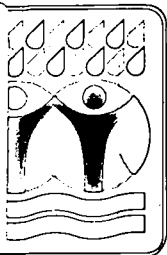


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SEMINAR ON
REGIONAL WATER
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VOLUME 2

DETAILED REPORT OF
THE WORKSHOPS

C. F. I. G. R. E.

CENTRE DE FORMATION INTERNATIONALE
A LA GESTION DES RESSOURCES EN EAU

I. T. C. W. R. M.

INTERNATIONAL TRAINING CENTER
FOR WATER RESOURCE MANAGEMENT

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VOLUME 2

DETAILED REPORT OF THE WORKSHOPS

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- SUMMARY OF VOLUME 2 -

- SECTION B : INAUGURAL SESSION'S EXPOSÉ
AND DEBATES.
- SECTION C : DETAILED REPORT OF THE WORKSHOPS.
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AND CLOSING SESSION.
-

SECTION B

**INAUGURAL SESSION'S
EXPOSES AND DEBATES**

- S U M M A R Y -

1. SPEECH BY MR. LACROIX, REPRESENTING THE FRENCH MINISTER FOR CULTURE AND ENVIRONMENT.
 2. SPEECH BY THE CHAIRMAN, SIR NORMAN ROWNTREE.
 3. INTRODUCTORY EXPOSE BY MR. VALIRON.
 4. SEMINAR PRESENTATION BY MR. TENIÈRE-BUCHOT.
 5. INTERVENTIONS BY THE VICE-CHAIRMEN.
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-



1. SPEECH BY MR. LACROIX, REPRESENTING THE FRENCH MINISTER FOR CULTURE AND ENVIRONMENT (EVENING OF MONDAY 9TH JANUARY).

As representative of the French Minister for Culture and Environment, I would first of all like to wish you and thank you all, particularly the great majority of you who have come from abroad specially to take part in these work sessions.

I would also like to tell you how honoured we feel in recognising the eminence of those present, which augurs well, Mr. Chairman, of the success of your undertaking.

Before taking up those questions which form the object of these sessions, I would like to remind you that we are here before an organization which is already firmly established and which already disposes of important financial means, enabling it to welcome and train numerous trainees.

As representative of the Minister for Culture and Environment, I very sincerely wish that our work sessions fulfil the aim assigned to them, that they succeed in defining a series of training courses ; and, in this connection, I would like to draw your attention to a document given to you and entitled "Training Programme for the First Year's Activities" ; where you will find a certain number of training programmes as also a series of reflection and research themes.

To conclude this brief speech, I would like you, in the absence of discussion at this late hour, at least to think over these projects and propose, in the course of the following days' discussions, any deletions, modifications, additions and enrichment you desire, so that the orientation to be given to ITCWRM may be specified in detail.

2. SPEECH BY THE CHAIRMAN, SIR NORMAN ROWNTREE.

It is with great pleasure that I welcome, to this seminar, the eminent experts coming from all over the world.

UNEP and the French Government must be congratulated for their initiative in offering the required conditions for the creation of a training centre for regional water planning, conditions which cannot exist everywhere and in the same manner.

In this connection, two definition problems arise in the organization's title, and which, I am sure, will be reconsidered during the discussions.

- Firstly, it must be understood that what is implied by the word "regional" is not necessarily an administrative zone, but a geographico-hydrological zone, modified by administrative restrictions.

A region can sometimes represent a major part of a country or even parts of several countries, in which case the problems can be of an international nature and will impose severe restrictions on technological optimization.

- Secondly, the translation of the term "gestion" is not adequately rendered by the English term "planning". It would undoubtedly be more correct to translate by "water management and planning".

The aims of this seminar have till present been attained, to the extent that the invitations have been promptly accepted by personalities who are authorities on management in their own countries and at the international level.

It now remains for us to concentrate our forces on our main aim, which is that of preparing recommendations which will serve to elaborate training programmes in the years to come.

Your recommendations, as also the discussions preceding them, will be noted by the Scientific Council members present at this seminar, and will constitute a report to be presented to the Scientific Council when it meets next week. This Council will take decisions on the basis of your recommendations.

It now remains for me to introduce the Vice-Chairmen who are next to me and who will assume the Chairmanship of the four workshops devoted to a study of chosen subjects.

I hope your discussions will be fruitful and that your presence in these charming surroundings and in this splendid region of France, will inspire you to provide useful recommendations. Thus, ITCWRM will continue to contribute essentially towards the preservation, throughout the world, of water resources, the most precious of all capital.

3. INTRODUCTORY EXPOSE BY MR. F. VALIRON, GENERAL MANAGING DIRECTOR OF I.T.C.W.R.M.

I am going to try and tell those present at our meeting what we expect of their presence here and, as the Chairman, Mr. ROWNTREE, has just mentioned, what we hope to gain from it for starting ITCWRM.

3.1. I.T.C.W.R.M.'S CREATION.

The Centre was born from an idea which arose during the work session, two years ago, at Nairobi, and which took place within the framework of the United Nations Council for environment. In the course of this conference, a certain number of African and Asian countries, considering water problems to be an extremely important factor in their countries' development, felt that whilst they disposed of the necessary means for basic training of their

elite and of valid teams to confront water resource development problems, they considered even more indispensable to create refresher courses, on a regular basis, for these teams through international exchanges of experiences.

The water problem is a world-wide one and, as aspects common to several countries are found, it is of great interest to exchange experiences. On the basis of the training given in Universities and Engineering Schools, it is extremely important to systematically organize this exchange of knowledge so as to allow for rapid progress.

It is from this reflection at Nairobi, and which the French Government has taken up again, that ITCWRM was born.

3.2. THE ONENESS OF WATER PROBLEMS.

There exist excellent water training centres, but none which are oriented towards management problems, that is a global, and not fragmentary, approach to water problems.

As eminent specialists, you must know that water problems cannot be broken up. The cases exposed today, as also the round-table discussions, will confirm this oneness of water problems. Water is to be considered as a unit which must be taken as basic data. Water is also so implicated in all development problems that it is indispensable that water problem specialists examine and study all the facets together.

This, of course, does not mean that water specialists must be general practitioners. But, whilst having a deep knowledge of one facet, they must know and take into consideration the different implications and restrictions involved in the relationship between this facet and the others.

3.3. TRAINING POSSIBILITIES OFFERED BY I.T.C.W.R.M.

The French Government has accepted to give financial aid to ITCWRM. An equally important aid from UNEP (45 % of the Centre's functioning cost) will also be given. Without inflicting an over-detailed description on you, it would be useful to recall that ITCWRM has formulated its training around three ideas :

- a) Offer specialists already trained at Universities or Engineering Schools, and having practiced on the ground for some years, and additional training on a certain number of subjects through courses of relatively short duration (about three weeks). During these training courses, the most eminent lecturers that can be called upon, will come and explain to the trainees the latest developments in the water resource technical, economic and management fields.
In accordance with the agreements passed by UNEP, ITCWRM must, on principle, organize at least seven training courses of this type, open to 30 trainees chosen from countries that have expressed the desire to participate.

- b) Longer training implying a longer stay (6 months to 9 months maximum) for the trainee, who will, in the end, obtain the equivalent of a thesis.
The trainee will undertake research on a subject chosen by his country, whilst benefiting from a staff and assistance at two levels :
- local level with ITCWRM specialists,
 - higher level.
- French and foreign personalities will be called upon to ensure supervision of the thesis at the highest level.
- c) Training and information of a documentary nature. On the basis of documentary information to be found in specialised French institutions, as also on information coming from all countries, it is ITCWRM's intention to widen the scope of training, information and exchange.

3.4. I.T.C.W.R.M.'S INTERNATIONAL VOCATION.

ITCWRM's international vocation is to be seen not only through the training given to specialists from all over the world, but also the support given to it by water problem specialists from the international Community. This, I think, is essential characteristic of ITCWRM, which, whilst being an organization under French law, is guided, oriented at the scientific level by a Scientific Council, whose members reflect the Centre's international vocation.

3.5. THE SCIENTIFIC COUNCIL'S COMPOSITION.

The Scientific Council members come -in equal numbers- from three different sources :

- a) Personalities delegated by different international organizations concerned with water problems : UNEP of course, but also FAO, UNESCO, WMO, WHO, EEC, UNDP. It is possible that the Scientific Council be enlarged to other international organizations directly or indirectly concerned with water.
- b) Foreign personalities chosen for their competence. We were confronted with a difficult problem for there are eminent specialists in numerous countries. An initial group of specialists has been retained.
- c) French personalities.

The main obstacle to widening the Scientific Council is the restricted number of members admitted (we feel that the minimum number should be thirty).

3.6. THE SEMINAR WIDENING ITS SCOPE WITH A VIEW TO ANSWERING I.T.C.W.R.M.'S THREE ESSENTIAL PREOCCUPATIONS.

We therefore thought that the restriction placed on the number of Scientific Council members enabled us to open ITCWRM to outside specialists. This led us to organize this seminar in which you have very kindly agreed to collaborate. This opening of ITCWRM to outside specialists was conceived around the Centre's three main preoccupations :

a) The training course theme.

The training course theme must be chosen and defined with discrimination and this task cannot be left to ITCWRM alone - in spite of the extreme competence of its Scientific Council. We must gather together the widest and most well-informed opinions of specialists from the International Community, those who, as our Chairman pointed out, "are faced with fairly complex problems which they solve in a sophisticated manner", as well as those who confront water problems in countries where this question is of vital importance

Of course, in these countries, certain problems do not arise as yet, but problems of another nature exist. It is indispensable that these problems be formulated and that the kind of contribution offered by ITCWRM towards their solution be made explicit.

We must therefore, first of all, think over the orientations we are going to give ITCWRM.

We feel that organization problems, those of a political nature (in the sense of a link between the different factors), and of an economic nature, will have to be evoked. In doing so, we must choose a certain number of very concrete themes relating to realities existing in certain countries. In fact, if we wish to maintain high-level reflection, we risk failing in ITCWRM's vocation.

What in fact is the aim and what is the target ?

b) Aim.

The aim consists of helping countries progress in mastering waters. I suggest that problems be examined in the most concrete and realistic manner possible. The different ideas you may express will be of invaluable help to the Scientific Council.

c) Target.

The target is made up of the decision-makers desiring to acquire additional management training or obtaining information on diverse technics.

3.7. OPENING OF I.T.C.W.R.M.'S DOORS TO THE OUTSIDE WORLD.

Another subject for reflection will concern the study of possibilities for transfer of competence and technology, which can be organized as soon as ITCWRM calls upon lecturers from all over the world. We must continue this initial canvassing work of writing to a certain number of personalities, to ensure their participation as lecturers in ITCWRM's training courses.

The possibilities existing in this field, and in each of our countries, must be examined. An exchange of views and links between ITCWRM and specialised water organizations of each country must be created, as also with those responsible for these organizations. It is also important for ITCWRM to possess an inventory of competencies in the water field of each country, and even more important that these specialised organizations in each country orient trainee candidatures towards the Scientific Council.

If we do not succeed in attracting those persons capable of benefiting from our training courses, we will have failed in a part of our aim, even if our courses have been correctly conceived. Which is why we express the wish here that each of you, on returning to his country, maintains his relationship with ITCWRM so as to indicate, and orient towards us, any persons desirous of receiving this kind of training. May I therefore give additional information on the agreements exchanged between the French Government and UNEP :

- ITCWRM will assume charge of the trainees coming from those countries whose development has not yet acquired a certain level.
- However, if there are persons from highly developed countries wishing to benefit from ITCWRM's training courses (let us take the example of France), these specialists, coming from France or another country having acquired a similar level of development, will be the responsibility of the countries concerned.
- The taking charge of trainees from developing countries will include travel, board and lodging expenses.
- It is for the Scientific Council to define the rules, which will be submitted for UNEP's approval, whereby the free training conditions may be determined.
- The difficulty in recruiting trainees accounts for the slow starting of the ITCWRM courses.

3.8. PROGRESS MADE IN THE SETTING UP OF I.T.C.W.R.M.

A first Scientific Council met after the Mar del Plata conference which was held, as the Chairman, Mr. ROWNTREE, pointed out earlier, in April 1977. This Council met in May 1977.

From then onwards, we desired rapid progress, but had to submit to a certain number of obstacles common in the setting up of a new organization. In fact, it is indispensable to draw up numerous agreements with national, as well as international, organizations. There has therefore been a certain delay. At present, all agreements have been passed, which has enabled us to organize this seminar, ITCWRM's actual starting point.

If things work out as we hope, the Scientific Council, which is meeting at this very place next week, will be called upon to pronounce itself and decide, in a very precise manner, particularly on training course themes. It is probable that a lot of time will have to be devoted to the prospecting and brin-

ging together of the trainees. This will take a certain period of time, but the year 78 will be devoted to the setting up of a series of training sessions, which will start next spring.

At the material level, we dispose of the following (here also, we had no infrastructure in the beginning) : temporary premises will be available in three weeks not far from Hotel Novotel where we are at present. The construction of permanent premises will be started in about one month about 200 metres from this hotel. We also dispose of training premises put at our disposal by the city of Cannes in which the 1978 training courses will take place.

This is the present position. This delay can appear unfortunate, but has its advantages in the sense that our orientation can even now be entirely modified and enriched.

This is why we have great hopes in your presence today. It is left to you to tell us if the path we are taking is the right one and also give us other, more wiser, alternatives. I am sure that your opinions will be heeded and taken into consideration by the Scientific Council.

I have come to the end of my speech, Mr. Chairman, which I hope will better fix our hopes and underline the importance we attach to this four day meeting.

4. SEMINAR PRESENTATION BY MR. TENIERE-BUCHOT.

Mr. TENIERE-BUCHOT explains to the participants how the training course will take place and underlines the following points :

4.1. ORGANIZATION OF THE SEMINAR AND DEVELOPMENT.

The seminar is divided into three parts of unequal importance :

- a) An introductory day where three concrete cases will be presented and discussed. This will be a kind of "conditioning".
- b) Two workshop days.

The participants will be divided into four groups, of equal importance if possible, each group devoting itself to a different theme :

- Technic and Technology
- Economy and Finance
- Sociopolitics
- Institutions.

This division which, I agree, is artificial, and if applied too strictly, would be contrary to our doctrine and aims, is, in fact made for practical

reasons : exchanges of views being simpler and more fruitful in small groups of about fifteen persons, than in a gathering such as the present one.

So as to guard against over-specialised debates, the animators (our Chairman, Vice-Chairmen as well as rapporteurs) will, during the recesses, exchange views on the development of their respective Workshops and harmonise the work undertaken during the discussions.

- c) The last day will be devoted to a work synthesis : in the morning, the conclusions of the different Workshops will be formulated by the bureau and submitted, in the afternoon, for approval of the participants.

4.2. PHILOSOPHY OF THE SEMINAR.

The orientations and aims of the seminar having already been presented by the Chairman, Sir ROWNTREE, and by Mr. VALIRON, I need only answer the question posed by a good number of those present here : what am I to do here ? Well, I think I can tell you that you must find both training subjects as well as those capable of benefiting from this training, and think over ways of adapting this "service" rendered to the "target".

Each of you must feel invested with a double role :

- share his knowledge,
- play the role of ITCWRM's "ambassadors", by calling upon teachers and lecturers from your respective countries, and, above all, by sending us yours specialists and decision-makers decided competent and motivated enough to follow our courses and do research at ITCWRM.

In reply to a remark which you must surely have made : "the organization of this seminar is expensive", I will say that this is true, but, and I have calculated this, it hardly represents what it costs all of us to consume 3 to 10 m3 of water a day for one year !

May I end by saying that we must make an effort, failing which we prove our inefficiency to tackle management problems through their technical aspect, with a view to solving concrete problems.

Of course, ITCWRM is not a technical research centre ; it disposes neither of laboratories nor workshops. But it is not a School of Administration either. ITCWRM must lie between these two extremes, which, in a way, constitute the rocks on which we should take care not to come to grief.

4.3. CONDUCTING OF THE DEBATES.

Attention will be paid to define training needs without touching on the present state of technologies.

5. VICE-CHAIRMEN'S INTERVENTIONS.

Mr. PIGANIOL :

I would like to draw your attention to one aspect of what could be ITCWRM's activity : I am struck by the quantity of information available to the world, and surprised at the general belief - especially in the United Nations - that it is enough to distribute it.

In my opinion, what matters is the transformation of this information into knowledge adapted to the needs of a man with a mission to accomplish. ITCWRM is one of the rare organizations which has fixed such an aim by providing the decision-makers with the means for an autonomous choice and for an adaptation of their choice.

Men whom we address do not always exist ; we must encourage their coming and define their profile. This task is of fundamental importance, for this kind of organization is lacking in a good number of countries. This task is formidable for it is for us to prove that we must succeed.

Mr. CANO :

The question we must ask is : what will the trainees do after the training course ? We are confronted with two risks : "brain drain" and "professionalism of grants". Efforts must be made so that the trainees return to their countries.

Mr. KINDLER who expressed satisfaction at the great number of countries represented (more than forty) remarks, on the other hand, that the discussion - particularly of Workshop n° 4 - will be rendered more difficult and very complex.

6. EXCHANGES OF VIEWS ON I.T.C.W.R.M. AND ITS ORGANIZATION.

After having pointed out that the group constitution would not be of a restrictive nature and that one could count on the good will of the participants to form themselves into Workshops of equal strength, Mr. ROWNTREE asks if there are any questions.

Mr. DA CUNHA ask how the language problem will be solved and what will be the criteria for the selection of candidates.

Mr. VALIRON replies that the seminars will be bilingual, at least in the beginning, but that efforts will be made to develop monolingual training courses in the language spoken in the countries concerned (in English and French of course, but also Arab, Spanish or Portuguese for exemple).

With regard to selection criteria, these are related to the fact that ITCWRM will not dispense training of long duration, but training complementary to university and engineering school training.

Given that the trainee should have already had occasions to solve concrete problems, it is desirable that he have at least two years' professional experience.

There is no provision for delevering degrees, except to those who will have envisaged a thesis in connection with specialised schools and French or foreign universities.

Mr. KABURU :

Are training courses for technicians envisaged ?

Mr. VALIRON :

The Scientific Council has settled this problem : the level of technicians does not, for the moment, correspond to that chosen by ITCWRM ; however, it is envisaged to :

- availability of technician trainers,
- put the interested parties in touch with organizations specialised in training of technicians (such as the Limoges Centre in France devoted to training purification technicians).

In reply to a second question by Mr. KABURU on the modalities of scholarship attribution and the role of Governments in the selection of candidates, Mr. VALIRON says that "the selection will be undertaken at two levels :

- the demands for scholarships will be formulated through the States,
- ITCWRM's Scientific Council will make the final choice, since it holds the financial responsibility.

In reply to a question by Mr. HARVEY on the form to be given to the training courses, Mr. VALIRON says that there will be an open discussion on the subject, but around practical cases.

Mr. ROWNTREE closes the discussion by replying to Mr. JOHNSON that if the Scientific Council members have not been designated till present through the Government agency, it is possible to do so for the new members coming essentially to complete this Council. He next invites the first lecturer, Mr. HARIRI to speak.

SECTION C

DETAILED REPORT
OF THE WORKSHOPS

WORKSHOP 1

THEME : TECHNICAL AND TECHNOLOGICAL ASPECTS.
SUB-THEMES : 1.1. INVENTORY OF USEFUL REGIONAL WATER
PLANNING DATA.
1.2. AVAILABLE AND FEASIBLE TECHNOLOGIES.

CHAIRMAN : MR. AYIBOTELE
RAPPORTEURS : MR. NEWSOME, MR. LEYNAUD
ANIMATORS : MR. MEGULESCU, MR. ROCHE, MR. MARGAT

PARTICIPANTS : MESSRS. BANERJEE, COIN, FAUQUIER,
MRS. FORKASIEWICZ, MESSRS. KABURU,
LAWSON, MOLINARI, NEMEC, OGUNROMBI,
PERES, RANGELEY, ZABRÉ.

- DETAILED SUMMARY -

I - SUB-THEME 1.1.

INTRODUCTORY EXPOSÉS.

- 1.1. Messrs. AYIBOTELE and NEWSOME
- 1.2. Messrs. ROCHE and NEGULESCU

DISCUSSION.

- 2.1. Data related to ground water
- 2.2. Water and agriculture
- 2.3. Data adequacy and response delays
- 2.4. Water quality and public health
- 2.5. Data collection and integrated planning
- 2.6. The developing countries' specific problems and the nature of ITCWRM's role
- 2.7. Data banks

DISCUSSION ON THE SYNTHESIS AND DEBATE ON THE TASKS ASSIGNED TO ITCWRM.

- 3.1. Research
- 3.2. Training

II - SUB-THEME 1.2.

1. INTRODUCTORY EXPOSÉS.

1.0. Messrs. LEYNAUD and RANGELEY

2. DISCUSSION.

2.1. General water supply's problems in developing countries

2.2. Technological water supply's problems in developing countries

2.3. Resource's protection and planning

3. DISCUSSION AND SYNTHESIS.

I - SUB-THEME 1.1.

INVENTORY OF USEFUL REGIONAL WATER PLANNING DATA

1. INTRODUCTORY EXPOSES.

1.1. PRESENTATIONS BY MESSRS. AYIBOTELE AND NEWSOME (cf. Section E).

After the introductory exposé of Mr. AYIBOTELE who presides over the Workshop, Mr. NEWSOME is requested to speak. He comments a series of slides illustrating the main steps to be taken in data collection and utilisation :

- Data : a condensed form of information.
- In what circumstances are data filed ?
- With what aim.
- Data normalisation and data recording.
- Data collection level and quality control.
- Specific aims at each level.
- Role of data in planning.

By way of conclusion, Mr. NEWSOME, who points out that WHO is publishing a blue book on data collection, evokes the problems of such a collection by automatic mesure apparatus (monitoring) ; in his opinion, the very concept and employment of these apparatuses should be questioned.

In fact, rather than absolute values, it is the variation rates which are of interest to us ; however, on one hand, the proposed captors are of too precise nature for the information to be deduced, and, on another hand, some of the other captors left out on account of their low sensitivity and precision, could provide the required information.

To this theme, on which research could be done, Mr. NEWSOME suggests adding another theme, one of training this time, which would concern "data planning and presentation" ; this theme corresponds to a training requirement which is not, at present, undertaken by any organisation.

1.2. EXPOSES BY MESSRS. ROCHE AND NEGULESCU.

Mr. AYIBOTELE next calls upon Mr. ROCHE to speak. Mr. ROCHE comments the text presented in Booklet E. Then Mr. NEGULESCU draws up an exhaustive inventory of the different types of data which should be collected within the framework of integrated planning of an hydraulic basin (cf. Section E).

2. DISCUSSION.

After having given a broad outline of the preliminary exposés, Mr. AYIBOTELE opens the discussion, the main speeches of which have been regrouped into themes and subjects for the sake of convenience.

2.1. DATA RELATED TO GROUND WATER.

After having reminded the importance, recognised by all those present, of data collection, Mr. BANERJEE points out that the latter does not present any great difficulty in hydrological and meteorological fields where rules have been fixed and norms duly admitted. This would not be the case for ground water "... for which I think such norms do not exist. However, numerous countries can satisfy their needs only through ground water resources exploitation. These can only be evaluated by means of observation stations for which norms must be defined, taking into account the different geological settings, and correlated to surface water norms."

Mr. BANERJEE therefore suggests that a specialised seminar on ground water should on principle be retained.

This proposal meets Mr. AYIBOTELE's approval and gives rise to important comments from Mr. MARGAT (cf. Section E) :

- "It is dangerous to arbitrarily dissociate ground water from surface water which, in fact, contain important numerous interconnections except in certain specific configurations.
- It is however necessary to draw attention to certain particularities of ground waters :
 - . their tridimensional nature which distinguishes them from surface water linear network.
 - . their generally slow flow which requires less temporal statistical data.
 - . the ever-increasing cost of this data collection : for a twofold improvement in the quality of information on the acquifers, the costs multiply tenfold.
- Exploitation of ground water resources is characterised by a great flexibility in development (although it is impossible to space out the construction of a big dam, the development of a drilling site can be implemented in stages) and in its progressiveness (the knowledge that one possesses of a site can be improved during the early phases of implementation)."

2.2. WATER AND AGRICULTURE.

A second theme for discussion concerns water and agriculture.

This subject was taken up by Mr. BANERJEE, who recalls the importance, crucial for certain countries, of water requirements for agriculture, and points out that a correct appreciation of these requirements particularly implies a sound knowledge of water availability and the nature of the soil, and that, here too, the norms are not harmonised.

Mr. RANGELEY continues along the same lines as Mr. BANERJEE : "... the global efficiency of water utilisation in Asia is to the tune of 40 % whilst elaborate irrigation systems reach 55 to 60 %. Water economy in agriculture can be considerable..."

"In fact, it is simpler to collect than to exploit data ; thus even if efficient measure systems have been developed (neutron humidimeters, tenscometers), it is not always known how to make the best possible use of them... Here is an interesting subject to develop !..."

2.3. DATA ADEQUACY AND RESPONSE DELAYS.

At the end of his speech, Mr. RANGELEY approaches two important aspects of data collection : their adequacy in relation to the requirements and the response delay : "... we need a dynamic system which would allow an adjustment in water needs according to the climatic variations..."

Mr. MARGAT, who is of Mr. RANGELEY's opinion, points out that it is of less importance to study data collection technology than to make a correct appreciation of the needs. He adds that the cost/profit economic analysis of data acquisition should always be undertaken. He finally points that there exists an evident need for real time short term prevision.

The latter aspect is explained by Mr. BANERJEE who recalls the crucial importance of data collection in defining the importance of extremely expensive development schemes undertaken to fight against droughts and floods, but also, and above all, in implementing alert systems eventually utilising mathematical forecasting models ; this latter point eventually constituting an interesting seminar theme.

2.4. WATER QUALITY AND PUBLIC HEALTH.

As a result of Mr. AYIBOTELE's remark that the discussion has particularly concerned, till then, only hydrometeorological and agricultural aspects, and not as yet the socio-economic aspect of data collection, the debate moves on to water quality and public health.

Mr. LEYNAUD, who had already brought up this important question in his exposé, explains it during the discussion : "... it can be feared that the new generation considers water flow as an abstract ensemble of parameters, such as pH. There exists a better means of defining water quality, by doing so with the help of biologic or biotic indications. But these indications vary from one region to another (the living species not being the same), a system of biotic indications should thus be proposed. ITCWRM should not neglect this problem which should at least be evoked in the training courses..."

This biologic approach will be taken up again at a later stage by Mr. COIN, who insists on the major problem of public health, and, by evoking water pathology, distinguishes that which appears chronically in developing countries from that which appears today in developed countries particularly under the effects of industrial pollution.

2.5. DATA COLLECTION AND INTEGRATED PLANNING.

Mr. RANGELEY agrees with Mr. AYIBOTELE's remark on the importance of taking into consideration the socio-economic aims, and stating that he will come back to it in his exposé on sub-theme 1.2., underlines the importance of a global approach :

"... the aims at the hydrographic basin level must be well defined. We have ourselves made mistakes in large development projects (Indus basin, Ganges basin, Niger basin and still others) for lack of data on the needs in food, energy, domestic and agricultural water, etc..."

The fact that the priority order of these needs varies from one country to another must be taken into consideration. What is necessary is the conceiving of programmes concerning very vast regions and the proposal of projects treating the different aspects, without going too much into details ; from there onwards, one must be conscious of the kind of data to be collected rather than enter into details concerning the manner in which this collection should be undertaken..."

Mr. LAWSON also considers it desirable to alert the decision-makers of each country by organising, on one hand, a very general seminar with the aim of sensitizing the participants on this subject, and, on another hand, specialised work sessions defining exploitable norms at the regional group level.

Mr. ROCHE then remarks that "... it is indispensable to act in close collaboration with study groups (there are new ones every day !) coming from a certain number of organisations of an international character, especially as ITCWRM is less of research organisation than one of dissemination."

This opinion is shared by Mr. NEWSOME who confirms that there are many research centres and that the ITCWRM should utilise the knowledge acquired and diffuse it.

Mr. AYIBOTELE observes that Mr. RANGELEY had, in fact, expressed the opinion that there should be no seminar limited to specific data collection but, on the contrary, be devoted to the collection of all-round data concerning a river basin.

Mr. RANGELEY confirms this and adds that the training programme he advocates is essentially for high-level decision-makers and technicians and eventually for those at a slightly lower level.

Mr. RANGELEY draws attention to another motivation for regional data collection : "... There exists in the world an extraordinary demand for infrastructures... Can OTCWRM contribute towards perfecting these expensive investments ? ... For regional planning and development of big river basins, action must be taken in such a manner that the decision-makers become aware of an integrated approach and of the errors resulting from an incorrect estimation of the demand.

Another branch of training would concentrate on high priority themes, and, in this Workshop, we must discuss the manner in which these priorities will be inventorised and classified."

2.6. THE DEVELOPING COUNTRIES' SPECIFIC PROBLEMS AND THE NATURE OF ITCWRM'S ROLE.

All through the above discussions, the representatives of the developing countries insisted on the specific nature of their problems.

Mr. OGUNROMBI :

"References have been made here to teledetection and other sophisticated methods. Their implementation does not give rise to any difficulty in developed countries, but in developing countries, there is often neither the equipment nor the personnel, and data collection is undertaken by technicians when what is needed is engineers.

In fact, in our countries, there is a lack of data, a certain groping, and this leads often to the failure of the projects:

One of ITCWRM's aims could be the development of two parallel trainings :

- definition of the personnel required for manual mesures necessitating no complex or delicate material.
- training course for personnel in charge of implementing sophisticated mesure methods (such as teledetection)."

Mr. AYIBOTELE also agrees on the necessity of defining the approaches which take into account the means at the disposal of developing countries.

Mr. KABURU is convinced of this and asks that their needs be above all taken into consideration ; thus "... more than 90 % of the population of developing countries live in rural zones where water transport meets with numerous difficulties. How can the adduction problem be solved ? For data collection, only technicians or even personnel with lower qualifications are available !..." "... there is an important need for adequate training ; I am therefore in agreement with Mr. OGUNROMBI's proposal which I will transpose in the following manner :

- the training course on the methods to be employed for "sophisticated" data collection would concern particularly urban zones and the industrialised regions of the countries.
- the training at a lower level would initiate personnel from rural regions into data acquisition, taking into consideration the practical difficulties (particularly communication problems) encountered, how to collect data, dispatch and treat them..."

Mr. NEWSOME remarks that the training needs appear to be at three levels :

- . decision-makers and "sub-decision-makers"
- . engineers
- . technicians called upon to work on the spot.

Mr. AYIBOTELE's answer to this is that during its first Scientific Council meeting, the ITCWRM had decided to limit its activity to training the trainers of technicians.

Like Mr. OGUNROMBI, Mr. KABURU remarks that the Scientific Council's decision does not forbid the formulation of recommendations ; this is registered by Mr. AYIBOTELE, who notes that recommendations for training "sub-technicians" could be formulated.

Mr. RANGELEY objects to the training of technicians at the ITCWRM, since training of this kind can only be undertaken in the countries concerned.

Mr. MOLINARI remarks that there would be no difficulty there, since the Scientific Council has accepted that a part of the training courses take place outside France and in the concerned countries.

Messrs. OGUNROMBI and KABURU agree to this and point out that the training courses would be conducted with greater facility if there was cooperation with local training centres. They insist on the ITCWRM making known its possibilities in different countries.

2.7. DATA BANKS.

Mr. KABURU points out that the census in Africa is undertaken according to the criteria existing in developed countries and is therefore questionable or ineffectual : he asks for assistance in the creation and development of a demographic data bank. To this, Mr. BANERJEE remarks that the creation of data banks is not a part of the ITCWRM's vocation.

After Mr. NEWSOME recalls the principles of functioning existing in the organisation he directs (Water Data Unit), which manages the only data in existence in the United Kingdom, Mr. RANGELEY points out an exception to the rule according to which data banks must always have a national character : the Mekong committee.

Mr. RANGELEY notes however that although it appears to him inopportune to see the ITCWRM collect and treat data, this could be admitted in specific cases and in an extremely selective manner.

3. DISCUSSION ON THE SYNTHESIS AND DEBATE ON THE TASKS ASSIGNED TO I.T.C.W.R.M.

After the reading of the synthesis project drawn up by Messrs. AYIBOTELE and NEWSOME, Mr. NEGULESCU is requested to speak. He elucidates the hierarchisation of the themes for reflection and insists on the importance of the socio-economic aspects, notably :

- the place of demography in water policy and planning.
- the priority to be given to public health, rendering it independant of all financial restraints.

Mr. AYIBOTELE opens the debate which is essentially on the nature of the tasks assigned to the ITCWRM.

3.1. RESEARCH.

On Mr. AYIBOTELE's request, Mr. MOLINARI reminds the participants of what the ITCWRM means by "research", that is studies, synthesis, clarification of priority questions, of which certain points remain vague.

Mr. OGUNROMBI agrees and gives by way of example of applied research the synthesis that could be put at the disposal of consultants, who often have an insufficient knowledge of what exists in countries where they are going to work.

Another example of applied research suggested by Mr. OGUNROMBI could be the development of used water treatment methods in regions deprived of electricity.

3.2. TRAINING.

The training level resolution leads to a very heated debate where those who are for "orthodoxy", limiting the training dispensed by the ITCWRM to high-level officers, face the numerous other participants regrouping essentially the representatives from developing countries, notably Messrs. KABURU, LAWSON, OGUNROMBI, who would like the ITCWRM to undertake training, even if it be of certain points, of technicians.

Mr. OGUNROMBI continues by remarking that if the ITCWRM restricts its training only to decision-makers, it would concern an extremely limited number of persons in developing countries.

The insistence with which this need for training technicians on the spot was expressed led to the participants in general expressing the desire to include this point in the final recommendation which can be read in Booklet D.



II - SUB-THEME 1.2.

AVAILABLE AND FEASIBLE TECHNOLOGIES



1. INTRODUCTORY EXPOSES.

After his introductory exposé (cf. Section E), Mr. AYIBOTELE requests Mr. LEYNAUD and then Mr. RANGELEY to speak. Mr. LEYNAUD presents his report (cf. Section E) and Mr. RANGELEY comments his paper (cf. Section E), after which he comes back to the debate of the day before. Mr. RANGELEY feels that the seminar's time-table and programmes should respect a logical order and a certain progression so as to facilitate the acquiring of knowledge by the trainees and also by the non-trainees by means of diffusion of files oral courses.

2. DISCUSSION.

2.1. GENERAL WATER SUPPLY'S PROBLEMS IN DEVELOPING COUNTRIES.

Mr. COIN opens the discussion by examining those problems which appear to him the most acute in developing countries, and insists on the necessity of regrouping the themes and treating the problems - particularly that of public health - in a global manner.

a) Drinking water supply in urban zones with special reference to :

- . resource
- . treatment
- . distribution, whose technology has made tremendous progress with the introduction of high-pressure networks adapted to developing countries.

b) Water supply in rural zones with special reference to :

- . resource and definition of protection perimeters
- . distribution (more convenient than in the preceding case)
- . treatment (notably deironisation and demanganesation in certain African countries).

c) Water supply in industrial zones with special reference to :

- . resource : quantity and quality of untreated water
- . recycling
- . specifications related to waste water and rejects.

d) Sanitary problems with special reference to :

- . densely populated zones
- . sparsely populated zones.

Mr. COIN concludes by specifying that WHO is working on these problems since the last twenty years.

Mr. OGUNROMBI fully agrees with Mr. COIN. The water supply question is an important one : it is necessary to dispose of good quality water, which implies the solving of sanitary problems. Emphasis must therefore be placed on water treatment, and research in unsophisticated technologies encouraged.

Mr. ZABRE fully agrees to the setting up of a course on water supply in urban and rural zones : "... in Africa, water is supplied to towns to the detriment of the countryside. In Upper Volta, the seven major towns are supplied with the help of the usual networks, but there still remains 33 towns."

Mr. LAWSON :

"... I would like to add, to what Mr. COIN has just said, the important question of irrigation in its economic and sanitary aspects. Paradoxically, food shortage increases industrial needs ; let me explain : we are encouraged to develop irrigation, which leads to an increase :

- . of consumption of manure
- . of pollution
- . of channel dimensioning
- . of evaporation, etc...

This leads to problems of choice of appropriate technics and maintainance."

2.2. TECHNOLOGICAL WATER SUPPLY'S PROBLEMS IN DEVELOPING COUNTRIES.

a) Short-term development.

Mr. MOLINARI evokes the problems encountered in rural zones concerning the exploitation and maintainance of pumping methods, however elementary these may be, and wonders how the ITCWRM could contribute towards solving them.

Mr. ZABRE agrees to the importance of this question, and Mr. ROCHE points out that O.E.C.D. has studied the problem of technology transfer and adaptation to developing countries, which in his opinion is of top priority.

b) Long-term research.

Mr. ZABRE feels like Mr. COIN that there is much to be done in the sanitary field.

Mr. NEGULESCU considers that the necessity accepted by everyone to struggle against pollution and have recourse to recycling implies the development of technics for the elimination of harmful matter.

He also insists on the need for studying used water and mud valorization in agriculture.

Finally, Mr. NEGULESCU suggests reflection on sea water utilisation as also on the problems connected with navigation (cf. Section E).

2.3. RESOURCE PROTECTION AND PLANNING.

Mr. MARGAT (who explains his ideas in a note to be found in Section E) :
"... some remarks concerning ground water :

- one must not be malthusian : a temporary exploitation of non-renewable resources can be envisaged ; such an exploitation can momentarily play a relay role.
- with regard to drinking water, the problem of choice of the waters' origin must always arise.
- all this implies long-term strategy...."

Mr. BANERJEE suggests deep reflection on the over-exploitation of ground water and its consequences, systematic on the coastline of his country.

Mr. ZABRE agrees with Mr. MARGAT on the importance of long term ground water utilisation planning, and expounds on the surface water resource protection problem and the attempts made in his country at limiting very intense evaporation (2 m/an).

"... the attempt at reducing evaporation by interposition of a fine fluid screen having failed, there is research into the possibility of obtaining this by means of appropriate vegetation (water-lilies)..."

Mr. BANERJEE proposes research and training on the global approach to water regulation :

"... In India, there is much investment in dam constructions annex works. The well-known alluvial deposit formation problems lead to expensive methods of soil preservation.

At present, we have unfortunately no control over the efficiency of the measures and investments undertaken.

The effort at synthesis and research must precisely be directed towards the adaptation of means to needs and work monitoring.

This question is of course closely connected with the struggle against floods.."

3. DISCUSSION AND SYNTHESIS.

The discussion was mainly held on the best means of regrouping the different themes undertaken, the participants in general ratifying the synthesis prepared by Mr. LEYNAUD (cf. Section D).

WORKSHOP N° 2

THEME : ECONOMY AND FINANCE

SUB-THEMES : 2.1. ORIGIN OF FINANCING AND DIVISION
OF COSTS.

2.2. FINANCING OF WATER WORKS.

Vice-Chairman : Mr PIGANIOL

Rapporteurs : Messrs BINSON, WARFORD

Animators : Messrs ALBRECHT, DUBREUIL, LACROIX,
and ZAPATA

Participants : Messrs AMBROGGI, DOOGE, EMSELLEM,
HARVEY, HASSANE, KIHLEN

- DETAILED SUMMARY -

1. MORNING OF TUESDAY 10TH JANUARY, 1978.
 - 1.1. Inauguration and orientation by the Vice-Chairman, Mr. PIGANIOL
 - 1.2. Paper read by Mr. ALBRECHT and discussion
 - 1.3. Brief exposé of the Niger Republic (Mr. HASSANE), Thai (Mr. BINSON), Turkish (Mr. KUHLIN) and american (Mr. ZAPATA) experiences

 2. AFTERNOON OF TUESDAY 10TH JANUARY, 1978.
 - 2.1. Exposé by Mr. WARFORD
 - 2.2. Role of I.B.R.D.
 - 2.3. The economic, social and psychological cost approach
 - 2.4. The restrictions implied in training and the increased efforts necessary in this field

 3. MORNING OF WEDNESDAY 11TH JANUARY, 1978.
 - 3.1. Role of international financing agencies
 - 3.2. Critical study of the cost distribution systems
 - 3.3. Methodological trial of the sale of water to users
 - 3.4. Methodology of the intangible aspects of water economy - social and political aspects
 - 3.5. Project management and financing within a water policy

 4. SYNTHESIS AND DRAFTING (WEDNESDAY AFTERNOON).
 - 4.1. Discussion
 - 4.2. Synthesis
-

1. MORNING OF TUESDAY 10TH JANUARY 1978.

The morning was devoted to the four following points :

- Inauguration and orientation by the Vice-Chairman, Mr. PIGANIOL.
- Paper read by Mr. ALBRECHT.
- Discussion around Mr. ALBRECHT's paper.
- Rapid exposé of the Niger Republic (Mr. HASSANE), Thai (Mr. BINSON), Turkish (Mr. KUHLEN) and American (Mr. ZAPATA) experiences.

1.1. INAUGURATION AND ORIENTATION BY THE VICE-CHAIRMAN, MR. PIGANIOL.

Method proposed : "I propose that Tuesday be devoted to a sort of brain storming around what should be taught. This evening, assisted by the rapporteurs we will try and draw up a programme which will be discussed tomorrow morning. Today therefore, a totally free survey and tomorrow the drafting."

A point is made in answer to Mr. DODGE's preoccupation on the workshop's aims. "We must, says Mr. PIGANIOL, provide ITCWRM with detailed themes for seminars and training courses. It is probable that we will need to depend on the following aspects :

- . trainee profile
- . selection criteria
- . teaching contents
- . animator-lecturer profile."

"We must consider ourselves as a Programme Committee and avoid entering into details of the subjects. Mr. DODGE's question reminds me of the following difficulty :

- there exist teachings for which there are results (1), for which there is a doctrine, documents.
- we will probably also take up fields and themes where there are neither doctrine, documents, or results (1). I think for these unexplored themes, we must suggest that ITCWRM promote preliminary research before organizing a training course or seminar.

This leads me to make a clear distinction between explored and unexplored themes."

Mr. PIGANIOL concluded by introducing Mr. ALBRECHT who, by means of an actual case, will suggest possible teaching elements.

(1) Results : to be understood as a pedagogical evaluation.

1.2. PAPER READ BY MR. ALBRECHT (cf. Section E) AND DISCUSSIONS.

The discussions start after Mr. PIGANIOL has appreciated the clarity and precision of the exposé.

Messrs. AMBROGGI, PIGANIOL, LACROIX express the following points :

Mr. AMBROGGI :

"ITCWRM must in principle have an international vocation and provide an answer to several categories of water resource management problems to be found in the world."

After having pointed out that in the group present, representatives of developed countries are in the majority, he gives his point of view.

"Diverse approaches are possible to water resource management :

- the country-wise approach would lead us to studying 140 cases (140 nations).
- the developed country-third world-fourth world approach could be a second possibility.
- The approach to be studied and suggested by ITCWRM consists, before any intervention, in the regrouping into about ten homogeneous categories, countries capable of being the object of intervention in the field of training.
- the profile of ITCWRM's future client appears to be an important problem and we must provide a correct answer to the Scientific Council on Monday when this question is raised."

Mr. PIGANIOL :

"Cost calculation and evaluation use methods independent of the concerned country's social structures.

On the other hand, in answer to the question "who will pay ?", the importance and density of social structures are determining factors."

Mr. PIGANIOL supports this point of view by giving the example of mountain villages in France.

He insists also on amortization understood in the sense of a "financial recovery based on physical criteria" and amortization understood in the sense of "a recovery spread out for social reasons (lodging)".

Mr. LACROIX underlines the diversity of water resource management organizations. He feels also that the French system (Financial Basin Agency) such as expounded the day before by Mr. VALIRON, is more supple than the type of organization expounded by Mr. ALBRECHT (Ruhr).

The French system is essentially inciting and based on a harmonious association of taxes and grants. Other examples and systems could be cited in European countries (Great Britain).

Mr. LACROIX feels that the trainees, after knowing the different organization systems in existence, should be able to chose for themselves (taking into account restrictions and the national context).

1.3. BRIEF EXPOSE OF THE NIGER REPUBLIC (MR. HASSANE), THAI (MR. BINSON),
TURKISH (MR. KUHLEN) AND AMERICAN (MR. ZAPATA) EXPERIENCES.

At Mr. PIGANIOL's request, a certain number of water resource management experiences met with by those countries present in this workshop are exposed.

NIGER REPUBLIC (Mr. HASSANE).

Mr. HASSANE presents a panorama of the principle water management aspects in his country :

- 5 million inhabitants of which 90 % are rural,
- an essentially agricultural economy (rearing),
- the farmer is mainly employed during the rainy season (4 months),
- the State undertakes all water resource research and mobilisation financing (hill reservoirs - Niger river perimeter),
- in rural zones, water is free of charge (water supply for drinking purposes and livestock),
- in urban zones (20 000 to 150 000 inhabitants), water is taxed but the State provides grants for deficit planning,
- the State is the only investor of water capital.

THAILAND (Mr. BINSON).

Mr. BINSON presents his paper on water problems in Thailand (cf. Section E) and makes an important comment on the concept of water flow of an international nature.

TURKEY (Mr. KUHLEN).

"The water policy can be a factor and instrument for the redistribution of national wealth. In fact, taxing the rich for the benefit of the poorer sections can constitute a means for distribution of national wealth."

The morning concludes with Mr. PIGANIOL inviting Mr. ZAPATA to expound on the american experience, requesting him to explain :

- . the irrigation water aspect
- . the pollution taxation aspect.

2. AFTERNOON OF TUESDAY 10TH JANUARY 1978.

The afternoon of Tuesday 10th January was devoted to the study of the four following points :

- Mr. WARFORD's paper
- The discussion of I.B.R.D.'s role
- The study of the economic, social and psychological cost approaches
- The study of training obligations and the increased efforts necessary in this field.

2.1. EXPOSE BY MR. WARFORD.

Mr. PIGANIOL congratulates Mr. WARFORD on his very complete and highly enriching political economy exposé.

2.2. ROLE FO I.B.R.D.

Mr. HASSANE :

"I am not trying to criticise or question the I.B.R.D. work methods but it is nevertheless important, in a country like the Niger, to take into account the economic, as well as social, benefits of an investment..."

Mr. AMBROGGI :

"It is normal and logical that I.B.R.D. make down its criteria, in order to avoid glaring mistakes. Given these criteria, it is difficult to ask I.B.R.D. to go beyond the social threshold which depend more on international solidarity than on economic returns. That is why, guarding against any ill-timed publicity, I would like to point out that U.N.D.P., UNICEF and PAM are working, since about fifteen years, in an extremely efficient manner in the field we are studying.

Mr. PIGANIOL :

"... I.R.B.D. acts as a banker and must therefore *recover its money*. There are two levels of reasoning :

- reasoning at I.B.R.D.'s level, which is that of a banker,
- reasoning at the international solidarity level merits a more subtle approach.

The problem is to know where is the critical point.

2.3. THE ECONOMIC, SOCIAL AND PSYCHOLOGICAL COST APPROACHES.

A comment by Mr. PIGANIOL will enable Messrs. ALBRECHT, ZAPATA, DODGE, HASSANE and WARFORD to express their points of view on this subject.

"... for certain countries, says Mr. PIGANIOL, a glass of water has considerable value, for others, a cubic metre is of little value. This leads me to point out the difficulty of cost evaluation when it comes to fundamental and elementary needs..."

Mr. HASSANE points out that in the Niger Republic, the water problem is posed in terms of life and death and is therefore incalculable. If in a developed country, the needs are 150 litres per day per inhabitant, in the Niger Republic, they are, in certain regions, estimated at 10 litres per day and per inhabitant : the inhabitants are obliged to cover 15 kilometres per day to satisfy their drinking water needs. The cost per cubic metre has been evaluated at 250 Niger francs. The State taxes a cubic metre 50 Niger francs (1 French franc), that is, five times less. The consumption, the means at the consumers disposal does not, in any case, permit this expense, which, in fact, is ensured by the State through grants for deficit planning. In conclusion, Mr. HASSANE pays homage to certain formes of national (F.R.G.) and international (FED-UNICEF) cooperation.

Mr. PIGANIOL next invites Mr. WARFORD to develop I.B.R.D.'s concept on the subject of actualization rates conceived as a manipulation of the time scale.

There is also discussion on the labour cost notion : Niger, China and Senegal are cited by way of examples. The main ideas emerging from this discussion are :

- comparision of technological inconveniences (works of too large size) with labour advantages (China).
- remarking that the notion of "appropriate technology" has replaced that of "intermediary technology". The term adequation tends to adapt socio-human conditions to physical conditions and vice versa.

2.4. THE RESTRICTIONS IMPLIED IN TRAINING AND THE INCREASED EFFORTS NECESSARY IN THIS FIELD.

Mr. PIGANIOL underlines the need for organizing a seminar for training and introduction to water policy within the general economic framework of a country.

Mr. AMBRAGGI suggests that the different possibilities for solidarity offered by the international Community (UNDP, UNICEF, PAM) can be explored and explained to the trainees ; the latter, thus informed, can measure the importance of this solidarity. It is within the framework of such information that the policy-makers of a country can formulate their projects.

Mr. WARFORD points out that certain aspects of his exposé have been interpreted in diverse manners.

Mr. DUBREUIL feels that the Workshop disposes of sufficient material for reflection but that it must go further. Commenting on the Scientific Council's last report, he feels that the diverse overlapping zones in the water field

should be analysed, and, to support his argument, gives the example of socio-political themes of workshop 3 or technical themes of workshop 1, which overlap with workshop 2.

He next wonders about the profile of the decider. He can be an engineer, economist, ecologist. Our role is to advocate meetings and training courses allowing for both an exchange and a balance of knowledge.

The session is adjourned after Mr. PIGANIOL points out the interest and importance of Mr. DUBREUIL's intervention.

3. MORNING OF WEDNESDAY 11TH JANUARY 1978.

This morning was devoted to a critical study of all the themes proposed, in accordance with the method proposed by Mr. PIGANIOL and accepted, the day before, by the participants.

3.1. THEME 1.: "ROLE OF INTERNATIONAL FINANCING AGENCIES".

Theme 1 is introduced by Mr. AMBROGGI and commented upon by Mr. WARFORD, and concerns the role of international financing agencies.

'Different decision-makers must be informed, says Mr. AMBROGGI, of the role and mission of the different international financing agencies...'. Besides I.B.R.D., there is mention of financing without any interest rate (UNDP) or other types of assistance or solidarity from the international community (PAM, UNICEF).

Mr. AMBROGGI suggests that to this description of the international financing mechanisms could be added, and this in agreement with the concerned organizations, short visits to Agencies by the trainees in restricted groups. Qualified persons from the Agencies could come to the ITCWRM courses in order to explain the financing mechanism contents and limitations in vigeur.

3.2. THEME 2 : "CRITICAL STUDY OF THE COST DISTRIBUTION SYSTEMS".

The second theme fibres rise to a discussion, in the course of which Messrs. LACROIX, DUBREUIL, HARVEY and DOOGE expose their different points of view.

The author, Mr. HARVEY, entitles his project : "critical study of the cost distribution systems".

Mr. LACROIX asks (and this question is also raised by Mr. PIGANIOL) if the theme proposed must :

- be of a specific nature,
- be given a wider scope so as to include the study of administrative organization systems.

Mr. DUBREUIL remarks that when the levels of development are similar, the cost division aspect is in fact interesting. But when there is disparity in the development levels, it is important to study the nature of the development systems to be chosen and the alternatives offered to the decider (big water works or small development plans).

Mr. DOOGE insists on :

- the need for broadening the pedagogical method,
- the critical analysis methods of the different systems.

Mr. HARVEY expresses a point of view which is similar to that expressed by Mr. DUBREUIL as also that of Mr. DOOGE.

Mr. PIGANIOL concludes by saying :

- that it is difficult to separate the two aspects, when, probably, the cost distribution systems will occupy 50 % of the subject.
- that he approves of the need for a socio-economico-political description of the context of each of the systems invoked by Mr. LACROIX.
- that he is retaining, after approval of all the workshop members, a broad theme with particular emphasis on cost distribution.

3.3. THEME 3 : "METHODOLOGICAL TRIAL OF THE SALE OF WATER TO USERS".

The third theme, also invoked by Mr. HARVEY, leads Messrs. LACROIX, ALBRECHT, DOOGE, AMBROGGI and DUBREUIL to express their respective points of view.

This theme is presented by its author, Mr. HARVEY, as a "methodological trial of the sale of water to users" and leads Mr. PIGANIOL to ask if there is no overlapping between the second and third themes.

Mr. AMBROGGI wonders if it would not be wiser - taking into account the explanations offered by the author - to call this theme "struggle against water wastage".

Mr. LACROIX asks if this theme would not duplicate with the objectives fixes for the established systems.

Messrs. ALBRECHT and DUBREUIL insist on the overlapping of the subjects and on the need for a specialization adapted to participants.

Mr. DOOGE raises the pedagogical method aspects.

Mr. PIGANIOL formulates a synthesis of the preceding interventions by pointing out :

- that Mr. HARVEY introduced an interesting notion of management system evaluation criteria by splitting up :
 - . water economy
 - . social cost acceptance.

- that the theme proposed by Mr. HARVEY can be temporarily isolated.

He decides to continue with the study of the other proposals.

3.4. THEME 4 : "METHODOLOGY OF THE INTANGIBLE ASPECTS OF WATER ECONOMY - SOCIAL AND POLITICAL ASPECTS".

The 4th theme, also proposed by Mr. HARVEY, concerns the methodology of the intangible aspects of water economy, or again the social or ecological aspects.

Mr. PIGANIOL feels that the subject must be split up into two parts, this theme containing :

- water policy as a factor of society structuralization
- water policy as a factor of the influence of milieu.

Mr. HASSANE, on Mr. PIGANIOL's request, points out, by way of example, the vicious circle constituted by the digging of a well, overgrazing, and desertification in the Niger Republic.

This leads me to think, in a discriminating manner, over the struggle against drought that the speaker situates between 1968 and 1973 (the affected countries being Senegal, Mali, the Niger Republic and the Republic of Chad) "... desertification can prompt, said the speaker, the unfortunate shepherd to make his troupe cover twice the distance of 15 kilometers...".

Mr. WARFORD's intervention is around three aspects :

- we risk being hemmed in, in trying to calculate the incalculable
- the evaluation field is enlarged regularly
- the Sahel problem is however calculable.

Mr. HASSANE adds :

- that the consequences are calculable
- but that the projects are difficult to determine financially.

Mr. DOOGE insists on organising research on what is generally not thought of :

- seminars on the sociological impact of administrative water structures
- seminars on the ecological impact.

Mr. PIGANIOL, retaining Mr. DOOGE's conclusions, requests that the fifth theme, proposed by Mr. ZAPATA, be examined.

3.5. THEME 5 : "PROJECT MANAGEMENT AND FINANCING WITHIN A WATER POLICY".

Mr. ZAPATA's project can be entitled : "project management and financing within a water policy". This theme leads Messrs. ALBRECHT, PIGANIOL and DUBREUIL to express their respective points of view.

Mr. ALBRECHT asks that the terminology utilised be made explicit and suggests that a work session be devoted to defining the terminology employed.

Mr. PIGANIOL retains the theme in its double aspect (management and cooperation).

Mr. ALBRECHT's suggestion is retained after Mr. PIGANIOL has insisted on the necessity of splitting the subject and introducing the notion of calculation of the optimal dimension of the projects.

4. SYNTHESIS AND DRAFTING (WEDNESDAY AFTERNOON).

This session is marked by :

- a general presentation by Mr. PIGANIOL,
- interventions by all the participants,
- a proposal by Mr. PIGANIOL,
- drafting of a synthesis (cf. Section D).

4.1. DISCUSSION.

Messrs. ALBRECHT, AMBROGGI, DOOGE, HARVEY, KUHLEN, WARFORD and ZAPATA intervene :

- to make a more detailed study of an already examined subject,
- or to draw attention (Mr. HARVEY) to the contents of the report to be submitted to the Scientific Council.

4.2. SYNTHESIS.

This synthesis, to be found in Section D, was adopted by all the workshop participants.

WORKSHOP N° 3

THEME : STUDY OF SOCIO-POLITICAL PROBLEMS.

SUB-THEMES : 3.1. CHARACTERISATION OF THE INTERESTS PRESENT IN WATER UTILIZATION.

3.2. PUBLIC ACCEPTIBILITY AND PARTICIPATION.

The sessions took place as follows :

- Tuesday 10th January, sub-theme 3.1. and discussions.
- Wednesday 11th January, sub-theme 3.2. and discussions.
Adoption, after discussions, of the final recommendations.

The Workshop was presided over by the Vice-Chairman, Mr. CANO, assisted by Mr. CAMPELLO (sub-theme 3.1.) and Mr. MONTANARI (sub-theme 3.2.). The latter were aided respectively by Messrs. NAJLIS and GUGGINO (Mr. CAMPELLO) and Mr. SCOTT (Mr. MONTANARI).

The other participants of the Workshop are (in alphabetical order) : Messrs. AGUILAR, ALVARADO, ETIENNE, GANA, GILBRICHT, HEMMADI, KUNTJORO, LIZZARALBE, VALIRON, WIENER.



- DETAILED SUMMARY -

1. MORNING OF TUESDAY 10TH JANUARY (FIRST PART)
 - 1.1. Introductory exposé by Mr CANO
 - 1.2. Speech by Mr CAMPELLO
 - 1.3. Discussion

2. MORNING OF TUESDAY 10TH JANUARY (SECOND PART)
 - 2.1. Speech by Mr NAJLIS
 - 2.2. Discussion

3. AFTERNOON OF TUESDAY 10TH JANUARY
 - 3.1. Discussion
 - 3.2. Conditions for the elaboration of the synthesis project - Sub-theme 3.1.

4. MORNING OF WEDNESDAY 11TH JANUARY
 - 4.1. Speech by Mr MONTANARI
 - 4.2. Discussion

5. AFTERNOON OF WEDNESDAY 11TH JANUARY
 - 5.1. Discussion of the synthesis project presented by Mr VALIRON (sub-theme 3.1.)
 - 5.2. Discussion of the synthesis project presented by Mr MONTANARI (sub-theme 3.2.)

5. BIBLIOGRAPHICAL REFERENCES
 - 6.1. Bibliography given by Mr CANO
 - 6.2. References of a document transmitted by Mr GUGGINO.

1. MORNING OF TUESDAY 10TH JANUARY (1ST PART).

The Vice-Chairman, Mr. CANO inaugurates the Workshop.

After having introduced the rapporteurs and their assistants, he points out :

- a) the Workshop's objective (project to be presented for the approval of the Scientific Council ;
- b) that Tuesday will be devoted to sub-theme 3.1. and Wednesday to sub-theme 3.2. and the drawing up of the final document.

Mr. CANO introduces the Workshop theme, explaining that his intervention will be essentially centred around the definition of a hydrographical region. After recalling that a bibliography is to be found in the documents given to the participants, he states :

- that no rapporteur having been appointed to speak on the subject, it is left to him to fulfil this function ;
- that the notion of region can be understood in diverse manners :
 - . political
 - . administrative
 - . technical.

Mr. CANO starts by giving an account of the history of Water Rights. The following points in the oral exposé may be retained :

- The Spanish decree of 5th March 1926, historically legalising the notion of a hydrographical basin ;
- The law (USA) of 18th May 1933 concerning the Tennessee Valley ;
- The United Nations research work and expert appraisements from 1957-58 ;
- The Helsinki rules (1966) ;
- The Strasbourg Conference decisions of May 1968 ;
- The considerations of the International Conference of Valencia of September 1975 ;
- The recommendations of the 11th International Conference on Water Rights and Administration (Caracas 1976).

Mr. CANO, after having recalled the diverse steps in legal water history, points out that :

- the notion of a hydrological basin must not be confused with that of its contributing factors (surface and ground waters) ;
- the notion of ground water, having given rise to a debatable interpretation, merited to be discussed ;
- the notion of basin was admitted at a later stage by the technicians than by legal men. The date of admission by technicians is given as 1950.

Mr. CANO concludes by insisting on the several possible divisions :

- political (including the international aspect concerning neighbouring countries). The example of equity in the struggle against floods within the E.E.C. was given. Marine water pollution was also cited (the choice of federal countries was evoked).
- administrative.
- hydraulic : the importance given to different approaches (ground and surface waters) was pointed out. Mr. CANO touches on a certain number of phenomena of a general or localised nature necessitating international solidarity :
 - . struggle against floods,
 - . elimination of effects provoked by household wastes in highly urban areas,
 - . ground salinization through water (the recent Senegal example is cited).

After having recalled the main points of his speech :

- notion of basin ;
- legal aspects and history ;
- natural resources ;
- environmental aspects.

Mr. CANO points out that the Colombian Environmental Code of 1974 remains an example in the matter and recalls resolution 7 of Mar del Plata.

Before inviting Mr. CAMPELLO (rapporteur) to speak, he points out that resolution 7 strongly suggests the creation of about fifty Commissions for the study of river problems.

Mr. CAMPELLO, after having thanked Mr. CANO, speaks on the North-East Region of Brazil. (cf. Section E)

He firstly gives a certain number of general indications on this region :

- ten states ;
- 1 600 000 square kilometres ;
- 20 % of the total area of Brazil ;
- three pluviometric or hydraulic regions :
 - . coastal zone, pluviometer $> 1\ 200$ m/m
 - . west zone, pluviometer between 700 and 1 200 m/m
 - . central zone, pluviometer < 700 m/m.
- 50 % of the population lives off rearing ;
- grave drought problems are latent and necessitate hydro-agricultural development.

The speaker adds :

"The Brazilian Government decided, in 1960, to create SUDENE, an organization responsible for water and soil resource utilisation management. The board of Directors is composed of :

- State governors ;
- representatives of the concerned ministries ;
- representatives of development banks."

Mr. CAMPELLO tackles his subject from the point of view of four statements and questions :

- a) the problem of profitable water distribution : the San Francisco river constitutes the only energy source for North-East Brazil. Irrigation and development are reaching such proportions (of consumption) that, in the near future, this could give rise to conflicts. Irrigation according to the speaker, necessitates mobilising a rate of flow of 500 to 600 m³/second.
- b) developing countries having important climatic contrasts meet with difficulties that cannot be compared with those of developed countries.
- c) information, according to the speaker, is situated at different levels (vertical or horizontal). It is extremely difficult to draw up a synthesis of such information.
- d) a study of the setting of an information bank taking into account :
 - . users demand (demand)
 - . possibilities (offer).

Mr. CAMPELLO concludes his speech by expressing the wish that ITCWRM act at two levels :

- Level 1 : by training technicians in controlling supply and demand ;
- Level 2 : by explaining and making known to farmers a certain number of irrigation and development technics.

Mr. CANO, after having thanked the speaker, indicates :

- that, after a pause, the Workshop participants will have the honor of listening to Messrs. GUGGINO and NAJLIS.
- that the training of trainers must remain an essential idea.

Mr. WIENER points out that trainers and potential trainees exist. The main thing is to define programmes that can be put at the disposal of the trainers.

2. MORNING OF TUESDAY 10TH JANUARY (2ND PART).

After the pause, Messrs. CANO, NAJLIS, GUGGINO, WIENER, STOTT give their respective points of view.

Mr. CANO says that so-called active training is in accordance with the 1976 Caracas Conference recommendations, and that there is a publication conceived and diffused by the International Association for Water Management on the subject.

Mr. NAJLIS comments the terms to be found in his paper and insists particularly on :

- the immense overlapping between political and development problems ;
- the necessity for a professional dialogue between the different disciplines concerned with development ;
- the contempt felt by "politologist" for economic analysis and by economists for political analysis ;
- the importance of sociological data in development.

Mr. GUGGINO next insists on :

- the need for a global training strategy ;
- the experience acquired in this field by the C.S.E.I. of Catania.

Mr. CANO invites Mr. GUGGINO to present a written concrete recommendation to the Workshop participants.

After having recalled Mr. CANO's explanations and indications, Mr. WIENER again points out the distinctions (political-management-technical-administrative) present in a regional approach. He insists :

- that the coincidence between surface and ground waters at the "basin" unit level is not always possible ;
- that the financially calculated errors can pass from a tolerable (100 000 \$) error to a governmental one (1 million \$) ;
- that time must be devoted to reflection and conception ;
- that problems in developed countries, as mentioned by Mr. VALIRON in the plenary session (Monday 9th January), are different from those faced in developing countries.

Mr. WIENER concludes by saying that the following precisions are necessary :

- training aims ;
- training programmes ;
- the form to be given to training ;
- homogeneous zones to be determined by TICWRM.

Mr. WIENER ends by remarking that political, administrative, cost and socio-logical factors render the analysis in developed countries different from that of developing countries. He adds that a certain experience has been capitalised since 30 years (1945) and supports his point of view with the following examples :

- . North-west Mexico
- . California
- . Arizona.

Mr. STOTT insists on :

- the necessity for a global conception and basic philosophy called "doctrinal framework" ;
- a good assimilation by the trainees of the aspects of conception and of a general framework assimilation ;
- the absolutely necessary but brief knowledge acquired by every trainee of the socio-political framework (the term of the day has been pronounced) ;
- the necessity for a simplification of particularly complex questions for the trainees.

Mr. WIENER, who introduces himself as a planner, indicates the diverse restrictions present in the choice of a geographical division. He prefers a single management unit (particularly in developing countries), pointing out the inconveniences for water management of a strictly administrative division. He prefers the management unit notion and cites examples in support of this. At the political level, Mr. WIENER says that the different restrictions imposed by the users must be analysed differently according to the degree of democratization in each country.

3. AFTERNOON OF TUESDAY 10TH JANUARY.

At Mr. CANO's request, a discussion allows a certain number of speakers to express their points of view.

Mr. WIENER insists on two aspects :

- 1st aspect : the choice of a management unit. The region's management aspect must be privileged at the cost of the basin entity. We must come to a definition, admitted by all concerned, in a given country and even at the international level. For the latter, Mr. CANO knows that things will move slowly.
- 2nd aspect : the approach to the problems and the kind of ITCWRM training courses arising from this approach must be different according to whether they are for developed or developing countries.

Mr. GANA developed the following points :

- the necessity for a maximum valorization of a cubic metre of water especially in arid zones of developing countries.
- the importance of economic balance in the development plan choice. Right regions should not become richer and poor ones even poorer.
- the need to analyse differently the nature and contents of the responsibilities of water managers in developing and developed countries.
- the care with which decentralisation at the decision-making level must be undertaken in countries where the national concept is a recent, and therefore fragile, one.
- the error, in development, is to limit oneself to calculating projects in dollars, since these projects can lead to an increase in desertification, which is not calculable.
- centralisation at the planning (decision) level must be accompanied by decentralisation at the management level.
- concerning regional limitations, Mr. GANA feels that, in certain cases (the Maghreb oasis for example), it is the resources which must dictate administrative limitations.
- the ITCWRM training courses quality and efficiency will depend on our efforts at analysing and raising problems in all their aspects.

Mr. VALIRON says that at the present level of discussion, and particularly after Messrs. WIENER and GANA's remarks, it would be of use to point out the following :

- THE TARGETS : ITCWRM must first of all make a choice of targets. This choice depends on financial means and can be enlarged in the future. At present, however, it is important to retain that, given the nature of financing (Nairobi) and the urgency and acuteness of the problems, the developing countries constitute ITCWRM's privileged target. It is therefore important to point out that at present, ITCWRM will give training for the benefit of developing countries.
- THEME REGROUPING : it is important, says Mr. VALIRON by way of a second remark, that we regroup themes in as practical a manner as possible. It would be unfortunate for our courses to be of general nature. This does not exclude the future possibility of organising such a course, but at present, and on a priority basis, our courses must touch on concrete aspects and realities on the ground.
- REGIONAL HOMOGENEITY : specialised and practical courses must be dispensed within countries grouped together in a homogeneous manner on the basis of criteria such as size, climatic structures, comparable development level. The Scientific Council has envisaged organising an initial training course for countries of the Sahel ; this is an example of an interesting target.

We must make an effort to find similar targets, keeping in mind what Mr. GANA said on the maximum valorization of a cubic metre of water. Perhaps it would be possible in Latin America, for example, to find homogeneous targets.

This kind of regrouping could also facilitate better understanding (the language utilised) and this is with reference to the language problem evoked.

Mr. VALIRON concludes with the following remarks :

- the necessity of simplifying the problems and there he agrees with a point of view expressed by Mr. STOTT.
- the suggestion made concerning the acquiring of general knowledge during one day must be retained. This day, whatever the target, is necessary and will be organised around concrete cases.
- the suggestion on a multidisciplinary welcome of trainees should also be retained.

Given our present work level, says Mr. VALIRON, I am not aiming at a synthesis, but rather at bringing together and clarifying the ideas proposed.

Mr. CANO thanks Mr. VALIRON and invites those participants so desiring to speak.

Mr. AGUILAR :

"There was question of technology transfer from developed countries to developing countries. According to me, there possibly exists another type of extremely interesting transfer between developing countries with comparable levels of development. It is possible that certain developing countries have met with success in certain fields and with failure in others and that other developing countries have undergone experiences to the contrary".

Mr. CANO :

"Next year, in 1979, an international conference on the theme developed by Mr. AGUILAR will take place in Argentina. I propose that ITCWRM contributes, by means of a paper, to this conference".

Mr. ALVARADO :

"The moment has come, in my opinion, for recommending training themes. Theoretical ideas can of course be given, but it is indispensable to make practical suggestions corresponding to the realities of the country. In that, I fully agree with Mr. VALIRON : we must make practical recommendations to ITCWRM. I would also like to recommend, to this centre, the organization of courses not only at Sophia, but also in the concerned countries".

"It is, on the other hand, important, that during these courses, emphasis be placed as much on what should be done as on what should not be done. Finally, it seems difficult to isolate training from research. A great effort must be made to elaborate study programmes. Concerning technology transfer, I agree with Mr. AGUILAR".

Mr. CANO next requests Mr. ETIENNE to speak.

Mr. ETIENNE :

"I agree with Mr. AGUILAR, but I would like to go further. Mr. VALIRON suggested a certain homogeneity of training courses. He cited the Sahel example. I am in full agreement at the educative level. At the exchange level, on the other hand, I would like a second category of trainees coming from very different professional, geographical horizons."

"Information and exchanges will thereby prove fruitful. I therefore suggest a certain suppleness here. At the educative level, the course objective, choice of subject, trainee selection correspond to Mr. VALIRON's ideas. I would however like the introduction of more "heterogeneous" training courses."

Mr. NAJLIS :

"Let us take the planning example. This is yet an unexplored field. It is in the interest of developing countries to learn, on their own, to exchange and analyse their errors, strategies and failures. It does not appear of interest to me for the developing countries to copy the approaches practised in developed countries."

Mr. VALIRON :

"I have kept in mind what Messrs. ETIENNE and NAJLIS said about two levels of training :

- one course which welcomes a homogeneous ensemble around a highly practical theme ;
- an exchange which would be situated at a different level of experience.

It appears wise to me to call the latter "*seminar*"."

Mr. LAZZARALBE :

"I am happy that Mr. VALIRON has clarified the term "training course". May I point out that since 11 years, CIDIAT, under aegis of the Organization of American States, has much for which to be congratulated and this is bearing fruit - for it has brought together, in a meeting, specialists coming from comparable levels and different disciplines."

Mr. GILBRICHT insists on the two following aspects :

- liaison between planning and engineering missions,
- diverse environmental implications.

The first day's work (Tuesday 10th January) ends with :

- practical considerations provided by Mr. VALIRON,
- the arrival of Mr. KUNTJORO (Indonesia),
- the unanimous adoption of a proposal entrusting Mr. VALIRON with presenting a written synthesis the next day (Wednesday). This decision was undertaken following a feeling that the discussions are moving away from the central theme. The participants therefore commission Mr. VALIRON with preparing a synthesis for the next day (cf. Section D) and approve the following preoccupations expressed by him :
 - . the need for giving concrete proposals,
 - . draw up a coherent programme for 1978,
 - . to find one's bearings with regard to feasible ideas
 - . not to waste time notably in recruiting trainees, which is a long drawn out process.

4. MORNING OF WEDNESDAY 11TH JANUARY.

Mr. CANO presents the work to be done on Wednesday 11th January by :

- specifying sub-theme 3.2. ;
- introducing Mr. MONTANARI, rapporteur-consultant Expert Council.

Mr. CANO indicates that water using organizations and non-water using (but concerned) organizations constitute the basis for reflection. There also exist different levels of public participation :

- decision making level ;
- planning level ;
- administration level.

After Mr. MONTANARI's exposé, Mr. CANO says that the discussion is now open and points out that Mr. VALIRON has been entrusted with drawing up the synthesis of the work of the day before (cf. Section D)

Mr. MONTANARI reads out his speech, the outline of which is to be found in Section E.

He is congratulated on the quality of his exposé. Messrs. STOTT, WIENER, LIZZARALBE, KUNTJORO, HEMMADI, however make the following comments :

Mr. STOTT :

- the need for being practical (Mr. STOTT here refers to the point of view expressed by Mr. VALIRON) ;
- the problem of public approval and participation is very complex. The highway network planning example cited by Mr. MONTANARI proves that this problem is not specific to water ;
- the need for a wise choice in teaching.

Mr. WIENER :

- let us be frank ; can the process presented by Mr. MONTANARI really be suitable to developing countries ?
- he insists on entities which are the framework of populations (village - tribe) in certain developing countries ;
- the essential problem in developing countries lies in efficient implementation of local participation.

Messrs. LIZZARALBE, KUNTJORO and HEMMADI, with the help of extremely concrete examples, express reservations on the possibility of applying Mr. MONTANARI's model to developing countries.

5. AFTERNOON OF WEDNESDAY 11TH JANUARY.

In the afternoon, the session is resumed under the Chairmanship of Mr. CANO who requests Mr. NAJLIS to recall the terms of resolution 7 of Mar del Plata (setting up of international commissions for river questions). He confirms to Mr. ETIENNE that the resolutions would not be discussed in detail but simply recalled by way of information.

On Mr. CANO's request, Mr. CAMPELLO gives details on the sub-theme of the day before (Tuesday) and which are found in Document 3.3. (sub-theme 3.1). The discussion takes place around the final document prepared in two parts :

- FIRST PART : project presented by Mr. VALIRON in French ;
- SECOND PART : project presented by Mr. MONTANARI in English.

5.1. FIRST PART (MR. VALIRON).

Mr. VALIRON points out that he has simply tried to put down, without any value judgment, the participants' diverse recommendations. This project is given in Section D - Workshop 3 -

The adoption of the final recommendation is preceded by a debate and amendments proposed by the following speakers :

- the term socio-political must be added (Mr. CANO) (§ 11 modified) ;
- cohesion between the ITCWRM methodology and objectives (Mr. CAMPELLO) must be underline (§ 12) ;
- ITCWRM's contribution to the T.C.D.C. Conference in Argentina is retained (Mr. CANO) (§ 12) ;
- the study of links between regional and national planning and the problems of federal countries (Mr. CANO). Mr. VALIRON proposes that this be made the object of a special paragraph which would recommend a seminar and not a training course (§ 19) ;
- the term small hydraulics draws Messrs. WIENER and AGUILAR's attention. Mr. WIENER feels that big hydraulics must not be forgotten and Mr. AGUILAR feels that keeping in mind the mexican example where certain irrigated holdings reaching 100 000 hectares, the two hydraulics must be cited. Mr. VALIRON has therefore the opportunity of explaining that there was no question of privileging small hydraulics but of distinguishing two types of interventions adapted to specific contexts :
 - . big hydraulics (big areas) is practised in general in zones where irrigation traditionally exists,
 - . small hydraulics is associated with zones where the populations are less accustomed to irrigation technics. It is agreed upon to remove the word small.
- paragraph 6 which brings out a proposal made by Mr. GILBRICHT gives rise to discussion. Mr. VALIRON proposes a much more general drafting on environmental protection whilst insisting on the public health aspect.

- concerning centres with which ITCWRM will establish relations, there are diverse opinions. These are resumed by a proposal made by Mr. VALIRON, tending to fuse paragraphs 7 and 8 of the project, placing emphasis on the relationships ITCWRM must have with Centres having the same aim and benefiting from similar (international) financing, with possibilities of widening the scope in the future.

This is followed by an analysis of Mr. MONTANARI's project (sub-theme 3.2. and Document 3.7) in English. The participants bring out the necessity of linking in the form certain paragraphs of the two projects. The proposal's last paragraph must be drafted anew. After discussion and consultation, Mr. CANO invites Messrs. VALIRON and MONTANARI to discuss their proposals together and arrive at a final document which he will have to present the next day at the Workshop's synthesis meeting.

6. BIBLIOGRAPHICAL REFERENCES.

6.1. BIBLIOGRAPHY GIVEN BY MR. CANO

ASSOCIATION INTERNATIONALE du DROIT des EAUX. Recommendations de la Conference de Caracas sur le Droit et l'Administration des Eaux-AIDA II (8-14 Février 1976)

CHARLES BOURNE. The development of international water resources : the "drainage basin" approach, published in Canadian Bar Review (March 1966) pp. 62

GUILLERMO J. CANO. Systems of administrative organization for the integrated development of river basins. Doc. of the United Nations E/CN.12/503 (April 1959)

GUILLERMO J. CANO & JOAQUIN R. LOPEZ. Las cuencas hídricas como unidades óptimas para la planificación y administración de los recursos hídricos. Participación de los usuarios en tales actividades (Mendoza 1976)

J. D. CHAPMAN (editor). The international river basin (Vancouver, 1963)

K. CSONTOS & T. KREMPELS. Contributions to the International Conference on the organization for the autonomous steps of water use (Budapest 1976)

M. L. EFROU & F. VALIRON. Gestion des eaux le long d'une rivière à partir des objectifs de qualité.

HANS W. KOEN. Ruhwerband y Ruhvitalsperrenverein, un modelo de administración autónoma de recursos de agua por sus usuarios (Bonn 1976)

UNITED NATIONS. Report of the United Nations Water Conference, Doc.E/CONF.70/29, Sale number : E.77.II.A.12 (N. Y. 1977)

-Proceedings of the Interregional Seminar on Water Resources Administration. New Delhi 1973 (N. Y. 1975) doc. DP/UN/INT-70-371, including the following papers of interest :

Guillermo J. Cano. New approaches to water resources administration in developing countries (pp. 84-100)

Kanwar Sain. Participation of the public in water resources development and administration (pp. 173)

W. Derrick Sewell. Public participation in water resources development and administration (pp. 178)

-Developpement intégré des bassins fluviaux - Rapport d'un collège d'experts (N. Y. 1958) doc.E/3066, sale number 58.II.B.3. re-edited in 1970 (Gilbert White, editor)

-Management of international water resources : institutional and legal aspects (N. Y. 1975) doc. sale number E.75.II.A.2. (Robert Hayton editor)

GONZALO SANCHO de YBARRA. La gestión autónoma del agua en España (Zaragoza 1976)

COLIN SINNOTT. The management of water resources in England and Wales (London 1976)

LUDWIK TECLAFF. The river basin in history and law (The Hague 1967)
Martinus Nijhoff, ed.

-The river basin and beyond : changing concepts in U. S. water resources planning (New Delhi 1973)

P. F. TENIERE-BUCHOT. Politiques et instruments de la gestion des eaux
OCDE, doc.ENV/WAT/76.6 (Paris 1976)

F. VALIRON. See above M. Lefrou.

6.2. REFERENCES OF A DOCUMENT TRANSMITTED BY MR. CUGGINO DURING THE WORKSHOP.

Centro Studi di Economia Applicata all'Ingegneria, C.S.E.I. Catania.

- Preamble
 - Organizational structure of Catania
 - Activities
 - Programs.
-

WORKSHOP N° 4

THEME : REGIONAL WATER PLANNING INSTITUTIONS.

SUB-THEME : 4.1. ADMINISTRATIVE SET UP AND INSTITUTIONAL ORGANIZATION.

4.2. POLITICAL REGIONAL WATER PLANNING INSTRUMENTS AND THEIR IMPLEMENTATION.

The Workshop was presided over by Mr. KINDLER, assisted by Messrs. JOHNSON and SANTEMA. The latter were aided respectively by Messrs. DA CUNHA and CAULFIELD (Mr. JOHNSON) and Messrs. VOLKER, KOVACS, TENIERE-BUCHOT (Mr. SANTEMA)

The work was undertaken in four sessions, tuesday 10th and wednesday 11th January.

Others participating in this workshop (in alphabetical order) : Messrs. ALOUINI, FARRA FROND, GARCIA, HARIRI, LANGWEG, LEE, LUMU, THORPE, VASQUEZ AVILA.

Sir Norman ROWNTREE also participated partly in the sessions.

- DETAILED SUMMARY OF WORKSHOP 4 -

1. MORNING OF TUESDAY 10TH JANUARY
 - 1.1. Introductory exposé by Mr KINDLER
 - 1.2. Speeches by Mssrs DA CUNHA and JOHNSON
 - 1.3. Debates - discussion

 2. AFTERNOON OF TUESDAY 10TH JANUARY
 - 2.1. Speech by Mr CAULFIELD
 - 2.2. Debates - discussion

 3. MORNING OF WEDNESDAY 11TH JANUARY
 - 3.1. Speeches by Mssrs SANTEMA, KOVACS and TENIERE BUCHOT
 - 3.2. Debates - discussion

 4. AFTERNOON OF WEDNESDAY 11TH JANUARY
 - 4.0. Synthesis
-



1. MORNING OF TUESDAY 10TH JANUARY.

The Chairman, Mr. KINDLER, after having greeted the Whorshop participants, invites them to introduce themselves individually and to briefly state the fields and organizations in which they work.

In answer to this request, each of the participants briefly gives his university and professional references ; this introduction is to be found in Section E of the present report.

This useful formality over, Mr. KINDLER gives an introductory speech on the seminar's objectives, the contents of which can be found in Annexe 1 of the present report.

This morning being devoted to an initial presentation of papers, the participants listen, after a short interval, to Messrs. JOHNSON and DA CUNHA.

The contents of their papers are annexed to the present report :

- Mr. JONHSON's paper (cf. Section E)
- Mr. DA CUNHA's paper (cf. Section E)

2. AFTERNOON OF TUESDAY 10TH JANUARY.

Mr. KINDLER opens the afternoon session by insisting on the importance of the ITCWRM document on the first year's activity, mention of which was made by Mr. LACROIX.

Mr. TENIERE-BUCHOT intervenes with the following details :

- The document to which Mr. KINDLER refers is a rich improvement in quality over the earlier document presented to the first Scientific Council. The first document took into consideration contacts ITCWRM made with UNEP ; the second contains the first Scientific Council recommendations.
- Desiring to give information, we deemed it necessary to distribute a reference document. This does not mean that we must stop at this point.
- It is necessary, as Mr. VOLKER said, to go beyond the seminar contents and define now and progressively in the next two days, the problems of seminar and training course organization, i.e. trainee selection around a given theme, choice of a geographical impact (several countries grouped together or a region of a country), the teaching content and pedagogical choice... This is what must be analysed with the help of precise examples. Our conclusions must not, for example, contain recommendations for such and such a linguistic tool, but rather find out a precise aspect of water institutions must be transmitted through lectures or otherwise.

We must conclude our work with this type of extremely concrete recommendations.

Mr. KINDLER, after having thanked Mr. TENIERE-BUCHOT, invites Mr. CAULFIELD to present his paper.

After having thanked Mr. CAULFIELD, Mr. KINDLER feels that the Workshop disposes of sufficient matter for discussion. He also recalls the ideas developed by Mr. CAULFIELD, that is, the necessity of adapting teaching to concrete and specific problems experienced by the trainees in their respective countries.

On the basis of the Chilean example, Mr. KINDLER points out the gap which sometimes exists in the water management field between theoretical choice (texts) and daily practice.

A discussion opens with an intervention by Mr. LUMU.

Mr. LUMU develops the following points :

- "ITCWRM's creation is a perfect answer to the preoccupation of developing countries.
- ITCWRM can be the crossroads for exchanges of experience in water resource management.
- We must help ITCWRM to develop this field, to create homogeneous groups of countries with similar water preoccupations and to organise a sort of "à la carte" teaching.
- The trainee must have the necessary university qualifications and have at least two years professional experience."

Mr. KOVACS :

- "It appears difficult, in the present state of affairs, to proceed with any form of teaching other than a comparative study of specific cases bringing out the technical, organizational, planning and financial aspects. However, in the end, the final work must be given to the trainees". The speaker, to support his point of view, gives the example of the seminar organised in 1976 at VARNA (Bulgaria) on long-term water resource planning.
- After recalling the Varna seminar conclusions, Mr. KOVACS evokes the complexity of the subject, insisting on the fact that beyond the economic, historical, organisational diversities, the common problem remains that of adapting demand to resource.
- The speaker continues by saying that, on the basis of the comparative study of concrete cases, research can be undertaken on the links between the different water resource and management factors.
- He also feels that domestic, agricultural and industrial water consumption aspects have not been evoked and discussed. He insists finally on the need for approaching each case in its actual context : what is true of non arid zones can be disastrous in arid zones, as much in matters of investment choice as of legislation.

Mr. HARIRI brings up the educative aspect in the sense of an awareness and popularization of local water uses. There exists a popularization of water economy themes concerning agricultural or industrial uses, but not for local use. He suggests that this theme be evoked and discussed in the course of the seminar.

Mr. THORPE insists on the need for organizing seminars and training courses for widening the narrow vision that each specialist has of his field. An exchange of views allows this mutual broadening and enrichment.

The speaker feels that numerous water problem specialists have a narrow vision of things. By specialists, he means engineers, jurists, planners.

The second point developed by the speaker is on the importance - on the basis of an English example - of public participation and organization in water resource management.

The United Kingdom has a multifunctional system, but those in charge of management are not always conscious of this. This sometimes leads to decisions lacking imagination, such as the construction of a new work, which excludes the wiser solution of extending an older work still in service.

England has managed to define this multifunctional system. The speaker thinks that other countries will also succeed.

Mr. FARRA FROND developed two points :

- He expresses surprise at the fact that only cases of developed countries have been exposed. He comes from a country where the water resource problem does not arise. He would have liked a comparison of cases from developed and developing countries.
- The second point concerns trainee profile. The university criteria appears inadapted to countries like his own where engineers are still at the training courses for the technicians, high-level technicians, etc... according to groups of interested countries. Valuable elements for future research work could be obtained from these courses.

Mr. GARCIA :

The speaker expresses his idea of what ITCWRM's role and mission should be. The creation of ITCWRM is an excellent idea. Mr. GARCIA continues by developing the following points :

- "First of all, the trainee would like to understand why he has failed in the development field in his country. Such replies can be provided by ITCWRM through training, but the trainee, back in his country, will find it difficult to get this point of view admitted.
- The trainee would also like to be kept informed of the latest water research developments.
- ITCWRM should be the crossroads for dialogue, exchange and reflection.
 - . dialogue and exchange enable professionals to broaden their perspective, and here, I repeat, and agree with, what has already been said.
 - . reflection enables the drawing up of solutions to the problems studied.

Mr. ALOUINI mention the following points :

- the trainee profile : the course must be organised for persons having the power of decision in their respective countries in water resource planning and management. He insists that ITCWRM must orient its training towards decision makers.
He places doubt on the efficiency of courses for non-deciders (implementation).
- Mr. DA CUNHA's paper : "the type of organisation exposed by Mr. DA CUNHA is extremely clear and attractive, but does not appear *exportable* to all regions of the world."
- "It is also important for ITCWRM to give thought to water resource management training courses and types of organisations possible for homogeneous groups of countries. This homogeneity should be at the water resource level."
- With reference to what Mr. SANTEMA said on water planning and management, Mr. ALOUINI gives the Tunisian example to support his point of view. In Tunisie, we have drawn up regional water resource exploitation master plans (north-centre-south). The World Bank has granted funds after having imposed a plan for the North. The Tunisian government has decided to draw up plans for the Centre and South without calling for financial aid from sources which impose their points of view. This example illustrates the restricting side to financial aid in all water resource planning.

Mr. TENIERE-BUCHOT states and proposes the following :

- "We are at the very core of the subject and I thank you for your different points of view which will prove extremely useful to ITCWRM."
- "I also suggest that each of the participants make a proposal during a short pause."

Mr. KINDLER thanks Mr. TENIERE-BUCHOT for this proposal which is approved. The Workshop members are invited to elaborate on their recommendations during a short 15 minute pause.

After the pause, Messrs. VOLKER, CAULFIELD, SANTEMA, LUMU, THORPE and KOVACS will speak on the programmes and on the course levels and pedagogic contents.

Mr. VOLKER makes three recommendations :

- a need for coherence at the teaching level
- a need for coherence of the problems studied (notably within a regional framework)
- a need for an attentive reexamination of the duration (3 weeks), which appears insufficient.

Mr. CAULFIELD evokes the need for political awareness of the technicians.

Mr. SANTEMA feels that through the study of management instruments, the Workshop will be called upon to concentrate on political awareness and dynamic planning problems.

Mr. LUMU evokes the problem of continuation once the trainee has returned to his own country. He suggests that there exist a structure there which would enable the further pursuing of the training course.

Mr. THORPE evokes the trainees' possible age, as also the need for giving precise programme details before the training course.

Mr. KOVACS :

- feels that the trainees should come from different disciplines so as to avoid narrow teaching limits
- also feels that ITCWRM must be doted with an excellent pedagogical information service in order to provide answers to all these problems.

3. MORNING OF WEDNESDAY 11TH JANUARY.

Mr. KINDLER inaugurates this second day by recalling the principle subjects of the day before and resuming the proposals made around profiles, objectives, programmes and their implementation.

After having insisted on the need for adapting the teaching to the types of water uses in each country, Mr. KINDLER invites Messrs. SANTEMA and TENIERE-BUCHOT to present their respective papers (cf. Section E)

These two texts give rise to several interventions :

- The planning theme gives rise to the following comments :
 - . Mr. KOVACS underlines the importance of planning and asks that it should not be considered as an activity in itself, but that the main preoccupation be an attempt at achieving a global coherent economy.
 - . Mr. LUMU suggests that a study be made of the two experiences (socialist and non-socialist) in planning.
- Mr. KINDLER, supported by Mr. VASQUEZ AVILA, proposes that all courses and seminars dispose of means for defining the terms utilised.

At Messrs VOLKER and DA CUNHA's request for an examination of the course proposals and recommendations, Mr. KINDLER replies that this will be the object of the afternoon session.

4. AFTERNOON OF WEDNESDAY 11TH JANUARY.

This final session will be opened with Mr. KINDLER stating that the recommendations of the participants are grouped around four general themes :

- . the aims
- . the course organisational, administrative and pedagogical structures
- . the teaching content
- . the participant profile.

After having proposed that the subjects be first of all "touched upon", and then studied each in turn before the final synthesis, Mr. KINDLER invites Mr. TENIERE-BUCHOT to provide information concerning the seminar's next step.

Mr. TENIERE-BUCHOT points out :

- having contacted the three other Workshops, he was informed that they were drawing up course and seminar theme proposals.
- that the Chairman, Sir Norman ROWNTREE, will take stock of the situation in two parts (after dinner, and the next day's breakfast) with the Workshop animators and those others responsible.
- after the Monaco visit, a plenary session with all the seminar participants will complete the study of the documents proposed.

In answer to Mr. KINDLER, who asks if the seminar titles must simply be suggested, or if their contents must be defined, Mr. TENIERE-BUCHOT says :

- First of all, amongst the 22 subjects proposed, those of extreme importance must be indicated.
- It must be indicated if the training course is of three weeks duration or more.
- The size of the audience must finally be indicated (20, 30 persons or more).
- The most important thing is not the seminar's detailed contents, but rather a certain number of precise practical indications enabling its implementation.

After two brief interventions by Messrs. SANTEMA and HARIRI, the 22 points are read out.

The first speaker is Mr. KOVACS who feels that the three main subjects amongst the 22 points are :

- 1) Make a study of the existing water resource management organisations and the history of their evolution. Next, organise a seminar for a detailed comparative study of the advantages and disadvantages of different organisations.
- 2) The second concerns the methodological approach, that is the manner in which the water management objectives must be perceived. This aspect was discussed this morning and the means for attaining the objectives indicated.
- 3) The different integrated water management instruments.

More "localised" but equally important subjects, such as international financing procedures or the drainage basin notion at the international level, must retain our attention.

It is also indispensable to bring together trainees coming from zones homogeneous in the geographical as well as the water resource development sense.

If the Workshop retains the above three subjects, the speaker suggests that they be broken up into small study groups.

Mr. THORPE shares his preoccupations with those present concerning the choice of a three week course (duration retained). Must one on the basis of general indications on a subject, enable those coming from different disciplines to meet and discuss? Must one group together a certain number of themes and maintain a balance in the teaching process or must one concentrate only on intense specialisation of a theme?

Mr. TENIERE-BUCHOT answers that the proposals made by both Mr. KOVACS and Mr. THORPE are interesting. He points out that the three week period is not a rigid factor and that shorter and more specialised courses can be envisaged.

What Mr. THORPE calls "the mixed menu" consisting of transmitting a certain number of institutional water management generalities can also be considered. A rapid and general introduction to the subject will enable those so desiring to acquire general knowledge. The two approaches are complementary. It remains to be seen if the trainees are motivated by them.

Mr. TENIERE-BUCHOT concludes by saying that he was struck this morning by the remark of Mr. LEE, who declared himself sceptical about the very notion of water management at times non-existent in several Latin American countries. In this case, Mr. THORPE's proposal appears even more valid. In fact, the concept being non-existent, it must be introduced without going into the details of its aspects. On the other hand, in countries where the water management question is more advanced, it is wise to enter into precise details. In the latter case, Mr. KOVACS' proposal appears interesting.

Mr. CAULFIELD reminds the audience that ITCWRM's mission consists in providing the trainee elements for the final decision. We must concentrate on coherence, the kind and quality of elements to be provided, so that the decider can make his own choice.

Mr. TENIERE-BUCHOT approves this analysis and desires that, on the basis of the 22 points, there be regroupings and that points which are criteria be isolated.

Mr. GARCIA, speaking in the same spirit, proposes certain regroupings.

Mr. KINDLER next takes stock of the discussion, recalls the Workshop's objectives, the principle points on which the participants agree and invites Mr. THORPE to speak. The latter considers that ITCWRM should not provide the regular teaching dispensed elsewhere, but rather exchange fruitful exchanges of experiences.

Mr. KINDLER reminds those present that 3 subjects have been proposed and that the specific nature of the subjects according to each country results in the difficulty of drawing up recommendations of a universal character.

Mr. TENIERE-BUCHOT insists on the fact that the aim is not to establish complex subjects but rather to determine a course theme and its organisation modalities. The speaker will several times in the course of his intervention speak on the need for simplifying things. Simple feasible ideas must be implemented, he says, and not complex ones that cannot work out.

Mr. VASQUEZ AVILA agrees with Mr. TENIERE-BUCHOT and considers that the Scientific Council can, through orientations, make those in charge of drawing up detailed programmes aware of their responsibilities. It also appears necessary to inform the Scientific Council that the organisation of two or three seminars has been suggested.

The study of problems on certain rivers having an international character is of general interest. Another problem raised by Mr. KOVACS and concerning the intense use of basin resources by diverse users (agriculture - industry) appears interesting. For Latin American countries, and on account of the remark on inexperience made by Mr. LEE, a general seminar on diverse aspects of water planning and management appears desirable.

Mr. KOVACS considers that the trainee profile constitutes a prerequisite to defining course content. His proposal is as follows :

- Possibility of organising a general seminar on integrated water management.
- In each seminar, a rapid survey of water management can be envisaged, after which more specific themes such as the comparative study or organisations would be taken up.

On the basis of three objectives :

- . long term planning
- . development of integrated management instruments
- . choice programming

and in relation with the kinds of basins (agricultural - industrial and mixed), it is possible to establish a set of nine different courses with a certain number of specialised teachings concerning, for example, international financing or international basins.

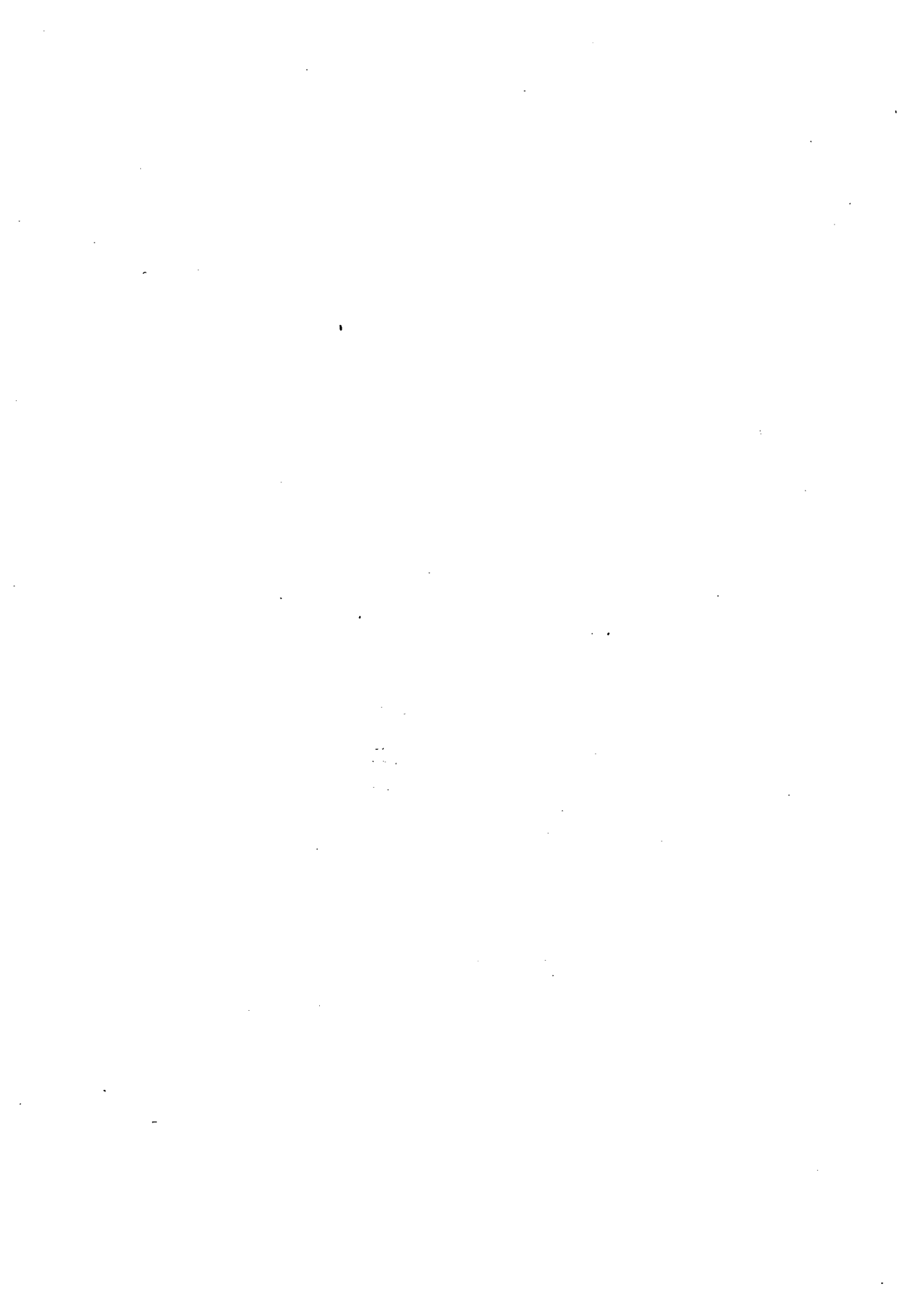
Mr. HARIRI says that one must be wise and avoid controversies, otherwise ITCWRM's development would be compromised and it would be faced with difficulties.

He particularly refers to international water problems, a delicate subject. He also insists on the means of communication (language). The term "instrument", for example, has different meanings in different languages and countries, and this could be a source of misunderstanding.

Mr. CAULFIELD partially disagrees with Mr. HARIRI on the international basin subject. If difficulties arise, ITCWRM must contribute towards solving them, to ignore them would not constitute a positive approach.

Messrs. VOLKER and KOVACS also intervene.

Mr. KINDLER closes the Workshop n° 4 session and the drawing up of the synthesis (cf. Section D) is started.



ANNEXE
SHORT WRITTEN CONTRIBUTIONS
TO THE WORKSHOPS

- B. BINSON
 - G.J. CANO
 - M. CAMPELLO
-

SHORT EXPOSE ON FINANCIAL AND ECONOMIC PROBLEMS

B. BINSON

One of the most important problem in realizing Water Resources project is its Cost and Benefit justification.

Benefit may be termed Effectiveness and it must cover both economic as well as social benefits.

Most of the economic benefits are direct but most of the social benefits are indirect and are harder to assess than economic benefits. Nevertheless, care must be made to evaluate them, so that the project will be properly justified.

INTRODUCTION TO THE SUBJECT ON SOCIO-POLITICAL PROBLEMS
IN REGIONAL WATER MANAGEMENT

Guillermo J. CANO

SUMMARY

I. WHAT DOES ONE MEAN BY "REGIONAL" WHEN ONE SPEAKS OF WATER ?

1. Surface basin
2. Underground basin
3. Economic management region
4. Political and administrative management region.

II. PARTIES INTERESTED IN THE HYDROLOGICAL REGION.

1. Users and their organisations. Utilisation for the following purposes : domestic and municipal, agriculture, rearing, mining and oil, electric power, industries, leisure and tourism, navigation and floating.
2. Government and its policies - utilisation priority decisions.
3. Third parties (non-users).

III. PHYSICAL FACTORS IN THE REGION.

1. Natural resources :
 - a) waters (surface, underground, atmospheric, coastal)
 - b) other natural resources (earth, ground, flora, fauna) mineral deposits, climate, topography (including slopes) and their utilisations.
2. Natural phenomena : floods, drought, salinization, erosion, sedimentation, typhoons, earthquakes.
3. Other environmental elements : urban and rural populations, household, industrial and agricultural wastes, agrochemical products, industrial establishments.

IV. ECONOMIC FACTORS. REGIONAL PLANNING AND ITS LINKS WITH NATIONAL PLANNING.

Water works' environmental impact evaluation.

V. PUBLIC PARTICIPATION IN WATER POLICY AND MANAGEMENT.

VI. TRAINING OF GOVERNMENT SERVANTS AND PUBLIC.

VII. LINKS WITH THE OTHER THEMES :

1. With the institutional setup (Workshop n° 4)
2. With the basic data needs (Workshop n° 1) and technology
3. With economy and finance (planning - Workshop n° 2).

VIII. THE PROBLEM ENVISAGED TEN YEARS HENCE.

1. Socio-political and institutional information needs
2. Training needs (the ITCWRM programme for two years).

SUITABLE TRAINING OF PERSONNEL RESPONSIBLE FOR
INSTRUCTING TECHNICIANS IN CHARGE OF TRAINING
FUTURE WATER USERS

S. CAMPELLO

The hydro-agricultural utilisation of small holdings, within the framework of rural development, in regions of great climatic instability (changeable rainfall) demands a work of augmentation and the training of personnel so as to orientate animation groups.

In the case of North-East Brasil, the Brazilian government has just launched an operation called "Projet SERTANEJO", which aims at mobilising important financial and human means so as to provide the tools indispensable to the agriculturer for ensuring an economic balance at the production unit level, often threatened by climatic instability. Technical and financial assistance has been given to holdings of less than 200 hectares, taking into account the physical restrictions encountered.

SECTION D

**WORKSHOPS' SYNTHESIS DOCUMENTS
AND CLOSING SESSION**

I - WORKSHOPS' SYNTHESIS DOCUMENTS

WORKSHOP N° 1 - RAPPORTEURS : MESSRS. NEWSOME AND LEYNAUD

WORKSHOP N° 2 - RAPPORTEUR : MR. PIGANIOL

WORKSHOP N° 3 - RAPPORTEURS : MESSRS . VALIRON AND MONTANARI

WORKSHOP N° 4 - RAPPORTEUR : MR. KINDLER

WORKSHOP N° 1
SYNTHESIS DOCUMENT

TECHNICAL AND TECHNOLOGICAL ASPECTS

1. SUB-THEME 1 : INVENTORY OF USEFUL REGIONAL WATER PLANNING DATA.

Two principal types of data were identified :

1. Hydro-meteorological data : including resource assessment and damage due to flood.
2. Socio-economic data : including population growth, industrial development, food, health and legal water rights.

1.1. HYDRO-METEOROLOGICAL DATA.

Topics of particular interest were :

Economy of data collection which included standardisation of methods and nomenclature, optimisation of networks for both operational use and planning, research and other uses, and cost-benefit appraisals and methods of presenting the information.

In discussing these topics it was borne in mind that the rapid acquisition of data, perhaps by telemetry or remote sensing was appropriate in some circumstances.

It was thought that groundwater hydrology was a special case which had not received as much attention as surface water. Special features included the link with hydro-meteorological data (i.e. the relationship between ground and surface water) ; the hydraulic conditions of the aquifer and that while temporal changes were slow, they took place over a wide area. Any data collection, processing and archiving system would have to be flexible enough to accommodate these features.

The use of biological indices as a measure of water quality was discussed and it was thought that these were not used as much as they might be but that some rationalisation of the systems currently in use would be beneficial.

Finally, data necessary for flood control, warning and forecasting were recognised as being vitally important.

1.2. SOCIO-ECONOMIC DATA.

Important data sets under this heading included :

- population : its size and growth rate
- food and fibre : including crop water requirements and the data necessary for the operational control of irrigation taking into account climatic conditions
- energy : the demand for energy and its rate of growth
- potable and industrial water supply : the demand for water supply, particularly in rural areas, the rate of growth in total and per capita terms.

It was recognised that the order of importance of socio-economic data varied from country to country according to the circumstances in each country.

From these considerations and the discussions which resulted therefrom, the following training needs were identified at three levels :

- a) For top technical people and non-technical people who have an appreciation of technical matters who were involved in decision-making in river basin planning.

These should be general courses to make them aware of the comprehensiveness of the approach that was necessary and of the inaccuracies of the data with which they were supplied and on which they had to base their decisions and the consequences of failure to implement programmes on schedule.

- b) For specialists, for example experienced engineers with executive responsibilities.

- c) For technicians.

These were divided into two types, rural technicians who would employ simple techniques and urban technicians who would employ quite sophisticated techniques.

The need for this level of training in developing countries was recognised and emphasised, but there were some reservations about the ability of ITCWRM to carry this training in France.

The Group therefore suggested that effective liaison should be established between ITCWRM and governments and training institutions in the formulation of their training programmes.

As far as is practicable, ITCWRM should hold and/or finance seminars and/or training courses on a regional basis, or perhaps even in individual countries and should participate fully in the preparation of their syllabuses.

ITCWRM should also organise appropriate courses for the training of people who will subsequently have the responsibility of training technicians in their own countries.

Subjects proposed as suitable for training by ITCWRM :

- Philosophy of data network design for both surface and groundwater and coastal and marine waters including cost-benefit appraisal of data collection and methods of presentation of information.
- Biological water quality numerical indices - their establishment and use.
- High speed data transmission - methods available for both developed and developing countries.
- Operational data for control of all facilities concerned with irrigation and water management purposes including flood control, flood forecasting and flood warning.

Finally, using the definition of research in ITCWRM, the following areas of research work were suggested :

- . Population forecasting
- . Standardisation for groundwater data
- . Standardisation of water quality data
- . Rationalisation of biological indices.

2. SUB-THEME 2 : AVAILABLE AND APPLICABLE TECHNOLOGY - SYNTHESIS AND CONCLUSION.

The Workshop came to the conclusion that the choice of technology to solve a particular water management problem must be done within the content of an integrated regional water plan.

It felt that in accordance with the terms of reference of ITCWRM there was need to offer a general course of training into the methodology and techniques of integrated river basin planning to top level decision-makers and planners. This course should be treated along the following broad hearings :

- identification of objectives
- identification of potential
- identification of constraints
- project identification and formulation
- comparative analysis of project ranking and programme preparation
- expenditure schedules
- response to investment (or benefit schedules).

A second level of training was also recommended. This is to be directed at engineers who have responsibility to implement specific water projects. It was however recommended that these specific courses should be designed and offered in such a way that the participants are made aware of the solutions to the specific problems that they have to deal with and do not stand by themselves but are part of an overall system.

The specific areas recommended by the workshop are :

2.1. PREVENTION AND PROTECTION OF RESOURCES.

particularly by means of soil and water conservation techniques and general action for prevention of monitoring of soil conservation techniques.
Leasure fonds.

2.2. DRINKING WATER SUPPLY AND TREATMENT IN RURAL AREAS.

- Resources : quantity and quality, distribution, purification and health engineering.
- Design and operation of purification process more adapted to rural areas.
- Sludge disposal.
- Health aspects.
- Process and technology.
- Power for pumping and transmission.

2.3. IRRIGATION AND DRAINAGE PROBLEMS.

- Water savings and water economy. Assessment of needs, of abstraction and transportation.
- Delivery of water.
- Drainage problems : Impact of irrigation on water quality, with emphasis on impact of use fertilisers and pesticides, and more particularly impact of intensive agriculture.
- Flood protection.

2.4. DRINKING WATER SUPPLY IN URBAN AREAS.

- Quality and quantity of resources.
- Selection of sources of water.
- Treatment and distribution of water.
- Health engineering.
- Design and construction of sewage system.
- Operation of plants.

2.5. WATER SUPPLY TO INDUSTRY.

- Quantity and quality necessary for range of industries.
- Manufacturing industries - water saving, recycling of water.
- Recovery of by-production.
- Purification of residual water.

2.6. PROSPECTION AND DEVELOPMENT OF WATER RESOURCES AND ENVIRONMENTAL PROBLEMS.

- Assessment of impact of water works.
- Design and construction of such works, to safeguard the environment.
- Protection and development of irrigated farming.
- Impact of flow adjustment - minimum flows.

RESEARCH : could deal with other research institutions on the matter.

- Control-evaporation.
 - Control-sedimentation.
 - Irrigation - water requirements for crops.
 - Selection of new varieties of crops without decreasing yield.
 - Technology research on the processes for the delivery of water to crops.
 - Control - soil conservation - indices to use of water - extensive purification processes more adapted to rural areas. Biological impact of water works, and evaporation.
-

WORKSHOP N° 2
SYNTHESIS DOCUMENT

ECONOMY AND FINANCE

- 1) The group desires first of all to draw the ITCWRM's attention to the different types of seminars covering the work "Training Seminar".
 - a - General seminars on the definition, identification and analysis of the problems to be solved.
 - b - Information seminars on the experiences acquired, with a critical analysis.
 - c - Seminars aimed at providing the intellectual tools enabling the solving of problems.
 - d - Seminars aimed at providing the "state of the art" on a specific point.
 - e - Research seminars permitting the evolution of the state of the art.

In fact, given the level of participants, who will be responsible for conception and implementation, these different aspects of the seminars will often appear simultaneously. However, it would be effective to separate them, if not into several different seminars, at least into different phases of the same seminar.

- 2) The second point the Group desires to underline is the necessity to operate in successive stages, in an experimental manner. Thus, the first seminar proposed below could be divided into three stages :
 - a - Assimilation of general problems and the mastering of available intellectual tools (information).
 - b - Application to a series of specific insufficiently explored items (establish and evolve the state of affairs, deduce the basic elements to be integrated into the training).
 - c - Integrate the results of the second stage into the plan of the first and formulate the structures of a basic seminar which could be held several times,

The seminar thus formulated could, of course, contain variations so as to better adapt to different groups of countries having similar problems. It must be supple in its contents and duration. In fact, it concerns a veritable group of seminars with similar characteristics.

It must also evolve, and not be static. The modalities of its evolution must be foreseen. This will be possible particularly through the permanent existence of n° b seminars.

On the basis of these principles, the Group proposes, first of all, a seminar on :

GENERAL WATER POLICY AS AN ELEMENT OF A NATIONAL DEVELOPMENT POLICY

I - INTRODUCTION.

Development aims.
Planning methods (inciting or centralised).
The place of water - its functions.

II - THE PROBLEMS.

Limitation in financial resources and other types of resources.
Difficulties in integration of the priorities of diverse water problems into the priorities of other objectives (interaction between all development aims).
Lack of insufficiency of data useful to decision-making.

III - INTELLECTUAL CONCEPTS AND WORK TOOLS ADAPTED TO ECONOMIC PROBLEMS.

A - Cost-benefit analysis.

It must be applied to all forms of action : the evident example of investments must not make one forget that the analysis must also apply to administrative decisions, regulations, etc...

Principles of the cost-benefit analysis.
Its limitations - Difficulties in introducing the time factor (cost actualization).
Its possible extensions.

The direct, indirect, apparent or hidden costs will notably be envisaged, social costs defined, qualitative elements introduced, as also externalities, etc..., the limits in the efficiency of the economic market and its remedies identified.

The notion of opportunity costs will be introduced.

The effects of scale, the alternatives offered by appropriate technologies, the advantages and disadvantages of solutions utilising man-power or not will be more specially studied.

The notions of probabilistic risks will be introduced.

The methods to be utilised in the case of multiple competitive of simultaneous water uses will be defined, which will lead to the analysis of the system applied to water problems and to the notion of the non-intuitive character of complexe systems.

Supplementary methods will be provided :

- Matrixes of interaction
- Multicriteria analysis
- Self help plans.....

B - Price policy.

Relations with Cost-Benefit analysis.

Criteria - Resource allocation - marginal costs - adaptation to social conditions - sense of social justice, capacity for payment.
Mobilisation of available resources for public purposes.

Administrative applicability criteria - utilization measures .
Identification of beneficiaries.

IV - PRACTICAL APPLICATIONS.

The majority of the following sub-themes arise from phase b mentioned above. They will therefore first be explored in ad hoc seminars, before becoming a part of more ambitious seminars described here : but it is important that the participants be knowledgeable on the preceding subjects, so there is interaction between the applied subjects and the general subjects.

- 1) Cost-benefit analysis applied to problems of irrigation and the prevention of catastrophes due to floods or drought.
- 2) Price policies with regard to water destined for man, livestock, agriculture, industry, energy production.
- 3) Specific problems arising from projects with multiple water uses. Examples of projects concerning international rivers.
- 4) Role of penalties and standards for effluents.
- 5) Methods enabling a better accessibility to data.
Establishment of temporary hypothetical work merits.
Accelerated inventory system.
- 6) Role of International Agencies : BIRD, UNDP, UNICEF, WFP.
Distribution of the actual cost - which should always be known - and the remaining cost taking into account aid resulting from international solidarity.
- 7) Conceiving of original financing means and of eventual ad hoc institutions.
- 8) Introduction of water policy into the national plan.

The Group also proposes a seminar on :

A CRITICAL ANALYSIS OF THE TYPES OF WATER PLANNING INSTITUTIONS IN EXISTENCE

The Group sees this theme from the economic angle. It goes without saying that it can be combined with other analysis of, for example, human and social impacts.

- a) The Group deems it necessary that the institutions under study never be disassociated from their physical, historical and social context, if only to better evaluate their efficiency.
- b) They must be analysed as a system and their elements and interactions enumerated.
- c) The system's efficiency must next be evaluated, hence criteria such as : economic efficiency, resource management, environmental impact.
- d) Possible adaptations (flexibility) of the system.
- e) Search for new combinations of elements proper to certain specific conditions (physical, social...).
- f) Functioning conditions linked to the nature and number of the men trained. Training problems. Their costs.

The Group finally proposes a third seminar, whose title could be :

ECONOMIC OPTIMIZATION OF PROJECT MANAGEMENT

The basic idea of this seminar is to achieve an "appropriate method" for managing each project situated in its context, so as to utilise all the possibilities and only utilise relevant sophisticated methods, through practical examples of management strategies applied to totally successful projects.

WORKSHOP N° 3
SYNTHESIS DOCUMENT

SOCIO-POLITICAL ASPECTS

1. CHARACTERIZATION OF INTERESTS PRESENT IN WATER UTILISATION.

1.1. The importance of socio-economic and political aspects in a correct solution of water problems has led the group to propose that in all courses or seminars organised by the ITCWRM, whatever be its theme, at least one day be devoted to this item. For this purpose, precise examples will be chosen and treated so as to illustrate the links between these aspects and technical considerations ; this will be done with the aim of showing, in a practical manner, how they can be integrated into the decisions.

1.2. The desire that the ITCWRM contribute towards defining a training methodology consistent with its aims and with contributions from the university and ground specialists was expressed. This would enable a contribution to the conference on the transfer of knowledge to developing countries, which will take place in 1979 in Argentina.

1.3. The Group distinguished two types of training :

1.3.a) The training course grouping specialists having already acquired a certain experience on the ground, so as to provide them a complementary training arising from the very vast experience of the lecturers.

This course must be undertaken for those trainees having similar preoccupations, and therefore courses applying to countries of a same region, of equal size and having a comparable level of development.

1.3.b) The seminar where a certain heterogeneousness of participants is desirable and where there will be exchanges of experiences between confirmed specialists.

1.4. It is thus proposed for the training courses to chose themes of interest to groups of countries of a given homogeneous region in relation to the water theme. Some examples have been given :

- problems of the countries of the Sahel
- preoccupations of countries bordering the Sahara with regard to desertification
- certain preoccupations common to latin american countries with regard to effective water utilisation by the beneficiaries of hydraulic projects.

1.5. The necessity of organising a suitable training of personnel whose task is to instruct technicians in charge of training future water users, was underlined (cf. Mr. CAMPELLO's note).

1.6. The Group has deemed useful not to neglect, each time this is necessary in the courses or seminars, those aspects, determined with a certain difficulty, of environmental protection and leisure, the health aspects of the public being given special priority.

1.7. The interest in organising certain training courses on the spot was underlined. It has been agreed upon to do so in collaboration with certain existing centres. The ITCWRM has also been recommended to cooperate with all centres supported by international organisations. It will be worth extending such cooperation to all national centres with similar aims, whatever their mode of financing.

1.8. During training course or seminar implementation, technical, socio-economic or political aspects must be simplified to the maximum, so that the most important interactions of the latter be shown, as also how to, from specific examples, master them.

1.9. The organisation of a seminar enabling the exchange of water planning experiences and notably the links between national and regional planning between countries having either a federal or decentralised structure appeared desirable.

2. PUBLIC PARTICIPATION AND ACCEPTANCE RELATED TO WATER RESOURCES.

2.1. Objective is ultimately to provide people with better services. This may be costly in terms of time, money and personnel.

2.2. Experience and judgement indicate that the level and type of participation are different for different levels of development, different stages of development, different cultures and under different types of socio-political conditions.

2.3. There are four principal areas for productive public participation :

- Decision-making
- Planning
- Local administration
- User education.

2.4. Participation ranges from meeting basically simple user training by mobilizing the self-help capacity of small rural communities to the complex multi-level interactions related to expensive projects in highly developed groups. The unit to be dealt with is the appropriate group of people involved in some identifiable way with the activity whether it be a project, policy or program.

2.5. ITCWRM can best assist in promoting the public participation capabilities in developing countries by exposing executive officers to courses and seminars and training teachers for service in their home countries under the following guidelines :

- a) Bring together for courses or seminars people with comparable backgrounds and similar problems.
- b) Provide the basic scientific background in social sciences, dynamics of communication and experience.
- c) Furnish the groups with pragmatic methodology and techniques to carry out participation activities appropriate to the level of people and type of specific objective.

2.6. ITCWRM offers these services to assist the various governments, authorities and other official bodies in carrying out their specific responsibilities.

WORKSHOP N° 4
SYNTHESIS DOCUMENT

REGIONAL WATER PLANNING INSTITUTIONS

1. - COMMENTS RELATED TO THE OBJECTIVES OF CEFIGRE.

- 1.1. CEFIGRE should be a forum for decision-makers, planners and technical specialists in the water resources field, among others to promote the communication and understanding between those groups.
- 1.2. CEFIGRE should organise, in France or abroad, courses and research activities in the field of planning and management of water resources for a broad audience of decision-makers, planners and technical specialists, so as to enlarge their knowledge and sensibility for integrated approaches.
- 1.3. Such seminars should not duplicate training in water resources planning and management by other established facilities. The possibilities of joint efforts by CEFIGRE and other institutions should be given due consideration. Furthermore, coordination with other institutions providing formal courses and training should be ensured.
- 1.4. The establishment of a formal relationship between CEFIGRE and each country - e.g. through an appropriate governmental institution or an university - deserves careful consideration ; this should facilitate e.g. the provision of an extended support of participants to courses after they have returned to their countries.
- 1.5. Apart from capabilities in the field of education and training CEFIGRE should build up capabilities as an information and documentation center for water resources planning and management techniques ; it should compile a listing in various languages of definitions of concept and technology used in the water resources field.

2. - COURSE ORGANIZATION AND PROCEDURES.

In developing the program for considered courses the objectives of each course, as well as the professional background of the participants should be carefully considered. To the extent possible, countries with comparable geographic, economic and resource development should be invited to participate in the same courses and the course formulated to meet the needs of such a group of countries. Other items to be considered related to organization and procedures include the following :

- 2.1. Information should be provided to trainees prior to coming to the course in order that each trainee will be prepared to participate immediately after introductory statements.
- 2.2. A comparative teaching approach should be used to the extent appropriate.
- 2.3. Applicable models will be developed to which trainees can relate their water organizations and tools.
- 2.4. Case studies and model analysis thereof related to the topic will be used.
- 2.5. Difficulties involved in applying the case studies as well as incompatibility under certain circumstances will be noted and discussed.
- 2.6. Textbook solutions will be avoided.
- 2.7. Trainees will be encouraged to find their own solutions to problems presented.
- 2.8. A working team concept will be used when possible, in lieu of lectures from the discussion leader.
- 2.9. Time will be allowed for individual study and reflection by the trainee.
- 2.10. Different durations of the courses should be established compatible with objectives and aims. Suggestions include one week for decision makers ; three to six weeks for high level administrative officials and one to three months for high level professional planners.
- 2.11. Courses should be planned for summer months to meet needs of professors and educators.
- 2.12. Appropriate emphasis should be developed for each seminar. Suggestions include awareness and sensitivity to public and political relationships ; alternative solutions to problems ; research in problem solving and inter-relations with international organizations.
- 2.13. Courses should be inter-disciplinary to the extent practicable.
- 2.14. Different levels of courses on the same subjects should be provided.
- 2.15. Participants should find it possible and advantageous to take several courses in sequence.
- 2.16. Analytical approaches should be mixed with case studies.
- 2.17. Discussion and dialogue should be stressed in the teaching approach.
- 2.18. Recognition that there is no best solution to meet all situations and geographic areas should be noted.

- 2.19. Where appropriate training should be conducted in relatively small seminars (10 to 20 participants) wherein the discussion leader provides an introductory statement with the remainder of the time devoted to discussion.
- 2.20. Training should not presuppose an ideal form of political, social, economic or institutional arrangement.
- 2.21. Training should aim to provide understanding why political, social, economic and institutional arrangements may differ for similar river basins.
- 2.22. Where possible and desirable subjects of interest for developing and developed countries should be considered together.
- 2.23. Subjects of limited scope with a brief reference to broad aspects, should be considered where the overall subject is extensive and complex.

3. - TOPICS.

The three major types of courses on water resources planning and management are foreseen : (a) general, (b) selected topics with good introductory coverage of the general issues, and (c) special topics not necessarily calling for extensive coverage of the general issues.

The topics which should be considered in developing the program for each course are presented below. It should be noted, that the level of consideration for each topic will differ for each type of course.

- 3.1. Comparative government structures indicating the differences between unitary states and federal states, including significance of various constitutional limitations on government powers and basic constraints related to water management functions.
- 3.2. Comparative organizational structures relating to water resources planning and management, including the distinction between the decision-making authority, co-ordinating authority, and advisory functions.
- 3.3. Comparative policy decision-making processes, with particular reference to national and regional objectives, also historical changes in these objectives.
- 3.4. Consideration of public vs. private water functions, including comparative analysis of the means by which different countries handle water functions that are capable of generating revenues to cover related costs vs. the means that provide water but do not generate any direct revenues.
- 3.5. Comparative study of different financial arrangements, including information where and how to obtain international financing.

- 3.6. Institutions, policies, and their integration on the homogeneous regions (agricultural regions, industrial regions or urban agglomerations).
- 3.7. Comparative study of institutional structures for handling international water problems.
- 3.8. Available water management tools : technological, planning (dynamic, public participation, models), legal, economic ; comparative study of the effectiveness of various tools.
- 3.9. Environmental policies and ecological considerations in the context of water resources planning and management.
- 3.10. Co-ordination with management activities around other central themes such as environment, social, and economic development.

4. - SUGGESTIONS FOR PARTICIPATION IN CEFIGRE'S COURSES AND RESEARCH ACTIVITIES.

- 4.1. Participants in courses and research activities should have functions with considerable responsibilities related to water resources planning and management in their countries. Additional criteria could be : a university degree and some years of professional experience, a demonstrated or potential managerial capability, and a capability to teach or otherwise pass on the acquired knowledge. Within the limits of the above mentioned conditions the character of a certain type of course may be varied according to the level of the responsibilities of the participants.
 - 4.2. Administrators and professional staff of international and regional organizations might participate along with trainees from the various countries so as to promote the mutual understanding and co-operation and to widen the horizons of the group.
 - 4.3. Participants should be rather homogeneous as to language, their level of responsibilities, and the kind of problems they are confronted with.
 - 4.4. Participants should duly acquaint themselves beforehand with the requirements of the various courses and training activities with the help of information on these activities to be provided for by CEFIGRE.
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II - SEMINAR CLOSING SESSION

THURSDAY 12TH JANUARY 1978

The Chairman, Sir Norman ROWNTREE, after having apologised, on behalf of Mr. VALIRON who is retained in Paris, says the reading of reports and discussions will be preceded by the screening of a short film.

Sir Norman ROWNTREE defines the work method : reading of the Workshop reports by the Vice-Chairmen followed by a discussion. He would like the questions posed after the reading of each report to be brief and the veritable discussion to start immediately after this brief survey.

Sir Norman ROWNTREE invites the Vice-Chairman, Mr. AYIBOTELE, to read out the conclusions of Workshop n° 1. This Workshop's recommendations giving rise to no commentary on the part of the participants, Sir Norman ROWNTREE invites the Vice-Chairman, Mr. PIGANIOL, to read out the recommendations of Workshop n° 2.

Dr. COIN would like :

- that paragraph IV 4) (cf. Section D) be more precise. He points out that the effluents norms are not defined in accordance with penalizations, but with quality objectives as expounded in paragraph 1.2. of Workshop n° 1 (cf. Section D).
- the high-level technicians welcomed at ITCWRM are not necessarily those who draw up the norms, but rather those applying them. We must therefore explain to what these norms correspond.

Mr. PIGANIOL points out that it is precisely in the spirit of what Dr. COIN has just said that the Workshop has drawn up this recommendation. The standard is not conceived as a tool of repression, but as an integrated water policy instrument. This will be rendered more precise in the final text.

The Vice-Chairman, Mr. CANO, is next invited to speak by Sir Norman ROWNTREE on the recommendations of Workshop n° 3.

Mr. GANA points out here that this report would have been more homogeneous if it had been prepared in a single language (English or French).

Mr. CANO points out that the report is ready in the two languages. Concerning homogeneity, the Vice-Chairman agrees that there can be certain aspects common to the Workshop's two sub-themes, but this phenomena can be arrived at in the case of all four workshops, and, beyond the small inconvenience it represents, is witness of the unanimity expressed for the discussion of certain crucial themes.

The Vice-Chairman, Mr. KINDLER, next reads out the conclusions of Workshop n° 4.

Mr. MOLINARI notes that no proposal has been made at the documentation level ; after having underlined the interest this activity represents for ITCWRM, the speaker points out that through course and seminar publications, etc... participation will be enlarged.

Mr. GANA next makes three remarks :

- he notes what appears to him to be a contradiction between paragraphs 2 and 22 (cf. Section D).
- he raises the problem of "client" (decision-makers) availability for a relatively long period, during a season (summer) when problems are crucial in certain countries.
- he desires that the adjective "considerable" accompanying the term "responsible" be removed.

The Vice-Chairman, Mr. KINDLER, underlines the difficulties arising in a correct utilisation and manipulation of the notions "developed countries" and "developing countries". He warns against a too rapid schematization and suggests a more subtle approach. He gives his own example as Chairman of the I.I.A.S.A. (1), which groups together 17 countries and which is sometimes taxed with being a "club of developed countries". Concerning the term "considerable", he simply wished to point out that the ITCWRM trainee must have the power of decision in his country.

Sir Norman ROWNTREE thanks Mr. KINDLER for having evoked this necessary "developed countries - developing countries" nuance, and points out that this terminology is closely connected with the context of a debate. Certain contexts exist where this terminology makes a separation between the haves and the have-nots. In our context, he feels that this terminology separates those who tackle water problems with more elaborate technics.

Mr. DA CUNHA points out that the choice of summer for certain seminars does not only present inconveniences, for there is increased availability of university members and professors, etc...

The demographic aspects associated with water resource management leads to comments by Messrs. AYIBOTELE, KABURU and ROWNTREE.

Mr. AYIBOTELE says that the Workshop recommendation on this subject appears correct. Certain methods existing in the demographic evolution forecasting field are correct, others debatable. ITCWRM should make a critical appreciation of these methods and place them at the disposal of countries which will adapt them to their demographic conditions.

Mr. KABURU, whilst agreeing that the demographic aspect is important in water resource management, considers that it would be an error to isolate it as a unique factor.

Sir Norman ROWNTREE, after having underlined the importance of the demographic aspect and the need for reflection on this subject, so as to master the demand expectations, proceeds with the closing of the session.

(1) International Institute for Applied Systems Analysis.

Sir Norman ROWNTREE :

The Scientific Council members are going to carefully examine the seminar's different recommendations. He will try to present a synthesis of our work to the Council members.

He pays homage to the efforts and the extremely useful recommendations made by the participants to the workshops. He would like the participants back in their country to inform the specialised training and water resource management organisations of the possibilities offered by ITCWRM in this field.

Sir Norman ROWNTREE concludes by thanking the French Government and UNEP for their initiative, the representatives of international organisations, the French Government representative, the seminar participants, Messrs. VALIRON, TENIERE-BUCHOT and EMSELLEM and the ITCWRM team, the interpreters and secretaries and the Novotel Management.

Mr. LACROIX next thanks all those who have contributed towards the seminar. He hopes that eminent specialists will return to Sophia-Antipolis, this time in better climatic conditions.

- The session is closed -
