité de l'approvisionnement de main d'œuvre pour le désherbage et le dragage des canaux tertiaire sous incitations appropriées. Deuxièmement, KRC peut percevoir des honoraires de l'eau auprès des agriculteurs par la loi. Toutefois, KRC a exempté les frais d'eau des petits agriculteurs à fin de réduire leur fardeau financier. Mais, l'exemption de ces frais aux grandes entreprises agricoles n'est pas nécessaire. Troisièmement, un aspect capital du PIM est qu'il permet les consommateurs d'eau à organiser les WUG, à fournir le main d'œuvre, à partager les coûts et à participer à la prise de décision. Afin d'adopter le PIM, il est également important d'étendre les districts autonomes avec un appui financier.

Mots clés: *Coûts d'exploitation et de maintenance, PIM, gestion des systèmes de l'irrigation publique, autonome, économiser l'eau, groupe de consommateurs d'eau, frais d'eau*

1. INTRODUCTION

The patterns of farmers participation in irrigation management are many depending on the condition and status of country. But, the basic principle of participatory irrigation management (PIM) is "Agricultural water is most effectively managed by those who use the water." PIM involves participation of farmers at all levels and aspects of management, including planning, design, construction, operation & management (O&M), financing, decision-making, monitoring and providing feedback. PIM is practically recommended and executed in the developing countries to promote the efficiency and sustainability of irrigation management.

Irrigation development projects in developing countries were implemented and led by the Food and Agriculture Organization(FAO) and World Bank as international aids during 1970s and 1980s, but the projects were not successful in managing irrigation facilities due to lack of participation from the actual users of the water. Accordingly, there was growing interest in PIM, which had to be implemented later when the irrigation development projects in developing countries supported by FAO and World Bank were executed. Since the International Network in Participatory Irrigation Management (INPIM) was established in 1995, it has contributed to PIM activities in several countries by holding international meetings, regular symposiums and information exchanges on technology.

The concept of PIM is opposite of public irrigation management, in which the government or public corporation is responsible for irrigation management. In this paper, we would like to suggest an appropriate PIM in Korea by encouraging farmers to participate in irrigation management in order to reduce the amount of water usage and operating costs under public system.

2. CONCEPT OF PIM

In the principle of PIM, farmers (stakeholders) participate in all aspects of planning, implementing (design, construction) and O&M of irrigation projects. In particular, a water users group (WUG) has to be formed and promoted to enhance farmers' participation in decision making, providing labor, sharing costs, monitoring, evaluation, and providing feedback for O&M. Such self-governing organizations will expand the labor pool and help reduce various costs. The ultimate goal of PIM is to reduce agricultural water use and national financial burden, while increasing the levels of efficiency and interest in irrigation projects. Elinor Ostrom states in his book *Governing the Commons* (1990) that self-governing by local residents can be more efficient than public management.

Table 1 Concept of farmers' participation in all aspects and levels

All aspects/ All Levels	**Plan & Design**	**Construction**	**O & M**
			(Decision making, Labor, Pricing, Monitoring, Evaluation, Feedback)
Primimary	(Water users') Participatory Irrigation Management		
Secondary			
Tertiary			

Most outstanding PIMs are mostly executed in the developing countries like Thailand, Vietnam, Indonesia, Philippines, and Sri Lanka. With the collapse of Soviet Union, irrigation management transfer (IMT) programs were introduced in Central Asia and transferred ownership and authority of irrigation facilities that had been managed by the government to the farmers (water users). The IMT program is one of the means to achieve PIM. Meanwhile, PIM has been successfully carried out by the Land Improvement Districts (LIDs) in Japan in terms of farmers participation and water fee payment.

3. STATUS OF PIM IN KOREA

Since 2000, PIM in Korea has been divided into two phases: water management by Farm Land Improvement Associations (FLIAs) until 1999, and by the Korea Rural Community Corporation (KRC) after 2000. There was a historically important incident in 2000 that brought about public irrigation management in Korea.

3.1 Participatory irrigation management until 1999

Modern irrigation management started in Korea with the establishment of the Water Users Union in 1908. Before 1908, old traditional irrigation management was carried out by the government. Later, FLIAs were formed and self-governed under the system of participatory irrigation management until KRC was established in 2000.

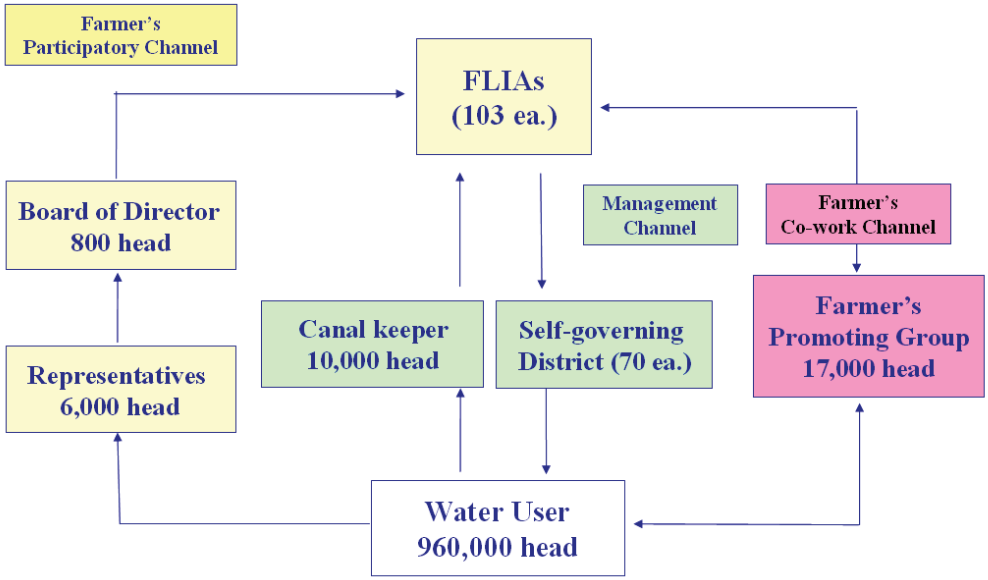

Fig 1. Participatory Irrigation Management System in Korea until 1999

FLIAs members had paid about US$300/ha (250kg of rice) for water fee until 1987, and Farmer's Promoting Group (Heung Nong Gye in Korean) had contributed to cleaning waterweeds and dredging ditches. Later, the water fee was significantly reduced to US$60/ha (50kg of rice) according to government policy. At the time, FLIAs members participated in making decisions on the irrigation management as representatives of the board. After 1989, FLIAs members elected their leaders by themselves. PIM had been operated comparatively well by the water users group until 1999.

3.2 Public irrigation management after 2000

KRC merged with FLIAs, Federation of FLIA (FFLIA) and Rural Development Corporation (RDC) in 2000 to enhance operational efficiency of the related sectors and to strengthen services to the farmers. Farmers were exempted from paying water fees and O&M costs (300billion won/year, US$300 million), which were covered by government subsidy (50%) and KRC subsidy (50%). The water management committee (Farmers Promoting Group until 1999) comprised of 15,000 villages to promote farmers' participation in KRC, and KRC formed a board comprising of 1,139 representatives appointed by KRC's head and regional offices from the memebr of the water management committees.

KRC tries to support a policy for self-governing of 15% of irrigation areas to promote farmers' participation and to reduce costs. The self-governing policy involves KRC providing operation costs to the farmers for self-governing of the irrigation areas, and farmers offering their labor for cleaning waterweeds and dredging ditches. Farmers' contribution to the maintenance of canals is recently rapidly decreasing as shown in the Table 2.

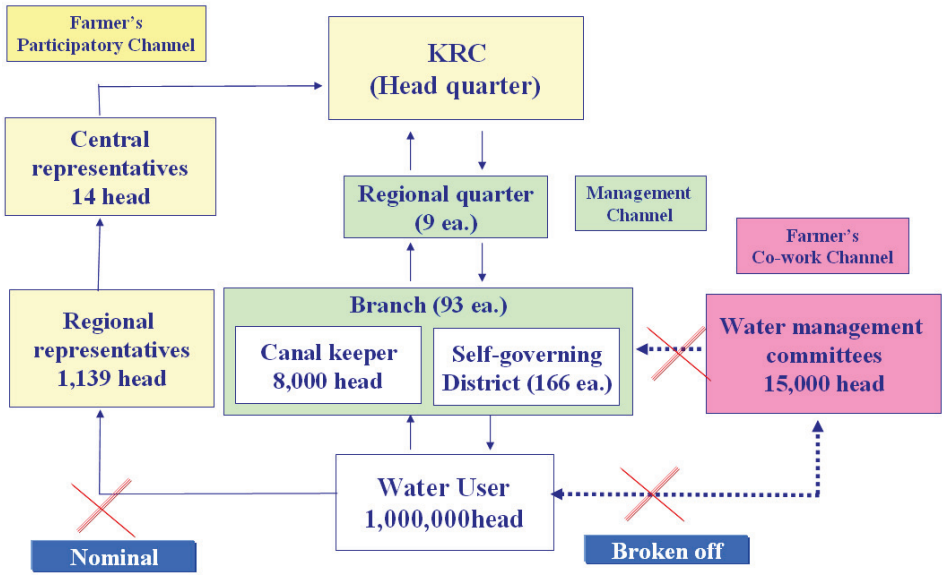

Fig 2. Public Irrigation Management System in Korea after 2000

Table 2. Percentage of farmers participating in canal maintenance

Table	~1990s*	2003	2005	2006	2007	2008	2009
Dredging (%)	30~	22	28	29	21	15	7
Weeding (%)	~80	24	24	31	21	13	10

* No data available and from the hearing survey

3.3 Current problems in the public irrigation management

Although irrigation management by FLIAs formed by farmers could be regarded as kind of PIM, there have been positive and negative consequences after the transition to public management. Positive effects include mitigation of drought damages, reduction of water conflicts and O&M personnels, thanks to integrated management at the national level.

There have also been negative effects. First, there have been attacks from international organizations such as OECD and WTO because of the exemption of water fees, against beneficiary-burden rule, and unfair trade competition. Domestically, existing rights to agricultural water has been weakened. Second, farmers' ownership has been weakened, increasing water usage and their dependence on government subsidy. Third, participation and representative have been limited, making it difficult for farmers to participate. Unlike the days of FLIA management until 1999, farmers cannot participate in decision making for irrigation management in KRC areas, nor can they elect union and regional office leaders. Fourth, there has been a heavy burden on the national budget due to decreases in labor supply and water fees from famers. Fifth, ground work for PIM collapsed as farmers associations began to disband in local villages, signifying that farmers have no duties regarding cost, labor, and decision making in irrigation management. Therefore, it is important to make improvements

in irrigation management and introduce a PIM program acceptable to Korean farmers so that they can save water and participate in decision making, supply labor, and share costs.

Table 3 Annual status of O&M in the public irrigation management

Item	2000	2001	2005	2008
Cost of O&M (in million US$)	214	234.3	273.2	312.1
No. of O&M employees	3,828	3,556	3,098	2,901
Self-governing district area (ha)	-	5,782	31,496	13,845

4. ACTIVATING POLICIES ENCOURAGING THE FARMERS PARTICIPATION

4.1 Farmers participation under the public irrigation management system

After the transition to public management in accordance with political and historical issues, public irrigation management system has been stabilizing for 10 years. However, the problems cannot be solved by simply deploying means such as IMT, which transfers ownership and authority of irrigation facilities to WUGs. Therefore, it is necessary to find ways to reduce water usage under farmers' participation and public system without returning the ownership of irrigation facilities back to FLIAs. Until 1999, the pattern of irrigation management had belonged to the PIM type-1 which the WUA had kept the ownership of irrigation facilities. After 2000, the pattern of irrigation management has belonged to the PubIM which is out of boundary of PIM. The public irrigation management has been sometimes criticised as a system against the international standard of PIM. In the study, the pattern of PIM type-2 in future is proposed by encouraging the farmers participation for the decision-making, laboring, self-governing, and cost-sharing as shown in the Figure 3.

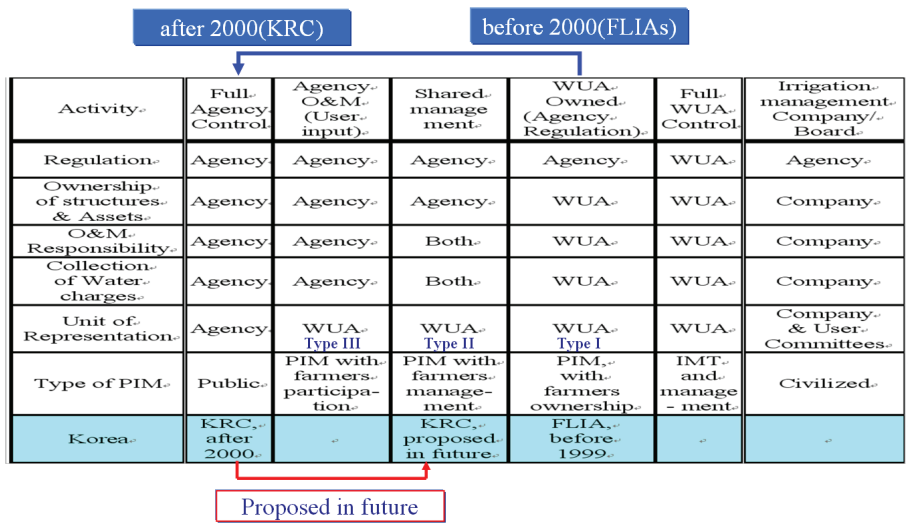

Fig 3. Transition of appropriate types of PIM in Korea

International standard

All aspects / All levels	Planning Design	Con-struction	O&M		
			Decision, Operation, Monitoring, Feedback	Labor	Financing (cost)
Primary	◎	◎	◎	◎	◎
Secondary					
Tertiary					

◎-Most participatory ○-Partial △-Little ×-None

Before 2000 in KOREA

All aspects / All levels		Planning Design	Con-struction	O&M		
				Decision, Operation Monitoring, Feedback	Labor	Financing (cost)
Primary Secondary Tertiary	Befor 1987yr	△	△	△	○	○
	After 1988yr	△	△	○	△	△

After 2000 in KOREA

All aspects / All levels	Planning Design	Con-struction	O&M		
			Decision, Operation Monitoring, Feedback	Labor	Financing (cost)
Primary					
Secondary	△	△	○⇒△	△⇒×	△⇒×
Tertiary					

Fig 4. PIM standard model and status of PIM in Korea

4.2 Policies encouraging the farmers participation

4.2.1 Reorganizing WUGs

It is very important for the farmers to participate in decision making. WUGs should be reorganized to revive the concept of PIM from the discarded water management committee to automonosly reinforced new water management committee. A water users committees should be formed by the election in the new type of WUGs and given stronger roles in making decisions. Farmers' demands should be reflected in planning water supply and repairing irrigation facilities through the water users committee. Meanwhile the new type of WUGs should have a responsibility to supply labor for weeding and dredging in the tirtiary canals under the suitable incentives. Authorization of such power by rights and duties can actively encourage farmers to participate in all aspects.

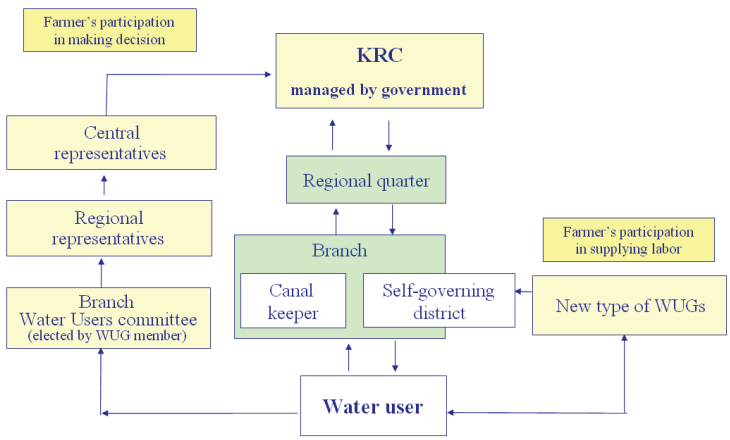

Fig 5. Proposed Participatory Irrigation Management System in Korea

4.2.2 Subsidy for motivation of labor participation

It is practically difficult to expect farmers to participate in irrigation management as much as in the days of FLIAs. Therefore, the government subsidy programs for farmers have been implemented to encourage farmers' participation in irrigation management. Making efforts in the O&M of irrigation and drainage canals is one of the conditions for receiving the subsidy of direct payment from the government. If farmers successfully achieve the conditions such as O&M of soil conservation, boundary in paddy, canaling, and weeding in canal, they can receive the direct payment for 970US$ per hectre in 2008. If farmers violate the conditions, they can receive none or half of direct payment depending on their achievement. The direct payment were paid to the farmers for 800millionUS$ in total in 2009 and it was found by the self-investigation that lots of them were inappropriately executed in terms of the given conditions. Therefore, it is necessary to reinforce the execution of the conditions of direct payment and also to provide additional subside to motivate famers proper participations under the current policy.

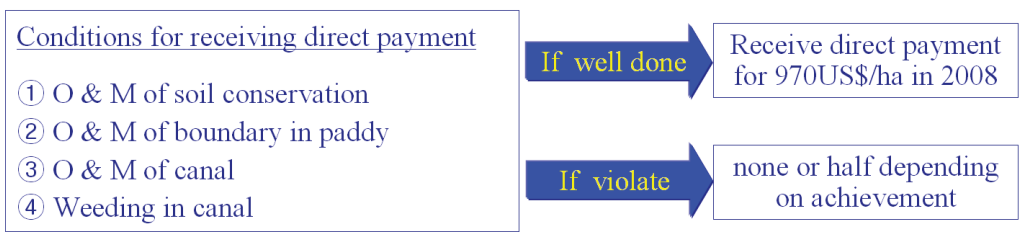

Fig 6. Conditions for receiving direct payment program in Korea none or half depending on achievement

4.2.3 Establishing the standard for sharing cost

According to the article 14 of the KRC law, KRC can collect water fees from the farmers after the transition in 2000. However, KRC has exempted water fees from small-scale farmers to reduce their finanical burden. But, the exemption of water fee to large-scale agricultural companies is not necessary. Accordingly, there is a need to introduce specific legislation to levy water fees and to examine the conditions and methods for collecting the fees. According to a survey conducted by KRC in 2007, 39% of farmers were willing to pay water fees of 60,000won (US$60) per hectare, which is about 10% of the current cost level. Therefore the conditions of levying the water fee should reflect the ability of famers' financial burden and the circumstances in local farming communities.

4.2.4 Expansion of self-governing district

As of 2009, there are 166 self-governing districts (13,696 hectare) with an average area of 83 hectare, which can be regarded as a small-scale area. The supporting fund for operation cost in the delf-governing district is 37,000won (US$37) per hectare, being relevant to only 5% of operation cost in the KRC areas. Even though there are needs for self-governing districts, the area of self-governing district reached less than 20% of targeted area in 2009 because of lack of interest from famers and KRC employees. A key point of PIM is to make water users organize WUGs and make water users supply labor, share cost burdens and

participate in decision making. In order to adopt PIM, it is also important to expand the self-governing management with such financial support. The following recommendations are suggested to expand the self-governing districts. First, retired KRC employees could be hired as responsible managers in self governing areas. Second, self-governing areas would be limited to 50~100hectare, and more on-farm canal and land should be assigned as self-governing areas than headwork facilities (reservoirs and pumping stations). Third, there should be manuals, promotion, and education on self-governing management. Fourth, there should be rewards based on the performance of self-governing management.

4.2.5 Expanding the roles of reorganized WUGs

The basic law of water management is now under legislation in the national assembly. The principle of law is based on the integrated water management of watershed level. National and regional committees of water management will be organized by the law in the near future. In the respect, the member of new type of WUGs should participate in those committees as stakeholders of irrigation water user. And also new type of WUGs initiate not only the management of irrigation water but also the management of irrigation water quality and non-point source pollution in the watersheds. Those new activities of WUGs should be compensated as an incentive.

5. CONCLUSIONS

There was a transition from self-governing management to public management in Korea when KRC merged with FLIAs, which had managed 60% of irrigation areas. While making a number of achievements, some problems occurred in the public irrigation management, such as lack of farmers' participation, increased amount of water usage, and elevating operating costs. Accordingly, this paper suggested ways to increase efficiency in water usage and reduce operating costs under the public management through the motive power of farmers participation. First, WUGs replaced the discarded water management committee should be reorganized to revive the concept of PIM in the form of autonomosly reinforced one and the roles and functions of WUGs and the board of representatives should be strengthened. The functions of new type of WUGs should be expanded to the participation in regional committees of water management as a stakeholder of irrigation water user and also the management of irrigation water quality and non-point source pollution in the watersheds. Those WUGs activities should be compensated as an incentive. Second, subsidies (direct payments) should be provided to faithful farmers as an incentive for their labor supply. Third, water fees should be charged to large scale agriculture companies. Fourth, professional managers could be hired, management targets would be adjusted, and incentives should be offered. These efforts are expected to improve the irrigation management by encouraging farmers' participation under public system.

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