

**DAC Network on Poverty Reduction Task Team
on Infrastructure for Poverty Reduction**

**Issues and Recommendations
for the Irrigation Sector Support**

Final Report

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Task Team on Infrastructure for Poverty Reduction**

Executive Summary

The second workshop of DAC Network on Poverty Reduction Task Team on Infrastructure for Poverty Reduction was held in Berlin during October 27-29, 2004. During the workshop, strong poverty reduction impact of irrigation services was recognized. Irrigation's main benefits, both direct and indirect, to marginal farmers and landless laborers come from improved employment opportunities, higher wages, and low food prices. Irrigation and drainage systems have proven to be effective in increasing food production, reducing poverty and enhancing regional economic development – essential for achieving MDGs of poverty and hunger reduction, and thus contributing to sustainable growth.

Recognizing needs of new investments to develop water resources, the workshop participants agreed that the priority should be given to making better use of, and upgrading of existing facilities with agreed priorities and pre-conditions for future irrigation sector support. Active farmer participation in the irrigation sector can deliver sustainable services in an accountable, transparent, effective and environmentally responsible manner. This needs to be supported through policy and institutional reforms to introduce sound regulations and effective institutions/agencies at all levels. It was also agreed that the irrigation support needs to be discussed in the context of the agriculture support because the majority of people in developing countries depend on agriculture and because irrigation is an effective tool to increase agricultural production to support the growing population. The irrigation sector also needs to focus on improved water productivity as competing water demand increases. Integrated water resource management to address scarce water resources is required with a proper water policy.

The main actions and considerations in formulating irrigation sector support agreed are listed as below:

Decentralization

- ✓ Participatory Irrigation Management (PIM) is to be further promoted for improved irrigation service delivery.
- ✓ Consideration will be given to the facility ownership.
- ✓ Effective policy and government's strong commitment to support decentralization needs to be ensured.
- ✓ Sector reform needs to define new role of government and irrigation agencies.

Sustainability – Sustainable Service Delivery to the Poor

- ✓ Policy on facility rehabilitation is to be established.
- ✓ Irrigation projects will address financial sustainability.
- ✓ Transparent and explicit subsidy system must replace implicit ones.

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- ✓ Establishment of a rehabilitation/renovation fund will be supported.
- ✓ Water charging requires clear objectives.
- ✓ Empowerment and provision of incentives for farmers are crucial to sustain irrigation systems.
- ✓ Affordable irrigation water supply technologies need to be promoted where they fit.
- ✓ Environmentally sustainable irrigation systems and improved irrigation water efficiency are critical.
- ✓ Holistic approach and better collaboration of all stakeholders will be ensured for effective irrigation services.

Governance

- ✓ Institutional/policy reforms to introduce accountability and stronger farmer participation will be supported.
- ✓ Capacity is needed at every level for improved governance.
- ✓ As part of policy reform, the land tenure for farmers will be addressed.
- ✓ Good coordination within the government is the key to maximize synergy.

Other Main Themes

- ✓ Coordinated water resource development and better management are required for the sustainable irrigation sector.
- ✓ New investments should be at least economic, social and environmental costs.

1. Background and Challenges in the Irrigation Sector

1.1 Introduction and Issues in Infrastructure Sector

The need for infrastructure service provision to reduce poverty and increase economic growth has received recognition in various contexts. However, developing countries face a serious shortage of funds for infrastructure development. Private sector interest in infrastructure investments in developing countries has declined from a peak of \$128 billion in 1997 to \$58 billion in 2002. With regard to the water infrastructure, private finance has accounted for less than 10% of total investments. There is a clear consensus among the donor community that improving infrastructure in developing countries is a key element in reducing poverty and reaching the Millennium Development Goals (MDGs). The right policy and institutional capacity are crucial for ensuring sustainable infrastructure investment.

1.2 Main Messages from the Second Workshop for InfraPoor

During the Second Workshop of the Infrastructure for Poverty Reduction Task Team in Berlin, strong poverty reduction impact of irrigation services was recognized. Irrigation and drainage systems have proven to be effective in increasing food production, reducing poverty and enhancing regional development – essential for achieving MDGs of poverty and hunger reduction, and thus contributing to sustainable growth. Recognizing needs of new investments, the participants agreed that the priority should be given to making better use of, and upgrading of existing facilities with agreed priorities and pre-conditions for future irrigation sector support. Active private participation in the irrigation sector can deliver sustainable services in an accountable, transparent, effective and environmentally responsible manner. This can be supported through policy and institutional reforms to introduce sound regulations and effective institutions/agencies at all levels. It was also acknowledged that the irrigation support needs to be discussed in the context of the agricultural assistance because the majority of people in developing countries depend on agriculture and because irrigation is an effective tool to increase agricultural production to support the growing population. Water productivity has to be improved through irrigation support as competing water demand increases. Therefore, integrated water resource management to address scarce water resources is required with a proper water policy.

1.3 Challenges of Irrigation Sector and Its Role in Achieving MDGs, Poverty Reduction and Economic Growth

The majority of people living in developing countries depend on agriculture for their main source of income. Irrigation and drainage systems can contribute to achieve MDGs through increased food production and enhanced economic development. Irrigation projects create a large number of agricultural jobs, of which 40% is held by women, and even out the seasonal demand for labor. Providing a reliable supply of water through irrigation systems make it possible for the vulnerable people to move beyond subsistence farming. A study show a

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striking impact on poverty¹: In unirrigated districts 69% of people are poor, while in irrigated districts poverty drops to 26%. Despite such evidence, irrigation investments in developing countries have fallen, while the irrigated area has been lost due to poor management.

Many developed countries have invested in water infrastructure to provide protection against climatic variability over years, while many developing countries have as little as 1/100th as much hydraulic infrastructure². Investment in irrigation is effective for water storage, crucial to protect against external shocks such as floods and droughts. Increasing investments and more effective use of such investments are crucial. There is likely to be a minimum public investment in surface water irrigation systems, mainly due to: (i) high irrigation system development cost; (ii) low agricultural commodity prices, reducing rate of returns on irrigation investments; (iii) significant environmental cost and competing demand for water; and (iv) fiscal burden of recurring costs³. With the international consensus around the importance of increased water productivity, as evident during the second workshop, a new strategy to design and management of irrigation systems in association with institutional and policy reforms is emerging. Due to critics over the economic rate of return on large-scale irrigation investments, new low cost technologies need to be introduced.

Traditional central government dominated institutional settings and its functions with top-down approach have failed to sustain irrigation services. In addition, poor performance of systems managed by irrigation agencies was evident. Insufficient cost recovery and lack of direct linkages between revenue and expenditure, and between the client and the service agency are the root of the problems of inadequate maintenance of the systems resulting lower performance together with the lack of ownership by the farmers. In addition, inefficient irrigation management augments the problems which results in: (i) degraded environment and ecosystem; (ii) uneven water allocation; and (iii) inadequate maintenance, and lack of rehabilitation/modernization of existing irrigation infrastructure and vicious circle of further degradation of ecosystem and irrigation facilities and water allocation.

Improved management of water resources to increase water productivity is essential. Freshwater needs and competing water demand are growing. Therefore water productivity has to be raised as the irrigation water is subservient to other competing water uses including urban and industrial users. Agricultural production will need to increase to support the growing population. Future food supply has to depend on increased productivity of the current irrigated farming land through improved management reform and investments for water resource development and in modernization and rehabilitation of existing infrastructure. Emphasis is also needed on greater productivity from existing investments with strong attention on improved efficiency and conservation. A balance between selective investments for water development and greater productivity from existing investments, with

¹ World Bank: India Irrigation Sector Review, 1991.

² World Bank: Water – A Priority for Responsible Growth and Poverty Reduction – An Agenda for Investment and Policy Change, 2003.

³ World Bank: Water – A Priority for Responsible Growth and Poverty Reduction – An Agenda for Investment and Policy Change, 2003.

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attention to improved efficiency and conservation, was one of the key conclusions for future support. Needs for the international community to identify and capitalize on good practice was also recognized.

Irrigation often comes with a high environmental price tag – degraded ecosystems in terms of polluting water, reducing available water, and altering water flow patterns. Irrigation tends to salinize land and water, and causes water logging. It is reported that salinization affects 30% of irrigated land and is reducing the existing irrigated area by 2% a year. Over-exploitation of groundwater resources in arid and semi-arid countries is documented. Using wastewater or low-quality water for irrigation is an option to reduce demand for freshwater. The importance of water policy which needs to be implemented in an integrated manner with other sectors was also recognized during the workshop. Irrigation planners need to learn cost effective ways to lessen irrigation impacts on biodiversity for environmental sustainability.

This report will summarize consensus reached during the second workshop of DAC Network on Poverty Reduction Task Team on Infrastructure and try to give guidance on how to resolve some of the key problems for effective irrigation infrastructure support.

2. Decentralization

The main objective of decentralized irrigation management is to achieve more economic and equitable use of irrigation water and to improve the productivity and sustainability of irrigation programs for sustainable agricultural production. Decentralization requires changes in farmers' and related institutions' behavior and responsibility, and more participation by the water users, namely farmers. Private sector participation in surface irrigation canal systems has been introduced in terms of Participatory Irrigation Management (PIM) where farmer organizations take over operation and maintenance (O&M) and Irrigation Management Transfer (IMT) where responsibility/authority is reassigned from government entities to non-governmental organizations (NGOs). The PIM is defined as farmers' participation in irrigation and drainage systems, such as planning, operation, management and investment in main or secondary, and at farm-level irrigation canals. In contrast, IMT may involve transfer of all or partial management responsibilities of subsystem levels or for entire systems.

2.1 Consensus for Preparing the Infrapoor Guiding Principles

Participatory Irrigation Management (PIM) will be further promoted for improved irrigation service delivery: Participation of farmers was acknowledged essential to the sustainable and effective transfer of management from government to users. PIM as a management strategy to meet development objectives lies in the balanced pursuit of participation and user management control. Transfer of management to users is the general approach for PIM with

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government's ownership of the facility. The state normally manages the headworks and main canals, while legally recognized water user associations employ their own technical staff for the management of the secondary and tertiary levels of the canal networks. Benefits of participation in irrigation management particularly come from involvement of farmers in decision making and planning.

Community management needs to be tailored to specific and widely varying circumstances and problems. It is crucial to include sustainable O&M plan in the project design with a 'bottom-up' approach. Irrigation users usually know what needs to be done to the facility. Therefore the use of joint walkthroughs and meetings to learn about local priorities and issues which affect system design, i.e., water delivery problems, flood patterns and land tenure, is effective. It is likely to be more efficient and cost-effective to piggy-back on the existing institutions rather than creating a new entity. Avoiding creation of new organizations and utilizing existing ones, either formal or informal, through recognition and involvement through which water is already being allocated, is normally recommended for PIM. Furthermore, the PIM approach should match the local capacity level and cultural background and clear authority has to be given to the management entity which is based on socio-cultural context of the population in the targeted area to strengthen the sense of ownership. A supportive environment for private participation through regulation needs to be in place. Water associations have to be given the right of water charge collection and penalties to non-payers. Prior consent from farmers is essential and support from village leaders is the key for successful PIM.

In Mali, there are no formal user associations, but farmers are represented in decisions on use of water fees through their elected delegates. In Latin America, farmer associations are legal entities which are responsible for water distribution, fee collection, maintenance, conflict resolution and representing farmers in discussions with public entities. Associations normally hire professional staff for irrigation management. Social associations in Asia depend on direct participation by all farmer members with daily interaction in decision making and sanctioning. Participation can be voluntary or mandatory, however, mandatory participation can address problems of 'free rider'. Careful thoughts should be given to design of user associations, including its size, level of financial autonomy, responsibility, and local conditions.

Consideration will be given to the facility ownership: Irrigation should be ultimately financially and technically sustainable and should not require continuing donor financial involvements. This requires policy change to provide incentives for the private sector, including user associations, to invest/operate the irrigation and drainage systems. Commercial investments in irrigation are unlikely unless a proper legal framework is in place. In countries where user participation is well implemented and local capacity exists, transfer of the ownership of some levels of the canal networks to users should be considered. It is evident that in the case where the ownership remains with the government, associations do not feel obliged to undertake costly operations. When PIM is scaled-up, the ownership of the canals at main and/or secondary levels will need to be addressed. Transfer of the ownership may be a good incentive for the private sector to invest/operate the irrigation and

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drainage systems. Mexico offers one vision of the medium-term outlook - the government manages only those irrigation systems that are problematic, all healthy systems are transferred to water user associations.

Effective policy and government's strong commitment to support decentralization need to be ensured: Promoting farmer network or a water user association in water resource management and irrigation/drainage systems is recognized as an essential element for improved water productivity and poverty reduction. The goal of PIM should be a creation of stronger public-private partnership as discussed above, and to improve the quality, effectiveness and sustainability of the irrigation services. Several studies indicated that governments can be motivated to mobilize farmer labor and to reduce demands on government budgets and resources through decentralization. It is also evident that governments are willing to hand over the dirty work such as cleaning and glass cutting but unwilling to transfer ownership of irrigation assets and water rights. Therefore, strong support by the high level government officials is effective. Improved regulatory framework and sector reform are also essential for sustainable farmer participation, including financial viability and improved performance.

Sector reform needs to define new role of government and irrigation agencies: An institutional setting needs to be created within an effective legal and regulatory framework. Regulatory systems and coordination structure usually exist but operate inefficiently due to lack of authority and appropriate resources for enforcement. Experience shows that better aligned irrigation institutions are necessary with clear roles of central and local governments, and other stakeholders, e.g. agricultural associations, and farmers, need to be established in terms of planning of irrigation infrastructure development, operation and maintenance of facility, and water distribution. There also needs a legal basis for associations to put funds aside for costly rehabilitation and renovation undertakings (see the section 3: Sustainability).

Clear definition of a new role for irrigation agencies is also called for: the future role of agencies with farmer participation may need to focus on supervision, guidance, monitoring and technical assistance to ensure service sustainability and transparency. The irrigation agency should shift its focus away from agriculture towards environment, where there is a growing need for government involvement to manage across competing demands for water from agriculture, industry and urban. Irrigation agencies need to establish links with basin agencies and various stakeholders such as urban, industrial and environmental to prepare water management plans with clear water allocation rules. Irrigation agencies may coordinate the activities of various government agencies related to irrigated agriculture and makes recommendations for seasonal water allocation. Water user associations should adopt a new role in negotiating for their water supply with these competing interests. Broad consensus needs to be built with government's high level commitment for introducing any changes.

2.2 Survey answers

(1) Roles of the government

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- There is a need to discuss issues of regulation, supervision, taxation, & related services. (Germany)
- The government should engage more in regulation rather than planning & executing. (Germany)

(2) Relationship between central government and local entities

- Lack of know-how & capacities of local entities is often a problem. (Switzerland, USA, Germany, Japan)
- Co-financing from the national government, municipalities, and/or communities is important. (Switzerland)
- Irrigation projects are often planned and implemented by the central government, and then are handed over to the water associations for operation and maintenance. (Japan)

(3) Responsibilities of the beneficiaries

- Cash contributions of farmers or communities are important as local resources for investment and maintenance. (Germany)
- We will face the difficulties of creating two types of members, those who can benefit from the services and those who cannot. It also may be difficult to secure farmers understanding to pay both taxes and water right charges. (Japan)
- It is desirable to finance the cost of maintenance through water charges paid by the beneficiaries, but water charges are often unable to cover the full maintenance costs. (Japan)

3. Sustainability – Sustainable Service Delivery to Poor

Many studies demonstrate a link between user participation in irrigation systems and the improved service quality and sustainability. Through participation, a sense of responsibility for water systems is promoted and therefore cost recovery has improved. Decreased administrative cost is evident. Better water allocation and management was also reported. However, in many countries the main objective of introducing PIM has been to recover the maintenance cost from water users to reduce government's budget deficit and promote effective use of water. Thus an increase in water charges, once management responsibility is passed on to the user association, is inevitable. This may create a hardship to small holders. In addition, lack of administrative management and technical skills is often cited as an area for extended support for sustainable irrigation systems. A series of support services are required for capacity building, and rehabilitation and renovation of irrigation systems. Governments need to provide farmers with incentives for costly rehabilitation and renovation undertakings.

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‘The gloomy arithmetic of water’ by the World Commission on Water is daunting. During the last decade, while population tripled, the use of water increased sixfold. Irrigation accounts for 70% of global water withdrawals. Groundwater aquifers are being mined, with water tables dropping by meters every year. Irrigation damages farming land and affect water quality. Thus environmental sustainability is also critical for successful PIM.

3.1 Consensus for Preparing the Infrapoor Guiding Principles

Policy on facility rehabilitation is to be established: Governmental policies on rehabilitation and renovation are often non-existent. Support is needed for governments in preparing a policy on rehabilitation and renovation. Donors may need to encourage governments to agree on a program for rehabilitation and renovation and its prioritization with the association. When management responsibilities are transferred to farmers, the irrigation system has to be in a good condition, however, over time, periodical rehabilitation and renovation is required. When water user associations take over management of irrigation systems and are given the rights to use the facilities, associations do not feel obliged to undertake such costly operations. In this context, the ownership of the facilities needs to be addressed (see the section above 2: Decentralization). It should be noted that in some countries rehabilitation and renovation may be beyond the technical and financial means of water user associations.

Irrigation projects should address financial sustainability: It was agreed that: (i) the user charge should try to cover the operation and maintenance costs; (ii) the O&M costs need to be clearly defined; and (iii) irrigation service charges need to be collected and used in transparent ways. At the same time, to lessen a financial hardship to small farmers, it was agreed that a need of monetary support should be considered (see also the paragraph below on subsidies). Management transfer can improve the problem of small service charges and low collection rate⁴, as an increase in water charges is the marked outcome of the management transfer. However, even with the improved collection rate and the higher charges, O&M costs may not be fully covered. Therefore, financial support, even substantially lower after the management transfer, or cost-sharing arrangements between the government and the association may be still needed for sustainable irrigation services. In estimating the ability to pay and setting the fee levels, a balance between sustainability and affordability of the poor needs to be well managed. It is crucial to include a sustainable O&M plan in the project design with farmer participation. Transparent fiscal management should be in place to ensure accountability and sustainability.

Transparent and explicit subsidy system must replace implicit ones: Irrigation O&M cost should be financed by the users. It was agreed that in the case where subsidies were needed, smart subsidies - direct and targeted - would be introduced. Subsidies have to be explicit and provided through government budgets, or shown as revenue deficits or losses of public enterprises, such as irrigation departments and/or municipalities. Assistance is needed to

⁴ In case of Mali, the collection rate improved from 60% to 97%.

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help the government understand actual subsidy levels and the objective that subsidies would be used to achieve. Donors may need to assist the government in devising smart subsidies to the poor coupled with higher irrigation charges for commercial farming to address poverty impacts of irrigation reform. For groundwater irrigation, subsidies are normally provided as a form of low energy prices, i.e., lower electricity tariff and diesel prices. This gives a wrong economic signal which may result in over-exploitation of groundwater. Support should be provided to the government to reduce level of subsidies to encourage farmers to be more rational in using the limited resources.

Establishment of a rehabilitation/renovation fund should be supported: It was recognized that external financial support was needed for costly rehabilitation and renovation of irrigation facilities. A Rehabilitation/renovation fund, from which associations could request funds to complement their investment funds, may be an effective tool to ensure timely rehabilitation and renovation, as water user associations are unlikely to collect enough funds for costly undertakings. Agreements on a rehabilitation and renovation program and its prioritization need to be reached between the government and the association. Cost-sharing arrangements between central/local governments/authorities and user associations are also needed. Governments need to provide farmers with incentives for costly rehabilitation and renovation investments. In addition, matching ratio has to be established and from where the resources can be mobilized.

Water charging requires clear objectives: Assistance should be provided to help policy makers design the pricing policies that are manageable, and formulate a plan on how to implement and to enforce such policies. The design should include water charges based on the labor contributions, and other incentives such as differential subsidies to water user associations based on their efforts to raise resources. Irrigation service charges can address both resource and financial objectives. In the irrigation sector, in most cases, user charges focus on annual operation and maintenance cost recovery and in some cases, user charges recovers a fraction of capital investment costs in addition to O&M. Two part fee structure, consisting of fixed and volumetric components, may be recommended to address scarce water resources. The fixed part represents a connection charge, and the volumetric charge can be calculated based on the size of the farm land or the value or type of crops produced (as a rough estimate of the volume of water delivered). The latter part can give an incentive to farmers to save water.

Empowerment and provision of incentives for farmers are crucial to sustain irrigation systems: The project will be designed to maximize impacts from improved participation in irrigation development through promoted involvement of farmers in various stages of irrigation such as design and construction decisions, and implementation. PIM needs to be seen as a continuum involvement of stakeholders in management decisions, including information sharing, consultations, joint assessments, shared decision-making, collaboration and empowerment. Joint walkthroughs give a sense of ownership to participating associations and a sense of greater involvement in decision making on irrigation systems. Irrigation projects need to provide farmers

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opportunities to see how their contributions are spent and receive the benefits from the investments.

Environmentally sustainable irrigation systems and improved irrigation water efficiency are critical: It was agreed that irrigation projects needed to contain measures to minimize negative impacts on water and land ecosystems, including ground water monitoring and control, and plans for environmental monitoring and enforcement. Irrigation projects will be designed to address water productivity in areas of vulnerable environmental degradation. Increasing demand for water is also a critical issue and improved efficiency is badly needed in use of irrigation water. Irrigation has a significant impact on nature as well as local communities, including irrigation service users and non-users. Irrigated land is apt to salinity and water logging, which result in reduced land productivity. Studies estimate 30-50% of agricultural areas is degraded, resulting in lower crop yield. Although costly, investments in disposal and reuse of the drainage water can be worthwhile in some areas to minimize the environmental damage and conserve water. Rainfall cultivation should be examined, as it may be effective in some areas.

Affordable irrigation water supply technologies should be promoted where they fit: Irrigation investments and PIM approaches are important element to reduce poverty. Poverty alleviation can be further augmented by introducing low-cost and labor intensive irrigation technologies. Irrigation projects have to ensure improved access to water for small holders, allowing enhanced agricultural production and food security. Measures need to be taken to ensure water/land access to women and disadvantage groups. The main benefit of irrigation on poverty comes through job creation and lower food prices stemmed from higher yield. Better employment opportunities of laborers and higher wages in irrigated farm land are evident. Studies also suggest that poverty severity is lower in the irrigated agricultural areas compared to rain-fed areas. Thus Promotion of affordable irrigation water supply technologies may be suitable for some areas with the subsistence level farmers. Tube wells, provided groundwater exists at shallow depths, are cost-effective for many smallholders and domestic use⁵. However, care has to be taken to ensure water conservation and avoid over-exploitation of groundwater. Provision of incentives for the small holders to adopt small-scale low-cost localized irrigation systems can be effective. Appropriate measures to give incentives should be identified. Involving NGOs may be beneficial for provision and dissemination of low-cost technologies.

Holistic approach and better collaboration of all stakeholders will be ensured for effective irrigation services: The PIM approach has to be complemented by other services such as improved access roads, better market information, and agricultural extension services. After the management transfer, irrigation service charges are often raised. Farmers, therefore, expect/need higher income to pay increased fees from improved agricultural productivity,

⁵ One-half of the total irrigated area in India relies on groundwater wells on which 60% of irrigated food is produced. In Nigeria, about 30,000 ha was irrigated using the low-cost tubewell-pump package. It was reported over 30,000 packages had been distributed to farmers.

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sales and income. Access roads should be addressed as part of improving farmer livelihood. Provision of a package service to the land poor is needed to ensure improved livelihood -- such a package may include access to new and/or improved technologies in irrigation water supply, seeds/fertilizers/tools and market information. Extension services and agricultural diversification may be also effective. The government should be encouraged to offer information on various services available in the market such as extension advice and new technologies, and market/crop information. The new role of the irrigation agency could cover such activities, but core services including provision of irrigation management assistance should be offered before expansion of responsibilities.

3.2 Survey answers

(1) Targeting the disadvantaged group

- Project locations should be focused on disadvantaged regions or poor areas. (Australia, USA, Ireland, Japan)
- It is important to identify the groups of farmers, which are highly motivated to participate in the implementation of the projects and in the maintenance of the facilities. Priority should be given to expand access to the poor population isolated from the public services. (Japan)
- NGOs, user groups have primary roles in identifying the poor, and facilitating the poor to identify their needs. (Ireland, Germany)

(2) Approaches toward improved sustainability

- Community involvement is one of the key of the projects. (Australia)
- Sustainable service delivery often depends rather on cultural & management attitudes as well as project approaches. (Germany)
- Of particular importance are the distribution of land and water rights, the contributions on investment costs, and regulatory framework for irrigation. (Germany)
- Construction of irrigation facilities does not automatically increase the incomes of the beneficiaries through agriculture, and our assistance requires effective linkage between technical and financial cooperation. (Japan)

(3) Water charging

- Because commercial-based pricing structures demand excessive financial burden to the poor, how to balance accessibility and affordability is the major challenge. (Japan)
- An introduction of well-targeted smart subsidies is important. (Switzerland, Japan)

4. Governance

Good governance requires an introduction of regulations and institutional reforms to introduce accountability and stronger farmer participation. For efficient and transparent

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public institutions, governments have to build capacity to perform public functions and enhance the state's accountability. Initiatives in both areas contribute to good governance, which is vital for sustained growth and poverty reduction.

4.1 Consensus for Preparing the Infrapoor Guiding Principles

Institutional/policy reforms to introduce accountability and stronger farmer participation are the key: Governance problems associated with public infrastructure services are usually stemmed from a lack of capacity which is crucial for strengthening public functions. Irrigation projects will support an establishment of a clear framework for governance of irrigation schemes with a greater sense of ownership to farmers.

Capacity is needed at every level for improved governance: The key for sustainable PIM is mainly on how to improve and sustain participation in the tasks of water distribution and system maintenance. Therefore, long-term support to water user associations is evidently needed. Training needs are normally identified in the area of system operations, water management and allocation, facility maintenance, preparation of O&M plans, and expenditure/income planning and budgeting. Independent audits should be introduced to ensure financial transparency. Views on how to achieve pro-poor regulatory authorities and avoid patronage for pro-rich, agricultural and industrial interests need to be formed. Measures for tackling "corruption" in implementing irrigation programs are also required and applied in aid programs and/or projects. Large farmers can secure large quantity of water leaving little water to small farmers in countries where extreme land inequality exist. Care has to be taken to ensure water flow to small users and those in tail-ends of irrigation systems.

As part of policy reform, the land tenure for farmers needs to be addressed: The importance of reviewing land policies was acknowledged. Greater transparency in land management can increase land security even in the absence of official land title. Land tenure is the key for accountability and sustainability, and private investments. Land tenure can improve farmers' sense of ownership, resulted in an increased responsibility for water systems and effective irrigation management.

Good coordination within the government is the key to maximize synergy: The key areas for the holistic approach are overall economic development planning, agriculture, infrastructure, energy and environment. An establishment of an inter-governmental committee to exchange views and discuss development priorities may be an effective option.

4.2 Survey answers

(1) Lack of capacity

- The lack of know how & capabilities of local authorities, inappropriate management of local authorities, financing capacity building programs for local authorities and municipal staff is important. (Switzerland)

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- In addition to the lack of institutional capacity for providing efficient services in operation and maintenance, budget shortfalls for operation and maintenance are serious problems. (Japan)

(2) Accountability and transparency

- For tackling corruption, social control within community based development schemes, transparent criteria and procedures for open programs, consultants and compliance audits. (Germany)
- Economical use of water for irrigation that accounts for 80% of the water consumption is requested. (France)
- One of the most serious problems in irrigation projects is non-functioning of water associations, and subsequent non-collection of water charges, which result in lack of maintenance of the irrigation system. (Japan)
- Land and water rights issues require coordination of higher authority. (Japan)

(3) Local ownership

- To strengthen ownership, KfW follows the principle of collecting contributions from the people using the water infrastructure. (Germany)
- Local inhabitants should be responsible for maintaining peripheral channels, and an effective means to achieve this is to establish a water association. (Japan)
- Community and private ownership were drawn largely on existing cultural and management attitudes in case of Bolivia. (Germany)

5. Other Main Themes

Agreements were reached on the following issues in addition to the three key themes discussed above.

5.1 Consensus for Preparing the Infrapoor Guiding Principles

Coordinated water resource development and better management are required for the sustainable irrigation sector: Integrated water resource management requires that water has to be managed and protected on basin level considering all resources and uses. Proper water policy needs to be developed and implemented jointly with other sector policies. External support may be needed to encourage governments to recognize the range of water uses and the challenge of water management to meet all competing needs. The irrigation agency should focus more on environmental issues and water user associations should assume a new role in negotiating for their water supply with the competing interests. Irrigation water is also used for multi-purposes, i.e., domestic and productive uses such as drinking, cooking, bathing, home gardens, livestock and fishing. An effective water right provides security to water user associations. There is a strong evidence that specifying the rights of water user associations is an important factor for successful management transfer. Water rights matter

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more significantly if water is scarce, lack of/little precipitation and in arid areas, and when competing demand for water by industry and municipalities is increasing. Flexible water allocation with compensation is a key for sustainable water user associations. When water is diverted to more productive or higher priority uses as economic, demographic, or emergency conditions change, appropriate compensation will be required to the users who need to give up the water rights. An effective water right also requires to be specified in both quality and quantity: Water quality is becoming an increasingly important issue as water is often reused in response to water scarcity.

New investments should be at least economic, social and environmental costs: New investments are required for water resource development to protect against external shocks in many developing countries. New investments and support to increasing water productivity on the existing facilities need to be balanced for an effective irrigation sector strategy. It was agreed that priority should be given to making better use of, and renovation/upgrading of existing facilities. Priorities and pre-conditions for future irrigation sector support should be identified and agreed. Investments in water infrastructure have been declining over time and this needs to be reverted. Without new investments, it would be impossible to meet increasing water needs for food security and livelihood for small and marginal farmers. It is also widely recognized that irrigation investment is essential for water storage, crucial to protect against climate vulnerability. Given the growing water demand, increasing investments and more effective use of such investments are crucial.

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List of Annexes

Annex 1: Summary of Recommendations for Irrigation Support

Annex 2: Summary of DAC Responses

Annex 3: Selected Case Studies

Annex 4: References

Summary of Recommendations for Irrigation Support

- In formulating guiding principles -

Strong poverty reduction impact of irrigation services was acknowledged during the 2nd workshop. Irrigation's main benefits, both direct and indirect, to marginal farmers and landless laborers come from better employment opportunities, higher wages, and low food prices. Irrigation and drainage systems have proven to be effective in increasing food production, reducing poverty and enhancing regional development – essential for achieving MDGs of poverty and hunger reduction, and thus contributing to sustainable growth.

It was agreed that the irrigation support needs to be discussed in the context of agricultural assistance because the majority of people in developing countries depend on agriculture. Furthermore, irrigation is an effective tool to increase agricultural production to support the growing population. Agriculture and irrigation face a challenge – there is an increasing competing demand for water. Water to irrigation is subservient to other water uses, such as industrial and urban needs, therefore, irrigation support has to improve water productivity. Integrated water resource management to address scarce water resources is required with a proper water policy.

Active farmer participation in the irrigation sector, which needs to be supported with the sector reform, can deliver sustainable services in an accountable, transparent, effective and environmentally responsible manner. Projects need to be designed to encourage farmers' further involvement in the irrigation service delivery – through facility ownership and financial contribution to cover O&M cost. Farmer participation should be supported through policy and institutional reforms to introduce sound regulations and effective governmental institutions/agencies at all levels. Smart subsidies should be adapted to ease hardship of the poor and give a proper economic signal to conserve scarce resources. Recognizing needs of new investments to develop water resources, the priority should be given to making better use of, and upgrading of existing facilities with agreed priorities and pre-conditions for future irrigation sector support. Emphasis is needed on greater productivity from existing investments with strong attention on improved efficiency and environmental conservation. An irrigation renovation fund to compliment farmers' contribution can be established to ensure timely rehabilitation and/or renovation undertakings.

The main actions and considerations in formulating irrigation sector support are listed below:

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Decentralization

- Participatory Irrigation Management (PIM) is to be further promoted and supported legally for improved irrigation service delivery. Community participation with prior consent has to be tailored to specific and varying circumstances and problems.
- Consideration should be given to the facility ownership, when PIM is scaled-up. Policy change is required to support the user ownership and to provide incentives for investments.
- Effective policy and government's strong commitment to support decentralization need to be ensured. The goal should be a creation of strong public-private partnership to address water productivity and sustainable irrigation service delivery. Governments have to develop a proper regulatory framework for sustainable farmer participation.
- Sector reform needs to define new role of government and irrigation agencies. It is important to reach broad consensus for any changes introduced with government's high level commitment.

Sustainability – Sustainable Service Delivery to the Poor

- Policy on facility rehabilitation needs to be established. Donor support may be effective to assist the government in developing a policy on rehabilitation and renovation with a set of clear criteria for priority.
- Irrigation projects need to address financial sustainability. The user charge should try to cover O&M cost which is clearly defined. Irrigation service charges have to be collected and used in a transparent manner.
- Transparent and explicit subsidy system must replace implicit ones. In the case where subsidies were needed, smart subsidies would be introduced. Governments may need to be assisted in understanding actual subsidy levels and the objective that subsidies would be used to achieve. The government should be also supported in devising smart subsidies to the poor.
- Establishment of a rehabilitation/renovation fund needs to be supported. User associations would request funds from the fund to complement their contributions for investments.
- Water charging requires clear objectives. Assistance is needed to help policy makers design pricing policies to address resource and financial objectives and its enforcement guidelines.

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- Empowerment and provision of incentives for farmers are crucial to sustain irrigation systems. Projects should ascertain to empower farmers for improved involvement in various stages of irrigation development.
- Environmentally sustainable irrigation systems and improved irrigation water efficiency are critical. Irrigation projects need to contain measures to minimize negative impacts on water and land ecosystems. Investments in disposal and reuse of drainage water should be considered for resource conservation.
- Irrigation projects should support affordable irrigation water supply technologies where they fit. Irrigation projects need to include measures to promote affordable irrigation water supply technologies suitable for small farmers and to maximize the poverty alleviation impact.
- Holistic approach and better collaboration of all stakeholders will be ensured for effective irrigation services. A PIM approach has to be complemented by other services such as agriculture extension services, access roads, and rural finance to maximize synergy. A better dialogue among stakeholders will need to be ensured.

Governance

- Institutional/policy reforms to introduce accountability and stronger farmer participation are the key. Irrigation projects will help establish a clear framework for governance with a greater sense of ownership to farmers.
- Capacity is needed at every level for improved governance. Long term support to water user associations and other related agencies will be provided through projects.
- As part of policy reform, the land tenure for farmers will be addressed. Support should be provided to promote greater transparency in land management for increased land security.
- Good coordination within the government is the key to maximize synergy. An establishment of an inter-governmental committee to exchange view and discuss development plans may be effective.

Other Main Themes

- Coordinated water resource development and better management are required for the sustainable irrigation sector. Assistance is needed for governments to prepare a proper water policy and implement it jointly with other sector policies. Water quality for irrigation will need to be addressed as water needs increase.

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- New investments should be at least economic, social and environmental costs. Agreements should be reached on priorities and pre-conditions for future irrigation support. New investments and support to increasing water productivity on the existing facilities need to be balanced.