PN-AAW-406 48292

PAPER No. 23

FOOD AND AGRICULTURE ORGANIZATION
OF THE UNITED NATIONS

AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D.C.

EXPERT CONSULTATION ON IRRIGATION WATER CHARGES
FAO, Rome, 22-26 September 1986

JAMAICA

COUNTRY REPORT
ON
IRRIGATION WATER CHARGES

by

Thorant W. Hardware

IRRIGATION IN JAMAICA

A B S T R A C T

In Jamaica, approximately 40,500 hectares or 12.2 per cent of the cultivated lands are irrigated. Seventy per cent of the irrigated lands are in sugar cane.

Sixty per cent of the irrigated lands are served by private systems (which include the self-contained systems of Government owned estates) some thirty-nine per cent by public systems and one per cent by a semi-public system.

In the public systems, there is no recovery of investment costs; and O & M costs are presently subsidized by approximately ninety-five per cent. The sole financial incentive to private irrigation is a pumping cost subsidy to producers of sugar cane which averages seventeen per cent of the energy cost for deep well pumping.

Funds made available to public irrigation institutions are approximately two thirds of the amounts required each year for adequate O & M. The existing institutions are adequate for the effective collection of water charges. However the levels of charges are determined by the central government ministry.

There is a need for an effective mechanism for the timely updating of changes for water from public systems in order to cover funding shortfalls.

EXPERT CONSULTATION ON IRRIGATION WATER CHARGES

AT FAO, ROME IN SEPTEMBER, 1986

A Paper prepared in accordance with the "Outline for the Preparation of Papers (Selected Countries)" by the Underground Water Authority and Ministry of Agriculture, Jamaica - August, 1986

1. The area presently irrigated in Jamaica is approximately 40,500 hectares (100,000 acres) or 12.2 per cent of the cultivated land. Approximately 85 per cent of the irrigated land comprises the semi-arid to sub-humid plains in the south-central area of the island, in the parishes of Clarendon and St. Catherine.

Approximately 70 per cent of the irrigated land is in sugar cane; the other important uses being bananas and pasturage, each of which occupy approximately 10 per cent of the irrigated lands.

The predominant method of irrigation is surface irrigation employing furrows. Drip irrigation of bananas is presently regaining favour. Sprinkling is used to a limited extent.

There are no present plans for new irrigation systems in Jamaica. However, there are active projects for major improvement and rehabilitation of the systems in the two principal irrigated areas of the island. These systems comprise approximately 85 per cent of the irrigated area. For the larger area, the Clarendon Plains (21,000 hectares), the project is in the detailed design stage (July, 1986). For the other, the St. Catherine Plains (14,000 hectares) the principal investigations for project formulation are now being carried out.

2. a) Present policies for the financing of investments in public irrigation schemes are twofold - (i) where the sums are large and

require specific loan financing and (ii) where the sums are smaller and may be accommodated in the national capita. budget.

(i) For investments requiring loan-financing, a Project]Profile usually requiring a preliminary feasibility study, must first be forwarded by the proposing agency to the Planning Institute of Jamaica for presentation to the Pre-selection Committee of the Ministry of Finance. On approval by the Pre-selection Committee, funds are provided to the proposers for detailed feasibility study and design. The Planning Institute then begins the process of identifying and confirming a source of funds for the execution of the proposed works. With positive feasibility findings and the completion of designs, a loan agreement to fund the execution is completed and the works executed. In recent years, feasibility studies and designs have been financed by special loan programmes; and the repayment of such loans are considered a part of the execution cost.

(ii) For relatively small works, the Ministry of Finance may directly approve requests for the provision of funds in the annual capital budget.

b) Present levels of subsidy to irrigation works are:

(i) for capital costs, 100 per cent to all types

(ii) for O & M costs; -

canal system fed mainly by river diversion - 84 per cent

canal systems fed mainly by borehole wells - 92 per cent

pressurized pipe systems fed by borehole wells - 95 per cent

c) Government in Jamaica finances the total construction of irrigation water distribution systems up to the individual farm lot boundaries.

Government makes loans available to farmers for the financing of on-farm works.

d) The Irrigation Act makes statutory provision for the application of local taxes to finance irrigation investments. However, the provision has not been applied.

e) There is at present no active policy for the recovery of investments in irrigation in Jamaica.

3. a) At present, a charge is made only for a licence to abstract groundwater. Such a licence is perpetual. The present charge is four hundred Jamaican dollars ($400.00).

Legislation is proposed to require annual licences for the abstraction of ground and surface waters, and further annual charges for the use of water, depending on the nature of both the abstraction and the use.

b) The Underground Water Authority presently imposes the licence charges.

The proposed legislation will establish a Water Resources Authority in the place of the present Underground Water Authority. The new Authority will impose the licence and user charges.

4. a) Approximately sixty one per cent of irrigated lands in Jamaica are served by private and semi-public irrigation systems.

The single true semi-public system serves approximately one per cent of the lands.

b) The single present policy in support of private irrigation is a subsidy paid by the Sugar Industry Authority to producers of sugar cane who pump water for irrigation. The present subsidy level is five Jamaican dollars (J$5.00) per long ton of canes produced.

c) Meaningful hard data on comparative investment costs are not presently available. However, public system construction must include certain cost factors not applicable to private systems, e.g: purchase of canal and pipeline rights of way; purchase of well sites; construction on public roads; and more elaborate well control houses. Unit costs for similar items are otherwise the same.

Operation and maintenance costs reported for private systems averaged J$900 per acre served in the crop year 1985.
For public systems, the equivalent average costs for deepwell systems was J$750 and for a gravity river system J$110 per acre served. These figures reflect the inadequate maintenance of public systems; and possibly, exaggerated energy costs for private systems.

Private and public well pumps averaged 80 per cent operating reliability; with private pumps averaging 85 per cent of rated yield and public 75 per cent. The public river system averaged approximately 50 per cent of rated yield.

5. a) O & M expenditures (for public systems) are taken to comprise -
local scheme office costs
energy costs
system operator costs
system maintenance costs (cleaning, ordinary repairs etc.)
Costs of replacement of plant and equipment, and for Ministry head office services are not included.

Quarterly billings are made to contracted farmers and payment is

made to the local Collector of Taxes who is provided a charge roll.

Government does not contribute to the payment of the amounts charged to farmers. Government actually subscribes eighty four to ninety five per cent of the O & M costs of public systems as indicated in 2b above.

Costs arising from (diversion) dams are included in O & M costs.

b) In recent years, O & M expenditures have fallen short of requirements, resulting in inadequate preventative maintenance of well pumps and cleaning and repair of canals. During Financial year 1985/86 the Mid-Clarendon Irrigation Authority requested J$6,268,782 but was allocated only J$4,221,016.

c) There is presently no capital cost recovery. Where the irrigation system is operated by a "Statutory Body" called an "Authority", the charges collected by the Collector of Taxes are handed over to the Authority. Where the system is operated as a department of a Ministry, the collected charges go into the general revenue - this applies to one case which is proposed to be changed.

d) Energy is the principal component of O & M expenditures where water is pumped. The costs of field operating staff or "canal attendants" and of canal cleaning are next in importance; and are the principal cost components of systems which do not include pumping.

e) The unit O & M cost of water in community sprinkler systems is approximately twice that in canal systems fed by borehole wells.

f) Central Government Ministry support to public irrigation includes - two assigned administrative officers, Minsitry Engineering Division representation on the boards of (4) Irrigation Authorities,

ad-hoc technical assistance by the Ministry Engineering Division and the engagement of consultants for specific investigation and development tasks.

There is no support of public irrigation at the parish (provincial) level in Jamaica.

At the scheme level, four of the five public schemes are constituted as statutory Authorities governed by a Ministry appointed board of nine members. The fifth is constituted as a department of the Ministry having jurisdiction. Each scheme has a Works Manager (2) or, if small, a Works Overseer Grade I (3), other Works Overseers, accounting, clerical, operating and maintenance staff.

g) Available records do not allow for the concise identification and comparison of similar type systems of high and low investment costs.

As indicated in 4 c) above, O & M cost of a gravity system is approximately one-seventh that of a deepwell system.

h) The four public systems organized as Irrigation Authorities include local farmer representation on the boards. The board chairman is normally a local farmer and he has executive powers.

6 a) Data is given in Table 2 for the principal irrigated crop, sugar cane, which also reflects the lowest revenue of standard crops.

b) Agricultural inputs other than fertilizers are traded at market prices. The importation of agricultural inputs does not attract duties. A current programme supported by the Canadian International Development Agency makes fertilizer available at eighty per cent of world market prices.

Farm product prices are determined by the market conditions. While there are a number of commodity "boards", there is no specific policy of price support.

c) Land in active agricultural production receives a seventy-five per cent remission of taxes. There are no taxes on produce, or presently on incomes derived fr m the production of crops.

d) The present level of water charges in public irrigation systems operates as a major subsidy in the production of irrigated crops.

7. The present institutional "set up" is considered to be adequate for collection of water charges. The efficiency of collection is determined entirely by the resolution of the governing bodies in locking off supply to defaulters.

The major weakness of the system is in the updating of charges. This updating is controlled by the central government ministry having jurisdiction. These ministries have been reluctant to increase the charges.

8. Conclusion

Farmers served by public irrigation systems are presently having a "free ride" compared to the operators of private irrigation systems. This condition is however, somewhat reduced by the lower water productivity of public systems due to their inadequate maintenance.

Recommendations

It is recommended that prescriptive systems be instituted for public irrigation bodies to:

i) allow the acquisition of the funds they require each year for operation and maintenance, whether by budgetary grant or the collection of charges; and

ii) made mandatory the updating of charges whenever the limit of availability of budgetary support would produce a shortfall in the funds required for operation and good maintenance.

Underground Water Authority
Hope Gardens
P.O. Box 91
Kingston 7
Jamaica
August, 1986

Table 1

Water Charges Applied in Public System

Type of System	Present Annual Charge Applied Since 1983	Previous Annual Charge and Applicability
Gravity Canals served by river diversion	J$12.00 per cubic yard per hour continuous flow (c.y.h.)	J$3.60 per c.y.h from 1957 to 1983
Gravity Canals served mainly by deepwells	J$30.00 per c.y.h	J$9.00 per c.y.h. from 1957 to 1983
Pressurized pipe systems served by deepwells or boosters from canals	J$50.00 per c.y.h	J$18.00 per c.y.h. from c. 1968 to 1983

* Present rate of exchange J$5.50 = US$1.00

Table 2

Average Revenue from Sugar Cane Cultivation with Surface Irrigation Using Deepwells

	Private	Public
Average yield is 25 tons/acre/year		
Average price is J$88 per ton		
Revenue from cane sales, per acre	J$2,200	J$2,200
Pumping subsidy at $5 per ton	125	nil
Gross revenue	J$2,325	J$2,200
Production cost other than water supply per acre	612	612
Irrigation water supply, per acre	900	60
Net revenue, per acre	813	1,528
per hectare	J$2,009	J$3,776

Source: Sugar Industry Research Institute