

ISSUES IN THE LEGAL ORGANISATION OF IRRIGATION IN AFRICA

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I. THE PROBLEM

Irrigating Africa

The search for alternative strategies which would extricate Sub-Saharan Africa from the current agrarian crisis has been on for a number of decades. If, as the Food and Agriculture Organisation (FAO) of the United Nations predicts (FAO, 1981), bringing more unused arable land into cultivation will account for no more than 25% of increased production by the end of this century, that search must now concentrate on the improvement of technologies of production and the development of production management structures that are more efficient than those that are currently in place. One option which is now receiving increased attention is the application of irrigation technology for the purposes not only of reducing excessive dependency on rain-fed agriculture, but also of facilitating greater intensification of production and the reclamation of vast arid and semi-arid lands that are currently unavailable for productive use.

The systematic application of irrigation technology, however, is likely to exacerbate most of the maladies now plaguing Sub-Saharan agriculture. For in addition to the much discussed issues relating to access and control of land, the viability of units of production in peasant farming, and the need for progressive deperissement¹ in agriculture in general, a whole new set of problems peculiar to irrigation will

have to be faced. The more important of these are the sheer expense involved in the installation and operation of infrastructural works, the reorganisation of existing agrarian structures that will be necessary in view of the very intricate processes relating to the harnessing, conservation, control, consumptive utilisation and management of water, and specific tenure issues such as the determination of optimum sizes of irrigated holdings, the criteria for allocation of those holdings and the degree of control of their use which the employment of this technology often raises. Others include technical and environmental problems such as water loss through evapo-transpiration; salinity and water-logging due to inadequate drainage; transmission of waterborne diseases; disequilibrium of established eco-systems, rapid depletion of ground water regimes where irrigation involves large hydrogeological installations, and the resolution of conflicts arising from irrigation and other uses of water.

Whereas many of these problems appear, at first sight, to be basically technical and economic, experience in Africa and elsewhere suggest that without sound normative and institutional structures governing decision-making at all operational levels, irrigation is bound to be an expensive waste which poor countries cannot afford. The need to develop a proper legal organisation for the management of irrigation systems must, therefore, be high on the agenda of policy-makers and planners.

A Summary of the Issues

This essay identifies some of the major legal and organisational issues to which attention must be drawn in the search for optimality in the operation of irrigation systems in Sub-Saharan Africa. Special attention is paid to those issues which relate to ² the ownership, development and management of water resources, the installation, and operation of irrigation structures and infrastructure and design, allocation and tenure of irrigated holdings. Nothing is said in this essay on the resolution of transnational conflicts arising from the abstraction, impounding and utilisation of international water bodies.³

II. THE LEGAL ORGANISATION OF WATER RESOURCES

Ownership of Water Resources

One of the most important issues in irrigation which must be settled quite early relates to the ownership of water resources. In most African countries, this issue is normally dealt with in either of the following ways.⁴ First, there are those countries such as are in all of English-speaking Africa (other than Zimbabwe, Botswana, Swaziland and Lesotho) where a combination of common law doctrines and statutory modifications during and after colonialism have firmly vested the ownership of "public" water in the state.

Although the precise definition of what constitutes "public" water varies, its core usually includes (a) all ground water, (b) any water or body of water which is not wholly located within the boundaries of land owned by any one proprietor, (c) water which though wholly located within such boundaries, naturally discharges into a water-course beyond them, or (d) water contained or flowing in a spring, stream, river, natural or artificial lake or conservancy, swamp, or in or beneath any other watercourse. An important effect of vesting public water in the state is to subject the same of different allocative and conveyancing procedures. Hence in the one case, a fairly complex system of licensing and other allocative processes administered by water authorities or similar agencies is in operation in these countries. And in the other, no conveyance or transfer of the physical solum upon or beneath which public water lies can be effectual to vest, demise or assign any sight, interest or privilege in any person in respect thereof. It follows from this mode of ownership, that "private" water, where it exists, is of little consequence to large scale irrigation, unless, of course such water is the result of a massive exercise of a license issued by a water authority as aforesaid.

Second, there are those countries such as are in all of French and Portuguese-speaking Africa, and Zimbabwe, Botswana, Swaziland, Lesotho and South Africa where a heavy civil law derivation based either on the code Napoléon or Roman-Dutch precepts continues to make a distinction

between surface and ground water reserves. As regards surface water the general rule is encapsulated in the doctrine of riparianism which bestows upon every owner or proprietor of land abutting on a stream, river or other watercourse, certain secure rights and privileges (correlative with other proprietors in a like situation) in water contained therein. Ground-water reserves, however, are generally regarded as the property of him/her who holds title to the overlying land unless such reserves are contained in defined channels, in which case, surface water rules apply. In these jurisdictions, therefore, private ownership and control of water resources tends to be the rule rather than the exception.

Historically speaking, regimes that confer private rights in water resources upon individuals or corporate entities directly (rather than via state grant or license) have been known to operate smoothly only in conditions of abundance of water. It is for that reason, for example, that riparian systems have always been administered by the courts through constant litigation. It is commonly agreed, however, that activities which depend on competitive and efficient distribution of water over large surface areas only a fraction of which may be riparian to any body of surface water, or which are apt to quickly reduce water resources to an item of scarcity, are not suited to regimes of private ownership and control. For in addition to the obvious disadvantages inherent in routinely conducting economic business through the courts and similar tribunals, a labyrinth network of contractual arrangements mainly in the form of easements, and other forms of iura in re aliena, will be required if the full benefits of those activities are to spread beyond those in whom property in water is vested. Chief among those activities is irrigation.

For most of Africa, irrigation at least on any significant scale, will for a long time, remain an activity that is only possible through the instrumentality of the state. In consequence, a regime of private ownership of water resources such as the civil law (and especially Roman-Dutch) systems encourage, would, ex hypothesi, be both inequitable

and counterproductive. Its inequality lies in the fact that public resources would be used to support a very narrow social base consisting mainly of large estate owners or those capable of acquiring them through private resources. More crucial however, because such a regime has been known to encourage indiscriminate consumptive utilisation of water resources it is also associated with their rapid depletion. In this sense, therefore, private ownership and control of significant quantities of water can, in the context of irrigation, become antidevelopmental; hence counterproductive.

The Development of Water Resources

An important issue which this raises is that in those jurisdictions which, for some reason, find it difficult to convert to a full state ownership system, a mechanism which ensures the continuous development of water resources will be indispensable. The neglect of water development programmes even on a limited scale has been the nemesis of many a private, small-scale (or unregulated) irrigation scheme in Africa. Indeed, irrespective of water ownership modes the absence of such mechanisms at the headwaters of transnational river systems has been the cause of the disintegration of many irrigation schemes in down-stream jurisdictions.

Whatever the mode of its ownership, in irrigation schemes, therefore, it is important to understand that water, like all renewable resources must be developed. This is especially critical since it is known that irrigation is by far the largest of all water uses in the world. It accounted for upto 70% of all uses in 1967 and will still top the 51% mark or higher in the year 2,000 (Agriculture towards 2000, FAO, Rome).

The development of water resources implies the execution of a number of very specific activities. The most important of these are planning, harnessing, conservation and monitoring on a catchment area or drainage basin basis. I shall outline below what each one of these activities should involve and how they can be incorporated into an overall legal framework for irrigation agriculture.

Water resource planning is not an activity that many African countries are consciously engaged in. The general predisposition of government appears to be that this should remain nature's preserve! And yet it appears commonsensical that rational decisions about the uses to which water should be put must be based on the correct appreciation of the net volume of water which a given catchment area of drainage basin is capable of generating and the rate at which regeneration occurs in any given hydrometric cycle. It is, thus, essential that any given state or the agencies that has charge over water within its jurisdiction should develop the capability, inter alia, to:

- (a) determine, from time to time, the national policy with regard to the allocation of water between competing uses e.g. domestic, public, industrial, power, irrigation, transportation etc.,
- (b) prepare, at appropriate intervals, broad master plans for the use of water in the light of that national policy and,
- (c) supervise specific water consumption programmes drawn up by individual and corporate users.

For an agency of the state to plan at this level, it will need, for each catchment area or drainage basin, adequate information on (a) its entire meteorological spectrum, (b) the incidence and distribution of rainfall therein, (c) the properties, flow level (or volume) and general hydrology of surface and ground water therein, (d) the character of the existing and projection of future demand for specific use purposes therein and the minimum flow requirements of any watercourse which are capable of satisfying that demand, and (e) the absolute amount of water loss through evaporation, seepage or other causes.

A good water resource development plan must be buttressed by operations designed to harness and conserve water especially where weather patterns are erratic or unreliable. For a number of African countries, Kenya and Tanzania among them, this appears to be a most serious impediment to the development of large irrigation and human resettlement programmes. These countries have simply not developed the

capability of "taming" their surface water bodies - except perhaps for the purposes of power generation. The harnessing and conservation of water must, in addition involve the capability of:

- (a) impounding and storing excess water in conservancy dams, artificial lakes or other conformations, for future use as determined with reference to each country's water policy,
- (b) aggressive protection of watersheds from pollution, siltation, erosion or loss of vegetative cover arising from existing or planned development programmes, and
- (c) controlling the general quality of the water and environment of any given catchment area or drainage basin.

This particular capability is going to be all the more crucial since present trends indicate that the destruction of natural forests hence of watersheds is one of the most important causes of desertification in sub-tropical Africa.

Finally it is important that agencies of the state should develop the capability of monitoring, on a fairly regular basis, the actual rate of consumptive utilisation of the water resources of any given catchment area or drainage basin. This implies the further capability of collecting, analysing, storing, retrieving and disseminating information thereon. Traditionally, this is a task which many African countries have left to water allocation authorities. But whether these have developed effective or any monitoring programmes at all, is not readily apparent.

I have expounded at length on the need for state agencies to actively develop water resources, because I believe that large irrigation schemes are not sustainable on a long term basis unless this occurs. In designing legal regimes for such schemes, therefore, provisions must be made for the formulation and periodic review of water policies, the preparation and amendment of water plans, and the establishment of a water resources inventory for every catchment area or drainage basin

into which any particular country naturally divides. The legal regimes governing water resources in Africa need therefore to be overhauled. For they concentrate, almost to an Act, on the distribution of water to consumptive users only!

The Management of Water Resources

There is an aspect of water resource development which requires separate treatment; namely management, in an operational sense. For irrigation systems to work, a great deal of management decisions must constantly be made. These relate not simply to matters which the particular mode of ownership of water resources, per se, may generate. Of immediate concern to participants in an irrigation scheme will be the more mundane issues such as the distribution of water, drainage of irrigated holdings, assessment of rates and taxes on water received, and the cleaning of irrigation channels.

In circumstances where irrigation is predominantly an individual or small-scale affair, these management issues are normally resolved at the interpersonal level failing which voluntary water association (where they exist) or the courts (ordinary or special) may become seized of them. As soon as it requires major works, however, irrigation very quickly attracts state intervention. A large and complex managerial bureaucracy is usually the result as those who have studied Sudan's Gezira Scheme will affirm. Management responsibilities can vary in a combination of ways. For example, the impoundment and distribution of water may attract a different bureaucracy from that which handles drainage; the structures (or works) may similarly be managed apart from the water, per se; so can maintenance be divorced from capital works, etc. To confound it all, different crops within a single irrigated area may be the subject of completely separate management regimes!

It is important, I think, that the management of water in any irrigation scheme should, in the first instance be as simple and integrated as possible. Further, it makes for a more rational investment strategy to avoid fragmented decision-making in a single irrigation

scheme at all costs. It is largely for this reason that it is preferable to install a single water management authority competent to make decisions, inter alia, on priority of uses and users, the principles of allocation and distribution, the control of quality, the quantity and frequency of use and environmental quality matters that relate directly to irrigation. As these decisions may depend on a wide variety of factors such as the character of the natural flow of the water concerned, the size of permissible irrigable land, absolute parcel sizes, crop requirements and even the method of distribution (whether overhead sprinklers or ground level channels), legislations setting up such authorities usually confer upon them the power to make appropriate rules. Such rules, where made usually (although not always) extend the management responsibility of these authorities beyond water, per se, to include the network of structures i.e. reservoirs, wells, canals, trenches, dykes, culverts, sluices, pumping installations and appurtenances, aqueducts, etc. needed for or in connection with the impoundment, storage, passage, discharge or drainage of that water.

III. THE LEGAL ORGANISATION OF IRRIGATION STRUCTURES AND INFRASTRUCTURAL SERVICES

Irrigation Structures

As far as irrigation structures are concerned, the management regime suggested above will work tolerably well only in schemes where both water and land are the subject of public ownership. In private or mixed private and public irrigation schemes, however, it is usually advisable to devise a separate regime for the management of irrigation structures. Although the precise content of such a regime will vary from one scheme to another, careful attention should be paid to two particular matters.

The first concerns the nature of the technological devices which individual or corporate irrigators may want to apply in order to abstract or impound water. Most jurisdictions now require that all major irrigation structures outside state schemes should, before they are installed, be the subject of a prior licence from an appropriate

state agency. As that requirement ought not to distinguish between private or public water regimes, even riparian systems should be affected except where very simple abstraction and discharge technologies are used. The reason for this is to ensure equity as between users and different types of uses hence unnecessary and expensive litigation through the Courts.

A licence governing methods of abstraction, impoundment or discharge of irrigation water, will also settle the issue of control, operation, maintenance and protection of the structures concerned. In private or mixed public and private schemes as, for example, where a parastatal agency provides water in respect of irrigated holding privately owned, some form of levy by way of cost recovery, is usually imposed upon those who benefit from the services provided under licence. This sort of arrangement is common in countries such as the Netherlands or Guyana where agriculture relies almost totally on continuous drainage and irrigation.

The second concerns the transilting of water across, over, or under other proprietors holdings especially in schemes where the vast majority of holdings are privately owned and are not physically contiguous to any source of irrigation water. It will be recalled that one of the criticisms that has been levied against riparianism is that it discourages subdivision of holdings in strips parallel to a given source of irrigation water; the tendency being instead to do so only in such a way as to maintain some contiguity to that source. As that situation can very quickly lead to strips of sub-economic sizes, many jurisdictions try to avoid it either by maintaining large irrigation schemes as public undertakings or providing for a statutory scheme of servitudes in favour of non-riparian irrigators. Where the latter option is taken, (as in the case in Kenya, Benin, Swaziland and Mauritius, among others), the scheme of servitudes confers upon persons entitled to construct or otherwise install irrigation structures full rights of access or transit under, across or over holdings owned or possessed by other proprietors, for the purposes of delivery or discharge from their holdings of such amount of water as they may be entitled to. By resorting to a statutory scheme of servitudes, a great deal of highly intricate private negotiations and conveyancing procedures are avoided.

It is important to emphasise that the acquisition of rights of access or transit in the manner indicated herein does not in itself confer ownership rights over holdings thus transversed, nor does it necessarily confer upon owners of such holdings any share in the control, operation, maintenance or protection of the structures involved. What it does, rather is to impose a burden upon such a holding. Where, however, the owner of any such holding also benefits from the services provided by those structures, it is normally to enter into cost-recovery arrangements as indicated above.

Infrastructural Services

The management of infrastructural services such as roads, housing, schools, medical facilities in public or large irrigation schemes usually lies in the public domain. For that reason no special legal regime is necessary unless there is need to physically co-ordinate these with irrigation structures and other works, in which case an appropriate order of primacy is usually stated. Similarly no special regime is necessary with respect to small-scale or private schemes since these are normally resolved in-house between various irrigators.

IV. THE LEGAL ORGANISATION OF IRRIGATED HOLDINGS

Some Basic Parameters

As "controlled water use" is what distinguishes irrigation from rain-fed agriculture, the legal and organisational issues surrounding access to water and the use of abstraction or impoundment technologies are clearly among the very first which any investor in an irrigation scheme or enterprise will want clarified. Once this is done, however, attention must turn to the all important issue of access to irrigated holdings. Many an irrigation scheme in Africa has failed to take off mainly because this issue was not settled properly or given the careful consideration which it deserves.

There are four important parameters to this issue. The first is the design: i.e. lay-out and size distribution of irrigated holdings.

The second is the tenure regime to which holdings should be subject and ought to exercise in respect of the produce thereof. The third is the form of juridical protection which tenure rights ought to receive. These are briefly examined below.

The Design of Irrigated Holdings

Design of holdings is probably not a major legal or organisational matter in small or private irrigation schemes. For in those contexts the size distribution of holdings will vary with the quantum of land at the disposal of each potential irrigator. Similarly, as long as irrigation technology remains relatively simple, the actual layout of holdings, especially in relation to service structures, will remain the subject of simple contractual arrangements between irrigators and their associations. Arrangements along these lines have been known to work quite well among indigenous agricultural communities along river valleys in Africa.

The design of irrigation schemes, and especially the size distribution of holdings, being largely a function of the technology to be used in the management of water, it follows that serious problems will arise as soon as that technology substantially changes. Whatever may be the reasons for such changes e.g. the need to expand individual holdings or to intensify production, a general reorganisation in the design of holdings could become necessary in the interest of equity and efficiency. Such a reorganisation may involve not only the creation of more standardised plot sizes or the realignment of their lay-outs, but also fluctuation in the absolute number of irrigators in a given scheme. In each one of these cases a number of basic property issues will require settlement. Among these are whether or not authority to effect reorganisation exists at all, and how the rights of those adversely affected are to be protected. This latter issue can become particularly complex in situations governed by indigenous tenure regimes since transgenerational rights in respect of holdings will also require protection. It is important, therefore, that beyond the need to closely

monitor private or small irrigation schemes for development which might impact on the design of holdings the overall legal and organisational framework of irrigation schemes should be linked up to national land laws so that proprietary issues similar to those above can be quickly resolved.

In large or public irrigation schemes, however, the design of holdings can present major organisational problems. This is because a number of fundamental (even though preliminary) decisions must first be taken before the actual lay-out and size distribution of holdings can be worked out. One of these concerns the clarification of goals. It is important in this respect that irrigation planners should be absolutely clear about the primary goals e.g. productivity, equity, or flood-control, which the scheme is expected to achieve. This will, to a very large extent, determine not only design, but also the entire administrative organisation of, and tenure regime that should prevail in, that scheme.

The other concerns how land required for irrigation purposes is to be obtained. The general tendency in most African jurisdictions is to compulsorily acquire such land in the absence of any that is publicly owned. Although compulsory acquisition statutes normally provide for prompt and full compensation based on prevailing market values, it must not be assumed that this automatically eliminates socio-legal considerations from the actual design of holdings. For one, the fact that compensation is usually in cash, rather than in land of equivalent value, often means that a substantial number of displaced people have to be resettled within the proposed scheme itself. For another, where, as will happen land held under indigenous tenure is acquired, those displaced are resettled in the vicinity of the proposed scheme by their kinsmen the effect, usually, is to reduce the amount of land available per family in the catchment area of that scheme. Both of these should be taken into account in the determination of appropriate holding sizes, the criteria for and the order of priority in the allocation of those holdings, and the provisioning of infrastructural

services in a well-planned irrigation scheme. Consequently clear guidelines on how these are to be dealt with is crucial.

Tenure of Irrigated Holdings

One of the most important parameters to which an appropriate legal regime for an irrigation scheme must advert relates to the conditions under which irrigators may have access to irrigated holdings. The issue is not simply about who should have access to what holding, it also is about how much and for what specific purposes that access should be given.

It is generally thought in many parts of Africa that for public or large irrigation schemes to succeed, only limited tenure rights should be accorded to irrigators however selected. The practice therefore is to allocate holdings on the basis of temporary occupation licences (TOLS) or similar arrangements. The justification usually is that unless public control and supervision is exercised, the very large public investments sunk into these schemes are unlikely to be profitable. These arrangements are consequently buttressed by large and expensive state bureaucracies which control anything from the residential affairs of irrigators, through the conduct of transactions in holdings and compliance with conditions of access, to crop planting time-tables and marketing of certain crops or produce thereof.

It is becoming increasingly clear that the ToL and kindred arrangements are a major impediment to efficient production and the development of cohesive farm communities in irrigation schemes in Africa. Because of the lack of permanence which it signifies, the ToL very quickly generates outmigration from public schemes in addition to encouraging irrigators to spend most of their productive efforts on privately held plots situated elsewhere. The ToL can also be the subject of serious abuses by irrigation bureaucracies. It is desirable therefore that where the full compliment of tenure rights cannot be conferred a "tenure ladder" that allows individual or corporate irrigators to move up i.e.

build more secure rights, on the basis of performance and level of investment in the scheme be provided for. At the "secure" end of that ladder, an irrigator should be able to transmit his/her rights to successors without mediation by the relevant bureaucracy. The point to emphasise here therefore is not that particular tenure arrangements are especially desirable; rather it is that maximum flexibility permitting irrigators to build tenure rights as and when their own perception of production advantage dictates is the better legal and policy option. That flexibility should, in appropriate circumstances also extend to the marketing of the produce of those holdings.

Juridical Protection of Tenure Rights

One of the social costs of irrigation development especially if the prevailing tenure regime is as flexible as is suggested above, is the probability of fairly complex disputes over rights to both water and irrigated holdings themselves. Such disputes will arise not only among irrigators inter se, but also between them and the bureaucracies in charge of those schemes. It is important therefore that procedures be provided for the resolution of such disputes.

Although most jurisdictions leave the resolution of all disputes to ordinary judicial processes, it may be advisable, especially in very large irrigation schemes to provide for special tribunals to adjudicate exclusively on matters arising therefrom. Special land courts are thus a familiar device in Roman-Dutch jurisdictions, so are water courts or tribunals. As I have intimated above, however, unless these bodies are able to function speedily, irrigation development may suffer in virtue of their existence. Procedural simplicity and recourse to substantial justice, therefore, must be the primary goals of such tribunals. ✓

V: CONCLUDING REMARKS

This essay has identified some of the major legal and organisational issues to which attention should be paid in irrigation planning

in Africa. Its basic thrust suggests that controlled water use through investment in expensive abstraction (or impoundment), distribution and discharge technology, and the design, allocation and tenure of irrigated holdings will, of necessity, require a great deal of institutional changes and management preparedness before functional and production efficiency can be guaranteed. These changes will involve new and sometimes novel legal regimes which are not part of the residual law of many African jurisdictions. As ability to design such regimes and to fully integrate them with the social and political economic context in which particular irrigation schemes operate will therefore be crucial. In that exercise careful balance must be maintained between the need to protect public investments and to respond to the exigencies of equity and individual or corporate choices in the irrigation enterprise.

Footnotes

1. I have borrowed this term from Block, P.C., (1986) "Land Tenure Issues in River Basin Development in Sub-Saharan Africa" Land Tenure Centre Research Paper 90, University of Wisconsin Madison. The term, he explains, is the French translation of Marx's doctrine of the withering away of the State under socialism. Block's point is that after a while, excessive state presence in agriculture is a liability and should be dispensed with.
2. In presenting and discussing these issues, I have relied heavily on my work as a FAO Water Resources Development and Management Consultant in the Co-operative Republic of Guyana, South America in 1985 and 86.
3. Of which approximately 54 river or lake basins in Africa.
4. The system of prior appropriation which was developed in the mid-19th century in Western United States is unknown to African legal systems.