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MODEL FOR EFFECTIVE COMMUNITY PARTICIPATION IN RURAL COMMUNITY WATER SUPPLY PROJECTS IN ANAMBRA STATE OF NIGERIA

INTRODUCTION

Public participation or involvement in project implementation is becoming a vital aspect the world over. In the developed nations this has arisen out of the need to reach consensus in a sort of collecting bargaining process to avoid sharp criticisms from Conservationists and Environmentalists with regards to not enough consideration for project environmental impact studies. This usually generates conflicts with different interest groups protecting their own partisan interests and this consequently results in costly delays in the implementation of the project or total abandonment of the project. In the developing countries this new trend is not noticeable because of the lack of adequate enlightenment of those who benefit directly from the projects. A greater percentage of the public share the view that the Government of the day ought to take full-responsibility for making available all the public utilities required, and hold the view that they have no responsibilities required and hold the view that they have no responsibility in the whole affair.

Recently this trend is changing rapidly in certain parts of the developing nations. There has become an increasing awareness that there is a vital role that non - Governmental agencies can play positively in project planning and implementation. Communities are waking up to the responsibilities of full involvement and commitment in implementing Government socio-economic and socio-political programmes. In Anambra State of Nigeria the need for positive social action is rapidly increasing and this action is clearly seen in the construction by communities of roads, markets, bridges, rural electrification, rural water supply schemes, and other infrastructures. Town welfare unions, development unions, cultural organizations, social clubs, different age grades and other groups have largely been responsible for the initiation and execution of development projects in the different rural communities.

This new trend is very warmly welcome specially in a socio-cultural setting that is highly characterised by acute group competitions such as Anambra State and deliberate efforts should be made by the Government to encourage these groups and improve their output from these projects. More specifically so are the cases of communities that have embarked on rural water supply projects. Experiences of the past have shown that very often community-initiated water supply projects get abandoned mid-way during execution because of different reasons depending on the peculiarities of the community affected. Some of the causes for this negative undesirable output in rural community water project implementation emanate mainly from "cracks" in the group's solidarity rather than the so-often mentioned reason of lack of funds. This, in turn, emanates from conflict arising mainly from distrust of each other, lack of adequate leadership role, inability to provide adequate conflict models for settling group disputes amicably if and when they arise, absence of specific skills and ignorance of knowing where to go for expert technical advice, and lack of adequate programming of work and supervision of works during construction. This results in waste of scarce financial as well as material resources over extremely irrelevant issues, wasteful rivalries and unhealthy competitions thus delaying the fast execution of the water project. Experience has shown that even if funds are readily available the groups cannot perform in a belated "social climate of crisis."

In Anambra State the number of the on-going and proposed rural community water supply projects by self-help efforts is quite alarm- and represent quite a substantial investment in rural development. The State Government has also recognised this and is currently persuing the policy of providing financial as well as technical assistance to different communities in the State which have on-going

rural water supply projects. Even the different Local Governments in the State are embarking on similar policies. With the keenness and interest being recently expressed by all concerned one has to see this as a healthy development in the rural

water supply sector of the economy. From Table 1 it is to be noticed that greater emphasis ought to be placed on rural water supply since the greater percentage of the population of Anambra State reside in the rural areas 75% (1979), 71.5% (1985) & 69.2% (1990).

TABLE 1

ANAMBRA STATE WATER SUPPLY
CONCEPTUAL APPROACH TO DEVELOPMENT TARGETS
DECADE OF WATER SUPPLY

1	2	3	4	5	6	7			8
YEAR	ZONE A ERACHY	POPUL. *	% OF TOTAL POPUL.	% WITH NO WATER SUPPLY.	% WITH ACCESS TO WATER SUPPLY	STANDARD OF SUPPLY			SUB. STAND. SUPPLY
						% WITH STAND PIPE	% WITH COMPOUND TAP	% WITH HOUSE CON.	
Present (1979)	Urban	1.4 M.	25%	15%	85%	25%		25%	50%
" "	Rural	4.2 M.	75%	85%	15%	75%			25%
"		5.6 M.							
Target (1985)	Urban	2.0 M.	28.5%	-	100%	40%		60%	-
"	Rural	5.0 M.	71.5%	50%	50%	40%	10%		
"		7.0 M.	100%						
Target (1990)	Urban	2.5 M	30.8%	-	100%	-	-	-	-
"	Rural	5.6 M	69.2%	-	100%	70%	30%		
"		8.1 M.	100%						

*Presently about 60% of Urban (0.8 million) and 90% of Rural (3.6 million) do not have a satisfactory standard of water supply.

To record positive outputs from the different communities and encourage more communities to follow suit, it has become a necessity to develop a model that is locally applicable and adaptable for the effective development of rural community water supply projects in the State. A human-oriented, real-life model is called for. Also since one would expect that the goals of the approaching International Drinking Water Supply and Sanitation Decade (1981 - 1990) could be more readily achieved by involving as many local residents as possible, it would be necessary to develop realistic participation models that would serve as a major tool for implementation.

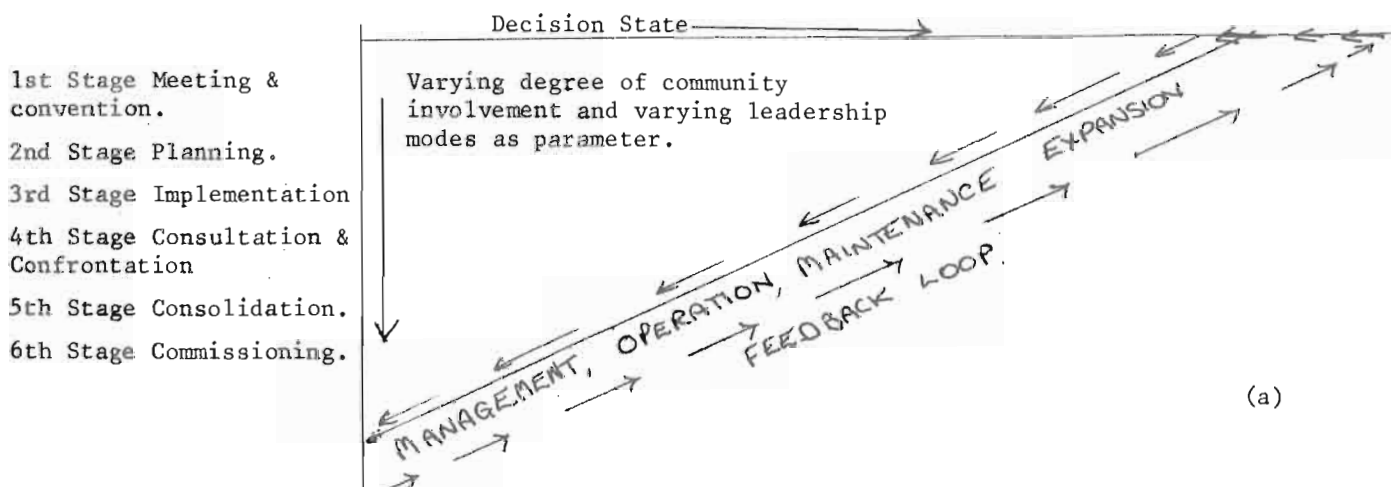
Also past experiences in Anambra State have shown that major failures which have been recorded in rural community water supply projects were due to the fact that the implementation schedules were not properly sequenced and programmed, and the non-involvement of the communities early enough in the planning and construction phases. Non-commitment of the communities as well as lack of community support at the operation and maintenance phase has led to failures of projects like the Achi Rural Community Bore Hole Scheme, Ogugu-Nenwe-Ndeabor scheme, Amkwe scheme, Ngwo-Abor-Ukana, Nsude scheme, to cite only but a few of these cases.

This necessity of involving the communities early enough in the planning and implementation of rural water supply projects, as well as the anticipation of the success of the approaching International Drinking Water Supply and Sanitation Decade led to the development of a Qualitative/Subjective Dynamic Programming Model for effective community participation in planning and implementing community rural water supply projects.

SUBJECTIVE DYNAMIC PROGRAMMING PARTICIPATION MODEL DERIVATION.

The Basic Underlying Philosophy of the Human Oriented Model

FIGURE I



The model assumes that communities that will benefit directly from rural water supply projects should be highly involved and interested in the project planning and execution. The involvement should be based on a flexible plan, occasionally being fully open but most of the time being partially restricted. The timing of community involvement is the most crucial factor that will determine success or failure of the model. When to apply the fully open or the partially restricted aspects depends on the nature of the task to be performed. The model is based on task-force-approach that applies mixed mode leadership styles, varying in time as the functions to be performed vary. The model inputs derived from the background tradition, customs and culture of the people as well as physical local conditions with respect to the water supply component systems elements. The model derives from the Perspective III - The Human Perspective which lays more emphasis on the concern for human beings involved in the task of achieving set objectives and goals rather than the structure of the organization or the work-flow. The task force implementation committee leadership should be used on Fielders Contingency Theory. Close supervision of workers is detrimental and use of reward rather than coercive power is preferred. The legitimate, expert and referent powers of leadership should be high. For leadership to be truly successful, the follower must see "something in it for him". In short, both leader and follower must be adept at the process of social exchange. For each stage and state in the execution phase, the leader-member relationships has to be continuously modified by bringing in subordinates with similar attitudes and beliefs thereby increasing the homogeneity of the group. Group involvement and the extent of involvement are subjectively assessed, timed, and manipulated to keep the community informed, motivated and enthusiastic. A feedback mechanism is vital for the success of the model. Figure I depicts the three dimensional flow diagram of Stage-State-Involvement for sequencing of community participation in rural community water supply projects.

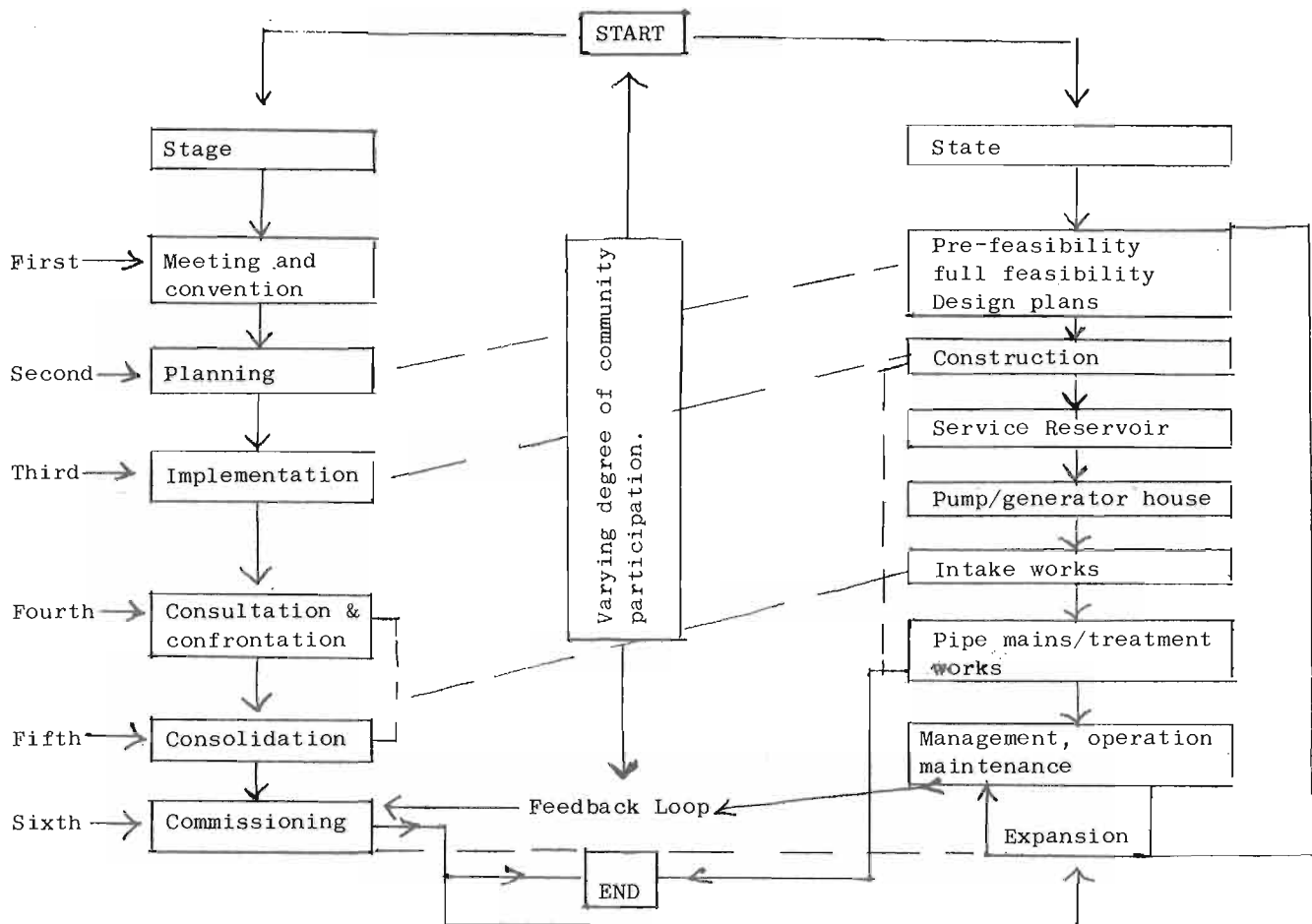


Figure 1. The three dimension flow diagram of stage-state involvement for sequencing of community participation in rural community water supply projects.

THE DERIVED PARTICIPATION MODEL FIELD
APPLICATION. THE IHE COMMUNITY RURAL WATER
SUPPLY PROJECT CASE STUDY

Figure 2 is the map of Anambra State of Nigeria with the 23 local government areas and the Anambra State Corporation Admin. Zones. IHE is a town located midway between the Anambra State Capital of Enugu and the Awgu Local Government Area headquarters at Awgu, that is about 25 kms. from Enugu on the old Enugu-Awgu-Okigwe-Umuahia road. It is located within Awgu Local Government Area. The present population is about 18,000 people.

As early as 1962 this community which is made up of twelve big villages realised the importance of modern pipe borne water and rated it as top priority. The community

embarked on collection of money by levying all taxable adults, both men and women to realise money for the achievement of this goal. The then leaders of the town were charged with the responsibility of depositing the water project fund with the defunct Awgu County Council at Awgu. Unfortunately, owing to lack of technical expertise and lack of preliminary investigations the decision was made to develop bore hole system (merely because the leaders of the day have seen bore holes working in some other areas). In 1965/1966 they went ahead and hired drillers who drilled several test bore holes and none was yielding water. This situation should have been expected since IHE geologically belongs to the Enugu rocks and shales beds which are non-ground water yielding formations. For the hired drillers to earn their money they told the natives that one test bore hole indicated that

ground water in one of the villages called Umuogba was adequate as a source of supply for the community. The news was welcomed with a sigh of relief, enthusiasm and high expectation. Unfortunately, after the civil war in 1970 the community started asking questions about the project and more specifically about the money that their leaders have been collecting from them. They demand for an account but they did not get an answer and the bore hole project has also been physically - abandoned and the water that they have expected to flow "soonest", as they were made to believe, was not forthcoming. This situation precipitated a "crack" in the leadership and mistrust set in and the natives became reluctant to pay more money for the project. The project died a natural death !

In August of 1978 a select group of concerned IHE Community elites resident in Enugu got together and scheduled a two day general convention of representatives of all IHE social and cultural organizations from all over the country for the 7th & 8th October 1978. At this convention the "IHE United Front" (IUF), a cultural body of all IHE youths at home and abroad emerged. A decision was made to revive the plan for IHE community water project. A lot of personalities with high legitimate power, expert power, referent power, and reward power attended and addressed the convention. Care was taken to eliminate some personalities who had lost the respect of the people to avoid suspicion, mistrust and heterogeneity. Fortunately at the time of inception of this idea, the writer was the Anambra State Commissioner for Works and Housing, and a cocktail party was given at his residence at the end of the convention in honour of the delegates who participated in the sessions. The "modus operandi" for the planning and implementation were set and the date (24th December 1978) for the first fund raising ceremony was settled. The Water Project Force Implementation Committee (WPTIFIC) was set up with role functions and expectations properly defined. The morale was high at the close of the cocktail party. The first stage task was recorded as a very big success.

The second stage was strictly restricted. This was the planning stage which is an expert role. A request was put to the Anambra State Water Corporation to carry out a Project Pre-Feasibility (PPF) study on two alternative Rivers the Isioji and Oboma which were easily identifiable by local residents, including the President of IUF, the first Vice Chairman and the writer, as the only possibilities since the residents already were informed that there was no possibility of water supply from a bore hole source. The PPF study revealed that the Isi-Oji river, though with a smaller dry season flow of 652

cubic meter per hour was a better source than the Obomo River, since the main stream does not carry a lot of silt and sand like the Obomo River. Isi-Oji also has the economic advantage of savings in cost of pipe mains to the Community Centre being only 1.5kms away, plus the added advantage of eliminating the socio-political problem of "right-of-way" from the other neighbouring community of Agbudu through whose land the main pipeline would have to traverse some distance of about 5 km. before entering IHE community area if the Obomo River was to be selected. Thus, Isi-Oji river was preferred. Altimeter spot measurements (not detailed contour survey) indicated the highest point in the neighbourhood and thus the location of the service reservoir was established. Simple schematic design of system elements was evolved for the "intake-service reservoir portion." In the meantime the writer requested the President of IUF to call a restricted meeting of the WPTIFIC for education of this subgroup of sequences, and leadership roles, styles and strategies for implementation. The meeting was thoroughly briefed on the relevant issues and asked to form another sub-committee under its supervision to gather population data, on village by village basis and to present the figures in writing from the village remotest from the intake source to the village nearest to the source. A dateline was given for this task to be completed with a promise for reward if the dateline was met. The reason for the population figure on village by village basis was explained and well communicated. Plans were made for the first fund-raising ceremony and intensive campaigns by use of radio, television, press, posters and hand bills were conducted.

The third stage was the start of the implementation. The IUF's first phase fund-raising ceremony was held in community centre on 24th December 1978 as scheduled and a substantial sum of twenty thousand naira (N20,000.00) was realised mainly from affiliated social organizations and well wishers from outside the community. The Local Government Council Chairman and his Supervisory Councillors were in attendance. Local traditional and cultural dance groups were in attendance to entertain the guests. The plan to use surface water, the Isi-Oji River was exposed before the community. The donations were on voluntary basis. The amount realised was announced at the end of the ceremony and a commitment was made by the President of the IUF that every kobo realised will be put into fast implementation of the project and will be openly and properly accounted for. Every donor got a receipt. As soon as some funds became available a sum of two thousand naira (N2,000.00) was deposited with the State Water Corporation for final survey plans, more comprehensive laboratory water quality tests, and final designs for using the Isi-Oji river source after a meeting of the IUF Executive.

A restricted meeting of the WPTFIC was called to inform them that final working plans are being finalised and educated them on the construction sequence of the system component elements. This was followed by an enlarged WPTFIC and IUF executive open meeting to plan the second fund raising ceremony. In order not to lose momentum and interest the second voluntary fund raising was held on the 15th April 1979, barely three and half months after the first fund raising ceremony and a sum of about twenty five thousand (N25,000.00) was realised. Progress report and financial account were given before donations started. This was followed by restricted meeting of enlarged WPTFIC and IUF executive to discuss the financial requirements for construction. As soon as the final plans were ready and it was confirmed that the Isi-Oji River source was of high natural quality, a sum of N20,000.00 was deposited with the State Water Corporation as part payment for construction of 100,000 gallons capacity Brathwaite steel tank, after a meeting of the IUF Executive with the Management of the State Water Corporation. Construction of tank was started on the 26th May 1979 and completed by the end of September 1979. Simultaneously work was started by WPTFIC's direct labour at the pump/generator house. Sub contracts were given to local residents including women and supervisory role was given to WPTFIC. In the meantime the IUF Executive applied for a matching grant from the Awgu Local Government Council and a sum of about N3,000.00 was granted for the water project. Construction of the pump/generator house was started on 14th July 1979 and was completed on the 31st August 1979. As soon as the house was completed a request was made to the State Water Corporation to give a IUF a generator and pumps. On the 13th September 1979 the IUF got a 137.5 KVA Lister electrical alternator machine and two units of 60 ft. (head), 2970 revolutions per minute (speed), and 15,000 U.S. gallons per hour (capacity) pumps. Installation of these machines are nearing completion.

The fourth stage was consultation as well as confrontation. An open annual convention of representatives of all IUF - affiliated socio-cultural groups was held on 6th & 7th October 1979 at IHE, after a restricted meeting of the IUF executive and WPTFIC to prepare detailed progress report and financial accounts. The convention started with an inspection of the tank site and the intake works. Reports from the Technical Adviser, the President, Secretary, Financial Secretary, and Treasurer were presented and distributed to delegates. A register of donors on a village by village basis, ranked in descending order of amounts donated, was presented. Strong appeal was made to members not to relent the efforts so that the positive output will continue. Strong

accusation was levied on some personalities in the community who have not shown enough interest in the project and there were strong threats to get them involved by force since everybody was expected to benefit from the project once it was completed. These personalities were put to shame. December 23rd 1979 was fixed as date for the third fund-raising ceremony. The convention ended with a party given by an eminent personality in the town, Chief E.M.C. Aniagu.

Shortly after the convention the natives felt that they have not contributed and that their names were not in the register of donors. They requested for a meeting with IUF Executive and at this meeting they by themselves moved for levey system according to the traditional and cultural guidelines normally in use in the Community for division of labour (or sharing of things). A minimum amount that was expected of each person in each category (in several categories that the natives identified) was fixed for both men and women. It was also agreed that the chairman of each village cultural meeting would take responsibility for collecting the money from all the members of the village and that he would also present it openly during the next fund-raising ceremony. This was held, as planned on 23rd December 1979 with representatives from both the State Water Corporation and the State Governor's Office. This was the most successful fund-raising ceremony. A total sum of about N35,000.00 was raised. The welcome Address presented to the State Government to take over the water project and complete it soonest since the IUF has played a remarkable leadership role and has got practical, physically observable output from its intensive, relentless effort for the past year. Before the fund raising started the guests including the natives were taken on a tour of both the intake and service reservoir sites. What they saw was a real "morale-booster" and spurred them to get money out of their pockets for the rapid continuation of the project.

A restricted meeting of the IUF executive and the WPTFIC was called immediately after the launching to celebrate the success of the third launching. During this meeting it was decided that more money would be deposited with the State Water Corporation for the construction of the intake works, minor treatment works, main pipeline, and major distribution pipe network.

The fifth stage was consolidation. A powerful delegation was sent first to the state Water Corporation Management to deposit more money for the above-mentioned works, then to the Commissioner for Water Resources and Public Utilities, and to the State Governor to submit letters requesting that the project be taken over completely by the State Government, including operation and maintenance after comm-

issuoning. This request was granted and it is expected that the 1980 Budget (1st April 1980 - 31st December 1980) will have substantial sum for this project.

The sixth stage will be commissioning of the completed water project, which is expected to be before December this year (two years after the community initiated action).

MANAGEMENT, OPERATION, MAINTENANCE AND EXPANSION PLANS.

The IUF plans to manage the system jointly with the State Water Corporation after the commissioning. The IUF also plans to form a local water management committee from the WPTFIC which will be charged with the responsibility of monitoring faults (like burst pipes, broken stand pipe taps etc.) reading of meters, billing, collection and administration of water rates and private connection charges on village by village basis. It is also hoped that the State Water Corporation Management will provide basic "on-the-job" training for local residents with basic technical ideas who will become assistant operators and some who will read meters and carry out some basic routine repairs. Already two such local community residents (two retired army officers), are participating and understudying the installation of the Lister alternator machine and the pumps.

The big cultural issue of water being "traditionally free" in our society is bound to militate against the efficiency of collection of water rates. However, with the education, the early and continued involvement and more enlightenment on the part of the natives, there is the hope that they will be a positive cultural transformation with respect to paying for the services rendered in operating and maintaining the water works.

The next anticipated problem is a socio-cultural one of adequate controls in water use. It is expected that people from the neighbouring communities of Agbudu, Isu, Agbogugu, Owelli, and Amoli with no water supply facilities will migrate and draw water from the system. Also businessmen who sell water will come to draw water with tankers. The question, then is who pays for this water not directly consumed by the community?

Since, in our culture it is forbidden to ask anybody, including strangers, to pay for water this aspect of management will pose a difficult problem for the community. Because of this expected unavoidable situation a stand pipe will be provided in the vicinity of the intake to serve this purpose and will be metered to determine the quantity of water "lost" from the system for such "unscheduled usage". In the short-run it will just be "fair" to control this tap and charge the businessmen who draw water by tankers for sale to other communities since they make a lot of profit out of this highly-lucrative business. The revenue

realised from the business group will be used to defray the cost of water drawn by the neighbouring communities for pure domestic consumption. In the long run the local water management committee will schedule meetings with the neighbouring communities to explain and appeal to them that since IHE community residents themselves pay for the water from the improved pipe-borne water supply system (not for water from open streams and springs) they too will have to advise their own residents to pay for the improved services being rendered to them. This is a very delicate issue and will have to be handled very cautiously since an awkward situation, which is likely to mar the peaceful co-existence and induce animosity between IHE and her neighbouring communities could be precipitated. In the meantime one can only keep his fingers crossed and hope that these neighbours will make a deliberate goodwill effort to understand and co-operate.

The issue of expansion of the scheme in the very near future has to be thought of alongside with the management since this is expected to present a lot of problems. It is to be expected that with the water brought nearer to their homes water use will skyrocket in the community, because it, initially will appear as if this "one-time-free" but scarce commodity has now finally become available in surplus quantities and there is no limit to what can be done with it. There will be no reason and no tendency to practice astute conservation in the 'use and waste of this very expensive commodity". The current design water demand per capita per day for IHE community is about 15 gallons/capita/day and the design capacity is based on 1995 projected population of about 32,000, using a compound growth rate of 2.5%. With siting of cottage industries (as expected) in the community, and the corresponding migration of people and improved standard of living it is to be expected that the population will overtake the design demand and there will be the need to provide bigger capacities earlier than the design period of fifteen years. Estimated average 1995 demand (15 year demand) is 50 cubic meter per hour and peak demand is 60 cubic meter per hour (using a factor of 1.2). Since the estimated dry season flow of the Isi-Oji River at the point of intake is about 652 cubic meter per hour expansion plans will be based on the same source and a parallel pipeline will have to be provided with more pumping facilities and two more smaller units of service reservoirs. This would minimise inconvenience during expansion and as well minimize costs. This expansion is planned for the year 1990 (and not for 1995) based on realistic planning which inputs the facts given above. It will be the sole responsibility of the State Water Corporation with the voluntary co-operation of the IHE community to carry out the expansion.

CONCLUSION

The subjective Dynamic Programming Partici

pation Model presented depicts a healthy an desirable co-operation between the local **community** and the State Government Agency (State Water Corporation) charged with the responsibility of supplying water with the community playing the major leadership roles and the Government Agency supplementing the community efforts by providing the technical assistance and guidance promptly. What the model stresses is that "quality of participation" is more relevant and effective than "quantity of it". The model is based on contingency theory and is subjective in the sense that it assesses the inputs subjectively. It is a qualitative dynamic programming model in that it defines the stages and states sequentially in time with the future outputs from the later state-stage (decision) depending on the preceding state-stage outputs. It is empirical model which is based on the local traditions, customs, attitudes, value systems of the people, and the socio-cultural environment. It is, therefore, a realistic and real-life model which has been derived from practical field observations and experience and is easily adaptable to changing conditions. The model is derived from the Systems Approach of management in social organizations with a bias on the Theory Y (human-oriented) rather than Theory X (productivity-oriented) theory, with emphasis on the Structural and Work Flow Components and less concern for the human beings in the organization). Mixed-mode leadership styles were employed, the style to adopt at any given time (legitimate expert, referent, position or coercive power), depending on the "situation" and the nature of the task to be performed. Constant but not too close supervision was an advantage. The three dimensional flow diagram of Figure 1 depicts the State-Stage-leadership mode and sequences which were used to produce the desirable "Hawthorne effect".

By this model the community was thoroughly informed and updated on issues, thoroughly educated, and involved in open meetings most of the time, kept away in restricted speciality meetings, properly motivated and rewarded, to keep the people enthusiastic and anxious all the time. The support and trust of the entire community on the leadership were upheld by adopting the system of open financial accounting, and periodic but constant reports on positive progress and achievements at every stage during the execution phase (occasional set-backs were kept secret to avoid doubts).

The output from the model is a very optimistic one as can be deduced from the case study presented. This should be applied to other communities with similar backgrounds, traditions, and socio-cultural settings. The model has shown that local community support and involvement is a "sine-qua-non" for any meaningful rural water supply scheme, irrespective of the scale of the project and its level of service.

The model has driven one important lesson home to all involved in project planning and implementation in the developing nations -- that is, the non-inclusion or non-involvement of the local communities early enough in the planning stages of projects will result in communities being reluctant to render their support in the management, operation, maintenance and expansion of the schemes. The failures normally recorded during the operation and maintenance stages will be cut down considerably. This should be a "recipe" for both the planners, consultants, contractors and policy makers.

If this model were to be modified and adequately employed in the different communities of Anambra State currently engaged in rural community water supply projects by self-help efforts a lot of positive output will ensue and "crisis situations" and abandonment of projects half-way during execution will become more or less, a thing of the past and a lot of investment in the rural water supply sector must have been saved !

Indeed the most important and significant application of this Community Participation Model will be in the approaching International Water Supply and Sanitation Decade (1981-1990) since all indications point to the fact that more emphasis would have to be placed on the developing countries, with a specific objective of getting modern pipe-borne water (or at least improved water supply facilities) to the remotest rural reas of the developing world.

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