

# Incorporating institutional and legal requirements

by Robert Bos

**Institutional arrangements are an essential condition of environmental management of vector control in resource development projects. The author describes four models, and concludes that good legislation is vital.**

Intersectoral collaboration has often been unjustifiably described as simply the process whereby an agency belonging to one public sector lends assistance to another agency in a different sector. The addition of a drainage component to an already existing and operational irrigation scheme with the primary objective of reducing a schistosomiasis problem that intensified following the scheme's development is, according to this view, a good example of such collaboration. In recent years, the concept has evolved, principally under the influence of the report of the World Commission on Environment and Development. Currently, the above example would still be considered a positive contribution by the agriculture sector towards the correction of a deteriorated health situation, provided of course the construction of the drainage component is for a major part funded by the former. It would, however, be argued that the fact that such remedial action is necessary clearly indicates that intersectoral collaboration has been functioning far from optimally at crucial stages of project planning, design and implementation.

In the full significance of the term, intersectoral collaboration implies that:

- The components of a national development plan are considered in a holistic way, and that all public sectors that may be affected by them in an indirect way are identified at an early stage.
- For each component the sectors identified as relevant review their policies for mutual compatibility, and jointly solve policy incompatibility.

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- The sectors maintain a dialogue which permits them to stay informed of each others potential, progress and constraints.
- At the project planning stage the possibilities for the sharing of resources in further project development are carefully investigated and defined.
- At the implementation phase the monitoring of indicators is expanded beyond those strictly of interest to the sector that is the primary beneficiary of the project.
- Evaluation is not only carried out on a short-term sectoral basis, but also on a medium-term, multisectoral basis. In other words, the overall effect on human welfare should be assessed as the final indicator for success.

This comprehensive concept of

intersectoral collaboration can only be achieved within an adequate institutional framework. The agreements between different sectoral bodies concerning the flow of decision-making processes, the division of responsibilities and labour, and the sharing of resources are generally referred to as institutional arrangements.

This paper reviews some examples of such arrangements in the context of environmental management to prevent or mitigate the vector-borne disease problems associated with water resources development development with special attention to the legislative aspects.

## The Tennessee Valley Authority, USA

The Tennessee Valley Authority (TVA) was created in 1933 as a



*'Snail scouts' — health workers looking for snails which transmit schistosomiasis. Co-operation between health workers, agriculturalists and engineers must be established from the beginning.*

P. Almsy/WHO

regional development agency by an Act of the United States Congress. It was one element in a broad programme designed to bring the nation out of severe economic troubles. Its structure makes it unique among federal agencies: TVA is an independent agency and not part of any federal cabinet department. Consequently, inter-departmental conflicts are limited. The TVA Act provides it with the administrative freedom to meet the special requirements of its programme and to adopt the methods of administration of successful private as well as public enterprise.

TVA programme activities are handled by three major offices. The Office of Power and Engineering is a self-financing operation deriving funds from the sale of electric power to 160 distribution systems and selected industrial and government customers, altogether a US\$ 4 billion per year operation. Activities of the two other major organizational structures within TVA, the Office of Natural Resources and Economic Development and the Office of Agricultural and Chemical Development, are primarily funded through congressional appropriations.

Four points in the 1933 Act are fundamental to this unique institutional set up:

- The Act provided the Authority with a high level of autonomy in conducting its business. TVA has its own legal status and does not have to refer back to the US Justice Department for legal matters, as other Federal agencies do; and it has great financial flexibility, as it receives a lump sum from Congress every year, is allowed to invest proceeds from one sector into the development of another, and only returns the overall net proceeds to treasury at the end of the fiscal year.
- The Act delegates the planning responsibilities entirely to the Authority. It must, however, implement its plans through the existing Federal and State structures.
- The Act focuses economic development on a river basin strategy. This avoids one practical problem often faced in a regional development approach: the delineation of an appropriate region. Quite often regions have been defined along geo-political boundaries, with the economic rationale as a secondary consideration. By taking a river, its principal tributaries, and the accompanying watershed as the development focus, the definition is clear-cut. Moreover, because the river is a prominent factor in the ecology of a watershed, a river-basin strategy makes it easier to assure that regional development provides a long-term ecological protection.
- The Act avoided the supplanting or duplication of the roles by other Federal Government agencies already at work in the region, like the Department of

Agriculture or the Department of the Interior. Rather, TVA was placed in a role of persuading, by demonstration and other means, departments and agencies to adopt policies, procedures, and methods contributing to integrated resource development.

At the start of TVA three impoundments already existed on the Tennessee River. Surveys in the vicinity of one of these lakes showed malaria prevalence rates of between 35 and 65 per cent. It was clear, therefore, that the Authority must establish a programme to control this severe health problem with its broad implications for the economic and social development and the well-being of the people of the region.

Based on studies and recommendations by the United States Public Health Service in the early 1900s, regulations had been adopted by various southern states governing the conditions under which water might be impounded. The purpose was to minimize the potential hazards to public health. These regulations stipulated that any person, corporation or agency wanting to impound water or change the levels of existing impoundments must first obtain a permit from the respective State Board of Health. The regulations further specified certain vector control actions that were to be taken to ensure that disease-transmitting mosquitoes were controlled.

Foremost among these specifications were guidelines for reservoir-basin preparation, water level regulation, shoreline drainage, and aquatic weed control. With these regulations already in place in the Valley States, TVA was legally obliged to include mosquito control in its regional development plans. In support of these regulations and to ensure compliance, it prepared a series of vector control specifications for each of its planned reservoirs, equal to or surpassing State requirements. Thus, legislation was a key element in ensuring that mosquito vector control measures were incorporated into the planning and development of water resources projects, and it helped to eliminate conflicts of competing interests.

TVA has been recognized for more than fifty years as a unique public model for the integrated development of an entire geographic region. A comparison between the socio-economic

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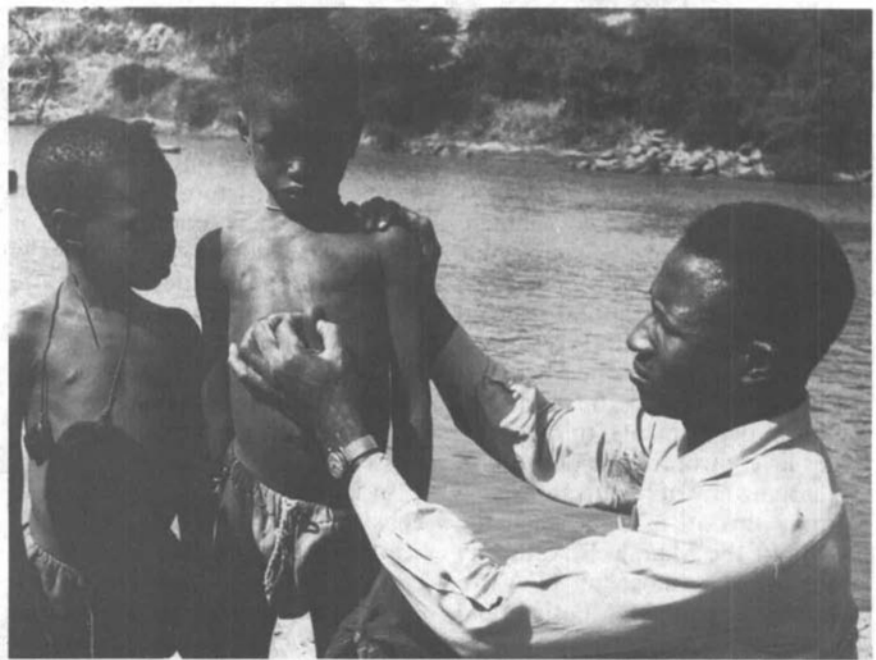
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situation in the Tennessee Valley in the 1920s and 1930s and the present-day situation in many developing countries has often been drawn. Consequently, the transfer of the TVA model to those countries has been frequently advocated for major natural resources development projects. In fact, in a number of countries attempts have been made to copy the TVA approach. It is important, however, to bear in mind the differences between the Tennessee Valley situation and the conditions found in many developing countries, and to assess the value of the aforementioned four fundamental points of the TVA Act under such conditions.

Clearly one cannot simply duplicate the exact combination of strategies used elsewhere, because each region represents a unique pattern of resource and economic problems and opportunities. An essential difference between the Tennessee Valley and most developing countries is that the regionally focused TVA programme was nevertheless carried out within the national context, through existing agencies and with federal financial support. Most developing countries will not have the economic strength to initiate such a major resource development project by themselves.

This means that external funding from bilateral or multilateral donors will need to be attracted. If, in such a case, drastic measures are not taken to ensure that part of the financial resources is channelled through to national ministries for the strengthening of their executive role, then there is a considerable risk that a development authority will overpower other national bodies because of its disproportionate financial strength. Not only will this situation result in a less than optimal collaboration with existing government bodies, but it is also likely to drain skill and know-how from these bodies in favour of the newly created entity. While great caution is therefore necessary to transfer the managerial structure of TVA, the integrated river basin approach is certainly of value in regional development anywhere, and is being adopted in many countries with great benefit. Particularly from the ecological perspective, which is so acutely relevant to the distribution of vector-borne disease, the establishment of river-basin



E. Mandelmann/WHO

*The tell-tale nodules of river blindness. Irrigation projects that will change conditions in local water must be assessed for health implications before they go ahead.*

development authorities is an important contribution towards sustainable development.

### The Mahaweli Authority

A master plan for the development of the irrigation and hydropower potential of the Mahaweli River and its tributaries in Sri Lanka was drawn up by UNDP and FAO in 1968, and envisaged the development of 360,000 hectares of land in the Mahaweli and adjacent basins and the production of 508MW of hydropower. The original programme was scheduled to be completed in thirty years. In 1978 it was revised to an accelerated version which aimed to irrigate 120,000 hectares of new land and to generate 470MW of hydropower.

The implementation of the accelerated Mahaweli Development Programme was begun in that same year by the Ministry of Mahaweli Development. It soon became evident, however, that the managerial capacity and administrative procedures of a government ministry were less than ideal for the implementation of a development programme of that size on an accelerated basis. Therefore in 1979 the Mahaweli Authority, a government corporation, was set up by an Act of Parliament. The Act provided for the Minister in Charge of the Programme to declare, with the approval of the President, any area which could be developed within the water resources of the Mahaweli

Ganga or any other major river a 'special area', where the Authority could exercise all or any of its powers, duties and functions.

The functions of the Authority in relation to these special areas were designated in the Act as comprising:

- Planning and implementing the Mahaweli Ganga Development Scheme including the construction and operations of reservoirs, irrigation distribution systems, and installations for the generation and supply of electric energy.
- Fostering and securing the full and integrated development of any Special Area.
- Optimizing agricultural productivity and employment potential and generating and securing economic and agricultural development within any Special Area.
- Conserving and maintaining the physical environment within any Special Area.
- Furthering the general welfare and cultural progress of the community within any Special Area.
- Promoting and securing the participation of private capital, both internal and external, in the economic and agricultural development of any Special Area.
- Promoting and securing the co-operation of Government departments, State institutions, local authorities, public corporations and other persons, whether private or public, in the planning and implementation of the Mahaweli Ganga Development Scheme and in the development of any Special Area.

The powers of the Mahaweli Authority cover a wide range of activities, from the construction of irrigation and drainage works and structures and hydropower installations to watershed management and the control of soil erosion, and from settlement and resettlement of persons on lands,

farms and properties in any Special Area to the organization of farmer training services, farmer credit facilities and agricultural inputs into farming systems.

The Mahaweli Act provides for the Authority to give special or general directions to government departments and corporations, requiring these entities to perform any functions and duties deemed necessary by the Authority in any of the Special Areas. The Mahaweli Authority can, furthermore, establish departments or agencies under its control for the purpose of discharging any of its functions.

From this it is clear that the powers of the Mahaweli Authority largely surpass those of TVA. In addition to planning, design and demonstration, it is also responsible for programme implementation and it can create its own structure through which to carry out its executive functions. The example of how public health is dealt with (based on information received in 1984 and updated in 1987) illustrates the functional implications of this mandate. The Mahaweli Authority recognized that the Ministry of Health has primary responsibility for delivery of both preventive and curative health services in the entire country. The Mahaweli Economic Agency (MEA) has also been made responsible for health care delivery in the downstream areas, supplementing efforts of the Ministry of Health in preventive and curative services, including health education. The institutional arrangements which were originally established consisted of the appointment by the Ministry of Health of a Deputy Director to liaise with the Mahaweli agencies, and the creation of a standing committee on health with representatives from MEA, MECA (the Mahaweli Engineering and Construction Agency) and the Ministry of Health.

The Mahaweli Authority has, to a certain extent, copied the government structure and has undertaken tasks which could have been implemented by existing government agencies had the external funds been channelled differently. The flexibility of TVA which was purposely built into the 1933 Act of Congress which limits the Authority's powers to planning and demonstration has, in the case of the Mahaweli Authority, given way to a structure with greater

similarity to government agencies than to private enterprise. The health activities of the Mahaweli Authority exemplify this: they are of the conventional health services type. MECA's involvement in health infrastructure improvement and MEA's responsibilities for health care delivery are typically sectoral. Opportunities for a more intersectoral approach towards public health, by considering it in the design of the structural lay-out of irrigation and drainage works, seem for the most part to have been missed.

In fact, the planning, design and construction of the irrigation schemes appears to have been carried out with strictly sectoral goals in mind: how to achieve the largest command area feasible within the geo-physical constraints posed by the dry zone area. Some concessions were made for wildlife conservation, but the design of water delivery systems, human resettlement programmes and irrigation management lack essential health safeguard components of the environmental engineering type.

### **Philippines**

The two public sectors in the Philippines directly concerned with vector-borne diseases are both organizationally subdivided. The water resource development sector consists of some twenty different agencies; in the health sector, the malaria eradication service and the schistosomiasis control and research service.

Faced with an intensification of activities in the water resources sector, the Philippines authorities created in 1974 the National Water Resources Council which, with regulatory/executive as well as advisory functions, was to co-ordinate water resources development at a national level, consistent with principles of optimum utilization, conservation, and protection, to meet present and future needs.

It was recognized that malaria, and to an even greater extent schistosomiasis, needed to be considered in the context of water resources development. The schistosomiasis control component in the context of irrigation development requires an input from the engineering side and from the health services. The engineering part consists of the improvement of

existing drainage channels and the construction of new ones; the implementation of improved water management schemes; the construction of footbridges; the construction of health centres; and the development of rural drinking-water supply.

### **Implementation mechanism**

The mechanism for the implementation of a schistosomiasis control programme in an irrigation project in the Philippines depended at that time on whether the programme was one of several components of an integrated area development project, or a component of an irrigation development project in the strict sense. In an integrated area development project the National Council on Integrated Area Development was the principal executive agency responsible for the implementation of the programme, with the National Irrigation Administration (NIA), the Ministry of Public Works and Highways (MPWH) and the Ministry of Health (MOH) as co-operating agencies. On the other hand, if the programme was a component of an irrigation project, then NIA was the principal executing agency with MPWH and MOH as co-operating agencies.

Taking the latter case as an example, the intersectoral collaboration was as a rule defined in a memoranda of understanding (MOU) between the executive agency (NIA) and the co-operating agencies. The MOU with the Ministry of Health described the duties and responsibilities of both agencies with respect to the schistosomiasis control programme. Thus the MOH was responsible for the health services component, except where it related to rural water supply and sanitation, which was the responsibility of the MPWH. In this collaborative framework, the NIA provided logistical support to employees from other agencies stipulated to work for the programme. The disbursement and management of the bilateral or multilateral component of the health programme funds included in the irrigation project budget was administered by NIA. The MOH, on the other hand, controlled the national counterpart funds for the health component.

In the Philippines the water resource sector was and continues to be very heterogeneous. At the national level several ministries may be involved in the planning and execution of medium- and large-scale projects; at lower administrative levels small-scale projects may be initiated. Within the macro-economic policy framework each of the separate entities will have its own policies aimed to achieve an individual set of objectives through effective implementation of its programme. There will be a range of sectoral policies, only loosely interconnected and sometimes even conflicting. The establishment of a co-ordinating body, such as the National Water Resources Council, with policy review and adjustment in its terms of reference, seems a first prerequisite to make sectoral policies compatible.

The institutional arrangements as they were established in the Philippines in the 1970s are true to the concept of intersectoral collaboration. They provide the framework for multidisciplinary planning, and prescribe a division of labour and the channelling of external funds, and define inputs from various sources. The Philippines model would seem suitable for replication in similar settings. Effective intersectoral arrangements do not, however, generate spontaneously. Different sectors are used to competing for limited funds and tend to have a self-centred perception of national priorities. The arrangements will therefore have to be enforced from the highest executive levels. Moreover, the arrangements are ephemeral. As political systems change, governments are reorganized and national development plans modified, existing arrangements may become outdated from one day to another, or disappear altogether.

## Ethiopia

Sometimes intersectoral collaboration develops from the bottom up rather than from the top down, and this has happened in Ethiopia. Ethiopia belongs to those East-African countries where substantial water resources remain to be developed for agricultural purposes. Aware of the health implications of irrigation development, a group of interested scientists took the initiative to

demonstrate the value of multidisciplinary collaboration in a project to control urinary schistosomiasis in the Amibara Irrigation Scheme in the Middle Awash Valley. This successful control effort attracted the attention of various ministries and institutions and culminated in the formal establishment, in 1985, of a Committee for Inter-institutional Collaboration. This group brings together their expertise in engineering, agriculture, vector ecology and disease epidemiology, and aims to develop an intersectoral approach towards the prevention and control of water resources development associated vector-borne diseases.

The establishment of the CIC was formalized in a memorandum of understanding, spelling out the specific objectives and functions. It was initially signed by the National Research Institute of Health, the Water Resource Development Authority, the Institute of Pathobiology of Addis Ababa University, the Occupational Health Unit of the Ministry of Industries and the National Programme for the Control of Malaria and Other Vector-borne Diseases. Participation is open to all relevant government institutions.

Following the success of the Amibara Irrigation Scheme, various *ad-hoc* working groups of the CIC have started activities, including a health and environmental impact assessment as part of a feasibility study on the Gilgel Gibe hydro-electric project and an environmental health impact assessment and appropriate design of a monitoring programme for a master drainage operation of the Melka Sadi and Amibara areas.

The Committee for Inter-institutional Collaboration has been carried by the enthusiasm of its members, and this has led to immediate results. The political will to make this group a formal part of the Ethiopian decision-making process with regard to water resources development has, however, so far been insufficient. As a result the expertise available is not utilized to its full potential. The solution again points in the direction of the development of proper legislation, which would make the screening of any new water resources development project by the CIC compulsory.

## Conclusions

For each institutional environment the optimal construction will have to be designed; a mere copying of structures that have proven successful elsewhere is usually less than satisfactory. Good legislation is the only way to ensure continuity in intersectoral collaboration, which is prone to deteriorate in times of economic decline, political change or instability. In this connection it is important to note that environmental legislation is now beginning to take shape in many developing countries. Environmental issues, by definition multisectoral in nature, require a vast range of suprasectoral and sectoral laws. Environmental Impact Assessment is now no longer just a condition imposed by multilateral and bilateral donors, but is also legally required for development projects in many countries. The enforcement of the law and the follow-up and implementation of EIAs, however, remain problematic. Bye-laws and other regulations imposed by local government have gained in importance, particularly in the face of spreading urbanization. A comparison of malaria cases in the four major cities in India clearly indicates the importance of their strict enforcement. In Indian cities malaria transmission is mainly linked to the breeding of vectors in borrow pits of construction sites and in rooftop water tanks. In Bombay, where the engineering code of practice and construction regulations are well spelled out and strictly enforced, the number of malaria cases have fluctuated in the past five years between 833 and 4,073. In Calcutta, Delhi and Madras, where legislation is incomplete or not enforced with similar vigour, these figures are, respectively 8,285-26,056; 14,423-38,108 and 30,771-51,376.

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Opinions expressed in this paper are the author's only, and do not necessarily reflect the official policies and views of the World Health Organization.