Upper Volta

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SOCIAL SOUNDNESS ANALYSIS

UPPER VOLTA VILLAGE WATER SUPPLY DESIGN PROJECT

Paula Roark, Social Analyst
Dimpex and Assoc. Inc.
Washington, D.C.

Women in Development
Agency for International Development
Room 3214, New State
Washington, D.C. 20523
(202) 632-3902

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INTRODUCTION - DATA BASE

I. Social Landscape

A. The Country of Upper Volta

B. The S. W. Region of Upper Volta

C. Power Structures

1. Political Structure

2. Decision Making Process

3. Symbolic Structure

4. Village Ownership Patterns

D. The Role of Women

1. Symbolic Role

2. Economic & Social Role

3. Changing Roles

E. Water Use at the Village Level

1. Tangaye Study

2. Typical Water Use

3. Analysis of Village Water Use

F. Traditional Beliefs Concerning Water & Health

G. Summary

II. Socio Cultural Feasibility

A. Project Background

B. Voltaic Project Priorities

C. Project Benefits & Correct Technological Mix

1. Quantity-Quality and Pump Maintenance

2. Project Decisions in the Social Context

D. Identified Obstacles to Successful Project Implementation

1. Village Participation and Community Action

2. Donor Point of View and Village Participation

3. Institutional and Longterm Constraints

E. Summary

III. Communication Strategies and Diffusion of Innovation

IV. Social Consequences and Benefits

INTRODUCTION

It is the purpose of this annex to delineate within the social analysis format, those issues that are of paramount importance to the successful implementation of the project. They include:

1. the socio-economic and political structure of the region as related to successful project design;

2. correct technolcgical mix and its relationship to the socio-cultural milieu and stated country objectures;

3. village participation and payment as a necessity of successful well installation;

4. diffusion of innovation through health education and technological intervention at the village level.

The data base of the analysis includes several different sources and methodologies:

1. A field trip to the Bougouriba ORD was arranged. An adapted World Bank questionnaire concerning community development of village water resources was administered in local languages in four villages. The four villages included the two most diverse ethnic groups of the project area. The sample was necessarily of small numbers (28 individuals) and perhaps "influenced" by the presence of the researcher in the village during the time the local animatrice administered the questionnaire. However it was theorized that the diversity of the two ethnic groups should illustrate areas of general agreement that could be extrapolated to the entire project area.

2. Discussions were held with a variety of officials at the ORD level and the national level before and after the field trip. A group of professional contacts, specifically western educated Voltaics, originally from the project areas, and a number of expatriate social science personnel attached to international organizations, were asked to comment on the reliability of the questionnaire findings.

3. Secondary sources included the libraries of CVRS and ORSTOM. The researcher also relied on the researcher's prior work experience in Upper Volta as an employee of the Institute of National Education, 1974-1977, sponsored by the Fulbright-Hayes Exchange program.

I. SOCIAL LANDSCAPE

A. The Country of Upper Volta

Upper Volta is a land locked country in West Africa and is one of the poorest countries in the world. The land area is 274,122 square kilometers with an average population density of 22 people per square kilometer. The country, for the most part, has poor and shallow soils, unreliable water resources, and little exploitable mineral resources.

The 1975 national census counted 5,658,203 resident Voltaics with an estimated population increase of 2% per year. Infant mortality rate has been estimated at 182 per 1000, and life expectancy is approximately 32 years. More than 45% of the population is under 15 years of age. More than 25% of the national budget is spent on education, but only 7% of the population, mostly men, are literate.

The Mossi are the largest single ethnic group (48%) and hold the majority of political power. The remainder of the population is divided among 15 other ethnic groups each comprising not more than 10% of the total population. The government has just ended a 12 year benign military rule with a return to constitutional government and national elections. The country has an excellent record on freedom of speech, press, and individual rights.

The religious affiliations vary considerably according to region and ethnic group, but overall figures show 69% Animistes or traditional religions, 27% Muslim and 4% Catholic.

More than 94% of the Voltaic population lives in 7,200 rural subsistence villages. Only 1.2%, or 33,000 people of the 15-59 age group are salaried employees, and this group, of course, is mainly located in the urban areas.

The average GPD per capita is $84. The only substantial increases in the national budget during the past five years has been through donor input. This is in spite of a highly creditable 14% increase in agricultural productivity between 1973-1975. The 1975 census counted more than 335,000 absent Voltaics as emigrant workers in the surrounding countries. The Voltaics are known throughout West Africa as serious, hardworking admirable employees, so opportunities are always available. Despite the possibilities of continuing salaried work in other countries, more than 85% return to Upper Volta after a stay of 6 months to two years.

Given the lack of natural resources and the perennial risk of drought, assuring adequate resources of food and water is Upper Volta's major concern. Despite the negative statistics cited above, Upper Volta does have several aspects in its favor. There are an abundance of human resources, an

efficient, honest, responsive government, and an administrative organization that, however thinly staffed, provides a long term basis for positive institutional growth.

B. The South West Region of Upper Volta

Upper Volta can be divided into three distinct social-political regions: 1) the northern Sahelian zone primarily occupied by the semi-nomadic Peuhl ethnic group; 2) the Central Mossi Plain and the eastern part of the country occupied primarily by the controlling Mossi ethnic group and the Gourmantche; 3) the southern area of Upper Volta occupied by a variety of ethnic groups historically and ethnically separate from the traditional Mossi empire. These three social political regions correspond to the three climatic regions of the Sahelian zone, the Savannah zone, and the southern tall grass Savannah zone.

The geographical region identified as the area of the village water supply project is primarily in the south western zone of Upper Volta. Four "Organisations Regionale de Develloppement" (ORD) exist in the designated area. The three ORD's of Bobo Dioulasso, Banfora and Bougouriba join together to form the bulk of this region. The fourth ORD of the Volta Noire (Dedougou) geographically as well as historically has acted as a buffer zone between the South-west region and the central Mossi region.

The total project area includes one third of Upper Volta's total surface, with a population density average of 10-20 people per square kilometer as compared with a density of 50-70 people per square kilometer in the Central Mossi plain. There are a total of 2571 villages in the region. The great majority of villages number less than 500 in population and many less than 250 in population. The average population per village divided according to ethnic group is given on the next page.

Bobo Dioulasso, the former colonial capital is the only urban center in the project area with a population of over 100,000. There are four other cities classified as semi-urban with populations of 5,000 to 10,000 people. They include the town of Banfora, headquarters of the Banfora ORD; Oradora in the Bobo Dioulasso ORD; and Nouna and Tougan in the Volta Noire ORD. The Bougouriba ORD has one town, Diebegou, headquarters for the ORD, which is over 3,000 in population.

Subsistence agriculture is the primary occupation of the great majority of the rural people in the project area. The principal subsistence crops are sorghum and millet. Peanuts, cotton, rice and sugar cane are the principal commercial crops. Livestock raising is of moderate importance (see attached map).

ETHNIC	POPULATION OF VILLAGE							
	0-100	100-250	250-500	500-1000	1000-1500	1500-2000	2000+	TOTA
Lobi	19.71	51.17	26.52	2.1	0.23	0	0	99.9
Samo-Marka	15.15	20.20	34.44	19.20	8.08	2.52	0.5	99.8
Bobo-Fing	13.63	30.68	22.72	23.86	4.54	1.13	3.4	99.9
Bwa	20.47	30.53	18.93	20.0	6.94	1.20	0.9	99.9
Senoufou	11.36	28.78	27.27	18.18	6.81	4.54	3.03	99.9
Mossi	5.51	17.76	28.9	28.6	11.37	4.25	3.54	99.9

The agricultural calendar dictates all other activities.

1. The end of May, June, beginning of July the land is prepared and the seeding is accomplished.
2. July and August are spent in weeding and maintaining the fields.
3. September, October and November are the months of the harvest. Each crop is harvested in a specific sequence.

Although the type of work changes slightly from region to region, Upper Voltan women do more than 50% of all agricultural work.

In the project area there are three major divisions of ethnic groups. The Bobo ethnic group (Bobo Fing and Bwa) constitutes 6.7% of the total Voltaic population. The Senoufou is 5.5% of the population. Together these groups are considered to be the most ancient inhabitants of the region.

The Lobi and Dagari ethnic groups both originally emigrated from what is now Ghana several centuries ago. Despite their ancient common origins they are totally different in social structure and attitude. Together they are 7% of the total country population.

The Mande are grouped together because of similar linguistic origins. In the project area this includes the Samo and the Marka which are 6.9% of the national population.

The breakdown of ethnic group and religious affiliation is interesting.

Ethnic Group	Animistes	Muslim	Christian
Bobo	84.6	5.0	10.4
Senoufou	90.5	9.1	0.4
Mande (includes other ethnic groups)	44.6	49.5	5.9
Lobi	96	4	0
Dagari	87		13

(These are estimates based upon 1961 figures.)

The Samo, Marka and Bwa are found in Volta Noire ORD (Dedougou). The Bobo, Bwa and Senoufou reside in the Bobo Dioulasso ORD. The Senoufou live in the Banfora ORD and the Lobi and Dagari occupy the region of the Bougouriba ORD (see attached map).

C. Political and Symbolic Structures

Although there is a multiplicity of ethnic groups in the project area, from a sociological and cultural point of view there are certain general similarities. These similarities are partially based upon historical patterns. The ethnic groups of the project area were rarely aligned or conquered by the Mossi empire. The Bobo and Senoufou groups were the oldest holders of land in the region and created their own kingdom. The Samo to the north and the Lobi to the south fiercely and zealously guarded their own independence from both the conquering Mossi and the more ancient Bobo groups.

1. Political Structure: The most obvious similarity is the traditional political structure. The southwest ethnic groups are egalitarian in their rule. Traditionally there is a "chef de terre" that holds symbolic power in concert with a council of elders. However, there is a large diffusion of actual power and the political power of the chief is more symbolic and non-hierarchial than most ethnic groups. There was not in the traditional structure, with the exception of the Samo, a "chef de village" which is now required by national law of all villages.

This is in contrast to the Mossi political structure that is powerful and hierarchial. The "chef de village" in the Mossi structure is a traditional post as is the "chef de terre", and holds a great deal of power. For the majority of ethnic groups in the project area the "chef de village" is a product of colonial rule and may or may not be a powerful personage in the village. The power held seems to be dependent upon personality and family lineage.

Because of this egalitarian characteristic, power is diffused throughout the village or clan. The Samo have been described as anarchists and the Lobis are known for their high sense of individualism. In many of the groups power seems to reside within the extended family that lives together and does not extend upward to a nucleus of power at the village level.

A knowledge of the traditional political structure and the manner it integrates into the modern state political structure is a necessity for correct preliminary and ongoing contact between the village and project officials and implementors.

2. Decision Making Process: The decision making process seems to be very ethnic, region, and even village specific. This is probably due to several factors. Because of the sense of egality of each family there is an absence of power at the village level. If there is power it is always invested in the "old ones". The role that women play in the decision making process changes between ethnic groups.

In the Lobi and Samo groups, women never speak at meetings held to make decisions. Among the Dagari the older women are expected to play a role, and among the Senoufou the women may speak if she feels strongly about a subject. It is interesting to note that the first two ethnic groups have the highest percentage of Muslim followers.

Knowledge of the decision making process and networks of power and authority among and between both men and women of the village is necessary to elicit and sustain village participation and community action needed for successful implementation of the project.

3. Symbolic Structure: As stated earlier, each ethnic group has a chief, usually designated the "chief of the land", who holds a great deal of symbolic and sometimes political power. In the Bobo, Samo and Senoufou groups this chief is usually found at the village level. For the Dagari, it is the "Doglo", or the "old parents", of a large extended clan. Within the Lobi this function does not extend above the "yir", or the extended family compound.

The Dagari and the Samo also have a separate "rain chief" which is in direct contrast to the Mossi and other ethnic group traditions in which "water responsibilities" are incorporated into the "chef de terre" responsibilities. Among the Samo, it is the women's perogative and responsibility to come together and discuss the possible lack of sufficient rain. If they decide the problem is crucial the women then approach the "rain chief" and he aids them in preparing the correct ceremonies to bring rain.

The Samo also have waterfinders "Tore Fonly" who find water with various types of rods. This person performs a ceremony before villagers begin to dig a well. It was not ascertained whether this personage existed within other ethnic groups of the project area. However because the Samo are the only ethnic group that has historically dug wells in the project area, they are probably the only group to have this type of ceremony. The other ethnic groups considered the earth sacred and therefore did not construct wells before the colonial invasion. It is known, however, that the "chef de terre" among the Senoufou also controls the water that is in the 'bas fonds' or water inundated lowlands.

Respect and utilization of symbolic ceremonies structures or personages in a meaningful manner during project implementation usually strengthens the credibility of the objectives of the project in the eyes of the villagers.

4. Villager Ownership Patterns: Water and access to the water, is a free good at the village level. However, the well itself has traditionally "belonged" to a chief or an elder of the village. The "owner" or family responsible for the well undertakes the maintenance and upkeep of the

10

well. This connection between "ownership" and maintenance of the well seems to be a prevailing attitude throughout Upper Volta. This relationship between collective use and individual responsibility has not always been clearly understood and has fostered several incorrect assumptions and implementation methodologies.

It was often assumed by donor organizations that a well could be constructed for a village with minimal village participation and that collective water use patterns would assure collective responsibility for maintenance. This assumption has been proven incorrect. From the villagers point of view the well may belong to them in terms of collective use and is often appreciated. However the ownership and therefore the maintenance of the well rests with the "government", or the "white man" (donor organization). Thus the villagers feel they have user rights but not ownership rights and therefore it would be incorrect for them to assume responsibility for the well.

The placement of wells without village participation and input has been a second factor in the misuse and disuse of newly constructed wells. For instance, in the past year HER constructed a well at Kouri. They placed the well on a site where the villagers believed "genies" lived. Initially, there was some minimal use of the construction, but then a goat fell into the well. At that point the villagers completely abandoned the well because they felt the genies had demanded their first sacrifice.

Village investment and participation in the well construction by some cash payment and or village work teams, along with veto control of site selection is the obvious solution to the problem of village ownership and responsibility. However it should be recognized that this response engenders an entire new set of factors that must be dealt with if this process is to be successful. They include:

1) Village ownership of the well does set priorities in use vis a vis other groups outside the village in terms of well use. For instance if a well is installed in a large village in a certain "quarter", usually only the families of that quarter work on the well. During the dry season if the water is not sufficient for the entire village, the quarter has the right to turn people from other parts of the village away.

2) Village contribution of either work or cash is done by family. If no-one of the family works they forfeit their rights to participation in the control of the water resource. However they may use the well as long as there is enough water to serve all needs. On the other hand if a family contributes work but no cash it is usually assumed

by the village that it is impossible for the family to contribute financially and thus they still maintain their full status as contributors.

2) Partial financing of the well maintenance definitely establishes ownership and responsibility at the village level. A second advantage is also gained in that this seems to establish the villagers right to turn away herders and their animals.

However, very careful arrangements must be implemented to guarantee government responsiveness. Otherwise the solution could possibly create more problems than it could possibly solve.

In summary, the necessity of implementing correctly designed processes to ensure valid village ownership and responsibility is crucial to the success of the project.

D. The Role of Women

The position of the Voltaic woman is often ambiguous to the Western observer. The majority of the ethnic groups are patrilineal, the holders of village office are male and women seem to do the majority of hard work. Thus some observers have suggested that the Volta woman traditionally has been not much more than valuable property of the husband.

This point of view does an injustice to the traditional place of women in the Voltaic society. The Voltaic woman, when she leaves her family compound to marry, rather than becoming the responsibility (and/or property) of her husband, becomes a social and economic entity in her own right. She is essentially responsible for her own well being and that of her children.

1. Symbolic Role: In terms of prestige Izard suggests that despite the fact that most of the observable symbols of traditional life are masculine, the ability to give life is feminine and this is viewed as a greater power than all the other symbols. "Only the woman has direct communication to the power of the land". (Izard, 1973).

2. Economic and Social Role: However, the fast increasing change from subsistence to cash economies has increased the traditional work load of women (farming, marketing, and household care), while decreasing the traditional work load of the man (hunting, warfare and farming). At the same time the Western organizations that have introduced the cash economy have given entrance, for the most part, only to men, i.e. farm training, access to credit, and technical training. The increasing traditional work load of women contrasted with the widening opportunity for men to enter the prestigiously considered cash economy has thus

increased the dependence of women upon men. Hemmings (1977) suggests that the traditional prestige of Voltaic women is actually decreasing because this increasing dependence upon men is changing traditional social processes and institutions that formerly preserved the traditional autonomy of Voltaic women.

The Western observer, then must realize that the situation observed at the present time may well be a partial product of Western self-fulfilling prophecy wherein women have been traditionally defined as unequal in industrial societies. In African societies unequal access to the burgeoning cash economy creates new unequalities and reinforces whatever maldistributions of social equity that traditionally existed.

The women of Upper Volta have well delineated spheres of influence and power. The woman of the project area creates a contrast in terms of large amounts of social freedom and somewhat constrained economic freedoms. Mossi women farm their own fields and keep the money for themselves. The Voltaic woman of the Bougouriba region will often have her own fields but the money does go to her husband. All other work that she performs for cash benefit is hers to keep. This includes pottery which is an important industry; dolo (local homemade beer) preparation and selling; basket and mat weaving. It should be noted that several of these occupations vary according to sex between ethnic groups.

Socially, the woman of the Bobo, Senoufou and Dagari groups is a free entity, and there are several festivals every year wherein the woman has total freedom, during which time she accounts for her actions or time to no-one.

3. Changing Roles: As a primary emphasis any village water project must take as a central consideration the role of women in the social and economic milieu. The women in the family are the ones that carry the water and do the majority of the chores connected with water. As governments and donor agencies introduce more sophisticated water systems to villages, the questions of participation and control of the new resources are of crucial importance to women. Too often the Western theories of division of work and resulting power control of resources are applied to an African integrated co-operative work structure to the detriment of the female population.

Within the Voltaic village the various duties of procurement and management of water are diffused between the two sexes. The complete control of resources according to sex does not exist in this situation. Women fetch the water and control its use in the compound. The man must ask permission, for example, to take water for the animals. Women decide together when they need a new water source and ask

the men. The men decide if they indeed agree with the women, and if so where the well will be placed.

Thus this diffusion of control is not readily apparent to the outside observer who sees only the final decision making process in the council of elders.

It is especially important therefore to the women of the project area, that new methods of control are not introduced as part of the project implementation plan that would diminish or negate Voltaic women's traditionally diffused but strong role in the management of water resources.

E. Water Use at the Village Level

Normally, there is a definite lack of necessary base line data concerning well water use at the village level. Fortunately however, an exhaustive study of water use in a Voltaic village has just been completed by Ms. Grace Hemmings, Yale PhD. candidate, and has been made available to the village water design team.

1. Tangaye Study: The study was conducted in the village of Tangaye which is 190 kilometers east of Ouagadougou. The village population is 2,359 people with 180 extended family groups. The ethnic group is Mossi. In the village there were 17 water sites including one HER well with a pump, a variety of traditional wells, and several marigots. Distances for all users were between ½ to 2 kms. Obviously the placement of this village does not resemble the project area ethnically. However, as basic attitudes towards water seem to be similar throughout the country and usage of water is based upon its proximity, general extrapolations can be made to the project area.

The methodology of the project included two day continual observation at water sites in the village and in 12 selected family compounds. The information noted at the well site and in the family compound included: time, person, how much, and for what use. The study completed two days of observation during the dry season and two days during the wet season.

Observations of one family of 13 members during a 48 hour period yielded the following information:

APRIL 16 (dry season)

Water brought to compound: 166 liters

Total water consumed: 136 liters

Cooking (13 people)	28 l. = 20.6%
Dolo	57 l. = 41.9%
Drink (13 people)	6 l. = 4.4%
Bath (2 people)	15 l. = 11.0%
Wash (face)	3 l. = 2.2%
Animals (drink)	27 l. = 19.8%

Number of Trips to Well

7 - 11am = 2
4 - 7pm = 8

Number of Women

total = 6
fastest time for trip = 24 mins.

Cooking

Variety	Weight	Water
Petit Mil	5 kgs.	9 l.
Petit Mil	6 kgs.	10 l.
Sauce		3 l.
Sauce		6 l.

Note: Much activity outside of compound that day.

APRIL 17

Water brought to compound: 288 liters

Total water consumed: 281.50 liters

Washing clothes	30 l. = 10.0%
Drinking	12 l. = 4.3%
Animals	12 l. = 4.3%
Construction of bricks for house	227 5l. = 80.8%

Number of trips to the well

total: 21
18 between 9am and 10am

Note: day of construction of house, food had already been prepared elsewhere and brought to compound.

2. Typical Water Use: Throughout Upper Volta the village water use picture is essentially the same. Women and girls do the water fetching and carrying for compound uses while men and boys take the major responsibility for animal watering. Most household women make two visits to the well, once in the early morning and once in late afternoon. Water is carried on the head in large clay pots that hold approximately 20 liters of water. Younger girls carry smaller pots. Very old women don't fetch water and it is the responsibility of the old woman's brothers wives to carry water for her needs.

In the compound every woman keeps a covered clay pot for drinking purposes in her room during the dry season but water for cooking and household purposes is kept outside. During the rainy season drinking water is not kept in the compound. During the rainy season everyone bathes in marigots but during the dry cool season water is brought to the compound and heated for bathing.

In Pemming's study the amount of water for everyday domestic uses during the dry season averaged about 9.9 liters per day per person. Ten liters per day per person seems to provide for basic minimal health needs. It is sufficient for cooking, drinking, washing and bathing.[1] Given "adequate" water sources that are more than 500 meters from the house the amount of 10 liters per day per person seems to remain fairly constant throughout Upper Volta and even in the northern Ghana CIDA pump project area.

3. Analysis of Village Water Use: The village people of Tangaye seemed to make little distinction or preference for HER pump well water. The HER well was always one of the four highest in usage, but several traditional wells and marigots were as popular.

The people of northern Ghana at the site of the CIDA pump project also used the closest source of water. Because the CIDA people have placed their pumps approximately one mile distant from each other, in the dry season at least this meant the pumps were the closest water source.

The AVV project in southwestern UV is installing wells with hand pumps and their findings indicate that the women will walk the distance to the pumps in the dry season but prefer to use the closer marigots in the wet season.

All of this indicates one key point of consideration: from the villager's point of view distance is the major factor in deciding where to get water. This situation should have decided implication for well site placement and emphasis of health education programs.

[1] Personal experience of researcher and other people during periods of living in the bush.

A second related question is the relationship between the amount of water used per day per person in the compound as compared to the distance of the water source. Hemmings data established that 10 liters per day per person was average water use in the hot season. The data suggests that increase of water utilization is apparent only when the household is within a 500 meter distance to the water source. This finding would agree with Anne White's studies in Tanzania (1974). Hemmings data also suggests that water use per person decreases if the household is very large.

From field observation it became apparent to this researcher that water use per person diminished perceptibly when the water source was more than a certain distance away. In rough estimates one could hypothesize that water use per person decreased to about 5 liters per day when the water source was more than 3km distant.

Studies verifying and specifically delineating the relationship between amount of water use and distance to water source would be valuable for continuing project implementation and evaluation. Findings and results could aid in placing wells at distances that would achieve maximum cost effectiveness while continuing to maximize health benefits.

F. Traditional Beliefs Concerning Water and Health

There is a fairly high awareness of relationship between water and health in some areas and a very low level awareness in other areas. The Dagari in the project area state that they definitely prefer well water because "it is better for you". Cheesecloth is sold in markets in this area and is used as a filter for drinking water. Lobi women state that they always use marigot water for dolo making but this is done because the dolo is boiled for a long time. For drinking they declare a preference for well water. However, the people of Tangaye (Hemmings study) and certain groups in the AVV project state that they definitely prefer marigot water to well water. There seems to be an emphasis on the taste and the color of the water.

Whatever the "aesthetic" preferences or perceived relationships between health and water, the overriding conclusion is that proximity of water is still the deciding factor in its utilization. This means that during the dry season women will walk 1 or 2 kilometers to a newly constructed well with a pump to procure water. However, during the rainy season the women will dig small wells next to their fields or concession, or go to nearby marigots for their supply. There seems to be little distinction between the cleanliness and preferability of the pump water as opposed to the small hand dug well, or at least the effort spent procuring the pump water clearly outweighs the possible good of clean and therefore healthy water.

Many foreign village level volunteers tell similar stories of being asked by villagers to drink "marigot" water as that is what made the villagers strong. To prove their point the villagers would compare their "good health" to the foreigners "poor health".

Whether the villagers actually believed this is a moot point as the request was often made in a joking manner. What the story does seem to underline is the harsh realities of the village environment creates an acceptance, conscious or unconscious, of the environmental and health hazards.

G. Summary

The existing social landscape of the village water supply project area was generally described in terms of geographic, human, and economic demographic data. Those areas of the socio-cultural milieu that would experience change, disruption, or greater emphasis due to project implementation were discussed in some detail.

The power structure of the village must receive a great deal of attention by project implementors if the project is to be successful. It was emphasized that all of the ethnic groups in the area were quite egalitarian in their political structure. The decision making process and the role women play in the process, although to some extent generalizable are in actuality ethnic and even village specific.

Village ownership of water resources are of great importance to the correct "social siting" of the well and its continued maintenance. Description of the basic knowledge and data needs to achieve this objective were discussed.

The role of the woman in any water project is crucial. Description of her symbolic, social and economic roles were presented with special note given to her changing role due to the development process. Special emphasis was placed upon the fact that although in the short run women will certainly benefit from more and improved water sources, care must be taken not to diminish women's traditional role in the management of water resources.

Water proximity and use, and traditional beliefs concerning health, are the two areas of village life which will be substantially changed by the project. Ten liters per day per person is the average water usage for people living 500 m. to 2½ km. distance from the water source. Those people living farther than 3 km. seem to use a substantially smaller amount, while those people living closer than 500 m. to the water source begin to use more. Distance to the water source is the major factor in its use. Water quantity is clearly the primary need and water quality a secondary consideration at this time from the Voltaic point of view.

The power structure, decision making and village ownership patterns of the various local ethnic groups should be studied more thoroughly in the first few months of the project implementation.

The rôle of women in water management, changing traditional beliefs and actions concerning health, distance, quantity, and quality factor of water as related to cost effectiveness and health benefits, should all be subjected to intensive monitoring throughout the life of the project.

II. Socio-Cultural Feasibility

The preceding section attempted to construct a background of knowledge for the reader concerning the physical, socio-economic and cultural aspects of the village water project area in Upper Volta. This section will attempt to describe the proposed project and its goals from the Voltaic point of view, and integrate the Voltaic needs and objectives to USAID perceptions of possible project goals and benefits. This process should describe those benefits that are similarly perceived by the recipient and the donor, thus this delineating the most successful project design and implementation process.

A. Project Background

The Village Water Project proposed by HER for USAID funding is a direct outgrowth of a seminar held in Ouagadougou, February of 1976 entitled "Management of Water in Upper Volta", sponsored by UNDP. The primary participants were all Voltaic personnel at the national and regional level charged with the policy planning or technical duties of water resources in Upper Volta. A variety of personnel from international organizations participated as observers. A member of the present design team, Mr. Phillip Roark, was one of the participant observers.

The conclusions and recommendations of this seminar were subsequently adopted as official government policy statements concerning water resource development in Upper Volta. Those recommendations that are pertinent to the development of this project include: (synthesis pp. 83-90 Politique de l'Eau en Haute Volta)

1) The government should intervene to assure a water source in each rural village that will furnish a minimum of 10 liters per day per person.

2) The continued emphasis on digging of modern hand dug wells is recommended as short term (5 to 10

years) objective because the hand dug well is completely integrated into the socio-cultural milieu. While the technical superiority of the small bore wells with pumps is recognized this option is reserved for medium and long term exploitation.

3) In terms of development purposes the water resources of the crystalline zones should be reserved for human and domestic animal use.

4) Only in sedimentary zones should projects be considered that would encourage intensive development of irrigation and livestock raising.

5) Hydrogeological research is encouraged in the southwestern areas of Upper Volta where little has been done.

6) HER is responsible for the development, management and consolidation of water resources in Upper Volta.

B. Voltaic Project Priorities

With the adoption of these water policies and the completion of national water and well inventories, Upper Volta then approached various donor organizations asking them to fund village water projects in specified areas of the country. AID was asked to undertake responsibility for construction of 2,126 new wells, and the deepening of 214 wells in the southwestern area of Upper Volta.

In the general proposal presented to AID, HER asked for:

- well deepening ---------- 200
- modern hand dug wells-------- 600 (with village workers required)
- wide diameter drilled wells-1300*
- small bore with pump-------- 500

HER also presented a list of priorities:

1) villages that have a school or dispensary and no well

2) villages where people must walk more than 5 km. to water source

*Wide diameter drilled wells were decided to be unacceptable technically because of geological terrain and high cost of drilling operations. HER agreed with this assessment in view of their past year's negative experience with the AVV wide diameter drilling program.

3) villages that have a population of more than 500 people

4) villages where people must walk more than 3 km. to a water source

Considering the water policy statement, and the priorities stated in the HER project proposal, the first priority of this project is the creation of more water sources to provide a greater quantity of water to the rural population of the southwest area.

The position of the Government of Upper Volta concerning policies and priorities was further clarified during an interministerial meeting, sponsored by HER. Participants included the AID/Development village water team, all heads of service for HER, Directors of the four ORD's of the project area, and representatives of the Ministry of Health, Ministry of Planning, Social Affairs Office, and Community Development Office. During the meeting, the preferred options or methodology of attaining this priority objective was clarified.

The USAID team individually posed a number of questions concerning project design and implementation to which the concerned Voltaic organizations or persons replied. (Process-Verbal de la Reunion du 20 Juin, 1978).

A primary concern of the USAID team was the correct technology mix, i.e. the number of modern hand dug wells vs. the number of small bore wells with pumps.

The Director of HER, Mr. Ido, stated that the number of small bore wells "was fixed at 500 because of stated priorities". In further clarification, the director of the Black Volta ORD said that "the maintenance of wells must stay at the village level because the government does not have the necessary resources for continued maintenance. The greatest preference must therefore be given to modern hand dug wells. Small bore wells should be installed only when there is no other technical choice. Also pumps must be standardized throughout the country." (p. 4 minutes)

Mr. Ido, Director of HER, responded to this comment by stating that "the remarks of the Black Volta ORD Director are pertinent and state exactly our present policy. We construct, to the greatest extent possible modern hand dug wells. Small bore wells with pumps are installed only where hydrogeological constraints so dictate or where water tables are not satisfactory."

A second concern of the USAID team was village participation in well construction projects and ensuing maintenance.

In terms of village participation, HER has a stated policy that the villagers must work as part of the digging

21

crews. The assistant Director of the Banfora ORD stated that "village maintenance responsibilities must be precisely defined before well construction begins." The ideal of village participation seemed to be accepted by all participants.

A third concern of the USAID team was the integration of a health program with the well construction program.

The primary indication of HER's interest in an integrated wells health project was their commitment to and organization of the inter-ministrial meeting. During this meeting Mr. Ido said that "conforming to the policies stated in 'Management of Water; the Ministry of Health must be involved in the implementation of any wells program in order to assure proper sanitary conditions for the population". (p. 2) It was agreed that the majority of the collaboration would take place at the ORD level with the Ministry of Health assisting in the training of project animatrices. HER stated later that they would also encourage a 'consultation committee' at the national level between HER and the Public Health Office that would meet three or four times per year to review project direction.

In summary, the Voltaic project priorities were presented to the village water team in a clear and concise manner, with open discussion encouraged, and all requests of information honored.

C. Project Benefits and Correct Technological Mix

The final goal, agreed to by Voltaics and USAID, of the village water supply project is to improve the health of the rural people. To achieve this goal the Voltaics have placed their major priorities on increasing water quantity and decreasing distance to the water source. Water quality is, at this point, a secondary priority.

On the other hand USAID has traditionally put a great deal of emphasis on water quality and therefore small bore wells with hand pumps is usually assumed a necessary component of any water project. Thus the key decision to be made in this project design was correct mixture of modern hand dug wells to small bore wells with hand pump.

1. Quantity - Quality and Pump Maintenance: Obviously small bore wells with pumps that supply villagers with a year round water supply that is healthful and non-contaminated is ideal. However there are two key factors that undermine the real, as opposed to the ideal, long term benefits to the villagers:

1) A small bore well and pump is only as good as its maintenance. Numerous projects give testimony to the

innumerable pitfalls of pump maintenance in developing countries. OECD statistics indicate that more than 50% of pump installations in developing countries are inoperable 3-5 years later.

The officials of Upper Volta themselves do not believe they have the capacity to maintain more than 500 pump installations in 250 villages at this time. Maintenance is the key factor but finally it is not a question of technical feasibility, but of institution building, logistics and long term economic questions concerning national budget ability to absorb reoccuring costs of long term maintenance programs.

2) The health benefits of clean water supply to be maximized must be incorporated into a health education program. The benefits of clean water are probably not fully maximized until the health program has been in operation several years. As indicated earlier, distance is the primary factor in procurement of water. Villagers may use the pump during the dry season and go back to the closer marigot water during the wet season if not properly informed.

Theoretical constructs of the quality vs. quantity controversy, have begun to change for tropical areas.

Bradley in Water, Wastes and Health in Hot Climates (1977) claims that because of the "warmth" and the "poverty" of tropical climates a wider view than strict attention to water quality is necessary.

Feachem, in the same book states;

> "In the water-washed category, the skin and eye infections are also major causes of morbidity, and like non water borne diarrhoea, they are reduced by increasing the quantity, availability and reliability of the water supply almost irrespective of its quality. Therefore a general rule can be postulated that all low income water supplies should strive to bring abundant qualities of water near to or into dwellings throughout the year." (p. 86).

2. Project Decisions in the Social Context: After lengthy consideration and discussion of these issues several key decisions were made by the village water team and USAID Ouagadougou.

- Modern hand dug wells would be an integral part of the project with the number of pumps not exceed 500.

- The Health program was to be an integral part of the project thereby guaranteeing maximation of increased benefits of quantity and quality of water.

The key decisions establish the basis of a project design that is judged responsive to the needs of the rural majority in Upper Volta and congruent to the stated national government goals and objectives. Project design includes the following provisions:

- short term (project life) emphasis is put on modern hand dug wells that will improve water quantity, and through design of well, quality of water. This emphasis maximizes village responsibility and continuing self reliance.

- Initial installation of 500 small bore wells with pumps is to be considered a pilot project with further aid and extension based upon evaluation of first 5 year project.

- Although the choice of the Moyno pump is probably a correct technical choice, any long term standardization of pump policy formulated by the Voltaics may well advocate other choices. The fact that French manufactured goods are the most easily obtainable and that the Vergnet pump can be maintained at the village level may well make this pump the long term choice of the Voltaic government.

- Midterm evaluation of project will allow for reduction of hand pumps and increase in numbers of hand dug wells if technical and social problems associated with hand pumps are becoming accentuated.

- Integrated health program will improve water quality of hand dug wells, maximize benefits of clean water from small bore wells with pumps, and provide a beginning infrastructure for continuing rural health programs.

D. Identified Obstacles to Successful Project Implementation

In present "development strategies" no-one questions the need or validity of village participation. "Village participation" can be interpreted in a variety of ways however, and therefore the specific needs of this project in terms of participation and community action should be firmly delineated.

1. Village Participation and Community Action: The crucial point is village "ownership" and responsibility of the well. Attitudes concerning ownership and responsibility of traditional wells were discussed earlier, these traditional attitudes, present HER experience, and former donor experiences indicate several levels of village participation must be insisted upon if the project is to be successful. It

should be noted that the process delineated here is in essence the process with some refinements and additions that HER presently attempts to implement.

1) When approached the village must be given the right to decide whether they actually want the well, with all its attendant responsibilities, within their village. It should be noted that this is rarely a problem as most villages will do more than required, and most in the project area have been requesting wells for several years.

2) If the village indicates they want a well they then participate in all decisions, but must finance it in several ways:

- labor: all HER hand dug wells require village input of labor in terms of actual digging crews, clearing crews, and carrying crews. This project would continue this process. The small bore well construction would endeavor to use village labor as much as possible.

- Cash payment: the advantages of partial cash payment for maintenance was discussed earlier. HER does not presently require this. However a National Water Fund has just been created by government decree. HER officials have indicated that preliminary plans include a village contribution for all water installations. These contributions will be augmented by urban water use fees and possible donor funds. The project should therefore utilize this method for partial village financing.

- Maintenance and health education: the villagers would be asked to form a village health and maintenance committee. The duties and responsibilities of health education program is fully amplified in other sections. Responsibilities for training of village maintenance committees/people would be divided between the health sector and the construction sector. The specific short term objective would be to introduce to the villagers technological culture. The team would consist of encadeurs and animatrices trained in well maintenance, and Peace Corps volunteers. Resource information and presentation guidance could possibly be obtained from VITA technological information centers now under review by AID for possible funding in several of the project ORD's.

The village contact and sensitization process developed by HER will be utilized and built upon. Presently it includes:

1. ORD HER official contacts sub prefecture who organizes meeting with all village chiefs of area.

2) HER official meets with village chief and explains project

3) village chiefs inform their village and if well is wanted, appointment is made through the sub prefecture for the HER official to visit the specific village.

4) HER visits village, presents conditions of work and site selection is begun, continuing contact is established.

The basic additions to the process would be the inclusion of the health officers in steps 1, 2 and 4. At step 4 more complete presentations, including village animation procedures, would be developed.

In summary, these three aspects of village participation should ensure an attitude of ownership and responsibility for the well by the village. It will also provide a basis for village maintenance education and health education and future development activities. It cannot be over stressed that, if on the other hand, the village is not involved at these three levels, the project will become a welfare rather than a development project with few long term gains and a higher risk of well failure at village level.

Donor Point of View and Village Participation

Village participation is only half of a two way communication component. The other half of the communication component is the donor organization and its implementing community development theories. If the donor agency is to be truly committed to village participation, several constraints should be recognized and dealt with:

1) village participation, to be functional, must have as its objective integration of the new information or technology into the cultural and social system of the village rather than only imposition of the material at the village level.

2) Integration of information takes a great deal more time than imposition of information. This is often not aligned with donor needs to see "concrete" results in order to justify continuation of the project funding.

3) Awareness of and allowance for this possible conflict between time needs for village participation and time constraints of the donor organization should be built into the project design and project implementation by allowing sufficient lead time for adequate work and training at the village level.

Institutional and Longterm Constraints

Upper Volta has an efficient institutional organization and well defined policies for development of water resources. The training of the people in management and technical positions range from excellent to good. However they are very thinly staffed. If this presently efficient and responsive staff becomes too overloaded by increasing responsibilities the obvious outcome would be increased frustration, increased bureaucratization and therefore increased inefficiency.

In terms of this project certain institutional constraints should be solved or continually monitored, specifically in terms of the pump portion of the project.

1) the problem of reoccurring costs and sufficient personnel at the end of project should be resolved.

2) this project is only one of several donor projects to be implemented through HER in the next several years. Pressures on resources, financial and personnel, will be significantly increased. The situation should therefore be closely monitored.

3) the problem of pump standardization among all donor organizations and HER must be resolved for any long term success in terms of a pump installation and maintenance program.

F. Summary

The project background and Voltaic priorities in terms of goals and objectives was described and discussed.

The discussed Voltaic priorities included:

- emphasis on increasing quantity of water available to villagers. Quality is a secondary consideration.

- short term continuing emphasis on modern hand dug wells.

- number of small bore wells with hand pumps would be held to a maximum of 500.

- integration of a health program with the well construction program.

Discussion of USAID concerns quality, health benefits of increased quantities of water, and pump maintenance was presented.

Correct project design and its successful integration into the social-cultural landscape was described. Identified obstacles were:

1) correct technological mix, 2) village participation and community action and 3) donor and UV institutional constraints.

III. Communication Strategies and Diffusion of Innovation

The communication and diffusion strategies of the village water supply project are its organization and training components.

The already existing institutional structures of the Voltaic government will be utilized in project implementation. Objectives for the five year life of the project include increasing institutional performance ability, both quantatively and qualitatively.

The organization chart that is included in the project description has been reviewed with Voltaic officials at national and regional levels. Alignment of project organization with present governmental structures and project congruence with future Voltaic objectives was considered to be an essential prerequisite of successful project organization. The organization chart thus integrates all of these concerns with the needs of project workability and efficiency.

Health and technological intervention training components at the village level are the planned methods of diffusion of innovation, as well as a method for distribution of the social benefits. Communication strategies will be primarily implemented by inclusion of village participation methodologies at the field level.

The success of the communication and diffusion strategies will be judged by the evaluation of project base line data gathered at the beginning, mid term, and end of the project life. This evaluation should be a continual monitoring process of the success of these strategies. Indicated changes, resulting from the evaluative process, should be implemented throughout the life of the project. Communication strategies and methods to diffuse innovations can never be considered a prepackaged or static entity. They must be continually modified to meet the changing needs of the project.

IV. Social Consequences and Benefits

The possible social benefits and consequences has been indirectly the basic subject of the entire social analysis. In summary the benefits are improved quality of life and basic health improvement. There are more than 1600 villages in the project area that subsist on less than 5 liters per day per person. An increase to 10 liters per day per person

should make significant differences in their quality of life style and basic 'good' health. This difference is hard to imagine for people of developed countries that live in the midst of plentiful water but it does exist and is almost a life giving difference.

This project will address itself to the two top priorities of HER. They are: 1) villages that have dispensaries or schools but no well and 2) villages that are more than 5 km. from a water source and therefore utilize less than 5 liters per person per day.

Thus the project has an immediate impact on diverse levels of rural subsistence society. It does therefore address the stated U.S. objectives of meeting the needs of "the poorest of the poor", while providing for ongoing continuing development of all sectors.