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India's 12th Five Year Plan proposes a National Irrigation Management Fund (NIMF) designed to catalyze management reform in India's public irrigation systems which suffer from low recovery of irrigation service fee (ISF), skimpy maintenance budgets, and persistent decline in system infrastructure. NIMF will provide 100 percent incentive to irrigation agencies for all Irrigation Service Fee (ISF) they collect from farmers, 130 percent for the ISF collected through Water User Associations and 150 percent for ISF collected based on volumetric water supply to WUAs. These incentive payments will be made based on a third party verification of the claims made by irrigation agencies.

To explore how to design a quick, efficient and cost-effective third party verification, management students were deployed to understand the ISF assessment and collection process in four states and the paper trail these generate. This Highlight summarizes the results of this student research which may provide guidance in the design of third party verification for claims submitted to the NIMF. The process may also be tweaked to generate an array of monitoring data useful for performance benchmarking of public irrigation systems.

IWMI-TATA
Water Policy Program

Water Policy Research

HIGHLIGHT

Chasing the Paper Trail in an Irrigation System

Guidance for Third Party Verification for the Release of Incentives Under the National Irrigation Management Fund

Nisha Nair, Raja Panchal and Rahul Agrawal

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Chasing the Paper trail in an Irrigation System
Guidance for Third Party Verification for The Release of Incentives Under The National Irrigation Management Fund[1]

Research highlight based on Panchal and Agrawal (2012)[2]

Why the NIMF?

Most of the MMI projects in India are underperforming on account of poor management of the systems. Though there is massive infusion of capital by the government on creating new systems, the annual O&M expenditure of existing systems in all states is around 0.95 percent of the capital cost (Shah 2012). Apart from the poor allocation of funds for O&M activities by governments, the O&M cost recovery through ISF is also very less. The ISF collected by the states are fixed at a low level and the ratio of the actual ISF collected to that demanded is declining progressively. The governments have neither the will nor the resources to collect the actual ISF (Doraiswamy et al. 2009; Shah 2011). As the farmers pay less ISF, their bargaining power to demand better services declines which further reduces the incentive of the Irrigation Departments (ID) to perform better.

To overcome these problems and incentivize the IDs, the Planning Commission Working Group on MMI projects have proposed a Rs. 6700 crore[3] NIMF (Planning Commission 2011). This fund will be utilized by the Central Government to provide the States a matching contribution to the ISF they collect on a 1:1 ratio. The States will allocate this grant to the MMI systems in proportion to their ISF collection. They are also required to submit a certified and audited statement depicting the actual ISF collected from farmers of different MMI systems. The claims on ISF collection by States will undergo an independent verification based on which the Centre will disburse the grant each year.

This Highlight summarizes the study done by two IRMA students Raja Panchal and Rahul Agrawal in four states, to understand the information flow and management information system (MIS) of irrigation projects which is a prerequisite for designing a practical and robust verification system for validating the ISF claims of the States.

Following the paper trail

The study was done at Division level of an Irrigation System in four states, *viz.* Uttar Pradesh, Madhya Pradesh, Gujarat and Maharashtra. The states were chosen based on the management and revenue collection procedure (Table 1). Since in some states, the Revenue Department (RD) collects the ISF while the ID assesses ISF, the students interviewed employees at different levels of both the Departments. They also undertook field visits to see how the procedure was initiated at the farmer level and followed the paper trail till the highest authority at the Division level.

Table 1 Irrigation systems studied based on the mode of ISF collection

State	System studied	Division studied	Assessment and Revenue collection
Gujarat	Mahi River Bank Canal	Anand Division	Assessment done by Irrigation Department and collected by Revenue Department
Uttar Pradesh	Sharda Sahayak Project	Rae Bareli Division	
Maharashtra	Waghad Project	Nasik Division	Assessment and revenue collection done by the Irrigation Department
Madhya Pradesh	Tawa Irrigation Project	Itarsi Division	

[1]This IWMI-Tata Highlight is based on research carried out under the IWMI-Tata Program (ITP). It is not externally peer-reviewed and the views expressed are of the authors alone and not of ITP or its funding partners – IWMI, Colombo and Sir Ratan Tata Trust (SRTT), Mumbai.

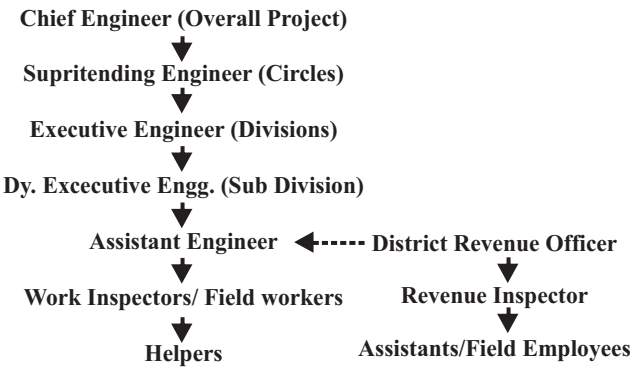
[2]This report is available on request from p.reghu@cgiar.org

[3]One crore = 10 million

KNOWING THE HIERARCHY

In designing a verification framework, hierarchy plays a pivotal role as formats and receipts are generated at different levels in ID which are important for the verification process. The lower rungs in the hierarchy collect individual information, combine them in the prescribed format and forward them to the upper level. The same process is repeated until a project wise report is made which finds its place in the annual reports of the departments. The basic hierarchical level of both ID and RD is similar in the four states. The generalized structure of the departments is shown in Figure 1.

Figure 1 Generalized structure of ID



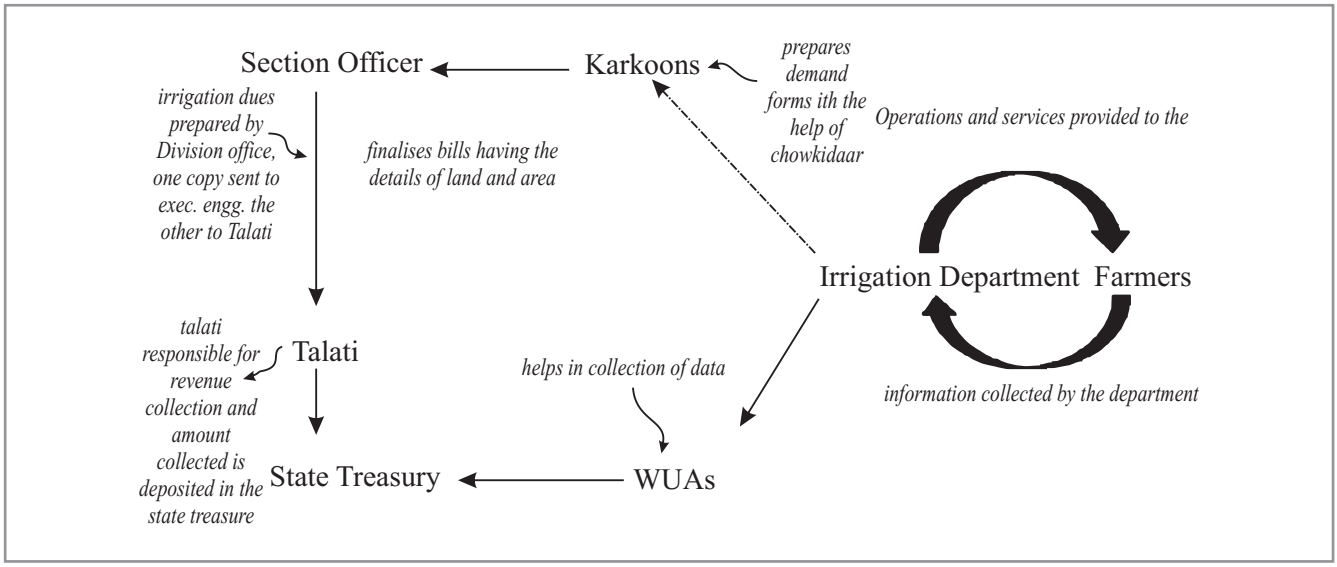
The data collection mainly starts from the office of Assistant. Engineer who presides over the workings of the field staff known by different names in different states like *lascars, seenchpals, beldaars, chowkidaars* etc. In case the RD is involved in collection of revenue, the interface is usually the Deputy. Executive Engineer at Sub Division level or Assistant Engineer. The District Revenue Officer reports directly to the RD for financial purposes and the Sub Division for administrative purposes. The first step for any third party should be to closely study the department's organization chart, prepare a draft which clearly mentions the kind of reports, vouchers and receipts being produced at each level. This would help in the verification process as cross checking the records at every level would certainly give an idea whether there is consistency in the records maintained.

WHEN TWO DEPARTMENTS ARE AT WORK

As shown in Table 1 Gujarat and Uttar Pradesh follow a system in which assessment of the irrigation tax to be collected is done by the ID officials while the revenue collection is done by the RD. In case of Uttar Pradesh the assessment of ISF is done by the internal revenue officials in ID and the recovery is done by the RD officials, while in case of Gujarat the RD appoints the *Mamlatdar* (also *Talati* in some cases) to facilitate the ISF collection.

In Gujarat, the recovery process starts with the Karkoons preparing a demand form with the help of outlet book maintained by the *Chowkidaar*. The Section Officer then finalizes the bills of Form 12 which has the details of land and area irrigated. With the help of this, Irrigation Dues

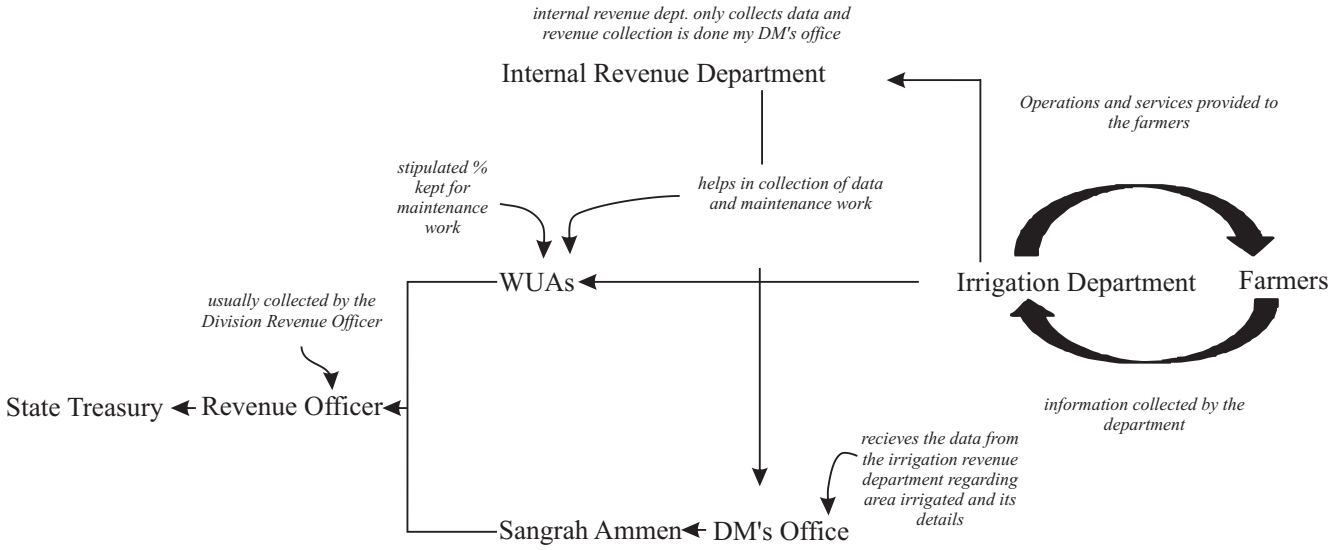
Figure 2 Revenue collection system in Gujarat



Copy is prepared by the Division office. One copy of this is sent to the Executive Engineer's office and another to the *Talati* who is responsible for collecting ISF. When a farmer pays ISF, a pink *paavti* (receipt) is issued to him, a copy is kept with the *Talati* and another copy is sent to the bank. The *Talati* then issues a *challan* which contains the details of the money collected and the copy of the receipts given to the farmers which along with the money collected is deposited in the bank. While the original copy is kept at the office, two copies are sent to the bank and the fourth one is sent to the *Mamlatdar*. The *Talati* maintains a book of records (8-B) which mentions the details of the farmers with the amount pending and Document No. 11 has the details of the payments made by farmers towards their bills. These two documents (8-B and No. 11) are consolidated as 8-b document. This consolidated statement is maintained for every village at the *Taluka* level. The *Talati* submits the data of the amount recovered and collected to the *Mamlatdar* office every month who reviews the collection procedure. This data is then collected at Division level minor and sub minor wise which is again prepared Distributary wise and sent to the Engineer-in-Chief who in turn gets the data consolidated for the whole irrigation system (Figure 2).

In comparison to Gujarat, Uttar Pradesh has clearly divided the tasks between the Irrigation and Revenue Department. The ID[4] is involved in service delivery and assessment. The *Seenchpal* (who act as an interface between the farmers and ID) records the irrigated area in *Khasra Shudkar*[5]. The data in the *Khasra Shudhkar* is used to prepare *Jamabandi* or demand for ISF and a copy is sent to the District Magistrate's office. The recovery process starts after the assessment is done and the RD prepares the *Parcha Seench* which informs the farmers about the revenue that is due on them. The *Sangrah Ameen* from the RD is responsible for collecting the entire amount. The farmers get receipts against the payments and a copy is kept for the maintenance of records. The recovery done by the RD has to be periodically informed to the ID in writing. The revenue is collected *Taluka* wise and is consolidated Distributary wise and sent to the

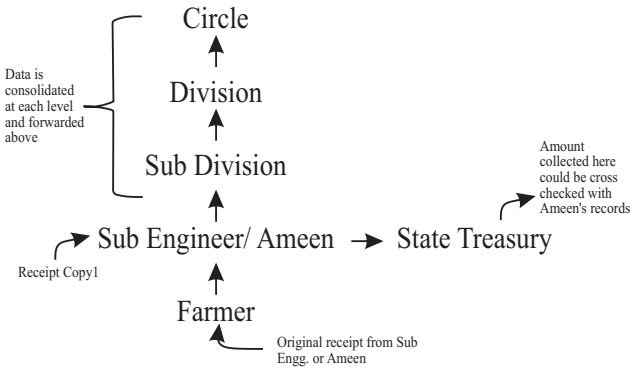
Figure 3 Revenue collection system in Uttar Pradesh



[4]The Irrigation Department is divided into two divisions: Engineering Division responsible for O&M and Revenue Division headed by Divisional Revenue Officer is involved in revenue assessment. It may however be noted that the collection of revenue is done by the Magistrate's office and not the officials involved in assessment process.

[5]*Khasra Shudhkar* contains name of the cultivator and crop sown, total area and area irrigated

Figure 4 Paper trail in Madhya Pradesh

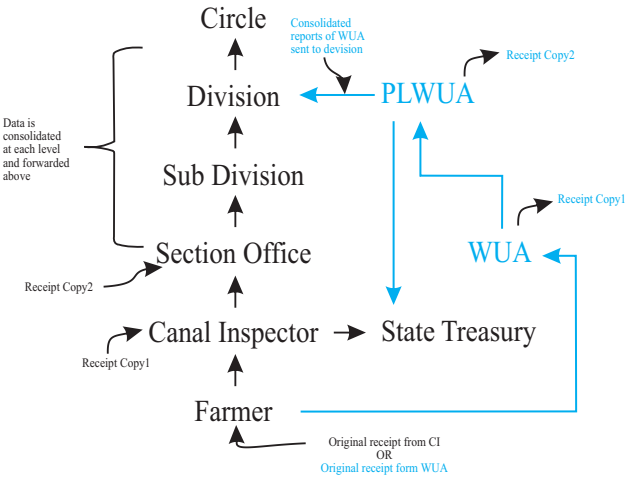


Engineer-in-Chief. This report of revenue collected includes the service tax from farmers as well as industrial and domestic use. But the data available at division and sub division level clearly demarcates the revenue that comes from farmers (Figure 3).

When one does it all

In Madhya Pradesh and Maharashtra both the service delivery and revenue recovery is done by the ID. Here the farmers go into an agreement with the ID. The agreement contains details such as area to be irrigated, crops sown and plot number *(khasra no.)*. During the irrigation service delivery the *Ameens* note down the number of irrigations and any unauthorized irrigation by farmers. The farmers are charged on the basis of area irrigated, crops sown and number of irrigations.

Figure 5 Paper trail in Maharashtra



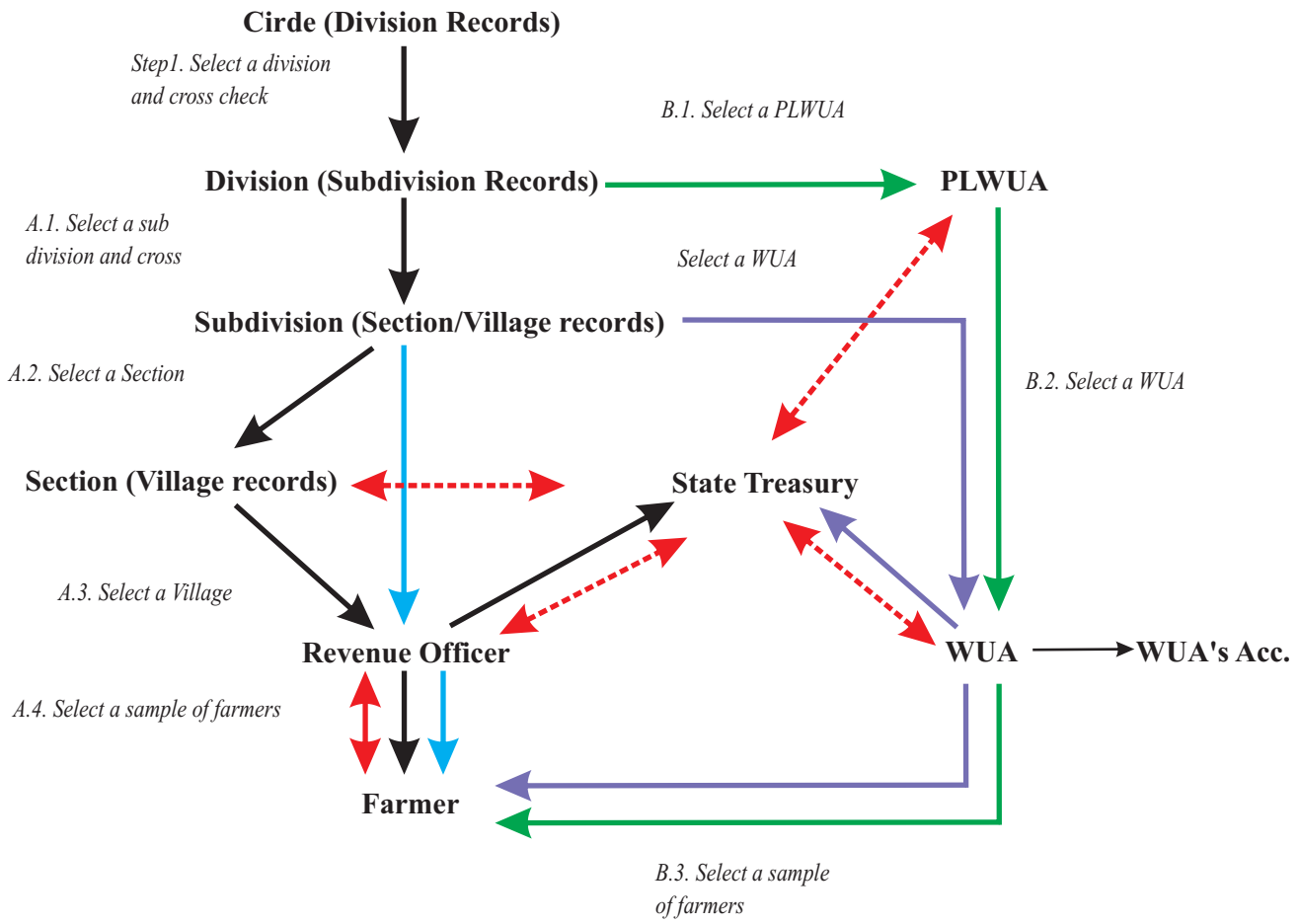
In Madhya Pradesh the recovery process starts at the end of the season and is mainly carried through Sub Engineer and *Ameens*. Each Sub Engineer has 2-3 *Ameens* under him and each *Ameen* is given a set of villages for recovery. The farmers are provided with receipt on payment of their bill. These recovery records are first consolidated village wise and then clubbed further subdivision wise. These records are then further consolidated Division wise, Circle wise , Chief Engineer wise then arriving at a sum total of irrigation revenue from famers (Figure 4).

Maharashtra in comparison to Madhya Pradesh follows both area basis and volumetric basis for revenue collection. While in Madhya Pradesh, Water Users' Associations (WUAs) are not authorized to collect revenue, here they play a major role in revenue collection. The Project Level Water Users' Association (PLWUA) enters into an agreement with the state ID which supplies water and the PLWUA pays water fees based on volumetric basis (say Rs. 75 /cusec) to the ID. This PLWUA will then supply it to WUA on volumetric basis and will add a commission to the fixed charge. The quantum of water that is to be supplied to each WUA is determined on the basis of availability of water in the dam and the number of members of WUA. The members of WUA are charged on the hourly basis (say Rs.150 /hr) by the WUA. The farmers here pay advance water tax in order to get concession benefits (Figure 5).

The farmers are given receipts on payment which mentions the crop sown, number of hours the water used, season (*rabi*, *kharif* and *summer*) etc. The details of each transaction are entered in the cash book and the cash is deposited in bank account after every three days and a separate file for bank receipts is maintained. The WUA then pays to PLWUA in the form of cheque. The PLWUA then deposits the amount in the ID account and a season wise revenue report is maintained which indicates the amount paid by each WUA under its jurisdiction. In other parts of Maharashtra the irrigation fees is mostly charged on area basis[6]. In areas where WUA is not present the farmers pay the irrigation fees to either Canal Inspector or directly to the section office.

[6]seasonal rates for different crops are applicable

Figure 6 A framework for verification system



Conclusion

The study in the four states shows that the revenue from farmers is depicted as a separate head in the recovery reports. Given the time and resource constraint, the third party who does the verification can go for Direct Substantive Testing whereby they will be cross checking the data regarding ISF at various levels. The third party can adopt a top to bottom approach for the paper trail through different levels in the ID till the Sub Division office or Section Office (a sample plan is given in Figure 6). The Sub Division office is where the data regarding demand estimation and collection is consolidated first. Apart from the ISF from farmers, the third party can ask Sub Division to submit separate data on ISF collected by WUAs and the department. Sub Division office can also submit data on number of farmers who paid ISF, area irrigated by them, crops cultivated etc., calculate ISF and check whether it matches with the ISF reported. In case of water delivery is on volumetric basis, which usually occurs in areas where WUAs are formed, the department can give data on the same. These data can be cross checked with the respective WUAs by the third party. The third party can also ask the department to submit data needed, in a specified pro forma disaggregating the necessary information regarding ISF assessment and collection. The ID can ask the WUAs to do the same.

Another major concern of the third party will be sampling of the irrigation systems as they could not check every irrigation systems in a state. They can go for random sampling for major and medium irrigation systems. They can compare previous years' (say past five years) ISF to current ISF and if there is a wide difference between the present ISF collection and the past collections, those systems should be chosen to understand why there is a sudden inconsistency. There is wide speculation that there may be over estimation of ISF by irrigation systems by fudging the data on ISF collected from not only farmers but also from other consumers like industries, since the

NIMF is given in 1:1 proportion to the ISF collected. Hence the third party should also check the ISF collected from other consumers.

The study shows that in some states, the ISF estimation and collection is done only by ID while in other states ISF assessment is done by ID and collection by RD. While the second case brings in more credibility in the process, it may cause difficulty for the third party in getting the data in the required format. Hence third party should give detailed instructions to ID regarding the consolidation of data in such cases.

The major thrust of the third party verification for NIMF should be that the ISF reported by irrigation systems is collected from farmers and not from other consumers and that those collected from each system and WUAs are accurately reported. The study shows that the data is available at all levels of hierarchy up to the farmers. The third party should define and decide the extent to which variations would be acceptable to it and if the variation crosses the set benchmark then it should be established that the data does not stand accurate with reference to the verification process. The decision of granting the NIMF should be taken keeping in view certain other factors that could have resulted in an inaccurate data. The third party also has to come up with a suitable sampling plan for each state and once the verification is started, the sampling plan may evolve also. The major challenge the third party will be facing is how to make the entire process reliable yet simple.

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About the IWMI-Tata Program and Water Policy Highlights

The IWMI-Tata Water Policy Program (ITP) was launched in 2000 as a co-equal partnership between the International Water Management Institute (IWMI), Colombo and Sir Ratan Tata Trust (SRTT), Mumbai. The program presents new perspectives and practical solutions derived from the wealth of research done in India on water resource 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 series on Water Policy Highlights and IWMI-Tata Comments.

Water Policy Highlights are pre-publication discussion papers developed primarily as the basis for discussion during ITP's Annual Partners' Meet. The research underlying these Highlights was funded with support from IWMI, Colombo and SRTT, Mumbai. However, the Highlights are not externally peer-reviewed and the views expressed are of the author/s alone and not of ITP or either of its funding partners.

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