

Communication strategies for heightening awareness of water

Report 2 of IHP II Project C1
(on heightening awareness of the
socio-economic role of water)

Prepared for the International
Hydrological Programme by the
Working Group of Project C1 (IHP-II)

Editor: B. S. Sadler



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Preface

Although the total amount of water on earth is generally assumed to have remained virtually constant, the rapid growth of population, together with the extension of irrigated agriculture and industrial development, are putting stress on the quantity and quality aspects of natural systems. Because of the increasing problems, society has begun to realize that it can no longer follow a “use and discard” philosophy — either with water resources or any other natural resources. As a result, the need for a consistent policy of rational management of water resources has become evident.

Rational water management should be founded upon a thorough understanding of water availability and movement. Thus, as a contribution to the solution of the world's water problems, Unesco, in 1965, began the first world-wide programme of studies of the hydrological cycle — the International Hydrological Decade (IHD). The research programme was complemented by a major effort in the field of hydrological education and training. The activities undertaken during the Decade proved to be of great interest and value to Member States. By the end of that period, a majority of Unesco's Member States had formed IHD National Committees to carry out relevant national activities and to participate in regional and international co-operation within the IHD programme. The knowledge of the world's water resources had substantially improved. Hydrology became widely recognized as an independent professional option and facilities for the training of hydrologists had been developed.

Conscious of the need to expand upon the efforts initiated during the International Hydrological Decade, and following the recommendations of Member States, Unesco launched a new long-term intergovernmental programme in 1975: the International Hydrological Programme (IHP).

Although the IHP is basically a scientific and educational programme, Unesco has been aware from the beginning of a need to direct its activities toward the practical solutions of the world's very real water resources problems. Accordingly, and in line with the recommendations of the 1977 United Nations Water Conference, the objectives of the International Hydrological Programme have been gradually expanded in order to cover not only hydrological processes considered in interrelationship with the environment and human activities, but also the scientific aspects of multi-purpose utilization and conservation of water resources to meet the needs of economic and social development. Thus, while maintaining IHP's scientific concept, the objectives have shifted perceptibly towards a multidisciplinary approach to the assessment, planning, and rational management of water resources.

As part of Unesco's contribution to achieving the objectives of the IHP, two publication series are issued: “Studies and Reports in Hydrology”, and “Technical Papers in Hydrology”. In addition to these publications, and in order to expedite exchange of information in the areas in which it is most needed, works of a preliminary nature are issued in the form of Technical Documents.

The purpose of the continuing series “Studies and Reports in Hydrology”, to which this volume belongs, is to present data collected and the main results of hydrological studies, as well as to provide information on hydrological research techniques. The proceedings of symposia are also sometimes included. It is hoped that these volumes will furnish material of both practical and theoretical interest to water resources scientists and also to those involved in water resources assessment and planning for rational water resources management.

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Foreword

Project C1, of which this report is part, represents a new direction in the International Hydrological Programme. It is the sole IHP-II project in the field of public information, and was established with two objectives, namely:

- “to prepare for planners and policy-makers material illustrating the importance of water resources in socio-economic development under varying conditions”;
- “to prepare recommendations on other ways in which awareness can be heightened.”

The Project Working Group was drawn from a diversity of national backgrounds. Membership was as follows:

Mr T.B.F. Acquah, Ghana
Mr P. Aristotelous, Cyprus
Prof. W.E. Cox, United States of America
Dr Quais Nuri Fattah, Iraq
Ing. M.C. Fuschini Mejia, Argentina
Prof. L.E. Garcia Martinez, Guatemala
Mr B.S. Sadler, Australia (Chairman)
Prof. G.V. Voropaev, Union of Soviet Socialist Republics

The Working Group approached this project by preparing two major reports, by presenting a set of recommendations for heightening awareness of the role of water, and by planning an abridged report designed for wider appeal. Having decided an outline for the two main reports and having reviewed early draft material in committee, responsibility for their completion was then assigned to two editors elected by the Group. Further contributions and reviews by other members were achieved through correspondence. The project reports, numbered Reports 1, 2 and 3, are as follows:

- Report 1 — “The role of water in socio-economic development” — Editor W.E. Cox
Report 2 — “Communication strategies for heightening awareness of water” — Editor B.S. Sadler
Report 3 — An abridgement of Report 1 (title not yet decided) — Editor W.E. Cox

As a further consequence of this project, extensive material has been gathered in the USSR by Professor Voropaev. This material has been presented in an additional independent report issued by Unesco (Voropaev, 1986).

Report 1, the companion report to this publication, comprises the basic message of the project. The report is directed towards planners, policy-makers and decision-makers both inside and outside the water sector and is relevant for consideration in both developing and developed countries.

Report 1 examines the relationships between water and socio-economic development, delineating fundamental roles and alternative approaches for optimizing these roles. It documents an intricate relationship with other sectors of socio-economic development and with

social values and custom. The need for communication and co-ordination between the planning of the water sector and other sectors and the need for maintaining awareness of interacting issues and values among planners and decision-makers are made evident. The review emphasises the following requirements:

- (a) water planning that is comprehensive, coordinating effectively with general socio-economic planning and recognizing that water development will fail to achieve its goals without corresponding action in other sectors;
- (b) realistic assessment of the social, economic and environmental effects, whether beneficial or adverse, of proposals for water development;
- (c) proper consideration of the effects of land use and development in other sectors on water resources management;
- (d) an integrated approach, inside the water sector, to water resources planning, development and management;

These fundamental requirements in turn led to an emphasis of the following more specific needs:

- (a) establishment of appropriate mechanisms to achieve effective inter-sectoral and intra-sectoral communication in the socio-economic and land-use planning processes;
- (b) the development of an adequate organisational structure for decision-making and implementation which is continuously adaptive to the changing demands and circumstances associated with socio-economic progress;
- (c) scientific evaluation and continuous assessment of water resources as pre-requisites for well-balanced water resources planning, development, utilization and protection;
- (d) effective incorporation of information on social and cultural issues and values into decision processes and the related need to adopt the use of public participation for this purpose.

This second report deals with communication of the message of Report 1. It reviews the need for communication, examines the problems and techniques of communication and discusses means for heightening awareness in planners and decision-makers, and in the general public. Report 2 was first prepared as a document supporting recommendations to the IHP Council and then re-edited for wider distribution in its own right, and in association with Report 1.

The report examines public and professional awareness and motivation as rational and political prerequisites for initiation of appropriate problem-solving actions. As an extension of these observations, the need is emphasised for water authorities to be active in widely communicating awareness of important water planning issues.

Communication problems and processes for com-

municating awareness are reviewed from the viewpoint of water planners and managers acting as the prime communicators. Some general observations are made in relation to principles and strategies of communication

which might be adopted by national water agencies and by international programmes such as the International Hydrological Programme.

I. Introduction

1. The concept of awareness and the issue-attention cycle

1.1 Definition of awareness

Although water has a fundamental and pervasive influence in human ecology, an adequate perception of water issues and appropriate responses to water problems will not occur in national socio-economic planning without deliberate communication efforts on the part of water authorities. Conversely, water authorities must be sensitive in their own decision-making to socio-economic planning issues and to the effects on management of other sectors caused by water resources development and management.

This report is directed primarily to discussion of means for increasing “awareness” of planners and decision-makers in other sectors with a view to motivating conscious recognition and consideration of water issues in socio-economic planning. However, attainment of this objective is closely associated with development of public perceptions and attitudes as well as perceptions and attitudes of planners and decision-makers in the water sector. Hence discussion naturally extends to development of public “awareness” and “awareness” within the water sector.

For this report, the desired ingredients of “awareness” are a perception of problems or issues and a corresponding motivation to respond with appropriate action. “Awareness” is therefore defined as a developed level of perception and knowledge relating to the substance and significance of water issues, and an associated development of attitude and motivation towards appropriate action. More specifically, in relation to achieving awareness among planners and decision-makers dealing with national socio-economic planning, two communication goals must be satisfied, namely:

- perception and knowledge of important water issues relevant to national socio-economic planning must be communicated to planners and decision-makers; and
- attitudes and motivation of planners and decision-makers must be developed so that they wish to see effective resolution of water issues and become committed to working for solutions.

1.2 The issue-attention cycle and the transience of awareness

For any planning decision to be accomplished, decision-makers must first be aware that a problem exists on which action is necessary. For a complex resource management issue, wide awareness of the problem must

commonly be extended into the community before the issue can command political priority and before action can be politically feasible. Because of the many impediments to raising consciousness of an issue to a level which will influence attitudes and motivation, resource management problems may easily develop to an unsatisfactory level or possibly even to impending crisis before decision makers and the community are convinced of the need to act.

The “Issue-Attention Cycle”, first described by Downs (Downs, 1972; Foster and Sewell, 1981), suggests that awareness of situations deserving action, and implementation of actions seeking to resolve a problem, follow a cyclic model of growth and decline of interest. Downs’ cycle is illustrated in Figure 1.

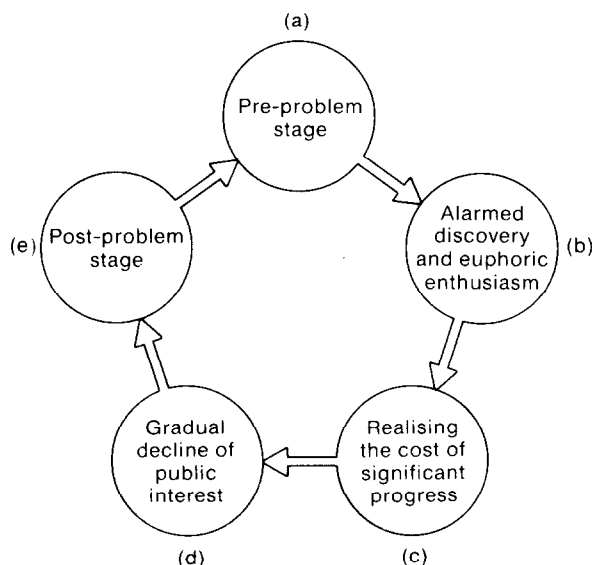


Figure 1: The Issue-Attention Cycle (As depicted by Foster and Sewell, 1981)

The “pre-problem phase” (a) when only a few individuals perceive the existence of an issue to be dealt with may, in some circumstances, last an extended period of time whilst the few struggle to gain recognition of the issue. Their difficulties in gaining recognition and commitment to action may range from the difficulty of communicating issues that are foreign to established disciplines of thought, to competition with other issues demanding attention and action, or to the difficulty that recognition might represent a threat to established interests.

Issues requiring problem solving may only succeed in gaining recognition above competing issues when communication of the problem is persistent and assertive, or when the situation becomes critical.

An issue may finally emerge from the pre-problem stage and be “discovered” (b) with a flurry of alarm and enthusiasm for action. In this situation, actions may be promised, regret may be expressed concerning previous inaction, research may be initiated, and investigations of possible action may be set in motion.

The enthusiasm and promises that accompany recognition will often be followed by a further recognition that action may be difficult and costly. At this stage, when the full cost and difficulty of significant progress becomes apparent (c), the will to act may decline unless action to sustain awareness of the issue is pursued. Cosmetic alternatives and partial solutions may be attempted, or other issues may rise and again take priority. In some cases substantial action will be initiated.

However, whether or not successful action is achieved, the issue will commonly tend to lose prominence and decline in public interest (d) once research, cosmetic action or substantive action is initiated. New issues are always present to take front stage. As time passes there is also the possibility that changes in political or administrative leadership and in planning personnel may bring new perceptions. Commonly an issue, whether it has been effectively resolved or only partially resolved, will advance to a “post-problem” stage (e) where it simply may be forgotten for a time or, with a solution perceived as being “in hand”, it may readily lose attention or commitment until, perhaps as a result of a crisis, it may again be pushed to the fore for another round of discovery and possible action.

Having passed once through this cycle to the post-problem stage, Downs suggests that public awareness of an issue will not again fall as low as it was in the original pre-problem phase. However, there will be cases where awareness falls sufficiently to drop below the threshold at which effective action is maintained. In such cases a new cycle of re-discovery and re-commitment will be needed.

This model of the Issue-Attention Cycle is useful in emphasising the essentially human nature of the decision process.

Without effective and persuasive communication which causes a problem to be perceived and establishes an attitude that action is necessary, a rational analysis by a planner can be no more than an academic exercise. More fundamentally, however, without adequate communication inputs relating to the socio-economic environment in which he operates, the planner’s analysis might never have occurred or its adequacy and rationality may be doubted.

The model also suggests that the nature and methods of communication needed through the various phases of problem-recognition and problem-solving will vary from periods requiring attention-grabbing messages to periods requiring careful diplomacy, and from periods emphasizing simple concepts or principles to periods requiring hard fact and detail.

The Issue-Attention Cycle emphasizes that communication is an essential stock in trade of the planner and also emphasizes that awareness is a transient state unless maintained by effective communication inputs.

2. Promotion of awareness by water authorities and planners

The concept of the Issue-Attention Cycle emphasizes the need for increased awareness of specific problems and issues as a pre-requisite for achieving and sustaining effective action. Where the appropriate actions relate to integration of water planning with general socio-economic planning, the target groups for achieving heightened awareness include not only planners and decision-makers, but also the general public whose attitudes and values have a strong influence on the political processes of public decision-making.

It is instructive to review, within one’s own national environment, the anatomy of some major decisions affecting water resources management where the proposed actions have been inter-active with other public interests. Cases often may be found where years or even decades have passed between the time at which investigators first perceived a need for action and the time at which public awareness developed sufficiently for decisive action to be politically feasible (Sadler and Cox, 1986).

The primary responsibility and need for developing and communicating heightened awareness of water issues rests with water authorities and water planners. However, the importance of this responsibility may not always be clearly perceived by these groups.

This report is concerned with ways in which international water programmes, water authorities and water planners can be effective in promoting awareness. The report outlines difficulties, principles and potential strategies in communicating awareness. The discussion emphasises a view of planning as a communication process concerned with acquiring information, establishing awareness and advocating necessary change.

II. Communication techniques and difficulties

1. Outline

Communication established for promoting awareness may involve one way communication (transmission) and/or two way communication (transmission/reception). In this chapter discussion is centred on presenting some general principles and problems relating to communication by transmitted educational messages and to presenting the main range of media options for conveying information. In a following chapter general discussion will be extended to communication by means of the planning process and consideration of two-way communication, particularly through public participation.

2. Impediments to effective communication

2.1 Environmental boundaries and impediments

Each environment within which communication takes place will have its peculiar set of factors impeding the transmission and reception of information. Such impediments are particularly evident where communication must span social, cultural and geographic boundaries. Consequently, the wider the environment in which a message is to be transmitted, the greater the number of boundaries to be crossed by communication, and the larger the range of impediments.

International programmes such as the International Hydrological Programme, because of their global communication lines, are concerned with communication across a large number of boundaries and will encounter most of the potential impediments to communication. Some of the important environmental boundaries to be crossed by communications from such programmes include:

- international
- cultural
- sectoral
- socio-economic
- language
- political
- educational

Water authorities working within particular national environments will be communicating across more limited boundaries, the more important of which are those between:

- the water sector and other sectors
- technologists and lay-persons, including elected officials.

Within the working environment of national or state water authorities there will be opportunity for transmitting more direct and specific messages than is practicable internationally, and there will also be greater opportunity for establishing dialogue.

The following sections comment on some environmental factors most commonly impeding effective communication.

2.2 Noise, diversions and filters

From the viewpoint of the sender of a communication, any other transmissions competing for the attention of the receiver constitute noise and diversions. In some cases, simply because of the large number of competing transmissions beamed at the receiver, this noise may cause strong interference.

The interference from competing communications also may be strengthened by their particular appeal or by established preferences of the receiver. The wide range of transmissions and sensory stimuli continually hitting an individual may be consciously filtered, but are also subject to a natural and sub-conscious filter which tends to eliminate reception of messages not related to the individual's personal goals. Thus transmission directed at planners and decision-makers outside the water sector must compete with many more direct transmissions from within the receiver's sector and for which he will tend to have subconscious as well as conscious preference.

Among the more obvious responses to these problems are: to transmit the message as directly and as near to the receiver as possible; to relay the message through retransmitters commonly listened to by the receivers; to transmit the message through more than one channel; to select channels commonly used by the receiver's sector; and to design the message to attract attention. To overcome the sub-conscious rejection of messages however, they need to be transmitted in a context where a receiver can perceive them to be consistent with his personal goals.

2.3 Disinterest and apathy

Commonly, as suggested by the discussion of Downs' Issue-Attention Cycle, communication may be directed into an environment where, though not hostile, the receiver may be very indifferent and perceive little of relevance in the transmitted information. This may be judged by the transmitter as reflecting a general apathy in the receiving community. Commonly, however, the indifference will be a consequence of, or at least be reinforced by, the receiver being tuned to other commitments and interests.

This problem is essentially due to the operation of competing noise and of filters which will strongly interfere with the reception until the receiver perceives the issue as being related to his personal interests.

2.4 Active resistance, hostility and bias

An important barrier to communication occurs where the receiver is not merely psychologically tuned towards competing messages but is actively resistant or hostile to the communication. This may arise as a result of real or perceived conflicts between the receiver's goals and those pursued by the transmitter. The receiver's attitude may also be a biased one where circumstances have led him to prejudge the communication.

Bias is not the sole prerogative of receivers. A transmitter must be prepared to consider whether real or apparent bias in his own communications is a potential barrier to effective reception of his message.

These barriers are significant at all levels of communication but singularly difficult when the hostility or bias is associated with positions of authority and influence. Careful diplomacy is needed to counter these circumstances, with peer influence being one important instrument of persuasion.

2.5 Language barriers

Language differences requiring translation between transmitter and receiver are not confined to differences in native languages or dialect but, very commonly in the context of this report, may relate to differences between the language of the technologist and language of the lay person. Important among these differences is the possibility, particularly with technologically oriented communication, that the language of the receiver may not include images to correspond with the language of the transmitter. Scientists and engineers generally have a poor record in translating technical information for lay-persons. (Murphy, *et. al.*, 1980)

2.6 Cultural barriers

Cultural barriers to communication are manifold and complex but are most evident where the public is the main receiver or transmitter of the communication.

Cross-cultural communication may encounter differing perceptions of reality, differing value systems, differing traditions of communication such as oral or written, and differing logical processes (Fuglesang, 1980).

Problems of cross-cultural communication involve far more than difficulties of language. Most critically in relation to promotion of awareness, these problems relate to the transmitter's difficulties in gaining feedback for a clear and sensitive understanding of the attitudes and needs of the receiver. A common example of this difficulty occurs where countries export technology assuming that what is appropriate for the exporting country is also appropriate for receiver countries with different cultural traditions.

The problems of cross-cultural communication for developing awareness in planners and decision-makers are limited by the fact that the communication is with professionals who have a capacity to interpret. These problems may be further reduced by encouraging situations wherein a general message can be further developed by the receivers into specifics which are attuned to the particular cultural circumstances.

2.7 Lack of support

Effective communication cannot proceed without support and sponsorship to provide personnel and facilities. Water resource agencies commonly devote less support to communication and extension than agencies in other resource sectors such as agriculture and forestry. Water authorities may need encouragement to accept a more developed responsibility for public education in water matters.

3. Basic features and steps of effective transmission

To introduce discussion of specific techniques and general strategies of communication, this section first discusses the basic ingredients of effective transmission.

3.1 Substance and direction

The most fundamental requirement for a communication to be effective and productive is that it be directed to an identified and useful objective. At the same time, the content of the communication must have substance and be relevant to that objective, and successive communications also must be consistent.

Although fundamental to good communication, these requirements are often poorly considered. For example, public participation may be pursued simply because it is a conventional requirement or is considered desirable, but not with clear and practical objectives in view. As another example, exercises in public education, such as in "save water" campaigns, may become pre-occupied with motivation and may fail to provide sufficient instructive content. Weakness of content in public education activities is often symptomatic of an organisation which is failing to co-ordinate the contributions of its main professional staff and of its communication specialists.

The question of selecting content is a particularly important issue for programmes seeking to promote general "awareness" of the role of water, and issues to be emphasized in such programmes need careful deliberation.

Report 1 of this project reviews the wide socio-economic role of water, which presents a very large subject if dealt with in entirety in communication programmes. However, the many specific roles of water vary in significance from place to place, and the educative emphasis in any situation should reflect this variation. Determination of the specific local issues to

be emphasized should be assisted by encouraging receiver feedback within the communication process itself.

3.2 Use of communication skills

Good communication demands clarity of expression, economy of style and attractiveness of presentation. This requires, among other things, an ability to translate from the language of the transmitter to that of the receiver, and an ability to make good use of communication media.

Scientists and engineers are often poor, even disinterested, communicators. Outside their own peer group, technically oriented professions often fail to establish an effective bridge transferring information out of their language and into terms understood in the every-day world. The scientist is normally extremely concerned with precision in his communication and therefore commonly lacks conciseness in communicating with the public. Technical detail is not only superfluous to the lay person, but also tends to obscure the basic message.

Water planners and managers should be encouraged to become communication-conscious and to make better use of communication skills, involving both professional communicators and the development of their own skills.

Preparedness to use professional communicators is particularly relevant in the field of public education. For public education, journalistic skills in style, attractiveness of presentation, and use of media are highly important. The communication must have sufficiently attractive presentation to gain attention amidst the noise of competing transmissions.

In the field of public participation, as in communication with planners from other sectors, the planner must play a direct part and cannot leave communication to specialist staff. Consequently, water planners should develop their own abilities as communicators.

3.3 Effective transmission techniques

In a later section, specific communication media are presented and their strengths and weaknesses indicated. Effective transmission involves careful selection and use of these media.

To offset weaknesses of particular communication media and to penetrate the various communication barriers, an effective technique will normally use a diversity of communication channels and methods. Some methods of transmission may have good penetration but be transient and unable to transmit detail. Other methods may be more permanent and able to convey detail but have poor penetration. The combination of the two will normally be more effective than the sum of the separate parts.

In diversifying communication channels, not all transmissions need be through direct linkages with the receiver. A very effective technique in some circumstances involves directing messages to a number of

intermediate receivers who retransmit to others within their own sphere of influence. Although this process involves some distortion of the original message, it can be highly effective if the intermediary is a good communicator and has influence with his group of receivers. Using this method, the transmitter can afford to spend time and effort in communicating detailed understanding to the intermediate group. This particular communication model is, in fact, very commonly employed. Examples of potential intermediate receiver/transmitters, appropriate to different circumstances, include school teachers, village leaders, public media, or National Committees of the IHP.

The concept of the Issue-Attention Cycle emphasizes that awareness will not be established without repetition of the transmission in order to achieve penetration and reinforcement. Furthermore, even when established, awareness will wane again unless there is continuity in the communication programme. Educational programmes seeking to achieve lasting effect must therefore be ongoing rather than "one-off" exercises and should be opportunistic as well as persistent.

3.4 Psychology and politics of influence

The attitude of the receiver can be one of the more important factors inhibiting communication of improved awareness. If the receiver is preoccupied and disinterested, or if the receiver is hostile and holds preconceived views, then a change of attitude is needed before the receiver can be made aware. Furthermore, it has already been stressed that the aim of improving awareness is not simply to improve perception but also to motivate the receiver to seek appropriate action. Communication therefore needs to be planned to contain elements of persuasion and influence.

Among the motivational stimuli which can be employed to add persuasion to logical argument are duty, self interest, concern for the future, desire to conform, authority, challenge, nationalism, and charisma. Some of the stronger methods of persuasion rely on involvement of the receiver so that the motivation is largely self-generated. Cognitive psychology recognizes that human beings are continuously motivated to maintain order and consistency in their perceived world of interest and will act to eliminate disorder. Psychological theory thus suggests that to affirm in people that a problem introduces disorder into their particular world is to motivate them strongly in the direction of solution. In the practical context of influencing planners and decision-makers from other sectors, this consistency principle implies that attention should be given to stressing that the water issue in question has potential to upset the order of their own domain of responsibility.

In public education programmes, such as water saving or public health exercises, professionally conducted surveys may be desirable to investigate receiver attitudes and determine potential motivating interests.

In some public issues, the charisma of one protagonist may be a strong influence. Counter productive and possibly irrational arguments may at times hold sway in debate simply because of the charisma of their protagonists. Such charisma is not easily countered by reason alone. The agency promoting the alternative position may need to develop the appeal of its own arguments, but most importantly, its communications would need to be especially clear, consistent and always attentive to the overall public interest in order to maintain credibility.

Particularly sensitive communication problems arise where hostility or resistance emanates from positions of authority or political power. In these circumstances communication techniques and messages need to incorporate careful diplomacy and the transmitter must adopt an approach which de-politicizes and de-personalizes the communication process. Care must be taken to avoid bias and to reflect the overall public interest. If this is not achieved, the credibility of the transmitting agency will be eroded.

Planners and decision-makers in the water sector are predominantly from engineering and physical sciences. These groups generally should be made more aware of the potential role of the psychologist or political scientist in helping to undertake effective and persuasive communication

3.5 Cultural sensitivity and response to feedback

This section has been dealing almost exclusively with transmission of information. However, communication is a two-way process, and good transmission involves monitoring of feedback from the receiver and consequent adjustment of the output.

In communicating awareness of specific water issues, the transmitter must be cautious about his own preconceived viewpoints and be receptive to opportunities for gaining feedback which may enhance or modify his perceptions.

Nowhere is this requirement for monitoring of feedback more evident than in cross-cultural communication, where the transmitter must be sensitive to cultural attitudes and beliefs which may differ greatly from his own.

3.6 Basic steps in transmission

The following basic steps outline the sequence to be followed in the effective transmission of educative messages:

- Identify the objective of communication
- Identify the audience
- Clearly define the message
- Identify potential communication barriers
- Decide appropriate techniques of communication and motivation
- Translate message into terms appropriate for the audience

- Decide timing
- Transmit and repeat until effective
- Monitor feedback and assess whether the communication has been effective
- Respond to feedback by adjustment of the transmission as necessary

These steps follow logically from the discussion in earlier sections and the headings are self-explanatory. Nevertheless, some of the most basic of these steps are commonly overlooked or poorly considered in planning communications, with the result that the penetration and impact of the message suffer. Consequently, there is value to be gained from regarding the steps as a checklist to be followed in planning, evaluating or implementing a communication programme.

4. Communication media

4.1 General comments on alternatives and selection

Table 1 presents the communication media most commonly used or potentially available for communication in the water resources sector. The table also summarizes the principal advantages and disadvantages of each. The media vary widely in their penetration capabilities, their ability to transmit detail, the potential range of their transmissions and the persistence of information which they transmit. Detailed discussion of these media is not intended here.

As stated previously, part of the art of good communication lies in good selection and use of the media and in appropriately combining and diversifying the media used to gain greater penetration, range, detail, reinforcement and persistence of the transmitted message.

Common limiting factors in the choice of media are the cost of transmission, cost and facility of reception, and limitations of expertise.

The transmission cost when employing some media will severely restrict their applicability. Nevertheless, there is a common tendency for water authorities to be unduly conservative with expenditure on communications. Effective and appropriate spending can produce a direct return by increasing the efficiency, credibility and acceptability of planning and decision processes and by contributing to improvements in the substance of decisions.

Financial considerations in selection of media must include cost to the receiver as well as cost to the transmitter. Media that require particular investment in reception facilities will have corresponding limitations on the size and nature of the audience which they can reach.

The range of media available for use is comparatively wide and growing. Developments in technique and media services are continuous. To take full advantage of such potential, a water authority would need to employ communication specialists with responsibility for assisting various groups in the authority to be effective in their communications.

Table 1: Basic communication media

Medium	Description	Advantages	Disadvantages or limitations
<i>Visual media — graphic</i>			
1. Posters	<p>* Definition: Poster graphics, with sparing use of text. Information summarised to basic elements.</p> <p>* Functions: Self sufficient exhibit, or backdrop to other communications.</p>	<p>Relatively low costs of production and display or distribution. Can have appeal and gain interest of moderately large audience. May be used as a class teaching aid or in a semi-permanent and unmanned display. Provides a simple aid to assist people who are being used as re-transmitters. May be widely distributed by mail. May be designed for communication with a non-literate audience.</p>	<p>Generally will only convey basic information or impressions because of the short time contact with the receiver. Has difficulty commanding attention where competing with three dimensional audio-visual and/or moving displays. One way communication only.</p>
2. Manned displays and exhibitions	<p>* Definition: Exhibitions manned by persons with knowledge and ability to amplify and discuss with interested spectators.</p> <p>Function: To communicate in situations where an exhibit can attract viewers stimulate discussion or questioning and promote other more detailed communications.</p>	<p>Well presented, such exhibits are stimulating, will attract viewers, and achieve one to one communications with attendants having good knowledge of subject. Travelling display caravans can be considered where movement between localities will improve contact with viewers. A two way system of communication which can achieve useful feedback. Useful as a publicity medium for "launching" other communications.</p>	<p>Expensive and commonly bulky to transport. Message conveyed to most viewers very general. A common error is to present excessive detail.</p>
3. Slides and slide kits	<p>* Definition: Photographic slides which may be pictorial graphic or textual. May be produced for supply in kits and supported by information booklets.</p> <p>* Function: Mostly as aids in support of talk or lecture or as a component of an exhibit.</p>	<p>Very quick and effective aid for communicating information or giving emphasis and illustration in lectures. Can be arranged for a use by changing selection and sequence according to needs. Relatively cheap to produce and very portable. May be automated as a component of an exhibit or audio visual.</p>	<p>Communication is relatively condensed. Requirement for a projector, screen and semi-darkened viewing area. Use is limited to the role of a communication aid supporting lectures, as a component of exhibits or as of an "audio-visual" presentation. One way communication only.</p>
4. Film strip	<p>* Definition: Film strip, usually reproduced from a sequence of slides and screened by a projector designed to handle film strip.</p> <p>* Function: Mostly as an aid in support of a talk or lecture or as an automated component of an exhibit.</p>	<p>Similar advantages to photographic slides but cheaper to produce in quantity for distribution than are sets of slides. Compact and light for mailing. Less prone than slides to mistakes. May be automated with an endless loop for continuous exhibit.</p>	<p>Not as durable as slides. Suitable projectors are not as widespread. Fixed sequence removes flexibility for adaption to circumstances. Requirement for a projector, screen, and semi-darkened viewing area. Use is limited to the role of a communication aid supporting lectures, as a component of exhibits or as a component of an "audio visual" presentation. One way communication only.</p>
<i>Visual media — typographic</i>			
5. Pamphlets and illustrated booklets	<p>* Definitions: Brief written materials prepared for a specific purpose and in which text information, ideally, is supported by good graphic illustration.</p> <p>* Function: Provide general information in concise, appealing, easily understood and referrable presentation. Generally for wide distribution by mail or handout.</p>	<p>Can reach a large number of people at low cost. Presentation can be simplified for easy consumption and the publication may be retained by the receiver for future reference. An available stock can be useful for answering queries. Referrable supplement to other forms of communication.</p>	<p>One way communication with a little feedback. Brevity may cause oversimplification or omission of important information. Large wastage to be expected with mass distributions.</p>
6. Reports and books	<p>* Definition: Written documents with relatively complete coverage of a subject.</p> <p>* Function: Provision of substantial information, which may be complex in nature.</p>	<p>The most common and accepted way of presenting information in a form in which it can be studied and evaluated. Capable of recording more complete detail for study and reference than are other forms of communication.</p>	<p>An information explosion is inundating decision makers with documents and reports for study. Unless well written, well presented and well promoted, reports will not command wide readership.</p>

Medium	Description	Advantages	Disadvantages or limitations
7. Journals and periodicals	<p>* Definition: Regular publications from the technical or popular press with established readership.</p> <p>* Function: Provide current information of interest to the publication's readership.</p>	If the established readership of the journal is an appropriate group, then these media will reach an audience with a higher than average level of interest. The communication may incorporate more substance than other more popular communication forms. The receiver may retain his copy for future reference.	One way communication with little feedback. Audience restricted to readership
8. Newspaper reports	<p>* Definition: Reports or features articles in daily or weekly newspapers.</p> <p>* Function: Communicate newsworthy information, or advertisements to a very wide potential readership.</p>	Very wide circulation. Relatively rapid form of communication. Can help to establish a subject on the 'agenda' of public discussion.	Communications confined to material which editors consider newsworthy. Editorial subjectivity can colour headline selection. Which may be the main source of impact. Journalists may not take time to adequately research background for their article.
9. Microfiche	<p>* Definition: Microfilmed material many normal pages being presented on one transparency. Able to be read with viewer or photographic enlargement.</p> <p>* Function: Compact recording, suitable for non-bulky storage or transport.</p>	Compactness provides for economical distribution of detailed information.	Viewers not yet in wide usage. Audience restricted to deliberate readers. Therefore lacks convenience and appeal for promoting awareness.
10. Mailed circulars	<p>* Definition: Communication to individuals by public mail or by private deliveries.</p> <p>* Function: Individually prepared communications or mass circulation.</p>	Good assurance of reaching receiver. Capable of achieving wide distribution.	Generally limited to simplified or specific messages. Mass mailings may have a high rejection rate unless message is extremely simple and/or well presented.

Exclusively oral communications

11. Radio broadcast	<p>Definition: Communication via public radio broadcasting systems.</p> <p>Function: Communication of public interest, documentary, or news information to a wide audience.</p>	Flexible medium able to transmit talks discussions or interviews. Greater range than television. Low cost and highly portable personal receivers. Useful with topical issues or news items. Valuable as an educational medium in support of correspondence course work. May incorporate talk-back programmes in which the public has an opportunity to air their views on the subject.	Commonly must compete with television. Difficult to capture the desired audience.
12. Audio tapes	<p>Definition: Cassette tapes for use in standard tape recorders.</p> <p>Function: Distribution of prepared talks, lectures or dramatised material to interested listeners or for use as a teaching aid.</p>	Widely available and easily portable. Can be used to complement written material. Inexpensive means for capturing some of the "presence" of an influential communicator.	Not a popular medium other than as a teaching aid.

Oral and visual combinations

13. Talks and discussions	<p>Definition: Addressing a group with arrangements for formal or informal discussion and questions.</p> <p>Function: Communication to an audience committed by interest or by obligation.</p>	Provides the stimulus of personal contact and opportunity for feedback. Communication may be readily enhanced by use of aids from other media such as slides, posters, exhibits or booklets. Receiver able to "sense" the authority of the transmitter.	Direct communication only possible with groups within range of travel and with time to attend.
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Medium	Description	Advantages	Disadvantages or limitations
14. Movie film	<p>Definition: Motion Picture with sound, most commonly 16mm or 8mm film.</p> <p>Function: For documentary or educational film sequences, possibly as a prelude or back-up to talks or lectures.</p>	<p>Suitable for viewing with a range of group sizes including large audiences. Film is readily transportable and reproducible. Particularly useful if movement is important to the images presented. Dramatisation possible as a means of conveying message.</p>	<p>Requires professional scripting and production. Not very flexible for updating or amending emphasis. Costly and time consuming to produce and to duplicate. Equipment and suitable viewing facilities necessary. Not as simple to operate as videotape.</p>
15. Videotape	<p>Definition: Standard videotape cassette generally with motion and sound.</p> <p>Function: For recording documentary or dramatised film sequences which may be replayed through domestic television units.</p>	<p>Similar advantages to movie but for use in smaller groups. Additional advantage is that video tape units are becoming more common as teaching aids and in domestic use of more affluent communities. More personal form of communication than movie film. Easily copied.</p>	<p>Requires professional scripting and production. Not very flexible for updating. Costly and time consuming to produce. Expensive equipment required for production and viewing.</p>
16. Television	<p>Definition: Communication via public television broadcasting systems.</p> <p>Function: Communication of public interest, documentary, or news information to a wide audience.</p>	<p>Highly popular mass medium transmitting into receivers' homes. Good medium for well produced documentaries or community interest advertising.</p>	<p>Costly and requires professional scripting and production. Transmission range more limited than for radio. Opportunities for use may be very limited in some developing countries where ownership of receivers may be very limited.</p>
17. Audio visual (slide and audio tape)	<p>Definition: Single or multiple slide projector systems which may have automatic advance synchronised to sound from a tape recorder.</p> <p>Function: Pre-recorded illustrated talks, lectures or documentaries.</p>	<p>Much simpler to produce, more easily scripted and more readily altered than movie or video. Effective results possible with a lower level of facilities and less professional inputs. Capable of a very strong visual impact if used with multiple screens and projectors. "fade-outs" and "fade ins". A stock programme can be readily re-edited for slightly different purposes. Relatively inexpensive compared with videotape or movie.</p>	<p>Multiple projector systems are physically cumbersome which detracts from portability. Requires suitable, relatively spacious and darkened viewing area. Not very suitable for multiple distribution because of limited equipment availability.</p>
18. Audio visual (strip film and audio tape)	<p>Definition: Script film projections which may have automatic advance synchronised to sound from a tape recorder.</p> <p>Function: Pre-recorded illustrated talks, lectures or documentaries capable of reproduction in multiple copies.</p>	<p>Cheaply reproducible from slides in multiple copies and compact for mailing. Similar impact to audio visual slides but a more limited range of effects from currently available equipment. Simpler to set up than slide systems and usage is increasing.</p>	<p>Film strip is not as durable as slides. Multiple projection systems are not yet available and projection power is generally less than in slide systems. Less flexible than slide systems. Equipment is not yet sufficiently widespread to take full advantage of the mailability.</p>
19. Tape and text	<p>Definition: Audio tape supported by or supportive of a written text or work book.</p> <p>Function: Mainly as a teaching aid.</p>	<p>Cheaply reproducible and compact for mailing. Can be produced with relatively simple skills. May be used in class work. Tape recorders are widely available in home and class room and hence very accessible. Simple editing.</p>	<p>Value heavily dependent on the quality of scripting and presentation. Tends to be limited to use as formal teaching aid.</p>
<i>Computer systems</i>			
20. Computers linked with exhibits	<p>Definition: Computer terminals as components of exhibits.</p> <p>Functions: A range of functions are becoming possible including information retrieval, demonstration games and simulations, dynamic graphics and microprocessor controlled operations.</p>	<p>Computer exhibits generally attract interest. Highly sophisticated and responsive exhibits are possible and semi-permanent exhibits being built around computer based information systems. Simulation, games and graphic techniques can be highly illustrative. Simple demonstrations can be built around a visual display unit operating "on line". Response of computer systems can be at varied levels relating to the level of the enquiry.</p>	<p>Costly and highly sophisticated. Very limited portability and access to suitable machine may be limited. Professional skills required for planning and implementation.</p>

4.2 Mass media

Although detailed discussion of alternative media is not presented in this report, it is appropriate to give brief attention to the role of the mass media. In terms of breadth of exposure, the mass media offer the most obvious means for promoting general public awareness.

A discussion of the use of the mass media for environmental education presented by Sandman (1974), identifies three goals to be met by the educational communication and reviews the mass media of the U.S.A. in terms of their accessibility and effectiveness for pursuing these goals. Sandman's three communication goals for environmental education are:

- communication of knowledge and general recognition of an issue;
- adjustments of attitude and motivation;
- teaching the receiver skills in how to respond.

Sandman contends that, although the mass media are technologically congenial for use in skills training, the marketability of such communication is low which causes the media editors to show very little interest in skills training. Sandman also argues that journalistic principles of editorial detachment strongly limit the potential use of the mass media to deliberately change attitudes and to motivate. Thus he concludes that use of the mass media for environmental education must rely largely on informational content.

With avenues being severely restricted for pursuit of two of his three communication goals, Sandman perceived considerable difficulty for those seeking to improve environmental education through use of the mass media.

The difficulties perceived by Sandman are generally reflected in the wider discussion of communication presented by Unesco's International Commission for Study of Communication Problems (MacBride, 1984). However, national differences in management and use of the media vary, in degree, the problems which Sandman identified for promoting attitude change through the media or finding media space for skills training.

Among the most basic problems addressed by Sandman in relation to use of mass media, and which have bearing on the objectives of this report, the following two problems deserve further comment:

- there is difficulty in gaining entry to the media with educative messages;
- the suggestion by Sandman that information alone has limited impact on attitudes or motivation.

In relation to the first of these issues, the editors and producers of mass media have a predominant interest in material they regard as "newsworthy" and which is judged to be of interest to their audiences. Their selection of news, within certain limits, tends to convert

their assessment of topicality to a self-fulfilling prophesy. Indeed, Sandman suggests there is plentiful evidence that the audience absorbs the agenda of the news far more completely than the content.

The predisposition for the mass media to present "hard news", news of current and public events, tends to work against informing the public of potential problems and leaves the media more disposed to reporting a problem when it occurs. To gain entry to the media with information which forecasts future problems requiring a public response, the public educator might seek to convert the material to the form of "hard news" such as by presentations at public conferences which themselves may be regarded as sufficiently "hard" and newsworthy. Sandman's argument that mass-media have a predisposition to "hard news" is not an argument that no other avenues exist for entering the mass-media. Two other means for example are by well produced documentaries or by paid advertisements.

In earlier discussion of the Issue-Attention Cycle it was recognized that, for many issues, the development of public awareness must often be accepted as a long and laborious process, so that if particular communications merely helped to place or hold a topic on the public agenda they might serve a very valuable purpose. Further educational benefit would be derived if the informational emphasis of media communications contributed to the slow process of attitude development and motivation of public interest. In some circumstances, such as a time of drought, the attention of the public will be more closely tuned to certain issues and there will be a period of opportunity in which the potential effectiveness of some communications may be orders greater than normal.

Where information has gained entry to the media, one factor which will determine its potential to develop changes of attitude and motivation is whether the presentation causes the audience to perceive the issue as affecting the stability and consistency of the audience's own perceived world of interest. Sandman also suggests that if a person does begin changing attitude and motivation, the person will be in a state of "cognitive dissonance" and will be hungry for further information which will support the altered position and relieve internal conflicts. These observations suggest a psychological technique of motivation and reinforcement which might be followed in attempting to influence public attitudes and behaviour (Kantola, Syme and Campbell, 1984). The fine line in such circumstances between education and propaganda, making-aware and manipulating, presents an important ethical issue which must concern the water authority transmitting such messages and may discourage the media editors from allowing entry of some such information to their news agenda.

III. Open planning and public participation: Creation of dialogue

1. Outline

In the context of this project, open planning processes and public participation should be seen as important means for communicating awareness. Certainly these processes are among the most effective mechanisms by which individual nations can develop and heighten internal awareness of the specific water-related issues that are important to their own socio-economic planning.

Hence, action to promote the effective application of open planning and public participation is a potentially powerful means of attempting to heighten awareness of water-related issues within national planning activities.

A detailed review of public participation techniques is not an appropriate task for this report. Instead, the discussion which follows is concentrated on a general examination of principles, and on the relevance, values and limitations of open and participative planning as a means of heightening awareness in decision making.

2. Levels of public involvement

2.1 The spectrum of involvement

The form and degree of public participation in planning and policy-making potentially covers a continuous spectrum of alternative levels of activity and power-sharing.

Near one end of this spectrum are wholly paternalistic approaches where a technical or political elite, working in closed processes, formulates plans and policies which are not made public until the decisions have been made. Near the other end of the spectrum are participatory processes in which the public participates directly in planning and policy-making throughout the entire process and may be given some degree of control over the process itself. Between the extremes are a range of processes where varying amounts of information are released and public inputs sought at progressive planning stages and where the degree of consultation and citizen control in decision processes may range from being a minor to a dominant factor.

One of the early descriptions of this spectrum, which emphasized different levels of power sharing in decision processes, was made by Arnstein (1969).

Arnstein's "Ladder of Citizen Participation" (Table 2) is often viewed also as a ladder of increasing ideological merit in participatory planning. In this report a more pragmatic attitude is adopted to the ladder of participation. The varying nature and dimension of

planning problems and the interests of practical efficiency dictate that widely different positions in the spectrum of participation will be appropriate for different planning studies. The public, for its own part, will also have differing expectations of involvement for differing levels and types of planning problem. For example, people will feel more competent to comment on a local water issue than a regional problem.

One of the arts of modern planning is to give the process sufficient flexibility to adjust to the level of participation most appropriate to any particular exercise.

Table 2: Ladder of citizen power and participation after Arnstein, 1969

Level	Form and degree of participation	
8	Citizen control) Degrees of citizen power
7	Delegated power	
6	Partnership	
5	Placation) Degrees of tokenism
4	Consultation	
3	Informing	
2	Therapy) Non-participation
1	Manipulation	

2.2 Open planning and participation — definitions

The range within the spectrum of participation which is of interest in this review is between:

- the band of open planning processes where information is deliberately made accessible or transmitted to the public but comment is not actively solicited; and
- the band of participative processes which are not only open in the sense of publicly reporting information throughout the exercise but which actively seek a degree of public participation in the investigation, planning and decision processes.

This whole range of processes has potential for contributing to public awareness.

3. Planning as an information process

The theme of this section is that attempts to heighten awareness of planners and decision makers should not be limited to, or centred on, direct education in relation

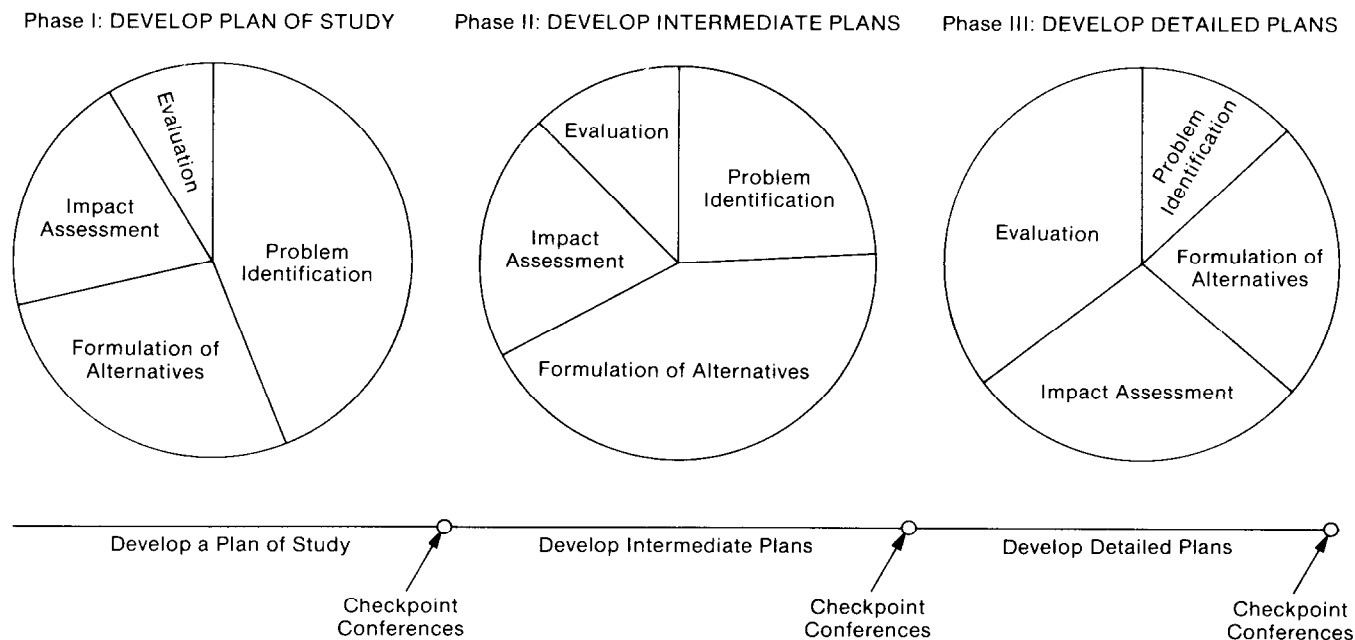


Figure 2: The iterative planning process (After Delli Priscoli, 1983)

to water issues but should also be very much associated with lifting the quality of planning processes themselves. It will be stressed that planning is primarily a process of communication and information processing.

3.1 Planning defined — an iterative socio-technical information process

Planning is a socio-technical process of information exchange and processing seeking to: perceive public need; identify and develop options; assess their impacts; evaluate (and negotiate) alternative tradeoffs; communicate the need for action; and establish motivation and commitment to pursue appropriate change or development.

Planning is a socio-political process which utilizes technology, not a technical process which has socio-political implications. The validity basis of planning is found in an “inter-subjective-transfer of knowledge”, not in an “independent-observer” position (Delli Priscoli, 1983).

It also follows that participative planning is an iterative process. To involve the public who will be affected by the solutions and to assess impact requires knowledge of the solutions which themselves depend on the impacts. Figure 2 shows a typical representation of this process in which the main tasks are repeated to varying degrees with each iteration. Recognizing four basic tasks in planning, the model stresses: problem identification as the main task of the first phase; formulation of alternatives as the major task of the second phase; and impact assessment and option evaluation as the main tasks of the third phase.

Relating to this model to the earlier discussion of the Issue-Attention Cycle, problem identification in the first phase may involve protracted efforts to develop sufficient awareness to gain support for developing a plan of study.

Figure 3 depicts in a general way the main directions and nature of information flows between the main participating groups in participative planning processes. Important features of this model are the feedback loops for value information which return to the water-planner and decision-maker from both the public and the planners from other sectors. An open but totally non-participative process is elitist because these feedbacks are cut off and the planner and decision-maker will formulate plans based only on their own exchanges of value information.

3.2 The hierarchy of planning levels — national and state plans of perspectives

Planning is a multi-level and generally hierarchical process. The top levels of the hierarchy are associated with comprehensive national policy development and long term strategic frameworks. Progressively lower levels are associated with: regional or local issues; and/or more specific and bounded issues; and/or shorter time frames.

In this hierarchical view of planning processes, planning at any level should be consistent with, and guided by, the next higher levels of activity and should give guidance to lower levels of planning activity.

The level of planning most relevant to this report is the level of comprehensive National or State planning

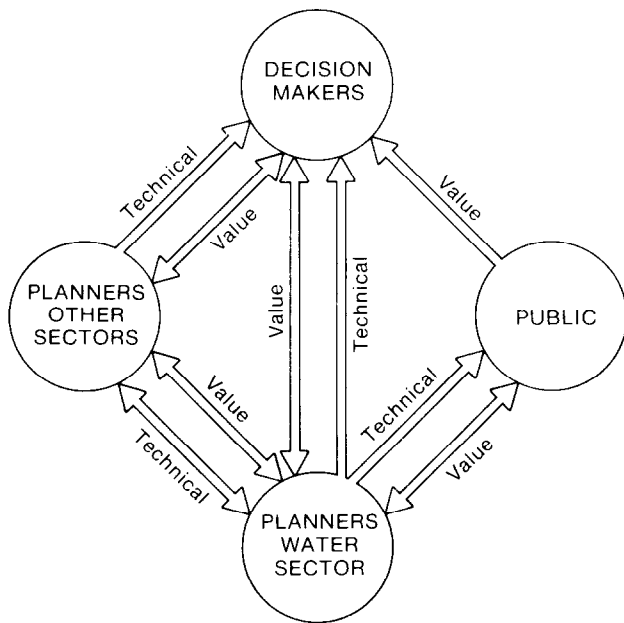


Figure 3: Principal information flows for comprehensive water planning

frameworks from general socio-economic planning and policy-making, through land use planning and policy-making, to water resources policy and strategy planning.

At these high levels of National and State socio-economic planning or water planning there is a growing tendency to see planning as a directional framework guiding policy and strategy development, rather than as a master plan setting a specific long-term sequence of developments. Commonly, attention in such plans is given particularly to issue identification and to formulation of alternatives. Impact assessment and evaluation are taken far enough to recognize priorities for lower levels of planning and to chart a broad strategic course and policy. However, detailed evaluation of alternatives and specific decisions belong to lower levels of planning activity which branch out from the higher level studies when identified as priority tasks.

A variety of approaches to high level water planning have been adopted, according to National or State circumstances. However, characteristics which tend to be common to the more noteworthy contemporary plans are:

- an attempt is made to project issues into the long-term future through forecasts of futures which themselves are seen to be subject to change as a deliberate consequence of the planning process;
- an attempt is made to consider relationships with other national interests;
- the studies are designed to form a basis for broad policy-making and for definition of action and planning priorities not only within the water sector but also within related socio-economic planning;
- the planning studies develop with varying degrees of participation or elitism, but are ultimately published

and disseminated in accessible and readable formats. This publication will stimulate public and political debate and should result in feedback from other sectors and from the public generally.

It is implicit in the concept of these comprehensive national socio-economic and water planning processes that they are promoting general awareness of inter-sectoral issues. Promotion of more comprehensive water planning processes is thus a positive and desirable means of promoting awareness of water issues in other sectors.

4. Goals and values of open and participative processes

4.1 General goals and values

The common need for public awareness and commitment as a political pre-requisite for major planning decisions has already been stressed in the introduction to this report.

All open planning processes provide a means for increasing public awareness and the awareness of other planners and decision makers through the public release of information. However, participative processes also provide a means for heightening water planners' awareness and for widening the basis for their planning to include public and other planners' values and perceptions in the planning and decision-making process.

Closed planning procedures and open but firmly non-participative processes tend to create an elite group of technologists and administrators who have difficulty in perceiving issues outside their own bounds of experience and technical expertise. The participative planning processes help to provide some assurance that interdisciplinary considerations have been adequately addressed by the planning group. Even within circles of government, the size and complexity of government has become such that communication between sectors can be enhanced by participative processes.

The need for citizen contact with the machinery of decision-making has been heightened in the recent era by an increasing need for social regulation and control as a strategy for management of resource problems. Regulating agencies employ public participation with an expectation of raising the credibility as well as the effectiveness of policy-making. If people see they are going to lose something, or some freedom, as a result of decisions by an authority, then the agency concerned must demonstrate the equity of the decision in order to maintain its credibility. To be perceived as equitable, a decision must be made visibly, with people able to see why the decision was made and with evidence that all interested parties and their values and concerns have had equal access to, and consideration by, the decision-makers.

The gap between open planning and participative planning is not necessarily a wide one. Open processes which are outgoing in their communication provide the opportunity of testing public interest. Open processes may be quickly made participative if they are found to communicate ideas which incite controversy.

4.2 Participative processes in developed and developing countries

In the past decade or so the use of public participation has gained increasing approval and recognition. In both developing and developed countries the basic demand for increased public participation is related to the growing complexity of decisions and their social interactions, largely as a result of rising population pressures and impacts of rising development on natural resources.

In developed countries, environmental issues have been particularly significant in promoting a trend of increasing citizen interest and desire to influence decision-making. At the same time, planners and decision-makers have increasingly recognized a need for obtaining feedback as to the likely effects of alternative plans on community interests and values. This latter trend has been stimulated by public rejection of plans developed under traditional non-participative processes. Associated with the desire of citizens to become involved in planning issues and with the needs of planners to tap wider sources of information, needs have arisen for planners to provide information to raise public awareness on relatively complex socio-technical problems.

In developed countries, many of the issues involved in public participation are those of affluent industrial communities. As well as basic health and pollution issues, considerations such as conservation and recreation benefits are expected to be evaluated in detail and open to public input and comment.

In developing countries, issues addressed in public participation are more likely to relate to basic human needs, and generally less government sponsored or spontaneous citizen action occurs. In these countries, where outside technological assistance is common, and in any other country where technology has been imported, particularly strong requirements may exist for some form of participative process. This should seek to inform the planner of: citizen needs and perception; socio-cultural impacts and problems; or difficulties associated with implementation of the proposed plan. In these developing countries, open planning and public participation will also provide a means whereby citizens can acquire the necessary education in use of water facilities developed as a result of the planning process.

5. Factors to consider in the use of public participation

5.1 Magnitude of commitment — When is public participation unnecessary?

Although this report is highly supportive of open and participative processes, it also seeks to emphasize that they should be approached from a fully practical and realistic viewpoint. Poorly conducted exercises, due to under-estimation of the commitment, may do more harm than good; hence public participation should not be entered lightly. At best, poorly conducted exercises will waste time and effort of key personnel. At worst, poorly conducted exercises will also destroy credibility for the organization and possibly create public distrust and dissatisfaction where none existed previously.

The use of public participation normally demands a significant commitment of staff and effort. Once started, however, a participative exercise cannot easily be terminated without serious loss of credibility. Hence the full extent of a participation exercise must be understood at the outset and not initiated if it cannot be justified or satisfactorily completed. Because of the commitment of resources associated with public participation, a very realistic approach is necessary which should be well tailored to the situation and which avoids overkill.

Some of the circumstances where the benefits may be insufficient to justify public involvement (Syme *et al.* 1982) will be situations where:

- the problem and general approach are well defined by accepted precedent;
- initial comprehensive approaches to the public reveal little interest or concern and no purposeful objective of participation can be identified for the public or for the planning authority;
- the values associated with the project provoke little or no community conflict;
- the early release of information may cause a sector of the community to move to block the interests of another.

The last of these situations is particularly difficult and, even when the withholding of information is well justified, decisions made in such circumstances can promote public bitterness and loss of credibility. In the rare situations where such decisions are necessary, the decision-making authority should take its decision to the public, not only with full and careful explanation, but also in a manner which demonstrates preparedness to listen for any unforeseen inequities and to act to correct such problems wherever possible.

5.2 Objectives, procedures and intended use of information

One of the common sources of difficulty in public participation exercises arises from misunderstandings of the objectives, procedures, and intended use of information.

This problem is not easy to overcome. It requires the water authority firstly to be sure and consistent in its own view of the objectives of the exercise and of the procedures to be followed. Once these basic matters are clearly decided, the water authority must carefully, consistently and repeatedly communicate:

- the objectives of the participation programme;
- the procedures being followed and deadlines in those procedures;
- what is expected and allowed of contributors;
- what use the authority intends to make of information acquired; and
- the limits which bound the possible responses of the authority itself.

If the objectives, procedures, and limits of responsibility are not clearly understood, considerable misdirected effort, frustration and scepticism may result. Syme *et al.* (1982) suggest that for a public participation programme to be successful, the aim of the programme may need to be negotiated with representatives of the participants.

5.3 What power should the participating public be given?

The ladder of power defined by Arnstein (1969) has been illustrated in Table 2. Movement up the ladder is often inferred or assumed to represent an improvement in the planning process. However, such a view may be more ideological than practical, and lower levels on the ladder may be more appropriate and realistic for many specific exercises where values are already well defined and/or issues are not contentious. Also, near the bottom of Arnstein's ladder, community "therapy" can be a legitimate function of the planning authority in situations where there is public anxiety.

The power appropriately given directly to the public in participative processes will vary according to particular cultural, economic, and political circumstances of a country as well as with the nature of a planning problem.

Over-emphasis on citizen's input or control in decision-making may lead to excessively slow and cumbersome processes of government and therefore add substantially to the cost of decision-making. In some cases a government may believe it has the responsibility to take a "hard" decision, perhaps despite the popular view. On the other hand, mere tokenism in assignment

of public power may damage the credibility of a planning study, should the public become concerned that its expressed opinions have been ignored.

5.4 Professional detachment and use of social scientists

An authority engaged in planning studies must be seen to pursue its programme with professional detachment as an investigator seeking the solution most appropriate to the interests of the community. For a participative exercise, an authority must present realistic alternatives and be prepared to adjust preliminary plans in the light of values or ideas proffered in the public participation exercise.

Participation is directed to receiving feedback on matters of "social value", and hence there is a need for water authorities to review the extent to which they make use of social scientists in teams associated with participative exercises.

6. Techniques of public participation

It has been considered appropriate for this report to deal generally with the subject of public participation rather than to present a review of techniques which can be pursued through a relatively extensive literature.

However, for general background, Table 3 presents a list of public participation techniques developed by Glasser *et al.* (1975) and summarizes their advantages and disadvantages. One of the greatest difficulties with all methods is in gaining a truly representative community input because of the problem of mobilising input from the so-called "silent" majority.

As in the use of communication media for transmission purposes, the most effective results are likely to be obtained from use of more than one technique.

Choice of techniques is one facet of public participation which will vary markedly between nations according to cultural and political characteristics and state of economic development.

Choice of participation techniques as well as power assigned to participants will also vary significantly according to the hierarchical level of the planning problem. Planning activities at a local level clearly have potential to employ more direct and intimate techniques of participation than do planning activities at national or state level.

Table 3: Public participation and education techniques (from Glasser *et al.*, 1975)

Technique	Description	Advantages	Disadvantages
<i>Large group meetings</i>			
1. Public hearing	Definition: Formal public proceeding usually required by statute. Purposes: To certify proposed plans and discuss other related issues.	Provides an opportunity for the public to ask questions and to voice opinions. It is a traditional technique, familiar to many citizens.	Does not usually allow for two way communication or continuity of interactions.
2. Public meeting	Definition: Informal public proceeding Purposes: To discuss issues.	Same as above.	Same as above.
<i>Small group meetings</i>			
3. Presentations to community groups	Definition: Lecture and discussion with specialists. Purposes: To identify community concerns to inform citizens of the plans, issues, pollution control techniques, water quality agencies, etc.	Opportunity for informing the public and exchanging information.	Is not a decision making meeting. Lack of good two way communication may lead to citizen apathy.
4. Site visits	Definition: Field trip to sites of existing or potential impacts. Purposes: To sensitise planners and citizens to project impacts.	Provides opportunity to more clearly understand the many dimensions of a problem.	Time consuming and expensive especially where sites are distant or inaccessible.
5. Advisory body	Definition: Formally appointed representative citizen group. Purposes: To sensitise planners and citizens to project impacts.	Provides opportunity for continuous two-way communications with a representative body. Reduces the need for community meetings. Assist in gaining support for a plan if they are fully involved in planning.	Role of body often mistakenly seen by the public as a decision making body and by agencies as a threat. Agencies are often reluctant to cooperate and use the body for superficial activities.
6. Citizens task force	Definition: Formally appointed citizens knowledgeable about a specific problem. Purpose: To study, lay professional concerns on a particular problem, and make recommendations for action.	Provides in-depth information on issues. Often can cut across agency jurisdictional boundaries to seek solutions to problems.	Task Force has no power to implement findings. It is usually disbanded after its work is completed thus limiting potential action on problem.
7. Role playing	Definition: An educational and decision making technique where real world problems are simulated by individuals who act the part (play the roles) of decision makers or citizens. Purpose: To sensitise citizens and decision makers to the economic, political, social and environmental aspects of resource decision making.	Provides an opportunity for citizens to experience decision-making problems and become sensitive to the complexities of economic, social and environmental decision making.	Requires skilled group leader to be most effective.
8. Values clarification exercises	Definition: Carefully designed activities for people to examine conflicts between their behaviours (lifestyles) and their stated beliefs (values). (For example, the conflict between weak support of pollution control projects and valuing clean water.) Purpose: To clarify people's values and align their behaviours to these values.	Provides an opportunity for the public and agency persons to re-examine the basis for their opinions and decisions on water resource issues and to potentially change their behaviours in that regard.	Requires careful preparation and well trained leaders to be effective.
9. Workshops	Definition: Working sessions in which interested affected public and government representatives discuss specific issues. Purpose: To identify and to recommend solutions to problems.	Provides an opportunity for two-way communication and a good learning experience for both the public and government representatives.	Same as above.

Technique	Description	Advantages	Disadvantages
10. Delphi exercises	<p>Definition: An educational and decision-making tool in which citizens and decision-makers can choose alternatives via pair-wise comparisons.</p> <p>Purpose: To reach consensus on the solutions to problems by jointly considering the opinions of a diverse group of expert witnesses.</p>	Facilitates the processing of a large amount of information in a systematic manner. Immediate feedback and ranking by Delphi is a low cost method of assimilating expert opinions.	Requires skilled group leader and participants who are committed to the objective of reaching a consensus.

Institutional arrangements

11. Regional and local offices	<p>Definition: Public agency offices located close to projected areas to administer programs.</p> <p>Purpose: To provide better contact between agency and local citizenry.</p>	Opportunity for agency personnel to become more sensitive to local issues. Increase services at the local level.	May be vitally expensive to house and some loss of central control may be experienced.
12. Citizen representation on policy bodies	<p>Definition: Lay citizen participation in the decision-making process.</p> <p>Purpose: To provide community interest groups with greater involvement in the decision-making process.</p>	Permits citizens to participate in decision-making; encourages citizens to be committed to support project implementation.	Appointed representatives may not, in fact, represent their constituency. To be effective representative must be forceful and articulate.
13. Ombudsman and community interest advocate	<p>Definition: An agency appointee to serve as a liaison with the community.</p> <p>Purpose: To investigate and resolve community complaints and make policy recommendations to decision-makers.</p>	Provides a mechanism for two-way communication between public and agency. Cuts through bureaucratic roadblocks.	Agency can abuse this mechanism by not giving the ombudsman access to vital information or by not considering citizen concern.
14. Public interest centre	<p>Definition: An office which disseminates information and provides speakers for community meetings.</p> <p>Purpose: To serve the community as a source of information on environmental issues, citizen rights and technical information written so the general public can understand it.</p>	Provides a new institution devoted to assisting the citizen in improving two-way communication with government.	May easily be ignored by government which may see the centre as a threat to authority or merely as a public relations office.

Media

15. Information pamphlets, brochures and summary reports	<p>Definition: Brief written materials on environmental issues.</p> <p>Purpose: To provide the public with general information and easily understood documents.</p>	Can reach a large number of people at a low cost to the agency. Simplify complex information for easy consumption.	One-way communication with little feedback. Brevity may omit key information from being transmitted.
16. Slides and film presentations	<p>Definition: Brief pictorial presentation showing water issues and solutions.</p> <p>Purpose: To create awareness of water problems, and methods of dealing with them (e.g. land use practices).</p>	Can be inexpensive to develop. When used with local issues and opinion leaders can be an effective technique.	Film distribution and providing projectors can be expensive.
17. Tape recorded information network	<p>Definition: Tape cassettes sent to citizen groups with discussion topics. Citizen responses are recorded and returned.</p> <p>Purpose: To inform citizens and obtain their opinions on issues quickly.</p>	Allows information to be distributed to a wide audience. Promotes two-way communication.	Technique is expensive and requires time to prepare.
18. Radio and talk show	<p>Definition: Program which provides experts a forum to respond to telephoned questions from citizens.</p> <p>Purpose: To provide a forum where many citizens can listen to a question and answer session with leaders or experts.</p>	Citizens can have direct two-way communication with decision-makers and a wide audience can be reached.	Agency administrators may be unwilling to commit time. They may also not like the public scrutiny.

Technique	Description	Advantages	Disadvantages
19. Press release, special feature articles and news letters	<p>Definition: Easily understood articles which reach a wide audience.</p> <p>Purpose: To inform people of issues rapidly. To announce meeting dates, changes in technology and changes in the law.</p>	Provides a forum for local issues and continuous communication.	Editorial subjectivity can distort issues and destroy credibility. Maintaining updated mailing lists may be expensive.
<i>Community interaction</i>			
20. Response to public inquiries	<p>Definition: Official response through letter, telephone, or other.</p> <p>Purpose: To maintain good communications with the public and to respond to questions.</p>	Can provide honest and precise responses to concerns of citizens.	Requires open and knowledgeable persons in agencies to respond competently.
21. Formal attitude survey	<p>Definition: A systematic assessment of a representative sample of a community.</p> <p>Purposes: To determine the values and position of the public on specific issues.</p>	Provides an objective view of popular values and preferences that are representative of the community.	Is expensive and requires experts to conduct accurately. Questions must be carefully worded so as to be interpreted correctly by respondents and analysts.
<i>Legal mechanisms</i>			
22. Citizen suits	<p>Definition: Opportunities in the law for citizens to sue agencies and individuals for not enforcing water-related laws.</p> <p>Purpose: To ensure that the laws are enforced, that consideration is given to the impacts of projects, and that public information is available.</p>	Provides direct line of citizen access to the policy process ensures equitable discharge of agency responsibility as defined by the judicial system. The threat of suit also acts as a restraint on agency action and is not expensive.	Is often expensive. Few citizens have the skills to use this technique. Sometimes effectively is used to block agency actions, stopping them from fulfilling their public responsibilities.

IV. Implementation of awareness programmes

1. Outline

This chapter discusses the development of strategies for heightening awareness of the role of water. The discussion is developed generally, recognizing that many different elements will be combined in any complete and effective strategy, and also recognizing that the way in which these elements combine needs to vary according to the participants, circumstances and environment of the communication. Throughout this chapter it is convenient to classify the potential elements of an awareness programme in four broad groups, namely:

- one-way communications;
- two-way communications;
- changes in the communication environment;
- influence and promotion.

The general principles of earlier chapters are seen to have wide application in development of awareness programmes. However, it is recognized that techniques must be adapted and emphasis varied according to the circumstances and environment of the communication.

The difference between the objectives and elements of programmes which are appropriate for developing countries and those which are appropriate for developed countries will be of fundamental importance in establishment of awareness programmes. For example, whilst the value of open and participative planning has been stressed in preceding chapters, there will be large and necessary differences of approach to the practical promotion of such principles between developing countries and developed countries. Despite these differences there will be, in each case, practical objectives which can be set profitably for improving communication in planning processes.

Another fundamental distinction arises between awareness programmes initiated at international and national levels. This particular report had its beginnings in consideration of what might be done for improving awareness through international programmes such as the International Hydrological Programme. However, it has been essential for developing discussion of international communication strategies to also view the question also in terms of national awareness programmes.

2. Objectives of awareness programmes

2.1 Primary objectives

No awareness programme should proceed without a clear perception of its objectives. In undertaking this project a number of general objectives have been

recognized for developing awareness programmes which must be further interpreted according to the specific needs and circumstances behind any particular proposal. The primary objectives which have been identified in this report as bases for awareness programmes are:

firstly, as an objective for general recognition in other sectors

- to achieve sufficient awareness of the role of water amongst planners and decision-makers in other sectors, and also the general public, that proper consideration of water is automatically sought in wider socio-economic planning;

secondly, as an objective for recognition of specific key issues

- to achieve sufficient awareness amongst planners, decision-makers and the public, of particular water issues so that these issues are well enough recognized for appropriate action to be taken or for decision processes to be initiated.

A third objective for awareness within the water sector is implicitly established by these primary objectives. This objective is:

- to achieve sufficient awareness among water planners and decision-makers so that they seek to adopt a comprehensive approach actively relating to other fields of socio-economic planning and also effectively integrating consideration of the various aspects of water.

2.2 Needs for awareness programmes

Report 1 of this project has been directed to documenting the importance of the many relationships between water management and general socio-economic development. However, it has not been the role of this project to make any systematic review of deficiencies in awareness of these relationships or thereby to assess the needs for programmes heightening awareness of the importance of water within wider socio-economic planning, nationally or internationally. Project C1 was conceived within the International Hydrological Programme from firm perceptions that: there are deficiencies in awareness; the need for awareness programmes therefore exists; and the need is greatest in developing countries. Conceptually, in discussion of the issue attention cycle and in discussion of planning processes, this report has affirmed a view that development and maintenance of awareness is an ongoing need in all countries and the Project Working Group also holds the view that the most fundamental need is in developing countries.

Over the last two or three decades there has undoubtedly been a rapidly developing trend of

international recognition that attainment of increased comprehensiveness is needed in planning processes. Increasingly, planners in particular sectors are becoming aware that their planning may affect, and may be affected by, planning in other sectors. One of the classical contributions to such awareness on a global scale was the Club of Rome report on limits to growth (Meadows *et al.*, 1972). This report stressed an ecological urgency for mankind to recognize and manage the system dynamics which link socio-economic development to resource conservation and management. Again, on a global scale, the International Union for Conservation of Nature and Resources (IUCN, 1980) in its World Conservation Strategy emphasized the importance to human society of planning comprehensively in order that socio-economic development relates to conservation and management of the life support systems soil, air and water, and of the living environment. The World Conservation Strategy sought to communicate its message at influential levels, emphasizing the mutual dependence of socio-economic development and environmental conservation.

These examples reflect an increasing general awareness of the dynamic inter-relationships of resources management and socio-economic development. However deficiencies in inter-sectoral awareness may be expected to increase as issues become more particular and to differ widely between countries.

It is in developed countries that such messages relating to socio-economic and environmental inter-dependencies have been most readily communicated and trends to comprehensive planning and a systems outlook have been most strongly manifested. The growth of environmental awareness in the general community in these countries in the 1970s was a very strong force encouraging such trends. This increased environmental awareness in developed countries has reflected their affluence and has been strongly motivated by a desire to maintain the qualities of life which are at the same time provided and threatened by modern development.

The primary need of water related awareness programmes in such developed countries is more likely to be for improving awareness of specific key water issues rather than for establishing general awareness of the importance of considering water in socio-economic planning. The general goals of comprehensive planning will be more commonly accepted than in developing countries and the problems relating to awareness of water will be associated particularly with the difficulties of being heard amidst the noise and diversions of other issues constantly being pushed before planners and decision-makers by politically active communities.

In developing countries the current needs for awareness are likely to be more fundamental than in the comparatively affluent societies of developed countries. Developing countries have greater immediacy in planning problems which commonly relate to basic concerns for attaining, rather than for maintaining, a desirable quality of life. Comprehensive planning should not be expected to simply reflect the emphasis in

developed countries if it is not to be perceived as an ideal appropriate only for affluent societies.

Report 1 of this project presents in some detail a review of the role of water in socio-economic development and provides evidence of the universal importance of comprehensive planning. Severe pressure on natural resources is manifest in many developing countries, and in comparison with developed countries there may often be a tendency for current planning and decision-making to proceed along relatively narrow institutional lines. Consequently, the potential improvements in socio-economic decision-making through increasing inter-sectoral communication and awareness are likely to be greater for developing countries than for developed countries.

3. Initiators and implementers

The identity of appropriate initiators and implementers of awareness programmes is a fundamental and practical question. Effective initiators and implementers of awareness programmes will be from among those organizations and individuals who not only have adequate knowledge but who also perceive a need, accept some responsibility, and have sufficient influence to be heard.

In this report it is considered that the primary, but not exclusive, role and responsibility for initiation and implementation of awareness programmes in any country rests most logically with the nation's water agencies and internationally a primary role rests with international water programmes such as the International Hydrological Programme. However, this position will not always be immediately practical and will not always be accepted by the organizations or persons themselves.

In the past, the predominantly technological background of water authority staff and mission-oriented charters have often tended to make them regard external communication as secondary to the further progress of technical activity. In both developed and developing countries it will be commonly found that extension and communication of awareness are not included as explicit features in the charter of water authorities. Such authorities may therefore feel constrained and may need greater assurance that positive action in communicating awareness is a valid activity and is at least an implicit part of their responsibilities.

A predicate of this report is that, although other authorities such as environmental or agricultural authorities will play an important role, it is only when water authorities have accepted a primary responsibility for promoting awareness that ongoing awareness of water issues can be manifest in general socio-economic planning. However, it must be recognized that there will be situations where, for reasons of limited capability, human resources, or outlook, the authorities will not be competent to adequately fulfill this role. In some

developing countries, for example, the expertise and outlook of water authorities may be focused in a relatively narrow functional role and the skill, breadth of experience, and awareness for initiating and leading such programmes may be limited. In such circumstances the development of awareness may, in the short term, be more dependent on other initiators who ideally should also apply part of their energies to encouraging development of such capacity and outlook within the water authorities.

Nationally, outside the water authorities, key groups who potentially can be particularly influential in initiating and implementing programmes or activities for raising awareness of important water issues include academic institutions, professional societies and organized interest groups. Such groups have potential not only to create opportunities for communicating awareness of water to other sectors, but also have potential to encourage advancement of the comprehensiveness and understanding of the approach adopted by water authorities.

4. Consideration of potential programme elements

It has been stressed that the audience and the communication environment are particularly important factors affecting the needs and objectives of an awareness programme. These same factors are also key considerations determining the measures which may be employed most effectively in a programme for improving awareness.

In this section a general evaluation is made of how audience and environment affect the potential utility of the following four broad groups of actions which might be elements of an awareness programme:

- one-way communications;
- two-way communications;
- measures affecting the communication environment;
- influence and stimuli.

4.1 One-way communication

If the message to be communicated is well-defined in relation to the needs of the audience, and if the message is expressed in terms which confidently can be expected to be understood, one-way communications can be a simple and economic means for communicating awareness to large audiences and over long distances. However, the difficulty of accurately matching communications to the needs of the audience in terms which are clearly understood increases as the distance between the sender and receiver increases. Such difficulties limit the effectiveness of one-way communications if they are not supported by other measures.

An important consideration in relation to one-way communication of awareness is that the wider the audience, and therefore the wider the range of

circumstances for which the message is to be appropriate, the more general must be the transmitted information. At the international level, for example, one-way communications of global relevance must be presented with adequate generality to embrace a range of circumstances after which it will be necessary for the audience to interpret such communications to relate to the specific circumstances and priorities of their own environment. Report 1 of this project is such a communication, the full benefit of which will only be realized if the various audiences interpret, or are helped and encouraged to interpret, the report in terms of their own specific circumstances.

One-way transmissions of this kind can be enhanced if they can be directed through re-transmitters who are closer to the target audience and able to re-interpret and give emphasis to aspects of the communication which are most pertinent to the receiver.

4.2 Two-way communication

Two-way communication has an important advantage when messages need to be better defined in relation to the needs of the audience. Through such processes, the presenter of information can monitor returning information relating to the problems, needs and circumstances of the receiver and can adjust the information transfer accordingly. However, the further the initiator of the communication is removed from the intended audience both physically and culturally, the greater the total size of the audiences, and the wider the differences that exist between them, the more difficult and costly will be the use of two-way communication.

At the international level, two-way communication will be practically confined to groups of national representatives and the value of such communication will depend on whether such representatives have been sufficiently motivated and also have sufficient influence to effectively re-transmit the messages or take other appropriate action within their own national environment. The motivation and ability of such representatives to re-transmit information will be strongly influenced by the precision or specificity of the topic and its relation to their own specializations. More general topics will commonly be perceived as providing least profit for interaction.

Two-way communication as a means for improving awareness of water issues will have a wider range of opportunities at national or local level than international level. Open or participative planning by national water authorities has been given particular emphasis in this report as an ideal means of employing two-way communication for maintaining ongoing awareness of current water issues. It is important to accept, however, that the realistic and practical definition of appropriate open and participative planning procedures must vary greatly under varying national circumstances and most particularly must vary between developed and developing countries and between countries of different cultural and political backgrounds.

In most developing countries, although cultural factors may favour participative decision-making, educational, organizational, technical and economic factors will effectively restrict the practicality of highly participative community involvement in planning and decision-making. In such countries, however, the basic principles remain, but the practical limits of involvement in communication may be largely confined to communication between those entrusted with the responsibility of planning and decision-making for each of the various fields of community interest.

4.3 Measures affecting the communication environment

In some circumstances, more significant and lasting benefits of increased awareness might result from efforts to improve the communications environment than might result from comparable effort applied to direct communication of information on water issues.

Such measures might be expected to be effective for internationally initiated awareness programmes and for national programmes. Particular examples of such measures might include:

- promotion of comprehensive and open water planning processes suited to national circumstances;
- encouragement of initiatives for improving communication skills in water authorities and other relevant governmental authorities;
- inclusion in the charter of water authorities of a responsibility for promoting public awareness;
- efforts to identify and inform potential re-transmitters;
- encouraging other bodies such as universities and professional institutions to become involved as primary participants in extension of awareness.

Measures of this kind are potentially very powerful. If an environment can be established which is particularly conducive to communication of awareness, including water planners with developed communication skills and strong motivation to use open or participative planning, then awareness should become largely self-generating. Such measures may be particularly relevant for adoption by international awareness programmes directed to developing countries. In such countries, emphasis might be given to promoting development of communication skills and encouraging open or participative planning, at least to the extent of improving inter-sectoral communication between planners and decision-makers.

4.4 Influence and stimuli

The psychological element of influence is an important element of awareness programmes which have the purpose of stimulating change of attitude and behaviour.

Whatever the environment of communication, whether national or international, and whether the audience is in developing or developed countries, an

awareness programme must be designed with this consideration clearly in mind. Earlier sections of this report give some emphasis to the importance of influence, stressing particularly that the greatest incentive will be achieved if the audiences perceive the issue to require action to maintain stability of their own domain of interest.

An effective international illustration of this approach is the IUCN's World Conservation Strategy which actively promotes a balanced conservation strategy as being equally important to the goals of developers and conservationists. This influence, through encouraging internalization of problems, was taken further in the World Conservation Strategy by encouraging the idea of the development of corresponding national programmes. Another feature of the IUCN promoted strategy was the recruitment of influential people as supporters or proponents of its cause.

Unless serious attention is given to introducing a deliberate element of persuasion and influence to an awareness programme, it is unlikely that the programme will result in significant alterations of behaviour.

5. Timing considerations

Timing is an important consideration in the design of awareness programmes and opportunism in the transmission of awareness can have marked effect on the effectiveness of the communication.

At this point it is appropriate to emphasize one consideration which is paramount in respect to timing. Communication of awareness is an ongoing need rather than a one-hit problem. Designing programmes for promoting awareness therefore needs careful consideration, not only to establish or heighten awareness, but also to maintain that awareness against the natural tendency to decline with time.

6. National and international awareness programmes

This report has presented a series of principles and techniques of communication relating to the development of strategies for improving awareness. It has been stressed that effective awareness programmes will normally comprise several complementary elements which need to be matched with the audience and the communication environment. In this final section, some concluding comments are made which seek to integrate the ideas of the report in respect to national and international programmes.

6.1 National programmes

At the national level, communication of issues relating water and socio-economic development can be directed specifically to problems of particular and current relevance to the individual nation and which need to be

addressed in its planning processes. It is at this level, by helping and stimulating planners, decision-makers and planning processes of individual nations to be aware of important water-related issues, that this project and its successors are aimed.

At this level, national water authorities with responsibility for planning and controlling the management and utilization of water resources are the authorities with greatest need for promoting awareness of water amongst planners and decision-makers in other sectors. The national water authorities are also close enough to their audience to have the choice of a wide range of potentially effective elements of an awareness programme and to engage in dialogue rather than being largely dependent on one-way communication.

As the prime objective of awareness programmes is achieving adequate awareness of water-related problems in national socio-economic planning, the first and most obvious point for stimulating awareness is through the planning processes of the water authorities. Awareness programmes which run independently of the national water planning process are likely to find difficulty in obtaining appropriate stimulation and in maintaining momentum and relevance. This observation is quite fundamental. Therefore, a primary determinant of whether or not national socio-economic planning responds adequately to key issues of water planning will be the degree to which national water authorities themselves adopt a comprehensive and outwardly communicative approach to water planning.

It has already been stressed that the arguments of this report need to be adapted to particular national circumstances and such considerations will lead to significant differences of detail and emphasis in developed and developing countries. Such differences will be very apparent in respect to the practical extent to which two-way communication is followed in planning. For many developed countries a level of communication and public involvement which is high on Arnstein's ladder of participation may be regarded as appropriate. In developing countries, however, such a goal would generally be quite infeasible and inappropriate. In these latter countries water authorities which are aware of the benefits of open and participative planning, and which have appropriate skills and commitment, are likely to find an appropriate level of involvement in communication. The initial target for many may well be to establish effective communication links at the professional planner level between various aspects of water planning and the planning of other sectors. For some countries, the starting point may need to be in training water planners and managers to achieve an appreciation of the benefits of open and comprehensive planning, and to develop the necessary skills and motivation to employ such practices.

Whatever the level of a particular nation's economic development, the inter-relationships between water planning and socio-economic planning are sufficiently important and complex that there is likely to be an ongoing need for development in the application of

comprehensive planning techniques and in the use of communication skills. Consequently programmes for appropriate development of these techniques and for training in planning and communication skills are likely to be beneficial for the water management programmes of most nations.

Institutional arrangement of the water sector will be an important practical consideration determining the extent to which awareness of the importance and relative priority of water issues can be communicated to other planners and decision-makers. If the water sector itself is strongly dissected functionally and/or geographically, and if the water sector has no effective coordinating mechanism, then it is probable that there will be difficulties in communicating effectively with other planning sectors. Moves to achieve an integrated outlook and co-ordinated approach to planning within the water sector are likely to bring additional benefits in the way in which water planning influences, and responds to, the planning of other sectors. Included in any improvements to the structure and charter of a nation's water authorities should be consideration of responsibility and capability for external communication of planning information.

Within a national planning environment, the competition for gaining the attention of planners and decision-makers in other sectors, amidst a host of other communications which they may perceive as closer to their own field of concern and responsibility, may be very strong. In such circumstances, in view of the other pressures on the planners and the natural psychological tendency for them to hear issues which they perceive as relating most directly to their responsibility, effective communication of water issues and evocation of a response may be very difficult. The water planner will need to take opportunities to transmit his message influentially.

Such opportunities will include being alert for the potential use of particular events or occasions when the audience may be more receptive. However, a key factor in achieving influential communication will be to present the issue in a manner which asserts how it affects the responsibility and interests of the other sector.

In national situations where institutional arrangements and water authority skills are not conducive to achievement of desirable levels of awareness of water issues, actions by other national bodies such as universities or professional associations may be needed in encouraging institutional change or in imparting knowledge and skills. Such bodies, however, can play an important part whether or not the national water authorities are performing adequately.

Professional associations and universities can assist the communication process by encouraging and assisting debate and by education and training programmes. Generally, professional training for the water sector is technologically based and apart from skills developed through experience in the workplace, water authority professionals will have had very little opportunity or encouragement for development of skills

of communication or of comprehensive water planning. Educators and professional associations can promote such skills development in under-graduate, post-graduate, and refresher training programmes.

6.2 International programmes

At the international level, programmes for improving awareness have a more limited choice of effective communication measures when compared with those which might be adopted at the national level. These limitations arise because of the size, diversity, and comparative remoteness of the audience, all of which tend to reduce the practical specificity of information and restrict the practical use of two-way communication.

A difficulty to resolve in international promotion of awareness is that to have impact and achieve results, the message must be individually interpreted and adapted to relate to a variety of national circumstances and needs. This conflict has been of direct concern in this project for example, and the project's Working Group has suggested means, such as national or international workshops, whereby the broad ranging review presented in Report 1 can be followed through with activities which encourage more specific interpretation and internalization of its message in different countries or regions.

It has been stressed in this report that awareness is subject to decay and, unless awareness is periodically or continuously re-stimulated, awareness will tend to decline to levels which evoke insufficient or ineffectual responses to many water issues. Sustaining ongoing international awareness programmes, based on

communication of issues, does not seem an appropriate long-term measure for addressing the problem of maintaining awareness. An alternative international strategy is to follow any direct stimulation of awareness, such as might be achieved through promoting the messages of Report 1, by emphasizing actions seeking to catalyze more fundamental change in national skills, institutions and processes of planning and communication. Ultimately, the goal should be for individual nations to have planning skills, processes and institutions which will be effective in developing and maintaining timely awareness of water in the national planning of socio-economic development.

In the International Hydrological Programme, where this report has been initiated, it is noteworthy that a number of projects of the third phase of the programme are consistent with the latter strategy and are generally directed down this path of promoting improvements in planning processes and institutions.

In this report a very strong emphasis has been placed on the role of communication in planning, which has been emphasized as a socio-technical process rather than a technical process. The models and means for marrying the social and technical aspects of planning may need to vary widely with cultural and economic circumstances, but the importance of communication in planning is too fundamental to be denied. Given the strong technological base of training in the water sector, an important facet of international programmes promoting advances in water planning could be educational initiatives for the development of communication skills, in listening as well as transmitting, within the ranks of water planners and managers.

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