

Report of the Committee
on
Pricing of Irrigation
Water

Planning Commission
Government of India
New Delhi

September, 1992

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EXECUTIVE SUMMARY

1. Introduction

(1) There has been widespread concern about the large and growing magnitude of losses on irrigation projects. A need has been felt to examine in depth the existing mechanism of water pricing, its level and structure, modalities of improving the recovery of dues, the norms of maintenance and other related issues. It was against this background that the Planning Commission constituted the Committee on Pricing of Irrigation Water in October 1991.

(Paras 1.1 to 1.8)

(2) Within the limited time available, we have had to rely heavily on work done and information compiled by earlier studies, supplemented by such information as could be obtained from State Governments through correspondence and discussions, field visits and meetings with experts.

(Paras 1.9 to 1.14)

(3) In several instances, the specificities of local situations will have to be taken into account while implementing the broad approach and specific principles embodied in our recommendations.

(Para 1.15)

(4) Much of the information which is crucial for a proper assessment of the performance of irrigation systems is hardly even compiled regularly, much less analysed. We hope that action will be taken to build up a system to generate reliable data on a continuing basis.

(Para 1.16)

2. Financial Performance of Public Irrigation Systems

(1) A number of Commissions and Committees are agreed that the income from irrigation works should cover the annual maintenance and operation costs, but there are some differences as to whether, and if so to what extent, capital related charges should be covered. The National Water Policy 1987 asserted that water rates should cover the annual maintenance and operation charges and a part of the fixed costs. It is against this background that we must review the existing system of water pricing.

(Paras 2.1 to 2.14)

(2) The incidence of irrigation charges varies a great deal across states, and the rate per unit volume of water consumed varies greatly across crops. The wide variability in the level and structure of rates per ha. cm suggests that there is scope for a rationalisation of the rate

structure. In no State does the gross receipt by way of water charges per hectare account for more than 3 per cent of the gross productivity per ha of irrigated area.

(Paras : 2.15 to 2.26)

(3) Revision of water rates has been infrequent, hesitant and very much less than the increase in costs. The all-round deterioration in the financial performance of irrigation projects is stark and nearly universal. The gross receipts of major and medium irrigation and multipurpose projects fell short of their working expenses by about Rs. 168 million a year on an average during the three years 1974-77; the gap rose to Rs. 2775 million a year during the period 1984-87. Including interest on capital outlay, the deficit rose over the same period from about Rs. 1737 million a year to Rs. 9867 million a year.

(Paras 2.27 to 2.31)

(4) There are some questions concerning the coverage and conceptual basis of the accounts figures. These are set forth in the text of this Report.

(Paras 2.32 to 2.35)

(5) For working out the full cost of providing irrigation water, the capital outlay for the purpose of calculating re. interest (as also depreciation) has to be the entire capital outlay on the irrigation sector, covering not only all major and medium projects without regard to the commercial/non-commercial classification, but also minor irrigation and the capital outlay, if any, under CAD as well.

(Para 2.36)

(6) For working out the element of interest on capital, it is in our view appropriate to take the average interest rate paid on the outstanding public debt of each State. There is also a strong case for the capitalisation of interest during construction in departmental management accounts.

(Paras 2.37 & 2.38).

(7) For determining the capital base which should bear the interest, projects which are still under construction have to be excluded; at the same time, projects in many cases begin supplying water long before they are completed. Actual costs tend to be inflated by a variety of factors (such as time and cost over-runs; defects in project design; deficiencies in management; waste; leakages etc.). In the absence of accurate information regarding such matters we decided to take the cumulative outlays three years prior to the accounting period as the base for computing depreciation and interest. Depreciation is taken at 1% of capital investment.

(Paras 2.39 & 2.40)

(8) On the basis of our estimates, the total unrecovered costs on account of major and medium irrigation works (14 major States) increased more than fivefold in a 10-year period from Rs. 280 crores in 1977-78 to Rs. 1525 crores in 1986-87. We would strongly urge that a serious and detailed scrutiny of the accounting of the costs and revenues of minor irrigation works also be undertaken to determine the order of subsidies involved.

(Paras 2.41 to 2.44)

(9) It is not possible to determine how much of the implicit subsidy is attributable to inefficiency and how much really benefits farmers because of the under-pricing of water. Attempts to reduce the magnitude of overall subsidies must therefore focus both on improving the efficiency of planning and management of irrigation (thereby cutting costs) and on increasing the collection of user charges by raising rate and the more effective enforcement of the scheduled rates.

(Para 2.45)

(10) It is necessary to supplement the financial accounts by proper management accounts. We have indicated in detail in the Report the Kind of information which such management accounts should cover. We recommend that the Government, with the assistance of the Central Water Commission, and in consultation with the Comptroller and Auditor-General of India, should examine the matter in the light of those observations and develop a suitable set of revised instructions and forms which will fully serve the purposes in view. We also recommend that the engineer in charge of each system (i.e., each major and medium project and clusters of minor irrigation projects) should be made responsible for the maintenance of these management accounts, and that the Irrigation Department should consolidate these for the State as a whole and produce an annual review presenting the total picture for the State.

(Paras 2.47 to 2.49)

3. Pricing of Irrigation - Approach and Principles.

(1) It is difficult to accept the case for subsidising such a user-oriented and capital-intensive infrastructure as irrigation . The government is not in a position to sustain subsidies on irrigation, or for that matter on any infrastructure, on the present scale.

(Paras 3.1 to 3.4)

(2) Water rates are a form of users charge and not a tax. The basis of determining the cost of the irrigation service and the desirable extent of recovery may be debatable, but not the principle that users of public irrigation must meet the cost of the service.

(Paras 3.5 to 3.7)

(3) Irrigation is one of the key inputs for crop production in as much as the productivity impact of better seeds, fertilisers and other inputs is critically dependent on the way water is used. It is therefore both legitimate and necessary to address the pricing of this input as one of the first steps and an integral component in the process of rationalising the totality of the price structure, and raising the efficiency of water use.

(Para 3.8)

(4) The underpricing of water adversely affects the availability of resources for the management of irrigation systems. Inadequate allocations for maintenance and repairs is a direct consequence of the poor financial position of the states, and is responsible for the low, possibly deteriorating, quality of service. This means that the potential increases in productivity which new technology makes possible cannot be realised in full.

(Paras 3.9 & 3.10)

(5) A revision in the level and structure of water rates is thus necessary in the interest of both efficiency and equity. The revision should be such as to achieve full cost recovery in due course and in the process promote saving, create disincentives for waste and thereby enable the service area to be expanded and a more reliable service assured.

(Paras 3.11 & 3.12)

(6) Revision of water rates should go hand in hand with measures to improve the quality of service and to keep a check on costs.

(Paras 3.13 & 3.16)

(7) In the light of a detailed assessment, rates for non- agricultural uses (domestic, industrial) should be revised so that the costs are fully recovered and arrangements built into the supply contracts for ensuring full and prompt recovery of dues.

(Paras 3.17 & 3.18)

(8) Estimates of full productivity impact in terms of gross or net output for different categories of irrigation in different regions are not available. We strongly recommend that the design for regular crop-cutting surveys should make irrigated land (as a whole and preferably by major types) a separate stratum for the purpose of yield estimation.

(Paras 3.19 & 3.20)

(9) Translating the overall productivity impact of irrigation into rates for particular crops raises difficult problems. There is also the question of how the cost- recovery principle and the 'capacity to pay' will be balanced. In view of these difficulties, and the

severe resources constraints facing the government, we are of the view that cost-recovery should be the main consideration governing rate-determination.

(Paras 3.19 & 3.23)

(10) We recommend that rates should be based on O&N norms and capital charges (interest and depreciation). The government must ensure that the actual O&M outlays more or less correspond to norms, which should be revised once in every five years

(Paras 3.24 to 3.25)

(11) We recommend that State irrigation agencies undertake analyses to arrive at a well-grounded estimate of the capital investment attributable to the irrigation service.

(Paras 3.27 to 3.29)

(12) We are of the view that some sort of averaging of rates by region and/or category of projects, as is already being done by several states, is desirable. We suggest the following categorisation: (1) major and medium storage systems; (2) major and medium projects based exclusively on barrages/diversion works; (3) minor surface irrigation works; (4) lifts irrigation from canals; and (5) lift irrigation from groundwater. Where a State has marked variations in agro-climatic conditions, the above categorisation may be done by agro-climatic regions.

(Paras 3.30 to 3.33)

(13) Attempts at distinctions in terms of head and tail reaches of a system, quality of soil, or other criteria for rate-determination should be approached with considerable caution, as they are difficult to apply and will add to the complexity of water pricing.

(Paras 3.34 to 3.36)

(14) There are divergent views on whether or not there should be any levy on conjunctive use. On the whole, we are of the view that recycling seepage from surface sources should not be taxed.

(Paras 3.43 & 3.44)

(15) There is a strong case for applying a two-part tariff. All lands included in the command should pay a flat annual fee on a per hectare basis for 'membership' of the system which entitles them to claim water and gives them the benefit of several other facilities which are associated with the spread of canal irrigation; and a variable fee linked to the actual extent of the service (volume or area) used by each member. Such a two-part tariff would be applicable in the case of major/medium irrigation schemes. In the case of minor projects, wherever the O&M of the system is completely turned over to water users'

associations, the associations would be charged only the basic flat rate on a per ha basis. However, till this is achieved, water charges for any minor scheme would be levied on par with major/medium schemes.

(Paras 3.48 & 3.49)

(16) Many considerations - linking water rates to quality of irrigation service, rationalising rate structure and reducing cost of assessment and collections argue strongly for a system which makes water charges explicitly a function of the volume and season. Volumetric assessment at the level of individual farmers would be both expensive and impracticable. However, it is feasible at reasonable cost to monitor volumes delivered at the distributary outlets at different points of time.

(Paras 3.37 to 3.47)

(17) The move to full-fledged volumetric pricing cannot be introduced immediately. The proposed rationalisation of water pricing will have to be accomplished in a phased manner.

(Paras 3.50 & 3.53)

(18) The objective of the first phase should be to rationalise and simplify the existing system of assessment (based on crop-wise irrigated area on an individual basis) to a system of season-specific area rates. It is possible to estimate the relative water consumption per hectare irrigated in different seasons. The variable part of the tariff in the case of major and medium projects and such of those minor works as are still under state management should be fixed on this basis. We would urge that all minor systems be turned over to users immediately after completion. Both categories of projects will pay a flat basic rate per ha. The level of cost-recovery to be aimed at in the first phase should at least cover the O&M costs and 1% interest on capital employed.

(Paras 3.54 to 3.56)

(19) Irrigated area under a crop which spreads over two seasons will be charged at the rates applicable to both seasons, and perennials for all three seasons; but crops like paddy which take a lot of water for non-consumptive uses need specific treatment. Where paddy is a significant but not a dominant crop, some differentiation may have to be made, in each season, therefore, we need to distinguish at best three categories, viz, paddy, sugarcane and perennials and other crops.

(Para 3.57)

(20) In the second phase to be implemented in the course of the next decade, the aim would be to shift to a fully volumetric system. Additional investments to modify the distribution system for effective regulation of volume delivered at outlets (estimated at

approximately Rs.5,000 crores) will be needed. As system efficiency and productivity improve, the targets of cost recovery can be progressively increased.

(para 3.58)

(21) There are many important matters of detail to be decided in shifting to the volumetric system of charging. These are best decided In consultation with users' representatives. The most crucial and also the most difficult task in this phase will be to promote the formation of sufficiently large farmers' groups.

(Para 3.59 to 3.61)

(22) Phase III, which will spread over a much longer period should seek to extend and consolidate the system of farmer group management, and implement, with the involvement and participation of such groups, a programme for upgrading the system to a higher level of efficiency in water-use and therefore of productivity. Besides substantial investments in conjunctive use and distribution networks, the techniques of water management will have to become tighter and more sophisticated.

(Para 3.62)

4. Operation and Maintenance

(1) It is generally recognised that the funds allotted for O&M are inadequate. The amount actually spent on O&M on a conceptually clear and uniform basis cannot be determined from published budgets or accounts. The importance of improving the accounting of expenditures needs hardly any emphasis.

(Paras 4.1 to 4.4)

(2) There is a case for earmarking the whole or a substantial part of the receipts from each irrigation system towards the operation and maintenance of that system. In the long run, there is a case for moving towards the conversion of each irrigation system into an independent self-financing system, whether through the formation of corporations or otherwise.

(Para 4.5)

(3) The Finance Commissions sought to make adequate provisions for O&M based on certain norms, but the general complaint is that the amounts provided for the O&N of irrigation projects continue to be well short of norms.

(Paras 4.6 to 4.7)

(4) There is a strong case for the department divesting itself of the responsibility for the maintenance of the network below a certain level of outlet (say, a 100 ha outlet), and

transferring this responsibility to users'groups. This would not merely reduce costs but would also enable the Department to concentrate on the _ maintenance of the main system and perform that function better.

(Para 4.8)

(5) We recommend that States set up special expert groups to work out appropriate norms and a procedure for periodic monitoring and updating for different agro-climatic regions and broad categories of projects.

(Paras 4.9 & 4.10)

(6) If we wish to switch over to group-based delivery, it will be necessary to clear the backlog of deferred maintenance and to upgrade the main system to bring it to the desired standard. We recommend that (a) atleast 10% of the plan provision for major and medium projects be allocated for renovating and upgrading existing systems; and (b) the recovery of accumulated arrears - the magnitude of which is currently very large - be earmarked towards meeting the cost of deferred maintenance/ special -repairs in the project concerned.

(Paras 4.11 & 4.12)

(7) Even after such restoration, it is essential to maintain all the project components properly. (An account of maintenance needs is given in the text of the Report and the related Annexures).

(Paras 4.13 4.16 and Annexure 4.2)

(8) The Committee is of the view that there should be separate norms for components with different characteristics. The Committee commends the methodology adopted in working out O&M norms for projects in U.P. and for Jayakwadi Project in Maharashtra.

(Paras 4.16 & 4.17 and Annexures 4.3 & 4.4)

(9) Based on our general recommendations, the States should work out the norms; and based on these norms, the per hectare norm for maintenance can be worked out. This should be a region-wise exercise, distinguishing different categories of projects. in exceptional cases, for mega projects, it may even be possible to have project-specific norms. At the State level, the budgetary provision for the Department should be on this overall per hectare basis, whereas allocations will be made to. Individual projects based on the components of maintenance costs.

(Paras 4.18 6 4.19)

(10) The staff component has been increasing over the years leaving progressively less funds for physical maintenance. Deliberate efforts are called for to bring down the staff

costs substantially. As a first step, the strength needs to be frozen and redeployed. One of the effective ways of cutting costs is to transfer some functions to users' groups.

(Paras 4.20 to 4.24)

(11) It will be useful if the Central Water Commission could undertake a systematic comparative study of the existing norms and the actual situation on the ground in all the major States.

(Para 4.25)

(12) The States should form a high-powered autonomous Board which may be called "Irrigation and Water-Pricing Board" to review the policy, establish the norms regarding maintenance costs for various components and staff costs, assess the actual expenditure in relation to these norms, and determine the parameters and criteria for revising water rates. There should be a mandatory review of all these matters every five years with an opportunity for users to present their views

(Para 4.26)

5. Assessment and Collection

(1) Among the various problems faced in the matter of assessment, unauthorised irrigation and the incorrect reporting of crops and irrigated area are the major ones. There are also delays in raising demands. In spite of low and subsidised water rates, actual revenue recoveries are substantially below the demands. Large arrears have been allowed to accumulate and these tend to be eventually written-off. The existing mechanisms for preventing unauthorised, excessive and wasteful use of water as well as for the recovery of outstanding dues have not proved very effective. Lack of coordination among different agencies involved in assessment and collection also aggravates the problem.

(Paras 5.1 & 5.8)

(2) There is considerable diversity in the mechanism for the assessment and collection of irrigation revenues. The limited data that we have seen suggest that the ratio of accumulated arrears to annual demand is generally much higher in States where the Irrigation Department is responsible for both the assessment and collection than in States where both functions are vested in the Revenue Department or where they are divided between the Irrigation and Revenue Departments. Having considered the matter, the Committee is of the view that the assessment function is best entrusted to the Irrigation Department. As for collection, States may choose one of two options - (1) entrusting both assessment and collection to the Irrigation Department, and (2) making the Irrigation Department responsible for assessment and the Revenue Department for collections - in the light of their specific circumstances and experience. Where alternative (1) is preferred, it

would be necessary to empower the Irrigation Department officials to recover arrears of irrigation dues under the Revenue Recovery Laws.

(Paras 5.9 to 5.15)

(3) The Committee would like to emphasise the need for purposive and strong measures to ensure the accurate assessment of irrigation charges and their prompt and full collection. We suggest that a regular system of independent verification of actual irrigation on a sample basis be introduced on all major and medium project commands. At the same time, we strongly recommend that a serious effort be made by Irrigation Departments to use remote sensing as an independent source, of information on irrigated area which can be used along with sample verification to test the veracity of records maintained by field staff. Such independent checks linked to a system of penalties for inaccurate (and rewards for accurate) recording would minimise the loss from under-assessment.

(Paras 5.16 to 5.18)

(4) We are of the view that the practice of waiving or suspending collections of irrigation charges on account of drought is not justified in respect of areas actually irrigated.

(Para 5.19)

(5) The reluctance of the governments to support the agencies concerned in enforcing the regulations has led to a situation in which these agencies have practically given up even raising demands for betterment levies; very little is done to take cognizance of the widespread violations of rules and even less to enforce what little penalties are levied. He need hardly emphasise that such laxity has serious consequences not just in terms of revenue but for the efficient management of the systems.

(Paras 5.20 & 5.21)

(6) With a view to improving collections, the States should consider switching from the existing system of supplying water on credit to one of supply against advance payment. The collection performance relative to demand should be an important consideration for deciding the allocation of O&N funds to individual systems. We also recommend that proceeds from the collection of accumulated arrears from a system be used for making up the cumulative effects of past neglect in the maintenance of that system.

(Para 5.22)

(7) Until a system of group assessment on a volumetric basis is introduced, the State agencies will need to verify and record the area irrigated by plots in order to determine the dues from individual farmers. The proposed system of season-hectare assessment (i.e., assessment on the basis of area irrigated in each season) will substantially simplify the task.

In the case of minor surface works, since assessment will be at a flat rate per hectare of command, there is no need for recording crop-wise area irrigated for the assessment of water rates.

(Paras 5.23 to 5.25)

(8) The aim should be to increase user participation in management initially at the level of distributaries and minors, and in due course at the level of the system as a whole. Each system should become an autonomous entity which manages its own finances both for operation and eventually for the expansion/improvement of facilities.

(Para 5.26)

Role of Farmers' Groups:

(1) The country must move over progressively from management wholly through the government bureaucracy to management by user farmers. As a first step, we suggest a substantial reduction in the sphere of responsibility of the government and the encouragement of user groups to take over maintenance, management of water allocations, and collection of water rates for a group of outlets serving at least a village.

(Paras 6.1 to 6.4)

(2) The general consensus among knowledgeable people is that efforts to actually organise farmers' groups and make them participate in management: have not really made much of an impact. Initiative for group formation will be forthcoming from users only if they see a reasonable prospect of substantial gain and if circumstances create the compulsion for cooperation. Steps for accelerating the process of forming effective users' groups have therefore to be conceived in a wider framework combining better management of the system as a whole with incentives for group operation.

(Paras 6.5 to 6.11)

(3) We have already suggested a three-phase programme for system improvement. The focus initially will be on investments necessary to effectively regulate deliveries at the minor/outlet level, and the formulation of clear operation rules. After this initial phase, which will culminate in volumetric group delivery and pricing, farmers' groups can play a major role in planning and implementing more basic system improvements. In the long run, the aim should be to get these groups actively involved in formulating and implementing system-improvement programmes. The ingredients of all these improvements are location-specific and best planned in cooperation with users' groups. A judicious combination of the profit motive, financial assistance and social pressure for equity and greater dispersal of water rights would be needed for the successful transformation of the system.

(Paras 6.12 to 6.16)

(4) It may be necessary to start with relatively smaller groups and gradually expand them to cover a group of outlets in close proximity. As a practical matter, the users' groups might - to begin with - be organised on a village basis.

(Para 6.17).

(5) The user-groups will be wholly responsible for (i) maintenance of the channels below the point where the water is delivered; (ii) payment of water charges to the system on the basis of an explicit contract; (iii) determining and enforcing the rules of allocation among the farmers served by the outlet as well as the rates to be charged from individual users. The crops to be grown, the construction of subsidiary storages or the conjunctive use of seepage will be left to be regulated exclusively by the group. The group will be free to determine the basis as well as the level of water rates and other additional service charges, if any. The surplus, if any, over the payment of dues to the system will be available for meeting local repairs, maintenance and even improvement of facilities.

(Paras 6.18 & 6.19)

(6) There is bound to be scepticism about the benefits of the proposed changes. Also, villages/ farmers' groups are heterogeneous and have internal conflicts. Great care should be taken to select initially villages/outlets which are favorably placed especially in terms of social homogeneity, relative freedom from conflicts and existence of a strong local leadership.

(Para 6.28)

(7) It is necessary to devise incentives which discriminate strongly in favour of farmers' groups and discourage individual service. The incentive will be strong if the revised rates are substantially lower for those who accept group-based volumetric charging than for farmers who wish to continue on the individual area-based demand system. Additional incentives would be allocation of funds for irrigation system improvement to effective farmers' groups which are willing and able to take over management responsibility, and the entrustment to such groups of contracts for system maintenance works in their vicinity. The government must declare its intention to withdraw, after a designated period of 5-10 years, from the responsibilities for management below the outlet, and confine itself to delivering water for a specified duration at the minor or the outlets. There should be a supportive attitude on the part of the departments concerned at all levels to the formation of groups, the provision of technical advice and assistance, and the encouragement of voluntary organisations to play a larger role in the process.

(Paras 6.21 to 6.23)

(8) The form that a farmers' group takes should be one which makes the group a legal entity which is capable of entering into enforceable agreements. The Government cannot enter into agreements with informal associations. However, we do not propose to make any specific recommendations on the form that the farmers' groups should take. This is a matter for each State Government to consider in the light of local circumstances.

(Paras 6.24 to 6.27)

(9) While the government will necessarily have to play the lead role in main system improvement, user's groups could play a role in the process. Appropriate organisational forms comprising the government, the financial institution* and users will have to be evolved. The case for the active involvement of user groups in improvements below the point at which they take over is much stronger, as detailed local knowledge and consensus is very critical for this activity. Here again the modes of participative planning and implementation should be established in the light of the experience of some well-chosen pilot projects.

(Paras 6.28 to 6.30)

(10) The sheer magnitude of the problem makes it imperative to encourage initiative from wherever it is forthcoming - whether voluntary organisations, such as cooperatives or non-profit groups or public -interest activists. Voluntary organisations usually lack professional manpower for management and technical functions, but this can be overcome by encouraging them to create a cadre of Paratechnologists. The role of voluntary organisations is often crucial in the initial stages of group formation. They have also a broader long-term role in bringing farmers' priorities and needs into the planning of system-modification and improvement. However, eventually all the tasks involved have to be performed by the water users' associations, with the Irrigation Department retaining responsibility for the regulation, monitoring and maintenance of the main system. The experience of some successful voluntary organisations can be studied. The resources of institutions such as IRMA, the IIMs, the Administrative Staff College of India, WALMI and water resource departments of technical universities, need to be availed of in a purposeful manner.

(Para* 6.32 to 6.34)

(11) It seems worthwhile to create a special fund in each State for financing the promotional work and pilot projects for system improvement.

(Paras 6.35 & 6.36)

Implementation

(1) For the purposes of illustrating the application of the suggested approach to the revision of water rates, if we use the norm suggested by the Jakhade Committee, namely, Rs. 180 per ha. gross irrigated area, with adjustments for inflation since 1987 and for departmental overheads at 25 per cent of the norm so adjusted, and add interest @ 1% on capital, the total recovery in Phase I should average around Rs. 340 per ha. As against this, the estimated gross receipts from major and medium projects in 1989-90 was Rs. 68; the actual irrigation revenue works out in 1989-90 to Rs. 50 per ha. Assuming conservatively the additional revenue on account of an increase in the rates for industrial use at Rs. 10 per ha, the recovery from irrigation charges in Phase-I has to be Rs. 310 per ha compared to the present realisation of Rs. 50 per ha.

(Paras 7.1 to 7.6)

(2) Stricter assessment and collection should increase revenue collections by 35-40 per cent of actual receipts (or Rs. 17-20 per ha area) without any change in the level or structure of rates.

(Paras 7.7 & 7.8)

(3) A basic levy at the rate of Rs. 50 per ha is recommended for all lands in the cultivable commands of major and medium as well as minor works. This is intended as a fee for the right to get water from the system (a sort of "demand charge").

(Para 7.9)

(4) The rate per unit of water needs to be equalised across crops. The additional revenue through such rationalisation will be sizeable, the increase ranging from 18 per cent to 140 per cent of the revenues at current rates if the per ha. cm. rates for all crops are made equal to the irrigation rate now charged for ID crops, and from 50 to 325 per cent if they are made equal to the highest irrigation rate per ha. cm.

(Paras 7.10 to 7.12)

(5) The level of rates will also have to be raised. The extent of increase required, depending as it does on the potential for rationalisation, cannot be quantified. It is also likely to vary from State to State. Nevertheless, on the average, the required revenue by way of irrigation charges (Rs. 310 per ha) will still be barely 6% of the gross produce per hectare of the irrigated area, and that without taking any account of likely improvements in productivity.

(Para 7.13)

(6) As a measure of inducement for farmers' groups to take over greater responsibility, we suggest that when the proposed revisions are implemented, the rates for group delivery

be fixed at substantially lower levels than for individual delivery, while keeping the basic fee of Rs. 50 per ha. Common.

(Para 7.14)

(7) In phase-II, the basic flat rate per ha of CCA will continue but should be related to an obligation on the part of the system to provide a minimum level of service defined in terms of volume of water for the staple crop seasonal. The variable rate will be switched progressively to a volumetric rate for group users. As the productivity of water increases, the variable rate can be raised so that the O&M costs and a larger part of the capital- related charges are recovered. Full cost recovery should be the goal for Phase-III.

(Para 7.15)

(8) There are differences among States in the extent of under-recovery of costs. The gap would be smaller in some States if the receipts on accounts of irrigation recovered as part of land revenue could be separated and fully accounted for.

(Paras 7.16 & 7.17)

(9) The revenue potential of better collections is seen to be high in those States where the order of increase in revenue required to meet the cost recovery standards recommended is also large. In such situations, efforts to improve assessment and recoveries must be given high priority. The scope for augmenting revenues through a rationalisation of the existing rate-structure is substantial but variable. A detailed illustrative exercise is given in Annexure 7.2.

(Paras 7.18 to 7.21)

(10) The implementation of the approach suggested here will require expeditious action on the part of each State to set up task forces, with adequate expert staff and authority for collecting the necessary data, to determine O&M norms by region and category of projects; undertake sample studies in the field to determine the extent of under-assessment and under-collection at existing rates; determine the per hectare rates applicable to paddy and other seasonal crops by season and for perennials in terms of volume of irrigation required and costs connected with carry-over between seasons; and work out the existing and projected use by non-agricultural users and determine the rates to be charged to such users, the appropriate contractual arrangements, and other relevant details.

(para 7.22)

(11) Simultaneously, a programme to encourage users' groups should be initiated, and a time-bound programme for switching over to group delivery should be announced. In tandem, programmes for upgrading capabilities of existing systems to manage regulated

delivery to groups and working out the operational rules in terms of which the groups will enter into contracts with the system should be launched.

(Para 7.23)

(12) The Centre and the Planning Commission can help the process by active intercession with the State Chief Ministers to explain the rationale and urgency of the proposed reforms. The Centre can also support the reforms through a programme of public education to explain their rationale; provide financial and technical support for initiatives to demonstrate the feasibility and advantages of group management; and persuade States to earmark sufficient funds for upgrading system-capability for introducing group-based volumetric supply and pricing. The National Water Management Project (NWMP), which needs to be substantially expanded and re-oriented in the light of our recommendations, would seem to be an appropriate instrument for this purpose.

(Paras 7.24 & 7.25)

(13) A minimum financial return should be reintroduced, along with the test of viability in terms of social benefits relative to social costs, as essential criteria for sanctioning all investment proposals whether for new projects or for the improvement of existing proposals.

(Para 7.26)

(14) These changes are essential and important constituents of any effort to improve public finances generally and those of the State Governments in particular, but are also required as part of an effort to improve the productivity of irrigated agriculture by making farmers aware of the value of water and at the same time enabling them to get a larger output per unit of water delivered by public systems.

(Para 7.27)

CHAPTER - 1

INTRODUCTION

The Appointment of the Committee

There has been a massive development, of irrigation in India since the inception of planning. Huge investments have been made in the public sector to develop the irrigation infrastructure to support agricultural growth. Altogether during the four decades from 1950-51 to the present some Rs.40,000 crores have been invested by the public sector on all forms of irrigation, the bulk of it on projects (mostly major and medium surface irrigation works) directly under the auspices of the Government. The total investment on major and medium works between 1950-51 and 1990-91 is placed at over Rs.26,000 crores and this is estimated to have created the potential to irrigate around 33 million hectares, an increase of 23 million ha compared to the level attained at the beginning of the first plan. During the same period minor surface irrigation works (mostly under the state auspices) are estimated to have added 4.5 million ha to the country's irrigation potential, bringing the total to 11 million ha. Some additions to groundwater irrigation have also occurred under the public tube-well programme. While the precise magnitude is not known, it is relatively small compared to the potential created in the private sector. Substantial investments have also been made to speed up the utilisation of the potential (through the Command Area Development Programme) and in the modernisation and improvement of existing systems (Tables 1-1 and 1-2).¹

Table 1
Plan Expenditure on Irrigation in India

(Rs. Crores)

Sl. No.	Period	Major & Medium	Minor			All Sources
			State	Institutional	Total	Total
1	2	3	4	5	6	7
1	First Plan (1951-56)	376.240	66.620	NEG	66.620	442.860
2	Second Plan(1956-61)	380.000	162.230	19.330	161 .580	541 .580
3.	Third Plan (1961-66)	576.000	327.732	115.370	443.102	1019.102
4	Annual Plan(1966-69)	429.810	326. 191	234.740	560.931	990.741
5.	Fourth Plan (1969-74)	1242.300	512.282	661.060	1173.342	2415.642
6	Fifth Plan (1974-71)	2516.180	630.830	778.750	1409.580	3925.760
7	Annual Plan(1978-80)	2078.580	501.500	480.400	981.900	3060.480
6	Sixth Plan (1980-85)	7368.850	1979.260	1437.560	3416.820	10785.650
9	Seventh Plan					
	(1985-90)	11047.640	3215.910	3063.870	6279.780	17327.420
10	Total for all Plans [@]	26015.580	7702.553	6791.100	14493.655	40509.235

Source: Central Water commission (CWC), Water and Related Statistics-(April,1992).

* Figures are likely to undergo changes.

[@] Includes expenditure on Command Area Development(CAD) and National Water Management Project (NWMP) except the central assistance available to States under CAD Programme.

¹ Details at the state level are given at Annexures-1.5 to 1.7.

Table 1.2

Planwise Irrigation Potential Created & Utilisation in India

(Thousand hectares)

Sl. No	Period	Major & Medium Surface Water		Minor Irrigation						Irrigation All Sources	
		P	U	Surface Water		Ground Water		Total		P	U
1	2	3	4	5	6	7	8	9	10	11	12
1	Pre-plan upto 1951	9705	9705	6401	6401	6500	6500	12901	12901	22606	22606
2	First Plan (1951-56)	2486	1280)	53	53	1777	1777	1830	1830	6459	5177
3	Second Plan (1956-61)	2145	2067)								
4	Third Plan (1961-66)	2231	2123)	58	58	4231	4231	4289	4289	8050	8050
5	Annual Plans (1966-69)	1530	1576)								
6	Fourth Plan (1969-74)	2608	1937)	450	3450	3930	3930	4380	4380	6988	6317
7	Fifth Plan (1974-78)	4014	2475)	538	538	3362	3362	3900	3900	7914	6375
8	Annual Plan (1978-80)	1895	1482)	500	500	2200	2200	2700	2700	4595	4182
9	Sixth Plan (1980 - 85)	3401	2685)	1697	1010	5823	4238	7520	5248	10921	7933
10	Seventh Plan (1985 -90)	2900	2560)	1290	960	7800	6910	9090	7870	11990	10430
11	Pre-Plan * Plan Period	32910	27890)	10990	9970	35620	33150	46610	43120	79520	71010

Source: Central Water Commission, Water and related Statics (April,1992)

P* Potent III Created

U Potential Utilisation.

1.2 There is widespread concern about the reported large under- utilisation of potential created; the fact that the productivity of irrigated land is well below the potential with available technology; and the large and growing magnitude of recurring losses on irrigation projects. The revenues from public irrigation works do not cover even the costs of operation and maintenance, not to speak of the recovery of any part of capital costs. There has been a general complaint that the standards of maintenance are poor and progressively getting poorer resulting in a deterioration in the quality of service. Irrigation water rates being levied by the State Governments vary from state to state and from project to project as well as for crops and seasons. These have not been revised in many States for a long time. The existing structure of crop-related water rates is seen to be ineffective in regulating the crop pattern. The recovery of water rates has also been unsatisfactory. As a result, the element of unrecovered cost in the irrigation sector has gone up to an extent which is a cause for

alarm in the context of the serious deterioration in the overall fiscal situation of the central and the state governments. Therefore, a need has been felt to examine in depth the existing mechanism of water pricing, its level and structure, modalities of improving the recovery of dues,, the norms of maintenance and other related issues.

1.3 It is against this background that the Planning Commission (vide their Notification No.16 (134)/90-I4CAO dated 23rd October,1991) constituted the Committee on Pricing of Irrigation Water under the Chairmanship of Dr. A. Vaidyanathan. copies of the Notification containing **the** composition and the terms of reference (TOR) of the Committee, and of the various corrigenda, are at Annexure-1.1.

Composition:

1.4 The nominations of the Members representing the States indicated in the initial composition of the Committee were made by the Governments of the respective States. The Ministry of Agriculture, Government of India also nominated their representative on the committee. Subsequently, the Planning Commission (vide corrigendum dated 5th December, 1991 changed one Member as well as the Member Secretary. Also, the Planning Commission (vide corrigendum dated 20th February 1992) added two new members. The final composition of the committee was as under:

1.	Dr. A. Vaidyanathan, Professor Emeritus, Madras Institute of, Development Studies, Former Member Planning Commission.	Chairman
2.	Shri Ramaswamy R. Iyer, Former Secretary (Water Resources) Government of India, now Visiting Professor, Centre for Policy Research, New Delhi.	Member
3.	Shri V.B. Patel Former Chairman, Central Water Commission, Government of India.	Member
4.	Shri R.L. Pardeep, Additional Secretary, Ministry of Water Resources, Government of India.	Member
5	Shri B.N. Navalawala, Adviser (I&CAD), Planning Commission, Government of India.	Member
6	Sh. M.S. Reddy, Member (WP), Central Water Commission, Government of India.	Member
7.	Dr. Sukhdev Singh, Agriculture Commissioner, Ministry of Agriculture, Government of India.	Member
8.	Shri Dharam Vir,	Member

	Earlier Director-General of Audit, Central Revenues and now Additional Deputy Comptroller and Auditor General, Office of the Comptroller and Auditor General of India, New Delhi.	
9.	Shri P.V. Rao, Principal Secretary, Irrigation and CAD, Govt. of Andhra Pradesh.	Member
10.	Shri S.L. Mukherjee, Secretary, Irrigation Department, Government of Assam.	Member
11.	Shri C.M. Vasudev, Principal Secretary, Irrigation Department, Govt. of Uttar Pradesh.	Member
12.	Shri M.Y.Oke, Secretary, Irrigation Department, Govt. of Maharashtra.	Member
13.	Shri S.S. Ganguli Secretary, Irrigation Department, Govt.of West Bengal.	Member
14.	Dr. V.J. Patel, Jivaraj Patel Agro Forestry Centre, Surendra Bagh (Gujarat).	Member
15.	Shri J.K. Duggal, Secretary, Irrigation Department, Govt. of Haryana.	Member
16.	Shri K.R. Datye, Consulting Engineer, Bombay.	Member
17.	Shri M.L. Lath, Commissioner (WM) , Ministry of Water Resources, Government of India.	Member Secretary

1.5 Shri S.L. Mukherjee, the representative of the Assam State Government could not attend any meeting of the Committee. However, his representative attended one meeting, namely the seventh. Subsequently Shri Mukherjee also discussed the report with Chairman and Member Secretary on 22nd August 1997 at New Delhi. Shri S.S.Ganguli, Secretary, irrigation, Government of West Bengal who was nominated by the State Government retired in March 1992. He as well his successor did not attend any meeting of the Committee. In addition, the following officials also participated in the meetings of the committee on behalf of respective organisations/departments; Shri R.S. Agarwal & Prof. K.P. Jain from Uttar Pradesh, Shri J.N. Nanda from Planning Commission, S/Sh O.K. Chakraborty, N.K. Bhattacharya and B.N. De from West Bengal, Shri D.N. Kulkarni from Maharashtra and S/Shri M.P. Vacher and S.K. Punchi from Haryana.

Water Users' Associations in the command of major and medium projects. The Ministry of Water Resources had requested all the State Governments in 1985 to take up the scheme of farmers' participation on a pilot basis in at least one minor comprising about 1000-2000 ha. of area in each Command Area Development (CAO) project for initiating the process of farmers' involvement in water management and maintenance of field channels. Detailed guidelines were also issued by the Ministry in April 1987 to all the States in the matter (see Annexure - 6.1). Under the Centrally sponsored CAD schemes, a management subsidy, at Rs.100 per ha. for the first two years and Rs.75 per ha. for the third year for farmers' associations formed for taking over the management of water distribution below the minor level, was given during the Seventh Plan. A number of water users' associations/ societies; are reported to have been formed at minor/outlet level in different States (Annexure - 6.2).

6.6 The provisions in various state enactments regarding farmers' participation in irrigation management are summarised in Annexure - 6.3. Some States (e.g., Kerala) provide for user involvement not only at the outlets but also at the intermediate levels and the project as a whole. Others (e.g., AP, Maharashtra, UP and MP) provide for farmers' management beyond the outlets. However, the relevant laws of several states (e.g., Punjab, Haryana, West Bengal, Rajasthan and Assam) do not have any provision for constituting users' associations and involving them in management. Even where provisions exist, there is a tendency to make the associations subject to active control by the Department.

6.7 Efforts to actually organise farmers' groups and make them participate in management have been patchy and can claim only a limited success so far. Most State Governments have not really pursued the idea seriously. Maharashtra and Gujarat are the two States where considerable pioneering activity has taken place in this sphere. Apart from several examples of voluntary efforts to establish users' cooperatives - for instance, the Mohini Cooperative in Ukai, Kakrapar and the Sri Datta Cooperative in Mula are famous - the Gujarat and Maharashtra governments have also adopted an active policy of promoting farmers' involvement in irrigation management.

6.8 Gujarat visualises constituting, in each project, committees with user - representatives at the village, the branch canal and the project levels. By 1988, the idea is reported to have been implemented or to be under implementation in 24 projects. The State has also a programme for encouraging the formation of water - users' cooperatives. The Sardar Sarovar project goes further and envisages that the project management 'will deliver water at the village outlet, leaving the subsequent management entirely to users. Maharashtra has recently announced a policy of progressively shifting to a similar system. (Annexure 6.4)

In some other States, (e.g., Tamil Nadu, Andhra Pradesh) similar initiatives have been reported at the level of particular projects. "Pipe Committees" were organised to manage water distribution below the outlet level in the Sriram Sagar project of Andhra Pradesh. But these are now reported to have become inactive. In Tamil Nadu irrigation community organisers trained

in water management were used to motivate and organise farmers for group action in the lower Bhavani project. So far about 25 percent of the project is reported to be covered by a four-tier structure of farmers' associations. Also noteworthy in this context is the West Bengal programme of transferring the entire operation and maintenance of a large number of tubewell clusters (involving some 7000 wells to date) through the Panchayat Sanities to users' groups. (Annexure - 6.5).

6.10 While no systematic assessment of these efforts is available, it is known that the area covered by these initiatives is very small, less than 1 percent of area irrigated at present. The general consensus among knowledgeable people is that they have been fitful and have not really made much of an impact. For the most part, the outlet and canal committees are there only in name; their functions are vague; they seldom meet; they are not consulted on substantial issues; nor are department officers required to follow their advice. There is also considerable reluctance, if not opposition, from the operational staff of the Irrigation Department to involving users in management; and even the users themselves tend to be apathetic to the idea.

6.11 Initiatives for group formation will be forthcoming from users only if they see a reasonable prospect of substantial gain and if circumstances create the compulsion for cooperation. Steps for accelerating the process of forming effective users' groups has therefore to be conceived in a wider framework combining better management of the system as a whole with incentives for group operation.

System- Improvement Precondition

6.12 An essential precondition is to convince users that they will benefit from such group activity by getting more water, more assured supplies according to a pre-specified schedule (or according to the needs of the crops), greater flexibility in the use of water, or some combination of these. Improvement in any of these dimensions will almost certainly increase productivity and therefore induce farmers to take the idea of users' groups more seriously.

6.13 These improvements are beyond the capacity of outlet groups. They are contingent on a radical change in system management involving fresh investments (especially for enabling better control over deliveries at the outlets); better formulated/transparent operational rules for the system; and confidence that the rules will be enforced. We have already suggested a three-phase programme for system improvement. The focus initially will be on investments necessary to effectively regulate deliveries at the minor/outlet level, and the formulation of clear operational rules in terms of which the entitlement of each segment in terms of quantum, duration and frequency of supply can be specified. This involves difficult questions of balancing the interests of efficient use with those of equitable distribution and current patterns of localisation and cropping patterns. Consultation with all segments of users in resolving these issues will not only facilitate better- informed and generally acceptable solutions but will also give a strong signal of

the government's seriousness about involving users. Also, there should be an inbuilt mechanism for the accountability of system managers in meeting these commitments to users.

6.14 After this initial phase, which will culminate in volumetric group delivery and pricing, farmers' groups can play a major role in planning and implementing more basic system improvements. The groups will have to play a greater role in promoting the optimum use of surface and groundwater resources for agricultural production. Traditionally, conjunctive use has been left wholly to unregulated individual initiative, but given its crucial bearing on productivity, it is a legitimate concern of public policy and group action. It is possible, with appropriate incentives, to make the users' groups play an effective role in securing the economical use of seepage and the wider distribution of the benefits.

6.15 In the longer run, the aim should be to get these groups actively, involved, in formulating and implementing system improvement programmes. The experience of command area development indicates that it has not been effective to the extent desired. The ingredients of farming system improvements - depending as they do on the soil conditions, size of holding, degree of fragmentation, the social and economic condition of individual farmers, their responses to market incentives and their perceived needs for production, subsistence and risk minimisation - are location specific and best planned in cooperation with users' groups.

6.16 As the demand for water increases and social pressure is generated for the equitable distribution of water, higher levels of efficiency in the use of water as well as the productivity of water must be attained. A judicious combination of the profit motive, financial assistance and social pressure for equity and greater dispersal of water rights would be needed for the successful transformation of the system. Depending on the local situation, various combinations may emerge. It is important to make available a wide range of technologies, organisational forms and related financial packages from which the farmers can choose.

Size and Function of User Group

6.17 The ideal would be to organise groups each covering relatively large areas (upto 500 ha. or even more) in order to get a tangible advantage in terms of reducing the burden (financial and managerial) on the system management and of improving the operation. However, this may not be always feasible initially. It may be necessary to start with relatively smaller groups and gradually expand them to cover a group of outlets in close proximity. In doing so, it is necessary to heed the view, especially among farmers, that multi-village outlets will be difficult for users to manage. As a practical matter, therefore, the users' groups might, to begin with, be organised on a village basis.

6.18 We envisage a contract between the system and each group regarding the volume of water and the frequency and duration of supplies to be made at the point where the group takes over, at specified rates per m³ of water. The contract should provide for adjustments in rates for

excess or short delivery and also some flexibility for groups with quotas in more than one season, to adjust inter-season use according to needs but contingent on the supply in the system.

6.19 The user groups will be wholly responsible for (i) maintenance of the channels below the point where the water is delivered (ii) payment of water charges to the system on the basis of an explicit contract, (iii) determining and enforcing the rules of allocation among the users served by the outlet as well as the rates to be charged from individual users. No restrictions will be imposed by the system on the crops to be grown, the construction of subsidiary storages or conjunctive use of seepage. These will be left to be regulated exclusively by the group. The groups will be free to determine the basis as well as the level of water rates and other additional service charges, if any. If this gives the group a surplus over the payment of dues to the government, that surplus will be available for meeting local repairs, maintenance and even improvement of facilities.

Promotion of Group Formation

6.20 Consulting farmers while making modifications and explaining the rationale of proposed changes and its potential benefits will help create an environment favourable for group action at the tertiary level. But farmers used to dealing with government officials rather than with each other in matters like water management cannot be expected to readily or quickly appreciate their common interest in and the benefits of collective management. There is bound to be scepticism about the benefits of the proposed, changes. Also, villages/farmers' groups are heterogeneous and have internal conflicts. The success of the early phases of the reform in handling these problems has a crucial bearing on how rapidly the restructured management/pricing system will spread. From this point of view great care should be taken to select initially villages/outlets which are favourably placed - especially in terms of the social homogeneity, relative freedom from conflicts and the existence of a strong local leadership - to demonstrate that substantial benefits come about from cooperation.

6.21 Farmers are likely to be reluctant to take on the obligations and responsibilities of group management,

especially if the system continues to provide water according to the area-based individual water demand on the same terms as for groups. It is therefore necessary to devise incentives which discriminate strongly in favour of farmers' groups and discourage individual service. The incentive will be strong if the revised rates are substantially lower for those who accept group-based volumetric charging than for those who wish to continue on the individual area-based demand system. Additional incentives would be the allocation of funds for system - improvement to effective farmers' groups which are willing and able to take over management responsibilities; and the entrustment to such groups of contracts for system-maintenance works in their vicinity.

6.22 The above inducements should be combined with (a) some form of "pressure" and (b) positive measures to support and nurture the groups directly and through voluntary organisations. In order to exert pressure, the government must declare its intention to withdraw, after a designated period of 5-10 years, from the responsibilities for management below the outlet and confine itself to delivering water for a specified duration at the minors or the outlets. The message to the farming community should be clear that the government considers the water users' groups as the main instrument for improving the management of the irrigation system. Government's commitment to the improvement of irrigation efficiency and farm productivity should also be visible, and the farmers should perceive the political will to improve cost recovery. This policy initiative should also be reflected in a time - bound programme of introducing group delivery and volumetric pricing.

6.23 The positive measures include, besides educating farmers about the rationale of the new system and its advantages, the cultivation of a supportive attitude on the part of the departments concerned (including the Irrigation Department) at all levels to the formation of groups, the provision of technical advice and assistance in working out rules and procedures for their operation, and the encouragement of voluntary organisations to play a larger role in the process.

Forms of User Organisation

6.24 An important question which needs consideration is the form that the farmers' groups should take. It is clear that the form should be one which makes the group a legal entity which is capable of entering into enforceable agreements. The government cannot enter into agreements with informal associations. At present there are three main ways in which such legal entities can be created: the establishment of cooperative societies under the Cooperative Societies Act, or of societies under the Societies Registration Act, or of a joint stock company under the Companies Act.

6.25 The cooperative and the registered society forms have been adopted in the limited number of cases of farmers' groups that we have come across. However, there are difficulties and rigidities under both the Cooperative Societies Act and the Societies Registration Act. There is little experience in India with the joint stock company form for managing water distribution to farmers.

6.26 A new possibility which we considered in our deliberations is that of providing (through suitable amendments) for the creation of legal entities by registration under the Irrigation Act of each state. We feel that it would be useful to explore this possibility further.

6.27 However, we do not propose to make any specific recommendations on the form that the farmers' groups should take. This is a matter for each State Government to consider in the light of local circumstances. As mentioned earlier, in West Bengal tubewell assets have been transferred to panchayat samitis who take up the responsibility for collection through

beneficiaries committees. This form can also be adopted with suitable modifications for the canal water users' association. There should be room for flexibility in the structure and procedures of outlet organisations. No single standard blue print will do

Role in System Improvement

6.28 There is a considerable on-going debate on the role of users' groups in system improvement. Generally the work of system improvement above the point at which farmers' groups take over is best left to the Irrigation Department. We have already recommended that investments for upgrading the system to handle volumetric delivery be given high priority. The commitment of funds for further improvements and the implementation of works should be contingent on the progress made in the formation of water users' groups.

6.29 While the government will necessarily have to play the lead role in main -system improvement, users' groups, once established on a widespread basis, could play a role in the process. How this could be accomplished is likely to become an important issue. An appropriate organisational form comprising the government, the financial institutions and users will have to be evolved. One possibility is a joint stock company. But the structure and modalities of this and other forms need to be worked out in some detail.

6.30 The case for the active involvement of users' groups in improvement below the point at which they take over is much stronger, as detailed local knowledge and consensus is very critical for this activity. Cost-sharing by the beneficiaries would bring about cost-consciousness, and the execution of improvements may be contracted to the water users. Here again the modes of participative planning and implementation process should be established in the light of the experience of some well chosen pilot projects. Even if government irrigation departments take the main responsibility, the planners of improvement should consult users' groups and allow for the modification of technical features and phasing in the light of such consultation.

Role of Voluntary Organisations

6.31 With a few exceptions it has been established that the process of initiation of group formation cannot be left entirely to the government. The working out of the memorandum of understanding ' and the establishment of the modalities of sharing of responsibilities and mutual obligations by farmers and the Irrigation Department, requires mediation which can best be provided by voluntary organisations. In any case, the sheer magnitude of the problem makes it imperative to encourage initiative from wherever it is forthcoming-whether voluntary organisations such as cooperatives or non-profit groups or public -interest activists. Well-established voluntary organisations with a proven track record could be called upon to promote water user groups. Voluntary organisations have advantages in regard to flexibility and autonomy, as well as previous association with the community in the group-management of

various activities. They usually lack professional manpower for management and technical functions, but this can be overcome by encouraging them to create a cadre of paratechnologists.

6.32 It is useful to distinguish between two different types of roles which voluntary organisations can play. One is to promote group-formation at specific outlets. The voluntary organisations' role here is often crucial in the initial stages of group-formation, but they must phase themselves out as soon as the group is able to stand on its own. A second type of function is to provide an independent but informed contribution to decisions concerning the system and to work with farmers' groups to test alternative upgradation priorities and techniques and methods of achieving Phase II and Phase III objectives; and to formulate optimal strategies for overall agricultural transformation. This is a broader, long-term role, which requires pooling together the knowledge and expertise of various voluntary organisations involved in the promotion of farmers' groups so that farmers' priorities and needs are effectively brought into the planning of system-modification and improvement. It must be reiterated that in both these functions the role of voluntary organisations is temporary. Eventually all the tasks mentioned have to be performed by the water users' associations, with the Irrigation Department retaining responsibility for the regulation, monitoring and maintenance of the main system.

6.33 Where, with modest efforts and small financial outlays, the irrigation system can be brought to a reasonable level of performance, the promotional role of voluntary organisations would be limited to the creation of awareness and the negotiation of the MOU with the Irrigation Department. The technical support would consist mainly of helping the farmers to check the system so that the main system can meet its obligations. Management and technical support will also be needed to help the groups to assess the costs of operation and maintenance and the liabilities they will have to bear. In situations where systems need major modifications and/or involve difficult technical problems, the process will take longer and more sustained efforts.

6.34 Various types of organisations can perform the promotional role, and the extent of participation of the government agencies would vary. The experience of voluntary organisations in Gujarat such as AKRSP¹ and Sadguru Seva Foundation, and CASAD² in Maharashtra, can be studied to create the appropriate type of non-profit voluntary organisation. The resources and expertise of training and research institutions, management and administration such as IRMA³, IIM⁴, the Administrative Staff College of India, WALMI⁵, and the water resource departments of technical universities, need to be availed of in a purposeful manner. WALMIs⁵ can be entrusted

¹ AKRSP = Aga Khan Rural Support Programme

² CASAD = Centre for Applied Systems Analysis in Development, Bombay

³ IRMA = Institute of Rural Management, Anand

⁴ IIM = Indian Institute of Management, Ahmedabad, Bangalore and Calcutta.

⁵ WALMIs = Water and Land Management Institutes.

with the task of identifying voluntary organisations and evaluating their performance, but they should have the freedom to choose their partners in promotional work and recruit non - government professionals.

Special Fund for Promotion/Pilot Projects

6.35 Funds for the promotional effort and the system - improvement work of pilot projects should not be tied to project funds. This is because local initiative may not be forthcoming where system - improvement funds are available for on - going large projects. Sometimes it is easier to improve the system on a medium project.

6.36 It seems worthwhile to create a special fund in each State for financing the promotional work and pilot projects for system - improvement. The success of the effort for promoting water users' groups will depend on the initiative of the State Government in taking up pilot projects and giving a performance orientation in the allocation and disbursement of funds.

CHAPTER -7

IMPLEMENTATION

Introductory

7.1 We now turn to the problem of translating the general principles regarding the pricing of water recommended in Chapter 3 into specific rates. Our focus is mainly on Phase I, namely, there structuring of the existing system of pricing from a highly differentiated crop-area-based assessment to one comprising a basic area rate and a variable season- hectare rate. What we intend to do here is to indicate (a) the order of increase in irrigation revenues which will be necessary in the country as a whole in order to cover the O&M costs and 1 per cent interest on capital employed; (b) indicate in general terms the manner in which the required additional revenues can be generated; and (c) illustrate the application of the methodology for determining season-hectare rates.

7.2 The cost of service to be recovered in Phase I includes operation and maintenance expenditures (including salaries of operating field establishment and departmental overheads) and 1 percent interest on cumulative capital investment three years prior to the reference year. The reference year has been taken as 1989-90 - the latest year for which we have estimates of irrigated area, expenditures and capital outlays.

Application of Suggested Approach (Phase-I)

7.3 We have recommended in chapter 4 that O&M costs should be based on norms to be worked out after a detailed review by State/region and category of projects. This task will have to be taken up by the State Governments. Pending that, for the purposes of illustrating the application of the suggested approach to the revision of water rates, we use the norm suggested by the Jakhade Committee, namely, Rs.180 per ha. of gross irrigated area, with the following adjustment: allowance has been made for the increase in costs because of inflation since 1987 when the committee made its estimates. The inflation-adjusted figure of O&M expenses (including a provision of Rs.50 for regular establishment) in 1989-90 corresponding to the Jakhade Committee norm is Rs.220 per ha. The norm does not include departmental overheads. Consistent with our earlier suggestion about the level of 'overheads chargeable, we have made a notional allowance of 25% of the Jakhade Committee norm for these items. With this, the O&M costs to be recovered works out to Rs. 270 per ha.

7.4 For the country as a whole, the cumulative capital outlay on major and medium projects at the end of 1986-87, i.e., three years prior to 1989-90 (the reference year), was of the order of Rs.20,000 crores. Interest @ 1% on this amount averaged over an estimated 27.9 million ha

irrigated by this outlay works out to a little over Rs.70 per ha. On this basis the total recoveries in phase-1 should average around Rs.340 per ha.

Order of Increase Needed

7.5 As against this, the estimated gross receipts from major and medium projects in 1989-90 was Rs.68 per ha. Details of the breakdown of this into direct and indirect revenues per ha are not available. Assuming these to constitute the same proportions of gross receipts as during 1984-86 - the latest period for which such data are available - the actual irrigation revenue works out in 1989-90 to Rs. 50 per ha. (Note that this is no higher than the realisation during 1983-84 to 1985-86).

7.6 As noted earlier, the revenue from sales of water for non- irrigation uses and other miscellaneous receipts accounts for a substantial part (31 percent in 1984-86) of gross receipts. Out of this, pending detailed analysis, it may be assumed that miscellaneous receipts per ha will remain at the present level. Receipts from the sale of water for non irrigation uses (at present 7 percent of the total) can be expected to grow. The volume of water allocated for domestic and industrial use is bound to grow rapidly in the future. There is scope - as the experience of States such as Gujarat has shown - for a substantial increase in rates especially for industrial uses. However, we are not in a position to assess the extent of additional revenues which can be secured from this source. This requires detailed data and analysis which are simply not available at present. Clearly, the larger the contribution of non- irrigation uses, the lesser the amount to be recovered from farmers. Assuming conservatively the additional revenue on

this account at Rs 10 per ha, the recovery from irrigation charges has to be Rs 310 per ha compared to the present realisation of approximately Rs 50 per ha. (see Table 7.1)

Table - 7.1

Composition of present and required revenues from Major and Medium Works

	1983-85 Realised	1989-90	
		Realised (Rs/Ka)	Assumed/ Required
irrigation Direct and indirect	48	48	310
On-Irrigation users	5	5	15
their Miscellaneous	15	15	15
gross receipts	68	68	340

7.7 The additional irrigation revenue to be mobilised has to come from four sources; (1) improving the assessment and collection of existing rates; (2) the introduction of a uniform basic levy per ha of irrigable command; (3) the rationalisation of the rate-structure to equalise rate per unit of water across crops within each season; and (4) a revision of the general level of rates.

Improvement of Collection

7.8 During the latter half of the eighties, information available in respect of 9 major States suggests that annual collections average around 80 per cent of the demand (Table-5-1). This does not allow for under-assessment arising from non-recording or mis-recording of irrigated area (especially under high-rated crops). If this is taken at 10 per cent, stricter assessment and collection should increase revenue collection by 35-40. per cent of actual receipts (Rs. 17-20 per ha) without any change in the level or structure of rates.

Proposed Basic Levy

7.9 We have proposed a basic levy on all land covered by public irrigation systems throughout the country. A levy at the rate of Rs.50 per ha is recommended for all lands in the cultivable commands¹ of major and medium as well as - minor works. This is intended as a fee for the right to get water from the system (a sort of "demand charge"). Those who have not got any water or are unlikely to get water can opt out of the system, but they will also forfeit the right to get water when it is available. This levy will dampen the clamour to over-extend the command and, more importantly, will generate pressure on the system managers to provide a minimum level of service to all segments of the command and thus help the process of improving the quality of service.

Rationalisation of Existing Structure

7.10 The third element is the rationalisation of rates. We have noted in Chapter-2 that in several States, water-intensive crops which usually give high values of output per hectare (though not necessarily per unit of water consumed) are being charged less, sometimes considerably less, than the irrigated dry (ID) crops (such as coarse cereals, pulses and oil-seeds) . In order to remove this anomaly, the per hectare rates on water-intensive crops need to be raised so that the rate per unit of water is equalised across crops. Such an adjustment will usually mean substantially raising rates on paddy and perennial crops.

7.11 This is purely illustrative. Considerable refinements are feasible for instance, finer distinctions between seasons; adjusting rates with reference to the weighted average for ID crops; and allowing for situations (as in Orissa) where crops other than coarse cereals, pulses or oil seeds bear a higher rate per unit of water consumed. The important point is that the revenue potential of a rationalisation of rates on the above principles is substantial.

7.12 The additional revenue will be sizeable, the increase ranging from 18 to 140 percent of revenues at current rates, if the ha cm rates for all crops are made equal to the irrigation rate now

1 For this purpose, cultivable command also includes areas within a command benefitting from irrigation through lifting water from the system or from groundwater .

charged for ID crops, and from 50 to 325 per cent if they are made equal to the highest rate per ha cm (See Annexure 7.1)

Raising Level of Rates

7.13 It is clear, however, that the above measures will not be adequate in all States to meet the gap between current revenues and the level required to meet the O & M costs, overheads and even 1% interest on capital. The level of rates will also have to *be* raised. The extent of increase required, depending as it does on the potential for rationalisation, cannot be quantified. It is also likely to vary from State to state. Nevertheless, on the average the required revenue by way of irrigation charges (Rs.310 per ha) will still be barely 6% of the gross produce per hectare of the irrigated area¹¹, and that without taking any account of likely improvement in productivity. The Irrigation Commission of 1972 considered 5-12 percent of gross produce as a reasonable level of water charges to be recovered from farmers.

7.14 These rates are worked out on the basis of existing arrangements whereby the Government bears the responsibility for maintenance, water distribution to outlets commanding 5 - 40 ha and assessment and collection right up to the individual farms. These costs can be substantially reduced if farmer's groups takeover the responsibility for maintenance and water distribution at the minor or distributary Level. The larger the command of the point at which group delivery is introduced, the greater the reduction in governmental cost. On this ground, and more importantly, as a measure of inducement for farmers' groups to take over greater responsibility, we suggest that when the proposed revisions are implemented, the rates for group delivery be fixed at substantially lower levels than for individual delivery, while keeping the basic fee of Rs.50 per ha. common.

Phases II and III

7.15 In Phase-II the basic rate per ha of CCA will continue but should be related to an obligation on the part of the system to provide a minimum level of service defined in terms of volume of water for the staple crop seasonal. The variable rate will be switched progressively to a volumetric rate for group users (at a rate substantially below the volume rates implied in the season-hectare rates applicable for individual service)-The pace of introduction of volumetric rates will depend on the speed with which main system facilities are upgraded to permit effective control over deliveries, revised operational plans are drawn up and farmers' groups are formed. As these take effect, and the productivity of water increases, the variable rate can be raised so that the O & M costs(which should be lower than under existing arrangements) and a

1 The national average of production per gross irrigated hectare in 1979-83, valued at 1986-87 prices, is estimated at Rs. 4900.

larger part of the capital-related charges are recovered. Full cost recovery should be the goal for Phase-III.

Variations in Under-Recovery of Costs

7.16 We do not have Statewise norms of O & M. However, it is to be expected that these norms will differ among States; so will the overheads and interest on capital. Again by way of illustration, Table 7-2 provides the comparison between actual collections per ha and the actual working expenses, overheads and interest charges in 1984-86. These estimates are intended to highlight the differences among States in the under-recovery of costs. The actual rate determination will be based on more recent data and O&M expenditure norms to be worked out by categories of projects and regions in each State.

7.17 The extraordinarily high gap between current and required revenues in some states like Tamil Nadu is more apparent than real. The gap would be much smaller if the receipts on account of irrigation recovered as part of land revenues are fully accounted. In these States there is a case for separating the irrigation component from the wet assessment so that all irrigated lands can be charged according to uniform principles. Also, to the extent that some States have already revised rates substantially as in the case of Gujarat and Maharashtra the picture would be different today from that shown in the table.

Table 7.2

Estimated costs and Revenue of Major and Medium Irrigation and multi purpose projects, major State 1983-84 to **1985-86**

	Estimated working expenses Rs.10 ⁶	GIA 10 ⁶ ha.	Cost/ ha	Water ² delivered ha. (ham)	Cost/ham (Rs.)	Gross Revenue (10 ⁶ Rs.)				Increase in Revenue required to cover cost	
						Total	Irrigation	Water Sales	Other receipts	Rs.10 ⁶	as a multiple of current gross receipts.
Andhra Pradesh	517	3.03	172	0.682	252	175	NA	43	132	342	1.95
Bihar	422	2.17	194	0.845	230	92	92	-	-	330	3.58
Gujarat	422	0.70	603	0.650	928	86	67	10	9	336	3.91
Haryana	344	1.74	198	0.838	236	104	88	-	16	240	2.31
Karnataka	301	1.11	271	0.830	327	63	-	-	63	238	3.78
Kerala	66	0.51	129	0.677	191	12	8	2	2	54	4.50
Madhya Pradesh	490	1.32	371	0.860	431	125	55	24	46	365	2.92
Maharashtra	450	0.96	469	0.800	586	131	83	16	32	319	2.43
Orissa	136	1.51	90	0.983	92	54	22	-	32	82	1.51
Punjab	294	2.45	120	0.903	133	121	89	14	19	173	1.42
Rajasthan	605	1.42	426	0.732	582	131	116	6	10	474	3.61
Tamil Nadu	273	1.22	224	1.070	222	13	5	3	5	260	2000
Utter Pradesh	932	5.52	169	0.820	206	600	581	5	14	332	0.55
West Bengal	200	1.47	136	1.100	124	13	12	-	1	187	14.38
All above States	5457	25.13	216	0.839	257	1720	1218	123	381	5730	2.17

1. Working expenses of major and medium multi purpose projects as reported by CWC (Average for 3 years centered on 1984-85) plus 25% overheads plus 1% interest on cumulative capital outlay at the end of 1981-82 (i.e. 3 years prior to 1984-85)
2. Based on CWC estimates for storage projects. It is assumed that this applied also to run-of-the-river schemes.

Potential of Increased Revenue

7.18 The potential for increased revenue through the stricter enforcement and collection of existing rates also varies. While little is known about the incidence of under- assessment in any State, the revenue potential of better collection is some what better known. The gap between demand and collections is negligible in States such as Punjab, Haryana and Uttar Pradesh, but as high as 70 per cent of demand in West Bengal. In Bihar, Maharashtra Gujarat, Madhya Pradesh and Rajasthan the gap ranges between 25 and 40 percent. The revenue potential of better collections is seen to be high in those States where the order or increase in revenue required to meet the cost recovery standards recommended is also large. In such situations, efforts to improve assessment and recoveries must be given high priority.

7.19 As for the rationalisation of rates, we have already referred to an illustrative exercise for six States on the basis of existing crop patterns, irrigation rates and cropwise water allowances in existing major and medium projects as given by the CWC. The scope for augmenting revenues through the rationalisation of the existing rate- structure is substantial but variable. In general it shows that rationalisation calls for a significant hike in the area rates for water-intensive and perennial crops.

7.20 The above exercise was based on estimates of overall irrigation duty for various crops without differentiating between seasons and without making any allowance for the fact that there are evaporation losses and costs of building storage necessary to carry over water from the rainy kharif season to irrigate rabi and summer crops. In order to devise the structure of water rates on a season-hectare basis which would take these considerations into account, a more elaborate procedure is needed. This procedure, which also leads to a rationalisation of the rate structure, has been applied in an illustrative manner for all major States. The assumptions, data and procedures are detailed in Annexure-7.2. The relative per hectare rates applicable to paddy, and other seasonal crops in each season in order to recover Rs.100 per ham are also estimated. It is apparent that the existing rate structures will need substantial revision if they are to fully reflect the relative water-intensities of various crops and seasons, as well as the costs of carrying over water from surplus to deficit seasons. The rationalization of the rate-structure along the lines discussed may by itself help to reach the targeted level of cost recovery in some States, but in general an increase in the general level of rates will also be needed if the cost-recovery objectives of Phase-I are to be realized.

7.21 It needs reiterating that these are illustrative of the implications of our approach and the manner in which the structure of season hectare rates consistent with water consumption is to be determined. The relative importance of different sources of additional revenue (better assessment and collection, rationalisation of rate-structure and revision of rates) and therefore the strategy to be adopted to raise the required revenues, will necessarily differ across States. Also, the level and structure of rates requires the determination of O&M norms relative to

irrigation needs of crops by season and for different categories of projects by agro-climatic regions. This is an exercise which the States need to undertake.

Implementation: Task Force

7.22 The implementation of the approach suggested here will therefore require expeditious action on the part of each State to set up task forces, with adequate expert staff and authority for collecting the necessary data to determine O&M norms (including regular establishment and overheads) by region and category of projects; undertake sample studies in the field to determine the extent of under-assessment and under-collection at existing rates; determine for each category of projects, given the existing crop-pattern and their irrigation needs, the per hectare rates applicable to paddy and other seasonal crops by season and for perennials in line with the requirements in terms of volume of irrigation and costs connected with carryover between seasons; and work out the existing and projected use by non-agricultural users and determine the rates to be charged to such users, the appropriate contractual arrangements and other relevant details.

Phased Programme for Group Delivery

7.23 Simultaneously, a programme to encourage users' groups should be initiated in carefully selected segments of each systems where the environment and social configurations are most conducive to success. A phased programme for switching over to group delivery should be announced and, along with it, steps taken to help the formation of organisations directly and through voluntary organizations with supporting training facilities for farmers and for irrigation functionaries. In tandem with these, programmes for upgrading the capabilities of existing systems to manage regulated delivery to groups and working out the operational rules in terms of which the groups will enter into contracts with the system should be launched.

The Role of the center

7.24 While, ultimately, the prerogative of and the responsibility for implementing our recommendations vests with the States, the Centre and the Planning Commission can help the process by active intercession with the State Chief Ministers to explain the rationale and urgency of the proposed reforms and secure a national consensus on the direction and the principles for restructuring the management and pricing of water. Individual States will find it easier to undertake major changes if there is such a consensus.

7.25 The Centre can also support the reforms through a programme of public education to explain their rationale; provide financial and technical support for initiatives to demonstrate the feasibility and advantages of group-management; and persuade States to earmark sufficient funds for upgrading system-capability for introducing group-based volumetric supply and pricing. The National Water Management Project (NWMP), which needs to be substantially

expanded and reoriented in the light of our recommendations, would seem to be an appropriate instrument for this purpose.

Reintroduction of Financial Return Criterion for Projects

7.26 We would further recommend that commitment to earning a minimum financial return - starting with recovery of O&M costs plus 1 percent on capital outlay - be reintroduced, along with the test of viability in terms of social benefits relative to social costs, as essential criteria for sanctioning all investment proposals whether for new projects or for the improvement of existing projects.

Conclusion

7.27 The approach suggested by us involves radical changes in the way irrigation systems are organised and managed even as it requires users to pay substantially higher prices for the water they use. But we are confident that these changes are essential and important constituents of any effort to improve public finances generally and that of the State Governments in particular. They are also required as part of an effort to improve the productivity of irrigated agriculture by making farmers aware of the value of water and at the same time enabling them to get a larger output per unit of water delivered by public systems. Such improvements are critical to sustaining the tempo of agricultural development. We hope that our recommendations will help initiate much needed reforms leading to a rational system of pricing water along with an improved, more productive irrigated agriculture.

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No.16(134)/ 90-I&CAD
Government of India
Planning Commission

Yojana Bhavan, Sansad Marg,
New Delhi - 110 001.

Dated 23rd October, 1991

NOTIFICATION

Sub:- Constitution of Committee on Pricing of Irrigation Water

1. It has been decided to constitute a Committee on Pricing of Irrigation Water under the Chairmanship of Dr. A. Vaidyanathan of Madras Institute of Development Studies, Madras and formerly Member, Planning Commission. The constitution of the Committee is as under :-

- | | |
|--|---|
| 1. Dr. A. Vaidyanathan,
Madras Institute of Development Studies, Madras | (Former Member,
Planning Commission)
Chairman |
| 2. Shri Ramaswamy R. Iyer,
* Visiting Professor, Centre for Policy Research Dharma Marg
Chankyapuri, New Delhi - 110 021 | Member |
| 3. Shri V.B. Patel, Former Chairman
C.W.C., II, Chandra Moulli Society Nava Vadej, Ahmedabad -
380 013 | Member |
| 4. Dr. J.P. Singh, Additional Secretary **
Ministry of Water Resources | Member |
| 5. Shri B.N. Navalawala, Adviser (I&CAD)
Planning Commission, New Delhi | Member |
| 6. Shri M.S. Reddy, Member (WP) CWC
Sewa Bhavan, R.K. Puram, New Delhi 110 066 | Member |

* Former Secretary (Water Resources) Government of India,

** was represented by Shri R.L. Pardeep, Additional Secretary, Ministry of Water Resources, Government of India,

- | | | |
|-----|--|------------------------|
| 7. | A representative of the Ministry of Agriculture
(Not below the rank of Joint Secretary) | Member |
| 8. | Shri Dharam Vir, * Director General,
Central Revenues (I) IP Estate, New Delhi-110 002 | Member |
| 9. | Secretary, Irrigation Department,
Government of Andhra Pradesh, Hyderabad | Member |
| 10. | Secretary, Irrigation Department,
Government of Assam, Guwahati-781 001 | Member |
| 11. | Secretary,
Irrigation, Government of Uttar Pradesh, Lucknow | Member |
| 12. | Secretary, Irrigation, Government of Maharashtra,
Mantralaya, Bombay-400 001 | Member |
| 13. | Secretary,
Irrigation and Waterways Department,
Government of West Bengal, Writers Building, Calcutta-1 | Member |
| 14. | Dr. V.J. Patel, Jivaraj Patel,
Agaro-Forestry Centre, Surendra Baugh
Kardoj 364-061, District Bhavnagar (Gujarat)
(A Farmer's representative) | Member |
| 15. | Shri B.B. Karajagi, Chief Engineer (IM),
Central Water Commission | Member **
Secretary |

II. The Terms of reference of the Committee will be as given below:-

- i. To review the existing water rate structure and the extent of subsidy in Government and Public sector irrigation projects.
- ii. To suggest:
 - a. the norms for fixing water rates;
 - b. the norms for cost escalation in O&M component of economic water rates.
 - c. the norms for conversion of volumetric supply of water rates of corpwise/areawise water rates for different agro-climatic zones;
 - d. the organizational measures including mechanism for efficient recovery of economic water rates; and
 - e. Operating controls of ensuring levy of appropriate irrigation water rates by the States.

* Shri Dharam Vir, since appointed as Additional Deputy Comptroller and Auditor General

** was replaced by Shri M.L. Lath, Commissioner (WM), Ministry of Water Resources, Government of India.

- iii. To evolve a rational water rated structure for both surface and ground water to promote conjunctive use.
 - iv. To review the present status of maintenance of irrigation projects in different states.
 - v. To review the norms of maintenance as recommended by earlier committees and different Finance Commission.
 - vi. To suggest the norms for fixing maintenance charges including stipulating the upper ceiling per hectare of command for the expenditure on staff establishment for various irrigation systems in different states.
- III. The Committee may constitute sub-group, if necessary and co-opt Member for specific Task/ Study.
- IV. Expenditure of the member on TA/ DA in connection with the meeting of the Task Force will be borne by the respective Department/ Ministry/ Organisations. Expenditure in respect of non-official members will be borne by the Planning Commission as per the rules and regulations of TA/ DA applicable to Group 'A' officers of the Government of India.
- V. The Committee will submit the final report within four months from the date of notification.
- VI. Hindi version follows.

Sd/-
(I.S. Ahluwalia)
Director (Administration)

All Members

Copy to :

1. Secretary (Co-ordination) Cabinet Secretariat, Rashrapati Bhavan, New Delhi.
2. The Comptroller and Auditor General of India, 10, Bahadurshah Zafar Marg, New Delhi.
3. Secretary, Ministry of Water Resources, Shram Shakti Bhavan, New Delhi.
4. Secretary, Ministry of Agriculture, Krishi Bhavan, New Delhi.
5. Secretary (Expenditure) Ministry of Finance, North Block, New Delhi.
6. Chairman, Central Water Commission Sewa Bhavan, R.K. Puram, New Delhi-66.

Planning Commission

- 1) PS to Deputy Chairman/ Member (R)/ Member (P)
- 2) PS to Secretary/ Special Secretary
- 3) Principal Adviser (Agriculture)
- 4) Advisers (PC)/ SP/ (I&CAD)
- 5) I&CAD Division

Copies also to:

- Information Officer, Planning Commission
- Guard File
- Library (PC)

Sd/-
(I.S. Ahluwalia)
Director (Adm.)

No.16 (134)/ 90-I&CAD

Government of India

Planning Commission

Planning Commission,
Yojana Bhavan, Sansad Marg,
New Delhi - 110 001.
Dated 5th Dec., 1991

CORRIGENDUM

Sub: Constitution of Committee on Pricing of Irrigation Water

In partial modification of this office notification of even number dated 23rd October, 1991, the following changes are made with immediate effect:

1. Shri R.L. Pardeep, Additional Secretary, Ministry of Water Resources, Shram Shakti Bhavan, New Delhi, will be a member of the Committee in lieu of Dr. J.P. Singh.
2. Shri M.L. Lath, Chief Engineer (WM), * Ministry of Water Resources, Lok Nayak Bhavan, New Delhi will be the Member Secretary of the Committee in lieu of Shri B.B. Karajagi, Chief Engineer (IM), Central Water Commission.

All other terms and conditions as set for the Committee remain unchanged.

Sd/-

(N.K. Malhotra)

Deputy Secretary (Admn.)

To

All Members of the Committee

Copy to :

1. Secretary (Co-ordination) Cabinet Secretariat, Rashtrapati Bhavan, New Delhi.
2. The Comptroller and Auditor General of India, 10, Bahadurshah Zafar Marg, New Delhi.
3. Secretary, Ministry of Water Resources, Shram Shakti Bhavan, New Delhi.
4. Secretary, Ministry of Agriculture, Krishi Bhavan, New Delhi.
5. Secretary (Expenditure) Ministry of Finance, North Block, New Delhi.
6. Chairman, Central Water Commission Sewa Bhavan, R.K. Puram, New Delhi - 66.

* Redesignated as Commissioner (WM) before the first meeting of the Committee.

No.16(134)/ 90-I&CAD

Government of India

Planning Commission

Yojana Bhavan, Sansad Marg,

New Delhi - 110 001.

Dated 20th Feb., 1992

CORRIGENDUM

Sub: Constitution of Committee on Pricing of Irrigation Water

In partial modification of this office notification of even number dated 23rd October, 91 and corrigendum of even number dated 15.12.91, the following additions in the constitution of the Committee are, made with immediate effect:

1.	Secretary, Irrigation, Govt. of Haryana, Chandigarh	Member
2.	Shri K.R. Datye, Consulting Engineer, Ganesh Kuteer, First Floor, Prarthana Samaj Road, Ville-Parle (East), Bombay-400 057.	Member

The committee will submit the final report by 30th 1992.

Sd/-

(N.K. Malhotra)

Deputy Secretary (G.A.)

To

- All Members of the Committee

Copy to :

1. Secretary (Co-ordination) Cabinet Secretariat, Rashrapati Bhavan, New Delhi.
2. The Comptroller and Auditor General of India, 10, Bahadurshah Zafar Marg, New Delhi.
3. Secretary, Ministry of Water Resources, Shram Shakti Bhavan, New Delhi.
4. Secretary, Ministry of Agriculture, Krishi Bhavan, New Delhi.
5. Secretary (Expenditure) Ministry of Finance, North Block, New Delhi.
6. Chairman, Central Water Commission Sewa Bhavan, R.K. Puram, New Delhi-66.

Planning Commission

- PS to Deputy Chairman/ Member (R)/ Member (P)
- PS to Secretary/ Special Secretary

- Principal Adviser (Agriculture)
- Advisers (PC)/ SP/ (I&CAD)

I&CAD Division

Copies also to:

- Information Officer, Planning Commission
- Guard File
- Library (PC)

Sd/-
(J.N. Nanda)
Deputy Adviser (I&CAD)

No.16(134)/ 90-I&CAD
Government of India
Planning Commission

Yojana Bhavan, Sansad Marg,
New Delhi - 110 001.
Dated 17th August, 1992

CORRIGENDUM

Sub:- Constitution of Committee on Pricing of Irrigation Water

In partial modification of this office notification of even number dated 23rd October, 1991 and corrigendum of even number dated 15.12.1991 and 20.02.1991, the term of the above Committee is extended up to 15.09.1992.

Sd/-
(N.K. Malhotra)
Deputy Secretary (G.A.)

To

All Members of the Committee

Copy to :

1. Secretary (Co-ordination) Cabinet Secretariat, Rashrapati Bhavan, New Delhi.
2. The Comptroller and Auditor General of India, 10, Bahadurshah Zafar Marg, New Delhi.
3. Secretary, Ministry of Water Resources, Shram Shakti Bhavan, New Delhi.
4. Secretary, Ministry of Agriculture, Krishi Bhavan, New Delhi.
5. Secretary (Expenditure) Ministry of Finance, North Block, New Delhi.
6. Chairman, Central Water Commission Sewa Bhavan, R.K. Puram, New Delhi.

List of Irrigation Projects visited and meetings held with the State Officials during the Committee's visit to selected States.

State	Meeting	Date	Name of the Irrigation Project/ WUA visited & meeting held
1. Maharashtra	Second Meeting **	3rd Feb. 1992	(i) Mula Irrigation Project (ii) Sri Dutta Sahakari Pani Watap Society Ltd. Chanda, Tal. (iii) Meeting with Secretary, Irrigation, Govt. of Maharashtra at Irrigation Rest House, Ahmednagar
		4th Feb. 1992	(i) Khadakwasla Irrigation Project (ii) Cooperative Agriculture Society, Manjari.
2. Gujarat	Third Meeting	5th March, 1992	(i) Meeting with Cnairmar, Sardar Sarovar Narmada Nigam Ltd., Secretary, Irrigation, and other officials of the irrigation Deptt., Government of Gujarat at Circuit House Annexe, Ahmedabad. (ii) Horticultural Farm at Pipardy and Kobdi. (iii) Jivara Patel Agro Forestry Centre, Curendra Baugh.
		6th March, 1992	(i) Mahi-Kadana Project (ii) Water Users' Association Anklay. (iii) Khedut Irrigation (TW) Coopt. Society Sundal Fura. (iv) Meeting with Secretary, Irrigation & official of concerned Departments, Govt. of Gujarat, officials of WALMI and IRMA and representatives of Water

* First meeting of the Committee was held on 16th December, 1991 at Yojana Bhavan, New Delhi

			Users' Associations and Experts at WALMI, Anand.
		7th March, 1992	(i) Sardar Sarovar Narmada Project (Under Construction) .
3. Uttar Pradesh	Fourth Meeting	10th April, 1992	(i) Eastern Yamuna Canal (ii) Meeting with Chief Engineer, Irrigation, and other officials of Irrigation Deptt., Govt. of U.P. and representatives of the farmers at village Phulkhari. (iii) Upper Ganga Canal, near Roorkee. (iv) Meeting with the officials of U.P. state Irrigation Deptt. at Bhimgoda Headwords on Upper Ganga Canal in Haridwar.
4. Haryana	"	11th April, 1992	(i) Augmentation Tubewell Project. (ii) Western Yamuna Canal, (iii) Meeting with Superintending Engineer, Western Yamuna Canal Circle, Karnal at Karnal. (iv) Private Tubewell at village Kachhava near Karnal.
		12th April, 1992	(i) Committee called on Deputy Chairman, Planning Commission & Member (Irrigation) & Member (Agr.) in Yojana Bhawan, New Delhi.
5. Orissa	Fifth Meeting	7th May, 1992	(i) Mananadi Delta Stage-I (ii) Meeting with Chief Engineer, Irrigation & Flood Control, and other officials of Irrigation & Revenue Departments, Govt. of Orissa & representatives of Farmers at Kendu, Patna. (iii) On-farm development work (OFD) at Matiapada. (iv) Meeting with State officials of irrigation Deptt. & representatives of farmers at Gop.

		8th May, 1992	<ul style="list-style-type: none"> (i) Mahanadi Delta Stage-II (ii) Meeting with State officials of Irrigation & Revenue Departments and representatives of farmers at Sakhi Gopal. (iii) Meeting with Senior Officials of State Govt. of Orissa viz. Development Commissioner & Secretary Planning Co-ordination; Principal Secretary (Finance); Secretary (Irrigation); Secretary (RD); Secretary (Rev.); Secretary (Agri.) Engineer-in-Chief, Irrigation at Sectt. Conference Room, Bhubaneshwar.
6. Andhra Pradesh	Sixth Meeting	7th June, 1992	<ul style="list-style-type: none"> (i) Sriramsagar Project (ii) Meeting with State officials of Irrigation and Revenue Departments & representatives of farmers at Pochampad.
		8th June, 1992	<ul style="list-style-type: none"> (i) Krishna Delta Project (between Vijayawada & Vayyur). (ii) Meeting with District Collector & other State officials of Irrigation & Revenue Departments, local MLAs & MP and representatives of farmers at Vayyur.
		9th June, 1992	<ul style="list-style-type: none"> (i) Meeting with Experts at Sectt. Committee Room, Hyderabad. (ii) Meeting with Special Chief Secretary, Secretary Planning and Finance, Govt. of Andhra Pradesh and other officials of 8 concerned Departments at Secretariat Committee Room, Hyderabad.

List of Dates and Venues of various Meetings (Seven) held by the Committee

Meeting	Date of Meeting and Field Visit	Venue of the Meeting
First	16th December, 91	Committee Room Ministry of Water Resources, Shram Shakti Bhavan, New Delhi.
Second	2-4th Feb. 92	Pune Irrigation Circle, Sinchal Bhavan, Pune in Maharashtra
Third	5-7th March, 92	Sardar Sarovar Narmada Nigan, Guest House, Ke Madia, in Gujarat.
Fourth	10-12th April	Yojana Bhavan, New Delhi
Fifth	6-8th May, 92	Secretariat of Government of Orissa at Bhubaneshwar.
Sixth	7-9th June, 92	Secretariat of Government of Andhra Pradesh at Hyderabad.
Seventh	19-21st August, 92	Yojana Bhavan, New Delhi.

Note: In addition, the Drafting Sub-Committee of the Committee on Pricing of Irrigation Water held a four day meeting from 14th to 17th July, 92 at India International Centre at New Delhi for preparation of the Draft Report of the Committee.

ANNEXURE-1.4

(Para 1.18)

List of Specialists/ Experts with whom the. the Committee held discussions.

S.No	Name of the Specialists/Experts	Present Status
1.	Shri C.C. Patel	Chairman, Sardar Sarovar Narmada Nigam Limited (Gujarat)
2.	Prof. Tushar Shah	IRMA, Anand (Gujarat)
3.	ShriK.B.Shah	Rtd. Chief Engineer now Consulting Engineer, Ahmedabad.
4.	Dr. Mahesh Pathak	Hon. Director, Agro-Economic Research Centre, Vallabh Vidyanagar (Gujarat)
5.	Shri S.N. Lele	Centre for Applied Systems Analysis in Development (CASAD) Bombay.
6.	Dr. A. Sunder	WAHANA Consultants Pvt. Ltd. Hyderabad
7.	Shri Satyanarayan Singh	WAMANA Consultants Pvt. Ltd. Hyderabad.
8.	Shri M.S. Billore	Former Secretary (WR) and Member, State Irrigation Tribunal, Government of Madhya Pradesh, Bhopal.
9.	Shri R.Chikkanna	Former Secretary, PWD, Government of Karnataka, Bangalore.
10.	Shri A. Mohana Krishnan	Chairman, Cauvery Technical Cell, Government of Tamil Nadu, Madras.
11.	Shri R.K. Patil	Centre for Applied System Analysis in Development (SASAD), Bombay

Annexure – 1.5 (para 1.1)

Statewise and Planwise details of Outlay/Expenditure for Major and Medium Irrigation Sector

(Re. Crores)

SI. No.	State/U.T.	First Plan (1951-56)	Second Plan (1936-61)	Third Plan (1961-66)	Annual Plans (1966-69)	Fourth Plan (1969-74)	Fifth Plan (1974-78)	Annual Plans (1978-80)	Sixth Plan (1980-85)	Seventh Plan (1985-90)
1.	Andhra Pradesh	37.47	57.43	91.52	60.87	118.71	269.11	257.69	729.59	1272.37
2.	Arunachal Pradesh	--	--	--	--	--	--	--	--	1.13
3.	Assam	--	1.02	1.43	1.89	3.97	24.83	15.62	68.91	116.06
4.	Bihar	15.55	26.54	68.12	33.96	130.46	203.93	164.47	719.19	1332.54
3.	Goa	--	--	Included	U.ts	--	--	Included	U.ts	66.96
6.	Gujarat	44.72	12.41	46.02	47.86	125.91	236.07	194.21	727.08	998.49
7.	Haryana	--	Include	in Punja	10.54	63.87	111.36	9346	253.41	502.01
8.	Himachal Pradesh	--	--	--	--	--	1.50	4.13	6.16	9.14
9.	Jammu & Kashmir	2.18	0.98	1.61	0.43	6.62	24.49	17.67	54.36	71.55
10.	Karnataka	38.69	27.39	30.86	32.03	134.29	188.46	138.38	413.53	527.42
11.	Kerala	11.79	7.91	10.29	9.16	27.36	75.13	74.97	259.53	301.90
12.	Madhya Pradesh	8.69	30.10	36.95	20.50	77.61	198.36	183.80	666.68	1155.43
13.	Maharashtra	--	52.63	63.10	58.00	166.33	361.63	292.80	1187.17	1561.87
14.	Manipur	--	--	--	--	1.41	13.39	9.62	38.75	73.76
15.	Meghalaya	--	--	--	--	--	0.11	--	--	0.21
16.	Mizoram	--	--	--	--	--	--	--	--	0.42
17.	Nagaland	--	--	--	--	--	--	--	-	-

I8.	Orissa	55.28	20.00	26.22	20.44	20.89	70.63	67.01	322.89	591.47
19.	Punjab	31.87	38.19	19.21	6.92	31.72	49.57	53.10	208.85	220.23
2e.	Rajasthan	31.03	23.30	72.19	33.62	119.19	176.02	114.20	379.10	470.61
21.	Sikkim	--	--	--	--	--	0.35	--	0.65	--
22.	Tamil Nadu	25.42	15.20	30.86	12.54	26.95	54.75	27.66	164.46	193.36
23.	Tripura	--	--	--	--	--	0.09	0.87	16.49	30.87
24.	Uttar Pradesh	28.41	25.12	55.07	46.93	157.70	371.59	296.09	924.26	1245.01
25.	West Bengal	44.52	22.46	15.32	11.54	25.18	48.59	47.52	141.73	234.37
	Total for States	373.62	362.70	568.77	429.23	1240.17	2479.96	2054.15	7282.78	10979.12
	Total for U.Ts.	0.62	17.30	7.23	0.58	2.13	12.30	8.54	58.05	6.94
	Total States & U.Ts.	376.24	380.00	576.00	429.81	1242.30	2492.26	2062.69	7340.83	10986.06
	Central Sector	--	--	--	--	--	23.92	15.09	28.00	61.58
	Grand Total	376.24	380.00	576.00	429.81	1242.30	2516.18	2078.58	7368.83	11047.64

Source: Water and Related Statistics, CMC, April, 1972.

Remark: Figures are likely to undergo changes.

**Statewise and Planwise details of Outlay/Expenditure for
Minor Irrigation Sector (State Sector)**

(Rs. Crores)

S. N o.	State/U.Ts. No.	1st plan	IIInd plan	IIIrd plan	Annual plan	IVth plan	Vth plan	Annual plan	VIth plan	VIIth plan
		1951-56	1956-61	1961-66	1964-69	1969-74	1974-78	1978-79	1989-85	1985-90
1	2	3	4	5	6	7	8	9	10	11
1	Andhra Pradesh	--	7.10	29.19	16.77	19.01	23.33	22.42	78.18	176.94
2	Arunachal Pradesh	Included In U.Ts.			-					23.32
3	Assam		1.91	4.10	3.26	11.09	21.25	21.78	82.44	162.53
4	Bihar		8.27	12.68	31.40	41.25	61.40	38.74	291.45	34.13
5	Goa	Included In U.Ts.			-	-				8.80
6	Gujarat		18.78	13.44	19.43	30.03	45.87	25.74	118.82	199.78
7	Haryana	Included in Punjab			3.89	4.11	3.24	9.54	99.23	95.96
8	Himachal Pradesh		0.68	0.68	1.41	2.49	6.53	7.18	29.98	59.98
9	Jammu & Kashmir		0.99	1.06	4.79	7.91	12.10	11.44	49.18	62.69
10	Karnataka		10.27	37.05	24.13	34.79	41.40	31.60	99.37	172.70
11	Kerala		1.70	5.59	6.52	11.33	13.40	11.44	31.39	44.63
12	Madhya Pradesh		8.49	21.4	18.44	42.62	79.14	81.87	279.04	339.19
13	Maharashtra	Included in Gujarat		24.23	34.45	77.13	86.17	45.18	148.95	399.34
14	Manipur		0.05	0.07	0.04	0.34	1.72	2.53	6.87	8.71
15	Meghalaya	Included in Assam				0.94	0.74	1.50	6.10	10.14
16	Mizoram	-				.	.	-		6.84
17	Nagaland				0.25	0.58	1.72	2.44	19.34	14.42
18	Orissa		1.65	6.22	7.95	18.88	31.03	28.39	95.49	182.95
19	Punjab		4.87	8.08	7.95	14.48	14.28	3.35	19.69	34.94
20	Rajasthan		3.94	11.27	9.78	11.43	11.34	13.97	91.15	55.85
21	Sikkim				-	-	0.80	1.70	5.06	8.82
22	Tamil Nadu		6.32	22.98	30.47	33.46	24.39	19.44	49.94	199.28
23	Tripura		0.06	0.19	0.16	1.39	1.73	2.89	13.74	29.55
24	Uttar Pradesh		16.34	57.70	74.15	110.97	106.50	76.83	311.20	589.21
25	West Bengal		2.04	12.98	15.97	29.14	44.04	37.98	89.28	86.82
26	Total States	54.78	93.46	268.41	313.21	509.77	624.34	488.75	1882.34	3949.54
27	Union Territories		0.18	0.652	1.151	2.512	6.49	7.45	31.98	15.35
28	Total States U.T	54.78	93.64	269.062	314.361	512.282	639.03	494.29	1914.34	3944.91
29	Central Sector	11.84	48.59	58.67	11.83	-	-	5.30	44.92	151.00
30	Brand Total	65.62	142.23	327.732	324.191	512.282	439.81	591.59	1979.24	3215.91

Sources-Water and Related Statistics, April, 1992-CMC.

Remarks : Statewise breakup for First Plan is not available

* Figures are likely to undergo changes.

Annexure-1.6-8

Statewise and Planwise details of Outlay/Expenditure for Minor Irrigation Sector (Institutional)

(Rs. Crores)

S. No.	State/ U.T	First Plan	Second Plan	Third Plan	Annual Plans	Fourth Plan	Fifth Plan	Annual Plans	Sixth Plan	Seventh Plans 1985-90
1	2	3	4	3	6	7	8	9	10	11
		1951-56	1956-61	1961-66	1966-69	1969-74	1974-78	1978-80		
1	Andhra Pradesh		0.33	7.34	31.17	43.19	65.61	70.63	127.19	404.76
2.	Arunachal Pradesh		--	--	--	Included	in U.Ts.	--	--	--
3.	Assam		Neg.	Neg.	Neg.	1.12	0.78	0.58	7.77	36.68
4.	Bihar		0.01	0.37	9.29	41.95	67.21	34.62	111.40	127.01
9.	Goa		--	--	--	Included	in U.Ts.	--	--	--
6.	Gujarat		9.23	27.41	17.24	76.00	29.05	23.61	62.26	163.13
7.	Haryana		0.01	0.07	9.25	30.21	40.42	19.03	107.28	111.51
8.	Himaehal Pradseh		Neg.	Neg.	0.09	0.35	0.22	0.53	0.35	1.28
91.	Jamau & Kashmir		0.02	0.02	0.17	0.17	0.07	0.12	0.08	2.03
10.	Karnataka		1.55	4.15	13.94	36.29	55.04	13.05	58.08	295.82
11.	Kerala		0.37	1.61	1.35	9.85	17.75	17.63	27.55	93.08
12.	Madhya Pradesh		0.54	10.32	11.86	54.22	105.01	47.94	176.83	301.37
13.	Maharashtra		4.00	50.64	56.31	79.25	71.57	42.56	215.96	532.66
14.	Manipur			-	-		Neg.	-	--	
13.	Meghalya				-		Neg.	-	0.03	
16.	Mizoram		--	-	-	-	-	-		
17.	Nagaland		-	-	-	-	Neg.	-	--	--
18.	Orissa		0.13	0.45	2.10	16.15	44.94	33.99	47.43	35.20

19.	Punjab		0.61	3.40	19.28	49.90	37.74	22.12	132.39	154.06
20.	Rajasthan		0.14	0.66	4.69	19.56	29.92	29.35	76.61	128.15
21.	Sikkim							-	-	
22.	Tamil Nadu		2.33	4.76	24.83	96.86	38.32	9.72	15.35	174.31
23.	Tripura		-	-	-	0.02	0.10	0.06	0.23	
24.	Uttar Pradesh		0.05	4.05	32.38	95.77	144.94	79.33	237.78	423.26
25.	West Bengal		0.01	0.01	0.62	9.75	30.37	33.68	32.86	76.97
	Total States		19.35	115.26	234.63	660.61	778.36	478.73	1437.43	3060.38
	Total U.Ts.		Neg.	0.11	0.09	0.45	0.39	1.65	0.13	3.44
	Grand Total		19.33	115.37	234.74	661.06	778.75	480.40	1437.36	3063.82

Source: Mater and Related Statistics April, 1992. CWC

* Figure are likely to undergo changes.

Note: Statewise breakup for First Plan is not available.

Annexure 1.7-A (Part 1 of 2)
(Para 1.1)

**Statewise & Planwise details of Achievements of Irrigation Potential
Created and Utilized-Major & Medium Irrigation.**

(Thousand Hectares)

S. No.	State/UTs.	Ultimate Potential	Pre-Plan upto 1951	First-Plan 1951-56		Second-Plan 1956-61		Third-Plan 1961-66		Annual-Plans 1966-69		Fourth-Plan 1969-74	
			P/U	P	U	P	U	P	U	P	U	P	U
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Andhra Pradesh	5000	1676	77	59	181	129	368	91	78	359	199	217
2	Arunachal Pradesh	-	-	-	-	-	-
3	Assam	970								20	6	13	6
4	Bihar	6500	404	125	87	269	180	239	248	259	160	569	157
5	Goa			-	-	-	-	-	-	-	-	-	-
6	Gujarat	3000	33	64	25	185	41	92	126	99	129	182	89
7	Haryana	3000	436	-	-	-	-	864	818	56	78	173	159
8	Himachal Pradesh	50	-	-	-	-		-	-	-	-	-	-
9	Jammu & Kashmir	250	43	2	2	2	1	10	5	6	11	21	19
10	Karnataka	2500	308	48	21	140	97	177	156	132	57	42	79
11	Kerala	1000	158	93	61	49	81	15	15	23	23	41	41
12	Madhya Pradesh	6000	513	4	4	30	21	208	32	187	115	45	111
13	Maharashtra	4200	255	21	17	47	21	129	85	119	32	266	77
14	Manipur	135	-	-	-	-	-	-	-	-	-	-	-
15	Meghalaya	20											

S. No.	State/UTs.	Ultimate Potential	Pre-Plan upto 1951	First-Plan 1951-56		Second-Plan 1956-61		Third-Plan 1961-66		Annual-Plans 1966-69		Fourth-Plan 1969-74	
			P/U	P	U	P	U	P	U	P	U	P	U
1	2	3	4	5	6	7	8	9	10	11	12	13	14
16	Mizoram @	-	-	.	-	-	.	.					
17	Nagaland	10	~		—	"	~	"	"				
18	Orissa	3600	455	4	4	363	280	127	129	131	147	59	113
19	Punjab	3600	1220	1238	576	100	375	-658	-301	60	74	184	196
20	Rajasthan	2750	320	197	105	30	62	234	249	235	297	151	160
21	Sikkim	20	-	-	-	-	-	-		-	-	-	
22	Tamil Nadu	1500	891	125	193	125	125	22	39	-65	-72	30	47
23	Tripura	100	-	-	-	-	-	-	-	-	-	-	-
24	Uttar Pradesh	12500	2553	329	129	272	319	311	340	142	100	497	343
25	West Bengal	2310	440	159	87	359	336	93	199	48	88	135	118
	Total States	58315	9705	2486	1280	2143	2067	2231	2123	1530	1576	2598	1927
	Total U.Ts.	160	-	-	-	-	-	-	-	-	10	10	10
	Grand Total	58475	9765	2486	1280	2143	2067	2231	2123	1530	1576	2608	1937

Contd...

ANNEXURE 1.7-A (part 2 of 2)

Statewise & Planwise details of Achievements of Irrigation Potential Created and Utilised-Major & Medium Irrigation

(Thousand Hectares)

S. No.	State/UTs.	Ultimate Potential	Fifth-Plan 1974-78		Annual-Plans 1978-80		Sixth-Plans 1980-85		Total upto the end of Sixth Plan including preplan		Seventh Plan 1985-90 (Anticipated)	
			P	U	P	U	P	U	P	U	P	U
1	2	3	15	16	17	18	19	20	21	22	23	24
1.	Andhra Pradesh	5000	213	175	154	149	305	160	3242	3006	169	166
2.	Arunachal Pradesh		-	-	-	-		-	0	0	0	0
3.	Assam	970	28	19	28	18	12	18	101	57	85	57
4.	Bihar	6500	437	319	150	165	427	455	2879	2173	267	390
5.	Goa		-	-	-	-	-	-	0	0	9	6
6.	Gujarat	3000	302	100	73	28	64	134	1094	696	178	197
7.	Haryana	3000	181	35	59	1 04	154	1 15	1923	1745	160	66
8.	Himachal Pradesh	50		-	-	-	6	4	6	4	2	0
9.	Jammu & Kashmir	250	16	12	6	6	31	16	137	114	17	18
10	Karnataka	2500	161	235	66	29	179	60	1253	1112	162	212
11	Kerala	1000	53	31	26	28	77	77	535	515	60	60
12	Madhya Pradesh	6000	269	210	186	37	381	273	1823	1316	373	245
13	Maharashtra	4100	286	163	112	35	458	343	1693	958	245	209
14	Manipur	135	-	-	6	6	34	18	40	24	21	73
15	Meghalaya	20	-	-	-	-	-	-	0	0	0	0
16	Mizoram	10	-	-	-	-	-	-	0	0	0	0
17.	Nagaland	10	-	-	-	-	-	-	0	0	0	0
18	Orissa	3600	187	198	100	100	127	82	1553	1508	98	40
19	Punjab	3000	109	108	56	56	154	144	2463	2448	170	75

S. No.	State/UTs.	Ultimate Potential	Fifth-Plan 1974-78		Annual-Plans 1978-80		Sixth-Plans 1980-85		Total upto the end of Sixth Plan including preplan		Seventh Plan 1985-90 (Anticipated)	
			P	U	P	U	P	U	P	U	P	U
1	2	3	15	16	17	18	19	20	21	22	23	24
20	Rajasthan	2750	159	72	209	168	260		1795	1423	173	209
21.	Sikkim	20	-	-	-	-	-	-	0	0	0	0
22	Tamil Nadu	1500	50	41	1	5	65	60	1244	1225	46	41
23.	Tripura	100	-	-	-	-	-		0	0	4	4
24	Uttar Pradesh	12500	1368	535	557	542	604	576	6633	5517	533	451
25	West Bengal	2310	195	222	106	6	53	64	1579	1470	122	91
	Total States	58315	4014	2475	1895	1482	3391	2680	29993	25315	2896	2560
	Total U.Ts.	160	-	-	-	-	10	5	20	15	2	2
	Grand Total 58475		4014	2475	1895	1482	3401	2685	30013	25330	2898	2562

Source : Water and Related statistics, April, 1992-CWC.

P = Potential Created

U = Utilisation

@ = included under UTs

Statewise and Planwise details of Irrigation Potential Created and Utilised (Cumulative) under Minor Irrigation (Surface water)

Annexure-1.7-B-1

(Thouund Hectares)

Sl. No	Name of the State	Ultimate Potential	Pre-Plan 1950-51	At the end of IInd plan 1960-61	At the end of A. Plan 1968-69	At the end of IVth plan 1973-74	At the end of Vth plan 1977-78	At the end of Annual plan 1979-80	At the end of VIth Plan 1984-85		At the end of Seventh Plan 1985-90	
									P	U	P	U
			P/U	P/U	P/U	P/U	P/U	P/U	P	U	P	U
1	2	3	4	5	6	7	8	9	10	11	12	13
1.	Andhra Pradesh	2300.0	753.00	753.00	756.00	775.00	980.00	940.00	1112.0	996.0	1253.00	1888.00
2.	Arunachal Pradesh	150.00	-	Included in Uts.		.	.	-	40.20	34.20	55.98	49.65
3.	Assam	1000.00	230.00	232.00	235.00	265.00	220.00	250.00	348.00	283.00	378.89	329.80
4.	Bihar	1900.00	850.00	853.00	856.00	875.00	890.00	725.00	1180	1075	1358	1218
5.	Goa	25.00	-	Included	In Uts.	-	.	-	13.60	13.35	15.51	14.75
4.	Gujarat	347.00	60.00	63.00	65.00	78.00	95.00	112.00	150.00	132.00	180.95	146.90
7.	Haryana	58.00	5.00	6.00	8.00	20.00	25.00	28.00	39.00	34.00	39.00	34.00
8.	Himachal Pradesh	235.00	60.00	62.00	63.00	75.00	85.00	90.00	106.00	97.00	1113.00	103.75
9.	Jamu & Kashmir	400.00	270.00	273.00	275.00	290.00	294.00	308	331.00	322.00	349.30	339.40
10.	Karnataka	900.00	425.00	428.00	431.00	460.00	550.00	595	676.00	654.00	713.44	691.44
11.	Kerala	800.00	235.00	228.00	230.00	265.00	275.00	290	340	320	389.90	362.35
12.	Madhya Pradesh	2200.00	400.00	403.00	406.00	425.00	500.00	568	813.00	728.00	941.70	847.00
13.	Maharashtra	1200.00	370.00	372.00	375.00	400.00	490.00	537	743.00	609.00	847.00	669.00
14.	Manipur	100.00	5.00	6.00	8.00	18.00	20.00	26.20	39.00	34.00	46.75	39.40
15.	Meghalaya	85.00	7.00	8.00	9.00	10.00	24.00	17.60	26.00	23.00	31.35	26.55
16.	Mizoram	70.00	-	included in Uts.		.	.	-	6.44	5.84	9.49	8.22
17.	Nagaland	75.00	-	6.00	10.00	35.00	35.00	42.00	51.00	47.00	62.05	54.00
18.	Orissa	1000.00	280.00	283.00	288.00	310.00	340.00	375	553.00	517.00	586.27	542.30
19.	Punjab	50.00	14.00	15.00	17.00	25.00	30.00	34	34.00	34.00	42.85	42.10
20.	Rajasthan	600.00	275.00	278.00	281.00	300.00	310.00	322	372.00	355.00	409.00	384.05
21.	Sikkim	50.00	N.A.	N. A.	N.A.	N.A.	7.00	9.00	14.00	10.00	20.36	15.85
22.	Tamil Nadu	1200.00	750.00	753.00	756.00	780.00	790.00	797	810.00	898.00	841.67	837.95
23.	Tripura	100.00	10.00	11.00	15.00	25.00	38.00	33.90	46.00	41.00	63.83	59.28
24.	Uttar Pradesh	1200.00	600.00	605.00	608.00	650.00	675.00	710	851.00	822.00	991.00	933.00
25.	West Bengal	1300.00	800.00	805.00	808.00	850.00	900.00	945	1030.00	1002.00	1224.75	1113.00
	Total States	17337.00	6391.00	6443.00	6500.00	6931.00	7465.00	7954.70	9683.24	8996.39	10965.84	9951.04

Annexure-1.7-B-2

Statewise and Planwise of details of Irrigation Potential Created and Utilised (Cumulative) under minor Irrigation (Ground Water)

(Thousand Hectares)

SI No	Name of The State	Ultimate Potential	Pre-Plan	At the end of IInd Plan	At the end of A. Plan	At the end of IVth Plan	At the end of Vth Plan	At the end of Annual Plan	At the end of VIth Plan		At the end of Seventh Plan	
			1950-51	1960-61	1968-69	1973-74	1977-78	1979-80	1984-85		(1985-90)	
			P/V	P/U	P/U	P/U	P/U	P/U	P	U	P	U
1	2	3	4	5	6	7	8	9	10	11	12	13
1.	Andhra Pradesh	2200.00	310.00	425.00	620.00	775.00	980.00	1045.00	1229.00	1200.00	1544.00	1507.00
2.	Arunchal Pradesh	B	-	-	-	-	-	-	-	-	-	-
3.	Assam	700.00	Neg.	Neg.	1.00	2.00	28.00	38.00	83.00	66.00	158.15	109.07
4.	Bihar	4000.00	170.00	260.00	500.00	800.00	1210.00	1410.00	2232	2070	3070.00	2773
5.	Got	B	-	-	-	-	-	-	0.70	0.25	1.64	1.26
6.	Gujarat	1500.00	380.00	620.00	1000.00	1200.00	1260.00	1319.00	1524.00	1477.00	1669.00	1626.31
7.	Haryana	1500.00	275.00	300.00	550.00	1010.00	1150.00	1229.00	1348.00	1327	1448.97	1420.92
8.	Himachal Pradesh	50.00	Neg.	Neg.	Neg.	5.00	6.00	6.50	11.00	8.00	12.80	8.92
9.	Jamu & Kashamir	150.00	Neg.	Neg.	1.00	2.00	4.00	5	6.00	5.00	6.97	6.77
10	Karnataka	1200.00	120.00	150.00	310.00	325.00	375.00	420	472.00	461.00	642.00	626.00
11	Kerala	300.00	Neg	Neg.	3.00	5.00	10.00	20	50.00	45.0	89.48	74.92
12	Madhya Pradesh	3000.00	250.00	330.00	485.00	700.00	900.00	982	1179.00	1142.00	1439.70	1400.20
13	Maharashtra	2000.00	440.00	680.00	850.00	925.00	1025.00	1095	1255	1223	1547.10	1495.10
14	Manipur	5.00 a	-	-	-	Neg.	Nig.	0.10	Neg.	Neg.	0.12	0.12
15	Meghalaya	15.00 a	-	-	-	Neg.	4.00	6.10	9.00	9.00	9.00	9.08
16	Mizoram	b	-	-	-	Neg.	Neg.	-	-	-	-	-
17	Nagaland	5.00 a	-	-	-	Neg.	Neg.	Neg	Neg	Neg	0.68	0.43
18	Orissa	1500.00	Neg.	Neg.	3.00	90.00	180.00	290	507.00	463.00	569.90	517.26
19	Punjab	3500.00	800.00	900.00	1600.00	2600.00	2800.00	2880	3140.00	3105.00	3209.89	3160.29
20	Rajasthan	2000.00	950.00	1020.00	1250.00	1400.00	1450.00	1490	1615.00	1582.00	1854.14	1819.24
21	Sikkim	2.00 a	-	-	-	Neg.	Neg.	Neg.	Neg.	Neg.	-	-
22	Tamil Nadu	1500.00	500.00	765.00	950.00	1000.00	1050.00	1090	1140.00	1135.00	1216.72	1211.35
23	Tripura	15.00 a	Neg.	Neg.	Neg.	2.00	3.00	4.50	12.00	9.00	16.71	13.24
24.	Uttar Pradesh	12000.00	2300.00	2800.00	4200.00	5300.00	6915.00	8130	11280.00	10255.00	15651.00	14249.00
25.	West Bengal	2500.00	Neg.	Neg.	120.00	250.00	400.00	485	672.00	598.00	1399.05	1062.00
	Total States	39642.00	6495.00	8270.00	12470.00	16391.00	19750.00	21945.20	27764.70	26180.25	35558.27	33091.50
	Total U.Ts	120.00	5.00	7.00	38.00	47.00	50.00	55.00	57.98	57.61	60.94	60.42
	Grand Total	39762.00	6500.00	8277.00	12508.00	16438.00	19800.00	22000.00	27822.68	26237.86	35619.21	33151.92

Source: Water and Related Statistics, April, 1992 -CWC.

Statewise and Planwise of details of Irrigation Potential Created and Utilised (Cumulative)
Annexure-1.7-B-3 under minor Irrigation (GroundWater)

(Thousand Hectares)

SI No	Name of the State	Ultimate Potential	Pre-Plan	At the end of IInd Plan	At the end of A. Plan	At the end of IVth Plan	At the end of Vth Plan	At the end of Annual Plan	At the end of VIth Plan		At the end of Seventh Plan	
			1950-51	1960-61	1968-69	1973-74	1977-78	1979-80	1984-85		(1985-90)	
			P/V	P/U	P/U	P/U	P/U	P/U	P	U	P	U
1	2	3	4	5	6	7	8	9	10	11	12	13
1.	Andhra Pradesh	4500.00	1060.00	1178.00	1376.00	1550.00	1880.00	1985.00	2341.00	2196.00	2797.00	2595.00
2.	Arunchal Pradesh	150.00	-	-	Included In Uts.			-	40.20	34.20	55.98	49.65
3.	Assam	1700.00	230.00	232.00	236.00	267.00	248.00	288.00	391.00	349.00	537.04	438.87
4.	Bihar	5900.00	1020.00	1113.00	1356.00	1675.00	2100.00	2335.00	3412.00	3145.00	4428.00	3991.00
5.	Goa	25.00	-	-	Included in Uts.			-	14.30	13.60	17.15	16.01
6.	Gujarat	1847.00	440.00	683.00	1065.00	1278.00	1355.00	1431.00	1674.00	1609.00	1850.32	1773.21
7.	Haryana	1550.00	280.00	306.00	558.00	1830.00	1175.00	1257.00	1387.00	1361.00	1487.97	1454.92
8.	Himachal Pradesh	285.00	60.00	62.00	63.00	80.00	91.00	96.50	117.00	105.00	126.60	112.67
9.	Jamu & Kashmir	550.00	270.00	273.00	276.00	292.00	298.00	313.00	337.00	327.00	356.27	346.17
10	Karnataka	2100.00	545.00	578.00	741.00	785.00	925.00	1015.00	1148.00	1115.00	1355.44	1317.44
11	Kerala	1100.00	225.00	228.00	233.00	270.00	285.00	310.00	390.00	365.00	479.00	437.00
12	Madhya Pradesh	5200.00	650.00	733.00	891.00	1125.00	1400.00	1550.00	1992.00	1870.00	2381.40	2247.20
13	Maharashtra	3200.00	810.00	1052.00	1225.00	1325.00	1505.00	1632.00	1997.00	1832.00	2394.10	2164.60
14	Manipur	105.00	5.00	6.00	8.00	18.00	20.00	26.30	39.00	34.00	46.87	39.52
15	Meghalaya	100.00	7.00	8.00	9.00	10.00	18.00	23.70	35.00	32.00	40.43	35.63
16	Mizoram	70.00	-	-	Included in UTs			-	6.44	5.84	9.49	8.22
17	Nagaland	80.00	5.00	6.00	10.00	35.00	35.00	42.00	51.00	47.00	62.73	54.43
18	Orissa	2500.00	280.00	283.00	318.00	400.00	520.00	665.00	1060.00	980.00	1156.00	1059.00
19	Punjab	3500.00	814.00	915.00	1617.00	2625	2830.00	2914.00	3174.00	3139.00	3252.00	3202.39
20	Rajasthan	2600.00	1225.00	1298.00	1531.00	1700.00	1760.00	1812.00	1987.00	1937.00	2263.00	2203.29
21	Sikkim	52.00	N.A.	N.A.	N.A.	N.A.	7.00	9.00	14.00	10.00	20.36	15.85
22	Tamil Nadu	2700.00	1250.00	1538.00	1706.00	1780.00	1840.00	1887.00	1950.00	1943.00	2058.39	2049.00
23	Tripura	115.00	10.00	11.00	15.00	27.00	33.00	38.40	58.00	50.00	80.54	72.52
24.	Uttar Pradesh	13200.00	2900.00	3405.00	4808.00	5950.00	7590.00	8840.00	12131.00	11077.00	16642.00	15182.00
25.	West Bengal	3800.00	800.00	805.00	928.00	1100.00	1300.00	1430.00	1702.00	1600.00	2624.00	2175.00
	Total States	56979	12886.00	14713.00	18970.00	23322.00	27215.00	29899.00	37447.94	35176.64	46524.11	43842.54
	Total U.Ts	161.00	15.00	18.00	49.50	78.00	85.00	100.00	72.18	71.55	81.31	77.13
	Grand Total	57140.00	12901.00	14731.00	19019.00	23400.00	27300.00	29999.90	37520.12	35248.19	46605.42	43119.67

Source: Ministry of Water Resources (Minor Irrigation division)

EXISTING IRRIGATION RATES FOR SURFACE WATER - STATEWISE.

Andhra Pradesh

The Water rates prevalent in Andhra Pradesh since 1.7.1986 are shown in Table-1.1.

TABLE-1.1 Water Rates (Rs./ha) for supply of water from Government sources* of irrigation in Andhra Pradesh with effect from 1.7.1986.

Nature of Crop	Water Rate (Rs./ha) for	
	Category - I** source	Category-II** source
1. For first or single wet crop	148.27	98.84
2. For second or third wet crop	222.40	148.27
3. For first irrigated dry crop	98.84	49.42
4. For second or third irrigated dry crop	148.27	74.14
5. For duffasal crop in the fasli year	370.67	247.11

Note * 1. A Government source of irrigation is one which has been shown as such in the settlement or resettlement classification.

** 2. Any source of irrigation coming under Major and Medium Irrigation Projects shall come under Category-I; sources other than Major or Medium Irrigation sources shall come under category-II.

Assam

No water rates are enforced in Assam

Bihar

The canals of Bihar are divided into the following two classes for imposition of water rates; (i) Perennial Canals and (ii) Non-Perennial Canals. Tables 3.1 and 3.2 show the rates for perennial and non-perennial canals prior to and since 1.10.1983.

TABLE 3.1 Water Rates (Rs./ha) for Perennial Canals in Bihar

	From 1974 to September, 83	From 1.10.83
1. Kharif		
(a) Long lease	74.13	
(b) Season lease	77.84	89.45
(c) Single watering	44.48	51.15
2. Rabi		
(a) Season lease	44.48	51.15
(b) Single watering	40.77	46.95
3. Hot Weather		
(a) Season lease for sugarcane	137.14	157.65
(b) Season lease for crops other than sugarcane	137.14	157.65
(c) Season lease for Jute	40.77	46.95
(d) Single watering for all crops other than Jute	48.18	55.35
4. Single watering for sugarcane outside the hot weather reason lease.		55.35

TABLE: 3.2 Water Rates (Rs./ha) for Mon-Perennial Canals in Bihar

	From 1974 to September, 83	From 1.10.1983
1	2	3
1. Kharif		
a. Long lease	33.36	
b. Season lease	40.77	46.95
c. Single watering	25.95	29.90
2. Rabi		
a. Season lease	33.36	38.30

Gujarat

The present structure of water rates in Gujarat was fixed vide Resolution No.WTR/1080/25/P of the State Irrigation Department dated 10.4.81 and have been effective from 15.6.81. These are shown in Table-4.1.

TABLE: 4 - Water Rates in Gujarat with effect from 15.6.1981

Name of Season/Crop 1	Water Rates (Rs. per ha.) 2
(A) Kharif Season:	
1. Paddy	110.00
2. Kharif Paddy with water for Dharuvadiah during one month before the season	125.00
3. Water Rates for Paddy in reclaimed Kharland areas :	
a. First and Second year	25.00
b. Third and Fourth year	40.00
c. Thereafter from the Fifth year	As (1) and (2) above
4. Crops like Bajri, Bavta, Juwar, Kodri, Maize and late Kharif Juwar	40.00
a. For every post-kharif additional watering sanctioned on canal form VI for maturity of crop	15.00
5. Deshi Kharif Juwar for Ukai-Kakrapar area (season 1st August to 31st Dec.) and Habrid Juwar	60.00
6. Other food crops and pulses not mentioned above, vegetables and grass	60.00
7. Groundnut, Cotton and Kharif crops other than those mentioned above	100.00
B. Rabi Season	
8. Wheat, Raydo	110.00

Name of Season/Crop 1	Water Rates (Rs. per ha.) 2
16. Hot Weather groundnut and other hot weather crops not mentioned above. (season to be reckoned if necessary from 15th Jan to 14th May for Hot Weather groundnut)	200.00
D. Two seasonal crops	
17 Crops like cotton and bidi tobacco –is	200.00
Breakup for Kharif	75.00
Rabi	125.00
18. All other varieties of tobacco except bidi tobacco	250.00
Breakup for Kharif	100.00
Rabi	150.00
E. Perennial Crops:	
19. Sugar-Cane (12 months) and Plantains	830.00
Breakup for Kharif	170.00
Rabi	290.00
Hot Weather	370.00
20. Rajko (Gadab) and other Perennial Crops (12 months not mentioned above)	570.00
Breakup for Kharif	120.00
Rabi	200.00
Hot Weather	250.00

Note:

1. Additional watering for bringing, seasonal crops to maturity after the end of the season and pre-seasonal watering for ploughing purpose, provided separate sanction is obtained on canal Form-VI (Such single watering will not be allowed on water applications mentioned at breakup rates)

Name of Season/Crop 1	Water Rates (Rs. per ha.) 2
6. Water rates for lift irrigation done by irrigators at their own cost :	
A. Lift irrigation from storage or pickup weir schemes of notified rivers, upto five miles upstream	1/3 of the above sanctioned rate for flow irrigation
B. Lift irrigation from canals of v irrigation projects	1/2 of the above sanctioned rate for flow irrigation
C. Lift irrigation from river between storage reservoir and pickup weir	1/3 of the above sanctioned rate for flow irrigation
D. Lift irrigation done from notified rivers, down stream of storage or pickup weir	Free of charge. (However, prior permission from the Competent authority should be obtained as per rules)
E. Lift irrigation done from the lift irrigation schemes to be taken up by G.W.R.D.C. in Ukai-Kakrapar area	80 paise per 10,000 litres
7. Water rate applicable to water co-operative societies. Water rate for flow irrigation for water co-operative societies formed by the irrigators in command area of irrigation projects.	25 paise for 10,000 litres
8. Perennial blocks on Kakrapar scheme as decided under G.R. No. CME-1072/4/P. dated 5.10.73.	Rate per hec. and per annum
1 : 3 blocks	Rs.330.00
1 : 4 blocks	Rs.280.00

Haryana

The present water rates have been in operation since Kharif-1975. These are shown in Table - 5.1.

TABLE 5.1. Schedule of water rates (Rs./ha) in Haryana with effect from Kharif 1975.

A. Water rates for the purpose of Irrigation from all canals except Lower Chautang Nala Canal

Class	Crop	Rates for irrigation flow (Rs./ha)	
		Bhakra Canal including Ghaggar and Saraswati Canals	Western Jamuna canal, Gurgaon Canal, Revari, Jui, Indira Gandhi Canal (Now Loharu canals) and Bisendra Narayan Chakravati (Sewani) Canal
1	2	3	4
1.	Sugarcane (except on Kharif channels)	98.84	84.01
2.	Sugarcane on Kharif channels	81.54	81.54
3.	Waternuts	81.54	81.54
4.	Rice	74.13	74.13
5.	Indigo and other dyes tobacco poppy, spices and drugs.	61.78	61.78
6.	Cotton	61.78	61.78
7.	Gardens and orchards and Vegetables except turnips	61.78	61.78
8.	Barley and oats (except on Kharif Channels)	66.72	46.50
9.	Wheat (except on Kharif Channels)	61.78	44.48

17	Gram	49.42	34.59
	Javar, cheena grass and all fodder crops, including turnips	49.42	49.42
19.	Watering for ploughing not followed by a crop in the same or succeeding harvest	7.41	
20.	Village and Zila Parishad and Panchayat Samities Plantations		
	i. any number of waterings in Kharif	12.36	12.36
	ii. one watering in Rabi	12.36	9.88
	iii. two or more waterings in Rabi	24.71	17.30
21.	Grass		
	i. Single watering in Kharif	12.36	12.36
	ii. Single watering in Rabi	12.36	9.88

B. Water Rates for the purpose of Irrigation from Lower Chautang Nala Canal:

Class	Crop	Rate (Rs./ha)	
		Flow	Lift Maintained and operated by cultivators
(1)	(2)	(3)	(4)
1.	Sugarcane, rice and waternuts	49.42	32.12
2.	Cotton, Indigo & Maize	29.65	19.77
3.	Other Kharif crops	19.77	12.36
4.	Special rates-single watering before ploughing for Rabi except wheat and gram followed by a crop	12.36	7.41
5.	Special rates-single watering before ploughing for wheat and gram followed by a crop	12.36	7.41
Note:	Additional watering after 31st October		
	1 Per ha all crops except fodder crop including turnip	9.88	7.41
	2. For fodder crops including turnips	4.94	3.71

Notes :

1. Rates for lift irrigation maintained and operated by the cultivators are half the flow irrigation rates shown above for all canals. For Jhujjar and JLN Lift Irrigation Schemes the rates are half the rates given in Col. (4) above.
2. Grass given two or more waterings falls under class 18.
3. Hempo, Indigo, Guara, Jantar and Arhar Ploughed in as green manure before 15th September are not assessable to water rates.
4. Rates are per crop except for garden and orchards which are per half year.

6. Himachal Pradesh

The occupiers rates in force for Minor Irrigation Canals in Himachal Pradesh with effect from 8.11.1977 are shown in Table - 6.1.

TABLE 6.1: Occupiers Rates (Rs./Ha) for Minor Irrigation with effect from 8.11.1977 in Himachal Pradesh

	Nature of crop	Rates Flow	(Rs./Ha) Lift	
	(1)	(2)	(3)	
1.	(a) Sugarcane (on Kharif Channels)	33.61	67.21	per crop
	(b) Sugarcane (except on Kharif Channels)	41.09	82.19	per crop
2.	Water nuts	28.02	56.04	per crop
3.	Indigo & other dyes, tobacco, poppy, spices and drugs	20.53	41.02	per crop
4.	Rice	24.27	48.53	per crop
5.	Cotton	16.80	33.61	per crop
6.	Melons, fibre (other than cotton and all crops not otherwise specified)	16.80	33.61	per crop
7.	Maize	13.96	27.92	per crop
8.	Kharif oilseeds	15.86	31.73	per crop
9.	Barley & oats (except on Kharif channels)	15.86	31.73	per crop
10.	Garden and orchards (excluding rabi crops) and vegetables	20.51	41.02	Garden and orchards per half year and rest per crop
11.	All rabi crops (except wheat & grams) including garden, orchards & vegetables	7.54	15.07	- do -
12.	Wheat and grams (on Kharif channels)	6.87	13.96	per crop
13.	Wheat and grams (except on Kharif channels)	14.58	29.16	per crop
14.	Bajra, Masoor and Pulses	12.13	24.27	per crop

	Nature of crop	Rates Flow	(Rs./Ha) Lift	
	(1)	(2)	(3)	
20.	Paddock area as sanctioned by the local government	20.39	40.77	per half year in whole area irrespective of whether it be irrigated in part or whole or not at all
21.	One watering in Kharif	3.73	7.46	per half year
22.	One watering in Rabi	3.73	7.46	- do -
23.	Two or more waterings in Kharif or Rabi (General rate)	7.54	15.07	- do -
24.	Wheat	14.58	29.16	per crop
25.	Brick making and pise wall building	0.74	1.48	per hundred cubic feet
26.	Laying concrete brick or stone Masonaroy	0.49	0.99	- do -
27.	Metalling road	37.07	74.13	per mile
28.	Consolidation of kacha service road	111.20	222.40	per mile per annum for max. 8 waterings in 10 months Dec.- Sept.
29.	Water supplied in bulk	3.71	7.41	per 2500 cubic feet
30.	Watering roadside avenue trees	9.27	18.53	Rs. 7.50 per canal mile of 5000 ft. for kharif crop, Rs. 15 per canal mile of 5000 ft. for rabi crops.
31.	Sprinkling water on roads in the Knar if season	18.53	37.07	per mile
32.	Sprinkling water on roads in the rabi season	37.07	74.13	per mile
33.	Opium	67.21	134.43	per crop

7. Jammu & Kashmir

The water Rites in Jammu & Kashmir effective from 1-4-1976 are given in Table - 7.1.

TABLE - 7.1: Water Rates (Rs./Ha) in Jammu & Kashmir with effect from 1-4-1976.

S. No.	Name of the Crops	Water Rates (Rs./ha)
(1)	(2)	(3)
A.	Jammu Division	
	Gravity Schemes	
1.	Sugarcane	20.07
2.	Paddy	20.07
3.	Vegetable	32.36
4.	Shaftala	15.44
5.	Maize	7.71
6.	Pulses	7.71
7.	Other crops	-
8.	Oil Seeds	10.80
9.	Wheat	10.80
10.	Plantation & Nurser	3.85
11.	Rouni	1.53
	Stabilization	
1.	Paddy	
2.	Vegetables	
3.	Maize	
4.	Other crops	6.18
5.	Wheat	
6.	Oil Seeds	
7.	Rouni	
	Lift/Pump Canals	

10.	Green Manuring	9.64
11.	Cotton	25.70
12.	Shaftala	51.40
13.	Wadwatter	9.64
B.	Kashmir Division	Abiana Rates (Rs./na)
	Gravity Schemes	
1.	First Class Crop (Paddy)	16.30
2.	Second Class Crops (Maize, Vegetables Alsi Etc.)	8.15
3.	Jallar and Jatta	4.20
4.	Stabilization (Abi Awal and Abi Doom for all types of crops)	6-18
5.	Wad water	2.96
6.	Roomi	1.48
	Lift Irrigation	
1.	Wet Crops	51.38
2.	Dry Crops	25.69

8 Karnataka

8.1 The revised normal water rates for different crops grown on the agricultural lands coming under the command of the Major and Medium Irrigation works in Karnataka with effect from 1.7.1985 are shown in Table - 8.1.

TABLE - 8.1: Water Rates (Rs/na) for Major and Medium Irrigation Works in Karnataka with effect from 1.7.1985

S.No.	Crop	Water Rate (Rs./Ha)
(1)	(2)	(3)
1.	Sugarcane to be harvested within 12 months	370.67
2.	Sugarcane to be harvested after 12 months	556.00

9.	Maize, Ragi, Navane, Sajje, Greengram, Sweet Potato, Gingelly, Onion, Corriandar	49.42
10.	Pulses	37.07
11.	Manorial crops	19.77
12.	Garden crop	98.84

8.2 For the period from 1.7.78 to 30.6.85, the water rates shall be levied and recovered at the rates in force from 1st July, 1976 in respect of lands under the Major and Medium Irrigation Projects for which the revised normal rates are now made applicable. These rates should be deemed to have been in force during the above period, for all purposes including booking of demand.

8.3 In respect of holdings coming under the Minor Irrigation Tanks, and such of the Medium Irrigation Projects which do not have assured supply of water, reduced water rates shall be levied in the following manner:

(i) Half the normal water rates will be levied on crops grown on lands coming under the command of the Medium Irrigation Projects with no assured supply of water. For this purpose, the Irrigation Department will prescribe the norms for classifying such types of projects and also specify the names of such projects. Such classification shall be subject to a review once in five years.

(ii) In respect of the minor irrigation tanks, as the supply of water is only of a supplemental nature and not to the full extent of the total water requirements of the crops reduced water rates will be levied on a differential basis as under:

(a) Higher reaches of the atchkat 1/2 the normal water rate, as comprising 2/3rds of the total at para (8.1) above, atchakat.

(b) Lower reaches including tail-end 1/4th the normal water rate lands, comprising

9 Kerala

The Government revised the rate of water cess in the entire State uniformly with effect from 1.7.1974 by amending the Acts applicable to erstwhile Travancore - Cochin area, Malabar area and South Canara district. The revised rates are shown in Table - 9.1.

TABLE - 9.1: Water Rates (Rs./ha) in Kerala with effect from 1.7.1974

S.No.	Type of land	Water Rates (Rs./ha)
1.	Lands already registered as single crop wet lands and on ~ which two paddy crops could be raised.	62
2.	Lands already registered as single crop wet lands and on which more than two paddy crops could be raised.	99
3.	Other lands already registered as wet lands on which two paddy crops could be raised.	62
4.	Other lands already registered as wet lands on which more than two paddy crops could be raised.	99
5.	Lands made fit for cultivation and on which only one paddy crop could be raised.	37
6.	Lands made fit for cultivation t and on which two paddy crops ' could be raised. ^ ^ ^ L	62
7.	Lands made fit for cultivation and on which more than two paddy crops could be raised	99
8.	Other lands benefitted	62
9.	In the case of Lift Irrigation Schemes the rate of cess is fixed as 50% in excess of the cess leviable for the area benefitted by major Irrigation Projects which are given above	

10. Madhya Pradesh

The water rates have been revised w.e.f. 1.10.84. These are shown in Table - 10.1.

TABLE - 10.1. Water Rates (Rs./ha) in Madhya Pradesh w.e.f. 1.10.84

S. No.	Name of Crops	Water Rate (Rs./ha)
1	2	3
1.	Rice	
	(a) Demand Rate	59.30
	(b) Long term agreement rate	54.36
2.	Wheat	
	(a) Preparing land for cultivation with maximum three waterings	61.78
	(b) For each additional watering	14.83
3	Sugarcane	296.52
4.	Sweet Potatoes, groundnuts (Kharif) field peas, soyabean, Sun hemp, mustard, garbeans, castor-oil plant:	44.48
5.	Cotton	
	(a) Ordinary	59.30
	(b) Hybrid, Vipul	92.66
6.	Garden crops such as chillies, brinjals, Potatoes, radish, cucumber, water melons, gourds, ladyfingers, arum, garlic, zira, methi, lettuce and other green vegetables, orchard and rubber plants, plantains, turmeric and pan.	296.52
7.	Poppy and tobacco.	66.72
8.	Bersum fodder	123.55
9.	Jowar	
	(a) Rabi ordinary	37.07
	(b) Rabi Hybrid, Vipul	74.13
	(c) Kharif ordinary	29.65
	(d) Kharif Hybrid, Vipul	37.07
10.	Clover, lucern and other fodd er crops	123.55
11.	Green manuring crops (like sar in, Dhancha etc.)	14.83
12.	Groundnut (Rabi)	59.30
13	Summer rice	77.30

11. Maharashtra

The Govt. of Maharashtra revised the water rates effective from 1-7-94 to 1-7-90 which are given in tables 11.1 to 11.5 as under:

Table 11.1 (Water Rates Rs./ha)

S. No	Crop/Season	During 1 st year from 1-7-90	Perennial water supply from Major, Medium & Minor Irrigation Projects			
			During 2 nd year from 1-7-91	During 3 rd year from 1-7-92	During 4 th year from 1-7-93	During 5 th year from 1-7-94
1)	(2)	(3)	(4)	(5)	(6)	(7)

Kharif Season

1.	Kharif season (including HYV)	65.00	70.00	80.00	90.00	100.00
2.	Kharif Rice (Agreement)	65.00	70.00	80.00	90.00	100.00
3.	Kharif Rice (Demand)	120.00	40.00	160.00	180.00	200.00
4.	Kharif Ground Nut	120.00	140.00	160.00	180.00	200.00
5.	First Irr. (including Rabi crop during Kharif)	-	-	-	-	-
6.	HYV Seeds and During Kharif foundation crop	120.00	140.00	160.00	180.00	200.00

Rabi Crop

7.	Rabi Season (excluding Wheat and Ground Nut)	90.00	105.00	120.00	135.00	150.00
8.	Rabi Wheat	100.00	125.00	150.00	175.00	200.00
9.	Kharif Rabi Cotton	180.00	240.00	240.00	270.00	300.00
10.	Rabi Ground Nut	180.00	210.00	240.00	270.00	300.00
11.	Rabi & Summer Rice	180.00	210.00	240.00	270.00	300.00
12.	HYV Seeds & foundation Crop during	180.00	210.00	240.00	270.00	300.00

S. No	Crop/Season	During 1 st year from 1-7-90	Perennial water supply from Major, Medium & Minor Irrigation Projects			
			During 2 nd year from 1-7-91	During 3 rd year from 1-7-92	During 4 th year from 1-7-93	During 5 th year from 1-7-94
1)	(2)	(3)	(4)	(5)	(6)	(7)

20. Bi-Seasonal Crops

20. Bi -Seasonal (e.g. Toor & Potato etc.)

1. In between Kharif & Rabi	90.00	150.00	120.00	135.00	150.00
2. In between Rabi & Summer season	150.00	175.00	200.00	225.00	250.00

PERENNIAL

21. Sugarcane 1000.80 1250.00 1500.00 1750.00 1750.00

22. Banana 800.00 1000.00 1250.00 1500.00 1750.00

23. OTHER PERENNIAL

1. Fruit Tree, Bar lie. Grass etc 800.00 1000.00 1250.00 1500.00 1750.00

2. Sugar — Beet (Excluding 1st & last Maturing) 195.00 220.00 245.00 275.00 300.00

3. Vegetable during kharif 120.00 140.00 160.00 180.00 200.00

4. Vegetable during Rabi 195.00 220.00 245.00 275.00 300.00

5. Vegetable during Summer 355.00 440.00 545.00 654.00 750.00

6. Onion during Kharif & Rabi 315.06 360.00 410.00 455.00 400.00

7. Onion Last watering during Knarif & Rabi 345.00 395.00 445.00 500.00 500.00

8. More than one watering to Onion during Knarif and Rabi & Summer Season crops 450.00 510.00 575.00 649.00 700.00

9. Onion during Rabi & Summer Season 480.00 560.00 640.00 720.00 800.00

24. Overlap

1. Upto December for each month

i Kharif 45.00 55.00 65.00 75.00 85.00

ii Rabi (Additional watering) 80.00 95.00 110.00 125.00 135.00

2. During January 200.00 250.00 300.00 350.00 350.00

3. During February 220.00 275.00 325.00 380.00 380.00

4. During March 375.00 170.00 565.00 660.00 660.00

5. During April 465.00 555.00 700.00 820.00 820.00

6. During May 500.00 595.00 740.00 865.00 865.00

S. No	Crop/Season	During 1 st year from 1-7-90	Perennial water supply from Major, Medium & Minor Irrigation Projects			
			During 2 nd year from 1-7-91	During 3 rd year from 1-7-92	During 4 th year from 1-7-93	During 5 th year from 1-7-94
1)	(2)	(3)	(4)	(5)	(6)	(7)

Rate of Sewer Water use for Irrigation

32. Sugarcane	2500.00	2750.00	3000.00	3250.00	3250.00
33. Other Perennial Crops	1750.00	2000.00	2250.00	2500.00	2750.00
34. Kharif Season	160.00	170.00	180.00	190.00	200.00
35. Rabi Season	240.00	255.00	270.00	285.00	300.00
36. Wheat	323.00	350.00	375.00	400.00	425.00
37. Summer Crop	510.00	570.00	630.00	690.00	750.00
38. Rice	510.00	570.00	630.00	690.00	750.00
39. Cotton	810.00	870.00	930.00	990.00	1050.00
40. Groundnut	810.00	870.00	930.00	990.00	1050.00

Source: CWC letter No. 1 (2)/92-stat./142 dt. 25-02

Table: 11.2 (MAHARASHTRA)

(from pre page)

Cubic metre system/water taken from the reservoir constructed from the contribution/ownership rate

(Rs. per 1000 Cub)

S1. No.	Place	Season	During 1st year from 1-7-90	2nd year from 1-7-91	3rd year from 1-7--92	4th year from 1-7-93
1.	At the site of minor-irrigation scheme	Kharif	12	14	16	18
		Rabi	18	21	24	27
		Summer	38	42	43	34
2-	Canals	Kharif	13	15	18	20
		Rabi	20	23	26	29
		Summer	41	47	54	60
3-	Reservoir constructed from the	For all	2	4	6	3

Table 11.3 (MAHARASHTRA)

(from pre-page)

(A) Water rates for Lift Irrigation (Water used through privately own ad lift schemes)

(Rs/hac.)

S.No	Place from where water IS lifted	Kind of crops				
		Sugarcane & Banana	Other perennial crop	Kharif Crop	Rabi Crop	Summer Crop
1.	Canal	750.00	500.00	50.00	75.00	150.00
2.	Reservoir	375.00	250.00	25.00	37.50	75.00
3.	Dam or high Barrage	375.00	250.00	25.00	37.50	75.00
4.	High Barrage	375.00	250.00	25.00	37.50	75.00
5.	Area in the river bed	187.50	125.00	12.50	20.00	37.50
6.	Within back water zone of the barrage for which no water is released from an upstream storage	187.50	125.00	12.50	20.00	37.50
7.	Within back zone of the barrage for which water is released from an upstream storage	62.50	40.00	Nil	12.50	12.50
B.	Kharif barrage for stray water	62.50	40.00	Nil	12.50	12.50

(B) Water rate for irrigation obtained from kolhapur type barrage, lift irrigation from river, lift irrigation for sugarcane (including aftermath) (from mowing harvesting).

1. Dams upon notified rivers from which water is given for twelve months. 468.75 (Rs./Ha)
2. Kolhapur type barrages for which water is not released from upstream cams 235.00 (Rs./ha).
3. From the rivers not benefited from any stores. 75.00 (Rs./Ha)

Tables 11.4

Service charges of lift irrigation (less than 30 mt. lift of water) schemes under- Irrigation department or- irrigation Development Corporation

Sl. No.	Season /Crop	1st year from 1.7.1990	2nd year from 1.7.1991	3rd year- from 1.7.1992	4th year from 1.7.1993	5th year from 1.7.1994
1	2	3	4	5	6	7
(A)	Two Seasonal Crop					
	1. Toor	120	140	160	180	200
	2. Tarmeric	165	190	220	250	275
	3. Chilli	165	190	220	250	275
	4. Long Fibre Cotton or Groundnut (Summer & Kharif)	300	350	400	450	500
(B)	Perennial Crop					
	1. Sugarcane	825	1050	1275	1500	1500
	2. Banana	750	960	1140	1320	1500
	3. Other Perennial crops	540	665	790	915	1037
	4. One watering for overlapping Sugarcane & Banana	30	35	40	45	50
(C)	Kharif Crop					
	1. Rice	90	105	120	135	150
	2. Cereal & Fodder Crops	75	87	100	112	125
	3. Other cash crops	105	122	140	158	175
(D)	Rabi Crop					
	1. Wheat	135	158	180	202	225
	2. Other cereal & Fodder crop	90	105	120	135	150
	3. Other Cash Crops	210	245	280	315	350
(E)	Summer- Crop					
	1. Summer Cereal crop	180	210	240	270	300
	2. Hybrid Jowar	180	210	240	270	300
	3. Cash Crop	300	350	400	450	500
	4. Second Summer Rice	225	262	300	337	375
(F)	Vegetables					
	1. Tomato	125	150	180	200	225

Table: 11.5 (MAHARASHTRA)

Service charges of lift irrigation (more than 30 mts. lift of water) schemes under Irrigation Department or Irrigation Development Corporation

SI- No	Season/Crop	1st year from 1.7.1990	2nd year from 1.7.1991	3rd year from 1.7.1992	4th year from 1.7.1993	5th year from 1.7.1994
1	2	3	4	5	6	7
(A)	Two Seasonal crop					
	1. Toor	143	153	164	185	205
	2. Turmeric	171	200	220	256	285
	3. Chilli	171	153	228	256	285
	4. Long Fibre cotton (Summer & Kharif)	360	420	480	540	600
(B)	Perennial Crop					
	1. Sugarcane	997	1369	1541	1812	1812
	2. Banana	942	1159	1426	1690	1612
	3. Other perennial crop	656	807	958	1109	1262
	4. One watering for over	37	43	50	56	62
	Lapping Sugarcane & banana					
(C)	Kharif Crop					
	1. Rice	132	154	176	198	220
	2 Cereal & Fodder crop	75	37	100	112	125
	3. Other Cash crop	105	122	140	158	175
(D)	Rabi Crop					
	1. Wheat	165	190	220	250	275
	2. Other Cereal & Fodder crop	99	115	135	149	165
	3. Other cash crop	210	245	280	315	350
(E)	Summer Crop					
	1. Cash crop	360	420	480	540	600
	2. Second summer rice	414	483	552	621	690
(F)	Vegetable					
	1. Kharif	138	161	184	207	230
	2. Rabi	210	245	280	315	350

12 Manipur

12.1 The present and proposed water rates in Manipur are shown below In Table - 12.1.

TABLE - 12.1: Existing and proposed water rates in Manipur (Rs./ha)

Season	Name of crop	Existing Water- Rates	Proposed Water Rates
Kharif	Rice II	37.50	50.00
Rabi	Rice I	75.00	100.00
	Wheat	37.50	50.00
	Other Rabi Crops Mung, Mustard, Peas etc.)	22.50	30.00

12.2 Notification for the enforcement of the present water rates was issued under Govt. of Manipur No. 4/4/IFC dated 23.12.81 for the levy of water rates in the State which is in exercise of the powers conferred by Section-100 of the Manipur Irrigation Act, 1977. Actual realisation of water rates has not yet been started in the State.

13 Meghalaya

There is no major or medium irrigation project in the State. AS such no water rates are enforced.

14 Mizoram

No water rates are enforced in Mizoram.

15. Orissa

15.1 Compulsory basic water rate is flat water rate per acre of land within the cultratable command area of an irrigation work payable to the State Government for supply of water, whether used or not, from an irrigation work for irrigation of the staple cereal Crop generally grown in the area. The paddy crop which is harvested between the 16th day of October and the 31st day of January is the staple crop for the entire State of Orissa. Irrigation works are classified into 4 classes viz. Class I, Class II, Class III and Class IV according to their capacity to irrigate the lands. The water rates for staple cereal crops for different classes of irrigation works in various time periods are shown in may be table - 15.1 and 15.2.

TABLE - 15.1

15.2 In respect of new irrigation works or irrigation works where compulsory basic water rate/water rate will be levied for the first time, the following principles shall be adopted:

- a) In the first year when the water is let out in the Ayacut Nil
- b) In the 2nd year when water is let out in the Ayacut 50% of the appropriate rate
- c) In the 3rd year when water is let out 75% of the appropriate rate
- d) In the 4th year and thereafter let out in the Ayacut 100% of the appropriate rate

Table- 15-1
Irrigation rates for crops other than staple cereal Crops in Orissa

SI. No.	Name of Crop	Irrigation Rates (Rs./Ha)				
		1968-69	1973-74	1974-75	1973-76	1981-82 Onwards
1	2	3	4	5	6	7
1	Dalua	19.77	39 .54	39 . 30	39-30	88.96
2.	Tobacco	37 ,07	37.07	55.60	55 .60	83.40
3.	Potato	24.71	24.71	37.07	37.07	55.60
4.	Vegetables including peas	19.77	19.77	29 .65	29.65	44.48
5.	On ion	24.71	24.71	37.07	37.07	54.36
6.	Wheat	4.94	14.83	22.24	22 •24	32.12
7.	Maize	12.36	12.36	18.53	18.53	27.80
8.	Mung	2. 47	2.47	3.71	3.71	3.56
9.	Groundnut	12.36	12.36	18.53	18.53	27.80
10.	Orchards	29.65	29. 65	44.48	44.48	66.72
11.	Sugarcane	34.59	44.48	66.72	66.72	100.08
12.	Jute	7.41	7.41	11 .12	11.12	16.68
13.	Fodder	12.36	12.36	18.53	18.53	27.80
14.	Pulses	4.94	4.94	7.41	7.41	11.12
15.	Cotton	24.71	24.71	37. 07	37.07	55•60
16.	Til(oil seeds)	4.94	4.94	7.41	7.41	11.12
17.	Betel Leaf	74.13	74.13	111. 20	111. 20	166.79
18-	Arher	12 .36	12.36	18.53	18.53	27.80

WATER RATES (Rs./Ha.) in Punjab with effect from Kharif, 1974 are given in Table 16.1

Table 16.1

Sl. No.	Name of the Crop	Water Rates (Rs.Per ha..) for				
		Eastern Canal	Bhakra Canal etc.	Sirhind Canal	Upper Bari Doab Canal	Shah Nanan Canal
1.	(i) Sugarcane except on Kharif channels	66.72	81.54	81.54	82.24	67.83
	(ii) Sugar-cane on Kharif channels	66.72	66.72	66.72	67.26	67.83
2.	Rice	48.19	48.19	48.19	48.56	48.83
3.	Cot tor.	39.92	33.36	33.36	33.63	32.54
4.	(i) Garden & Orchards	50.95	50.95	50.95	51.40	50.85
	(ii) Vegetables	44.77	40.77	40.77	41.12	40.70
5.	Maize	31.51	31.51	31.51	28.02	27.13
6.	(i) Kharif Oil Seed	31.51	-	-	-	-
	(ii) Oil seeds except Rabi oil seeds on Kharif channels		31.51	31.51	31.78	32.54
7.	(i) Wheat and gram on Kharif channels	13.59	13.59	13.59	13.74	14.93
	(ii) Wheat except on Kharif channels	—	28.89	28.39	29.13	—
8.	Bajra & Pulses	18.53	24.09	24.09	24.29	24.39
9.	All fodder Crops	14.83	14.83	14.83	14.97	16.26

* Bhakra canal, Bist Doab Canal Nawanshahar Branch, Jullundernder Branch, Grey canal taking off from Sidhwan Branch and Makhu canals and Mayawah & Sodhinagar . Distributories taking off from Ferozepur- Feeder and Sidhwan Branch & Mudki, Golewala, Phlda & Jit Distributarles taking off from Sutlej Navigation Channels of Sirhind Canal.

Note: Lift rates are half the flow rates.

17.1 The present water rates in Rajasthan are shown in Table 17.1

Table 17.1 Water rates (Rs./ha) in Rajasthan w.e.f 1.4.1982

SI. No.	Name of the Crop	(a) Ganga Canal, Bhakra, Ghaggar, Rajasthan & Chambal canal (Irrigation under perennial channels) (b) Irrigation works constructed/improved after 1st January 1952 and all works in the areas of former States of Banswara, Dungapur and Pratapgarh.	Pre-1952 Irrigation works except innundation irrigation works	Pre-1952 innundation irrigation works
(1)	(2)	(3)	(4)	(5)
1.	Sugarcane	143.32	123.56	51.89
2.	Rice	98.84	56.84	24.71
3.	Cotton	88.96	71.66	44.48
4.	Maize	44.48	24.71	19.77
5.	Bajra	44.48	24.71	19.77
6.	Jowar	44.48	24.71	19.77
7.	Pulses	51.89	44.48	32.12
8.	Garden (per year)	180.39	121.08	56.84
9.	Guwar	51.89	44.48	24.71
10.	Simmhemp & Grass	44.48	44.48	32.12
11.	Vegetables	71.66	49.42	27.18
12.	Other Khaif Crops	56.84	44.48	32.12
13.	Wheat	74.13	51.89	32.12
14.	Barley	51.89	37.07	24.71
15.	Gochani & Bejar	71.66	51.89	37.07
16.	Gram 1st Watering (two or Bore watering)	49.42 71.66	44.48 61.78	44.48 46.95
17.	Palewa	22.24	14.83	
18.	Fodder	44.48	44.48	24.71
19.	Oil seeds	56.84	44.48	32.12
20.	Water Nuts	88.96	61.78	32.12
21.	Indigo & other dyes	88.96	44.48	32.12
22.	Tobacco	88.96	51.89	32.12
23.	Lucerne & Poppy	88.96	51.89	27.18
24.	Zeera	88.96	46.95	27.18
25.	Other Rabi crops	64.25	44.48	32.12

Notes: Non-perennial Channels Ganga, Bhakra & Ghaggar & Rajasthan Canal areas:-

All Kharif Crops -

Same rates as perennial channels in column 3 above.

All Rabi crops

(a) For first watering – Palewa rates as per column 3 above would be charged.

(b) For second and subsequent watering - full rates as applicable to perennial channels as per column 3 above would be charged

17.2 Different sets of water rates are in vogue for irrigation from the following categories of irrigation works.

- 1) Ganga canal, Bhakra, Chambal Project, all irrigation works of the former State of Banskara, Durgapur and Pratapgarh and all Irrigation works constructed after 1st January 1952.
- 2) Old tanks or water reservoirs constructed prior January 1952.
 - a) Inundation irrigation works, and
 - b) Except inundation irrigation works.

18. Tamil Nadu:

18.1 The following systems of water rates are prevalent in Tamil Nadu .

- a) Wet Assessment
- b) Dry Assessment
- c) Standard Scales of Water Cess
- d) Special Rates of Water Cess

18.2 a) **Wet Assessment**

The lands are generally classified into wet and dry lands. Wet lands are those which are getting irrigation from a recognized source of irrigation. The sources of irrigation are classified as class I, II, III, IV and V according to their capacity to irrigate the lands. The wet lands under the sources of irrigation are assessed for their land revenue which includes a portion for irrigation. The basic wet assessment of these lands ranges from Rs. 3 to Rs. 22 per acre (or Rs. 7.41 to 54.36 per ha.) Lands, which are not assured of irrigation from any Government source, are classified as dry lands. The basic assessment for the dry lands ranges from Rs. 0.50 to Rs. 8.00 per acre (or Rs. 1.24 to Rs. 19.77 per ha) . Wet lands normally enjoying assured supply of water from Government source of irrigation for two crops are registered as double crop wet lands. The Second crop is charged generally at half of the first crop assessment. In the case of single crop wet lands, if a second crop is raised, an extra charge (Fasli Jasthi) is leviable which is ordinarily half the assessment .

To augment the revenue on irrigation, additional wet assessment was levied under the Tamil Nadu Act 8 of 1963. The rates of additional wet assessment are as follows. They are levied from 1.7.1962.

Details of Additional Wet Assessment

Additional Assessment Levied from 1.7.1962

(i) Irrigation from I and II Class sources:

- a) Single Crop wet lands 45% of the assessment. Total of wet assessment plus additional assessment not to exceed Rs. 18 per acre (or Rs. 44.48 per ha) per fasli.
- b) Double Crop wet lands 45% of the assessment. Total of wet assessment plus additional assessment not to exceed Rs. 27 per acre (or Rs. 66.72 per ha) per fasli.

(ii) Irrigation from III, IV and V Class sources:

- a) Single crop wet lands 30% of the assessment. Total of wet assessment plus additional assessment not to exceed Rs. 12 per acre (or Rs. 29.65 per ha) per fasli.
- b) Double Crop wet lands 30% of the assessment. Total of wet assessment plus additional assessment not to exceed Rs. 17 per acre (or Rs. 42 per ha) per fasli.

b) Dry Assessments:

18.3 When dry lands are irrigated with water from a Government source of irrigation, water cess under the Tamil Nadu Irrigation Cess Act is levied for charging for water in addition to the dry assessment. For normal extension of irrigation of dry lands under the registered source, Standard water rates are levied. The standard water rates have been fixed by dividing the irrigation source into two categories; the irrigation sources placed in the I or II class being treated in the first category and the sources in the lower classes in the second category. The standard water rates range from Rs.1.50 to Rs. 4.00 per acre (or Rs. 3.71 to Rs. 9.88 per ha) for first crop, half of it. For second crop and 1/4th for third and subsequent crops. For dufussal crops, the rates are Rs.4.50 or Rs. 6 per acre (or Rs.11.12 or Rs. 14.83 per ha) if the irrigation is from the source in the second category or from the first category. Under Act 8 of 1963, an additional water cess is levied on the above dry lands, with effect from 1.7.1962 at the following rates:

Rs. 74.13 per ha) for dufussal crop. The new projects have also been notified for levy of special assessment and special water cess at Rs. 10 per acre (or Rs. 24.71 per ha). In respect of projects which are designed for irrigation of dry crops or for short-term crops only, cropwise rates are prescribed.. The revenue due to irrigation is settled at the time of Jamabandhi and collected along with Land Revenue.

18.7 The special water rate for flow irrigation for some of the irrigation projects varying with the type of land and crop is given in Table 18.1.

18.8 Besides the above system, cropwise water rates are levied in respect of lands benefitted by certain projects listed in Table 18.2.

18.9. The special water rates for flow irrigation for some of the irrigation projects and crop-wise rates for operational projects indicated in Tables 18.1 and 18.2 do not cover any percentage of the operation and maintenance costs and interest charges on Capital Cost of the Project. The average cost per ha. for operation and maintenance of irrigation schemes for 1982-83 worked out to Rs 75.93.

Table : 18.1

Special Water- Rates (Rs./ha. for selected Projects of Tamil Nadu)

S. No	Name of Project	Dry Land						Diffusa l Crop	Wet Land				
		I Crop		II Crop		III Crop							
		Wet	Dry	Wet	Dry	Wet	Dry						
1	(2)	(3)	(4)	(5)	(6)	(7)							
	Aranlar	11.12	8.35	5.56	5.56	5.56	2.77	16.86	7.78 to 35.93				
	Sathanur		37.07		18.53		9.27		Single Doub Compound				
	(North Arcot and South Arcot dists.)								Wet Crop ed double				
	Tholudur		37.07		18.53		9.27	55.60	37.07 49.42 55.60				
	(Willington Reservoir)								Single Crop Double				
	(South Arcot district)								37.07 55.60				
	Cauvery Mettur		24.71		12.36		6.18	37.07	I	II	III	Diffu	
									Crop	Crop	crop	sal	
												Crop	
									18.53	12.36	6.18	30.89	
									(Proprietary wet and minor inam wet				

Table: 18.2 CROP-WISE WATER RATES FOR SELECTED PROJECTS OF TAMIL NADU

Sl. No.	Name of project	Type of irrigation	Rates for Principal Crops Cotton (Rs. per Ha)						
			Rice	Millets	Sugar-cane	Tobacco	Vegetables	Trees	
1.	Lower Bhavani	Flow	37.07	18.53	-	49.42	37.07	37.07	40.42
2.	Mettur Canal Scheme	Flow	37.07	18.53	-	48.42	37.07	-	-
3.	Chittar Pattankal	Flow	49.42	42.71	-	61.78	49.42	49.42	61.76
4.	Amaravathi	Flow	37.07	18.53	49.42	-	37.07	37.07	40.42
5.	Neyyar Irrigation Project Stage-II	Flow	DO						
6.	Villathurai Irrigation	Lift	37.07	18.53	-	49.42	37.07	37.07	49.42

Note: In addition to the above rates additional water cess is leviable at the following rates with reference to Act 8 of 1963.

I & VII Class Sources: 75% of water cess (The levy is subject to an aggregate amount per acre (or Rs.37.00 per ha) per crop for land revenue, water cess and additional water cess)

III, IV and V Class: 37.5% of water cess (——— do ———)

19 Tripura

At present no water rates are being collected from the farmers. However, the water rates proposed to be collected on the completion of the three medium projects viz. i) Gumti Irrigation ii) Khowai Irrigation and iii) Manu Irrigation are shown in Table 19.1.

Table 19.1 Proposed Water Rates (Us. per ha) in Tripura

Sl. NO	Name of the Project	Name of the Crop	Proposed Water Rates (Rs./ha)
1.	Gumti Irrigation Project	(1) Rice	30
		Wheat	30
		Sugarcane	80
		Jute	20
		Others	55
2.	Khowai Irrigation Project	(2) Rice (Boru)	120
		Rice (Aman & Aush)	30

	Wheat	30
	Sugarcane	80
	Jute	20
	Others	25
3.	Manu Irrigation Project	(3) - do- (Same as under
		(2) And Potato 30

20 Uttar Pradesh

20.1 The various Canal Systems are classified into 4 schedules for the purpose of levying water rates. The water rates with effect from 1.7.83 for Canal Systems falling in different schedules are shown in Table 20.1.

Table 20.1 water Rates (Rs./ha) in Uttar Pradesh with effect from 1.7.1983

For canal Systems included in	Name of crops	Water Rates	(Rs./ha)
		Flow Irrigation	Lift Irrigation
(1)	(2)	(3)	(4)
Schedule I	1. Sugarcane	237.23	118.61
	2. Paddy	143.32	71.66
	3. Vegetables, gardens (per fasal) Waternuts, Poppy	143.32	71.66
	4. Potato	177.92	88.96
	5. Tobacco	153.21	76.60
	6. Wheat, Barley &crops mixed with wheat or barley	143.32	71.66
	7. Cotton	56.84	28.42
	8. Fodder crops	49.42	24.71
	9. Green Manure	34.60	17.30
	10. Other Rabi crops	106.26	53.13
	11. Other Kharif crops	86.49	43.24
Schedule II	1. Sugarcane	237.23	118.61
	2. Paddy (excluding broadcast paddy on Doon canals)	36.49	43.24
	3. Vegetables, gardens (per fasal) Water nuts Poppy.	86.49	43.24
	4 . Potato	177.92	88.96
	5. Broad-cast paddy on Doon Canals	56.84	28.42
	6. Tobacco	106.26	53.16
	7. Tea orchards on Doon canals	106.26	53.13

For canal Systems included in	Name of crops	Water Rates	(Rs./ha)
		Flow Irrigation	Lift Irrigation
(1)	(2)	(3)	(4)
	8. Wheat, Barley and crops mixed with wheat or barley	86.49	43.24
	9. Cotton	29.05	14.83
	10. Fodder crops	19.77	9.88
	11. Green manure	14.83	7.41
	12. Other crops of Rabi	56.84	28.42
	13. Other crops of Kharif	49.42	24.71
Schedule III	1 . Sugarcane	118.61	59.31
	2 . Paddy	64.25	32.12
	3. Vegetables, gardens (per fasal), Water Nuts Poppy	64.25	32.12
	4. Potato	410.20	205.10
	5 . Tobacco	56.84	28.42
	6. Wheat, Barley & crops mixed with wheat & barley)	64.25	32.12
	7 .Cotton	19.77	9.88
	8. Fodder crops	14.83	7.41
	9. Green manure	14.83	7.41
	10. Other Crops of Rabi	34.60	17.30
	11. Other Crops of Kharif	118.61	59.31
Schedule IV	1 . Sugarcane	49.42	24.71
	2 . Paddy	19.77	9.88
	3. Vegetables, garden (per fasal) Water Nuts, Poppy	19.77	9.88
	4 . Potato	49.42	24.71
	5. Cotton	17.30	8.65
	6. Fodder crops	17.30	8.65
	7 . Green manure	17.30	8.65
	8. Other crops of Rabi	19.77	9.88
	9. Other crops of Kharif	19.77	9.88

21 West Bengal

21.1 The water rates prevailing in West Bengal since 1.7.1977 are uniform throughout the state in all project which are as follows:

<i>Season</i>	<i>Rate per ha.</i>
Kharif	Rs. 37.06
Rabi	Rs. 49.42
Boro	Rs.123.55

22 Goa Daman and Diu

22.1 In Goa, Daman & Diu, the lands Irrigated under different irrigation projects are as below:

- i) Major Irrigation - 980 ha
- ii) Medium Irrigation - 650 ha
- iii) Minor Irrigation - 14.977 ha

22.2 The water rates are leviable on two types of schemes crops such as paddy, sugarcane, coconut, arecanut, bettlenut, plantation, ground nuts, chillies, onions and vegetables. The charges levied for the schemes, which are enforced since June 1977, are shown in Table 22.1.

Table 22.1 Water in Goa,Daman & i Diu w.e.f. June 1977.

S. No.	Name of crop	Water Rates in Rs. /ha	
		Flow irrigation Schemes	Lift irrigation Schemes
1	2	3	4
1.	Paddy	75.00	150.00
2.	Sugarcane	150.00	300.00
3.	a) Coconut b) Arecanut c) Bettlenut d) Plantations	75.00	150.00
4.	a) Groundnut b) Chillies c) Onion d) Vegetables	50.00	100.00 100.00

23 No water rates are enforced in Andaman & Nicobar Islands.

24 Delhi

The water Rates for Minor Irrigation Schemes prevalent with effect from 1951 are shown Table 24.1

Table 24.1 Water Rates (Rs/ha) with effect from 19K1 for Minor Irrigation in Delhi.

Class	Nature of Crops	Water Rates (per ha)
1	2	3
II	1. Garden Orchards & vegetables	88.96
III	2. Wheat Barley	44.48
IV	3. Oil seeds	29.65
V	4. Gram measure & pulses	44.48
VI	5. Grass	59.31
VII	6. Fodder	22.24
JAID RABI		
VI	7. Maize	29.65
V	8. Jowar and other fodder corp	29.96
II	9. Vegetables	88.96
XX	10. Tobacco	88.96
XX	11. Indigo & other dyes and drugs	88.16
KHARIF		
IV	12. Bajra	29.65
V	13. Jowar & other fodder crops	22.24
IV	14. Fibers & other crops not otherwise specified	44.48
II	15. Vegetables	88.96
VI	16. Grass	59.31
IV	17. Maize	29.65
II	18. Garden & Orchard	88.96
I	19. Sugarcane	103.38
	20. Special paddy (Rice)	98.84
II	21. Vegetables	88.96

Source : CWC, Rates for surface Water in India (January 1988).

Note: Information in respect of Arunachal Pradesh, Nagaland and Sikkim is not included in the above source.

STATEWISE POSITION ON OTHER LEVIES/CESSES ON IRRIGATED AREA

(Rate Rs. per ha.)

State/Item	Water Rate*	Betterment Levy	Irrigation Cess	Crop Cess	Any Other Charges having bearing on Irrigation
1	2	3	4	5	6
1.Andhra Pradesh	Yes				
2.Bihar	“	-	-		-
3.Gujarat	“	-	Local Cess on water rate @ 20 paise per rupee.		
4.Haryana	“				—
5.Kerala	“	-	Annually on the basis of gross area Irrigated.		
6.Karnataka	“		-		
7.Madhya Pradesh	“	Not in force at present.		Crop Cess @ Rs.10 for canal irrigation and Rs. 5 per acre for lift irrigation.	
8.Maharashtra	“		Local Cess on Water rates @ 20 paise per rupee.	Education Employment Guarantee Cess	(a) Education Cess: i) Sugarcane = Rs 190 per ha. ii) Banana = Rs 110 " "
					iii) Cotton = Rs 40 " " iv) Groundnut = Rs 40 " " (b)

State/Item	Water Rate*	Betterment Levy	Irrigation Cess	Crop Cess	Any Other Charges having bearing on Irrigation
1	2	3	4	5	6
					Employment guarantee Cess at Rs. 25 per ha. on all agricultural lands on which irrigated crop are grown .
9. Orissa	Yes		—	—	—
10. Punjab.	““		—	—	—
11. Rajasthan			—	—	—
12. Tamil Nadu	“	Additional Wet assessment @ 45% of assessment for class I&II Class III, IV & V.	Special Water Cess varying with the class of irrigation sources and crops	-	
13. Uttar Pradesh	N				
14. West Bengal	“	Rs. 400 (for cultivable) lands. Rs.570 (for waste lands)			

* Statewise water Rates are given at Annexure - 2.1 to Chapter 2.

Source: Rates for surface water in India, CWC, Jan 1988 and information supplied by the states.

Guidelines suggested by the Second irrigation commission, 1972 for fixing Water Rates

The considerations to be kept in view in fixing irrigation rates as pointed out by the Irrigation Commission in 1972 are summarized in the following:

- i) From the irrigator's point of view, water rates should be related to the benefit which irrigation confers rather than to the cost of irrigation projects.
- ii) Since the irrigation requirements vary not only from crop to crop but also for the same crop grown in different seasons, such as the first, second or third crop of rice, the quantity of water supplied is also relevant.
- iii) Adequacy and dependability of supply are important considerations in fixing irrigation rates.
- iv) On canals, which are under-utilised, a development rebate, which should be progressively reduced, would help to ensure fuller utilisation. Of course, there will always be some lag in the utilisation of water during the initial years after the completion of a project.
- v) In fixing water rates for the different crops the State policy in respect of cropping needs to be kept in mind.
- vi) Irrigation is only one of the basic inputs used by a farmer and it is difficult to evaluate the precise contribution that it makes to the farmer's net gain. Hence, the Maharashtra Irrigation Commission (1960-62) had suggested that water rates, on a crop basis, should be fixed between 6 to 12 per cent of the gross income, the gross income being easier to calculate. The higher limit of 12 per cent was suggested for Cash crops and the lower one for food and fodder crops, which have a lower profit margin. The "Committee to Suggest Ways and Means of Improving the Financial Results of Irrigation Projects," appointed by the Government of India in 1964, had made a similar recommendation, but it has suggested a range of between 5% and 12% of the gross income.
- vii) Ordinarily, there should be no disparity in water rates between one project and another. But when there is a marked difference in the quality of service, there would be legitimate ground for differential rates.
- viii) Water rates should be levied on a Crop basis, except in the case of irrigation from tubewells.
- ix) Between regions with a similar class of supply, there should be the minimum disparity, if any, in the rates charged.

- x) For fixing rates, irrigation should be divided into A, B and C categories on the basis of the quantity and timeliness of supply. Lower rates may be fixed where, on account of good rainfall, the demand for irrigation water is less or where the supply is inadequate and uncertain.
- xi) The general level of rates in a State should be such that, taken as a whole, the irrigation schemes do not impose any burden on the general revenues.
- xii) Where lift irrigation is done at the farmer's cost, because of the extra effort or expenditure involved in lifting water, he takes care that water is used economically and wastage is reduced to a minimum. The resulting saving in terms of water justifies a lower rate for lift irrigation.
- xiii) Tubewell water should be charged on the basis of the quantity of water supplied at the tubewell. Of course, there could be some disparity in the amount which irrigators pay for areas located at different distances from the tubewell, because of transit losses; but with lined water courses and a proper roster of supply, the disparity can be considerably reduced.
- xiv) While promotional water rate may be necessary on projects where cultivators are not familiar with irrigated agriculture and the demand for water is not keen prolonged concessions are undesirable as they entail loss of revenue and accustom the irrigators to low rates which become more difficult to raise as time passes. In areas where cultivators are keen on irrigation, promotional rates are not necessary.
- xv) Water rates should be revised every five years.
- xvi) It becomes, difficult for a single State to take measures affecting large numbers of its people if there is no corresponding action by neighboring States. In raising water rates, therefore, groups of neighboring States must have a common policy.
- xvii) Considering the minimum level of irrigation rates, the cost of irrigation from sources other than State irrigation works should also be kept in view.
- xviii) In canal commands where the State has to supply water by lifting it, rates charged should be higher than the rates for gravity flow to take into account additional cost of lifting.
- xix) In the interest of promoting fuller utilisation of irrigation supply, there is justification for imposing of a minimum charge for every unit of culturable area in the command of a project so as to, realise an assured minimum amount of revenue to meet the working expenses of the project. However, such an irrigation cess should be low and levied only in areas where a regular supply of water is assured. This irrigation cess should be in the nature of a compulsory levy payable by all the owners of land in the command area in addition to which water rates should be

payable only by irrigators. The levy of such cess would obviate the need for any long term agreement regarding intake of irrigation.

Water charges for conjunctive use of Surface and Ground Water

The conjunctive use may take one of the various forms described below:

- (1) Pumped water from tubewell sunk along-side of a canal for augmenting canal supplies;
- (2) Water from shallow tubewells sunk as an anti-waterlogging measure, put into irrigation channels;
- (3) Private tubewells or filter-points sunk in canal commands for irrigating crops when canal water is not available or is available inadequately;
- (4) State tubewells sunk in a canal command to irrigate pockets which cannot be served with canal water;
- (5) Tubewell water for a second crop and canal water for the first crop;
- (6) Tubewell and canal water for irrigating the same area in a crop season.

In the first two cases, the canal supplies are augmented by ground water, and normal irrigation rates would naturally be applicable to areas irrigated by the channels, as the two waters cannot be separated, and the quality of service which these channels give is the same as from canal waters. In the third case, by sinking a private tubewell or a filter point the farmer derives additional benefit by irrigating his fields when canal supplies are not available. Here, normal canal water rates should be charged where canal water is used for irrigation, but there should be no charge where the irrigator uses water only from his own source. In the fourth case, tubewell irrigation in the canal command is no different from tubewell irrigation elsewhere and obviously normal tubewell rates should be applicable. In the fifth case, the canal water rate should be charged for the first crop and the tubewell rate for the second crop irrigated with tubewell water. In the sixth case, both canal and tubewell charges should be levied. Had the tubewell not been installed, the irrigator would have paid canal rates for irrigating with the available canal water. On installing a tubewell, he derives an additional benefit by using tubewell water during periods of low supply when channels run in a roster. He can, therefore, confidently grow high-yielding and better quality crops, which other irrigators on the canal with an inadequate supply may not be able to grow. Therefore, a tubewell charge, in addition to the canal rate, would be justified on account of the increased production, which he secures, by the use of tubewell water.

Source: CWC - Rates for Surface Water in India -Jan; 1988.

**Annexure 2.4
(Para 2.43)**

Capital outlay, revenue expenditure and revenue receipts relating to major and medium irrigation projects

(RUPEES in lakh)

State	Year	Capital outlay at the end of the year	Revenue receipts during the year	Revenue receipts during the year	Depreciation	Excess of expenditure excluding depreciation) over receipts	Excess of expend iture (including depreciation) over receipts
Andhra Pradesh	1987-08	233541 .68	13463.58	543.71	2335.42	12919.87	15255.29
	1988-89	262515.58	49098.47	544.07	2480.29	48554 .40	5 1034.69
	1989-90	289837.27	31553.70	3520.79	2761.76	28032.91	30794 .67
Bihar	1987-88	246126.08	3908. 18	767.13	2461 .26	3141 .05	5602.31
	1988-89	273078.67	5814 .28	654.41	2596.02	5159.87	7755.89
	1989-90	302007.56	5838. 71	609.18	2875.43:1	5229.53	8104.96
Gujarat	1987-88	178121 .98	21199.50	1368 .60	1781.22	19830.90	21612.12
	1988-89	197070. 17	29787.46	1690.09	1875.96	28097.37	29973.33
	1989-90	223266.88	35590.40	1704.77	2101.69	33885.63	35987.32
Himachal Pradeah	1987-88	1716.53	19.65	18.90	17.17	00.75	17.92
	1988-89	1942.21	33.45	0.21	18.29	33.24	51. 53
	1989-90	2127.75	35.85	0.29	20.35	35.56	55.91
Haryana	1987-88	78754.60	8665.73	784.34	787.55	7881 .39	8668.94
	1988-89	92613.68	9390.09	1554.80	806.84	7835.29	8642.13
	1989-90	86350.59	11611 .61	1357.23	844.82	10254.38	11099.20
Karnatak*	1987-88	171449.78	12882.56	1335 .04	1714.70	11547.52	13262.22
	1988-89	188066.74	13843.26	1430 .90	1797.68	12412.36	14210.04

State	Year	Capital outlay at the end of the year	Revenue receipts during the year	Revenue receipts during the year	Depreciation	Excess of expenditure excluding depreciation) over receipts	Excess of expenditure (including depreciation) over receipts
	1989-90	208922.09	15361.82	1614.34	1984.94	13747.48	15732.42
Kerala	1987-88	63235.39	1964.90	123.96	632.35	1840.94	2473.29
	1988-89	68458.97	2228.55	263.14	658.47	1965.41	2623.88
	1989-90	76010.94	1929.80	163.59	722.35	1766.21	2488.56
Madhya Pradesh	1987-80	210503.65	4620.04	1470.97	2105.04	3149.07	5254.11
	1988-89	235030.53	5605.96	1968.81	2227.67	3637.15	5864.82
	1989-90	258650.64	5787.40	1230.46	2468.41	4556.94	7025.35
Maharashtra	1987-88	310694.94	31765.25	1874.00	3106.95	29891.25	32998.20
	1988-89	350285.25	35982.15	1873.16	3304.90	34108.99	37413.89
	1989-90	400517.81	43894.52	2759.30	3754.02	41135.22	44889.24
Orissa	1987-88	131159.18	1441.18	660.18	1311.59	781.00	2092.59
	1988-89	145490.55	1344.58	556.59	1383.25	787.99	2171.24
	1969-90	159523.73	1611.05	455.78	1525.07	1155.27	2680.34
Punjab	1987-88	71388.32	5752.99	1257.53	713.88	4495.46	5209.34
	1988-89	87191.16	6539.89	1664.99	792.90	4874.90	5667.80
	1989-90	88735.15	7812.45	1737.10	879.63	6075.35	6954.98
Rajasthan	1987-88	131155.71	10761.32	1219.20	1311.56	9542.12	10853.68
	1988-89	143203.39	11587.92	1125.86	1371.80	10462.06	11833.86
	1989-90	155170.90	12989.82	1599.44	1491.87	11390.38	12882.25
Tamil Nadu	1987-88	57730.63	6937.51	134.23	577.31	6803.28	7380.59
	1988-89	61923.39	6395.67	125.81	598.27	6269.86	6868.13

State	Year	Capital outlay at the end of the year	Revenue receipts during the year	Revenue receipts during the year	Depreciation	Excess of expenditure excluding depreciation) over receipts	Excess of expenditure (including depreciation) over receipts
	1989-90	65191 .37	8089.86	157.62	635.57	7932.24	8867.81
Uttar Pradesh	1987-88	265338.39	25412.97	1716.08	2653.39	2396.89	26350.28
	1988-89	298428.51	30431 .82	3039.50	2818.84	27392.32	30211 .16
	1989-90	321798.58	35070.40	3661 46	3101.14	31408.94	34510.08
West Bengal	1987-88	47460.52	3621 .83	136.83	474.61	3485.00	3959.61
	1988-??	51255.71	4126.58	147. 11	493.58	3979.47	4473.05
	1989-90	55531 .19	4569.02	157.53	533.93	4411.49	4945.42

* At the rate of one per cent on mean capital outlay. In the case Of 1987-86 the depreciation hat bean calculated @ 1% on capital Outlay at the year-end.

@ Figures are provisional

Annexure - 2.5
(Para 2.43)

FINANCIAL RESULT OF SELECTED IRRIGATION PROJECTS

(Rupees In lakhs)

<i>State</i>	<i>No. Of projects</i>	<i>Year</i>	<i>Capital outlay at the end of the year</i>	<i>Revenue receipts</i>	<i>Revenue expenditure</i>	<i>Excess of expenditure (excluding interest) over receipts</i>	<i>Interest on capital outlay</i>	<i>Excess of expenditure (including interest) over receipt</i>	<i>Depreciations</i>	<i>Excess of expenditure (including interest and depreciation over receipts</i>	<i>Rate of interest on capital outlay</i>
Bihar	4	1987-88	375.89	86.09	326.09	240.00	13.76	253.76	3.76	257.52	7%
		1988-89	375.89	82.03	473.39	391.36	13.76	405.12	3.76	408.88	
		1989-90	375.89	34.12	603.54	569.42	13.76	583.18	3.76	586.94	
Gujarat	5	1987-88	16091.43	298.53	557.21	258.68	1874.52	2133.20	160.9J	2294.11	12%_
		1989-90	16834.22	544.98	454.26	(-) 90.72	1955.98	1865.26	164.63	2029.89	
		1990-91	17630.95	613.72	1059.89	446.17	2047.44	2493.61	172.33	2665.94	
Haryana	6	1987-88	24546.25	661.90	1043.35	381.45	1253.91	1635.36	245.46	1880.82	5%
		1988-89	25955.38	895.82	1252.31	356.49	1324.37	1680.86	252.51	1933.37	
		1989-90	26377.14	608.37	1618.31	1009.94	1345.46	2355.40	261.66	2617.06	
Kerala	8	1987-88	7286.90	75.59	123.61	48.02	788.23	836.25	72.87	909.12	11.5 to 12%
		1988-89	7675.42	74.26	139.52	65.26	881.69	946.95	74.81	1021.76	
		1989-90	8521.57	63.40	162.16	98.76	963.03	1061.79	80.98	1142.77	
Maharashtra	19	1987-88	72317.24	485.70	6757.16	6271.46	5054.11	11325.57	723.17	12048.74	7%
		1988-89	77244.96	275.35	5158.56	4883.21	5984.24	10867.45	747.81	11615.26	
		1989-90	82368.74	404.86	8399.24	7994.38	6628.13	14622.51	798.07	15420.58	

<i>State</i>	<i>No. Of projects</i>	<i>Year</i>	<i>Capital outlay at the end of the year</i>	<i>Revenue receipts</i>	<i>Revenue expenditure</i>	<i>Excess of expenditure (excluding interest) over receipts</i>	<i>Interest on capital outlay</i>	<i>Excess of expenditure (including interest) over receipt</i>	<i>Depreciations</i>	<i>Excess of expenditure (including interest and depreciation over receipts</i>	<i>Rate of interest on capital outlay</i>
Orissa	30	1987-88	28671.26	31.17	867.47	836.30	1956.37	2792.67	286.71	3079.38	7%
		1988-89	29889.24	59.82	798.23	738.41	2032.17	2770.58	292.80	3063.38	
		1989-90	32260.86	70.19	1220.36	1150.17	2119.99	3270.16	310.75	3580.91	
Punjab	9	1987-88	7680.81	1028.02	1688.63	660.61	523.02	1183.63	76.81	1260.44	
		1908-89	8678.25	1195.45	1632.11	436.66	572.40	1009.06	81.80	1090.86	7%
		1989-90	9384.89	950.42	2299.12	1348.70	632.02	1980.72	90.32	2071.04	
Rajasthan	6	1987-88	71228.28	1085.78	2473.05	1387.27	6849.35	8236.62	712.28	8948.90	10%
		1988-89	76949.21	780.65	1950.16	1169.51	6954.08	8123.59	740.89	8864.48	
		1989-90	83153.59	1222.50	2288.63	1066.13	8178.78	9244.91	800.51	10045.42	
Tamil Nadu	43	1987-88	69290.11	307.74	820.75	513.01	2983.68	3496.69	692.90	4189.59	4.5 to
		1988-89	74793.72	271.17	919.44	648.27	3245.11	3893.38	720.42	4613.80	12.75%
Uttar Pradesh	@ 16	1987-88	208629.21	1577.97	14976.71	13398.74	10724.28	24123.02	2086.29	26209.31	5.51
	25	1988-89	232702.40	2976.52	18349.86	15373.34	10867.13	26240.47	2206.66	28447.13	
	@ 16	1989-90	50729.61	2569.31	32010.08	29440.77	12069.20	41509.97	2417.16	43927.13	
West Bengal	9	1987-88	26233.46	94.17	1382.39	1288.22	1526.36	2814.58	262.33	3076.91	4 to 6%
		1988-89	27390.60	103.54	1459.18	1355.64	1595.52	2951.16	268.12	3219.28	
		1989-90	28727.28	104.96	1553.57	1448.61	1676.68	3125.29	280.59	3405.88	

* At the rate of one per cent on mean capital outlay. In the case of 1987-88, the depreciation has been calculated @ 1 per cent on capital outlay at the year end.

** Include revenue forgone/remission; @ Major Projects only.

EXTRACTS FROM ACCOUNT CODE VOL. IV

APPENDIX – 2

(See Article 281)

ADMINISTRATIVE ACCOUNTS OF IRRIGATION, NAVIGATION,
 EMBANKMENT AND DRAINAGE WORKS, ELECTRICITY PROJECTS
 AND MULTIPURPOSE RIVER-PROJECTS

Introductory	1	Part IV-Interest Account	9
Classification	2	Part V-Account of Indirect Charges	11
Part I-General Abstract of Financial Results	3	Part VI-Statement comparing Capital Cost with Sanctioned Estimates	12
Part II-Detailed Account of Capital Expenditure	4		
Part III-Revenue Account	8	Review	14

NOTE 1. The rules in this Appendix may be applied in relation to the accounts of a Government with such modifications as may be decided by the Government after consultation with the Comptroller and Auditor General. Vide Article 19 of Volume I of this Code.

NOTE 2. The rules in this appendix are primarily intended to apply to the administrative Accounts of Irrigation, Navigation, Embankment and Drainage Works. They may, however, be applied mutates to the Administrative Accounts of the Electricity Projects and Multi-purpose River Projects.

Introductory

1. The Accountant General may be required by Government to prepare annually proforma accounts (otherwise known as Administrative Accounts) of irrigation, navigation, embankment and drainage projects for which capital and revenue accounts are kept. These accounts should be prepared in Form 60, which is divided into the following six parts:

Part I. General Abstract of Financial Results.

Part II. Detailed Account of Capital Expenditure.

Part III. Revenue Account

Part IV. Interest Account

Part V. Account of Indirect Charges

Part VI. Statement comparing Capital Cost with Sanctioned Estimates.

Accounts of individual projects are kept in Parts II to VI for each, and the general results of all projects are abstracted in Part I.

Classification

2 The projects for which Administrative Accounts are prepared are classified thus:

A Irrigation Works

1. Productive

2. Unproductive

B. Navigation, Embankment and Drainage Works

1. Productive

2. Unproductive

In Part I projects should be grouped according to this classification, and on all separate Accounts of them the detailed classification of each project, should be indicated prominently.

NOTE: The classification of works into (1) productive and (2) unproductive is governed by such general principles as may be laid down in this behalf by the Government concerned in consultation with the Accountant General. See also Article 26 of Volume III of this Code.

Part I. General Abstract of Financial Results

3. Part I is a summary of the financial results of all projects in the province excluding those for which no capital accounts are kept, the figures in respect of individual projects being taken from the detailed accounts as brought out to other parts.

NOTE: Projects should be arranged serially in the order of the dates on which the construction estimates were closed. Projects whose construction estimates have not been closed should come next in the arrangement and they should be detailed in the order of the dates of sanction to the estimates. This arrangement should not, however, interfere with the classification of projects between Irrigation 2nd Navigation, etc. and between productive and unproductive prescribed in the preceding paragraph.

Part II. Detailed Account of Capital Expenditure

4. Part II, the Detailed Account of Capital Expenditure, is a statement of the total direct charges incurred to end of the year against all the sanctioned estimates of capital expenditure.

The outlay should be detailed by such branches and sections of the projects as are shown separately in the sanctioned project estimate, and under each it should be given in full detail of minor heads (including "Receipts and Recoveries on Capital Account") and detailed heads.

NOTE-1 Charges under the minor heads "Establishment" and "Tools and Plant" should be detailed only if the entire expenditure of a circle of superintendence, or of any other prescribed unit of distribution of charges relates to a single project; in other cases, the charges to be shown under each of these two heads will be the lump sums which may be debited to a project according to the rules of distribution of such charges made by Government in consultation with the Accountant General. See Article 42 of Volume III of this Code.

NOTE-2 In the case of projects for which completion reports have been submitted, it is not necessary to show details of expenditure by detailed heads under the sub-division of minor heads.

NOTE-3 In the case of projects in respect of which the construction estimates have been closed and the completion reports approved by Government and in respect of which no further capital expenditure is being incurred under open capital estimates, all details of capital expenditure should be omitted, references being given to the Administrative Accounts of the years in which the capital accounts were shown in detail.

NOTE-4 the particulars of apportionment of the capital expenditure among the Irrigation Major Heads need not be shown in the capital account.

5 Expenditure on surveys which was incurred before construction commenced should be brought on to the account by an entry in the column headed "To end of the year", qualified by a suitable explanation in the column for "Remarks".

6 For purposes of comparison with estimates, the form of Part II provides a column for "Cost of construction as now estimated". This column is written up thus: -

- i) If the construction estimate is still open. The estimated cost
- ii) If the construction estimate is closed. the aggregate of (1) actual expenditure on the closed construction estimate, (2) actual expenditure on all closed estimates of open capital and (3) estimated cost of all open capital estimated the accounts of which are still open.

In the case of projects the construction estimates of which have been closed the difference between the figures in this column and column 4 of Part VI will indicate the amount of the open capital sanctions still operative i.e., the further authorised liabilities of the project.

7. If the construction estimate has been closed, the date on which it was closed should be noted in the column for "Remarks".

Part III: Revenue Account

8 Part III, the Revenue Account, is a statement making an up-to-date comparison of the gross (i.e., direct as well as indirect) figures of the receipts and the working expenses of a project yielding revenue. The receipts should be detailed by minor heads, and the working expenses by both minor heads and sub-divisions of minor heads. The difference between the gross receipts and the gross charges will represent the net revenue or the deficit, as the case may be.

NOTE: The Revenue Account should be opened for a project as soon as any section of it is completed and begins to yield revenue.

Part IV: Interest Account

9 Part IV, the Interest Account, is a simple debit and credit account showing on one side the charges for the interest and on the other the net revenue, or deficit, as worked out in Part III.

10 Interest is adjusted in the Administrative Accounts of Irrigation, etc., projects stated below:

- a. For capital outlay met out of specific loans raised by Government, at such rate of interest as may be prescribed by Government having regard to the rate of interest actually paid on such loans and the incidental charges incurred in raising and managing them;
- b. For capital outlay provided otherwise, at such rate of interest as may be determined by Government in consultation with the Accountant General.

NOTE-1. By specific loans are meant loans that are raised in the open market for one specific purpose which is clearly specified in the prospectus and in regard to which definite intimation is given at the time of the raising of the loans that for the purpose of accounts they are to be regarded as specific loans.

NOTE-2 Interest is calculated on the total direct capital outlay to end of the previous year plus half the outlay of the year itself.

Part V Account of Indirect Charges

11 Part V, the Account of Indirect Charges, which is prepared in two separate sections - capital and revenue - is a simple statement of the indirect charges shown below:

Capitalised abatement of land revenue - At twenty times the annual amount of land revenue remitted.

NOTE: This charge should not be made in cases when the capitalised value has been awarded in lieu of abatement and has been debited as a direct charge.

Audit and Accounts Establishment - The actual expenditure, where it is readily ascertainable as in the case of separate Audit and Account Offices constituted for specific projects otherwise, 1 per cent on works expenditure.

11-A The proceeds of "Betterment levy" though treated as "indirect Receipts" in the accounts, should be taken in reduction of Indirect Capital Expenditure in the Administrative Accounts.

Part VI Statement comparing Capital Cost with Sanctioned Estimates

12 Part VI compares both the direct and indirect charges incurred up-to-date on a project with the amount of sanctioned estimates.

13 If the construction estimate is still open, no entries should be made in columns 2 to 4, headed "Charges against closed sanctions" and in column 8 "Total charges to date against old and current sanctions". But, if it has been closed, all the columns of the form should be written up columns 2 to 4 being used in respect of all working estimates (construction or open capital) which have been closed, and columns 5 to 7, headed "Current Sanctions", in respect of all working estimates of open capital, the accounts of which are still open. Particulars of the sanctioned estimates, e.g., the numbers and dates of the orders of Government issued from time to time, the amounts of estimates, etc., need not be entered in either case.

Review

14 The Administrative Accounts should be submitted to Government in print as soon as possible after closing the final accounts for March. The Accountant General should review the accounts and send with them a report of the points which his review may suggest. In the report should be mentioned specially all points requiring attention, e.g., (1) cases in which, in the Accountant General's opinion, a change of classification of projects from "productive" to "unproductive" or vice versa may be indicated, (2) cases in which an abnormal increase under "Working Expenses" is not accompanied by an adequate increase in the "Receipts", or (3) cases in which "Receipts" show a marked decline and there is no known reason for this.

NOTE-1 For the purpose of the review the figures shown against the minor head "Recoveries of Expenditure" should be deducted both from "Gross Receipts" and from "Gross Working Expenses".

NOTE-2 Any practical suggestions calculated to reduce the working expenses, to develop the gross receipts, or to effect economies otherwise, which may occur to the Accountant General, should ordinarily be made separately, the report being confined to mentioning the salient features of the accounts in a manner intelligible to an outsider.

15 Two copies of the accounts (with Report) should also be submitted simultaneously to the Comptroller and Auditor General. If printed copies cannot be dispatched so as to reach the Comptroller and Auditor General by the dates prescribed in Annexure to Chapter 21, the first copy should be sent on the due date in manuscript. A separate report should also be submitted at the same time reviewing the working of the various Irrigation projects with reference to the desirability of changing the existing classification of a particular work or works from "Productive" to "Unproductive" or vice versa, on the basis of the actual yield and the anticipated return from such works. This review may, however, if Government has no objection, be included in the report to Government, which the Accountant General submits under paragraph 14 above.

FORMS

FORM A.O. 60

(See Appendix 2, Paragraph 1)
ADMINISTRATIVE ACCOUNTS

PART I General Abstract of Financial Results of Irrigation, Navigation, Embankment and Drainage Works for which Capital and Revenue Accounts are kept for the year 19 -19.

Cost of construction as now estimated				Capital Outlay						
				During the Year				To end of the year		
Name of projects	Direct charges	Indirect charges	Total	Date of closure of construction estimate or in the case of works under construction, date of sanction	Direct Charges	Indirect charges	Total	Direct charges	Indirect charges	Total
1	2	3	4	5	6	7	8	9	10	11
			Gross receipts during the year		Working expenses and maintenance during the year inclusive of indirect charges					
Accumulated arrears of simple interest to the end of the year	Total capital invested to end of the year (column 11 and column 12)	Direct Receipts	Portions of land revenue due to works	Total	Direct charges	Indirect charges	Total	Net revenue Surplus Deficit		
12	13	14	15	16	17	18	19	20		
						Percentage of net revenue (column 20) on capital (Column 13)				
Percent capital column Gain "G" Loss "L"	Simple interest for the year as detailed in Part IV.		Net gain	Net loss	During	During	During	Prescribed Remarks rate of interest as test of productivity		
21	22		23	24	25	26	27	28	29	

FORMS

FORM A.O. 60 contd.

..... project

PART 11 Detailed Account of Capital Expenditure for and to end of year 19 -19

Heads of Account (Minor and Detailed heads)	Direct Charges		Coat of Construction as now estimated	Remarks (If any)
	During the year	To end of the year		
1	2	3	4	5
	R	R	R	

... Project

PART III Revenue Account for and to end of year 19 - 19 Date of closing of construction estimate

	Gross	Receipt		Gross Working Expenses		
	Total			Total		
Minor Heads	During the year	To end of the year	Heads of Account (Minor and Detailed heads)	During the year	To end of the year	Remarks
1	2	3	4	5	6	7
Direct Receipts			Direct charges			
Total Direct Receipts			Total Direct Charges			
Portion of Land Revenue due to Works			Indirect Charges as per Part V			
Total Gross Receipts			Gross Charges			
Net Deficit (if any)			Balance Net Revenue			
GRAND TOTAL			GRAND TOTAL			

FORMS
FORM A.O. 60
(See Appendix 3, Paragraph 1)
ADMINISTRATIVE ACCOUNTS

PART I General Abstract of Financial Results of Irrigation, Navigation Embankment and Drainage Works for which Capital and Revenue Accounts are kept for the year 19-19.

No. 297

(file No. 108-AC/51)

Page 255, First Edition (1940), Page 247. First Edition (Re-print, 1950)

Form A.O. 60

Substitute the following for the existing descriptive heading of Part I, General Abstract of Financial Results of –

No. 377

Page 255, First Edition (1940), Page 247, First Edition (Re-print, 1950), Form A.O. 60

For the existing Column 15 in Part I General Abstract of Financial Results of - substitute the following:

"Indirect Receipts" (Account Code, Vol. IV, No. 377, dated 2-1-55) (File No. 248-AC/53)

		Gross receipts during the year			Working expenses and maintenance during the year inclusive of indirect charges			
Accumulated arrears of Simple interest to end of the year	Total capital invested to end of the year (column 11 and column 12)	Direct receipts	Portion of land revenue due to works	Total	Direct charges	Indirect charges	Total	Net revenue Surplus + Deficit
12	13	14	15	16	17	18	19	20
				Percentage of net revenue (column 20) invested (column 13)				
Percentage on capital outlay column 11. Gain "G". Loss "L".	Simple interest for the year as detailed in Part IV.	Net gain	Net loss.	During	During	During	Prescribed rate of interest L, as test of productivity	Remarks
21	22	23	24	25	26	27	28	29

FORMS

FORM A.O. 60 contd.

..... project

PART IV Interest Account for and to end of year 19 -19

Interest	Amount	Net Revenue	Amount
Total Interest to end of previous year		Net Revenue realised to and of previous year	
Interest charges for the year		Net Revenue realized during the year, as per part III.	
Total Interest to end of the year		Total Net Revenue realised to end of the year as per part III.	
Balance		Balance	
TOTAL		TOTAL	

** Balance will be entered on the Interest or the Net Revenue side, as may be necessary*

..... Project

PART V Account of Indirect charges for and to end of year 19 -19.

Particulars	Amount	
	During the year	To end of the year
Capital Account		
Capitalised abatement of Land Revenue		
Leave and Pensionary Charges		
Audit and Account Establishment		
Total Capital Account		
Revenue Account		
Capitalised abatement of Land Revenue		
Leave and Pensionary Charges		
Audit and Account Establishment		
Total Revenue Account		

PART VI Statement comparing Capital cost to end of 19 -19 with sanctioned Estimates.

Charges against closed sanction		Current sanctions						
Particulars	Expenditure against construction estimate	Expenditure against open capital sanctions	Total	Charge s to date	Amount of sanctione d estimate	Unspent balance	Total charges to date against old and current sanctions	Remarks
1	2	3	4	5	6	7	8	9