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**Engendering the Second World Water Conference**

## **Report of the SEUF-KWA-IRC Action Research Project**

**A Project Supported by the Women and Development  
Department, Netherlands Ministry of Foreign Affairs  
On the Occasion of the Second World Water Forum,  
The Hague, the Netherlands, 17-22 March, 2000**

**Thiruvananthapuram, Kerala, India  
March 2000**

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# MALA-2000

Engendering the Second World Water Conference

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# **Acknowledgement**

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*SEU Foundation was ably represented by the WID - Director Ms. Thresiamma Mathew and Junior Programme Officer Ms. Mariamma David.*

*Last but not the least a big salute to the people of Vellangallore, NHG Convenors and Ward Water Committee Members.*

*Dr. K. N.Panicker*

*Director SEUF*

## Abbreviations

<b>CWSS</b>	-	<b>Comprehensive Water Supply Scheme</b>
<b>MLD</b>	-	<b>Million Litre per day</b>
<b>KWA</b>	-	<b>Kerala Water Authority</b>
<b>SEUF</b>	-	<b>Socio Economic Unit Foundation</b>
<b>Ipcd</b>	-	<b>Litre per Capita per day</b>
<b>NHG</b>	-	<b>Neighbourhood group</b>
<b>PLA</b>	-	<b>Participatory Learning Assessment</b>
<b>TLO</b>	-	<b>Technical Liaison Officer</b>
<b>NEDA</b>	-	<b>Netherlands Development Agency</b>
<b>WID</b>	-	<b>Women in Development</b>
<b>SPA</b>	-	<b>Stand Post Attendant</b>
<b>HHC</b>	-	<b>Household connection</b>



**SOCIO ECONOMIC  
UNIT FOUNDATION**

# **A GENDER AND POVERTY SENSITIVE PARTNERSHIP FOR MANAGING SCARCE DRINKING WATER IN KERALA, INDIA**

**Affected by a shortage of drinking water, women of Mala Water Supply Scheme and the Keral Water Authority began a unique experiment**

## **The Water resources issues in Mala**

The situation in Mala is typical for the development in many countries. Kerala is in itself not short of freshwater. Rainfall is high and during the monsoon season, which lasts from May to September, provides not only water for agriculture but also for drinking and other domestic uses. Almost every rural household has its own well. Human action has reduced the availability of rainwater for the state's freshwater needs. In the past the rain could infiltrate the soil in the extensive areas with dense natural vegetation and in the wet rice fields. Now, dry crops have replaced the rice and the vegetation has been cut down to make place for human habitation. Many of the men

work in the Gulf states. The families invest the earnings in high quality housing. The result is a great expanse of built-up areas and an extensive network of tarmac roads and surface drainage. All along the narrow coastal strip where most of the population lives much of the rainwater now flows directly into the sea. Because sweet ground water tables have declined salty water intruded further inland.

In consequence today's wells are salty and fall dry during three months of the year. Taps provided by Kerala Water authority, both public and private, is the only source of drinking water for the people in the mala scheme area. And Mala is one of the



Informal meeting of the street based water management group

over one thousand rural water supplies on which families have become dependent in this populous state. Despite the decline of fresh water the source of the Mala scheme would still be adequate to serve the needs of all its users. However, excessive water use in the lower lying areas and shortage of staff to fine-tune the water distribution mean that the available water does not reach the elevated places. On days there is water this comes at unpredictable hours and lasts for an unpredictable period, sometimes not longer than one hour.

Worldwide, the demands on freshwater are growing. This precious resource is unequally divided both between and within countries. Every year there are more

areas with a seasonal shortage of freshwater for domestic or productive use. The result is a growing competition for water between the water sub-sectors as well as the users. Fair allocation and good management of the resource are thus more and more crucial. Faced with serious shortages of drinking water in summer and determined to address this through better management of the available water, the women of Vellangalore, one of the most affected communities in the Mala piped drinking water supply scheme and the engineers of the Kerala Water Authority joined hands in a unique experiment to address the water resources issues in this hilly area.

### **CHARACTERISTICS OF MALA SCHEME**

Year of Completion	: 1990
Location	: Thrissur District
Type	: Comprehensive piped water supply with electrical pumping
Size	: serves six communities with a total population of 1.5 million
Supply Capacity	: 19 MLD
Financed by	: Govt. of Kerala and the Netherlands
Technical Agency	: KWA and TLO
Social Agency	: Socio-Economic units Foundation

## Women's informal water management

A participatory learning assessment of SEUF KWA, the World Bank Water and Sanitation Program and the IRC International Water and Sanitation Centre revealed that the problems affect especially the women in poor families who use public taps. Better-off households have private taps and have build storage reservoirs attached to their connection. In this way they can leave the taps open for the times that water comes. Poor women do not have this possibility. They must wait till water comes on in the public taps. This makes it hard for them to manage their time and other work. To cope, these women have set up an informal street based water management system. For this system they fix the self-closing taps in an open position. When the water comes on it flows into a metal water pot underneath it. The woman living nearest listens for the sound of the falling water (if she lives within earshot) or looks out for it. (if she lives within sight) or otherwise regularly checks upon the start of the water flow. She then warns her fellow women that water has come so that all can fill their pots. Each family is allowed to fill two pots for drinking purposes. If water is still flowing thereafter, more pots may be filled.

The system avoids having to post young children-often girls-near the tap

to warn mothers when the water comes on, as is often done in other areas. In Mala, the informal water management is working, but it is highly inconvenient. It makes people reluctant to pay for water and is one of the factors in the low cost-recovery for the water supply. Poor service and poor payment have become mutually reinforcing in a vicious circle.

### An experiment in Joint problem solving

The joint analysis of the situation, during the UNDP-World Bank sponsored study on "Participation, Gender and Demand Responsiveness - making the links with impact of Sustainability of Water Supply and Sanitation Investments", has brought about a one-year experimental project. The experiment addresses the water shortage through a partnership between the women, the local Community Council and the Kerala Water Authority (KWA). The Technical Liaison Officer (TLO) and the Socio Economic Unit foundation (SEUF) provide inputs. The Ministry of Foreign Affairs, Department of Women and Development of the Netherlands gave financial support. The process and first results are now presented as a case study at the Second World Water Conference.

### Water resources problems chosen to be addressed :

- Excess use of water including for un intended purposes such as irrigation. Spillage/wastage of water at Public taps. People with private connections (upper class) storing water in reservoirs and using it affluently with out consideration for others
- Leakage in the distribution pipelines. Unpredictability in the service and delays in operation and maintenance.
- Drying up of 80 % of the open wells.
- Unequal distribution resulting in a reduced flow of water to the elevated areas.
- Queuing and long waits at tap points.
- Quarrels and fights at stand posts leading to tension between families.
- Drudgery in fetching water from distant sources involving steep climbs.

The implementation process started with the mapping of the specific problems the women wanted to address. Each neighbourhood chose their own water convener. Ninety percent of them are women. The conveners organised several neighbourhood meetings. They were assisted by a team of one female and one male community member, who had got training on the use of participatory tools. Some separate meetings took place with the men to discuss women's work in water, analyse their own water use practices and on the men's support to the initiative. Participatory water resources mappings raised the insight and awareness of women and men. They revealed that of the 78 Neighbourhoods 50 had a water surplus and 28 a water shortage. Neighbourhoods in Kerala consists of c 50 households each. The total population of the community was 33,000 inhabitants in almost 9000 households (1991 census).

Mapping and roleplays helped those in the lower areas understand how overconsumption and wastage in their areas affected water availability in the higher parts. The meetings culminated in a large planning meeting at community level with all stakeholders: women and men representing the neighbourhoods, adults as well as young women and men, the council president and council members, engineers from the KWA and TLO office and the social staff from SEUE

At the meeting three programmes were decided on : saving water, recharging ground water by digging rainwater harvesting pits near wells and better distribution and management of the available water resources. In the subsequent months each group undertook their own actions. Led by the project team, Ms. Chandrika, Councillor of Vellangalore and Ms. Thresiamma Mathew, head of the Gender Unit of SEUE the women water conveners met with the scheme engineers and operator and made several agreements :

**A scheduled supply :** a fixed calendar and daily schedule for water delivery.

**Better communications :** At interruptions and breakdowns the operator telephones to the panchayat office to inform the community of the reason and probable duration. Neighbourhoods are either warned or turn to the council for information.

**Earlier start :** after an overnight interruption the operator starts the supply at 1 a.m. to ensure that the tank is filled by the time distribution starts.

To better demand and supply and fine tune the distribution the engineers from the KWA and neighbourhood members jointly undertook a water needs survey and water flow study. The water needs study took three days and was done in a sample throughout the Panchayat. The water flow study was done at every public tap (368) and at 16 selected taps during alternate months. Based on the outcomes the KWA shifted regulatory valves to the required places.

The conveners in their turn stimulated the curbing of over consumption and prompt tariff payments. They also achieved that sixteen public standposts that did not serve a specific group of families could be plugged up. Mapping of private connections showed that no illegal connection had been installed. A Panchayat-organised three-day campaign to dig rainwater collection pits for recharging the wells resulted in some 3000 pits dug in private land. Digging was done by women and men. A Small amount was paid from the Council's resources for each completed pit to compensate for the work. The impact of digging such pits is visible from from the level of water in the wells nearby.



Equi - distribution of water practised by the community

### ACHIEVEMENTS AFTER ONEYEAR

At the end of the first cycle the following achievements have been reached:

- A more regular supply, longer hours and sufficient quantity and quality
- Better relations between the KWA and the villagers.
- Purchase of a standby generator with contributions from the six panchayats
- A separate line scheduled to a Muslim area of 4000 families.
- Women will be trained in plumbing, meter repair and meter reading.
- Regular volunteers are remunerated.
- All stake holders learned to consider the role of women in the project.

Women's sense of social awareness tremendously increased and their self esteem boosted through the knowledge.

### GENDER ANALYSIS

After a gender training from SEUF the local support team led discussions on water and gender. Doing the exercise "A day in your life" - the concrete analysis of a day of a woman and a man with every activity and the time taken for it- gave a shock to both, when they saw the burden women actually carry. Generally housewives are thought to have a leisurely life. But with this exercise they could really picture the amount of time they spend on water collection alone on a day in summer. The project has brought more gender charges: "Suhara and Kamamma who always tried to give men the first chance to speak in meetings said at a later discussion " You men now wait. Let the women, say what they think, first we also know things now". We were thrilled to hear such statements

*(Mariamma David, SEUF)*



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## Table of Contents

<b>Acknowledgement</b> .....	3
<b>Abbreviations</b> .....	4
<b>Mala Comprehensive Water Supply</b> .....	6
<b>Socio-Economic Conditions</b> .....	8
<b>World Bank IRC Global Gender and Water Study</b> .....	10
<b>Gender Impacts of Water Problems</b> .....	11
<b>Initial Gender Action</b> .....	12
<b>The Partnership Project</b> .....	12
<i>Water savings and wastage control</i> .....	16
<i>Cooperation of KWA and women</i> .....	17
<i>Watershed and rainwater pits</i> .....	18
<i>Further Action</i> .....	19
<b>The effects</b> .....	19
<i>On water supply:</i> .....	19
<i>On the women:</i> .....	20
<i>On relations with the KWA and social and problem solving attitudes:</i> .....	20
<i>On gender relations</i> .....	21

## ***Mala Comprehensive Water Supply***

The Comprehensive Water Supply Scheme (CWSS) to Mala and adjoining Panchayat is a Netherlands Assisted Project for Rural Water Supply in Thrissur District of Kerala. The Kerala Water Authority (KWA) is the implementing agency. On the social side support was provided by the NGO, SEU Foundation. The Technical Liaison Office in Kochi provided technical assistance through the services of retired KWA engineers.

The Mala scheme covers six Panchayats, namely Mala, Kuzhur, Poyya, Annamanada (part) Puthenchira and Vellangallore. The ultimate benefited population and the foreseen water demand in the year 2011 are 2.04 lakhs and 11.20 Mld, respectively (Table 1). The water supply scheme is designed for a per capita demand of 55lpcd, including 10% wastage, to serve 90% of the total population. The Chalakudy River is the source of this scheme. Raw water is pumped from this river and is treated in a conventional treatment plant constructed at Vynthala, in Kadukutty Panchayat. The water is distributed through a network of about 397 kms of pipelines, 1488 nos. of street taps and about 3000 house connections. The quantity of water earmarked for Vellangallore Panchayat is 2-38 Mld for an ultimate population of 43264, to be reached in 2011. The water supply was constructed from 1984 to 1989 and became operational in 1990 (Partially commissioned. It is not yet fully commissioned as the treatment plant for the scheme is not constructed.)

**Table 1. Mala Comprehensive Water Supply Scheme: Population by sex**

Panchayat	Population	Male	Female
Poyya	20474	10075	10399
Kuzhur	18569	8272	10297
Puthenchira	19804	9127	10677
Mala	32572	16239	16333
Annamanada	26448	12984	13464
Vellangallore	32846	15599	17247

The project area is highly undulating so that distribution of water to all parts of the Panchayats has been a problem all these years. A high degree of technical and managerial skill, clubbed with appropriate social intervention by way of Peoples Participation is essentially required to maintain a balanced and sustainable water supply here.

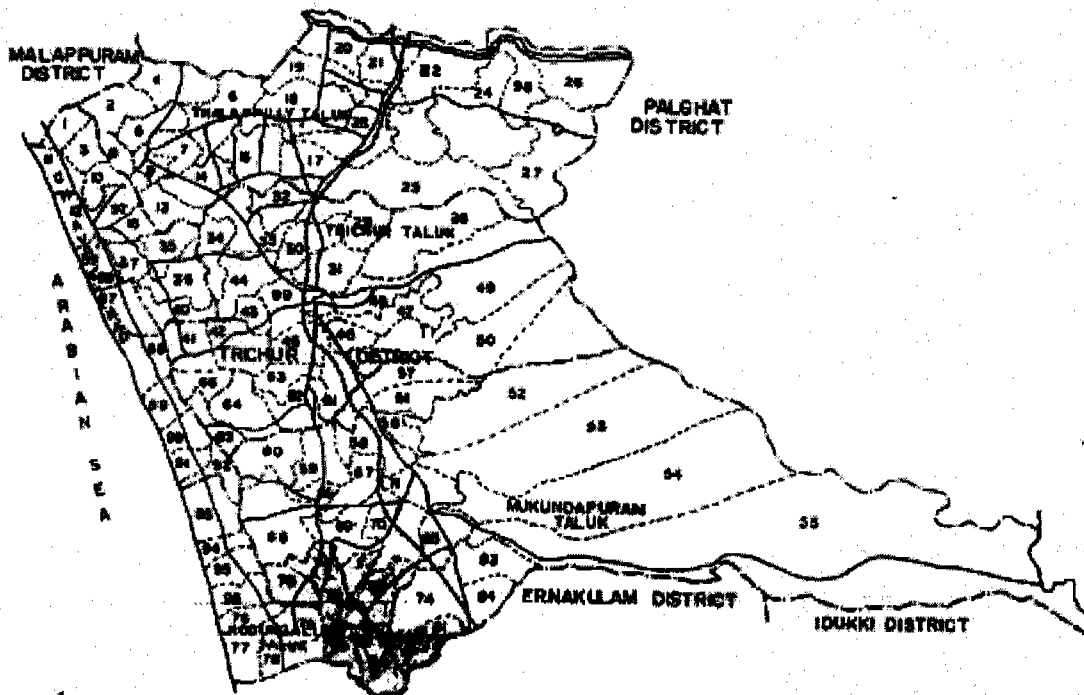
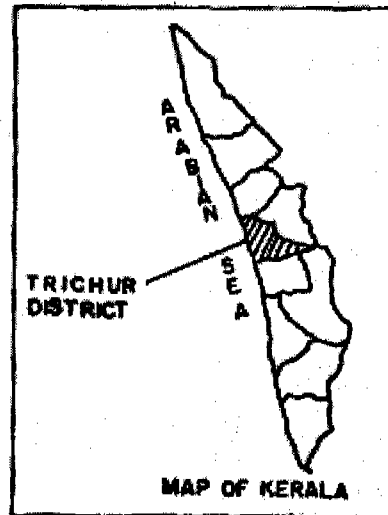


Figure 1

PROJECT AREA			INDEX	
S/NO	CODENO	NAME OF PANCHAYAT		
1	75	VELLANGALLUR	DISTRICT BOUNDARY	-----
2	72	PUTHENCHIRA	TALUK BOUNDARY	-----
3	73	MALA	PANCHAYAT BOUNDARY	- - - - -
4	80	POYYA	MUNICIPAL BOUNDARY	- - - - -
5	81	ANNAMANADA	RIVER	=====
6	82	KUZHUR	RAILWAY	=====
			ROAD	=====
			PROJECT AREA	=====
			PREPARED	JOY
			CHECKED	ALICE
			APPROVED	DIVAKARAN-KK

Map of Mala CWSS showing the 6 Panchayaths

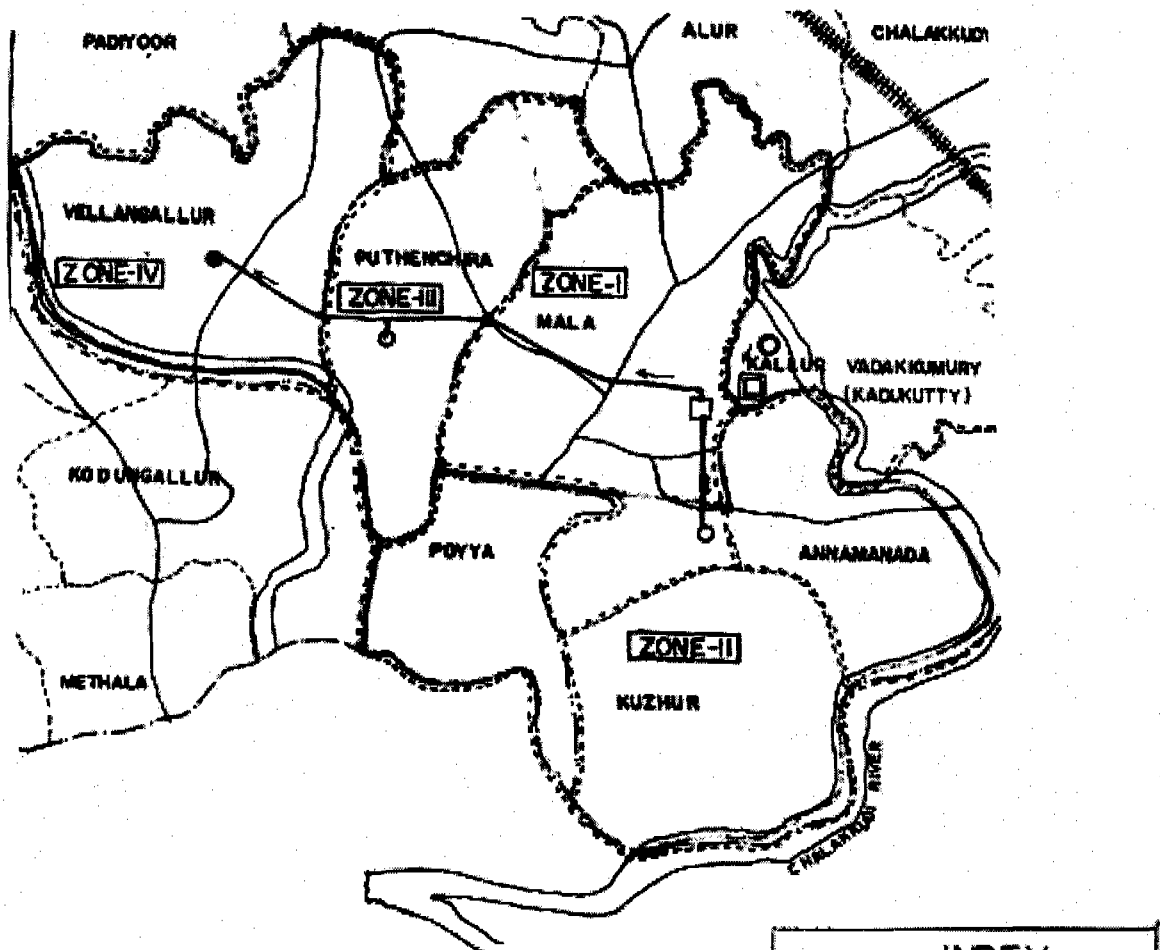


Fig2.

<b>INDEX</b>	
	PANCHAYAT BOUNDARY
	ZONE BOUNDARY
	WARD BOUNDARY
	ROAD
	PUMPING MAIN
	GRAVITY/DISTRIBUTION MAIN
	10 to 350mm
	30 to 140mm
	RESERVOIR
	WARD NO:
<b>DISTRIBUTION AREA OF ZONE-III</b>	
PUTHENCHERA PANCHAYAT, WARDS - 3 to 9	
PREPARED	JOY
CHECKED	ALICE
APPROVED	M. S. NIMANUR

## *Socio-Economic Conditions*

In the scheme area upper class men mainly engage in business, coconut farming, paddy cultivation and fish farming. Women engage in household management. Middle class women and men engage in agriculture, small businesses and paid jobs. Poor households earn their lives as agricultural labourers, head load workers, coir workers and coolies for the upper class and the business people. The women in poor households work in paddy fields, in small cottage industries like mat weaving, coir making, etc, or as servants in the better-off households. More than 40% of the families in the project area belong to the category of households below the poverty line.

The technical achievements of the Mala CWSS programme have been excellent. The scheme has been constructed well and participation of women along with men in selecting the location of the public standposts has had a good result that 90% of the families have a water tap within 200 meters of their house.

In spite of this, the families in the uphill areas and in the brackish water areas suffer an acute shortage of clean and sweet drinking water in the summer months. This period starts in December and lasts till June. The reason is that the distribution of the piped water does not, or very irregularly and unpredictably, reach these areas. The alternative for the women is then to use household and public wells. However the reliability and water quality of these sources have declined.

Even though piped water is now present, the people of Kerala depend very much on well water. During the monsoon, and soon afterwards the wells contain enough sweet water for all household needs and even for agricultural purposes. With the exception of drinking water, for which the taps with treated water are preferred, all other water requirements of the households are then met mainly from the wells. In this period the piped water supply is more than enough to meet the people's needs. In the six summer months, however, almost 80% of the population turn to piped water for every water need. In this season most of the open wells dry out in the whole project area. Drying up of the wells increases due to the deteriorated management of fresh water resources in Kerala. The surface with built-up areas has increased. Roads have been tarmaced and storm water drainage systems have been built. In farms dry crops, such as coconut trees have replaced wet rice irrigation. Sweet rain water that used to infiltrate the land now rapidly drains into the sea. Salt water intrusion has made many domestic wells unsuitable for use as drinking water. There is then no other alternative than tap water.

Over-consumption of tap water in the low lying areas during these months is one reason for the acute water shortage for people dwelling in the scarcity areas, especially in the hills and where groundwater is brackish. The situation is worst in Vellangalore Panchayat, due to the presence of three hilly areas and three brackish salinity areas (see Fig. 3). The total population affected is 6,530 people, out of whom 3320 are females.

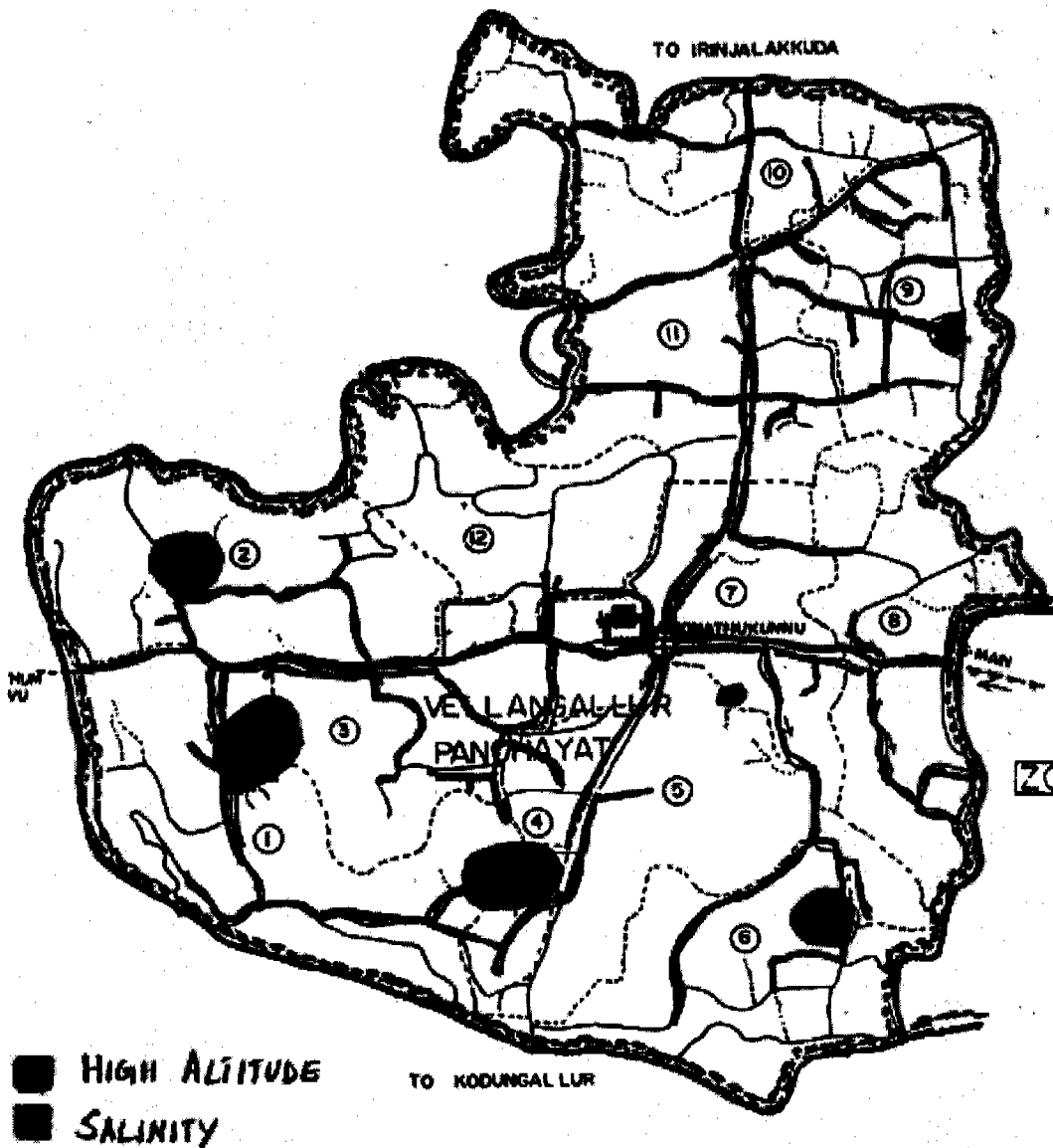


Fig. 3 Hilly area  
Brackish Water area  
(Salinity)

<b>INDEX</b>	
	PANCHAYAT BOUNDARY
	ZONE BOUNDARY
	WARD BOUNDARY
	ROAD
	PUMPING MAIN
	GRAVITY DISTRIBUTION MAIN ABOVE 400
	" " 140 to 350 mm
	" " 80 to 140 mm
	RESERVOIR
	WARD NO.
<b>DISTRIBUTION AREA OF ZONE-IV</b>	
<b>VELLANGALLUR PANCHAYAT WARDS</b>	
<b>I TO XII</b>	
<b>PREPARED</b>	JOY
<b>CHECKED</b>	ALICE
<b>APPROVED</b>	K.K. DIVAKARAN

## ***World Bank IRC Global Gender and Water Study***

For its water problems in poor areas, Vellangalore was chosen as the area of the pilot study for the research project on "Demand, Gender and Poverty: Linkages with Sustained Community Water and Sanitation Services" of the World Bank Water and Sanitation Program (WSP) and the IRC International Water Supply and Sanitation Centre. SEUF was one of the national partners in this 15-country study. The pilot study took place in Vellangalore Panchayat in the months of August to November 1998. It was during the study that the most needy area for drinking water was identified. Through the use of tools, like focus group discussion, transect walks, social mapping, pocket voting, ladder exercise etc. the concrete problem situation with regard to water and gender could be identified. The observations and other discoveries made by the participants themselves woke the people up and simulated them to propose concrete actions for problem solving.

These assessments revealed in particular the seriousness of the shortage of water for the poorer sections of the community. Despite the presence of the water supply, the women in particular struggle to fetch water for household use from the downhill area, climbing up steep hills or walking for 2-3 kms to a good water source. The tired look on the faces of women, the long queue for water at public taps, the very unpredictable supply, which comes sometimes once a week or once in three days, fighting and quarrelling at standposts, etc. were familiar sights during the study. Box 1 gives a summary of the findings from the assessment.

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### **Box 1 Gender-related Problems of Drinking Water Supply in Vellangalore Panchayat**

- ❖ Over 90% of the open wells dry up during summer.
- ❖ Eighty per cent of the households depend on public water supply  
(Ten percent has a private connection)
- ❖ The delivery of the water is irregular and unpredictable due to power shortage and pump failures
- ❖ Households with a private connection belonging to the upper class store water in reservoirs and use it affluently without any consideration for others.
- ❖ Serious water losses occur at times due to breaks in the pipelines
- ❖ Staff constraint in KWA cause delays in local maintenance and repairs. Simple repairs which are well within the local capacity and which the Panchayat is ready to pay for can not be made, as the KWA does not authorize such repairs.
- ❖ Long queues and waiting at tap points, drudgery in fetching water from distant sources through steep climbing affects women in the elevated and brackish water areas. These are also the poorest areas in the Panchayat.
- ❖ Quarrels around the stand posts cause tension and uneasiness for the women and lead to tension in and between families.
- ❖ Women have no say and influence in the scheduling of the water supply and other planning issues that affect them directly.

Despite their paying for water, Panchayat and users do not get information about interruptions in water distribution; they must take things as they come.

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## ***Gender Impacts of Water Problems***

The problems of water scarcity affects women more than men because the women collect water for all the household needs, including washing clothes, animal care, etc. In the summer season more than 3-4 hours of their time is spent in fetching water. Men give support only in exceptional cases. As a result the mothers have less opportunities to assist with their children's studies<sup>1</sup> or attend to other personal needs. Much of their leisure time is also lost. Social activities are also curtailed, because of time constraints. Women coolies and other working women have an unbearable burden to carry during these months. The Below Poverty Line households suffer most, although the rich too face problems, but they can sometimes afford to bring water by trucks or tempo van. Young and old alike face the hardships, but women in the age group of 18 to 55 suffer most. Of course less water also means less cleaning of the house, toilet, cattle shed, etc. Men may go to the ponds to take a bath, but most women have to forego bathing for several days. School children have also to restrict their bathing habits. Women experience a lot of discomfort during their menstrual period, as well as post-natal convalescence. Everyone in these areas feels the pinch of the water shortage.

The area with the most difficult water situation is Muzhaffarikunnu. This is a densely populated neighbourhood whose households belong to the Muslim community. The women in this area are highly vocal on their practical gender needs, but very submissive and silent in the face of strategic gender needs. Gender equality and gender role change are considered out of the question. There exists a subtle awareness among women and men of gender and gender equality, but it is not strong enough to make them breach cultural barriers.

In the Panchayat committee as well, elected women members make efforts to hold to their position and take up leadership on practical and strategic gender issues, but the men in the committee easily take over from them and treat them in an arrogant manner. They do so almost unaware, as a matter of fact. Such a situation was strikingly seen during our focus group meetings and stakeholders meetings (Box 2).

### **Box 2            Gender situation at the beginning of the project**

In a role play on their water situation staged by a neighbourhood group at the Stakeholders Assembly in Vellangalore Community Hall nine women and two men took part. The group had decided earlier that the women would lead the play showing the problem faced by their community in a scarcity area. But on the stage the men started to push the women backwards and took the upper hand. This destroyed the effectiveness of the role play and was a life demonstration of the tendency of the men to dominate even when the issues concerned were those of women.

<sup>1</sup> Kerala has a female literacy of 86.17% and parents highly value a good education for their sons and daughters



## *Initial Gender Action*

Since the women had no say in fixing the time of supply of water or its management they began to organise their internal water management systems. For instance they made arrangements for an equitable distribution of the scarce resource by allowing every household to collect two pots of water first and then fill only more pots if the water was still available. They also left an aluminium pot below the tap with the tap fixed in an open position in order to hear the sound of water whenever it came. Alternatively the woman living closest to the public standpost would keep an eye on the arrival of the water in the tap and then warn the other women in the street. In this way the other women did not have to interrupt their work or send their daughters or sons (but more commonly daughters) to wait at the standposts till water would arrive. In these ways the women managed the shortage of water and the unpredictability of supply. Such arrangements helped avoid at least unnecessary tension between neighbours.

## *The Partnership Project*

The knowledge from the pilot study, in which representatives from all concerned parties – women and men users, the Panchayat president (a man) and a Block Panchayat member (a woman), KWA authorities (men) and SEUF staff (women and men) had participated, led to the general conviction that problem solving action was both needed and possible.

It was clear to all that neither party could solve the problems on its own. The KWA needed the Panchayat and the neighbourhood groups for information and action about illegal connections and change in water use habits; the women needed the KWA for the adjustment of the water supply operation and maintenance. SEUF was a trusted partner who had earlier assisted the women and the KWA in locating the allotted number of water points in such a way that a maximum coverage was achieved in the most efficient way, so that virtually every group of families had a tap with treated water within easy walking distance. The Panchayat had a history of good co-operation and was very willing to be a partner for this important intervention. The households were enthusiastic to plan and participate in activities for mitigating the problems they were facing on a day-by-day basis.

The People's Planning Campaign, through which the State of Kerala has decentralised its planned development, and which had just started was also very congenial for the intervention. The NHGs (Neighbourhood Groups) which form the lowest planning layer are dynamically involved in the planning of the annual development plan of the Panchayat and could play an important role in the new Action. Water related local level voluntary institutions, such as the (mixed) Ward Water Committees and the female and male Standpost Attendants were already present and strengthened the organisational base of the partnership at the users' level.



**Women managing unpredictability** - leaving pots under open taps to hear the sound of water whenever it came.

The main goal of the project would be to see how women, Panchayat, voluntary agencies and water department can solve the water problem through co-operation in a strategy of 'give and take'. Since the women are the ones directly concerned and had already set up an informal management system they would be in the lead of the project. However, also men would be involved in a support position, as they also benefit from the water and have a responsibility for improving the situation of their wives and daughters.



Women and men at an "MHG" resource map preparation

*The particular objectives of the intervention were:*

- ❖ *To test the potential to effectively address the problems through joint problem solving activities by all stake holders;*
- ❖ *To recognise women's needs, commitments and management by enabling them to lead the process.*

The strategy that would be followed was a gender strategy, i.e. with men also taking their responsibilities and sharing the burden as well as benefiting from the results.

The nature of the activity was that of an experimental or learning project to see if the developed approach would be effective and can be replicated in other comprehensive water supply schemes. A number of these have similar problems in the distribution and management of the available amount of drinking water. If such partnerships are possible and have an alleviating impact they will help in sharing the present volume of drinking water more efficiently. This will in turn reduce the need for new construction and reduce the growing demand on fresh water.

Backdrop for the experiment were the forthcoming World Water Conference in March 2000 and the specific interest of NEDA (Netherlands Development Agency) to initiate action to resolve a major water problem through a strategy involving all the stake holders, viz., the implementing water agency (KWA), the local government (Panchayat), the external support agency (IRC), the Non Governmental Agency (SEUF), the Technical experts (TLO and his group) and the women and men in the user community.

**The focus was a social rather than a technical intervention which had its emphasis obtaining a fairer distribution of water within the whole Panchayat and the optimum utilisation of the water available to the Panchayat.**

• People's Planning is the approach to decentralised Government successfully experimented in Kerala since 1997. 40% of Government funds are spent in this way through the Panchayats and Municipalities which are the local governments. Water and Sanitation get priority in all the panchayats and major part of the fund allocation of 30-40% in the service sector is utilised for provision of water to the people. SEUF had been well advanced in planning, implementing and monitoring water and sanitation project together with community with a gender perspective through forming and training Ward Water Committees together with a number of local governments since 1987-88. Most recently SEUF's pilot activities in Decentralised Water Supply Systems have been highly appreciated and recognised by the Government of Kerala and World Bank. SEUF has been selected as an implementing agency for community managed water supply schemes in Malappuram Dt. Financed by World Bank. The key element in these project is the mobilisation and pooling of funds from all stake holders ie. The panchayat (local Govt.), Govt. of Kerala, The World Bank and user community.

The female council member of the Block Panchayat Ms.Chandrika Sivaraman and the WID Director of SEU Foundation Ms.Thresiamma Mathew were chosen to manage the project.

### **Activities**

The activities began at the end of March 1999. Being an experiment there was no set procedure; rather a programmatic approach was followed, with more detailed activities planned as the experiment progressed. A semi-chronological overview of the activities is given in Box 3.

The first actions were meetings with the women and men of the most concerned neighbourhoods, the Panchayat and the KWA. It was decided to first assess the precise water needs and resources available in the critical areas. The results, as presented in a stakeholder meeting in the Panchayat assembly hall, were:

- ⊕ There is sufficient water pumped to Vellangalore Panchayat for all to consume at the 55 lpcd rate. The distribution register (annexed) clearly showed this fact.
- ⊕ Lower levels enjoy an abundance of water, while people at elevated places are deprived of the bare minimum.
- ⊕ Water is overconsumed or misused or lost before it can reach the uphill areas.
- ⊕ Breaks and leaks are left unattended which aggravates a loss of water. Immediate information to KWA will help expedite the repairs
- ⊕ If households in the plains are willing to consider their fellow-beings in the uphill areas, all can get water. Owners of house connection should also be more ethical and control waste and over consumption.

Other issues discussed in the meeting were:

- ⊕ the problems of KWA to execute repairs in time.
- ⊕ the question of simple repairs which are within the capacity of plumbers and other technicians in the Panchayat. The Panchayat is willing to pay for such repairs, but local plumbers are not authorised for such support. Similar problems with meter readings and operation of valves.

### **Box 3                      Chronicle of the intervention**

- Community meetings in problem areas on 30.04.99 and 1.5.99. No of participants – Male: 31 Female: 109
- Panchayat committee meeting 25.3.99, 3.6.99, 9.9.99 and 25.11.99
- Meeting of all six Panchayats in the Mala scheme area – 12.8.99
- Water resource mapping, using as-laid maps to collect details of all natural resources
- Water needs study (sample survey) – 27,29,31 March 1999  
Aims: assess the actual amount of water required by women, men, children, animals etc. in the households.  
Identify all problem areas, and specific problems in piped water supply and traditional sources
- Focus group discussion in the crucial area using participatory learning and action planning techniques (Pocket voting, social mapping, ladder exercise etc.) 29,30,31 May 1999 and 1<sup>st</sup> June 1999
- NHG convenors training – on 9.7.99
- NHG meetings – to motivate the people in reducing the overuse/misuse and supply it to the hilly areas. Total number: 73. No. of participants 1164 – Male – 306 & Female - 858
- Preparation of NHG maps:
  1. No. of house connections
  2. Location of wells (public as well as private)
  3. No. of water tanks for each household
  4. Capacity of the water tank
  5. Location of overflowing tanks(if any)
- Water flow study of selected 16 taps
- Household connection owners meeting – 15.2.99
- Treatment plant visit by NHG convenors – 29&30 October 1999
- Plugging of unused public taps - 16
- Digging rainwater harvesting pits by the Panchayat - July 3,4,5, 1999
- Fault reporting
- Additional line to Muzafferikunnu community - estimate cost Rs.5,00,000/-

- ◇ the lowering groundwater – wells drying up
- ◇ the already mentioned women's problems with communication, predictability and regularity of water delivery not being recognised and women having no say in the scheduling of the delivery in times of water shortage

### **Box 4                      Stakeholders**

- The deprived user communities - women and men and their elected convenors (F, a few M)
- The Panchayat – (Local Government)– Panchayat member (F), Panchayat President (M)
- KWA – the Kerala Water Authority – Scheme Operator (M), Scheme Engineers (M)
- TLO – Mapping Unit – Technical Advisors (M)
- SEU Foundation – WID Department, Head (F) and staff (F)

The SEU Foundation together with the highly motivated and practical minded Panchayat President and the Woman Block Panchayat Member<sup>2</sup>, convenor for water, and the seriously committed KWA staff joined the women and men representative of the deprived communities to draw up concrete action plan, supported by the advice of the TLO and his group. The following interventions emerged from the joint planning. Based on these additional findings the assembly decided to focus on three specific areas of intervention:

1. Water savings and wastage control
2. Dialogue of KWA and women for improved delivery
3. Groundwater recharging through the construction of rainwater harvesting pits

### *Water savings and wastage control*

The first step of the water savings and wastage control was to create awareness among all users especially in the plains about the extreme hardship the women and men in the scarcity area face regarding water for household use.

#### How?

1. Convene NHG convenors meetings (organisers: SEUF and a two member community team, one woman and one man)
2. Role play the situation of the deprived and the attitudes of the affluent, so to create a sense of guilt and a mentality of sharing and caring among the affluent.
3. The convenors in turn organise NHG meetings and transmit the same to their people through role plays, using picture cards etc.
4. Create awareness about the water situation among all users and develop a caring/sharing attitude

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<sup>2</sup> A Block is the administrative level above Panchayat (community) level. A Block consists of 5-7 Panchayats with a typical population of 180000. The positions of Block Member and Block President are political (elected) positions. The woman Block Member and convenor of this project started her career as a member of a Ward Water and Sanitation Committee. These are voluntary committees, which participate in the planning, and management of Panchayat-managed water and sanitation programmes. One Panchayat has about 10-15 wards. Each ward consists of about 500 families.

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NHG Convenors role playing

It worked: 73 neighbourhood groups (NHGs) met only to discuss about the water re-distribution. Many remarked that they never realised how cruel they were to their brothers and sisters in the uphill area; how they were careless about the scanty resource – the water! (a date wise chart of the NHG meeting is annexed) This activity was followed by each neighbourhood group making their own water resource map. All the wells, public standposts, private connections, ponds, rivers if any were marked in the map which helped the community of each neighbourhood see how many water resources they have, and how they could spare more piped water for others.

NHG groups' volunteers subsequently visited upper class households with private connections to assess the capacity of their water storage tanks and alert them about misuse or waste. (Households with private connections storage tanks tend to leave their connection to the tank open. When the tank is filled the additional water spills over into the yard, causing a loss of water and a greater consumption than the 50 Lpcd on which the scheme is based).

***"Purified water is precious. Do not waste even a drop".***

Writings and sayings of this sort began to appear spontaneously as a result of the campaign for awareness and actions for better care/share of drinking water.

### ***Cooperation of KWA and women***

Through their roles as convênors and their engagement in group activities the women involved became more confident and began to raise their desire to know more about their water supply. They became ready to move out of their village to visit the water works at 15 km. away at Vainthala. SEUF's personnel happily supported them and KWA organised a visit during which they learned about the various processes involved in the treatment and pumping of river water and discussed the distribution problems as well as the problems of colour and smell. They also learned that water become milky when it comes with force due to the presence of the air in the pipe line. The latter is unavoidable as in India pipe lines in rural areas are not under pressure for 24 hours because electricity is ration. The air all aggravates the smell of chlorination



Chandrika Sivaraman (Block PT Member) motivating women and men to conserve water

**"I thought that chlorine was put in to the water in sacs and that that is why we had over chlorination. Now I see how it is done. Wonderful"**

**- (Fathima from tap No. 121)**

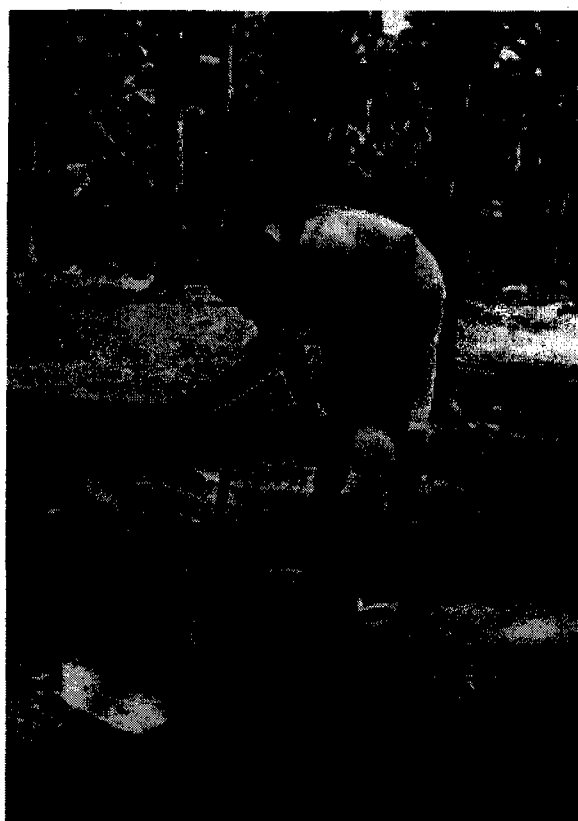
Issues that were discussed and agreed on in the meetings with the KWA were:

- 1 A scheduled supply: have a fixed calendar and daily schedule for water delivery. Days and hours of supply had been fixed and the public has been informed about them.
- 2 Better communications: If for any reason water could not be supplied, the operator notify the Panchayat by telephone to inform the community of the reason and probable duration. The Panchayat informed the affected neighbourhoods or they turn to the council for information.
- 3 Earlier start: after an overnight interruption. The operator starts the supply at 1 a.m. to ensure that the net is filled by the time distribution starts.
- 4 Fine tuning the flow: KWA carried out a study of the flow of water for selected public standposts in each ward of the Panchayat (16 Nos.) and regulated the flow.
- 5 Improvement of maintenance and repairs: Discussions have started on how repairs of leaks can be improved so that less water is lost (see also below under Further Action).

### *Watershed and rain water pits*

The Panchayat authorities, enlightened by the district's initiative to educate people on watershed protection and rainwater harvesting to combat water problems, introduced a campaign to dig rain water pits in every household's compound. This will help recharge the wells and retain the water for more months of the summer. They were keen to take any step to fight the water problem joining the women and men of the Panchayat. The Panchayat

even gave a subsidy to dig pits. More than 3000 pits were dug within 3 days in the Panchayat. Both women and men did the job. The result is yet to be seen. Since the NHG convenors are 90% women,



**KWA at work:-** Regulatory valves to control the flow of water



**Both women and men digging rain water pits**

naturally women took the lead in all activities. Information dissemination, awareness creation, motivating women and men and organising the campaign were effectively done by the women convenors. A few highly sensitised youth took as much interest.

The inauguration of the project "Self reliant district in drinking water" initiated by the District Panchayat of Thrissur, was held at Vellangalore because of the various programmes initiated here to combat the water crisis. The Minister congratulated the Panchayat as a whole but especially the women of Vellangalore Panchayat for their hard work and example setting.

The Panchayat had also made its own plans to accelerate solutions. In its current Annual Plan they support the digging, repair and maintenance of 95 wells, cleaning and protecting of ponds, etc.

Another technical intervention was to plug down sixteen unused public taps. KWA could not have done this without the support from the Panchayat and the members of the community. Earlier efforts to plug unused standposts was faced with a lot of resistance and difficulty. The action will curtail the loss of water through leaks and misuse.

### ***Further Action***

Through the enthusiasm and serious involvement of all concerned especially the women, and men, from the affected area, the technical wing (KWA) became all the more concerned about seeking ways and means to improve the existing water supply system. They have proposed:

1. To train women in plumbing and meter repair and meter reading so as to rectify problems immediately; thus making up for the staff constraints in KWA.
2. To lay an additional line to the extreme problem area, Muzaffarikunnu with a special valve operation, so that water is first given to this area before it flows off to low plains (cost estimate is 5 lakh)
3. During the peak of summer when electricity also fails frequently, they will operate an additional generator if the Panchayats pay the extra amount (Rs.1100/- per day)

The Panchayats in Mala scheme have agreed to do everything possible to augment the water supply and ease the struggles of the people.

### ***The effects***

#### ***On water supply***

The effects of the actions on the more equitable distribution of drinking water are being measured through a combined monitoring system of KWA and users. The neighbourhood groups in the uphill area reported positive results already:

Improvement regarding;

- Regularity in supply



- Longer hours of supply
- More or less sufficient quantity and quality

The physical impacts of the intervention will be fully visible only after the ongoing summer and the rainy season, which start in 2000 June. The next summer i.e. of 2001 will give the final indicators.



No more rush ! we can take water with ease now.  
Water comes at a predictable time.

### *On the women:*

Apart from the convenience and development benefits of a better water supply, the women's self esteem has been boosted through all the knowledge they gained through the social and technical inputs. They express their pride in being able to initiate such a novel project in the Panchayat for the first time. KWA and SEU Foundation officials and Panchayat authorities now visit women in the affected areas, hold meetings there, ask their opinions, etc. These women feel very much encouraged and their sense of confidence and self-respect has tremendously increased. The convnors have become experienced representatives of gender interests in the neighbourhood, travel and take part in planning meetings with the panchayat and KWA. Muslim women (eg. Amina, Fathima) have become very active in the water related programmes taking up leadership roles.

Traditionally women's community work is voluntary work and men do less voluntary community work than women. Work done by men tends to be paid work. In the experiment to improve water management in a gender-and poverty sensitive manner, regular volunteers have been remunerated. Women and men who have been actively involved for planning and meetings etc. have been given food and refreshments. All who took pits received a subsidy of Rs. 12/- per pit, the amount being paid to NHG convenors (F) who inturn disbursed it at NHG meetings to the households. Thus the adopted procedure made for transparency and accountability with a gender perspective and there have been no cases of wives and daughters doing the work while the compensation went to male household heads.

### *On relations with the KWA and social and problem solving attitudes*

Users were unaware of the technicalities involved in the supply of water in hilly areas. They only blamed officials. Now they are much more sympathetic towards KWA staff. The women used to shout at KWA and other officials because of their water problem, but would not spare any time or effort to take problem solving actions. They have become very active, have united and spread the practices to conserve, share and attain equitable distribution of water. A big change from self-centred to community centred attitude. Also their appreciation for piped water has tremendously increased as they witnessed the process of purification.

The local activities have created a general vigilance against misuse and over consumption. The women and men both including children learned about the social and technical aspects of water more concretely through the role plays and discussions in the neighbourhood group meetings. Many confessed that they never thought of the others when using plenty of water, but from now on it would prick their heart and conscience to waste or to see wastage of precious water. Understanding and appreciating the drinking water supply as an interrelated system where actions in one part affect other parts and the co-operation in addressing the problems have created a greater sense of community feeling and unity.

What is very rewarding to see is the understanding relationship that has emerged between KWA officials and the disadvantaged group in this area. Even if their water problem is not fully solved, they know that the department is concerned about them. The reactions to the "no water supply day" (the emergency schedule of two days of water, one day without agreed on with the women representatives for a period when no other measures may work) are milder.

### *On gender relations*

Through the three series of neighbourhood meetings held solely in connection with the better management of the water supply system, the selected volunteers who had undergone gender awareness training by SEUF, became proficient in leading discussions on gender and so create a stronger awareness among participants, both male and female. An exercise like "A day in your life" which involves the concrete analysis of a day of a woman and a man, specifying every activity done and the time taken for it, was a shock and an eye opener for both, as it helped them to see the burden women actually carry. Generally housewives are thought to have a leisurely life. But through this exercise they could really picture the amount of time they spend on the collection of water alone in a day in summer.



Local woman like Suhara gains courage to speak up in a n NHG meeting of men and women

All stakeholders have been learning to consider the role of women in this project. There was conscious effort from all concerned. This is an education for staff, officials and women and men from the community.

Suhara and Kamamma who always tried to give men the first chance to speak in meetings said at a later discussion "you men now wait. Let the women say what they think first, we also know things now". We were thrilled to hear such statements.

Mariam David, SEUF.

Men also began to realise more and more the need to let women participate. They are now more ready to wait for women to speak, to give chances for women to take decision regarding scheduling of water for improvement of water supply etc. All men who participated in neighbourhood meetings have felt the gender as a need of the time. Towards the end of the project the elected leaders (men) were also found to be less vocal in meetings for tackling the issues in water management. A start in gender is in place.

This project had been a great lesson for all. How a concrete effort can bring about attitudinal change among all levels of people and officials. The amount of enthusiasm created, the search for technological and social measures to solve the water problem from all parties especially the KWA and TLO staff, the new initiatives that have emerged as a result of this intervention (separate line to Muzaffarikunnu, flow regulators, etc.), the awareness and willingness of the Panchayat to do anything to support the women's initiatives are very important developments in the project area.

It is amazing to see the very keen interest of KWA Executive Engineer, Asst. Executive Engineer, Assistant Engineer, operator, supervisor etc. to study and find all possible ways to improve the situation. The Panchayat president has now vowed to see that this problem is solved and is ready to spend any money and time for it. These are marked changes, which only came about because poor women who normally do not take a lead took up the challenge, united and took action. Direct effects on the water supply are important; the indirect effect, the learning that to get change and improve their lives women themselves must act is at least equally relevant and a very valid project result.

The role of KWA and TLO has been outstanding. KWA, once a symbol of bureaucratic delay and hurdles proved that they can also act differently. The concern and willingness of the Panchayat to be the nodal actor signify the success of the decentralised planning process in Kerala.

The intervention, no doubt, has been a great lesson for all. It showed how commitment and partnership with proper facilitation can bring about attitudinal change among all levels of people and officials. The amount of enthusiasm created is sufficient to justify the inputs. The search for technological options and consensus on social and individual responsibilities are standing monuments.

The women, Panchayat, SEUF KWA and TLO will in the remaining months as well as in the next summer continue to gauge the effects of the interventions.

LOCATION  
CODE 3330

KERALA WATER AUTHORITY

No: D5-2137/99.

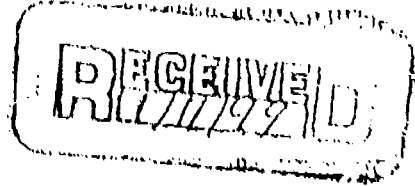
Office of the Executive Engineer,  
P.H. Division, Nattika, Dated 27-10-99.

From

The Executive Engineer.

To

The Technical Liaison Officer,  
Office of the Chief Engineer (IPD),  
Kerala Water Authority,  
Hospital Road,  
Cochin- 682 011.



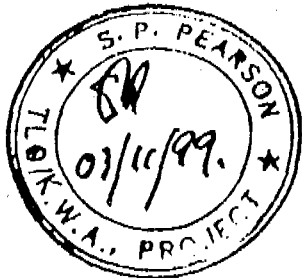
Sir,

Sub:- Mace. of CWSS to Mala & Adjoining Panchayats -  
Monthly details of consumption of water  
in Vellangallur Grama Panchayath -

Ref:-

.....

I am furnishing herewith the details of consumption of  
water in Vellangallur Grama Panchayath during the month of July,  
August and September, 1999 for favour of information.

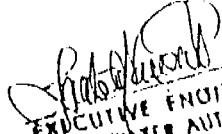


Yours faithfully,

EXECUTIVE ENGINEER

is of Consumption of water at Vellangalpanam panchayat during the month of September 1977.


Date	Water Supply Day/Night	Meter Reading at 5 pm	Consumption MLD	Remarks
31-8-77		7447		
1-9-77	Day	7510	0.63 MLD	
2-9-77	NL	-	-	
3-9-77	Day	7748	2.38 "	
4-9-77	"	7896	1.48 "	
5-9-77	"	8138	2.42 "	
6-9-77	"	8315	1.77 "	
7-9-77	"	8503	1.88 "	
8-9-77	NIL	-	-	
9-9-77	Day	8725	2.22 "	
10-9-77	"	8907	1.82 "	
11-9-77	"	9084	1.77 "	
12-9-77	"	9275	1.91 "	
13-9-77	"	9443	1.68 "	
14/9/77 to 16/9/77	NIL	-	-	Due to Electrical repair at sub-station
17-9-77	Day	9618	1.75 MLD	
18-9-77	"	9709	0.91 "	
19-9-77	"	9843	1.34 "	
20-9-77	"	10008	1.65 "	
21-9-77	"	10174	1.66 "	
22-9-77	"	10369	1.95 "	
23-9-77	"	10549	1.80 "	
24-9-77	"	10732	1.83 "	
25-9-77	"	10812	0.80 "	
26-9-77	"	10974	1.62 "	
27-9-77	"	11169	1.95 "	
28-9-77	"	11248	0.79 "	
29-9-77	"	11374	1.26 "	
30-9-77	"	11525	1.51 "	
	Total		40.83 MLD	

  
 EXECUTIVE ENGINEER  
 KERALA WATER AUTHORITY  
 PUBLIC HEALTH DIVISION  
 NATTIKA  
 NATTIKA

15701  
 Date of completion of work 15/8/99  
 Date of August-1999

Date	Water supply day	Meters	Consumption	Remarks
31-7-99		3041	0.11	
1-8-99	day	3185		
2-8-99	"	3335	1.44 mld	
3-8-99	"	3495	1.50 "	
4-8-99	"	3637	1.60 "	
5-8-99	"	3855	1.42 "	
6-8-99	"	4028	2.18 "	
7-8-99	"	4195	1.73 "	
8-8-99	"	4384	1.67 "	
9-8-99	"	4553	1.89 "	
10-8-99	"	4718	1.67 "	
11-8-99	"	4893	1.65 "	
12-8-99	"	5058	1.75 "	
13-8-99	"	5232	1.65 "	
14-8-99	"	5283	1.74 "	
15-8-99	"	5554	1.51 "	
16-8-99	"	5702	1.71 "	
17-8-99	"	5825	1.08 "	
18-8-99	"	5996	1.23 "	
19-8-99	"	6074	1.01 "	
20-8-99	"	6156	1.08 "	
21-8-99	"	6267	0.82 "	
22-8-99	"	6383	1.11 mld	
23-8-99	"	6496	1.16 "	
24-8-99	"	6613	1.13 "	
25-8-99	"	6731	1.17 "	
26-8-99	"	6873	1.18 "	
27-8-99	"	7016	1.62 "	
28-8-99	"	7130	1.13 "	
29-8-99	"	7172	1.14 "	
30-8-99	"	7317	0.42 "	
31-8-99	"	7447	1.45 "	

Total 13.96 mld

  
 EXECUTIVE ENGINEER  
 KERALA WATER AUTHORITY  
 PUBLIC HEALTH DIVISION  
 NATTIKA PIRKA  
 NATTIKA, PINNAC

As of Consumption of water in Vellangalpanchayat  
 during the month of July 1979.

Date	Water Supply Day/Night	Meter Reading at 5 p.m.	Consumption MLD	Remarks
1-7-79	Meter disman-	ded for repairs		Water supplied but not measured as meter under repair.
2-7-79	0.00			
3-7-79	-	-	Nil	
4-7-79	00127	1.27 mld		
5-7-79	-	-	Nil	
6-7-79	232	1.05 "		
7-7-79	314	0.82 "		
8-7-79	427	1.13 "		
9-7-79	-	-	Nil	Water given to all 6 panchayats on alternate days, due to reduced pumping.
10-7-79	527	1.00 "		
11-7-79	-	-	Nil	
12-7-79	693	1.66 "		
13-7-79	-	-	Nil	
14-7-79	899	2.06 "		
15-7-79	-	-	Nil	
16-7-79	1017	1.18 "		
17-7-79	-	-	Nil	
18-7-79	1124	1.07 mld		
19-7-79	1237	1.13 "		
20-7-79	1368	1.31 "		
21-7-79	1519	1.51 "		
22-7-79	1685	1.66 "		
23-7-79	1834	1.99 "		
24-7-79	1987	1.53 "		
25-7-79	2128	1.41 "		
26-7-79	2325	1.97 "		
27-7-79	2435	1.10 "		
28-7-79	2617	1.82 "		
29-7-79	2722	1.05 "		
30-7-79	2905	1.83 "		
31-7-79	3041	1.36 "		
Total		30.11 mld		

*[Signature]*  
 EXECUTIVE ENGINEER  
 KERALA WATER AUTHORITY  
 PUBLIC HEALTH DIVISION  
 NATTIKA  
 NATTIKA

**Amount of water supplied to Vellangallore Grama  
Panchayat**

**Average supply required - 40-45 Mld**

Jul-98	No supply for 5 days	31.2 Mld
Jul-99	No supply for 7 days	30.41 Mld
Aug-98		44.4 Mld
Aug-99		43.96 Mld
Sep-99		40.83 Mld
Oct-99	Maximum amount given	51.85 Mld
Nov-99	Maximum amount given	51.20 Mld
Dec-99		45.6 Mld
Jan-99	No supply for 3 days	39.01 Mld
Jan-00		43.52Mld



## A SAMPLE OF FLOW STUDY CONDUCTED FOR REGULATING THE SUPPLY

Date AUGUST	TIME OF arrival	Measuring Time	8:00 AM	11:00 AM	1:00 PM	Closing time
1	6.30AM		40-S	70-S	80-S	Continued supply
2	6.00AM		50-S	80-S	2-M	Continued supply
3	6.30AM		40-S	70-S	1.5-M	Continued supply
4	6AM		60-S	1-M	75-S	Continued supply
5	6AM		0-S	70-S	1.5M	Continued supply
6	6.30AM		70-S	80-S	2M	Continued supply
7	7.30 AM		80-S	80-S	2M	6:00 PM
8	7:00 AM		70-S	80-S	2M	Continued supply
9	6:00 AM		50-S	40-S	1M	Continued supply
10	7:00 AM		70-S	50-S	1.5M	Continued supply
11	7:00 AM		80-S	70-S	1.5M	6:00 PM
12	7:00 AM		80-S	75-S	2M	1.30 PM
13	6:00 AM		80-S	80-S	1.5M	4:00 PM
14	12:00 AM		NIL	NIL	1M	4:00 PM
15	7.15 AM		55-S	NIL	NIL	10.30 PM
16	7.30 AM		1.5M	2M	NIL	11:045 PM
17	7.30 AM		1M	2M	NIL	6.00PM
18	7.30 AM		105M	2M	NIL	12:00 AM
19	6.30 AM		1M	2M	NIL	11.45 AM
20	7.30 AM		1.5M	3M	NIL	12:00 AM
21	8.00 AM		2M	80-S	50-S	4:00 AM
22	1.30 AM		NIL	NIL	NIL	4:00 PM
23	7.00 AM		70-S	48-S	1M	4:00 PM
24	7:00 AM		40-S	50-S	2M	3:00 PM
25	6:00 AM		40-S	40-S	NIL	12:00 PM
26	6:00 AM		40-S	45-S	1M	Continued supply
27	6:00 AM		40-S	45-S	1.5M	Continued supply
28	6:00 AM		50-S	70-S	2M	9:00 PM
29	2:00 PM		NIL	NIL	NIL	2.30 PM
30	6:00 AM		48-S	1M	NIL	12.00PM
31	7:00 AM		50-S	1.5M	NIL	12.30 PM

By Rajitha - Volunteer