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# Water Policy Briefing

Issue 6

IWMI-Tata Water Policy Program

Putting research knowledge into action



## Pro-Poor Irrigation Management Transfer?

A growing body of international findings shows that irrigation management transfer can actually contribute to rural poverty by aggravating existing inequities within irrigation schemes or introducing new ones.

New research looks at how the transfer of irrigation management from governments to farmers can be done in a way that benefits poor farmers.

# How Can Irrigation Management Transfer Benefit Poor Farmers Rather than Hurting Them?

Driven largely by financial pressures, many governments are transferring full or partial management responsibility for irrigation systems from government agencies to farmers organized into Water User Associations (WUAs). In most cases, improving the situation of poor farmers has been a secondary aim of this reform. But there is increasing evidence that Irrigation Management Transfer (IMT) can actually negatively impact the situation of poor farmers—and, in extreme cases, can even cause the collapse of irrigation schemes.

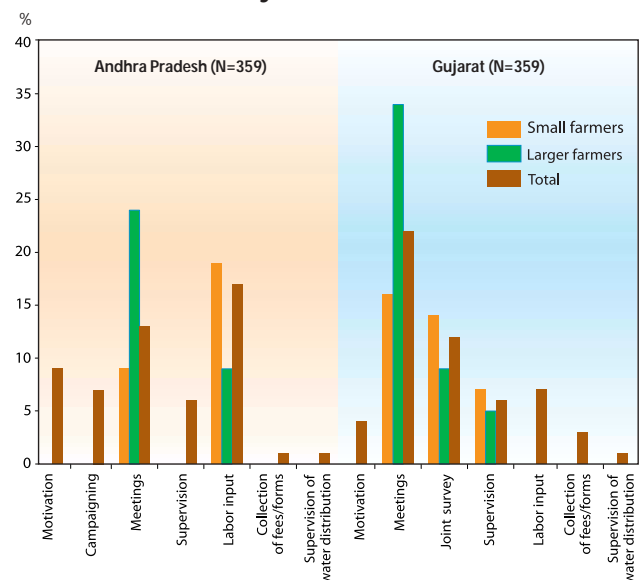
New research assessed two different IMT programs: The Gujarat Participatory Irrigation Management (PIM) program, one of the first IMT programs in India, and the Andhra Pradesh Farmers' Management of Irrigation Systems (APFMIS) program, which with its sweeping reforms has served as an example worldwide. This research suggests that even if the IMT process contains all the right ingredients on paper—such as strong voting rights for farmers, irrespective of farm size—poor farmers are less informed on the whole about their rights and so tend to lose out on many of the potential benefits of IMT. The study showed that in both Gujarat and Andhra Pradesh poor farmers tended to participate more in the repair and rehabilitation work, while the larger farmers were more involved in the decision-making process—dominating the meetings and committees (see fig.1).

To make IMT more pro-poor, and to ensure the viability of WUAs, which depend heavily on the labor contribution of small farmers, policy makers should take steps to ensure that poor farmers participate equally in decision-making processes. These steps include raising awareness and access to information, and making the election of WUA committees (which favor the village elite) more competitive and transparent. Monitoring participation in WUA activities and decision making against a reliable, and easily available indicator of poverty—farm size—is a key in evaluating equity trends over time.

IMT involves the handover of a number of responsibilities of the Irrigation Department to WUAs. Depending on the program, these can include distributing water, setting charge rates and collecting fees, and implementing the repair and rehabilitation (R&R) of canals.

Community management and greater autonomy, in theory, result in greater equity and improvements in the lives of the poor. Yet, in practice, researchers who studied two different IMT programs (APFMIS and PIM, Box 1) operating in large-scale canal-irrigation schemes found that this was not always true. The study, conducted by the International Water Management Institute (IWMI) and the Gujarat Institute of Development Research (GIDR) with support from the Ford Foundation and the Swedish International Development Agency (SIDA), surveyed 700 landowning and tenant farmers from seven

**Figure 1. Proportion of households participating in WUA activities, by farm size**



This issue of *Water Policy Briefing* is based on research presented in the IWMI's Research Report *Poverty Dimensions of Irrigation Management Transfer in Large-Scale Canal Irrigation in Andhra Pradesh and Gujarat, India* by Barbara van Koppen, R. Parthasarathy and Constantina Safiliou. Readers interested in the details of this research are invited to read the full text of the paper at [www.iwmi.org/iwmi-tata](http://www.iwmi.org/iwmi-tata) or request a copy at the address given below. Questions and comments on this issue may be directed to Dr. Tushaar Shah c/o IWMI, Elecon, Anand-Sojitra Road, Vallabh Vidyanagar 388 001, Gujarat, India or [iwmi-tata@cgiar.org](mailto:iwmi-tata@cgiar.org).

## Box 1. Two IMT programs: Characteristics and early impacts

Characteristics	Andhra Pradesh	Gujarat
Legal basis of IMT program	Andhra Pradesh Farmers' Management of Irrigation Systems (APFMIS)	Participatory Irrigation Management (PIM) Resolution
Year implemented	1999	1995
Scale	State-wide: all irrigation schemes (12,000 WUAs)	13 pilot WUAs
Tiers	All tiers: primary, secondary and tertiary	Scattered tertiary blocks
Implementer	Irrigation Department and District Administration	Irrigation Department or NGO
WUA's responsibilities	R&R <sup>a</sup> (huge funds channeled directly to WUA); some water distribution. In future: setting, collection and partial management of fees	R&R; collection of demand forms; fee setting, water allocation and distribution <sup>b</sup> (just beginning); fee collection (and payment to government)
Government's responsibilities	Fee setting and collection; some water distribution; major rehabilitation works	Major rehabilitation works
Owner of canals	Government	Government
<b>Impacts</b>		
Improved access to water	15% of farmers surveyed	15% of farmers surveyed
Expansion of irrigated area	2% of farmers surveyed (average 0.66 ha)	3% of farmers surveyed (average 1.1 ha)

<sup>a</sup>Repair and rehabilitation.

<sup>b</sup>This only applies to the water that the Irrigation Department delivers to the intake.

Positive impacts were seen in Andhra Pradesh after only two years, and in Gujarat after five.

Impacts were more wide-ranging in Andhra Pradesh, both geographically and at higher levels: the IMT program was designed (under APFMIS) to eventually include Distributary Committees (the next level up from WUAs) and Project Committees (at the main system level). But in Gujarat, the scattered WUAs could not come together to have an impact at higher levels. This means that "head-tail" inequities cannot be addressed there.

WUAs in the two states (plus 67 WUA committee members). The findings suggest that inequities resulting from IMT are primarily due to differences in access to information between poor and wealthy farmers. Wealthy farmers tend to be better informed of their rights and responsibilities as WUA members and participate more in decision-making processes.

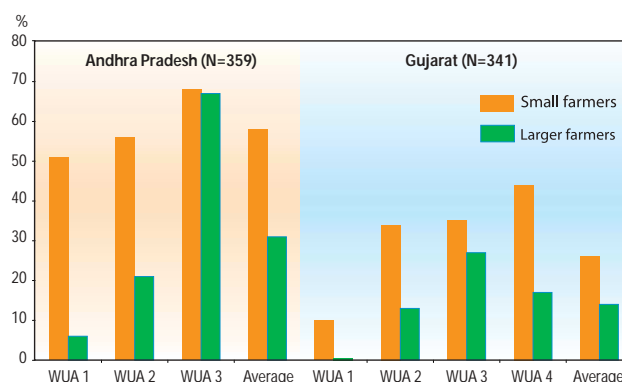
### Although farmers run the WUA, participation levels are not high

Participation in WUAs is low in both programs. After 2 years, half of the supposed constituencies of the WUAs were not aware of their existence. In Gujarat, after five years of IMT, still a quarter didn't know about the WUAs. Of the WUAs surveyed, awareness was highest (93%) in the one where an NGO had strongly intervened.

### Poor and nonpoor farmers are not equally well informed about WUAs

Being informed is definitely related to larger farm size. In both states, the number of small-scale farmers who were unaware of the existence of their WUAs was twice that of the large-scale farmers (see fig. 2)

**Figure 2. Proportion of households unaware of the WUA, by farm size**





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The relative absence of small-scale farmers from committees and general meetings means that they risk not gaining the crucial benefits that can be realized, from IMT.

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## Poor and nonpoor farmers do not participate equally in all activities

The relative absence of small-scale farmers from committees and general meetings means that they risk not gaining the crucial benefits that can be realized, from IMT. They are excluded from information, decision making and negotiation with leaders regarding the spending of government grants, site selection for R&R, future self-management of water distribution, and fee collection. In reality, what is called a “WUA” is first and foremost a handful of local elite who facilitate the implementation of state-initiated and -funded R&R work in a manner beneficial to themselves.

## Farm size: A reliable indicator of poverty

Because the poverty dimensions of large-scale canal irrigation systems are difficult to measure, they are rarely studied. So, not surprisingly, inequities have rarely been quantified. That is, until IWMI and GIDR researchers looked at the way farm size (which is conveniently recorded in land registers) was associated with a number of poverty-related factors.

They found that farm size is a good proxy for income and poverty. This means it is relatively easy for government staff, WUAs, NGOs or researchers to routinely monitor equity trends in IMT. This means that any inequities within schemes can be detected early and corrected, before they become entrenched. It also means that if localized projects aimed at the poor are planned (such as rehabilitation, drainage and salinization management), then areas with high concentrations of poor farmers can be targeted.

The researchers classified “small farmers” as those operating landholdings of less than one hectare (whether tenants or landowners). “Larger farmers” were those who farmed one hectare or more. There were three main findings relating to farm size.

### 1. Plot location: Head v. tail

In both states, significantly greater proportions of small farmers’ plots are located in the less-desirable tail ends (fig. 1). This seems to be both a consequence of poverty (poor farmers lack political clout and are therefore often forced to accept plots in the tail ends) and a cause (farmers in the tail ends often experience

### Box 2. Making IMT more pro-poor

**Clearly define the rights of farmers.** APFMIS serves as a good model for this. By law, farmers have equal decision-making power within the WUA, regardless of farm size (i.e., one farm, one vote).

**Raise awareness, especially among poor farmers.** In forthcoming publicity campaigns, state policy makers and the civil service should ensure that farmers understand the IMT process and their rights and responsibilities.

**Reform the election process within WUAs.** This is the single most effective way to substantially improve small-scale farmers’ inclusion in the WUAs. Election of new presidents and committee members should be vote-based rather than consensus-based, to promote competition between several candidates. Ensuring this, and also that farmers are well-informed, will increase transparency and equity.

**Differentiate between those farmers in the command area who use canal water and those who use alternative sources of irrigation in defining rights.** A high proportion of farmers do not use canal irrigation at all (or may use it only in some years)—relying instead on alternative water sources. The management of canal irrigation does affect the availability of alternative water sources, such as groundwater and hence the farmers who depend on them, but obviously not to the same degree as farmers who depend solely on canal water.

**Monitor, by farm size, participation in the WUA** (in elections, decision-making processes, fee collection, etc.). Research showed farm size to be a reliable indicator of poverty for intra-scheme comparison. And, the data are generally readily available, so that monitoring costs are minimal. Monitoring over time provides a good indication of equity trends and is a prerequisite for ensuring pro-poor IMT.

more difficulty in receiving enough water and are therefore more limited in the choice of crops and their ability to improve their yields, and are harder hit by droughts). In the WUAs in both states, IMT that leads to better provision of canal water to the tails would be “pro-poor” in itself.

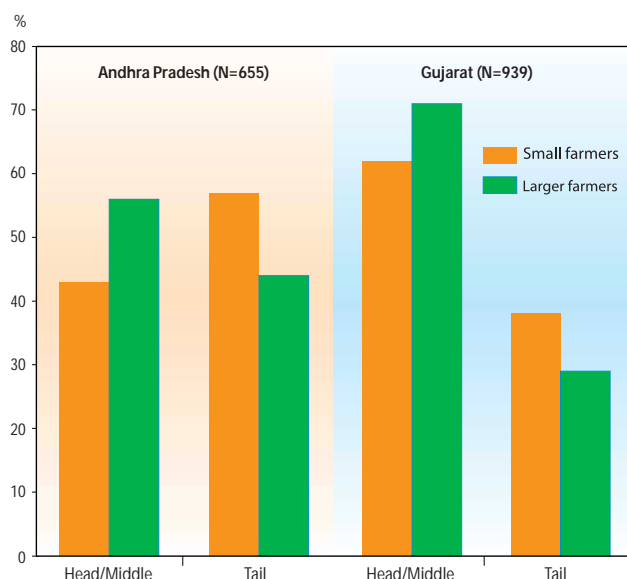
## 2. Crop choice: High value v. low value

In Andhra Pradesh, the proportion of small farmers’ plots (54%) planted with subsistence food crops (such as rice) was greater than that of larger farmers (32%). The opposite is true for cash crops that fetch a high price at the market: 18% of larger farmers’ plots were planted with chili, compared with only 8% of small farmers’ plots. This again reinforces the value of farm size as an indicator of income and poverty.

## 3. Significance of other income sources

Farm size and income diversification are actually inversely related. This is especially true of very small farms, where there is often more than one source of income. In areas with off-farm employment opportunities (Gujarat, for example), the smallest farms are not necessarily the most income-poor. This means, of course, that farm size is not such a useful

**Figure 3. Proportion of plots at head and tail ends of irrigation schemes**



There are inequities in location: Small farms are more often located in the tail ends than larger farms, and so face greater insecurities in terms of water supply.



Significantly more small farmers than larger farmers were completely unaware that the WUAs existed.

indicator of poverty in these cases. In cases like this, the importance of other income sources needs to be investigated. This would require researchers to collect additional information with respect to poverty (e.g., cattle ownership, earnings from wage-employment, number of male and female household members who are earning, etc.).

## Access to alternative water sources

In Andhra Pradesh, researchers found that canal irrigation tends to be a “poor man’s affair.” Here, and in many areas, poor farmers rely more on canal water than wealthier farmers. Poor farmers have less access to alternative irrigation sources (such as groundwater), which are generally more reliable. Only 46% of small farmers’ plots were irrigated from alternative water sources, compared with 56% of larger farmers’ plots.

One reason for this is that there are fewer pumps and wells in the tail ends (where the majority of small farmers’ plots lie). This is reflected in the fact that only 32% of tail-end plots (irrespective of farm size) benefited from alternative irrigation sources, compared with 64% of head end plots.

Another factor is that small farmers lack the capital to invest in pumps and wells. When canal supplies are insufficient or unreliable, these farmers are forced to

buy water from alternative sources and tend to pay higher prices for that water. It is hardly surprising, then, that most crops grown by small farmers using alternative irrigation sources, receive fewer number of waterings than the crops of larger farmers. So, even though the net benefits of alternative irrigation would be higher, small farmers tend to rely on canal water because it is cheap.

The important implication this has for IMT is that small farmers would benefit more than larger farmers from improved canal-irrigation performance. In Andhra Pradesh, therefore, any improvement in access to canal water in general would be “pro-poor” in itself, and could count on the active support of small farmers. As a corollary, modes of IMT that negatively affect the provision of canal water would hit the poor particularly hard.

In Gujarat, the situation is different. Researchers found no differences between small and larger farmers in the use of canal water, or in access to alternative sources and the number of waterings received. But, of course, the irrigation costs from alternative sources may be higher for small farmers.

Although small farmers are concentrated in the tail ends in Gujarat, they take equal advantage of the alternative irrigation sources. This is because, in contrast to the situation in Andhra Pradesh, these sources are more widespread in the tail than they are in the other reaches. In fact, in the tails, 69% of all plots were irrigated with alternative sources, compared with 59% in the head and middle reaches. So, the common assumption that access to water in canal irrigation commands is farm-size-neutral appears to be valid in the Gujarati WUAs. Improvements to the canal irrigation system, as long as it did not negatively impact groundwater availability, would benefit poor and nonpoor equally.

## Participation in WUA activities

In all WUAs, higher levels of participation in R&R work were found among small farmers than among larger farmers. However, small farmers participate considerably less in meetings than do larger farmers, and they rarely become committee members. For example, in Andhra Pradesh, although 19% of small farmers took part in R&R work only 9% attended meetings. The corresponding participation rates in R&R and in meetings for larger farmers were 9% and 24%, respectively.

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So, small farmers make an essential contribution to the IMT program through their upkeep of the canals. This is probably also because they are more dependent on supplies of canal water and upon agriculture as their primary source of income. But how long will they continue to do this (especially if the current subsidies are reduced) if they are deprived of having their say in meetings and in the running of the WUA? Greater participation of small farmers in decision making will make IMT more pro-poor, and will increase its sustainability and even its viability.

Having an input into the committee's allocation of water would give small farmers the chance to make the benefits of IMT more equitable. For example, during droughts, allocating water to each farmer, rather than according to farm size, would reduce the inequities that already exist due to poorer farmers having smaller landholdings. When faced with a serious water shortage, one Gujarati WUA allocated enough water to irrigate one hectare to each farmer, and then shared the remaining amount according to farm size. This resulted in high levels of farmer satisfaction, with more than 40% of farmers interviewed reporting that IMT had improved their access to water.

Greater participation in meetings would also ensure that the benefits of R&R work are felt equally by all members, and not just by the local elite. For example, in one WUA, the cementing of earthen canals was carried out only in the lands owned by the WUA's president and committee members. There have also been cases reported of some presidents and committees (or their families and friends) replacing the official contractors

appointed by the Irrigation Department when large R&R subsidies were at stake.

So how can the election of committees be made fairer? The APFMIS Act already provides all the elements necessary for a pro-poor mode of IMT. The WUA members have well-defined rights to elect leaders and hold them accountable. Added to this, small farmers have strong formal voting rights, because these rights are independent of farm size. Finally, the election procedures are well designed and defined. Yet, in reality, it is the wealthier candidates (with money to spend on campaigns) who tend to get elected.

In the PIM IMT program in Gujarat, genuine elections are rarely held. Implementing agencies have targeted wealthier castes when giving out information, so committee members usually come from this group. A democratic voting system would improve this situation.

But in both states, raising awareness is critical. Large publicity campaigns that inform farmers about the WUA and their rights and responsibilities, as well as about the elections themselves, will benefit those who are least aware of WUAs, and who are least active in decision making—poor farmers.

## Impact and future of the two IMT programs

IMT in Andhra Pradesh and Gujarat lead to, respectively: improved access to water for 15% and 25% of the farmers surveyed and extension of the irrigated area for 2% (average 0.66ha) and 3% (average 1.1 ha). These early gains were independent of farm size. (However, the qualitative scheme-level information highlighted that WUA leaders imposed their personal choice with regard to the priority of sites for R&R.)



These achievements are only the first step. In Andhra Pradesh, further transfer of financial and water management from the Irrigation Department to water users at all levels is still to come, as is planned under APFMIS. The benefits that come from completing long-

overdue repairs and maintenance are “easy gains.” There is a risk that the pace of improvements may slow down. What is more, it is uncertain whether the heavy subsidies provided for R&R will continue indefinitely, or what the contribution of farmers’ labor or cash will be.

In Gujarat, WUAs are in the process of undertaking water allocation, distribution and fee collection—cumbersome tasks the government is pleased to hand over. But, the new obligations to collect demand forms and fees represent a serious extra burden for irrigation committee members. Whether WUAs are willing, and equipped, to carry out the revenue functions is a question that has yet to be answered.

Under APFMIS, implementing the first steps at the lowest tiers has created a massive momentum. This forms a sound basis for the planned next steps: the organization of farmers at higher tiers and a complete

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handover. But a program (such as PIM in Gujarat) that focuses only on the lowest tiers and, in its pilot-phase, only targets a few scattered schemes is limited by design in its potential for vertical upscaling in the future. Replication at a larger scale will require considerable resources, human and otherwise.

Irrigation management transfer, or more precisely its R&R component has short-term benefits for all farmers in a scheme, including, if not especially, poor farmers. However, long-term benefits of IMT for poor farmers and the viability of handover itself are at risk because of serious inequities in the new WUAs. Better inclusion of the poor in information and decision-making flows would result in more sustainable advances in poverty alleviation. Systematic monitoring of key variables in productivity and participation by farm size will allow implementers to more easily spot and correct inequities.



## Water Policy Briefing Series

The Water Policy Briefing Series translates the findings of research in water resources management into useful information for Indian policy makers. The Series is put out by the International Water Management Institute (IWMI) in collaboration with national and state research organizations. It is made possible by a grant from the Sir Ratan Tata Trust.

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## IWMI-Tata Water Policy Program

The IWMI-Tata Water Policy Program was launched in 2000. This is a new initiative supported by the Sir Ratan Tata Trust. The program presents new perspectives and practical solutions derived from the wealth of research done in India on water resources management. Its objective is to help policy makers at the central, state and local levels address their water challenges—in areas such as sustainable groundwater management, water scarcity, and rural poverty—by translating research findings into practical policy recommendations.

Through this program, IWMI collaborates with a range of partners across India to identify, analyze and document relevant water management approaches and current practices. These practices are assessed and synthesized for maximum policy impact in the *Water Policy Briefing Series*.

The Policy Program's website ([www.iwmi.org/iwmi-tata](http://www.iwmi.org/iwmi-tata)) promotes the exchange of knowledge on water resources management, within the research community and between researchers and policy makers in India.

## IWMI in India

Over the past decade, researchers from IWMI have been collaborating with Indian scientists and development organizations in the areas of irrigation performance; satellite remote sensing; irrigation management transfer; analysis of gender, water and poverty; and malaria control.

In January 2001, a field office was established in Anand, Gujarat to work with Indian partners on groundwater management and governance. In October 2001, IWMI established its India Regional Office in Patancheru, Hyderabad, Andhra Pradesh. IWMI's research and cooperation in India focus on three key areas: river basin water productivity, water and land management in watersheds, and groundwater management.

IWMI's principal partners and collaborators for its work in India are the Indian Council of Agricultural Research (ICAR), the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), and a host of state irrigation departments, agricultural universities, and nongovernmental organizations.

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## About IWMI

IWMI is one of the 16 Future Harvest Centers supported by the Consultative Group on International Agricultural Research (CGIAR).

The research program of IWMI centers around five core themes:

- Integrated Water Resources Management for Agriculture
- Sustainable Smallholder Water & Land Management Systems
- Sustainable Groundwater Management
- Water, Health and Environment
- Water Resources Institutions and Policy

The Institute fields a team of some 50 senior researchers with significant international experience, supported by national research staff and a corps of some 20 postdoctoral scientists, mostly from developing countries. IWMI is headquartered in Sri Lanka with regional offices in India, South Africa and Thailand.

All IWMI research is done with local partners (universities, government agencies, NGOs, research centers, etc.). The Institute's outputs are public goods that are freely available for use by all actors in water management and development. The IWMI Research Reports, data and other publications can be downloaded from the IWMI website or received free of charge from the IWMI publications office. A series of tools for improved water management is also available.

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