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COMMUNITY PARTICIPATION IN A PUBLIC STANDPOST WATER SUPPLY PROJECT ON WEST JAVA, INDONESIA.

An evaluation study.

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PREFACE

In December 1985 I went to Indonesia for six months to perform the practical period of my study: Ecology of Housing. The research as described in theis report was not completed after half a year and as I was enjoing myself very much the period was extended. In December 1986 I returned to Holland. About 8 months of this period were spent on research.

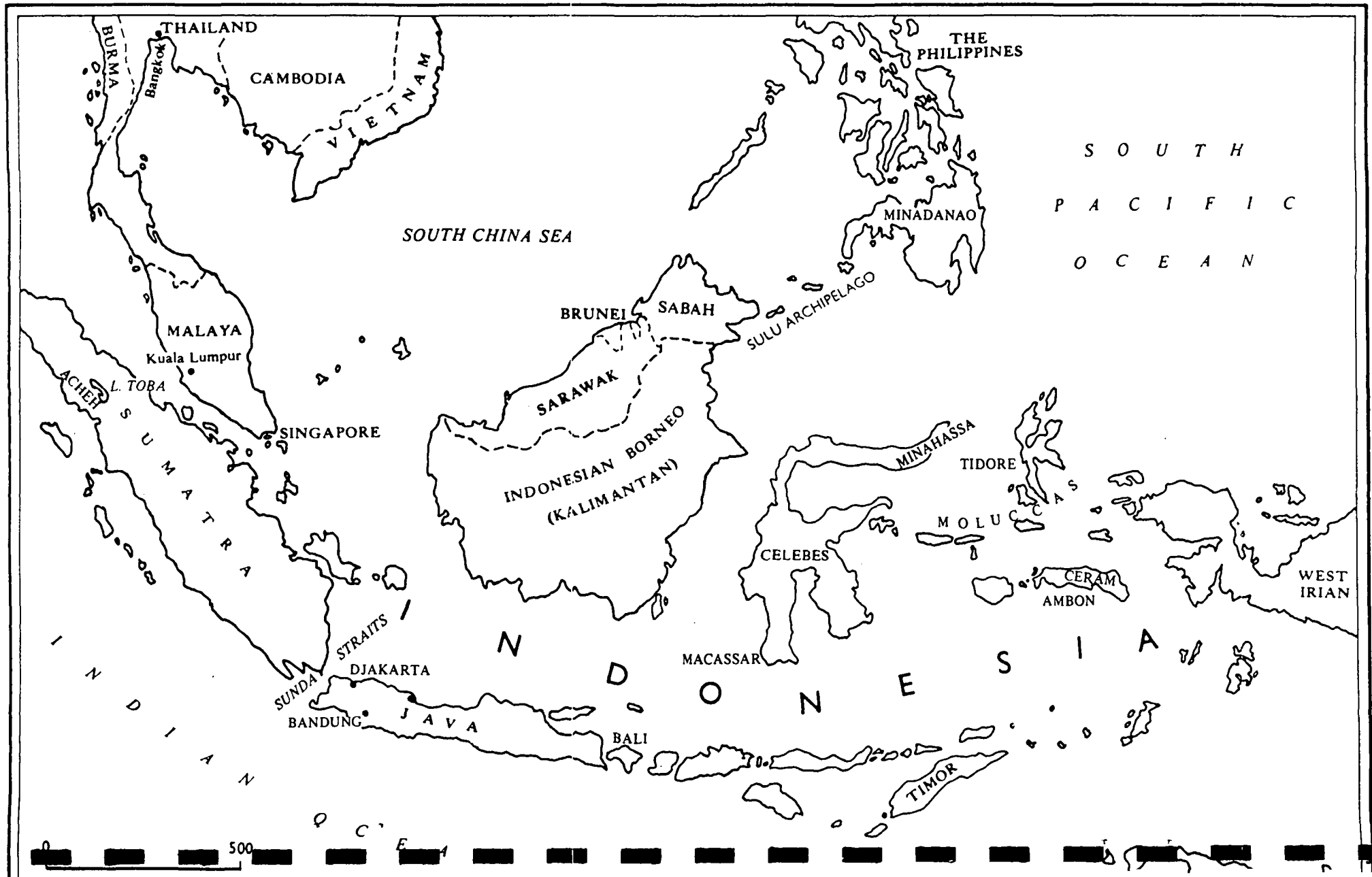
The first moment Mr. Parwoto, (my supervisor) proposed that I evaluate the community participation in some villages during a public standpost project, I refused. How could he ask me to do this, a student without any experience with no knowledge of the project?
After a few weeks of reflection and further exploration I revised my decision and started the job. I have never regretted that. It appeared to be an ideal subject in which to obtain practical experience in my field of study as well as to find answer to more personal questions. It gave me the opportunity to practise so many things that I had been taught during my study, to meet all kinds of people varying from experts to local governors to inhabitants, to stay in the villages and get an impression of the Indonesian way of life, to experience what community participation can look like, to discover the importance of a good water supply, to visit other projects, etc..

There are many people who made it possible for me to perform this research. It is impossible to mention them all but I would like to extend my special thanks to the following persons:
- The director of the IHS, Mr. Ritonga and his staff for allowing me to come to the IHS for my practical period.
- Mr. Parwoto, projectleader and my supervisor, Mrs. Yussi, supervisor and personal friend and Mr. Dedi, head of the department. They were wonderful people who advised and assisted me. They were never too tired to answer my questions and explain everything I did not understand. They showed me around and introduced me to new people.
- My colleagues at the IHS, with whom I had such a good contact. They taught me new things, were always ready to assist me and to listen to me and gave me the feeling of being welcome.
- The village heads, their families and all the other inhabitants of the villages who assisted me and made me feel at home.
- Mr. de Kruyff, a Dutchman who worked for the World Bank. His practical advice concerning research, water supply and data-analysis has been extremely useful and encouraging to me.
- Mrs. Boesveld and Mr. Seager of the IRC. During their stay in Bandung they gave me fresh ideas, advice, new information, critical remarks, discussions, etc..
- Prof. Roling of the Department Extension Science, Agricultural University. It was he who combined my ideas about community participation with extension studies, a connection that has been very useful during this evaluation. The discussion with him, his ideas, advices, interest and enthusiasm have been very inspiring for the development of my ideas about community participation. With his never ending questions he was an expert in offering me

new material to chew on each time we met, with as a result that I still feel if there is a whole field of questions waiting for me to be answered.
- Prof. van Leeuwen and Mrs. Hardon of the Department Ecology of Housing, Agricultural Unuversity, for their assistance and advices.

At last but far from least: my parents who did a wonderful job in correcting my English and who were always there to stimulate and to assist me.

Yvette.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SUNDA STRAITS
DJAKARTA
MACASSAR
INDONESIA
BANDUNG
JAVA
BALI
TIMOR
INDIAN OCEAN
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CONTENTS

TABELS.

STEP	OBJECTIVE	MAIN ACTOR	PARTICIPANT	FACILITATOR
General public information	To stimulate the felt need.	cadres	village inhabitants	trainers programme-holder
CSS	To identify the problems, obstacles and potential of the community.	"	household RSWS block	trainers
Identification of problems	To get consensus about problem formulation.	"	"	" related sectors, programme holder
Determination of level of change	To get consensus about the direction of the development and level of services required.	"	"	"
Diagnosis	To find the obstacles which prevent the level of change to occur before.	"	"	"
Identification of resources	To get consensus of each member of the community and possible resources from outside.	"	"	"
Design alternative solution	To get consensus of the physical target of development Setting development committee* to carry out the construction on the field, operation maintenance and repair of the product.	"	" LKMD, LMD RW, RT	"
Implementation	To discuss management of the services.	"	households	"
Evaluation	To increase the confidence of the actors, which in turn will sustain community self reliance. To seek possible improvement in future.	village head	cadres, LKMD, LMD, PKK.	" Camat

* Note: The document of alternative solution should include:
a. The design of the facility/services.
b. The description of the works and the technical specification.
c. The budget planning and resource allocation.
d. Planning for operation, maintenance and repair after construction, including the organization.

This document could be sent to Camat or even higher as a "project proposal".

income household per month, SM.

Percent of Total

Value Labels	0 10 20 30 40 50 60 70 80 90 100
<25.000	*** (1)
25.000-50.000	********** (14)
51.000-75.000	********** (6)
76.000-100.000	* (0)
100.000>.....	* (0)

income household per month, GT.

Percent of Total

Value Labels	0 10 20 30 40 50 60 70 80 90 100
<25.000	*** (1)
25.000-50.000	********** (11)
51.000-75.000	********** (9)
76.000-100.000	***** (2)
100.000>.....	*** (1)

income household per month, PI.

Percent of Total

Value Labels	0 10 20 30 40 50 60 70 80 90 100
<25.000	********** (5)
25.000-50.000	********** (11)
51.000-75.000	********** (6)
76.000-100.000	*** (1)
100.000>.....	* (0)

Percent of Total

extra sources of income, SM.

Value Labels	0 10 20 30 40 50 60 70 80 90 100
fishpond	*** (1)
garden	*** (1)
own agr.	* (0)
fish,garden	***** (2)
fish,agr.	* (0)
fish,garden,agr	********** (8)
garden,agr.	********** (9)
no extra	* (0)

Percent of Total

extra sources of income, GT.

Value Labels	0 10 20 30 40 50 60 70 80 90 100
fishpond	* (0)
garden	********** (13)
own agr.	*** (1)
fish,garden	*** (1)
fish,agr.	* (0)
fish,garden,agr	* (0)
garden,agr.	********** (8)
71	*** (1)
no extra	* (0)

Percent of Total

extra sources of income, PI.

Value Labels	0 10 20 30 40 50 60 70 80 90 100
fishpond	* (0)
garden	* (0)
own agr.	********** (6)
fish,garden	* (0)
fish,agr.	* (0)
fish,garden,agr	* (0)
garden,agr.	* (0)
no extra	********** (15)

1. INTRODUCTION.

The following report gives the results of a six months' research carried out during the practical period of study at the Institute of Human Settlements (IHS) in Bandung (West Java Indonesia) from December 1985 until December 1986. This practical period forms part of the study Ecology of Housing, direction of the main study : Household Sciences at the Agricultural University in Wageningen (Holland). The reseach also form part of a doctoral study for Extension Science.
This report is an evaluation study on the community participation during a Public Standpost Water Supply Project (PSWS - project), which was implemented from 1983 to 1985 in four villages in West Java (Indonesia).
Because of the limited time three of the four villages were selected for evaluation, namely Playangan (PL), Sukamulia (SK) and Gumulung Tonggoh (GT). These villages are the most rural and are the ones in which the community participation developed most clearly. It would have been interesting to evaluate the other village too but the time was limited.

During the PSWS-project attemps were made to involve participation of the inhabitants as much as possible for the planning, implementation and maintenance of the water supply. The organizations involved in this project were IRC (International Reference Centre for Community Water Supply and Sanitation, Den Haag, Holland), IHS (Bandung), Directorate of Water Supply, Directorate of Water Hygiene, the Directorate of Public Health and the local government.
The main purpose of the PSWS-project is to stimulate the development of more appropriate and successful methods to plan, implement and operate Public Standpost Water Supplies with communities in rural and urban fringe areas. As it is clear that a direct implementation of conventional technologies is not a long lasting solution for the water problems in the villages, the term "community participation" has become very popular during the past years.
In practice, a number of development workers have discovered that it is not all that easy to make the community participate and there are often a whole numbers of demotivators. For example, people do not want to help, they are not used to working together, they stop their activities as soon as the coordinator has left, etc..
In the PSWS project one tried to avoid kind of problems by:
- a careful selection of the villages.
- an involvement of all interested parties from the first stage of the project by giving as much responsibility as possible to the local authorities.
- paying a lot of attention to the organization and motivation of the inhabitants.
- giving them the opportunity to work out their own plans.

A remarkable fact is that, although the input from the project was the same for each village, the project developed differently

in each situation. In two of the villages it has worked out very well: the inhabitants are very satisfied and, in addition to the standposts, have made other improvements as well. In the other village the results of the project are negative and the inhabitants still do not have a good water supply. There wrre also big differences in the development of community participation in the villages.
The question for this research is how such a diversity in participation could occur and how it affected the results of the project.
Some additional questions are:
- How did the participation process in the villages develop?
- Participation developed in a different way in each village. What are the reasons for this?
- By what factors was the participation process influenced?
- Why did the inhabitants make no improvements before the project started?
- How were the households involved? Are they satisfied with their involvement?
- What are the results of the project? How are these influenced by the participation?
- How can the project (as far as participation is concerned) be improved in the future? - in these villages
  - in new projects in other areas.

Purpose of the research:
- To obtain knowledge in the process of participation in the planning, the implementation and the maintenance, especially from the point of view of the inhabitants.
- To know if this process was correct and what improvements had to be made.
- To obtain knowledge in the differences in participation and results, and the cause of these differences between the villages.
- To obtain knowledge in the general shortcomings of the project.
- To know the task of the intervening organizations and the function of the training.
- To know what kind of participation (see chapter 7) finally developed.
- To indicate why the inhabitants did not start to improve their water supply before the project.
- To give recommendations for improving the PSWS-project especially as far as the participation aspects are concerned.
- To give some general conclusions about conditions influencing the participation of the inhabitants.

Before starting to talk about community participation the meaning of these words must be clearified. For this study community participation is defined as: "The power in decision making as well as the physical activities of the inhabitants during the planning, implementation and maintenance of the project".
It is not a coincidence that the two aspects "power in decision making" and the "physical activities" are mentioned separatly. It happens too often that community participation is misused as a mean to have a project cheaply implemented by exploiting the physical input from the inhabitants. Involvement of the

inhabitants in the planning, preparation and decision making is not considered. In this research this involvement is regarded as an indispensable part of the participation process.
Community participation is regarded here from the point of view of the inhabitants. Subject of research is the household. In this research a household is defined as a group of people living in one house. Taking the Indonesian way of live into account, this appeared to be the most practical interpretation of the definition as formulated for Household Sciences*.

Some remarkable conclusions can be drawn when answering the research questions;
The term "Community Participation" has so many implications. It often occurs that two persons are talking about community participation in a project, using the same words but both having different ideas about the meaning of it. In fact they talk about two different matters. For example, the one intends to delegate the whole project to the inhabitants while the other only intends to inform them about what will happen in their village. To avoid misunderstandings, disappointments, conflicts, etc.. it should be clear to all parties concerned what is really meant by "Community Participation", before starting discussions about it.
Community participation is not possible in every situation and for every problem. It is not a wonder medicine that cures all pains. There are many circumstances where other ways of implementing a project are better. Especially the complexity of the technology, needed to implement the improvement plays a very important role in this.
The kind of community participation that can be developed depends strongly on the socio-economic conditions of the community. One cannot expect poor, hard-working farmers to spend a lot of time, energy and other resources on community activities. The right level of participation for each community, in which involvement of inhabitants is maximal, depending on their capacities and potentials, must be carefully considered.
The most important part of the participation process is the introduction of a money-collecting-system in the village. Only then can participation activities result in lasting improvements after the project has ended. If there is no money- collecting-system, the inhabitants become passive and wait for the next project to be financed by a kind of Father Christmas from outside.
When involving inhabitants in a project one must be sure that the chosen technology is correct, particularly if it is a new method. One cannot expect people to work hard for something that does not appear to operate because of its technical deficiencies.
Community participation is a process of persons with all their strength, weaknesses, ideas, qualities, will, etc.. During the participation process attempt is made to give everyone the opportunity to display his/her own proposals, ideas, etc.. How this develops depends strongly on the personalities that are involved: the right person at the right place is indispensable.

It was not easy to obtain all the data needed for these conclusions, being unfamiliar with the country, the local

situation, the PSWS-project, the language, the people, etc.. The method of research which is used to obtain the data will be described in Chapter 2. To get a better insight in the context of the PSWS-project Chapter 3 describes the development of the villages, the Indonesian policies regarding community development and the current problems of Indonesia.
Following that, in chapter 4 the PSWS-project in general will be explained. This project is a pilot project which is meant to be carried out on a national scale if the results are positive. Chapter 5 gives a general description of the characteristics of each village, the situation before the project and a short description of the parties involved in the project. In chapter 6 the results of the research are explained.
Based on research experiences and a study of literature, ideas about community participation in general have been developed. An answer to the following questions has been sought:
- By what factors is community participation generally influenced?
- What levels of community participation can exist?
- What conditions have to be met before community participation is possible?
These questions are discussed in Chapter 7.
The report will end with some conclusions.

*Note:
The household is:"a complex of actions on behalf of and usually also performed by members of a social unit, directed towards the fulfilment of material needs and towards the creation of material conditions for the fulfilment of non material needs" (Visser,C.W; 1976).

2. METHOD OF RESEARCH.

2.1 Introduction.

How can one obtain data of a participation process which has already taken place in three different places and which is nearly finished?; different stories, different results and only a little written information about how it took place. It felt like jumping into a deep well, not knowing where to end.
A study of available literature was made to get a general orientation on the situation, discussions with experts in the field of participation and water supply and some field-visits. A questionnaire survey on the households in the villages was made to obtain data about the situation in the village. Apart from the statistical information obtained during this survey, the qualitative data were of great value.
A diary in which all the discussions, meeting and observations were noted was a very useful reference during the entire research.

2.2 Orientation.

The initial two months were spent on orientation. Besides the study of literature and discussions with experts, this period was necessary to become acquainted with the Indonesian way of life, the language, the people, the behaviour,etc..
The field-visits formed an important part of this period. They offered an excellent opportunity to meet the local officials and the inhabitants of the villages, to prepare them for the coming survey and to explore the situation. Maps of the PSWS-block/kampong/RTs with all the houses, families, paths and standposts were drawn during these visits. These were very useful during the field survey.
The visits usually lasted several days. Thanks to the accompaniment of someone from the project-team of the IHS it was a good opprtunity to make contact with this team member. This person also had most knowledge of the local situation and the development of the participation process.

2.3 Field survey.

Based on the impressions gained during the orientation a questionnaire for the households in the villages was composed (see appendix 3). This questionnaire, put to men and women, included questions about the socio-economic situation of the households, questions about participation to the men and and questions about water-use to the women. This separation into men and women did not mean that the women were not supposed to have participated and the men not to use the water, but on the first instance was a task division. It is the women who usually fetch the water for cooking, drinking and washing. Talking about participation usually refers to the work of the men. The involvement of the women was not so clearly defined so it was not possible to make direct questionnaire points about this.

Men climbing in the high tree
to get me a fresh coconut.

Information about their involvement in the project was obtained by open questions and discussions. In order to do this it was important that the questionnaire had a special section for the women. When it would have been directed to just one household member there was a big chance that only the men would have been heard.
The survey was executed during a one weeks' stay in each village. These periodes were as follows: 8-14 March in PL 19-26 March in GT and 10-17 April in SM.
These weeks were a new and exciting experience. Some personal notes:

> "I am sitting in an old, bumpy, crowded bus on my way to the first village. My bags are heavily loaded with questionnaires and an enourmous apple-pie for my hosts. A lot of cynical questions are buzzing through my head: "What will it be like staying there, alone with strange Indonesian people?" and: "Is it not ridiculous that a foreigner dares to collect this information while her Bahasa Indonesia* is not yet fluent? Will they answer my questions openly? What shall I do if they do not accept me, if they are hostile or make fun of me?".
> To my enourmous surprise, none of these things occured. The villagehead and his family were so pleased to receive me that they slaughtered a chicken to celebrate the first night I spent there. I could sleep in the big, pink fourposter, reserved for guests, I was spoilt with coconuts that they fetched especially for me from the high trees and I was taken to all kinds of things they wanted to show me: The baking of rice-cookies, a tailors working place, a turtle-pond, the catching of fish from the fishponds, newly built houses, toilets and bathrooms, the volleyball-games, the harvesting of the fields, etc..".

During the week in the village the questionnaire survey was carried out, under about 25% of the inhabitants, 20-25 households were selected at random for the interview. All the houses of block/RT, drawn in a map were given a number and each fourth number was interviewed. The inhabitants enjoyed being interviewed. They answered the questions with great enthusiasm and there was only one refusal (a woman who was too shy). During the interview, the whole neighbourhood gathered in together, full of comment, jokes and laughter. As the questions were not too personal they formed no problems and the respondent was stimulated into answering.
The language problem had been overcome by an inhabitant who accompanied the interviewer and who could speak the Indonesian as well as the local language. The advantage of being accompanied was also that he /she knew the situation and the inhabitants which facilitated the contacts. A disadvantage was that the information was less objective and homogeneous as the social position of the accompanier was different in each village: the schoolmaster of the primary school, pupils of the secondary school, the daughter of the village head, a member of the PKK (womens organization), secretary of the village or a member of

the cadre.
After the inhabitants had replied the research questions it was usually impossible to leave their homes without a cup of tea or water, a sweet in banana leaf and a nice chat. It was wonderful to be able to do this in such a relaxed and friendly atmosphere with the inhabitants. During the chat it was possible to obtain new information about their involvement during the project. Observation of the water places has given a lot of information about their use and the water supply.
A very lucky coincidence was that during the week in PL there were also five Indonesian students of the IPB (Agricultural University Bogor). They were staying in the village for three months doing their practical period. It was very helpful to exchange our information to verify and to discuss it.

2.4 Data analysis.

After completing the fieldwork an interim report about each village was written. These interim reports contain all the information in as much detail as possible (for an example see appendix 4). These reports were discussed with other members of the project team: people of the IHS and also of the IRC.
The statistical analysis of the questionnaires was then executed and in August 1986 a start was made with this final report. During the last period the villages were visited several times to see how the development continued. As far as possible new information from this period is included in this report.

3. INDONESIA, A GENERAL VIEW.

3.1 Introduction.

When you pass an Indonesian village, inevitably your attention will be drawn to the large number of impressive signs in front of the village. Signs with words and letters as: gotong-royong, PKK, LKMD, LMD, etc.. What is the meaning of these words and letters? Where do they come from? What is happening in this village?
To answer these questions some insight into the past development of the villages can be of assistance. The words refer to activities which are undertaken with regard to community development. In Indonesia, Sukarno was the first to adopt the American ideas about community development and transformed them to his country. For the development of the Republic of Indonesia these ideas have been, and still are, very important. In this chapter the different approaches of community development will be discussed by connecting them to the historical development of the Indonesian village: they are transformed to the national situation. This information will give a better insight into the current problems of the Republic and its policies. In this context the problems and policies concerning drinking water and sanitation are also discussed.

3.2 Community Development.

"Community development, as formulated by the ECOSOC (department of social and economic affairs) of the UN (1956) has come into international usage to connote the following processes:
a. by which the efforts of the people themselves are united with those of governmental authorities,
b. to improve the economic, social and cultural conditions of the communities,
c. to integrate these communities into the life of the nation, and to enable them to contribute fully to national progress." (Boelaars, H.J.W.M, 1974).

In practice, three different approaches of community development can be observed: 1. **Top-down approach**
2. **Bottom-up approach**
3. **Combination of Top-down and Bottom-up**

1. **Top-down.**
The government prescribes to the villages what to do and how to do it. The reasoning is: If you do not order the people, nothing will happen; People in the village are unable to plan and to develop ideas and initiatives by themselves.
During the initial years of the Republic of Indonesia this approach of community development was practised. Much attention was paid to physical improvements in the villages, the social aspects were neglected.
This approach was not successful:: every initiative taken by the inhabitants was stifled and the idea of self-help was not developed at all. As a consequence, the improvements did not work

out as they should. In 1965 a new approach was introduced:

2. **Bottom-up.**
Here more attention is paid to the development and stimulation of the base: the community. The fieldworkers should start community development: teach the villagers to assist themselves. If the people are aware of their own capacities, the development process will follow naturally. Indonesia has an old tradition which could help the organization of community development namely "gotong-royong" * (= to carry the burden together), "musyawarah" (= communal deliberation) and "mufakat" (= communal consultation).
Gotong-royong refers to a very old institution of cooperation which finds its origin in the old Indonesian culture and the Adat. Generally spoken, gotong-royong can be regarded as a cooperation with two ways of communal action:
1. kinds of assistance on the basis of reciprocity,
2. collective activities to the benefit of the village community, the so-called "communal-services".
The system of gotong-royong has always been a social mechanism to provide in the need to execute tasks together which can not be carried out alone, for example the irrigation of the paddy-fields.
In the process of village development gotong-royong in combination with musyawarah and mufakat fulfils an importants function. In the present national ideology and policy these notions are still used.
In several cases the bottom-up approach seemed to work on a small scale. The weak point was that the resources, means and possibilities were restricted. Since there was no support from the official authorities, the newly displayed activities of the villagers were doomed to failure. A better coordination between the different poles in the community development process: the offfical authorities and the community, was necessary.

Combination of top-down and bottom-up, which is still practised in Indonesia. The community and the authorities should cooperate so there can be an exchange of flows from the top to the bottom and vice versa. The task of the development worker is to coordinate and stimulate the community in order that it may develop its own initiatives. On the other hand he is an intermediar between the higher authorities and the community. The higher authorities are also stimulated to develop activities and initiatives by means of organizing workshops, trainings, etc.. This two-fold approach of community development can be clearly observed in the way the PSWS- project was implemented (see chapter 4).

3.3 The historical development of Indonesia.

3.3.1 The old village as a community.

The Indonesian village was a geographically seperated community, based on family-ties and communal religion. The traditional village was independent; there were no relationships with outside authorities, because they were not there. The village formed an

adat-community, led by the village head and the adat-leaders. The animistical religion was very important. It formed the base for the adat which ruled the daily life of the inhabitants. We can find the strong relationship between religion and community in the following description: "The heart of the Indonesian life is still to be found in those socio-religious micro-societies, which are called desa. They still determine to a large extent the cultural, juridicial and economic infrastructure of the nation. The fundamental aims of the desa inhabitants is to live in peace and harmony among themselves, with the supra-desa authorities, and the surrounding world, this last supposed to be crowded by good and evil spirits which has to appease. The various events of the life-cycle of man (birth, initiation, wedding and burial) have to be integrated in a cosmic and social totality. The desa community itself is a salvation community for time and hereafter. Herds, ghosts and ancestors are the guardians of the established order, reflected in a sacrosanct customary law." (Boelaars, H.J.W.M;1974).
The rights and duties of each person were exactly determined. Living and working is done together, under the leaderhip of the wise men of the village. The village head holds a special position between the old men and the adat-wise-men. He leads the musyawarah and prepares the mufakat. The adat-wise-men take care of the ancestors' tradition. In this structure there is not much freedom, everything is directed to the harmony of the village. The community mechanisms regulate life and cooperation which is also the base for the gotong-royong.
As far as the socio-economical aspects are concerned; the economical activities are supordinate to the social activities. There is a subsistance economy: each family produces for its own need and there is no trade connecton with the outer world. Ties with the past are very strong and much more important than the future. The past is holy and determines the whole economic life.

The traditional village is discussed here to some extent because in the present Republic of Indonesia the village is regarded as the base for national development. The ruling structure of the village with its village head and wise-men has been transformed to a national level and constituted in the Fundamental Law of 1945. Sukarno himself idealized the communal religious village community with its gotong-royong, musyawarah and mufakat in order to unify the entire Indonesian archipel. Before his time, Indonesia passed through a whole number of turbulent centuries during which several foreign kolonialists exerted pressure upon the Indonesian village structure in order to obtain personal benefits.

3.3.2 Invading cultures.

The first Europeans arrived shortly after 1500. Before that a Buddhist empire flourished in Sumatra between 600 and 1200," followed by a Java-based Hindu empire which dominated the archipelago from then until 1500. The indigenous Indonesians assimilated many elements os the Hindu ans Buddhist culture anbd religion into their own animistic beliefs to form a unique

PA[redacted]ASI[redacted]

Pancasila as State Philosophy

Pancasila is the philosophical basis of the Indonesian State.

The Government of the Republic of Indonesia is a Democracy based on Pancasila (pronounced: Panchaseela) and the 1945 Constitution. Panca meaning five, Sila meaning principles.

PANCASILA

1st Sila: BELIEF IN THE ONE SUPREME GOD

2nd Sila: JUST AND CIVILISED HUMANITY

3rd Sila: THE UNITY OF INDONESIA

4th Sila: DEMOCRACY LED BY THE WISDOM OF DELIBERATIONS AMONG REPRESENTATIVES

5th Sila: SOCIAL JUSTICE FOR THE WHOLE OF THE PEOPLE OF INDONESIA

The concise meanings of the Pancasila are as follows :

1. Belief in the One Supreme God

This first principle of Pancasila contains the Indonesian people's acknowledgement of God's existence.In other words,the principle of the Belief in the One Supreme God reflects the Indonesian people's belief in another life after life in this world. This induces them towards the pursuance of noble values which would open the way for them for a better life in the hereafter. This principle is emphasized in article 29 section 1 of the 1945 Constitution which says that "The State shall be based on the One Supreme God".

2. Just and Civilised Humanity

This principle wishes human beings to be treated in accordance with their dignity as God's creatures. So the Indonesian people's view about human beings does not condone the opression of human beings, either by their own or other nations, physically or spiritually.

3. The Unity of Indonesia

The principle contains the concept of Nationalism, love for one's nation and motherland and the need to always foster national unity and promote national integrity. Pancasila's Nationalism calls for the elimination by Indonesians of superiority feelings based on ethnical grounds, ancestry or colour of the skin. In 1928 they pledged adherence to the principle of "One Country, One Nation and One Language". While the Indonesian State's emblem stresses the principle of "Bhinneka Tunggal Ika" which means "Unity in Diversity"

In daily life, various differences within the community pose no obstacles to the nation's unity and integrity. As President Soeharto pictured it: "Let the differences continue to exist. What we are trying to endeavour is how these differences could unite us in beautiful harmony, like the harmonious beauty of a multi-coloured rainbow".

4. Democracy led by the Wisdom of Deliberations among Representatives

On this kind of democracy, President Soeharto said, "The democracy we are practising is Pancasila democracy whose basic norms and legal bases are arranged in the 1945 Constitution". Pancasila democracy is democracy which is inspired by and is integrated with the other principles of Pancasila. This means that the use of democratic rights must always be accompanied by responsibility feelings towards God Almighty in line with one's own conviction and religious belief, the upholding of humanitarian values to suit man's dignity and integrity, the preservation and strengthening of national unity, and endeavours to realise social justice".

5. Social Justice for the whole of the People of Indonesia

This principle aims at the equitable distribution of welfare among the people, not in a static but in a dynamic and progressive way. This means that all of the country's natural resources and the nation's potentials should be utilized to bring the greatest possible happiness to the entire people. Social Justice implies protection for the weak, but not that the weak should be allowed not to work and to demand protection alone. On the contrary, they also must work in accordance with their own abilities in their respective fields. The protection given is to prevent arbitrariness from the side of the strong and to ensure the presence of justice.

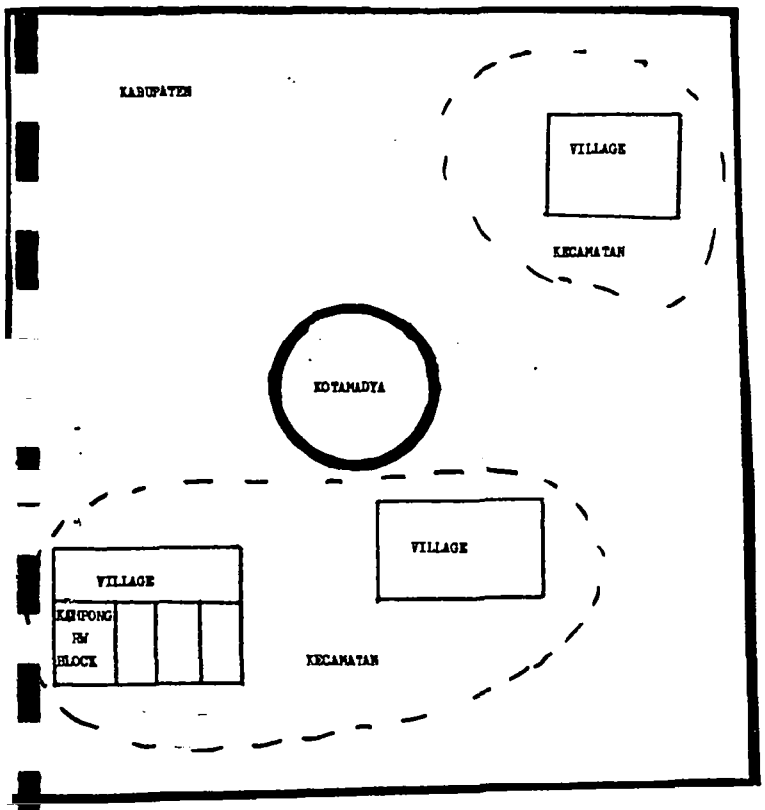
syncretism still evidence in Indonesia today.
From about 1000, the influence of Islam began to be felt, also via Indian traders. Islam continued to take root during the colonial period and eventually became the dominant religion.

3.3.3 Colonial period.

In 1511, the Portuguese took Malacca and spent the next hundred years trying to dominate the spice trade in the islands. This never really succeeded, but the Dutch East India Company, founded in 1602, did achieve that domination, even though it took two centuries. Inevitably, control of the trade resulted in political control as well and Indonesia became a Dutch colony for almost 350 years.
During the colonial period, a pattern was set which altered little after independence. It was a pattern in which the natural resources of Indonesia were plundered, largely for foreign profit, with a small local elite also benefiting, while the great majority of the people suffered material and cultural impoverishment. Under Dutch management, exports of Indonesian cash crops eventually came to supply one third of the total Dutch budget. Towards the end of the 19th century, when private planters were allowed to access to Indonesian land, traditional land-ownership patterns began to break down, creating a rootless and disoriented population which had lost the security of village culture but had no place in the new system.

3.3.4 Nationalism.

The twentieth century saw the beginnings as a nationalist movement in Indonesia. The all-embracing nature of the Dutch administration, economic injustices and a growing perception that there was a unity in Indonesia transcending regional boundaries all combined to fees the young movement. In 1927 the Indonesian Nationalist Party was formed, with Sukarno as chairman. It was repressed by the authorities and Sukarno was imprisoned on several occasions.
Dutch rule was interrupted by the outbreak of the war in the Pacific and the Japanese invasion in 1942. Sukarno convinced the Japanese that their interests would be best served by establishing a national forum to mobilise the support of the people. Sukarno served as chairman of this body, and after the Japanese surrender in 1945, took advantage of the power vacuum and declared Indonesian independence.
The Dutch, returning after the war, found that they could not easily take over their former colony. They mounted two "police actions" in an attempt to settle the matter by force. Both failed and Holland eventually agreed to a transfer of sovereinity. This took place in December 1949, with Sukarno as first Head of State." (Profile Indonesia 1983). Sukarnos domestic policy was dominated by the concepts of national unity and identity. To achieve this he introduced the Panca Sila and the national language Bahasa Indonesia.
The reconstruction of the governmental system started. the local



Organization of the Indonesian area.

KOTAMADYA= MAIN CITY
KABUPATEN= REGENCY
KECAMATAN= DISTRICT
KAMPONG
RW
BLOCK
} = PART OF THE VILLAGE

Government hierarchy in Indonesia.

ELECTIVE ASSEMBLY :	LEVEL :	EXECUTIVE HEAD :
PARLIAMENT (DPR)	CENTRAL GOVERNMENT	PRESIDENT
PEOPLES' ASSEMBLY (DPRD I)	27 PROVINCES	GOVERNOR (GUBERNUR)
PEOPLES' ASSEMBLY (DPRD II)	249 COUNTIES (KABUPATEN) 41 CITIES (KOTAMADYA)	REGENT (BUPATI) MAYOR (WALIKOTA)
-	SUBDISTRICTS (KECAMATAN)	SUBDISTRICT HEAD (CAMAT)
VILLAGE SOCIAL INSTITUTION (LSD OR LKMDK/LKMD)	RURAL VILLAGES (DESA) URBAN VILLAGES (KELURAHAN)	VILLAGE HEADMAN (KEPALA DESA) VILLAGE HEAD (LURAH)
-	NEIGHBOURHOODS UNIT (RUKUN WARGA = RW)	RW HEADS (UNPAID)
-	COMMUNITIES UNIT (RUKUN TETANGGA=RT)	RT HEADS (UNPAID)
-	HOUSEHOLDS	

government was divided into three levels: 1. Provinces
2. Kabupaten (Regency)
3. Camat (Municipality)

The villages would be the lowest govermental unit. Inside the villages there would be a division into smaller departments: Rukun Kampongs (RK= pillar of a village quarter) or Rukun Warga (RW= more or less the same as RK), and this divided again into Rukun Tetangga (RT= group of neighbours). These governmental relations were expected to establish a liason from the government to the village (see figure 1).

Effective functioning of this system was disturbed by the political and economical instability of Indonesia. Sukarno had announced that western style democracy was not suitable for Indonesia and had launched what he called "Guided Democracy" - a political system based on the traditional processes of deliberation and consultation which extended beyond political parties to "functional groups". These groups had different tasks and interests such as youth, the army, women, farmers, workers, scouting, islamics,etc..

The whole system of organization was inspired by these policies. This caused a sharp polarization which inevitably led to conflicts. From 1950 several ministers were involved in the development of the villages. Each ministry had its own approach and several programmes started. The implementation of the programmes was disturbed by political conflicts, corruption and the incapability of the bureaucracy which expanded beyond limits. The programmes as proposed by the various departments did not relate to and sometimes even opposed eachother. The inhabitants of the villages were the victim of the political battle.

Little attention was given to economic problems so that inflation soared, exports fell and debts reached record levels. Military influence grew fast and the situation came under pressure.

3.3.5 Fall of Sukarno.

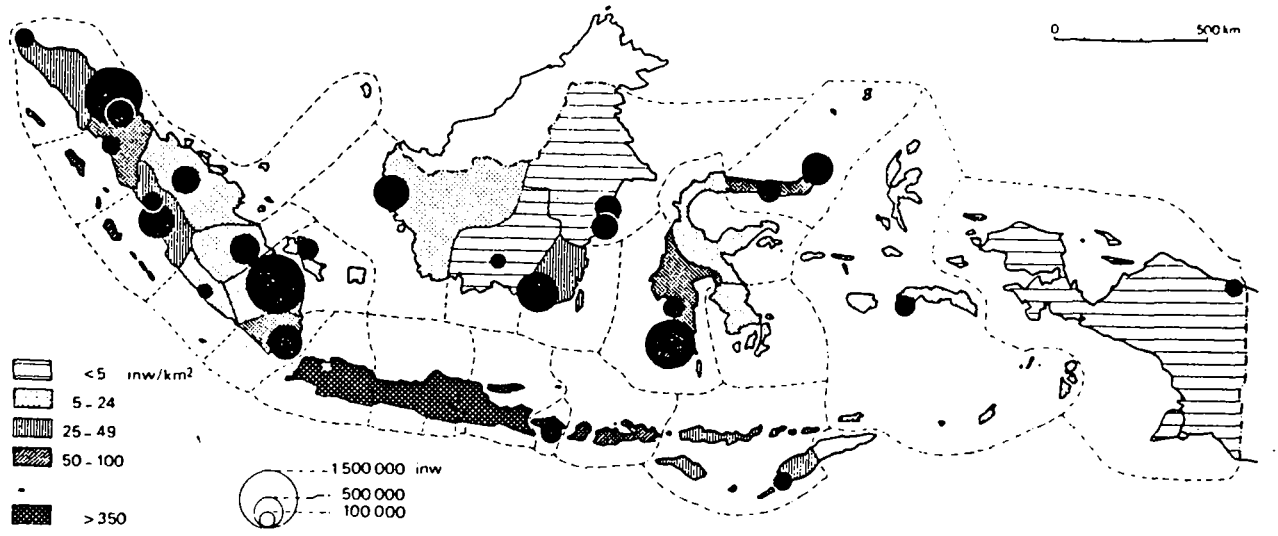
"In September 1965, six generals were killed in an attempted coup. General Suharto, until then relatively unknown, but with most of the army behind him, took steps to put down the coup and then manoeuvered himself into a position which forced Sukarno to cede extensive poweres to him. Rightly or wrongly, the PKI was blamed for the attempted coup and a massive backlash was launched against PKI members and suspected sympathisers. Hundreds of thousands of people- some estimates say a million- were killed and thousands more imprisoned. In 1968, Suharto was appointed President. Sukarno, under virtual house arrest, died in 1970." (Profile Indonesia 1983).

Suharto first tackeled Indonesias economical and political problems. The situation in the country was very disordered since most of the people in authority had disappeared. To fill the power vacuum the army was also provided with a social task, besides its military function. In each village a `pembina' (a `coordinator') was appointed. This pembina, usually a veteran or a soldier in service, had to stimulate development in the villages. At the same time he could keep an eye on political and

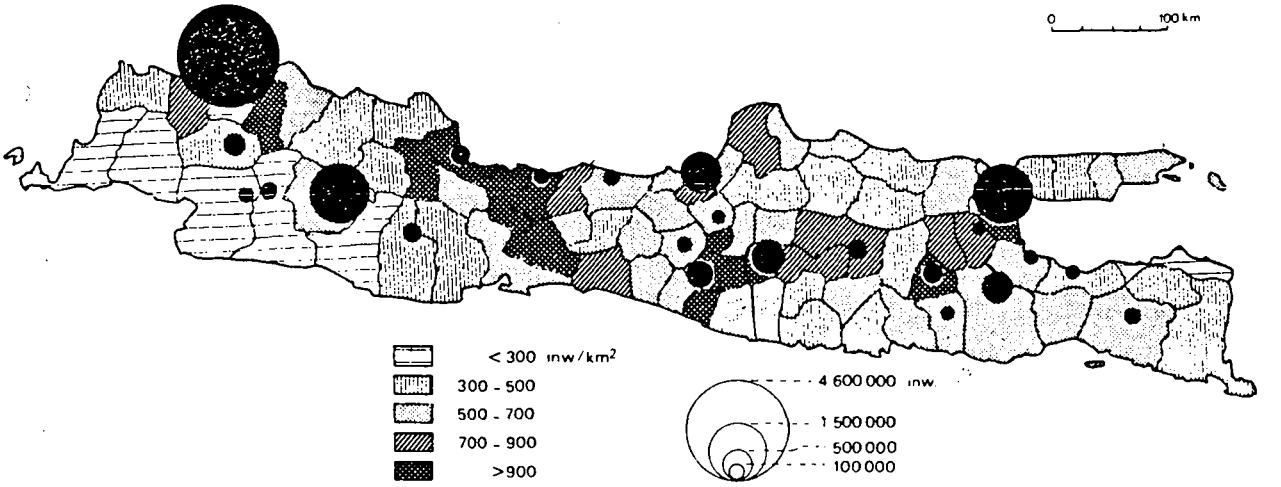
religious riots.
Economical stability primarily meant to stop the inflation by balancing the budget by means of strong retrenchments on national expenses and by increasing the revennes on taxes. Thanks to this policy and the enormous foreign aid, economic recovery was realized.
The first Repelita (5-years plan) 1969-1974 was to coordinate all activities. This plan was mainly focussed on the agricultural sector, especially the production of food crops. For years Indonesia was forced to import rice, due to underproduction. Because of the rapid increase in population the shortage of rice was hard felt.
Another focuspoint was the stimulation of industries directly related to agriculture and the exploitation of natural resources, particularly petroleum but also timber and minerals such as tin, manganese and bauxite.
The first Repelita was soon upset by the Indonesian bureaucracy and corruption. To cure this disease some drastic governmental action was taken in 1970 to clear the officialism. This would increase the chances of the Repelita.
Another action to realize a more efficient functioning of the political system was the establishment of the Golkar: a party which represents all kinds of working groups. All government officials had to be a member of the Golkar, so that divesity in political interests would not cause them to malfunction. The number of political parties was reduced to two:
- PP (Unity Party for Development)
- PDI (Indonesian Democratic Party).
The political parties had to limit their activities in the rural areas. For the first few years people should be left alone and not be overwhelmed by political campaigns. The village population should become a floating-mass, concentrating on the reconstruction and development of the village. When reviewing the approaches of village development, the bottom-up system was employed widely.
In the first Repelita economical development of the country was given the highest priority. The limited expenses in the social field were spent on education and family-planning. The second Repelita would focus more on social development.

3.4 Present situation.

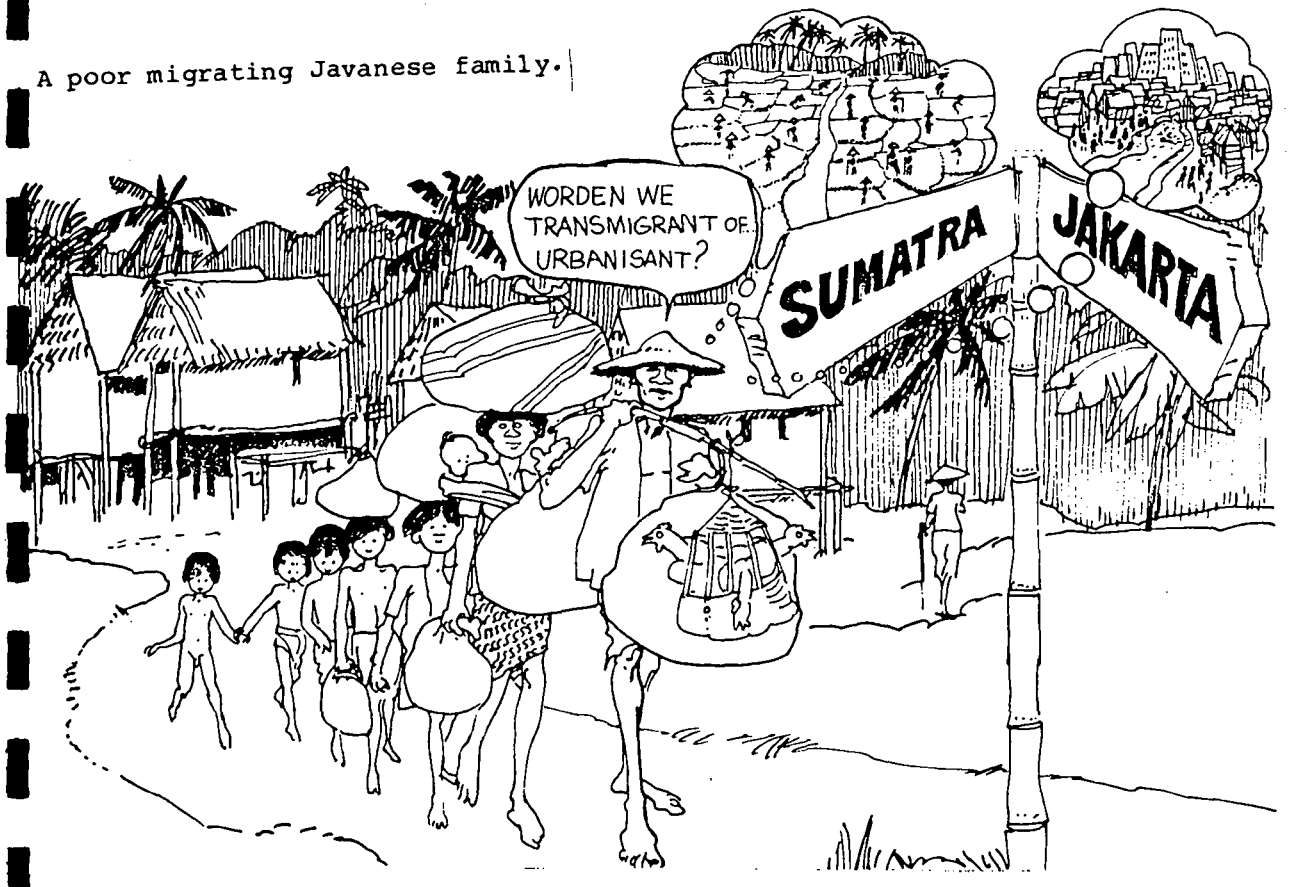
Despite the improvements of the last decades, Indonesia still faces many problems.
The first of these problems centres on the oil industry. The current position of oil on the world market is not as favourable as it was. Indonesia's economy strongly relies on oil-export and oil-prices. Oil reserves, according to a World Bank estimate will start to run by the end of the 1980's. As a result of the reduction in world oil-prices in 1986, the Indonesian government was forced to devaluate the Rupiah (Indonesian monetary unit) at the rate of 40%. Such a devaluation has far-reaching consequences for the national economy as well as the economical position of the inhabitants.
Secondly, timber, which is another large income earner for



Spread and density of the population in Indonesia in general (above) and on Java (below).
(Lentjes,W.A.J; 1980).



A poor migrating Javanese family.



Indonesia, has been exploited for decades without any apparent plan for reafforestation. The result is that commercial timber reserves are also likely to run down within a decade or so.
Thirdly, Indonesia's population continues to grow rapidly. Following the first Repelita the Indonesian government has actively conducted programmes for family planning. In some areas the results are good and family planning is practised but there are still too many areas where the birth-rate is much too high and still increases. The population problems are clearly demonstrated in the Isle of Java. About 120 million people, 80% of the total population of Indonesia: 161 million, are living on Java. The island is 4 times as big as Holland and covers only 7% of Indonesia's total land area. Due to its growing population as high population problems as high population densities, unemployment, impoverishment, etc.. increase.

Development of poverty in the Javanese rural area, 1970-1976, based upon different `poverty lines':

Poverty-lines (=yearly expenses per capita in rice-equivalents)	Number and Percentage of the population in the rural area. jan-apr.1970		jan-apr.1976	
	number (millions)	%	number (millions)	%
poor (320 kg)	37.97	61.00	40.48	58.60
very poor(240 kg)	24.58	39.49	27.48	39.78
extremely poor(180 kg)	13.03	20.93	17.24	24.95

(Lentjes, W.A,J; 1980)

In order to achieve a better population distribution, the government has established the so-called "Transmigration Programmes": Javanese families are encouraged to move to sparsely populated areas. Practice has shown however, that it is hopelessly optimistic to solve the problem of overpopulation of Java this way. The natural population growth of Java is too big and for every family that moves from Java to other areas a new family arrives in the Javanese cities to seek its fortune.
The cities cannot provide the migrants with means of living either, with as a consequence: sever unemployment, high population densities in the kampongs, extension of the slum-areas, impoverishment, etc..
One of the great problems as far as housing and living environment is concerned, are fresh water and sanitary facilities. How do you provide 161 million people with a safe drinking water supply and proper sanitation as quickly and as cheaply as possible? In 1983 about two-thirds of the urban inhabitants and three quarters of the rural population did not have these basic facilities (UNDP, 1984). Some examples of current problems in the rural area:

Fetch water with a "pikul".

" The water supply for people in the village comes from a communal water tap. Its over-spill, especially when there are heavy rains, has turned the surrounding area into one large mud pit-- another favourite but unhealthy playground for children. The water tap sees heavy use. Every morning residents line up to fetch water, many carrying a pikul (two tins hanging from a bamboo pole across the shoulders). The wait seems endless, but the dry season is the worst: the water supply becomes intermittent and people must stand in line for hours on end.

In a rural community in the province lives a 10-year old Muslim girl named Yati. Every morning at the break of the dawn, she and her mother pray and then walk together to fetch water four kilometres away at a dug well. Each places a plastic 10-litre pail on the top of their head, and Yati's mother carries a second pail in her hand. The trek is long and exhausting, and the water so labouriously carried back is contaminated anyway. Somehow, Yati has survived to make her daily trips, but as many as 300,000 Indonesian children under five years of age die yearly from diarrhoea, caused by unsafe water and inadequate sanitary practices." (UNDP, 1984).

To counteract these problems and to provide rapid mass coverage, the Indonesian government has devised an innovated "Mass approach". Prompted by the 1980 launch of the International Drinking Water Supply and Sanitation Decade, the Indonesian government founded several workshops to establish a plan of action. This plan emphasized low-cost technologies, phased and standarized service-levels, self-financing schemes and community and private sector involvement. Especially in the rural areas a people-centered approach is necessary. "People are to be seen as subjects and objects of the improvement efforts. Human values and customs must be given full attention in the implementation of the faciclities. Communities must be involved in the planning, construction, operation and maintenance of their systems.
Technological options will take into consideration the available skills, experiences and preferences of the people. Simple, low-cost options are preferred that encourage use of local manufacturing capabilities and materials, and provide employment opportunities.
Water supply and sanitation is to be integrated into rural community health development stategy. Sub-district workers are to be trained in health education and some technical aspects of water supply and sanitation, especially operation and maintenance. These workers, in turn will train personnel from the LKMD or Community Resilience Body- a village representative group composed of 10 or 11 volunteers, headed by the village head or the Lurah" (UNDP, 1984).
Taking these aspects into consideration, the PSWS-project of the IRC in cooperation with the IHS was implemented on West Java.

4. PSWS-PROJECT IN GENERAL.

4.1 INTRODUCTION.

The Public Standpost Water Supplies project aims to encourage the development of appropriate methods for the planning, implementation and the management of community watersupply systems which include a number of public standposts (communal water points). Public Standpost Water Supplies are piped systems serving the community through shared taps, either on their own or in combination with house connections (for the technical design see appendix 2). The project is designed to benefit ultimately the poorer sections of the communities in rural and urban fringe areas.

The immediate objectives are:
- To set up and to develop a number of demonstration projects on the application of public standposts in community water supply. The target of the development and demonstration work, concerns the management aspects (operation and maintenance, payment for the use of the water), aspects of community education and participation as well as socio-cultural impact, and training of local staff.
- To conduct a series of studies and to prepare guidelines on particular organizational, economic, technological and socio-cultural aspects of public standpost watersupply systems.
- To record and evaluate the progress of the demonstration projects in order to further the strategy on the implementation of rationalized water supply system.
- To contribute to the knowhow on planning design, operation, maintenance in the form of recommendations and manuals.
- To promote the application on a large scale of the strategies, methods and techniques developed and to allocate funds for this, as a follow-up of the project.
- To contribute to the international exchange of information on various aspects of public standpost water supply systems.

Major subjects:
In developing the demonstration projects, special attention will be given to: a. Operation and maintenance.
b. Administration and financial management.
c. Institutional and organizational aspects.
d. Community education and participation.
e. Design and construction.
f. Local manufacture of parts and equipment.
g. Manpower planning and training of local staff.

The approach of the project is to promote community participation at every stage of the project, as well in the preparation and the planning, the implementation as the maintenance.
The project activities have to be carried out through and by the nationals. This helps to ensure that the project results and the lessons learned are longlasting and have been developed within an appropriate context.

4.2 Role of the IRC.

The PSWS-project in Indonesia forms part of a PSWS-project of the IRC in a wider extension. It is implemented in other countries too.
Since 1981/82 the IRC developed proposals for the PSWS. DGIS (Directorate General of International Cooperation, Holland) agreed to finance the project and IRC was designated as the executing agency with a largely supportive and co-ordinative role.
The project was planned to last for two years, which appeared to be too short of time, and is prolonged since december 1985.

4.3 Administration and management.

A lot of information could be given about the administration and management of the PSWS-project in Indonesia. Its organization is quite new for Indonesia and appears to be very succesful. Initiatives to implement other projects with the same way of organization are displayed allready. However , this paragraph will only concern the information which is necessary to get a general impression of the organization of the project and the context of the community participation. For more detailed information is referred to Appendix 1.

As the project is directed to the nationals, the Institute of Human Settlements (IHS, Bandung, West Java), was appointed as the project coordinating and managing institution. The IHS assumes the responsibility of the project implementation and coordinates the various participating institutions involved (as there are Ministry of Public Works, Health, Home Affairs, etc..). With institutions of national and provincial level (province West Java) the outline and guidances for the project were established. Some of the institutions assisted to direct these to the local government of the regencies which were selected for the PSWS project.
The PSWS project was conducted to the village community following the line:

IRC-IHS-GOVERNMENT
↓ formation and training
TRAINERS (local government)
↓ formation and training
CADRE (group selected village inhabitants)
↓ Community Self Survey
COMMUNITY (inhabitants of the PSWS- block)

4.4 The local staff.

4.4.1 The trainers.

The trainers is a group of about seven persons, especially formed for this project, with the purpose to carry out the project from the level of Kabupaten (Regency). This group is planned to carry out new projects too, after this PSWS-project is finished.
Two groups of trainers represent the several social services of Kabupaten Cirebon and Kabupaten Majalengka:
- Dinas Kesehatan (Health)
- Dinas PU (Public Works)
- Dinas Bangdes (Rural Development)
- Kesra (Social Welfare)
- Kecamatan (Municipality)
- PDAM (Drinking Water)

The two groups of trainers received a training together, organized by the IHS. They got information about:
- the purposes of the project.
- the organization and the introduction of the bottom-up planning.
- health aspects.
- technical aspects.
- their own role, tasks and planning.

The function of the trainers was as follows:

- To stimulate the inhabitants of the village to organize themselves and to form a cadre-group, to become active and to improve their water situation.

- To organize a training for the cadre.

- To solve the bureaucratic problems which always appear when some activity is displayed.

4.4.2 The cadre and the community.

To carry out the project on the level of community and to be sure to be able to use a bottom-up approach, a group of cadre, active people in the village, was identified. The trainers contacted the village head, who formed the cadre group. This cadre recieved a training from the trainers. This training focused on:

- The purpose of good water supply in connection with health care.
- The organization of the project.
- The financial aspects of the project.
- The role of the trainers, the cadre, the community, etc...
- Possibilities for extension of the watersupply.
- In Jagasari the cadre visited another project (Care-project). In this project also washing, bathing and toilet facilities were built. The

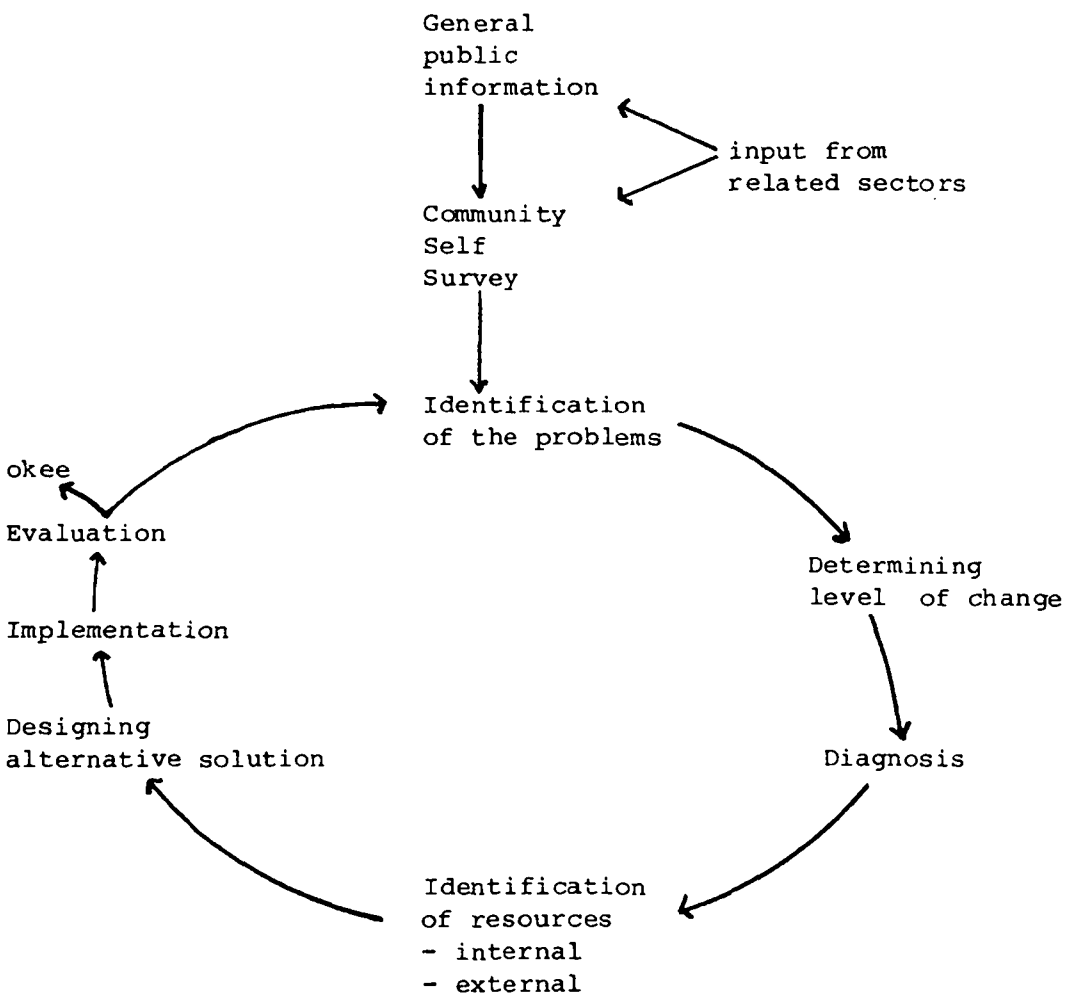
cadre was rather impressed by it and hope to be able to build it themselves too later on.

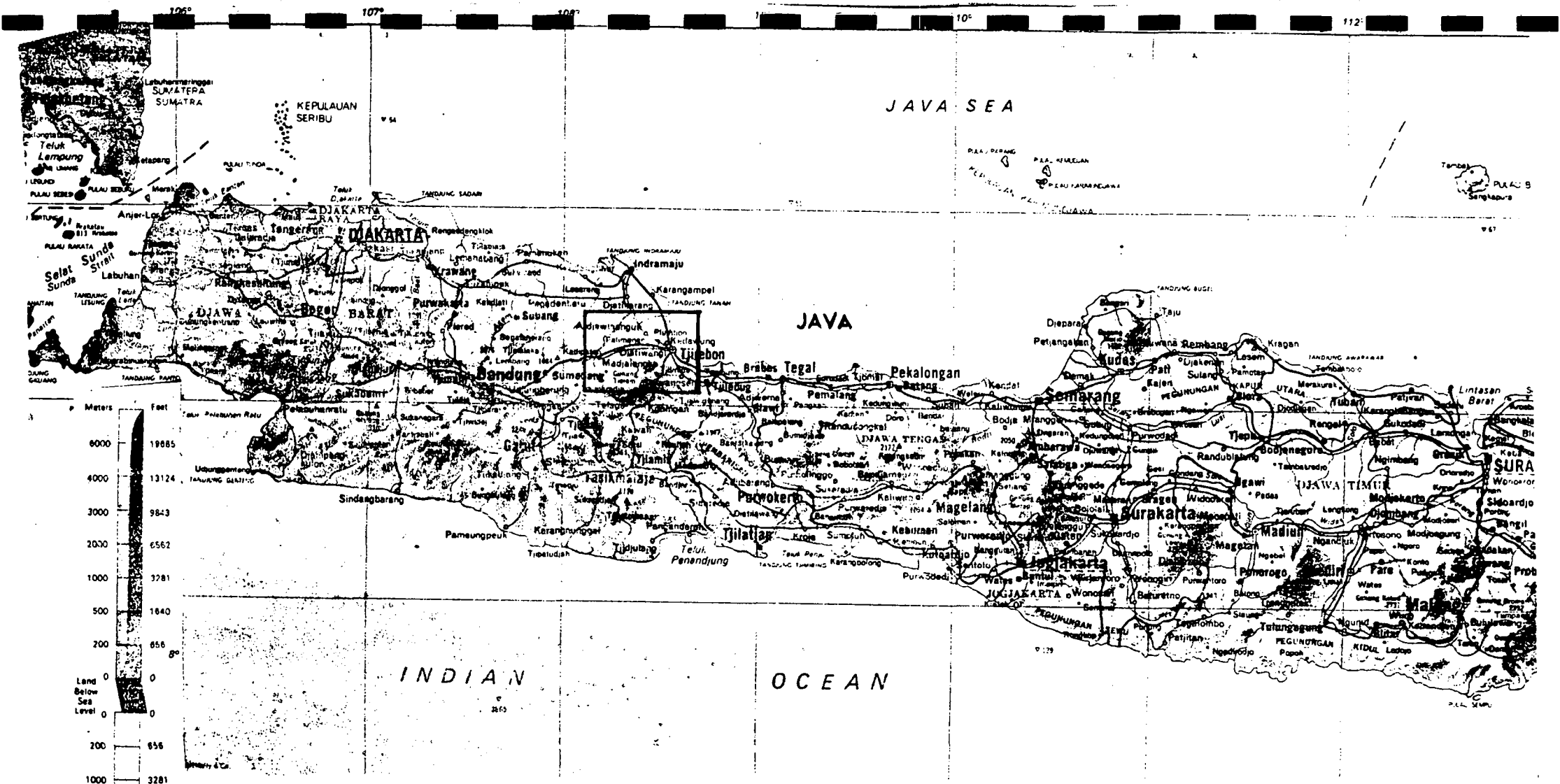
The cadre is responsible for the whole project in the village. To clearify the development in the village the model for Community Self Survey (CSS) was developed. This model clearifies the proces of awareness and decision making on the level of the community. During this proces, three kind of actors can be distinguished:

1. The main actor, who conveys the message.
2. The participant, who recieves the message.
3. The facilitator, who facilitates the development process to take place.

The concept of main actor, participant and facilitator, however, is an abstract concept to make the distinction of the actors in relation to their function in particular steps of development, which in turn will ensure the transfer of responsibilities as each actor subsequently will be the main actor as well.
Finally the community will perform as the main actor who carries out the actual work/development and facilitated by the authorities.

Model for Community Self Survey as developed by Parwoto (1986).





Map of Java, with the project area.

The cadre, in discussion with the inhabitants, had to make a plan for the implementation of the PSWS. This plan must reflect their own preferences, possibilities, etc.. This plan was discussed with the trainers and the IHS. After agreement of all the parties about the plan, the cadre was responsible for further development of the project in the village.

4.5 Selection of the villages.

Criteria for selection of PSWS demonstration projects were based on four major factors, namely geografical, socio-economic and cultural, mode of water supply with consideration of integrated approaches and distance. As being a pilot project the differences between the selected villages had to be as big as possible so it would be able to obtain a wide variety in experiences. Regencies in the easterne part of West Java province were selected on the above criteria.
A national workshop was held to discuss the preliminaries and the objectives of the IRC collaborated project in the light of the country's objectives and the national priorities in water supply and sanitation. Based on the above criteria the Municipality of Cirebon, Regency of Cirebon and the Regency of Majalengka were selected.
The trainers of these regencies selected the districts and the villages for the project. In the Regency of Cirebon two villages were selected; Playangan and Gumulung Tonggoh, in the Regency of Majalengka one village; Jagasari. Also in the municipality of Cirebon one kampong was selected, Karyamulia. This kampong is not involved in this evaluation study.

Character of the villages, selected for the PSWS project:

criteria: village (regency)	geographical	socio-economical	culture	former water supply
Playangan (Cirebon)	flat	rural fishermen agriculturist	Javanese	wells pumps river
Gumulung Tonggoh (Cirebon)	hilly	rural town work agriculturist	Sundanese	natural spring
Jagasari (Majalengka)	hilly	rural agriculturist	Sundanese	natural spring river

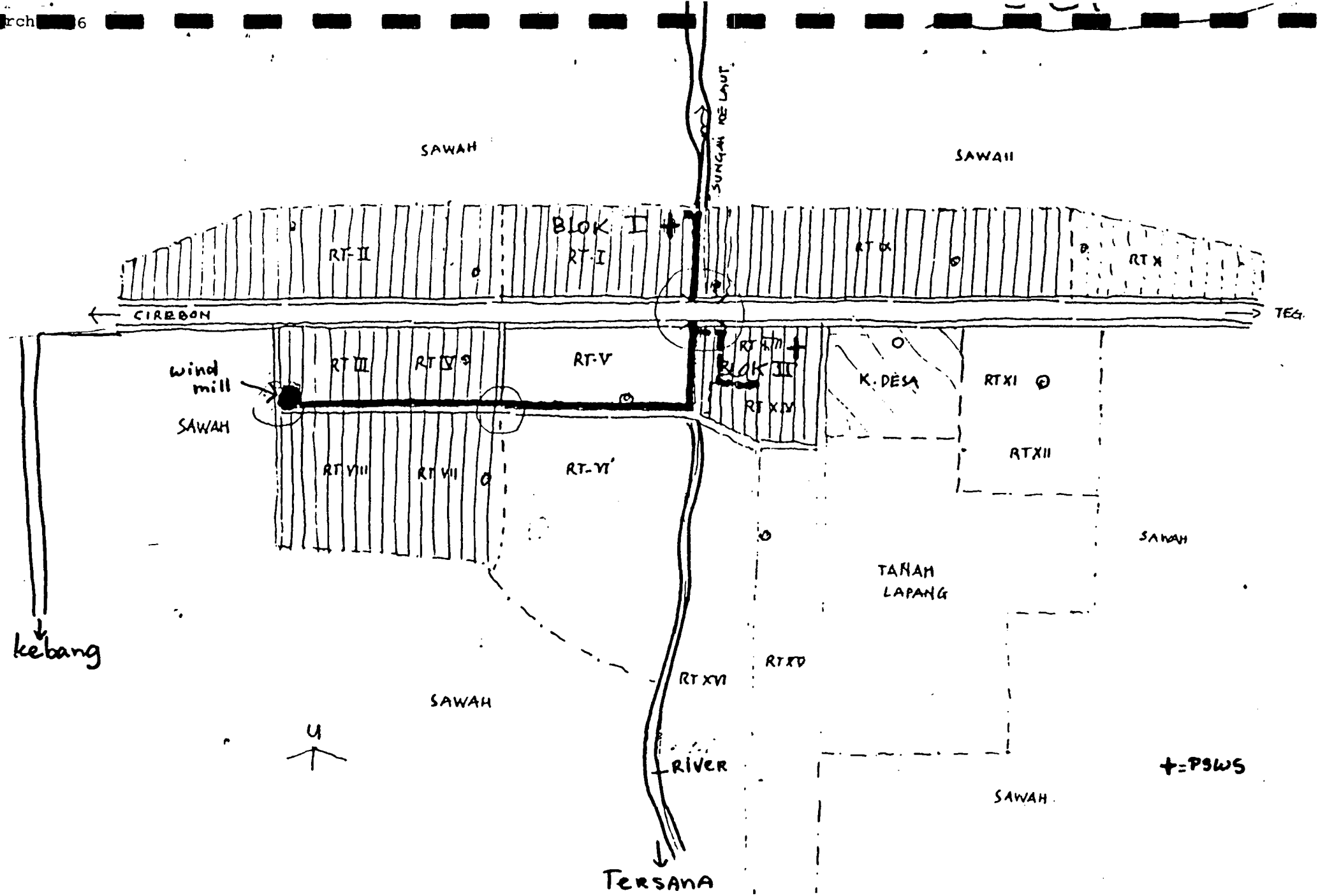
4.6 Used technology in the villages.

Because of the hilly location of SM. and GT., and the presence of a natural spring it was possible to solve the water problem by implementing a gravity system. The natural springs were capped and the flows down hills to the standposts in each village (for more details about this system see appendix ?). Each standpost has two taps.

In Playangan the problem could not be solved as easy as this. Because of its location near the sea, it is necessary to pump up the water from great depth. It is impossible to do this by means of a handpump, so they decided to build a windmill, connected with two pumps. The water will be stored in a reservoir beside the windmill.

4.7 Financial arrangements.

The funds for the PSWS project are withdrawn from different sources. The IRC, as main initiator, provided the funds needed for the software as training, workshops, manuals, education materials, etc.. The Indonesian government (Directorate for Drinking Water) paid 60% of the hardware, the construction costs. The other 40% were covered by the communities of the PSWS villages/blocks in the form of labour, food, materials (natural sources) etc. See appendix for a detailed description of this input in Sukamulia as an example village.
Eventual costs in the future will have to be covered by the local government or the communities.


SAWAH
SUNGAI KE LAUT
SAWAH
BLOK I
RT-II
RT-I
RT IX
RT X
CIREBON
TEG.
wind mill
RT III
RT IV
RT-V
RT XIII
BLOK II
K. DESA
RT XI
SAWAH
RT XIV
RT XII
RT VIII
RT VII
RT-VI
SAWAH
TANAH LAPANG
kebang
RT XV
RT XVI
SAWAH
U
RIVER
+=PSWS
SAWAH
Tersana

Map PSWS-RTs Pl.

April 1986

Agriculturar labourers in the field, PL.

A fisher man in PL.

5. SHORT DESCRIPTION OF THE VILLAGES.

5.1. Playangan.

5.1.1. General description of Playangan.

Playangan is situated about 27 km. to the east of Cirebon and crossed by the highway Cirebon-Semarang. The village is located in a flat area. A heavily polluted river which regularly floods the environment and houses of the village crosses the village.
The village is divided into 16 RTs.The project covers 3 RTs where no adequate water supply was available. The majority of the inhabitants are fishermen or agricultural labourers and very poor. There is a small minority of land owners who are in a good economical position and the other villagers work on their land. Beside their daily income, which is very low, there are no extra sources of income. Most of the houses are bamboo built and in bad condition, with a lot of people living in them. The living environment is dirty, waste is thrown into the sewerage or burnt and the smell of urine is noticeable. The education level of the villagers is very low, most of them did not go to school at all or only for a few years, and now a lot of children are not sent to primary school.

Community as a group.
The social contacts between the inhabitants of the RTs seemed quite good; after their work a lot of people come together to play, to chat, etc..
Their contact with the formal village-workers, who all live in the other RTs, is not really close.
For example, the village head never goes to the RTs to sit and chat with the inhabitants, whilst this is the only way to get into contact with them. They will not contact him by themselves (social distance, lack of time, etc..).

Community organizations in the village.
In the village is a LKMD* and PKK*, which meet a lot of problems while executing their programmes, partially caused by the low standard of living and the low education level of the inhabitants. The community of the village does not give the impression of being a tight community; the difference between the majority of poor inhabitants and the few rich ones seems to disencourage good social contacts between hem.

Health.
A lot of diseases occur, mainly due to the very poor living circumstances and limited knowledge of the people. A lot of inhabitants suffer from skin and eye diseases, signs of undernourishment and worms can be noticed with the little children and all the inhabitants are very thin. There is a health centre in the local town, but a lot of inhabitants prefer to go to the native doctor in the village or do not go to the doctor at all.

A poor house in PL.

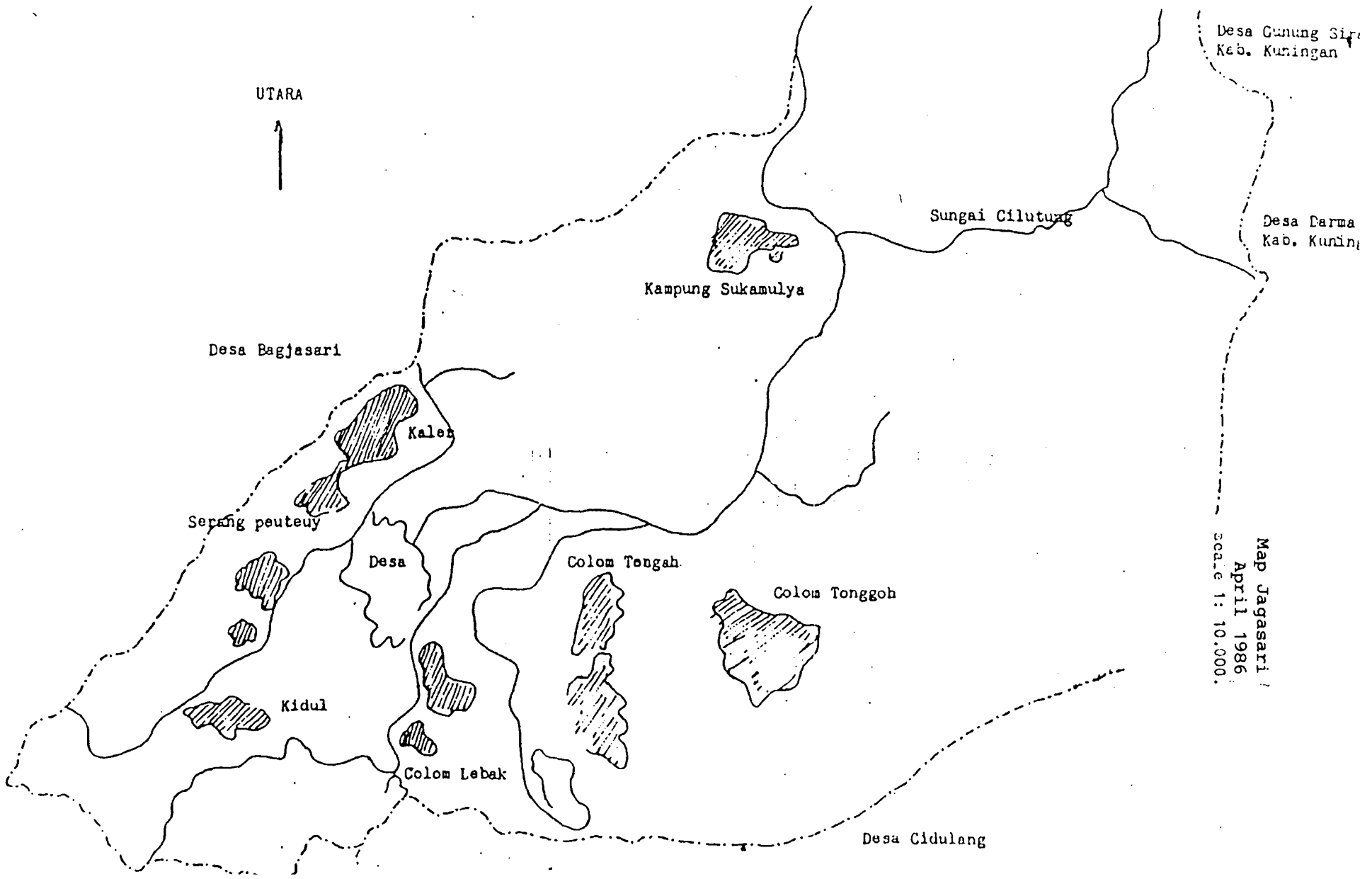
Toilet in the river in PL.

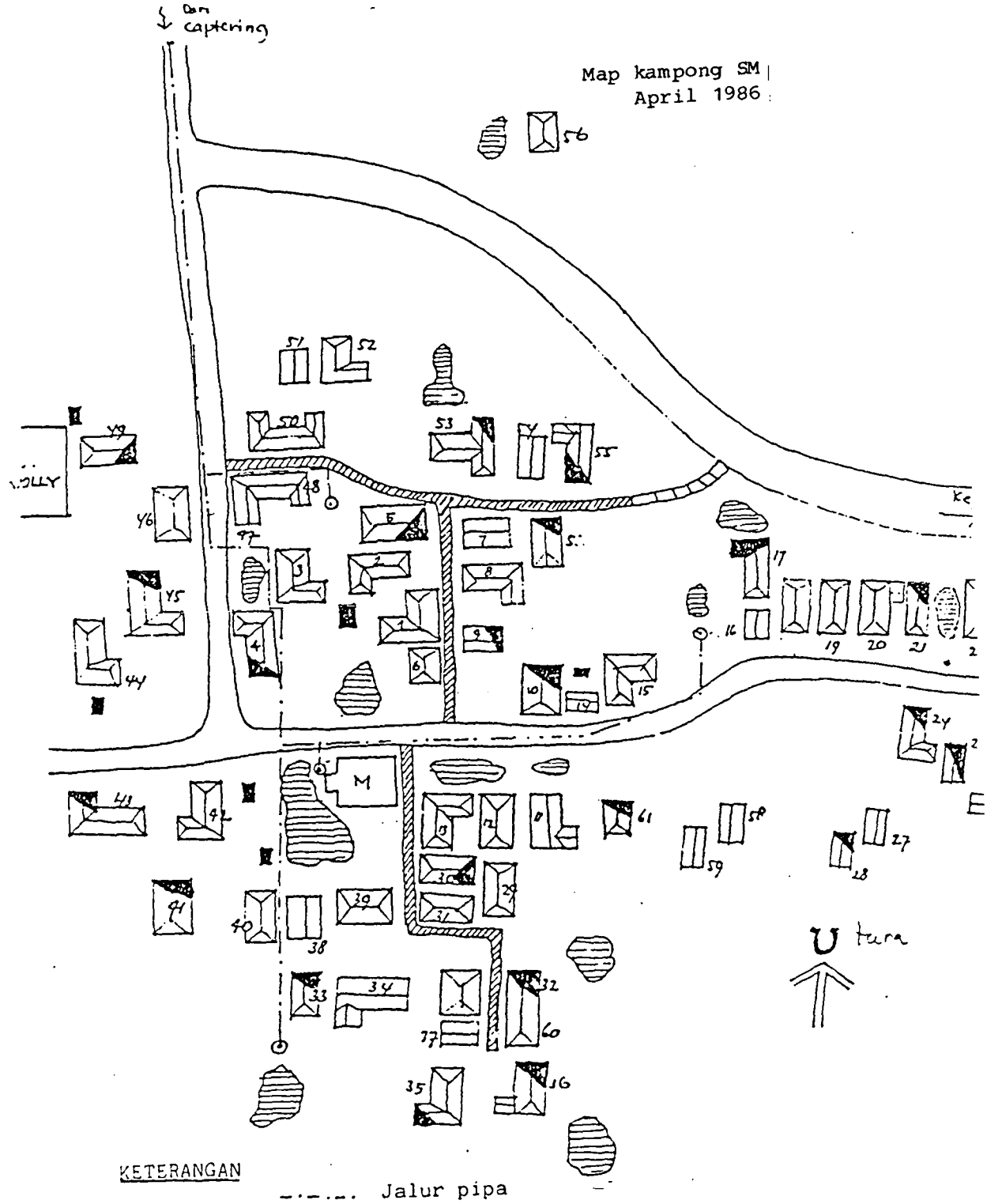
Sanitation and water supply.
For most of the inhabitants there is no public or private toilet at all and they have to go to the river or the field (in the village) for defaecating.
Drinking water is taken from the pumps in the village or the well in the house of the village head. The pumps are the result of some former projects in the village, organized by the government or foreign organizations. For most of the residents this water source is quite far from their houses. For washing the inhabitants use the water from the pumps, the wells or the river; they have to wait a long time for water from the pumps, most of the wells have become salty after some time (because of their location near the sea) and the river is very dirty and polluted. Shortly summarised: a very bad situation, which urgently needs to be improved.
Unfortunately the water situation in the village since the project is not very different from the situation beforehand, except for the presence of an expensive, non working system now.

5.1.2. Implementation of the PSWS project.

Planning.
Because of the bad water situation PL was selected for the implementation of the PSWS project. A group of cadre of about 12 persons was selected and trained to organize the project in the village. Not one of the inhabitants living in the PSWS-RT became involved, all the cadre members lived in other RT's. Apart from informing the heads of the PSWS-RTs and some inhabitants about the project, no clear signs of involvement of the inhabitants during the planning could be discovered.
The role of the village head in the cadre and during the whole project was very limited.
The main problem in the area was the shortage of good water sources because of the geological location of the village. After discussion with the technician of the IHS it was decided to pump up the water from the deep well in the village, with help of a windmill. This windmill was to be constructed by the technical institute in Bandung. The cadre organized the inhabitants and some craftsmen to implement the reservoir, the pipelines and the two standposts. (see appendix 5 for the design).

Construction.
The construction for the project started in december 1985. It took about one week to implement the pipelines and the 2 standposts. Every household in the village dug 3 metres for the pipeline and the standposts were built by the more skilled workmen: There are several carpenters and bricklayers and a mechanic living in the village. During this construction a technician of the IHS visited the village to advise the cadre.
Each standpost has 4 taps and the wastewater is led into the river. Afterwards the windmill was implemented by the Technical Institute. In march 1986 the whole system could start to work.


UTARA
Desa Gunung Sir
Kab. Kuningan
Sungai Cilutung
Desa Darma
Kab. Kunin
Kampung Sukamulya
Desa Bagjasari
Kalen
Sepang peuteuy
Desa
Colom Tengah
Colom Tonggoh
Kidul
Colom Lebak
Desa Cidulang
Map Jagasari
April 1986
Scale 1: 10.000.


Map kampong SM
April 1986
KETERANGAN
Jalur pipa
Kran Umum
Mesdjid
Kandang
Kolam Ikan
Jalan Setapak
Nomor Rumah
House Respondent

The windmill in PL.

The road to SM.

Repairs and maintenance.
In spite of the great efforts, especially in the beginning, the whole system never worked well. The main problem is the lack of wind. There is not enough wind to make the pumps work most of the time. No wind means no water. Apart from that, the quality of the windmill is bad. It has broken down frequently, the cadre is unable to repair it, so a technician from Bandung has to come which costs time and money. A third problem arose when the cadre decided to lay a waterpipe to the mosque (not planned in the project). Any water in the reservoir goes directly to the mosque before it gets the chance to reach the standposts. At the mosque it is used for washing and by playing children. At standposts the women are waiting in vain with their empty buckets.

Financial arrangements.
As long as the water supply does not work the inhabitants will not pay, so to date nothing has happened. New improvements have not yet been made.

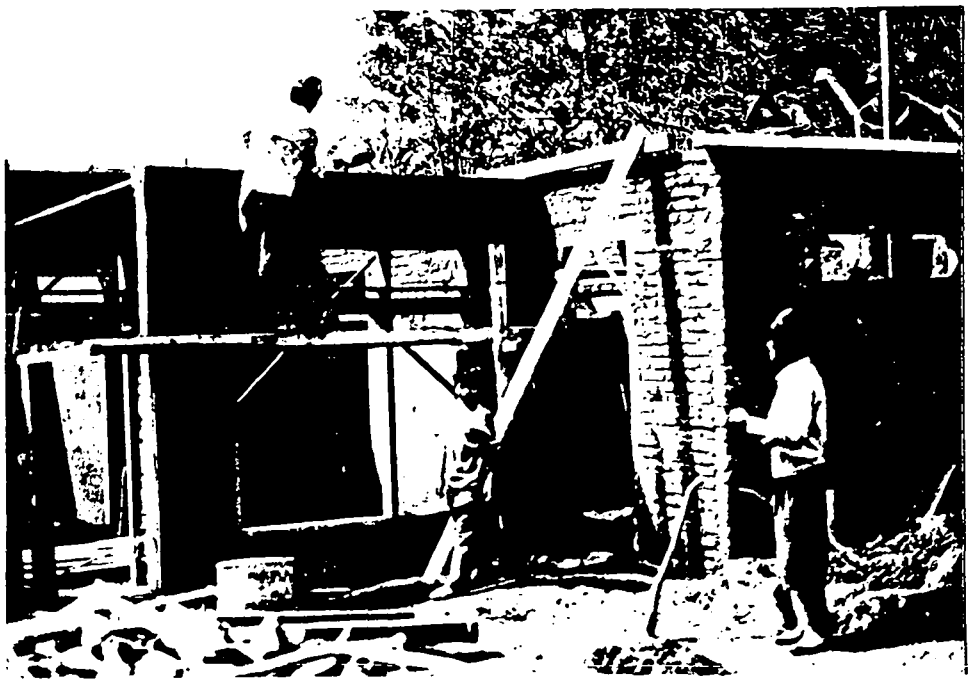
It is regrettable that in the village which needed the water supply most of all, the newly implemented system does not work. Because of the inhabitants poor living situation , bad health and lack of energy it will be difficult to motivate them to start something like this again. Experiments with new technologies should not be taken over the heads of poor villagers.

5.2 Sukamulia (Jagasari).

5.2.1. General description of Sukamulia.

Kampong Sukamulia is part of the village Jagasari which consists of 7 kampongs in total. The inhabitants of Sukamulia form a tight community, consisting of 66 households and 259 inhabitants in total (march 1986). The kampong is built against the slope of a mountain, about 3 km. from the village centre of Jagasari, quite isolated and difficult to reach. The environment is mountainous and covered with woods, sawa's and dry agriculture land. A small river runs alongside.
Nearly all the houses are brickbuilt with a lot of space used for gardens, fishponds, etc.. Since the project the inhabitants improved a lot in their environment; this looks really clean now. The garbage is burnt or composted.
Most of the inhabitants obtain their income from agriculture on self-owned land, supplemented with poultry and small cattle raising and fish from the many fishponds.
Educational level is generally low: most of the people visited primary school for a few years only. Generally all the children finish this school now. Very few of them continue their education.

The inhabitants of Sukamulia as a group.
The inhabitants of kampong Sukamulia form a very tight community. This can be due to the isolated geografical location. The gotong-royong is very strong. The inhabitants do not have much money but



Men building a house together.

Women working together in the field.

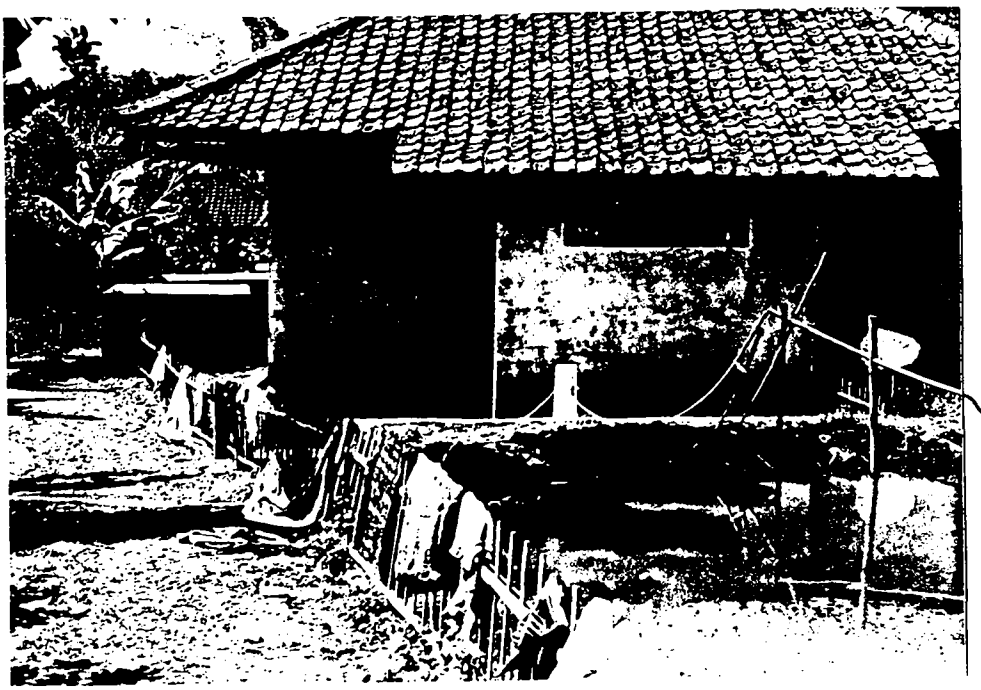
all live in a brickbuilt house. During the fieldwork they were very busy building two new houses. 20 to 30 men were working on them every day, while the house-owner took care of the meals and drinks. They also work together a lot in the fields, they prepare parties together, etc.. Everyone in the block knows one another and in the evening they come together for a chat.
Although the Lurah (head of the kampong) is very active he is not dominant. When asking the respondents who the most important person in the village is, they answered: "Oh, the whole community is very important", Which illustrated their feeling of being one tight community very well. This does not mean that the position of the Lurah is not important, he is a very respected man who plays an active and important role in everything that happens in the village. He and one other inhabitant are a member of the LKMD of Jagasari. None of the women are member of the PKK of Jagasari: it is too far.

Health.
The health situation of the inhabitants is not poor but still far from ideal. Diseases, due to lack of knowledge about food, sanitation, etc. still occur frequently. In a small regional town (about 5 km. away by foot) is a health centre. This is visited frequently by the inhabitants, generally spoken.

Sanitation and water supply.
All the inhabitants go to the bamboo toilets above the fishponds. Since the project the water supply in SM is good. There are four standpost now, each standpost supplied with two taps.
Clean water from the taps is led through bamboo or plastic pipe into eight platforms which are also used for washing and bathing. In the rainy season the water pours out abundantly and all the houses are situated near a water-place. In the dry season the situation is not as good ; there is a poor flow of water.

5.2.2. Water supply previous to the PSWS project.

All water for Sukamulia comes from a natural spring about 800 m. outside the block uphill. From this spring the water was led through bamboo pipes to a location at the fringe of the kampong, which was quite difficult to reach. To fetch the water the inhabitants had to go down on a steep muddy path. It was always busy and they often had to wait a long time. Although the spring supplied enough water for all the inhabitants they experienced a shortage due to frequent breakdowns in the bamboo transportation system. When it rained the water became contaminated with mud.
Before the project was implemented in Sukamulia there had been a water supply project in the district town, about 5 km. away. Water for this project was taken away from the area of Sukamulia. This caused a lot of protest from the inhabitants of Sukamulia:" Why do they take water from our area while the water supply is not even enough for ourselves?". These protests and the really bad water situation motivated the village leaders of Jagasari to promote the implementation of the project in Sukamulia.



A fishpond with the pipe from the standpost to one of the bamboo platforms.

A washing plaace in SM.

5.2.3. Implementation of the PSWS project.

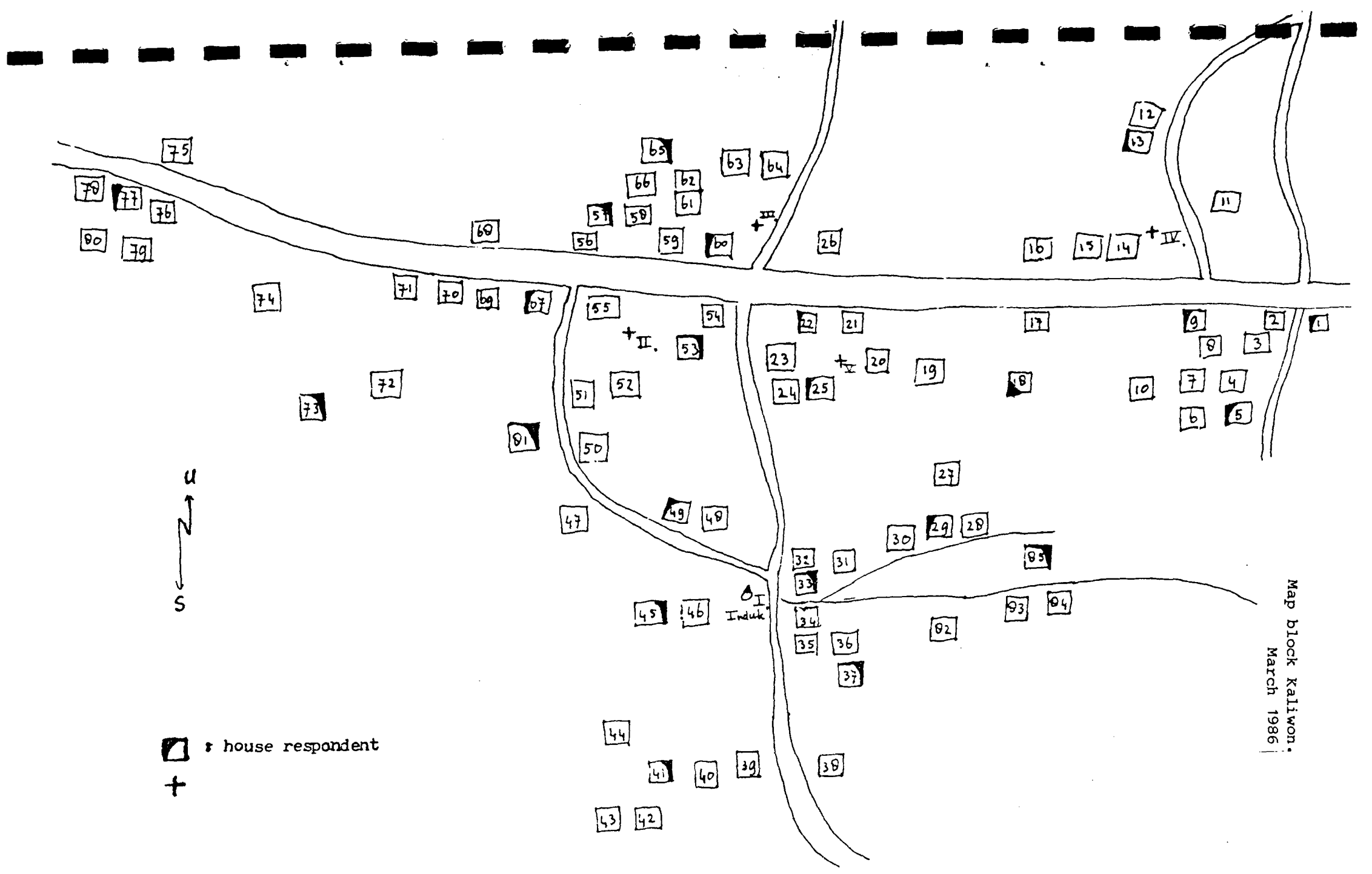
Planning.
First a cadre in the village of Jagasari was formed. Most of its members were also members of the LKMD. Coordinated by the cadre of Jagasari, which was formed and trained before the implementation, the Lurah of Sukamulia together with some active inhabitants, made plans and organized the inhabitants to implement the improvements.

Construction.
Construction ofthe project started in August 1985. It took about one month to build the spring capping, the pipelines and the 4 standposts. As far as possible the inhabitants provided the materials for the construction such as stones, wood, bricks, sand, etc.. During the construction there was a technician from the IHS present in the kampong to supervise the work and to coordinate and stimulate the inhabitants. The Lurah also played a very active role in stimulating and organizing the inhabitants. It was he who organized and planned all the works and cateringfor the following days. Each day there were about three women to take care of food and drinks. The enthusiasm of the inhabitants to help with the construction was enourmous. There were days that about 60 people, men, women and children were busy carrying stones, grinding sand,etc.. The construction itself was performed by the skilled workmen: They were paied half their normal salary by the project. The other half of their work was regarded as gotong-royong. The skilled workmen were of great assistance to the Lurah. He was also assisted by a member of the cadre of Jagasari.
After the completion of the standposts the inhabitants connected plastic and bamboo pipes to all the taps which led the water to some bamboo platforms above fishponds they had dug for this purpose.

Operation and maintenance.
After the completion of the work, the cadre of Jagasari trained a group of cadre of Sukamulia.* This cadre was selected by the Lurah of SM, in discussion with the community. When asked how he discussed this with the community, he answered: "Well, on Friday afternoon the men came together in the mosque and I already had an idea about the persons I would like to ask to join the cadre. I explained about the purpose and the tasks of the cadre and after that I asked each person if he would like cooperate and if the others agreed with it."

*Note:
It is quite confusing that two cadres are mentioned here: the cadre of Jagasari and the cadre of SM. As the cadre of SM has been most important for the participation of the community, most attention will be paid to this cadre.

His criteria for the selection of the cadre:
- A group of men with different qualities. It had to be possible to make a division in tasks: . financial tasks


U
N
S
: house respondent
Induk
I
II.
III.
IV.
V
Map block Kaliwon.
March 1986

. organizational tasks
. technical tasks

- The skilled workmen had to be a member.
- The members had to be physically strong enough to work.
- Still young.
- They had to live near the standpost.

The Lurah of SM became the chairman of the cadre. This cadre is responsible for the operation and maintenance: for each tap there are two cadre members for maintenance. Once a week a member of the cadre of Jagasari visits the kampong and controls the system. A year after the construction the system still works very well, there have been no breakdowns.

Financial management.
All the households of Sukamulia use the bamboo platforms with the water from the public standposts. They pay RP 100/month for the maintenance of the system. The owners of the fishponds have to pay RP 5000-8000/year because of their extra benefit from the water of the project. The money is collected by the cadre and one of the members acts as treasurer of the committee. Because collecting money in this way is unfamiliar to all the inhabitants they do not know a good way to invest it. At present it is just kept in the house of the treasurer, waiting until they need it. If it is not necessary to use the money for maintenance, the inhabitants plan to use it for other improvements.

Other results of the project.
The community is very satisfied with their water supply. It has not only resulted in a good water supply a short distance from all the houses but also in a general feeling of well being, which is expressed in a more tidy environment. The economical and nutritional resources have also been extended; the fishponds supply fish which is sold or consumed by the inhabitants themselves. The inhabitants have planted a lot of clove trees, with which good money can be made in future if they are well grown.
Instead of using the garden for defaecating they now go to the fishponds. In future they hope to be able to build washing/bathing places and public toilets.

5.3. Kaliwon (Gumulung Tonggoh).

5.3.1. General description of Kaliwon.

Gumulung Tonggoh is located in the spur montains, some kilometres land inwards from the north coast of Java, 26 km. to the east of Cirebon. The village is surrounded by woods, sawa's and small streams.

Posters, part of the health education campaign, GT.

A "buyung", a place to store the boiled drinking water.

Gumulung Tonggoh consists of 4 blocks. In one of them, named Kaliwon, the PSWS project is implemented. The 486 inhabitants of Kaliwon form a tight community of 85 households. About 60% of the working population of Kaliwon is employed as a salesman or labour force in Jakarta or other towns. For those who work in the village the main source of income is agriculture on self owned land. During part of the year, the workers in the towns return to the village to work as agricultural labourers or to work on their own land. Besides their daily income, which is quite high (the highest of the three villages), there is a rich supplement of extra resources such as their own gardens, fish from the ponds, fruit trees, poultry, small cattle raising, etc.. Most of the houses are brick built and the living environment looks clean. Garbage is burned or composted.
All children go to the primary school and few of them visit secondary school. Nearly all the adults went to school for a few years at least.

The inhabitants of Kaliwon as a group.
The village head of GT is a very different personality as the Lurah of SM. As he is a veteran soldier he handles with authority and efficiency. For the inhabitants he is a very strong leader. Although he does not live in block Kaliwon he visits the block frequently and has a good contact with the inhabitants. He stimulates and organizes the residents to improve their living environment and also knows quite well what is going on outside the village.
The gotong-royong in Kaliwon is very strong and there are several small groups of neighbours saving money, helping to build each others house, etc..
Several men and women are active members of respectively the LKMD and the PKK of GT.

Health.
The health condition of the inhabitants of Kaliwon is good. The inhabitants are well fed, no eye or skin diseases could be noticed and most of them have not been ill for a long time. Thanks to the activities of the PKK-members living in Kaliwon, the inhabitants are well informed and aware of their health condition. There is a health centre in the local town which is frequently visited by the inhabitants. Each month the local-riding-health bus visits the block.

Sanitatiom and water supply.
In some of the houses (8-10 houses) is a toilet. Most of the inhabitants go to the bamboo platforms above the fishponds. All the inhabitants take their drinking water from the public standpost. This water is also used for washing and bathing. In some cases water from other uncovered springs in the near environment of the houses is used for this purpose.

5.3.2. Water supply previous to the PSWS project.

Before the project started the inhabitants had already tried to improve their water situation, by building a simple capping on

the main spring in the village. They had obtained the knowledge to do this they from former water supply projects in their environment. There was still not enough water to supply all the inhabitants in the village in a satisfactory way. Besides the main spring there are some smaller springs, used for bathing and washing.

5.3.3. Implementation of the PSWS project.

Planning.

Thanks to the activities of the village head who wanted to improve the self-built springcapping, the PSWS project was conducted to Kaliwon. Since it appeared that the self-built springcapping was not enough, he looked for possibilities to improve it. When he heard about the possibility of having the PSWS project implemented in the village he made a proposal to the government of Cirebon and a request for money to improve the springcapping. In this plan he was assisted by the cadre of the LMD, LKMD and the inhabitants of Kaliwon.

With reference to the proposals the government of Cirebon selected this block to be supported by the PSWS project. At first the village head did not want the whole project in the village, he had only applied for money. During the other projects in the environment he had noticed that these were implemented, without involving the inhabitants, with as a result a bad maintenance and a rapid breakdown of the whole system. He was afraid that this would happen again. When it was made clear to him that it was possible for him to make and execute his own plans, he agreed.

In discussion with the LKMD and the technologist of the IHS plans were made to improve the springcapping. In the former situation the inhabitants could only get water from the main spring. In the project plans the water net was to be extended with four public standpost locations and an improvement of their self-built springcapping. To let the inhabitants also have a voice in the decision making, a rough model of the CSS-model was already thought out by the IHS. Because this was the first village of the project, it formed a kind of try-out for the further development of this CSS-model. Under advice and stimulation of the technician of the IHS, the village head formed several groups in the block. The head of these groups had to report the ideas and the decisions of the other inhabitants to the village head. In discussion with these groups, the location for the standposts was chosen. Criteria for this choice were:

- the location had to be downhill from the springcapping to be able to use the gravity system.
- it had to be near the houses.
- easy to reach (all the locations are near a paved path).
- on the land of some-one who was able and willing to give it in loan and who was also willing to maintain the standpost.
- a fair distance from the other locations.

The inhabitants, coordinated and stimulated by the dominant and active village head, started the implementation before the cadre was formed. They planned to improve the capping of the main spring and to build four standposts.

Washing|bathing place, GT.

Construction.
The construction of the system was finished in one month: August 1984. Everyone worked very hard; men working outside the village returned to help for several weeks. Local materials were used as much as possible. Women took care of the food and drinks. During the construction a technician of the IHS stayed in the village to give advice. Soon after the whole construction the users of each standpost built washing and bathing facilities at the place of the standpost. The owner of the land on which the standpost was located, made the design for these facilities. In these designs (which were all different) the standard form of the standpost was changed if necessary to make it fit into the plans for the washing/bathing place.

Repairs and maintenance.
After the implementation of the project the village head selected a group of cadre with 6 men from whole GT (most LKMD members). Three of them lived in block Kaliwon. Most of them are also members of the LKMD. The village head is the chairman and the stimulating power behind all activities. During the implementation of the project, the cadre members were active assisting the village head as a consequence of their normal function in the village, not as a cadre group because this was not formed yet. The cadre selected and trained a group of maintenance-men. These men live near the standpost and are responsible for the maintenance and upkeep of the place. The cadre is responsible for the water system as a whole. Until now there were no problems, big breakdown have not yet occured and small repairs were easily carried out.

Financial arrangements.
Since the project a cooperation has been established in Kaliwon. Each household is obliged to be member and has to pay RP. 100/month. This money is meant to finance repairs. If that is not necessary, it can be used to implement new improvements as public toilets, in future. It is a pity that the monthly contribution is so small. It will take a very long time before they are able to finance new improvements.

Other improvements.
The water supply in Kaliwon functions very well since the project. There is enough water for drinking, washing and bathing the whole year through and the inhabitants are very satisfied. Several households have built their own toilet and bathing facility. They have also dug some more fishponds.

General description of the villages.

VILLAGE (BLOCK)	AREA	SOCIO-ECONOMICS	INCOME POSITION	POPULATION PSWS-BLOCK	NO. H.H.	H.H. SIZE	HEALTH CONDITION	VILLAGE-HEAD	MUTUAL SELF-HELP	SITUATION BEFORE PSWS
Playangan (RT 1,13,14)	flat	fishing agriculture-labour	bad	466	68	6,9	bad	not close to community	not too strong	.some handpumps far .salt sources
Jagasari . (Sukamulia)	hilly	agriculture	moderate	259	666	3,8	moderate	active close	very strong	.natural spring far break-downs
Gumulung Tonggoh (Kalivon)	hilly	agriculture city-worker	good	486	85	5,7	good	active, dominant close	very strong	.natural spring only one waterpoint allready started improvements

Participation process and the results.

VILLAGE (BLOCK)	IMPLEMENTATION	ROLE VILLAGEHEAD	FUNCTIONING CADRE	ROLE COMMUNITY	TYPE WATERSUPPLY	NO. STANDPOSTS	FUNCTIONING PSWS	OTHER IMPROVEMENTS
Playangan (RT1,13,14)	too late, jan.'86	not active	very active contacts not too good	1 day work	deep well windmill	2 1 mosque	bad	not yet
Jagasari (Sukamulia)	as planned aug.'86 cadre not yet	very active	active persons	several days or weeks work women served meals	gravity	4	good	.bamboo washing toilet places .fishponds .clove trees
Gumulung Tonggoh (Kalivon)	too early aug.'85 cadre not yet	very active	active persons	several days or weeks work women served meals	gravity	4	good	.brick washing places .storage tanks .private toilets .fishponds .clove trees

6. RESULTS OF THE RESEARCH.

6.1 Introduction.

In each village the project has worked out very differently; the participation process took place in a different way, the trainers, the cadre and the community all had their own characteristics and the results are different too.
In GT the implementation was finished before the trainers were formed, whilst in PL one and a half years later the implementation had not yet started.
The men of SM spent several days or weeks on the project whilst the women cooked the meals. Most if the the men of PL spent only one day on the project, whilst only a few women took care of the food and drinks.
What is the cause of these differences?
This chapter tries to find an answer to this question by comparing the participation process in the the villages related to the socio-economical conditions of the inhabitants, the physical circumstances in the village and the role of outer organizations such as the local government, the IHS, etc.. The participation process is divided into the planning (5.2), the implementation (5.3), the maintenance (5.4) and the results of the project (5.5). In this order the participation aspects will be discussed. Most attention will be paid to the cadre and the community.

6.2 Planning.

6.2.1 Trainers and the training of the trainers.

It was a great advantage for the project that the group of trainers was formed and trained (see par. 4.4.2). As a consequence, everyone knew what was going to happen and what he had to do. Eventual protests, obstructions, questions, etc. could be discussed and solved beforehand. During the project the contacts with this level of government formed no problems.
Not all the trainers were active, as appeared in the course of the project. The group of trainers that was formed consisted of about seven persons from different institutions, with the purpose to realize an integrated approach. Unfortunately, both in the Regency of Cirebon as that of Majalengka it appeared that only two or three persons were active and involved in the project; the representatives of the Kesra, Health Department and Public Works. As their usual work concerns the participation and health of the inhabitants of the villages, they were more interested.
The trainers started their activities with a training of six days. This training dealt with the organization of the projects, the health aspects, the financial aspects, etc.. Taking the number of persons were who where finally active for the project into account, it must be doubted whether it is worthwhile to give so many persons such a long and expensive training. Most of them will not use the information given to them. In future this should

Tabel 1. Selection of the most important person as a cadre.

Answer on question 22: "Who is the most important person in your neighbourhood? name....."
This person is correlated with his selection or non-selection for the cadre.
In PL 16 persons mentioned by the respondents were not selected as a cadre member. This can explain the bad contact between the cadre and the inhabitants. By excluding these persons from the cadre, an important liaison between the cadre and the inhabitants of the PSWS-RTs was missing.

name of the village - (X Axis)

function of important person: - (Y Axis)

Number / Row % / Column % / Total %	playangan 0	g.tonggoh 1	sukamulia 2	Row Totals
cadre 1	5	7	14	
	19.2	26.9	53.8	26
	23.8	36.8	70.0	43.3
	8.3	11.7	23.3	
maintenar 2	0	10	1	
	0.0	90.9	9.1	11
	0.0	52.6	5.0	18.3
	0.0	16.7	1.7	
no function 3	16	2	5	
	69.6	8.7	21.7	23
	76.2	10.5	25.0	38.3
	26.7	3.3	8.3	
Column Totals	21	19	20	60
	35.0	31.7	33.3	100.0

Chi square	= 35.9	Valid cases	= 60
Degrees of freedom	= 4	Missing cases	= 11
Probability of chance	= 0.000	Response rate	= 84.5 %
Cramer's V	= 0.547		
Contingency coeff.	= 0.612		

be improved. Some possibilities for this are: 1. to give all the trainers short information and conduct the more detailed information to the persons who are really concerned with it. In this way the advantage of the formation of the trainers group, as mentioned above, could be obtained.

2. to select the trainers carefully in order to get a group of active and interested persons. Criteria for this selection should be established.

One of the purposes of the formation of the trainers is that the project will be extended in the future under their initiative and responsibility. Time will show if this really happens.
Until now, new plans have not yet been developed.

6.2.2 Cadre

One of the most important and also the weakest element of the participation process is the selection of the cadre (see par. 4.4.3). This group is responsible for the whole functioning of the project in the village, motivation and mobilization of the inhabitants, organization of the participation, etc. If the cadre functions well it greatly facilitates the execution of the project in the village. If the group does not function well, it is difficult, if not impossible, to work out the project in a satisfactory manner.

In this project it was the trainers who stimulated the formation of the cadre. They contacted the village heads of the participating villages to identify the cadre. It can be very inauspicious that a good selection of the cadre depends so heavily on one person: the villagehead. This can work out very well but it can also result in a wrong selection with unfortunate consequences for the participation of the inhabitants and finally for the project.
In GT and SM this selection resulted in a cadre group which could work well together and with the inhabitants.

In PL the selection of the cadre was successfully; the members were quite own minded which is not very promising for their cooperation. The relationship between the inhabitants of the PSWS RT's was also not really good, partially caused by the fact that none of those inhabitants was a member of the cadre. (see tabel 1)
Regarding the Indonesian structure of village organization, the only way to select the cadre is by consulting the village head. In order to ensure a good selection sound criteria for the selection of the cadre must be established (see appendix 6).

It seemed possible to implement the project successfully without the cadre (thanks to the active inhabitants in the village), and form the cadre afterwards. It has, however, several adantages to form and train the cadre before the implementation; The cadre can cooperate as a group from the beginning of the project. Problems in this cooperation could be signalized and solved with help of

the supervisor. During the course of the project the group will be able to survive its growing pains. By the time the project is finished this group will be strong enough to continue the development on its own. This advantage, which sounds quite reasonable, is not affirmed in the project, on the contrary: on the contrary: In PL the implementation did start after the establishment of the cadre but by the time the project was finished the group was disrupted because of personal conflicts. How to tally the theoretical advantage with the practical situation? This would be an interesting question to answer.
The advantage of forming the cadre during the planning is that the benefits of their training can be used optimally during the planning and implementation. These benefits are useful information, the fact that it made the cadre conscientious and feel responsible for their task and they facilitated the contacts between the cadre and the trainers.
Apart from the positie results of the training there are still a lot of points to be improved upon, especially concerning the method of knowledge transfer.
- The trainers, who were supposed to organize the training are not teachers or social workers, so they cannot be expected to be able to transfer the information in the manner pedagogue.
- As the education level of the cadre members greatly differs it is very important to teach them the correct way, particularly because the are not used to sitting, listening and comprehending for a long period of time. Reason enough to pay attention to the pedagological character of the training.
- Several cadre members had not understood much of the content of the training.
- The training took four days, which was too long for many people. One of the suggestions: "Why not train us for one evening a week or a month so we can go to the field with the given information, try it out and come back with questions, discussions, etc..?."

Following the project planning the cadre had to return to the village after the training, extend and discuss the given information with the other inhabitants to make them aware of their problems and the possibilities. In pracise this worked out differently. In SM and GT the implementation had already been finished, so the given information was only useful for the maintenance and the implementation of other improvements. In PL the technical solution of the problem was too difficult to be thought out by the cadre. Their input in the project was limited to the selection of the PSWS-RTs and the organization of the participation.
Meetings now and then between the cadre of the different project-villages can be very useful for the exchange of their experiences and information. The competition between them also stimulates them to new activities. For example the cadre of GT was the first that implemented and finished the project. They were really proud about that and it can be expected that they will try to be the first ones with new improvements too. For other villages it can be motivating to see how their colleagues did and with what results.

6.2.3 Community.

The project plans also had to be discussed with the inhabitants. Guided by the model of Community Self Survey (see par 4.4.3), the cadre had to organize these discussions. How this worked out exactly in practice was difficult to discover in this research. The village head of GT, assisted and stimulated by the technician of the IHS, formed groups of household-repesentatives for the discussion of the project. These groups were coordinated by an LKMD member. Findings of these discussions were reported to the village head. During the fieldwork for the research, inhabitants mentioned these discussion groups. They were very pleased with this possibility to express their ideas. It was not possible to obtain clear data about the influence of these groups on the plans and the decision making. This also applies to the other villages. In SM the village head gathered all the men of the block in the mosque to inform them about the project and to give them the chance to express their ideas about it. Most of the plan and decision making was carried out in discussion with some active men in the block (who also became the cadre in the latter stage of the project).
In PL it seemed that the inhabitants were only informed about the project by the RT or the cadre. There were no signs of discussion between the inhabitants and the cadre.
It is a pity that it is not possible to clarify the results of the CSS and the influence of the inhabitants on the decision making. It might be better to do this by examining the planning procedure in the village during its course. Although it is difficult to discover how far their influence reaches, there are some clear signs of involvement by the inhabitants in the planning.

- They all knew beforehand that the project would take place.
- They all knew that they would have to work for it themselves.
- They were very pleased with the fact that the organization and the planning of the project was in the hands of the cadre or other active inhabitants, who they regarded as their "own".
- It is obvious that a lot of informal discussions and exchange of information between the inhabitants, the village head and the cadre/LKMD members have taken place. The influence of these discussions, although difficult to establish, must not be neglected. In SM and GT especially, most of the inhabitants (men and women) felt very involved, also in the planning of the project, this might have been one of the most important means of communication for them.

There is a strong division in tasks between men and women. In first instance it seems as if the women are not active or involved in the project, but their work behind the scenes is indispensable. Serving drinks and food to the workers, discussing

the project together, passing on their ideas to the men, etc.. They were not openly involved in the participation process, especially not in the decision making. It is very difficult to ascertain their influence and involvement because it might happen in the Indonesian manner. Explanation of an Indonesian:" It might seem as if the women are not involved in the decision making, because they never give their comment openly, but there is a great chance that they will play it through their husband. In the night, when he is half asleep, she will whisper in his ear that it is not the right decision that the men have made, and that they had better change it. This her husband will do.".
In PL two women were a member of the cadre but their activities were limited to some administrative work. It is important to involve the women more especially in womenlike affairs such as health education, use of the water, etc.. To give information directly to the women about these aspects will be more effective than by playing it through the men.
How?
A good method to realize this has to be worked out.

It had very positive consequences for the project to involve the cadre and other inhabitants at such an early stage. When expecting participation of the community this involvement is inevitable. They all had the chance to make their own plans and to propose these to the trainers and the technician, to discuss them and to work them out. During the implementation they worked with the idea that they were their own plans, needs, priorities and responsibilities. A necessary condition for giving them the opportunity to do this, is that the whole concept must be flexible enough to include the changes wanted by the inhabitants. Only then are they free to make their own plans and is real participation possible. Except for the technical limits this worked out well in the project with as a result a wide variety of organizational activities, washing and bathing facilities, location and use of the standposts, etc..
Of course the cadre and the inhabitants make mistakes, but this is inevitable and human; according to a Dutch verb: "Where is being worked mistakes will be made". The advantage is, if the mistakes are a consequence of their own decisions and plans they feel responsible for them and are motivated to solve the problems themselves. On the whole their own ideas and changes worked out well and fit well into their own wishes and style of living.

6.3 Situation before the project.

The selection of the villages forms an important part of the project. In the villages, selected for this project, the water situation was really bad in the opinion of the inhabitants also. They were convinced of the need to improve this and were motivated to do something about it, as was clearly shown by the initiative they had already undertaken to conduct the project to the village. This motivation is a very important condition for the success of participation in the project.
It appeared that the biggest trouble maker was the daily effort to fetch the water and this was also the greater motivator for

Man digging a canal for the water pipe line.

improvement. The severest problem regarding the former was that the water supply was too far away. After that the waiting time, the quantity and the quality are mentioned as problems in the former situation. In each village these problems appeared.

Other projects in the environment, even those which were not successful, had an important motivating influence on the participation of the inhabitants. Because of these projects they were already aware of the possibility and convenience of an improved water supply, and had started thinking about their own situation.
In GT the village head and the other inhabitants learned a lot about the technical aspects of a springcapping and the involvement of the community by watching the other projects. From the unsuccesful projects they learned how they did not want to do it.
In SM the implementation of the water supply in the district town caused so many protests and a feeling of being cheated that the inhabitants of SM became motivated to do something about their own situation too. During the training the cadre of SM was taken to another project to show them the brickbuilt washing places there. The cadre is still talking about these nice places and plan to build something similar in the future.
In PL there had also been former projects (successful and unsuccessful) so the inhabitants were acquainted with the possibilities of improving the water supply.

6.4 Implementation

6.4.1 Introduction.

After the planning stage the implementation of the project could start; the decisions and plans formerly made had to be worked out. It appeared that, especially at this stage, all the inhabitants became active; who had already discussed with them what was going to happen, organized and stimulated by the cadre. They started the implementation.
There were sharp differences in participation during the implementation between the villages. In PL the inhabitants of the entire village (so not only of the PSWS-RTs) worked for one day. The water supply in SM and GT was implemented by the inhabitants of the PSWS-blocks only, who worked for several days or even weeks.
The way of participation was influenced by socio-economical, technological and environmental aspects.

6.4.2 Socio-economical aspects.

The possibility and motivation of the inhabitants to participate in the project depends strongly on their socio-economical conditions. To understand the differences in participation better it is necessary to examine these conditions and their influence on community participation in more detail. See the following points:

Tabel 2. Income of the households.

It is very difficult to get a good impression of the households' income. When only asking for the money-income many other sources of incomings are excluded such as fruit and vegetables from a self-owned garden, fish from the fish ponds, gifts, etc.. An additional problem was that the respondent often did not know exactly how much he earned: it differed from day to day, from season to season and from year to year. The income level as mentioned in this tabel is the result of the respondents'answer combined with their information about their savings and expenses. Based on these estimates the income of about half the population in each village is 26.000-50.000 Rp/month (= $10-20 month). The bad economical position of the households in PL is illustrated with 5 respondents (21.7%) in the lowest category of income whilst in SM and GT this category only counts 1 respondent (4.2%). It becomes more obvious when taking the number of extra resources into account (below). In GT and SM most of the households dispose of a whole number of extra resources of income. In PL most of the households (71.4%) do not have extra resources.

Time and energy

The inhabitants must have time and energy to spend on the project. The available time depends heavily on the ease with which the daily income is obtained. People who are active the whole day satisfying their immediate needs cannot be expected to spend a lot of time on the project. For those people one day of work is perhaps the same effort as for those who are "richer" and who could spend two weeks or more on the project because their daily work allows this.

From tabel 2 a big difference can be seen between the income postion and the extra resources of PL, GT and SM. PL is by far the poorest village without extra resources. It is a great effort for its inhabitants to obtain their daily meal of white rice. They cannot afford to stop working for one day: no work no food. One day's work on the project was a great investment for them (see tabel 3).Most of them reacted proudly and with enthusiasm when asked if they had been actively involved in the implementation: "Yes, we spent a whole day digging and working". This in comparison to the reaction of an inhabitant of GT to this question: "Oh no, I was not active, I only spent three days on the implementation". For the people of GT it is much easier to obtain their food. There is an abundance of extra resources in the village (see par. 5.3.1) and if they are agriculturists, they work on their own land, while in PL most of them are labourers. This enables them to determine their own time spenditure. GT also has the advantage of the higher incomes from the town-workers. During the implementation of the project many of the men of GT returned to the village for some weeks to help.

In SM the inhabitants are not as rich as in GT, but for them it is also not difficult to obtain their daily income; there are a lot of extra resources and since they all have land of their own, they are more free to determine their own time spenditure.

The time of the year during which the water system is constructed can influence the participation in this as well. The implementation of the project in GT and SM took place in August. This was not a coincidence but chosen by the inhabitants and influenced by several conditions. These are:

- The fiscal year in Indonesia runs from April to April. If money for the next year becomes available, newly initiated activities usually start to run in June. June is also the month of fasting. Because people are busy then, most other activities are postponed until July or August.
- The 17th August is the national day of independence which is celebrated each year with a lot of activities inside and between the villages. One of these activities is a competition between the villages with as theme the best developed village of the area. In preparation for this a lot of community activities are initiated to improve the living environment. In this context the construction of the water system was very suitable.
- Harvest months are May/June and October/November (more or less). August is not a very busy period.

In PL the moment of implementation was mostly determined by the course of the project. Because of the difficulties in finding and implementing an appropriate system with which to supply the water

days man spent on the implementation

Percent of Total

Value Labels	0 10 20 30 40 50 60 70 80 90 100
o	*** (3)
1	********** (12)
2-4	******* (9)
5-8	****** (7)
9-15	********** (19)
more	********** (16)

days man spent on the implementation, SM

Percent of Total

Value Labels	0 10 20 30 40 50 60 70 80 90 100
o	*** (1)
1	* (0)
2-4	* (0)
5-8	***** (2)
9-15	********** (10)
more	********** (8)

Tabel 3. Number of days the man spent on the implementation.

Big differences in time-input become obvious when comparing the number of days the men spent on the implementation. Most of the men of PL only spent one day (54.4%) or 2-4 days (22.7%). In GT and SM the same percentage refers to 9 days or more.

days man spent on the implementation, GT

Percent of Total

Value Labels	0 10 20 30 40 50 60 70 80 90 100
o	* (0)
1	* (0)
2-4	********* (4)
5-8	********** (5)
9-15	********** (8)
more	********** (6)

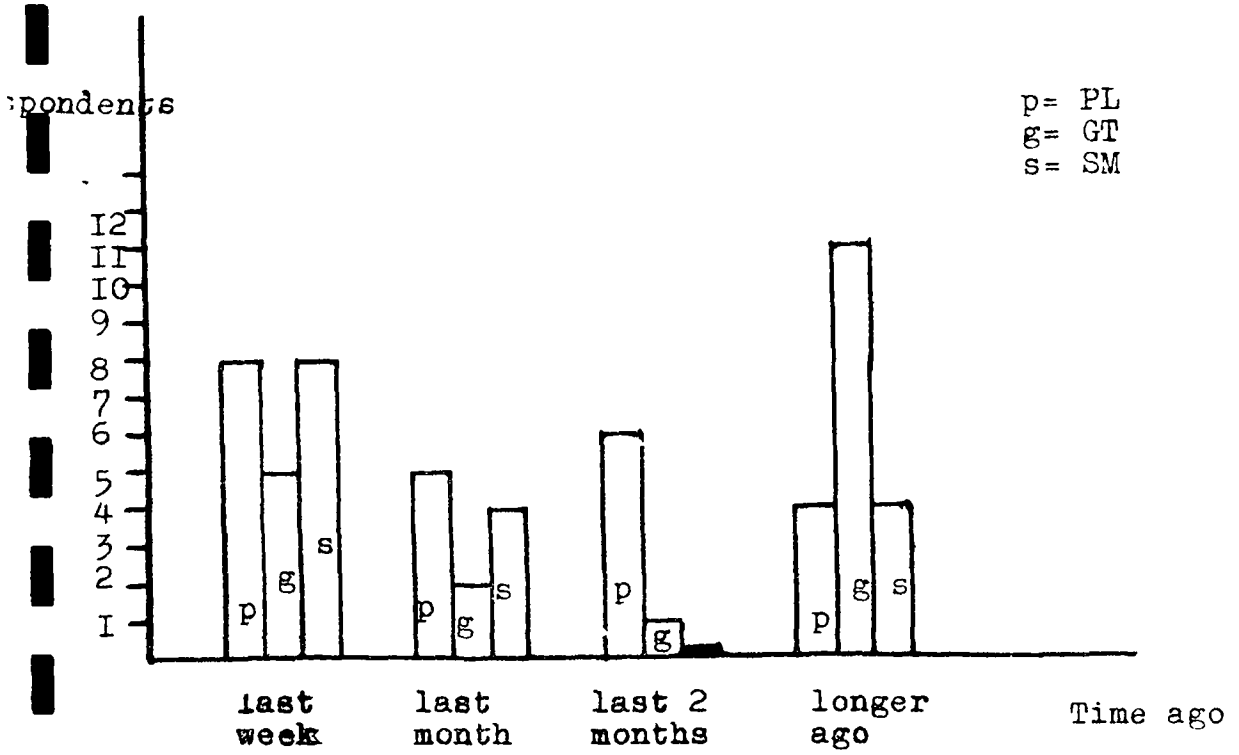
days man spent on the implementation PL.

Percent of Total

Value Labels	0 10 20 30 40 50 60 70 80 90 100
o	***** (2)
1	********** (12)
2-4	********** (5)
5-8	* (0)
9-15	*** (1)
more	***** (2)

everything was delayed, and as soon as the windmill was built the inhabitants constructed the standposts and the pipe system.

Tabel 4. Last time a family member was ill.



Health.
Another aspect which plays a role is the physical condition of the people. In PL the nutrition and health of the inhabitants is so bad that after one day of hard work there is no energy left to undertake new activities. As observation show the physical condition of the inhabitants of SM and GT is better.

Motivation: education and awareness.
Motivation to improve the water supply is strongly related to the education level and awareness of the community. The more highly educated inhabitants are more concerned with their health. They know more about health problems and the relationship to water use and as a consequence they are also more motivated to improve the water supply.
The education level (especially of the smaller children) and the awareness of the health conditions was the lowest in PL and the highest in GT. Some clear signs of this were:

- education of the inhabitants. Regarding appendix 8 there is not a big difference in the education level of the adults, but there is a big difference in the small children that should go to the primary school. In GT and SM all the small children are sent to primary school, whilst in PL many of them are not.

- activity of the PKK. Although the PKK in PL is quite active, there are no women in the PSWS RT who are a member of the PKK. As the wife of the village head (who is an active PKK member) says, it is a difficult group to reach. This is shown for example by the number of families which applies family-planning. A lot of women in the PSWS-RTs do not use birth control yet. In the rest of the village it is accepted more commonly. This in contrary to SM and GT where all the women use birth-control. The PSWS block of GT counts several very active PKK members.

- occurence and awareness of diseases. Tabel 4 shows that in PL the frequency of diseases during the last month is much higher then in GT and SM. As far as awareness is concerned: in GT the inhabitants paid much attention to their health condition; they often talked about it and also mentioned the necessity of a good water supply in relation to their health. Although in a lesser degree, this was the same in SM. In PL the inhabitants were not so concerned about health and its relationship to water supply; men bathed and children played in the heavily polluted river, the environment of the present water supplies was dirty and muddy, the tanks in which the water was fetched were often dirty, etc.. The inhabitants do not always realize when they are ill. It occured several times that the respondent suffered from a bad eye disease, but answered that it was a long time since someone of the household had been ill. She did not realize she was ill herself.

- In SM and GT it goes without saying that they boil the water before drinking it. In PL still some of the women do not boil the water before drinking it.

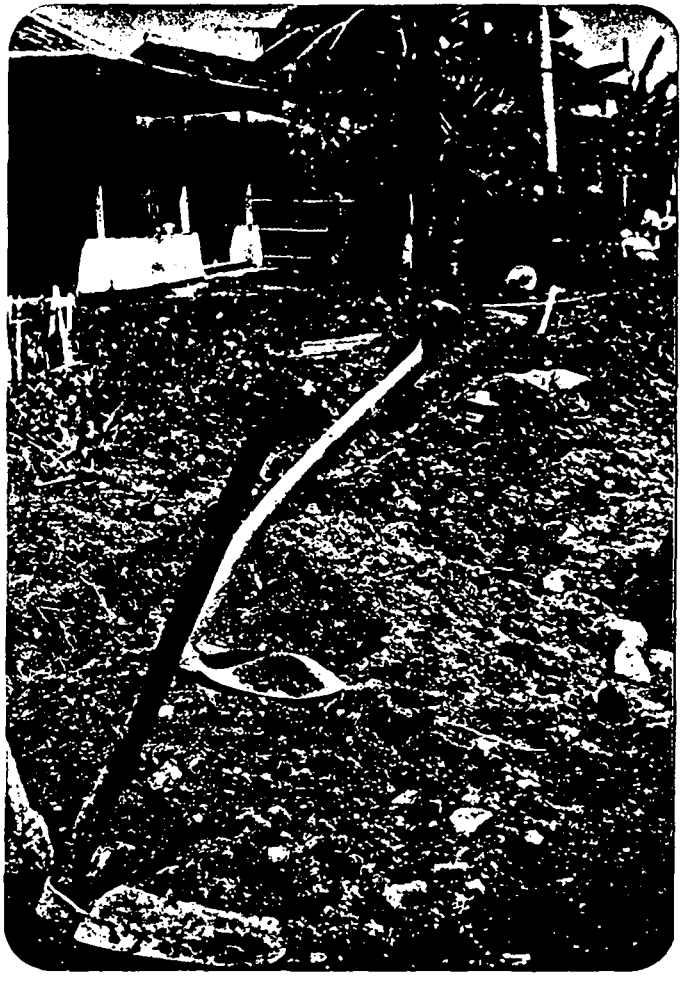
Community-ties
From the research in the three villages it appears that the

socio-economical position of the inhabitants strongly influences their participation. In PL this position was very bad and the input from the inhabitants was much lower as in GT where the socio-economical circumstances are much more favourable. However, one may not conclude automatically that the better the socio-economical circumstances, the better the participation. For example, the cities where it is much more difficult to work with help of community participation. There another very important element is often lacking the community-ties. These ties can be family-ties, social contacts, economical dependency etc. The stronger the ties between the inhabitants the more successful community participation will be. In the Indonesian villages these ties are institutionalized in the gotong-royong (see par. 3.2) In GT as well as in SM the gotong-royong is very strong. The inhabitants are used to working together: building each others houses, saving money, harvesting each others fields, etc.. Even if the people in SM do not have much money, they all live in a brick built house. This is quite cheap because the whole village helps to build it. During the observation period there were two houses being built, several fishponds dug, the women helped each other in the fields and prepared parties. Their strong gotong-royong has had positive influence on the participation during the project.

In PL the gotong-royong was not as strong. Sometimes, on Friday afternoon, they worked together to improve something in their living environment, but at the time of the research something like this had not occurred for a long time.

Differences in gotong-royong can be explained by the difference in homoguenity and tightness of the community. Some aspects of this are:

- Difference in living standard. Inside each block the living standard of the households was quite equal. Between the villages the differences are quite big (see chapter 5).
- The difference in the kind of work. In most of the blocks the kind of work did not differ much. In PL nearly all the inhabitants are fishermen and agricultural labourers. In GT they are agriculturist, salesmen in the village or workers in the city (especially the young people), and in SM most of them are agriculturists.
- The diversity in religion; all of the inhabitants are moslem.
- Most if the inhabitants are born in the village, which tightens the contacts with the others.
- Social contacts with the neighbours. In all the blocks the inhabitants came together each day to chat, to play volleyball, etc..
- Geological position. The PSWS-blocks of SM and GT were situated differently to those of the PSWS-RTs of PL. In PL the PSWS-RTs were situated in the middle of the village, not geologically separated from the rest of the village. The PSWS-blocks of SM and GT were quite isolated from the rest of the village, as a small community on their own.
- The size of the community. The smaller the community, the better the contacts between the inhabitants can be. In SM and GT the inhabitants clearly formed a very tight community. In PL this was not so obvious.



Tools to dig for the water pipe line.

For community-service activities the role of the villagehead is very important too. He is the one who can motivate and organize the community. If he functions well the community will be used to undertaking activities together. This strongly facilitates participation during the project which is obvious in GT and SM.
At the other side, if the village head is not really interested and too busy with business outside the village, there is big chance that the cooperation activities in the village are not as strong. As a consequence, it will be far more difficult to start a participation process.

There is a strong devision in tasks between men and women. In first instance it seems as if the women are not active or involved in the project, but their work behind the scenes is indispensable. Serving drinks and food to the workers, discussing the project together, passing on their ideas to the men, etc..

6.4.3 Technological aspects.

The technological capabilities of a community are easily over-estimated; for people who are used to working with bamboo and clay it is difficult to work with other materials and tools. For example in SM a tap was leaking; the ring had to be renewed. This is a very easy job, but because there was no spanner to dismantle the tap, the cadre was not able to repair it and had to wait for someone of the cadre from Jagasari.

The technologies and the materials must be abstracted as much as possible from the inhabitants' own resources, even if this might be more and harder work for them. Only then will they have the chance to fully participate.
In GT and SM the inhabitants were able to build the whole capping by themselves, with their own materials. They were given the chance to construct the new object by themselves and to get acquainted with it. Afterwards they can sit down in satisfaction about the hard work they did. In PL the windmill is a strange object, built by outsiders with strange materials. The inhabitants never got the chance to display their input, to get acquainted with the object and to make it their own.
The implementation must not take too long, otherwise the inhabitants will lose their interest. In SM and GT it took the inhabitants one month to complete the entire work. This did not appear to be too long although it was hard work. In PL the men worked for one day. Even if they would have liked to do more, they could not because all the responsibility was kept in the hands of the cadre and the technology was too difficult for them. Because of these aspects their involvement in the whole project was limited.
It must be clear to the inhabitants why the chosen technology has been selected. This must be motivated and explained. If the inhabitants do not understand why they have to execute something in a certain way, they will not be motivated, especially if they find there are easier ways to realize it.
In GT and SM it was clear why the gravity system was used, it was by far most the most simple solution. In PL it is not clear to

the inhabitants why a windmill was constructed instead of some handpumps. Now it appears that the windmill does not work, the people are very indignant and angry about the expense: "Why did the project not implement five good dragons instead of that stupid windmill which does not work?".
There can be some aspects in the planning (especially the technical design) in which it is not possible to involve the community, but even then it must be explained as clearly as possible. During the implementation of the spring capping in SM the technician gave the technical design of the capping to the cadre, and explained it as well as possible. This made them feel honoured and responsible for the capping.

6.4.4 Intervening organizations.

It will never be possible for a community to improve its water situation if the higher levels of government are not supportive. Thanks to the extensive preparations contact with the local government developed quite well during the project.
If a project aims to involve inhabitants and start a process of community participation some special requirements can be made to the supervisor of the project in the village (in this case the technician if the IHS). Apart from his technical capabilities, this person must have social capacities as well. A good contact between him and the community is one of the conditions for the succes of the project. In GT and SM the inhabitants still talk with great enthusiasm about the technician who assisted them. His presence (he stayed in the village during the implementation) motivated the inhabitants to be also present at the works each day again for long days. In PL their contact was not as good, with as a consequence that their cooperation was not optimal. The technician was annoyed with the cadre and the cadre made a lot of decisions against the advice of the technician.
During the project the technician must be one fixed person for one village, without change, so that it is possible to build up a good contact with the community. It is also better for the cadre and the inhabitants to get advice from one person only, otherwise they get confused (as happened in some cases).
There may be one exception to this rule: In case the relationship between the technician and the community is not as good as it could be, a change of technician must be considered. A good relationship is too important for the development of the project.

6.5 The maintenance.

6.5.1 Introduction.

The importance of the maintenance of the water supply can not be overestimated. To keep a system in a good condition is at least as important as to implement it which is not just a matter of calling the plumber and asking him to fix the breakdown. If the community has to maintain a water system it not only concerns the technical problems. The organization, task division and the financial management are at least as important and cannot be separated from the technical management. This is clearly

demonstrated in what happened in PL a few years ago. There another development organization implemented a diesel engine to pump up the water. After a few months this engine fell out of order. Why did it not work anymore? In answering this question the people just shrugged their shoulders:"There was no money with which to pay the diesel. Most of us preferred the handpumps because than you do not need to pay. As a consequence there are not enough people to finance the petrol so the engine was not used anymore. In a few months it rusted away and willnever work again". It is obvious that the failure of this engine had not only technical reasons. Especially not when taking the fact into consideration that there is a mechanic who lives and works in the village. He can repair all kind of machines and is also willing to help the community.
If more attention was paid to good organization and financial management it might have worked better, for example a clear division of users and non-users, a reasonable contribution of the users, someone to take care of this contribution collection, the establishment of a social network in which the users feel responsible for their own supply and do not give up and go to the other facilities.
How the maintenance in the PSWS villages works out will be discussed in the following points.

6.5.2 Organization.

During the training of the cadre a lot of attention was paid to the maintenance and its management with positive results: In SM and GT there are special maintenance men, each responsible for one standpost. In GT it is the former owner of the land on which the standpost is built. In SM two cadre members are responsible for the standpost. The cadre organized a special training for these maintenance men. In PL the cadre is responsible.

6.5.2 The technical maintenance.

Until now the maintenance in GT and SM did not cause many problems. The water system has not broken down, and if this happens they are prepared to repair it.
To make it possible for a community to maintain the system themselves, the system must be as simple as possible. The whole system in PL never worked well. Apart from the lack of wind, as the main cause for the idleness of the windmill, the system has already broken down many times, the cadre unable to repair it.
To make sure that they are able to maintain the system themselves, it might be a good rule to ensure that they must be able to build it all by themselves (with the advice of a technician). As soon as help and materials from outside the village are used the maintenance can give problems not only technical but especially organizational and financial problems.
Situations can occur in which it is not possible for the inhabitants to construct the facility themselves. If a new technology, which can not be constructed by the inhabitants, is introduced, it must come up to a certain number of conditions. Parlato (1985) discussed community participation from the point

of view of social marketing: " Selling a house latrine should be no different from selling toothpaste. The principles of good marketing are: a) developing a good product.
b) pricing it correctly.
c) delivering it promptly and conveniently.
d) devicing at little or no cost.
e) providing liberal credit terms.
f) publicizing it in an appealing and attractive way."

Some additional conditions in the case of the water supply:
- People must be trained, so there are people in the village itself who can do repairs.
- The inhabitants must have the tools with which to do the repairs.
- Repair materials must be available in the near environment of the village.

In Playangan the windmill and the pumps are of bad quality, they often break down. There is only one technical man in the village who can handle them but he gets fed up because there is no-one to help him. Often they have to wait for someone from Bandung to repair the pumps or the mill, which of course, takes a lot of time.

6.5.3 Financial maintenance.

The community must be able to finance the maintenance of the system themselves. To do this, the development and introduction of an appropriate money collection system is indispensable. This already happened to a certain extent.
In GT and SM every household pays 100 RP a month. This money is collected by the cadre and the name of the household with the saved amount is noted, so that the inhabitants can always check on it. In PL this still does not work and will not do so until there is water. It is quite understandable that the inhabitants are not willing to pay as long as there is no water.
It is a positive point that the inhabitants of SM and GT have already started paying, but a pity that they do not pay more. Now it will take too long before they have a reasonable amount to finance the maintenance or other improvements. The reason for this low amount is not that they cannot pay more (regarding their other savings, their income and their benefits from the project), but they are just not used to saving money in this way. The cadre does not know exactly what to do with all the money: just keep it in an old sock? to invest it again? to give in loan with interest? etc.. The inhabitants are not sure what is going to happen to their money, it is all too unfamiliar for them. More information and assistance is very necessary. An additional problem is that an appropriate money collection system for village communities still does not exist. This should be developed.

The cost recovery of the water supply must be clarified. Until now it is still not clear who will pay for a new system or big

name of the village - (X Axis)

satisfaction with the project: - (Y Axis)

	Number / Row % / Column % / Total %	playan gan 0	g.tong goh 1	sukamu lia 2	Row Totals
yes	1	12 22.6 60.0 19.7	23 43.4 100.0 37.7	18 34.0 100.0 29.5	53 86.9
not yet	2	4 100.0 20.0 6.6	0 0.0 0.0 0.0	0 0.0 0.0 0.0	4 6.6
no	3	4 100.0 20.0 6.6	0 0.0 0.0 0.0	0 0.0 0.0 0.0	4 6.6
Column Totals		20 32.8	23 37.7	18 29.5	61 100.0

Chi square	= 18.87	Valid cases	= 61
Degrees of freedom	= 4	Missing cases	= 10
Probability of chance	= 0.001	Response rate	= 85.9 %
Cramer's V	= 0.393		
Contingency coeff.	= 0.486		

Tabel 5. Satisfaction with the project.

The reponse on question no. 25: "Are you satisfied with the project?"
For SM and GT it is obvious: all the respondents are satisfied. In PL the situation is different. The answers "no" and "not yet" refer to the non-fuctioning of the water supply. The positive answers express their hope that the water supply will fuction in future ("beautiful windmill, nice taps, etc..") or the satisfaction with the attention paid to them by the project organization: "Good to have these kind of activities in our village".
As the question was put forward to the residents of PL just after the implementation of the project their opinion can be more positive as it is now, since the water supply appeared not to work.

repairs. This must be made clear before problems arise. It appears from the questionnaire that the people realize that they have to finance small repairs themselves, but they expect expensive repairs to be paid for by someone else. Who?

6.6 Results of the project.

6.6.1 Introduction.

In SM and GT the results of the project surpass the expectations and objectives. From the technical point of view the water supply functions well, the inhabitants are very satisfied and make good use of the water from the PSWS (see tabel 5). A base of cooperation between them has been laid from which it is easily possible to implement other improvements, with which the inhabitants have already started.

6.6.2 Technical results and the use of the water.

In GT and SM four standposts have been implemented. This is enough to serve the whole community. In SM all the taps (two at each standpost) are connected with a bamboo pipe. The water is led to the fishpond, so there are now eight water points. The standpost is not used at all because it is not necessary to open and to close the taps. This is of course very convenient but it is only possible because there is an abundance of water. It is to be hoped that will stay like this in the future. If the water amount decreases it will be difficult to change the behaviour of the inhabitants and to teach them to close the taps again after use.
They all go to the bamboo platform. The cement platform around the standpost is not used at all. Taking this into account it would not have been necessary to build this platform at all. A distribution point only would have been enough.

In GT and SM the water supply functions well. Until now, real technical problems have not occured.
The supplied water is enough for all the inhabitants. In SM it provides at least: in the dry season 2 lt/sec.
in the wet season 8 lt/sec.
In GT the water supply provides at least:
in the dry season 1,8 lt/sec.
in the wet season 2,8 lt/sec.

(source: Technician IHS, June 1987).

In these villages the amount of supplied water is enough for all the inhabitants to bathe, to wash and to drink. In GT the inhabitants have built storage tanks so that there is also enough water in the peak hours. In SM the taps are open the whole day and most of the year a good spout of water comes out. During the dry season (about 3 months a year) the situation is different. The exact amount of water supplied might be enough for the whole community, but as the water runs straight into the fishponds,

name of the village - (X Axis)

active again in next project? - (Y Axis)

Number / Row % / Column % / Total %	playan gan 0	g.tong goh 1	sukamu lia 2	Row Totals
yes 1	17	24	22	63
	27.0	38.1	34.9	94.0
	81.0	100.0	100.0	
	25.4	35.8	32.8	
no 2	2	0	0	2
	100.0	0.0	0.0	3.0
	9.5	0.0	0.0	
	3.0	0.0	0.0	
do not know yet 3	2	0	0	2
	100.0	0.0	0.0	3.0
	9.5	0.0	0.0	
	3.0	0.0	0.0	
Column Totals	21	24	22	67
	31.3	35.8	32.8	100.0

Chi square	= 9.31	Valid cases	= 67
Degrees of freedom	= 4	Missing cases	= 4
Probability of chance	= 0.054	Response rate	= 94.4 %
Cramer's V	= 0.264		
Contingency coeff.	= 0.349		

Tabel 6. Active in next projects again?

The answer on question no. 33: "If there would be a project organized like this one again, would you participate again?"
It is obvious that especially the inhabitants of SM and GT all are prepared to participate again.
In PL the situation is different. There were 4 respondents not positive in their answer. As this question was put to them just after the implementation this number may be different now the water supply appears not to work.

used and unused, much is lost, with as a consequence that there is not enough water at the moments of demand. A way to store the water should be found.

It has already become clear a that the results of the project in PL are poor. In PL the results are not so positive. The water supply still does not function well; there is still a shortage of water and the inhabitants complain and feel disappointed. The cadre group is fed up with the project; in spite of all their activities there are still no good results. There is a lack of communication between the cadre and the cadre and inhabitants of the PSWS blocks. Their relationship is illustrated by the following discussion with the RT-head of the PSWS-RT. The interviewer had asked him if there were inhabitants who had already paid their monthly contribution for the water. "Yes, some of them have already paid, but far not all of them. The people first want to have the water. As long as the water supply does not work well, they will not pay". The interviewer understood. " To whom do you give the contribution that you collect from the inhabitants? Do you hand it over to the cadre?". The head of the RT reacted very indignantly: "Ahhh, of course not, then it will disappear. No, I will take care of it myself".
Needless to mention that this is not a good base for cooperation in maintenance or implementation of new improvements (see tabel 6). Before anything else is tried to improve the physical situation in this block, a critical review of the organization of the cadre and the community has to be made.

A water system should be reliable, one cannot expect the inhabitants not to drink or wash for several days. It is no good either if they are forced to make use of former/other resources, even if this is only temporary. The water quality of those resources is probably bad, so all the health advantages, obtained by a good water supply, will disappear.
In GT the reliability forms no problem until now. In SM there is enough water supplied to foresee the inhabitants the whole year through. It is up to them to find a solution for the poorer months of the year.
In PL there is only water if there is wind which is only for two months a year from the right direction and with the right force. Needless to mention that reliability in this system is difficult to find.

Except for some houses in GT all houses in GT and SM are within a service radius of 100m., most of them really near. The houses which are further away in GT are those built uphill, so the water can not get there by itself (gravity system).
In PL the two standposts are not enough to cover the whole RT's. For the people living on the fringe the other sources are nearer. Perhaps the location of the standpost is not appropriate. In one of the RTs it is located on the fringe near the river but far from the inhabitants living on the other side of the RT.

The population growth rate in GT and SM is much smaller then the

project criteria mention (see appendix 2) so in future the amount of water will be enough. This in contrary to PL were the birth rate is higher. There the water problems will only worsen.

According to the technician the quality of the water is good. The quality should be good enough to drink it in small quantities without boiling it. Observations show that people sometimes still drink the water straight from the tap, while they are bathing or brushing their teeth. Most of the inhabitants brush their teeth with unboiled water. It is inevitable that they drink it when brushing. If the quality of the water is too bad to do this, it should be improved, or the inhabitants should be better informed and change their habits.
In most cases the water is carried home and stored in closed storage. Most of the women or children carry the water home in a gentong. Sometimes a bucket is used. In the house it is stored in a gentong. This water is used for drinking, cooking, etc.. In SM and PL all the women cook the water before drinking it. The water is fetched from the standposts several times a day, so it not stored in the house for a long time.
For washing and bathing the people go to the washing places.

It would be useful to know if the inhabitants prefer the water from the PSWS above other resources. Because of the lack of other water resources this question is out of context.

Since the water supply has been implemented most of the households say to use more water than before for washing, bathing and cleaning.

6.6.3 Health.

Exact data about the health-improvements in the blocks since the project were not available, only of the whole area (see appendix 7).
The inhabitants of GT were positive that their health had improved since the project. In SM they could not say anything about this (because the project has not yet worked long enough). From data from the Puskesmas it appears that many diseases are water-related in the area so an improvement may be expected now that there is a good water supply.

6.6.4 Other improvements.

A good water supply is an excellent start from which the inhabitants can easily make new improvements. In GT and SM the inhabitants have dug a lot of fishponds since the project. The fishponds are an improvement in the nutritional (fish-consumption) , the economical (sale of the fish), and the sanitary (the use of the fishpond as a toilet instead of the field) circumstances of the households.
They have also planted a lot of extra clove trees, which require a lot of water. The income from a big clove tree can be very high.
In SM the living environment has improved a lot since the

Tabel 7. Improvement with the highest priority in future.

name of the village - (X Axis)

first improvement in the future - (Y Axis)

	Number / Row % / Column % / Total %	playan gan 0	g.tong goh 1	sukamu lia 2	Row Totals
wash/bath place	1	15 78.9 71.4 23.8	1 5.3 4.3 1.6	3 15.8 15.8 4.8	19 30.2
public toilet	2	1 3.1 4.8 1.6	22 68.8 95.7 34.9	9 28.1 47.4 14.3	32 50.8
garbage syst.	3	2 100.0 9.5 3.2	0 0.0 0.0 0.0	0 0.0 0.0 0.0	2 3.2
drainage	4	0 0.0 0.0 0.0	0 0.0 0.0 0.0	0 0.0 0.0 0.0	0 0.0
extension tap	5	3 100.0 14.3 4.8	0 0.0 0.0 0.0	0 0.0 0.0 0.0	3 4.8
road to village	6	0 0.0 0.0 0.0	0 0.0 0.0 0.0	5 100.0 26.3 7.9	5 7.9
other	7	0 0.0 0.0 0.0	0 0.0 0.0 0.0	1 100.0 5.3 1.6	1 1.6
	71	0 0.0 0.0 0.0	0 0.0 0.0 0.0	1 100.0 5.3 1.6	1 1.6
Column Totals		21 33.3	23 36.5	19 30.2	63 100.0

Chi square	= 62.36	Valid cases	= 63
Degrees of freedom	= 12	Missing cases	= 8
Probability of chance	= 0.000	Response rate	= 88.7 %
Cramer's V	= 0.704		
Contingency coeff.	= 0.705		

Note: 1 row not included in Chi square calculations

project. The inhabitants have built bamboo platforms for washing, bathing and toiletting. In future they hope to build a similar brick washing place to the one in GT and the other village which was shown to them during the training. In GT several house connections and private toilets have also been built.
In all the villages the cadre has made plans to establish more improvements in the future, if there is money.

- Once there has been a project in a village the inhabitants become passive and wait for money from outside to start new improvements.
- To this very bad consequence of the project much more attention must be paid. The inhabitants must realize that the project will take place only once, that their government or the other organizations are not a sort of Father Christmas who keep on giving money and assistance.

Before the project in GT, the inhabitants had already started to collect money to improve their water supply. Since the project they passively wait for the next fund for improvements. They do not realize that they are able to bring the money together themselves, just by saving. Now they complain that it takes too long until the amount of money, saved from their monthly contribution of 100 RP, is enough to implement, for axample, public toilets.

From the questionnaire (tabel 7) it appears that the first improvement the inhabitants of GT would like to have is public toilets. The inhabitants of SM long for good washing/bathing and toilet facilities whilst the priority of the inhabitants of PL is a good washing facility (supposed a good functioning water supply).

Lack of money is the main obstacle for making new improvements. The ideas, the knowledge and the enthusiasm are there. It is necessary to find a way to get the money. If it cannot come from outside, a method inside the village must be found. An appropriate money-collecting-system has to be developed.

A project like this has a very positive influence on the social contacts between the inhabitants. Because they have worked together for such a long time, a good base for further cooperation and social contacts has been laid.

In the model of Community Self Survey there is a step from implementation to 1. the same problem again or to 2. okee, the problem is solved. 1. One must realize that this is a very difficult and frustrating step for the inhabitants. All their efforts have been in vain, and it will be very difficult to stimulate them to start again. This is clearly shown in PL: the inhabitants complain and are not satisfied with the project, the cadre cannot get on well together and the contact between the cadre and the inhabitants is not good (not only caused by the bad results of the project, but certainly it would have been better if the water supply had worked well) The trust of the inhabitants

in the cadre and the intervening organizations has diminished sharply too.

2. If the project worked out well, so following the step implementation to okee in the Community Self Survey model, and the inhabitants are satisfied, they will be eager to participate again.

7. PARTICIPATION IN THEORY.

7.1 Introduction.

As appeared in former chapters, the words "Community Participation" cover a whole range of dissimilarities in a participation process: the differences in functioning of the cadre, in the role of the village head, the cooperation and involvement of the community, satisfaction with the results, plans for new improvements, etc.. Can all these different processes be included in the words "Community Participation"? What do these words exactly mean when covering such a variety of processes? Reason enough to look at the phenomena community participation in more detail. Chapter 5 and 6 discussed how participation can develop in practice. In this chapter community participation will be regarded from a theoretical point of view. First, the meaning of the term `Community Participation'will be discussed in more detail. Later, attention will be paid to the factors that influence the kind of community participation that can develop. In the former chapters many of these aspects have already been mentioned when referring to the practical situation in the villages. Based upon these aspects, here an attempt is made to formulate the conditions which have to be met before community participation in its ideal form can take place. It can be used as a kind of checklist when starting a new process of community participation in another situation. By using this list, the strong and the weak points of the village in question can become clear and a decision can be made whether or not to select this village for the project; clarify what kind of participation can be expected, which aspects need extra attention, etc.

7.2 Levels of Community Participation.

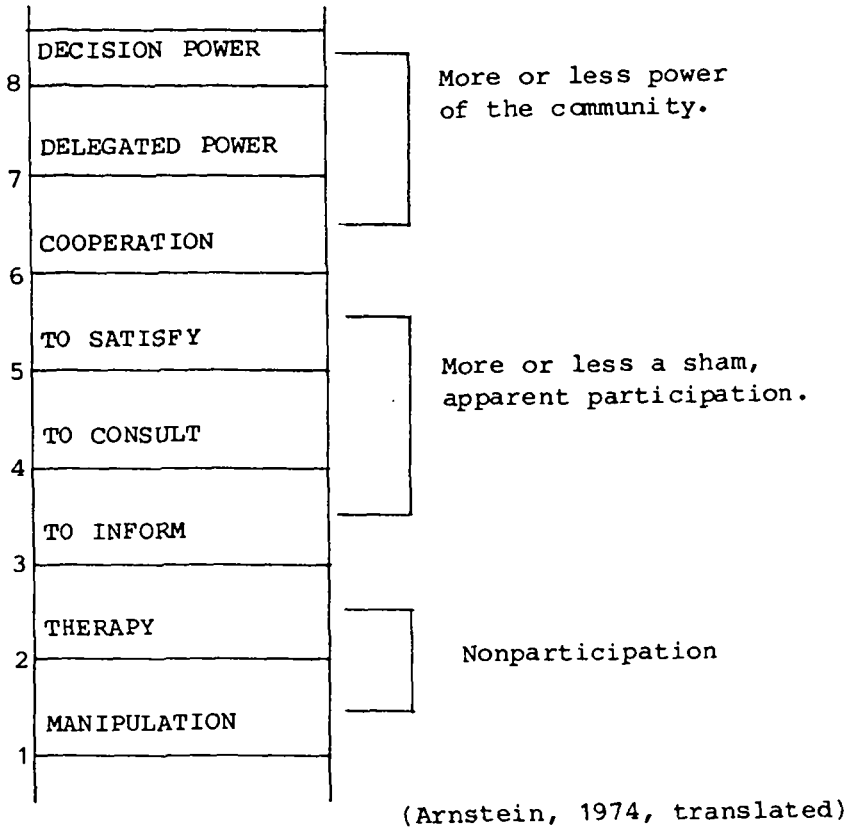
In the introduction of this report community participation is defined as "The power in decision making as well as the physical activities of the inhabitants during the planning, the implementation and the maintenance of the project." In this definition are two categories on which communtiy participation can be built namely: 1. the power of the inhabitants in the decision making.

and 2. their physical activities during planning, etc..

Distinction can be made between different levels of involvement for each category.

ad.1: Power of the inhabitants in the decision making can vary from no power at all (or even manipulation) to full power. Arnstein (1974) described this in his "steps of participation". (Note: In his theory these steps cover the entire participation. Here they only form part of the participation since the other part is formed by the physical activities. Arnstein only concerns the western situation where physical activities of the inhabitants play a lesser role).

Steps of participation: Power in the decision making.



(Arnstein, 1974, translated)

The first steps are (1) manipulation and (2) therapy. These steps reflect levels of "non-participation", which is considered a replacement of the real participation by some people. The purpose of this is not to give the community the opportunity to be involved in the planning or the programme making. The real purpose is to give the authorities the opportunity to "educate" or "use" the inhabitants. Steps 3 and 4 area kind of "sop" (zoethoudertje) which allows the community to listen and to voice its opinion, (3) to inform and (4) to consult. If the authorities only allow these levels of participation, the community can hear and be heard. But under these circumstances it does not have any power to force the authorities to take its wishes into account. Step (5), to satisfy, is the highest level of apparent participation. Following the basic rules the community is allowed to give their advice while the authorities still have power to make the final decisions. At the higher stages the community gets more power in decision making. The community can start a cooperation to negotiate with the authorities. In the highest steps (7), delegated power, and (8), decision power, the community has the majority in voice, or the entire ruling power in decisions which have to be taken.
All these steps of course are a simplification, but it helps to clarify one important fact, namely that several graduations of power in the decision making during a process of community participation do exist.

ad.2 Physical activities of the inhabitants in the planning, implementation and maintenance can vary from everything done by intervening organizations, to entire implementation by the inhabitants. It would be interesting to make a division between the degrees of involvement in these activities. A method for doing this (developed by a project manager of Care) is to make an economical estimate of the physical such as manpower, materials, consumptions, land, etc.. This can be related to the extent of total input in the project or it can be compared to the input in other places. This method has several disadvantages, the main one is that it is still difficult to give an economical valuation. Since no other ways of doing this have been developed it is mentioned here.

Theoritically spoken it would be possible to place each village on a certain level of participation when regarding these two categories. For example when comparing the PSWS-villages:

Power in decision making.

> In GT the inhabitants had already decided that the best way of improving the water supply was the construction of a springcapping, with whch they had already started before the project. In accordance with their own ideas this only had to be continued for the project. In PL such a high level of power in decision making in the planning was not achieved. As the residents of PL were unable to make a plan for the construction of the water supply, they did not have much say in it either. As far as this aspect is concerned they have a lower place on the ladder.
>
> In SM the villagehead said to have discussed the formation of the cadre with all the men in the block, in order to give everyone the chance to give his opinion. This can refer to step 7, majority in voice. The village head of GT appointed the cadre members himself, without discussion. Step 3, informing, might suit this situation.

Physical activities in the implementation.

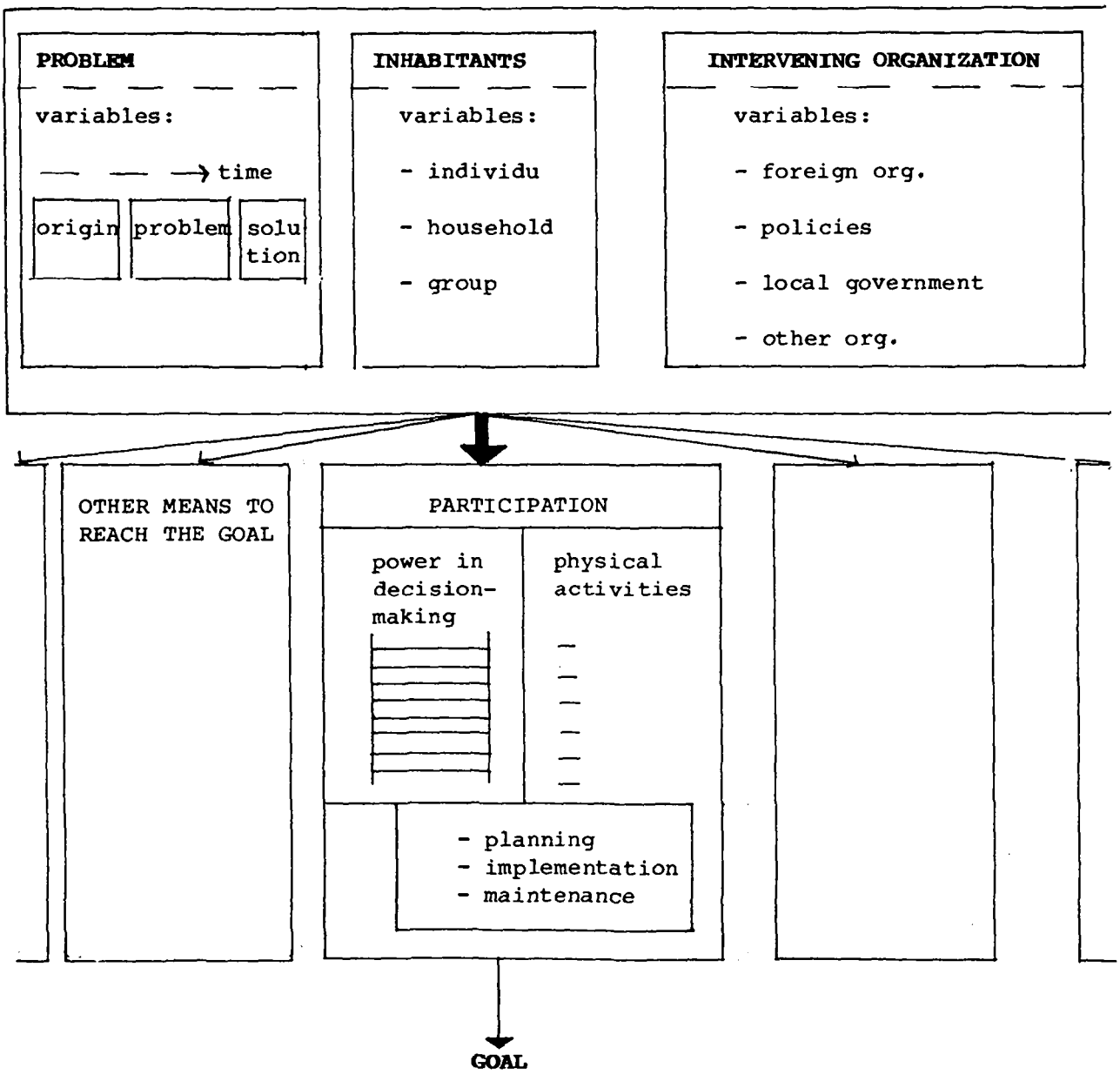
> In GT and SM the community built the entire water supply themselves. Apart from a small sum of money in order to pay the skilled workmen and some of the materials which had to be bought the inhabitants supplied all the input such as manpower, sand, grint, stones, wood, food and drinks, land,etc.. (see appendix 12 for the economical calculation). As far as this aspect is concerned a high level of involvement has been reached.

A good division in levels is not easy to make. Each participation process contains so many different parts. Each part can have its own level of involvement. In GT, for example, the village head made a lot of decisions on his own which can mean a low stage in the power of decision making for the inhabitants. On the other side they discussed and planned a lot as well and were also very active in the development, which can mean a high level of involvement.

Regarding the wide variation in different parts and levels of participation, it is better to limit the discussion to a general view on the participation process displayed. With the help of the division in levels of involvement a general idea of the plane participation in the village can be formed. The intention of the project was to reach a high level of community participation (although not formulated as literally as such, but abstracted from the goals of the project). The power in decision making as well as the physical activities were important. One realized that the inhabitants cannot do everything on their own (see par 3.2) and support from the local government was established. In all cases the local government was quite cooperative, they were willling to support the project and did not deprive the inhabitants of their power and involvement. In combination with the activities of the cadre, ccodination of the technician of the IHS and the activities of the community, acertain level of bottom-up planning (see par 3.2) was achieved. There are some big differences between the villages, in which it is obvious that the level of participation in GT and SM was much higher than in PL, but generally spoken in each situation it grew high above the lower levels of power in decision making and physical activities. The highest level of participation was not achieved either. This would mean that all activities of the intervening organization would be redundant and the inhabitants could have done everything themselves. It can be doubted if this level will ever be reached during a project and if that is really necessary. Community participation is not a goal on its own, it is just an important means of making improvements for the inhabitants. Improvements which are not only physical but also social, affective, organizational, etc..

A high level of community participation sounds good and it is also a very positive achievement: the higher the level of participation the better the community can help itself. However, a high level of participation cannot be realized in each situation. There will always be villages in which the circumstances are not favourable enough, and where only a low level of participation is possible. The circumstances that influence the level of participation are mentioned in the former chapters; they will be remodelled to the conditions that are necessary to fulfil before the highest level of participation can be achieved. The extent to which these conditions are met will determine the eventual level of participation. These conditions are put into a framework: `The model of conditions for participation'. In the model the circumstances which influence the participation process are divided in: 1. the problem
2. the inhabitants

Model of Conditions for Participation.

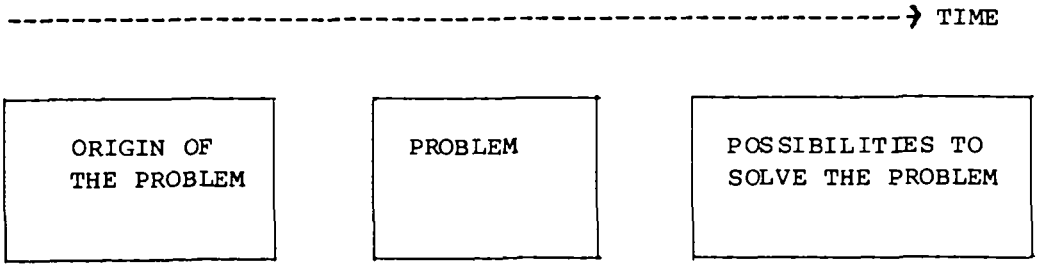


3. the intervening organizations.

Each part contains several elements which affects the participation process of the inhabitants. This can be different in each sitation for it strongly depends on the other circumstances as well but it is good to take each aspect into account.
In each element conditions can be formulated. The way in which the conditions are met will determine the level of participation which will be displayed during the project. By formulating these conditions it will also become clear why the inhabitants did not solve their problems beforehand by themselves. The missing conditions can be regarded as a cause for this.

7.3 The Problem.

"What is a problem? A problem is a situation or condition which causes difficulties. It may occur in an individual, a family or in a community. Something must be done to solve a problem or make it less serious." (WHO,PHW; 1980)
It will depend heavily on the kind of problem if it is possible to solve it by means of participation. Problems exist that cannot be solved by community participation. This has to be examined thouroughly.
The problem can be divided into the origin of the problem; the development of the problem (so the problem itself) and the possibilities to solve the problem.



The problem.

It must be clear to the inhabitants what the problem is. If not, they will never take the initiative to solve it. The inhabitants must also experience it as a problem and the problem must be urgent. If there are other problems more important then a bad water supply, they will first want to solve them.

The origin of the problem

Before the inhabitants are able to solve the problem, the origin must be made clear to them. By what is the problem caused? Not enough taps? A bad transportation system? A current system which does not supply enough water? A bad distribution system? etc..
The inhabitants must know the relationship between the cause of the problem and the problem itself.

The solution of the problem.

The problem can be solved by: 1. fighting the origin; for example in SM the problem was caused by the bad transportation system, the springcapping was not capped so the water became contaminated and there were not enough distribution points. By improving these aspects the problem could be solved (see par. 4.3.2 and interim report).

2. finding another solution because the origin can not be fought. In PL one of the problems was the salt water from the springs, caused by their location near the sea. The inhabitants were not able to solve this problem, so another solution had to be found, in this case the deep well.

It must be clear how the problem can be solved. In GT this was clear, knowledge had already been obtained from other projects, so they could start on an improvement even without help from other organizations.

The solution of the problem must be simple. If not, it will not be possible to have it carried out by the inhabitants, as is clearly demonstrated in PL with the windmill which reaches far above their own knowledge and capacities.

It must be possible to implement the solution in a short time to give fast results to the efforts made. In SM and GT the implementation was finished in a month's time, which appeared to be fast enough to keep the inhabitants interested and enthusiastic. The lack of results in PL very disappointing.

The solution of the problem must start with a tangible improvement with clear economical and/or physical benefits for the inhabitants. It is difficult to involve them actively in a programme which purely focusses on affective goals such as change of behaviour, increase of awareness and knowledge. Their benefits will not be clear enough. If the solution of a problem lies within an affective change, such as is the case in many subjects (for example health-problems) it is better to start with a constructive improvement (such as a water supply). It is easier to introduce and establish affective changes, deduced from the activities and organization around this subject.

The solution must be carried out with the tools, the skills, the materials and experience of the inhabitants themselves In SM and GT nearly the entire project could be implemented with their own skills and materials, except for advice from the technician and some bought elements.

The inhabitants must be able to collect the means needed for the solution. One of these means is money, others are: materials, working power, knowledge, etc. There must be a mechanism to organize this all.

The solution must certainly be effective. It is terribly frustrating for the inhabitants to put their trust and energy into something which does not work. This is clearly illustrated in Playangan.

The results of the solution must clearly benefit the inhabitants (and perhaps only themselves). Only then can they feel responsible for it.

7.4 The community.

The community can be divided into three levels of integration:

1. the individual
2. the household
3. the neighbourhood

At each level the influence on the participation will be discussed.

7.4.1 The individual.

- Sex : A big difference in tasks between men and women in as well as the decision making, physical work, etc. will influence their input in the participation. The way the participation is organized must regard these differences and make it possible for both to participate.
- Education : There is a strong relationship between education and the motivation to improve the water supply, especially as far as the health aspects are concerned. Paulo Freire (1973) regards education as the main condition to get power in decision making, etc..
- Age : Very old people, or young children can not be expected to initiate or contribute a lot (except if it is an older person with an important position in the village). The people must be young enough to be active for the coming years and old enough to be involved in the participation.
- Available time : This also depends strongly on their working situation. People must have time to spend on participation. The available time will depend on the time of the day, the month or the year and also on their socio-economical situation.
- Health : The inhabitants must have enough energy to spend on participation. Ill people cannot be expected to contribute.
- Position in the household : It will depend on the position of a person in the household how he/she will participate. For

example the head of the household will play different role to that of the other members. This must be regarded in the organization of the participation.

7.4.2 The household.

- Number of children : A lot of children can be a sign of a poor living situation and little knowledge of family planning and health problems. (see education)
- Number of children to school. : Is a a sign of development in the village.
- Income level : If the income is too low, the inhabitants will not be able to spend time and other resources on participation. They will need them too much to obtain their daily subsistance.
- Seasonality : During seasons that are important for their income the inhabitants will have no time to spend on participation. On the other hand, if it is a bad season as far as income is concerned they will have time to spend on the project. For example, in GT a lot of men came back to the village during the implementation because it was a bad season in town for earning money.
- Social contacts : The better the contacts with the other households, the easier it will be to cooperate and work together.
- Other resources : Beside time and working power the availability the materials needed for the implementation influences the involvement.
- Position in the neighbourhood : If the household has an important position in the neighbourhood (the village head, a rich household, etc..), its role will be different. The organization of the participation must take this into account.

7.4.3 The community-ties.

To make participation of the inhabitants possible they must form a tight and homogeneous group. Elements which influence this are:

Community size: The smaller the community, the better the social contacts will be and the easier it will be to cooperate.
Socio-economical dependency: If the inhabitants depend heavily on each other, they will also be used to working together.
Geographical location: The more isolated the geographical location the tighter the community.
Gotong- royong: If the gotong-royong is strong, it will also be easy to organize the inhabitants to work for the project.
Former experiences: If former experiences with participation are positive, the people will be more eager to participate again.

Religion: If all the inhabitants support the same religion they will form a closer community than if there are different religions.
Time living in the village: The time someone has already lived in the village will influence the relationship with the other inhabitants, the knowledge of the place, etc..

Before a community will participate it must be motivated to do so. As long as the inhabitants are not motivated, nothing will happen.

The community must be organized in some way, with the right persons at the right places.
Some strong and active persons (for example the village head) can make a whole lot of difference.

The community must be convinced of the fact that they are the ones who can solve the problem. If they do not know that they can do it themselves, they will keep on waiting until they get help from outside. During the project the CSS was formes to achieve this awareness.

7.5 Intervening organizations.

Intervening organizations are regarded as those organizations or institutions outside the village, which are involved in, or influence participation, for example; the local authorities, the government, foreign organizations, etc..
Condition for participation, concerning these parties is that the involved parties must :
- have knowledge of the problem
- be convinced of the need to solve the problem.
- regard participation as an appropriate way to solve the problem (not as a tool because it might be easier for them!).
- trust the capacities and knowledge of the inhabitants.
- give the power of decision making into the hands of the inhabitants.
- know what to do to support the participation process.
- be willing and able to execute their task in this.
- have good contacts with the community.

Before the project was executed these conditions were not yet met By the manner of organization of the project (formation of the trainers, trainings, etc..) these gaps were more or less filled.

Some discrepancies which influence these conditions:
- political situation.
- economical situation.
- historical factors (for example former experiences with participation).
- organizationed structure of the authorities (which in Indonesia is very strict, hierarchic and inflexible).
- contacts with the community.
- personal contacts and relationships.
- level of development of the area.

7.6 Differences in participation.

How was it possible that the participation process in each village developed in a different way?
The reason for this can be found in the different way the conditions for participation in the villages were met. Each village has its own characteristics and discrepancies. It will not be possible to fulfill all the conditions discussed here and also one condition can be more imporant than the other. A very important discrepancy is the personal differences between all the people who are involved in the process. Participation is a process of persons with all their own strength, weaknesses, ideas, qualities, will, etc.. Attempts were made to give everyone the opportunity of displaying their own proposals, ideas etc.. during the participation process.How this develops depends strongly on the personalities that are involved. The right man/woman at the right place is very important for the whole participation process.

8.CONCLUSIONS.

Conclusions can drawn from the method of research, community participation during the PSWS-project and participation in general.

Methodes of research.

Under the given circumstances the research could only be done as an evaluation study. Taking the obtained information into account, this was a reasonable method , but it also had several disadvantages. It is unfortunate that much depended on mutual information about processes which had already occured; many events are not mentioned, forgotten, not "objectively" reported, etc.. In many aspects it would have been more appropriate to do a research during the course of the project, to do ones own observations and interpretations of what was happening.

The questionnaire survey has been valuable especially as a mean to obtain qualitive information, less for the statisitical data and validity. Generally spoken it must be doubted if the use of this kind of questionnaire in these situations (poor rural villages with a low education level of the inhabitants) can give any valuable statistical information. Correct answers to questions about income, savings, expenses, quantity of used water are very difficult to achieve. When asking about their health situation there is a great chance that the respondent has far different ideas about what is meant by health and diseases than the interviewer. Questions about influence, involvement and decision making are abstract and difficult to operationalize. When asking questions on these kind of subjects there can be a hiatus in understanding between the interviewer and respondent, which remains unnoticed as the respondent will always answer something in order not to be impolite. Apart from that it is difficult to measure the so-called "interviewer effect". A white woman with white papers and difficult questions is not a daily happening for the respondents. This will also affect the collected data.

It is regrettable that the stages of the project differed so much in these villages. In GT the water supply already worked for one and a half years, in SM for a half year and in PL it has just been implemented and did not work well yet. These differences influenced the collected data too.

PSWS-project.

Before the implementation of the standposts could commence a great number of workshops and trainings were held. Their fuction was very important for the development of the project, but it is worth considering if this could be achieved in a more efficient and effective way. Several persons on which the information during the trainings was focussed were not interested, or the

manner of education was not suitable. They will never use the information given to them.
In some cases it missed its goal. The project in SM and GT had already been implemented before the cadre was formed: the trainers had not yet completed the formal procedure of information and training.
A good way to improve this has to be found. Some suggestions are already given in the text.

During a participation process it is necessary that cadre is chosen to organize and stimulate the process. In each village these plans were worked out in a different way. There were great differences in the formation and functioning of the cadre. This need not be a negative: In some aspects the practical alternative worked out very well, in others not so well. To make the project plans agree better wth the practical situation it is important to reconcile the process of cadre formation, selection, functioning, cooperation, etc..

A good selection of the village is very important. One criteria for this selection if the physical circumstances as for as the water supply is concerned. Another criteria is the socio-economical situation in the village. This especially important when the project aims to involve the inhabitants in a participation process. It should be included in the exploratory survey and the selection. For example: The water supply in a village is poor and badly needs to be improved. This can be a criteria for selecting this village for the project. However, if the socio-economical situation in the village is not very promising for the development of community participation two major factors must be considered:
1. Selection of this village is necessary in regard to the bad physical conditions and severe need of a water supply but as a high level of community participation can not be realized more input from outside forces (such as local government or project team) will be necessary. One can start with a low level of community particpation and try to upgrade it in the course of the project.
2. Taking the fact that the project aims to achieve a high level of community participation into consideration select another village, with better socio-economical circumstances, even if the need for a good water supply is not so severe as in the former village.
When taking this into account it must be clear to what level of participation is aimed. One may not expect a high level of participation that is unattainable. If the capacities cannot reach the expectations the project cannot develop as whished with as a consequence a lot of disappointments and frustration.

A project can have an initiating function for its neighbourhood. People living in the environment will hear about it, think about it and become aware of their own situation and the possibilities of improvement. These stimulating rays of project activities can have an important function for the start of community activities in the neighbourhood.

The construction of a good water supply is also a good starting point for the implemtation of other improvements. Community participation in combination with the implementation of a good water supply has a kind of snowball effect: It started with a process of particpation which resulted in a good water supply. This encouraged community participation started again by implementing new facilities for washing, bathing and toiletting. These facilities can stimulate the inhabitants to pay more attention to health aspects with as a consequence activities in this field, etc..
In order to start the snowball it is important that the first results work well and can soon be achieved. Otherwise the newly displayed activities will melt away.

A participation process is influenced by many, many different aspects. In this report an attempt is made to have a little insight into these aspects. It is difficult to determine exactly which factore influence community participation and in how far. It is doubtful if this ever will be possible but when comparing the theree villages two points became very clear:
1. The strength of the gotong-royong and the activities of the village head in this.
2. The technology chosen for the construction.
In the village where both the gotong-royong was weak and the chosen technology did not work, the project was a disaster.

As mentioned in the last point one very important aspect for a participation process with good results is the right technology. The first condition is that it will be effective! It seems trivial to mention this but in regard to the implementation of the windmill it is not excessive to stress this.
Secondly, involvement of the inhabitants means that the technology must be simple enough for them to maintain it. Technical as well as financial and organizational aspects must also be taken into account.

Why did the inahabitants not start the improvements beforehand? A difficult question to answer. They replied: "the lack of money". However, money gifts are not the solution either. The answer can be found in the lack of conditions necessary to start a participation process, as was discussed in this report. For more information about this, more research should be done.

During the participation process the development of an appropriate money-collecting-system in the village is indispensable. Only then can an improvement be lasting and new improvements follow. The establishment of a good system has proven difficult until now. A system has to be developed that also deals with the social and managable aspects.

It is unfortunate that it was not possible to discover exactly how the processes of decision making between the cadre, the cadre and the inhabitants, and the inhabitants developed. It can be doubted if the evaluation study if the correct way to get insight

into these processes. As they play a very important role in the participation more research is necesary.

The role of the women is a special point in the discussions, the decision making and the involvement in the project. Apart from some suggestions it was not possible to form an opinion about this. The women are a very important group as far as the water supply is concerned; they are the ones who fetch the water for consumption, who take care of the health of the family, the education of the children, etc..
In order to be able to involve them more obvious in the project it is necessary to have more knowledge about their role on discussions and decision making. More research on this must be done.

In spite of all criticism given, the results of the PSWS-project can be regared as positive, especially when compared to ther water supply projects. The purpose of the project is unique and in general worked out well. It fits well into the national and political development of Indonesia and involvement of the local governemt and community is acieved to a great extent. In two of the three cases the results are very positive. Involvement of the inhabitants not only concerned the execution of the work but also the planning and decision making. An attempt was also made to include other disciplines like health education, sanitation, training, organization, etc..
A very positive point is that in future the inhabitants can be expected to make other improvements as well.
Shortly summarized: Allthough there are a lot of points which can still be improved a good start has been made.

Community participation in theory.

There are many variables affecting the participation process. In this report they were connected to conditions, necessary to achieve the most ideal level of participation. This is just a tiny reflection of what happens in reality and there is a whole world of questions still left to be answered; many variables and conditions are not yet known nor mentioned; in how far do they affect the participation process? how can the level of participation be estimated? etc..
Shortly summarized: there is still a lot of work to be done.

Whilst so many stages of community paticipation exist, it will always remain difficult to define. In this report attention has been paid to the aspects "decision making" and "activities in executing the works". This has been divided into different levels in order to clarify the wide range of different meanings of "community participation". It is hoped that this clarification can be of assistance in achieving a common interpretation of "community participation" and thus facilitate the discussion and practice of it.

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WORDS TO BE EXPLAINED.

Arizan : A kind of system to save money. Each week/month friends or family or colleages etc. come together and every person gives a certain amount of money. The entire sum is given to one person who can who can spend it on a larger investment.

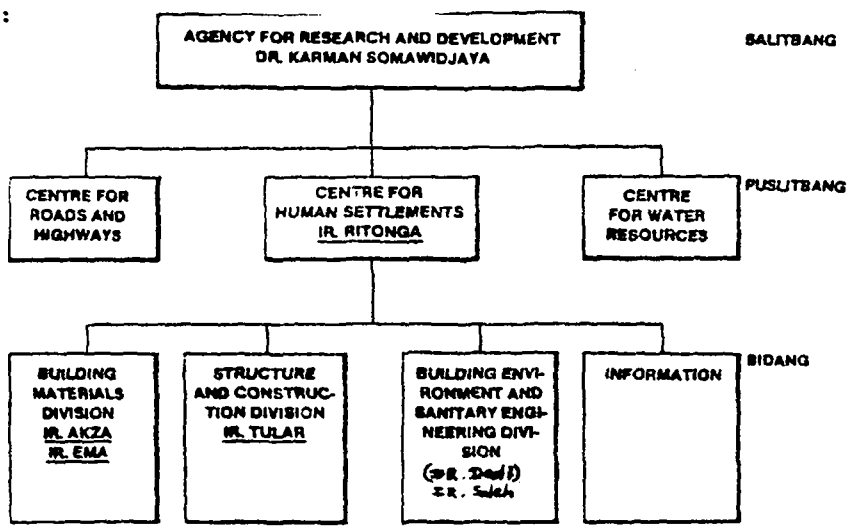
Bahasa Indonesia : The Indonesian national language.

CARE : A Canadian development organization.

Gotong Royong : Mutual Assistance. One of the most important traits of the people of Indonesia is Gotong Royong or Mutual Assistance as it is practised in the Indonesian social life. From time immemorial the harvesting of the rice in the villages is done in gotong-royong fashion by all members of a village community, in which they assist each other. This also applies to the planting of rice, the building of houses, the repair and construction of irrigation canals etc.; likewise to weddings and other festivities. This system of social cooperation among village communities has been handed down for centuries from ancestors to prosterity as a cultural inheritance, as an "Adat" or tradition. (Handbook 1984).

IHS : Institute of Housing Studies, Bandung, West Java.
Indonesian name: Puslitbang Pemukiman.
The IHS is a research institute under the Ministry of Public Works, whose task and function concerns Housing, Building, Planning, Water Supply, Sanitation and Urban and Regional Development.

Scheme:



INPRES : Instruction of the President to establish a programme for improvement of the living environment.

IPB : Agricultural University Bogor (West Java).

IRC : International Reference Center for Community Water Supply and Sanitation. The Hague, Holland.

ITB : Technical Institute Bandung (West Java).

LKMD : Lembaga Ketahanan Masyarahkat Desa.
Village Resilience Council.
Established in 1980 by the government as an official organization which has to be present in each village. Its activitites are directed to the improvement and development of the village. It forms the base of communication between the government and the community, it assists the villagehead in planning the development of the village and working out the plans, with the help of the inhabitants (organizing gotong royong).

Organization of the LKMD:
1. General chairman : villagehead.
2. Chairman 1, someone of the community.
3. Chairman 2, chairlady of the PKK, wife of villagehead
4. Secretary.
5. Treasurer.
6. Sections: a. religion.
b. social culture and law.
c. public security.
d. education.
e. living environment.
f. building up and cooperation.
g. health and family planning.
h. youth, sports and creativity.
i. social welfare.
j. family welfare (PKK).

Each section has a chairman.
Section e. and f. were most involved in the development of the PSWS project in the village.

LMD : Lembaga Musyawarah Desa.
An institution for discussion.

Mandibak : An open reservoir to keep for water for bathing.
From this reservoir the Indonesian people scoop the water in a small "handbucket" and pour it over themselves.

Pancuran : A bamboo platform with a fresh water supply above a river or a fishpond, used as a toilet.

PDAM : Provincial Service for Drinking Water.

PKK : The " Family Welfare Guidance Institution", a village community institution. It is a component for village women to improve family life by enhancing their role in the family and as a member of the village community.

PSWS : Public Standpost Water Supply.

PUSKESMAS : Pusat Kesehatan Masyarahkat, local health centre.

SD : Sekolah Dasar, Primary school.

SMP : Sekolah Menengah Pertama, the first 3 years secondary school.

SMA : Sekolah Menengah Akhir, the last 3 years secondary school.

TSM : Tenaga Sosial Masyarahkat, a social village worker. A skilled workman (carpenter, bricklayer, etc.) who lives in the village and is employed by the other inhabitants of the village. He is paid for his work, but he is much cheaper then a skilled workman recruited from outside the village.

Wudu : Washing of the hands, face and feet before prayer.

Administration and management of the PSWS project in Indonesia.

The primary responsible for the provision of water supply and sanitation lies with the provincial governments. In addition three ministeries of the central government are heavily involved in the water supply and sanitation sector:
- Ministry of Public Works (DEP PU) is responsible for the development in urban and semi urban area.
- Ministry of Health (DEPKES) is responsible for the development of rural water supply and sanitation facilities not covered by the urban systems.
- Ministry of Home Affairs (DEP DALAM NEGERI) is responsible for the operation of water supply schemes and drainage and sewage systems as well as promotion of community participation, by virtue of its responsibility over the local governments and the local government enterprises.

All plans which require the use of funds from external resources must be approved by the Ministry of Finance and the National Development Planning Agency (BAPPENAS). The ministry of Finance establishes terms to the existing agencies covering the provisions under which funds have been provided.

The ministry of Public Works is the principal government agency responsible for the implementation of the urban and semi-urban water supply and subsector programmes.

CIPTA KARYA - Directorate General for Human Settlements of the Ministry of Public Works (DEP PU), which is responsible for planning, evaluation, design and supervision of construction of all urban and semi-urban water supply, executes water supply projects through the privincial public works office (Dinas Per Cipta Karya).

Central level organization for the implementation of the PSWS project.
The central level administration of the PSWS project is confined to three ministries, namely the Ministry of Public Works, the Ministry of Health and the Ministry of Home Affairs.
The Ministry of Finance controls funds, while the National Development Planning Agency privides support for overall planning and programming. Since the Ministry of Public Works assumes the major responsiblity, the PSWS project comes within the framework of collaboration between IRC and the Government of Indonesia, which is represented by the Ministry of Public Works. The Ministry of Public Works executes the PSWS project through Cipta Karya which is one of the three Directorates General of the Ministry.

Project management committee (PMC).
A national level project management committee (PMC) consisting of members from the Ministry of Health and the Ministry of Home Affairs has been established to provide support and ensure the coordination of approaches, strategies, objectives and programmes

among ministeries involved, and to provide policy guidelines for planning and implementation of the project. The Director General of Cipta Karya chairs all committee meetings. The project manager is the secretary of the PMC.

Project coordinating institution (PCI).
The Institute of Human Settlements (IHS) at Bandung functions as the Project Coordinating Institution and assumes the responsibility of the project implementation and coordinates various participating institutions involved.

Project manager (PM) and project staff.
A senior member of the IHS functions as PM. He is assisted by three other teams consisting of members from Ministry of Public Works, Ministry of Health and local authorities to give the technical guidance, training, health education and research and development.

Functions of project staff and project manager.
PM provides administrative direction and the technical guidance while another staff member who is attached to the IHS assists staff of the Ministry of Health in health education, community participation and other related activities. The project staff manages all affairs of the project through the local staff with community participation.

Appendix 2.

Criteria and design standards of the PSWS.

- The optimum target is one public standpost is for 40 households (or about 200 people) with a maximum service radius of 100 m. and minimum supply of water of 30 litres/capita/day including non domestic use and losses.

- Connection to the standpost from the main distribution pipe has to be connected through clamp-settle or tee.

- Connection pipe diameter varies according to the consumption.

- The pipe used in this project should be approved by DJCK.

- Watermeter should be used for measuring the flow to public standposts and it should be protected by a concrete and steel wooden box.

- The type of standpost should be decided on by considering factors such as population to be served and the local circumstances. Platforms must be very small to discourage the people taking baths.

- The number of taps installed at one standpost depends on:
  total number of people to be served and peak hour demand
  sceduling pattern of demand
  rate of flow through the tap.

- Storage or cistern tanks should be provided if the flow of the source is not sufficient for direct consumption.

- The height of the water fall should be about 50cm-60cm.

- The taps used should be commonly used type of appropriate diameter.

- Every public standpost should be connected to the drainage system in order to prevent environmental hazards.

- Maximum day factor = 1.2 x average day factor.
- Maximum hour factor= 1.5 x average day factor.

- Design period for civil and pumping works considered as approximately 20 years.

- Population growth rate varies from 2.3% to 2.7% per annum.

[redacted] i[redacted]vill[redacted] [redacted]ato.[redacted]....

Name interviewer..........................

IDENTITY RESPONDENT

1. Name....................................
2. Age.........years
3. How many years do you allready live in the village? ......years.
4. What is your education?
   - O no school
   - O primary school finished/ not finished
   - O secondary school finished/ not finished
   - O others......................................
5. What is your job?
   - O fisherman
   - O agriculturist on own land
   - O agriculture labour
   - O worker in town
   - O trade (pikul, warung, shop, etc.)
   - O carpenter, bricklayer
   - O others..................
6. What is your income per month?
   - O 25.000 RP
   - O 26.000 - 50.000
   - O 51.000 - 75.000
   - O 75.000 - 100.000
   - O 100.000 ....
7. What do you think of the location of the water place?
   - appropriate? O yes
     - O no, why not ....
   - distance? O near
     - O far
8. Did you help chosing the location of the wa terplace?
   - O yes, How?...............................
   - O no, Why not? ....
9. Are you a member of a local organization?
   - O yes O no

which organization?	task
....	....
....	....
....	....

- O other people
- O [redacted]
- O village head
- O others.................

11. How were you involved in the planning of the public standposts?
    - O very active
    - O active
    - O not so active
    - O not active
12. What was your contribution?.........................
13. How were you involved in the implementation of the public standposts?
    - O very active
    - O active
    - O not so active
    - O not active
14. If not active, why not?
    - O did not have time
    - O do not think it is important
    - O ill
    - O family circumstances
    - O other reasons..................
15. If active, what was your contribution?..................
16. How many days did you spend on the implementation?
    - O 0
    - O 1
    - O 2 - 4
    - O 5 - 8
    - O 9 - 15
    - O more.........
17. How are you involved in the maintenance of the public standposts.
    - O active, what is your contribution?
    - O not active
18. If the money you pay for the water now, appears not to be enough, how much are you willing to pay per month?
    - O 100 - 250 RP
    - O 250 - 500
    - O 500 - 750
    - O 750 - 1000
    - O more.........

Appendix 3. Questionnaire of the survey.

O the ri ner families
O L[redacted]
O village/district
O government
O others.....

20. And who has to repair it?

O the cadre
O the community
O cadre with community
O governmant
O others.....

21. What do you think of the function of the cadre?

O very important
O important
O not important

22. Which person has a leading function in your neighbouthood?

name:.....
.....

23. If their would be a project organized like this one again, would you participate again?

O yes
O no, why not
O I do not know

24. What is the first improvement you would like to have implemented in your environment?

O bathing place
O washing place
O toilet
O garbage collection system
O sewerage for rainwater
O other public standposts
O other.....

25. are you satisfied with the project?

O yes
O no
O not really
O not yet

DRAWINGS ABOUT WATER USE AND TOILET FACILITIES.

[redacted]DENT[redacted]SPON[redacted]

1. Name.....
2. Age.....years.
3. How many years have you been living in the village?.....years.
4. With how many people do you live in your hou e? .....
5. How many children live in youre house?
6. What is their age?

1st child	age.....	ears
2	.....	
3	.....	
4	.....	
5	.....	
6...	.....	

7. How many children go to school now? .....
8. What is your education?

O no school
O primary school finished/ not finished
O secondary school finished/ not finished
O others.....;.....

ECONOMICAL CONDITION

9. Do you work?

O yes O no

10. If yes, what kind of work do you do?

O agriculture on own land
O agriculture labour
O keeping animals
O trade
O hand crafts
O processing fish
O other.....

11. What is the household income per month?

O 25.000 RP
O 26.000 - 50.000
O 51.000 - 75.000
O 76.000 - 100.000
O more

- O 1000 - 2000
- O 2000 - 3000
- O 3000 - 4000
- O 4000 - more

15. How much money do you save per month?..............RP

HOUSING CONDITIONS

16. How many rooms are in your house? ....
17. Do you have a bath room of your own?
    O yes O no
18. Do you have a private toilet?
    O yes O no
19. Do you take water to the house?
    O yes O no
20. With what do you take it home?
    - O bucket
    - O two buckets (pikul)
    - O plastic pipe
    - O other................
21. How many times a day do you get the water? ....
22. Who goes and gets the water usually?
    - O children
    - O mother
    - O father
    - O others.......
23. How do you store the water at home
    - O bucket
    - O gentong
    - O drum
    - O open reservoir
    - O other
24. For what do you use the water in the house?
    - O drinking
    - O cooking
    - O washing
    - O bathing
    - O cleaning the house
    - O other..........
25. Do you boil the water before drinking it?
    O yes O no

27. Is there any problems with the water?
    - O not enough water
    - O dirty
    - O have to wait long to get it
    - O there are no problems
    - O other...............
28. How often do the problems occur?
    - O each day
    - O each week
    - O each month
    - O other
29. In which season does the problems occur?
    - O dry season
    - O rainy season
    - O other
30. How long does the problems last?
    - O a few hours
    - O one day
    - O several days
    - O one week
    - O longer
31. What about the problems before the project?
    - O not enough water
    - O bad quality
    - O too far
    - O have to wait too long
    - O frequently broken d own
    - O other................
32. Do you use more water now, in comparison with before the project?
    O yes O no

    If yes, for what?
    - O bathing
    - O washing
    - O drinking
    - O filling the fishpond
    - O watering the garden
    - O other.............

[redacted] distance standpost [redacted] O O O O
waiting time long O O O O short

34. How much are you willing to pay for the water?

O 100- 250 RP per month
O 250- 500
O 500- 750
O 750- 1000
O more

35. From which disease did your children ever suffer?

O stomach
O diarrhea
O eye disease
O skin disease
O other.....

36. By what is the disease caused?

O food
O water quality
O weather
O do not know
O other.....

37. When was the last time one of the family members was ill?

O this week
O this month
O 2 months ago
O longer ago

38. Do you go to the Puskesmas (regional health center) if one of your children is ill?

O yes O no

39. Are you a member of an organization?

O PKK task.....
O BKOW .....
O other .....

40. Were you active during the implementation of the project?

O actve
O not active
O What was your contribution?.....

41. Are you satisfied with the project?

O yes
O no
O not really

DRAWIN ABOUT WATER USE AND TOILET FACILITITES.

Nama [redacted] No: [redacted]

IDENTITAS RESPONDEN

1. Nama.....
2. Umur.....tahun
3. Berapa lama tinggal di Playangan? .....tahun.
4. Apakah pendidikan Bapak?
   - ○ tidak sekolah
   - ○ SD lulus/tidak lulus
   - ○ SMP lulus/tidak lulus
   - ○ SMA lulus/tidak lulus
   - ○ lain-lain.....
5. Apakah pekerjaan Bapak?
   - ○ nelayan
   - ○ petani milik sendiri
   - ○ buruh tani
   - ○ tukang kayu
   - ○ karyawan
   - ○ pedagang/toko/warung
   - ○ lain-lain .....
6. Berapakah penghasilan Bapak per bulan?
   - ○ <25.000
   - ○ 26.000 - 50.000
   - ○ 51.000 - 75.000
   - ○ 76.000 - 100.000
   - ○ 100.000> .....

GAMBARAN AIR

7. Bagaimana penilaian Bapak mengenai lokasi tempat kran umum?

   Strategis
   - ○ Ya
   - ○ Tidak
     Mengapa?.....
     .....

   Jarak
   - ○ dekat
   - ○ terlalu jauh
   - ○ Tidak Mengapa?.....
     .....

9. Apakah anda anggota dari suatu organisasi setempat?
   - ○ Ya
   - ○ Tidak

   Sebutkan nama dari organisasi tersebut
   - ..... Sebagai.....
   - ..... Sebagai.....
   - ..... Sebagai.....

10. Dari siapa anda mendengar tentang proyek ini?
    - ○ RT/RW
    - ○ orang lain
    - ○ isteri
    - ○ kuwu
    - ○ lain-lain .....

11. Bagaimanakah keikut sertaan anda dalam perencanaan kran umum ini?
    - ○ sangat aktip
    - ○ aktip
    - ○ kurang aktip
    - ○ tidak aktip

12. Apakah bentuk kontribusnya? .....
    .....
    .....

13. Bagaimanakah keikut sertaan anda dalam pembangunan kran umum ini?
    - ○ sangat aktip
    - ○ aktip
    - ○ kurang aktip
    - ○ tidak aktip

14. Bila tidak, apa alasnya?
    - ○ tidak ada waktu
    - ○ kran umum tidak dirasakan penting
    - ○ sakit
    - ○ ada urusan keluarga

16. Berapa setangah hari anda pergunakan untuk bekerja dalam pelaksanaan?

- ○ 0 setengah hari
- ○ 1
- ○ 2 - 4
- ○ 5 - 8
- ○ 9 - 15
- ○ lebih: .....

17. Bagaimana keikut sertaan anda dalam pemeliharaan?

- ○ Aktip, apa yang anda lakukan? .....
  .....
- ○ Tidak aktip

18. Bila ternyata uang yang dibayar kurang, berapakah kesediaan anda untuk membayar?

- ○ 100 - 250 Rp per bulan
- ○ 250-- 500
- ○ 500 - 750
- ○ 750 - 1000
- ○ lebih.....

19. Bila kran umum rusak dan biaya perbaikannya tinggi apa yang akan anda:

- ○ minta sumbangan tambahan dari pemakai
- ○ minta sumbangan dari keluarga yang mampi
- ○ minta bantuan dari LKMD
- ○ minta bantuan dari Desa/Kecamatan
- ○ minta bantuan dari Pemerintah
- ○ lain-lain.....
  .....
  .....

20. Dan siapa yang harapkan untuk memperbaiki?

- ○ kader
- ○ masyarakat
- ○ kader dan masyarakat
- ○ pemerintah
- ○ lain-lain .....

- ○ penting
- ○ kurang penting
- ○ tidak penting

22. Siapakah orang yang paling berperan di lingkungan anda? (formal dan tidak formal)

"amanya.....
.....
.....

23. Bila kelak ada lagi proyak semacam ini, apakah anda bersedia ikut serta?

- ○ Ya
- ○ Tidak, Mengapa tidak.....
  .....
  .....
- ○ Tidak tahu

24. Apakah yang ingin anda lakukan saat sekarang untuk perbaikan lingkungan anda?

- ○ tempat mandi
- ○ tempat cuci
- ○ kakus
- ○ penanggulangan sampah
- ○ saluran air hujan
- ○ tambahan kran umum
- ○ lain-lain.....

GAMBARAN BUANG AIR KECIL/BESAR

25. Apakah Bapak merasa puas dengan proyek?

- ○ Ya
- ○ Kurang
- ○ Tidak
- ○ Belum

GAMBARAN BUANG AIR KECIL/BESAR.

Nama Pewawancara.....

IDENTITAS RESPONDENT

1. Nama.....
2. Umur ..... tahun.
3. Berapa lama tinggal di Playangan? .....tahun.
4. Berapa orang tinggal di rumah Ibu? .....Orang.
5. Berapa jumlah anak yang tinggal dengan Ibu sekarang? ..... anak
6. Uraikan anak Ibu:

anak ke.....	umur	tahun
anak ke.....	umur	tahun
anak ke.....	umur	tahun
anak ke.....	umur	tahun
anak ke.....	umur	tahun
anak ke.....	umur	tahun
anak ke.....	umur	tahun

7. Berapa anak yang masih sekolah? .....orang.
8. Apakah pendidikan Ibu?
   - ☐ tidak sekolah
   - ☐ SD lulus/tidak lulus
   - ☐ SMP lulus/tidak lulus
   - ☐ SMA lulus/tidak lulus
   - ☐ lain-lain.....

KONDISI EKONOMI

9. Apakah Ibu bekerja?
   - ○ Ya
   - ○ Tidak
10. Bila Ya, apakah pekerjaan Ibu?
    - ○ bertanai
    - ○ berkebun
    - ○ bertemak
    - ○ warung
    - ○ kerajinan
    - ○ membuat ikan asin, dst
    - ○ lain-lain.....

○ 26.000 - 50.000
○ 51.000 - 75.000
○ 75.000 -100.000
○ 100.000

12. Berapa kali seminggu Ibu belanja?
    ..... kali
14. Berapa kira kira Ibu keluarkan tiap kali belanja?
    - ○ <1000 RP
    - ○ 1000 - 2000
    - ○ 2000 - 3000
    - ○ 3000 - 4000
    - ○ 4000 >
15. Berapa banyak Ibu menabung tiap bulan?
    .....RP.

KONDISI RUMAH

16. Berapa ruangan di rumah Ibu?
    ..... ruang.
17. Apakah Ibu punya kamar mandi sendiri?
    ○ Ya ○ Tidak
18. Apakah Ibu punya kakus sendiri?
    ○ Ya ○ Tidak

GAMBARAN PENGGUNAAN AIR

19. Apakah Ibu mengambil air ke rumah?
    ○ Ya ○ Tidak
20. Bagaimana cara membawa air ke rumah?
    - ○ ember
    - ○ dipikul
    - ○ pipa plastik
    - ○ lain-lain .....
21. Berapa kali sehari Ibu mengambil air? .....kali.
22. Siapakah yang mengambil air biasanya?

○ ge[redacted]s .....
○ drum .....
○ bak .....
○ lain-lain.....

24. Untuk apakah air di rumah digunakan?
○ minum
○ masak
○ mencuci
○ mandi
○ membersihkan rumah
○ lain lain

25. Apakah Ibu memasak air sebelum diminum?
○ Ya ○ Tidak

26. Apakah Ibu juga menggosok gigi dengan air matang?
○ Ya ○ Tidak

27. Apakah ada persoalan mengenai air?
○ tidak cukup air
○ air kotor
○ menunggu lama
○ tidak menjadi masalah
○ lain- lain .....

28. Apakah persoalan itu muncul?
○ tiap hari
○ tiap minggu
○ tiap bulan
○ lain- lain.....

29. Pada musim apa persoalan itu terjadi?
○ musim panas
○ musim hujan
○ lain- lain.....

30. Berapa lama persoalan tersebut terjadi?
○ beberapa jam
○ sehari
○ beberapa hari

○ kualitas buruk
○ sumber air terlalu jauh
○ menunggu air terlalu lama
○ selalu rusak
○ lain- lain.....

32. Apakah sekarang banyak mengunakan air dibandingkan sebelumnya? ○ Ya ○ Tidak

Jika Ya, untuk apa?
○ mandi
○ mencuci
○ minum
○ mengisi air ke kolam
○ menyiram air u tuk kebun
○ lain- lain.....

33. Apakah pendapat Ibu sekarang dengan

Kualitas:	baik [ ][ ][ ][ ]	tidak baik
Jumlah air:	cukup [ ][ ][ ][ ]	tidak cukup
Jarak kran:	jauh [ ][ ][ ][ ]	dekat
Waktu menunggu:	lama [ ][ ][ ][ ]	cepat

34. Berapa kesediaan Ibu untuk membayar untuk kran umum?
○ 100 - 250 RP per bulan
○ 250 - 500
○ 500 - 750
○ 750 - 1000
○ lebih .....

35. Penyakit apa yang telah diderita oleh anak anak Ibu?
○ sakit perut
○ muntaber
○ sakit mata
○ penyakit kulit
○ lain lain.....

36. Apakah Ibu tahu sebab apa?
○ gizi kurang

○ bulan ini
○ 2 bulan yang lalu
○ lebih lama

38. Apakah Ibu pergi ke Puskesmas bila anak sakit?
○ Ya ○ Tidak

39. Apakah Ibu anggota organisasi?
○ PKK Sebagai?.....
○ BKOW Sebagai?.....
○ lain.....
.....

40. Bagaimana keikut sertaan Ibu dalam pelaksanaan proyek?
○ aktip
○ kurang aktip

Apakah kontibusi Ibu untuk proyek tersebut?
.....
.....

41. Apakah Ibu merasa puas dengan keikut sertaan Ibu dalam proyek?
○ Ya
○ Kurang
○ Tidak

42. Apakah Ibu merasa puas dengan proyek?
○ Ya
○ Kurang
○ Tidak
○ Belum

GAMBARAN BURUNG KECIL/BESAR.

INTERIM REPORT SUKAMULIA 10-04-1986 UNTIL 17-04-1986

June 1986
revised september 1986
Yvette van Dok

Appendix 4. Interim report of SM.

Kampong Sukamulia
Desa Jagasari
Mecamatan Mikijing
Kabupaten Majalengka

2.1 Location of the village

Kampong Sukamulia is part of the village Jagasari, which counts 7 kampongs in total.
It is located about 2 km. walk from the centre of the village, connected by a narrow mountain path. Mecamatan Cikijing is about 5 km. walking distance away. It can also be reached by a very bad road, 8 km. long, which can only be used during the dry season. Occasionally, on market days (twice a week) a small public Colt goes uphill from Cikijing to the kampong. This takes about half an hour and costs 300 RP.
From Sukamulia it is about 2 km. walk to the next kampong, Colom.

2.2 Population

Kampong Sukamulia march 1986:	men	130
	women	129
	total	259
	families	78
	households	66
average family size		3,4
average household size		3,0

Population growth: 1980 224 inhabitants
1985 259 inhabitants (information from the Lurah March 1986)

2.3 Geografical characteristics

Sukamulia is built against the slope of a mountain about 600 m. above sea level. Because of its altitude the temperature is pleasant. The kampong is quite isolated and difficult to reach. The environment is mountainous and covered with forests, sawa's and dry agriculture land. A small river runs alongside.

2.4 Size of the village area

total area	63 ha
sawa	[illegible] ha
dry agriculture	40 ha
living environments	8 ha

2.5 Daily subsistence and income

Most of the inhabitants obtain their resources from the agriculture fields they own themselves.

[illegible] main agricultural products

- rice
- sweet potatoes
- beans
- peanuts
- corn
- onions
- coffee
- tapioca.

It is very difficult to get correct data on their money income, because this differs from season to season. On average this is about 1000-1500 RP a day, but this only forms a small part of their daily income. Most of the food is grown in their own gardens and fields. Nearly all the women work in the fields. A few men go to the town as salesmen or labourers. The kampong has five carpenters/bricklayers who work in the kampong continuously.

2.6 Extra sources of income

Because of their extensive natural resources they need not buy their daily food. Apart from the agriculture land every household has a garden of its own, some chickens and other small animals. Since the PSWS project the inhabitants have dug 20 fishponds. The benefit from one pond can reach about 20.000 RP a month.
Several people have a clove tree. Good money can be made with cloves (this can amount to 500.000 RP a year for a big tree and a good harvest).
Banana trees grow everywhere and the coconuts are also not difficult to find.
Bricks for building the houses can be obtained freely from the riverside. This, together with the strong gotong royong (see par. 2.17), makes it possible to build stone houses quite cheaply.

Altogether, thanks to the wide variety of natural resources, the living standard of the inhabitants is much higher than expected when regarding their financial income only.

2.7 Expenditures

For their daily shopping, the women go to the warungs in the kampong. Sometimes they go to the market in Cikijing, which is held twice a week.

2.8 Social security

Old and ill people are looked after by their family.

2.9 Spending of time

As all the people own the land themselves they are quite free to determine their own working hours.
The men spend a lot of time on gotong royong while the women work in the fields.

work [redacted] young [redacted] gathe [redacted] play [redacted] ybal [redacted] ched [redacted] he o [redacted]
The evenings are spent chatting together.

2.10 Public facilities

In Sukamulia is one mosque. For the other facilities the inhabitants rely on the other blocks, Jagasari or Cikijing.

SD	:	in Colom (2 km. by foot)
SMP	:	in Cikijing
SMA	:	in Talaga, about 3 km. from Cikijing, to reach by public transport
Puskesmas	:	in Cikijing
PMK	:	in Jagasari

2.11 Education

All the small children go to the SD. Two children from the kampong go to the SMP.
Nearly all the inhabitants visited the SD at least some years. Most of them can more or less speak Bahasa Indonesia.

2.12 Health conditions

The health condition of the inhabitants is not bad, but still far from ideal. Diseases occur frequently and most of the time the inhabitants do not know by what these are caused.
Because of the high location of the kampong it can be quite cold and it is easy to catch a cold or influenza. Signs of skin and eye diseases could be noticed. In the supplement you will find a list indicating the diseases during january and february 1986 in the whole area of Cikijing. Unfortunately, data about Sukamulia only were not available. It is clear that a lot of diseases are due to a bad water supply. Hopefully in Sukamulia this situation will improve. Only 25% of the area the Puskesma covers has a good water supply.

There is still a great lack of knowledge about health and health conditions.
Several children had swollen tummies: hunger oedeem? Worms?. The men do not hesitate to jump into the fishponds, which are used as a toilet, to get wood or fish.

Family planning started in 1975 and is actively stimulated by the Lurah and the wife of the Camat in Cikijing. Now it is generally accepted and the average family size is quite small (only 3, 4 see chapter 2.2).

It goes without saying for all the inhabitants to boil the water before drinking it.

When ill, the inhabitants like to go the doctor. The problem here is the irregularity of their income. Some months a year the are not able to go to the doctor if necessary because of the lack of money.

I [redacted] kam [redacted] tsel [redacted] no [redacted] zati [redacted] excep [redacted] gro [redacted]
responsible for saving money since the project.
The Lurah and one other inhabitant (also cadre member) are members of the LKMD in Jagasari. The younger men play volleyball in the afternoon.
For the women there is only the PKK in Jagasari, which is not visited anymore by them (too far).

2.14 Living environment

The temperature in the kampong is very pleasant for living. Because of its altitude it is never really hot. There are nearly no mosquitoes but there are a lot of flies. This might be caused by the animals which are kept in the houses.
The houses are built quite far from each other. The space inbetween is filled up with trees, gardens and fishponds. The footpaths are mostly paved with local stones.
Because of its hilly location it does not suffer from floods.

2.15 Housing conditions

Nearly all the houses are brickbuilt. In many cases the floor inside is covered with earth only, the inhabitants do not have money to tile it. In most cases the windows have glass and the houses are quite big for the small households. No-one in the kampong has a bath or a toilet of his own.

2.16 Sanitation

Water

The water for washing as well as bathing and drinking is used from the pancurans. The taps are open the whole day and the water supply is continuous.

Toilet facilities

For deafaecating everyone goes to the fishponds. Some to the pancuran, which has the advantage that they can wash themselves as well. Others (most) go to the balong, which has the disadvantage that there is no water to cleanse themselves.

2.17 The inhabitants of Sukamulia as a group

The inhabitants of block Sukamulia form a very tight community. This can be due to the isolated geografical location. The gotong royong is very strong. The inhabitants do not have much money but they all live in a brickbuilt house. During the fieldwork they were very busy building two new houses. 20 to 30 men were working on them every day, whilst the house-owner took care of the meals and drinks. They also work together a lot in the fields, they prepare parties together, etc..
Everyone in the kampong knows one another and in the evenings they come together for a chat.

respondents who the most important person in the village is, they answered: [illegible] mean that the position of the Lurah is not important, he is a very respected man who plays an active and important role in everything that happens in the village.

The work of the women and the men is strongly separated. They both work very hard in the field and for the gotong royong. The work in the house is mostly done by the women. Often the women work together and the men work together, but both sexes rarely work toegether in doing the same work. For example, when working in the field the digging is done by the men whilst the harvesting of the small crops is the concern of the women. When building a house together (gotong rotong) the men build the house while the women (the owner of the house assisted by some other women) prepare the food and the drinks.
There seems to be a strong division between the organizational and decision making process. Inside the house the woman organizes and decides everything, but in public everything seems to be the concern and responsibility of the men, even the very womenlike affairs. For example: birthcontrol is stimulated and extended by the Lurah (who is a man).
Upon asking an Indonesian about this role-division, his answer was: "It might seem as if the women are not involved in the decision making, because they never give their comment openly, but there is a big chance that they will play it through their husband. In the night, when he is half asleep, she will whisper in his ear that the men have not made the right decision and that they had better change it. This her husband will do."

3. Situation before the project

3.1 Introduction

Taking the problems with the water supply in the kampong before the project into account, it was really necessary to do something about it. The implementation of the project in Cikijing has had a very stimulating effect on the inhabitants of Sukamulia to improve their own situation.

3.2 Water supply before the project

Before the PSWS project the water supply in Sukamulia was bad. There is a natural spring about 800 m. from the block from which the inhabitants led the water through bamboo pipes to the location at the fringe of the kampong.

The problems with this supply were as follows.
- The distance from the water locations. From the questionnaire this appears to be regarded as the most important problem. The inhabitants had to walk 500 - 1000 m. uphill to carry the water to their house.
- The quality of the water. Especially when it had rained the mud, taken away with the rain water, polluted the springwater.
- The reliability of the system. The bamboo pipes broke down often and once even a snake was found inside the waterpipe.
- Although the spring supplied enough water for all the inhabitants they experienced a shortage of water, because most of the water did not reach the village, due to the bad transportation system.

3.3 Former projects

Before the project was implemented in Sukamulia, there had been a water supply project in the IKK of Cikijing. Water for this project was taken from the area of Sukamulia. This caused a lot of protests from the inhabitants of Sukamulia; "Why do they take the water from our area while the water supply is not even enough for ourselves?". These protests and the really bad water situation made the cadre of Jagasari decide to implement the project in Sukamulia.

3.4 Conclusions

Kampong Sukamulia really needed an improvement in the water supply. This need played an important role in the selection of the kampong for the project.

The other project in the area has played an important function in making the inhabitants of Sukamulia aware of the possibilities to improve their water supply and to develop the motivation to do something about it.

4.1 Introduction

In Sukamulia the participation process developed differently from the planned process of the project.
During the planning of the project, the trainers of Majalengka selected and trained a group of cadre, all people from Jagasari.
During the whole implementation of the water supply in Sukamulia (august 1985) part of this cadre was present.
After the implementation, during the maintenance, people from Sukamulia formed a group of cadre and received four days training (december 1985) from the cadre of Jagasari. This training concerned the health aspects and the maintenance of the water supply.
The cadre of Sukamulia, supervised by the cadre of Jagasari who visi the block frequently, has to look after the whole water system.

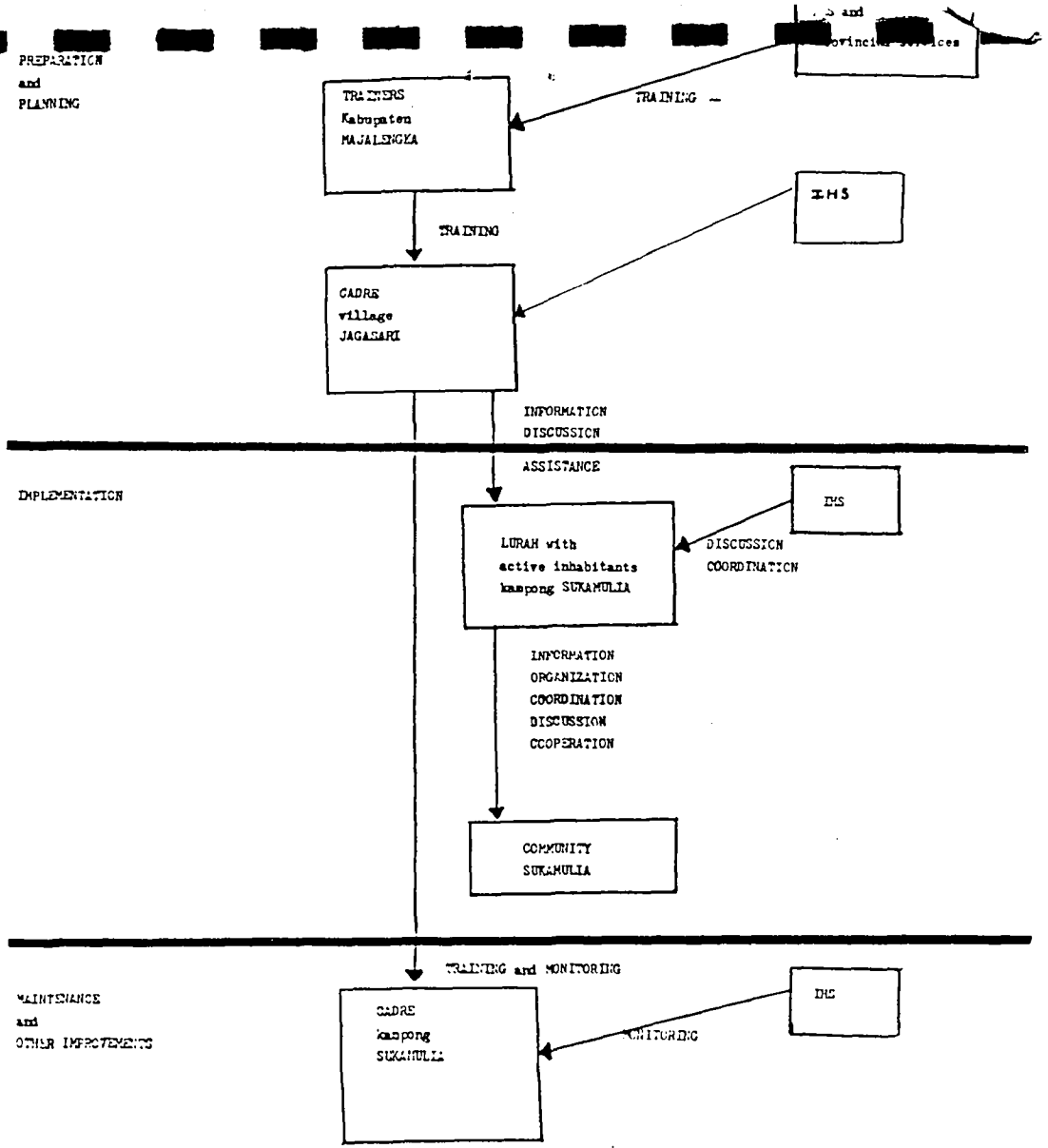
4.2 Preparation and planning of the project

4.2.1 The trainers

The group of trainers was selected from the provincial level Majalengka. From this group especially the teachers were very active for the project.
These trainers helped to select the village in which the project had to be implemented. Criteria for this selection were, among others, the bad health and water situation in thi area. In this village Jagasari, they selected and trained a group of cadre.
The whole project in Sukamulia was supervised by this cadre (see 4.2.2), so after completing the training, the trainers d not have to do very much, apart from the bureaucratic arrangements. This does not mean that they were not intereste especially the teachers paid several visits during the implementation and were present during the training of the cadre of Sukamulia.

4.2.2 Cadre of Jagasari

This is a group of men, living in Jagasari, with an active rc in the village (LKMD-member, teacher, etc.). During the preparation of the project they were selected and trained by the trainers of Majalengka. During the course of the project they formed the intermedium between the trainers and the community of Sukamulia. For this activities they were paid 1(RP/day by the IHS. This cadre selected the block in which the water supply should be implemented. Criteria for selecting Sukamulia were the bad water situation (see par 3.2) and the severe demand of the inhabitants strengthened by their protes on the former project in Cikijing (see par 3.3.).
This cadre informed the Lurah of Sukamulia about the project and together with the technician of the IHS they discussed tl way in which it could be organized and executed.



[redacted] e of Jagasari trained the cadre of [redacted] Sukamulia. The training could be organized before the implementation because it was not clear for a long time in which kampong the project would be implemented.
Because of this, some members of the cadre of Jagasari were present during the implementation in Sukamulia.
For more details about the criteria of selection for the cadre of Sukamulia see chapter 4.2.4.
The training of four days took place in Jagasari. The subjects it handled were:
- The purpose of a good water supply, especially concerning health.
- Financial aspects of the project.
- Possibilities for extension of the tap.
- A visit to another project (Care-project). During that project washing, bathing and toilet facilities were also built. This example appears to strongly motivate the cadre of Sukamulia to build something like that in the future.

4.2.3 The Lurah of Sukamulia

The Lurah of Sukamulia is a very active man who played an important stimulating and organizing role during the project. First he recruited the project to the village. He informed the inhabitants about the project. He discussed the plans for the technical implementation with the technicians and the cadre of Jagasari. He chose the locations for the taps, in discussion with the men. Together they chose the locations for the pancurans and the fishponds. These locations depended on the amount of houses around them, the person who was able to give his land and the distance of one location to the others.
He organized the community for the construction of the water supply.

The inhabitants have great confidence in everything he decides, and he did not have any problems in organizing this work.
He also became the chairman of the cadre of Sukamulia.

4.2.4 Cadre of Sukamulia

This is a group of 12 men, formed and trained by the cadre of Jagasari. Their main task is to take care of the maintenance of the water supply.
Although during the planning and the implementation of the project the formal group of cadre did not yet exist, these people were already very active, assisting the villagehead and discussing the plans with him.
The cadre was selected by the village head, in discussion with the community.
On my question how he discussed this with the community, he answered: "Well, on Friday afternoon the men came together in the mosque and I already had an idea about the persons I would like to ask to join the cadre. I explained about the purpose and the tasks of the cadre and after that I asked each person if he would like to do this and if the others agreed with it".

His criteria for the selection of the cad[redacted]
- A group of men with different qualities. It had to be possible to make a devision in tasks:
  . financial tasks
  . organizational tasks
  . technical tasks.
- The skilled workmen had to be a member.
- The members have to be physically strong enough to work.
- Still young.
- They had to live near the tap.

None of them were women, it is not really clear why not. It seems to be quite unusual to involve women in organizational tasks with the men.
It was difficult to get a good impression of their influence in the decision making (see par 2.17). It is a pity not to involve them directly to the project. Most of the aspects concern them too.

4.2.5 IHS

The role of the technicians of the IHS has been very important for the development of the project. Apart from their technical knowledge their social contribution was enormous. The inhabitants still talk about their enthusiasm and the good contacts with them. Their motivation has had a big influence on their own enthusiasm and participation.

First the technicians made a survey in the block and designed the technical plans for the construction of the water supply. They decided to build a springcapping on the natural spring from which the inhabitants already obtained their water. This was the easiest way. The spring is situated about 800 m. from the kampong and about 15 m. higher. With bricks and stones from the environment and bought cement, this capping could be constructed. Through a plastic pipe, the water is transported to the four standposts in the kampong.
The way of implementation, the devision of the work, the choice of the materials and the location of the standposts was discussed with the Lurah and the cadre of Jagasari.

4.3 Implementation

4.3.1 Introduction

The implementation of the water system was worked out very smoothly. It took about 27 days (augustus 1985) to build the springcapping, to implement the waterpipes and to construct the standposts.

4.3.2 IHS

During the whole implementation there was a technician from the Puslitbang to supervise the work. His presence and enthusiasm helped motivate the inhabitants.

to make the technical designs clear to the [illegible] builders. They still appreciate his attempt to explain the designs to them and it has motivated the execution of the work.

4.3.3 Community

All the inhabitants, men, women and children organized by the lurah, were actively involved in the construction of the water system. The women took care of the food, while the men and children helped with the building work, carrying stones and other materials, digging for the waterpipe, etc..
Thanks to the strong gotong royong and the inhabitant severe demand for an improvement of their water supply it was no problem to organize them to do the work. Sometimes more then 40 people were working together.

The six skilled workmen (carpenters/brichlayers) of Sukamulia did the more professional building work, partially paid for by the project.
Their usual wage is 4000 RP/day. The IHS paid them 2000 RP/day. The other part formed their own contribution to the gotong royong.

As the inhabitants of Sukamulia are not skilled to work with metal, three professional metalworkers from Jagasari were recruited for the metal works. They were also paid the minimal amount of 1000 - 2000 RP/day by the IHS.

4.4 Maintenance

4.4.1 Introduction

Until now, nearly one year later, the maintenance of the water supply did not give many problems. Without interruption the taps are open day and night and a nice spout of water comes out.
The water system is looked after by the cadre of Sukamulia, who were trained by the cadre of Jagasari after the implementation of the project.
To finance necessary repairs each household pays 100 RP a month.

4.4.2 Technical maintenance

Since september 1985 the water supply works well without any problems. There are two cadre members for each standpost to take care of the repairs, but until now it has not been necessary to do anything but clean the place. The taps are open the whole day and night, because the spring supplies an abundance of water. From the standposts the water is led by pipes, bamboo and plastic, to the pancurans above the fishpond. The pancurans are looked after and cleaned by the users and the owner of the fishpond.
Because of the lack of technical people in the kampong, it is fortunate that the maintenance of the water system does not need much technical input from them.

[illegible] the change of a worn-out washer of a tap is already difficult to repair, because of [illegible] repair. Fortunately each week someone from the cadre of Jagasari visits the kampong and controls the water system. If necessary he can help to solve this kind of problem.

4.4.3 Financial maintenance

To finance eventual breakdowns of the water supply, each household has to pay 100 RP a month. Owners of the fishponds have to pay 4000 - 8000 RP a year extra, because of their great profit from the water supply. The money is collected by the cadre and looked after by one of the members. A kind of saving group has been formed, and in a monthly notebook the name of the family is written down with the amount of money they have already paid. In this way they can always control it themselves.
The collection of the money does not give many problems. The amount is so small that everyone is able to pay it, it is clear for what they pay and they are very satisfied with the water supply. Until now nothing has been done with the money, because the cadre does not know exactly how to manage it. In future they all hope to be able to build a washing/bathing place and toilets. Unfortunately, the amount of money which is collexted is so small that it will take a long time before it is possible to finance these facilities. The cost of one washing/bathing facility is about 100.000 RP (a total amount of 6.000 RP is collected each month).
All the inhabitants realize that they will have to pay the repairs themselves, but as the amount of money saved is so small they will never be able to finance big and expensive repairs. Until now no arrangements have been made for these repairs.
Since the cadre is not used to collecting and saving money it seems they are afraid to ask more money from the households. They do not really know how to handle so much money.

4.6 Results of the project

4.6.1 Introduction

The project in Sukamulia is very succesful. It has not only resulted in a good water supply a short distance from all the houses but also in a tidy living environment and a extension of the nutritional and economical resources of the inhabitants.

4.6.2 Physical results

During the rainy season the water supplied by the natural source appears to be more than enough. The inhabitants do not need to close the taps and the water runs through day and night. The water is of good quality. During the project they built four standposts with two taps each which are not used. All the taps are connected with a pipe and the water is led to the pancurans.

less [redacted] lit/[redacted] Some [redacted] are [redacted]d s[redacted] pan[redacted]s can[redacted] not [redacted]sed and [redacted] the other locations the water flow is poor.

4.6.3 Location of the standposts

The standposts are spread throughout the whole village and easy to reach for everyone. The inhabitants never go to the standpost itself but to the pancuran. They made the pancurans to solve the problem of the waste water and to create eight places to collect water instead of four. All the houses are near a pancuran and every one is satisfied with the short distance to the water supply.

4.6.4 *Use of the water*

Since the project most of the people use much more water for washing bathing, drinking, house-cleaning and living environment, fishponds, gardens, etc..
For drinking they take the water home and boil it beforehand. Hopefully the quality of the water is good enough to drink it unboiled, since observations showed that they also drink the water straight from the tap when brushing their teeth, washing and bathing.

4.6.5 Health

It was not possible to obtain accurate information about eventual improvements in the health situation (see chapter 2.12). In the opinion of the inhabitants their health situation had improved since the project.
There is still a great lack of knowledge about diseases and the relationship with the water use.

4.6.6 Other improvements

Since the project more then twenty fishponds have been dug, which supply the inhabitants with fish, which the eat themselves or sell. It also forms a good solution for their sanitation problems. They used to go to the garden for defaecating. They all go to the fishponds now which means a big improvement in the cleanliness of their living environment.
As a washing facility they built the pancurans. In future they hope to have real washing facility as shown to the cadre in the Care project. They wait for the money.

4.7 Conclusions, discussions and recommendations

- Planning.
  It is a positive experience that the local trained group, the cadre of Jagasari, appeared to be able to form a new cadre in the kampong to organize and extend the project to the kampong. This has worked out very well.

  It is a pity that the cadre of Sukamulia was not already formed [redacted]ing [redacted]anni[redacted]his [redacted] not [redacted]e b[redacted] the [redacted] between the selection of the kampong and the implementation was too short. This should be planned better.

  The presence of teachers in the group of trainers as well as in the cadre of Jagasari had very positive consequences for the contacts with the inhabitants. They also appear to be the most active persons.

  The role of the village leader, the Lurah, was very important. His activities strongly facilitated the organization of the project in the kampong.

  During the planning a lot of decisions were made by the Lurah himself. These decisions were based on his informal discussions and good relationship with the community. His decisions were supported by the confidence of the inhabitants in him.

  The women were not involved in the planning or as a cadre member. This is a pity. The aspects of the project concern them as well. It could be a good opportunity for them to develop themselves as well.

  The role of the IHS has been very important too. Without its knowledge, the plans could not have been made.

- Implementation
  Even without the formal cadre it was possible to get the inhabitants organized and enthusiastic to work together for the implementation. This was due to:
  - The strong gotong royong in the kampong. The inhabitants are used to working together.
  - The activities of the village head.
  - The popularity of the village head. Everybody trusts him and will do what he asks them to do.
  - The bad water situation before the project. The inhabitants were eager to improve their own situation.
  - The former project in Jagasari which had stimulated them to think about improving their own situation.
  - The simplicity of the chosen materials. It was easy for the inhabitants to start the work, because they are used to building with the local materials.
  - The stimulation and organization of the cadre of Jagasari.
  - The very good contact with the technician of the Puslitbang Pemukiman. His enthusiasm motivated the inhabitants.

  The function of the technician was very important. Without his supervision it would not have been possible to construct the water system. Apart from his function as a technical adviser, his social function was also very important.

there was a sharp devision in tasks between them. The women took care of the [redacted] and [redacted]ks, [redacted] the [redacted] were [redacted] working on the construction.

- Maintenance
  To realize the maintenance of a system, it must be ensured that besides the knowledge, the tools, needed for repairs, are also available in the kampong. In Sukamulia this is not the case, and without support of the cadre of Jagasari some repairs can not be carried out.

  During maintenance the cadre of Jagasari is also important.

  Although the training of the cadre took place after the implementation it still had an important function for the maintenance of the water supply, the use of the water, the establishment of the money collection system, the motivation for improving the washing facilities and the contacts with the cadre of Jagasari.

  There is a great lack of knowledge and experience about a money saving system. Because of this, it is not handled as well as it could be. More information and assistance in this is desirable.

  It must be made clear who will pay for the big and expensive repairs in the future. The inhabitants themselves are not able to finance them, who else?
  To obtain money for the repairs and to finance other improvements they established a money saving system. For more comment on this system see chapter 4.5.4.
  Since there is more water they have also planted many more clove trees, which can result in big financial advantages in the future.

  In future the cadre of Jagasari hopes to be able to provide another kampong with a good water supply. Clear plans for this are not yet made.

- Other improvements
  Apart from a good water supply the project resulted in a lot of other positive improvements as well.

  The taps are open the whole day and the water is led to the pancurans where it flows freely.
  During the rainy season this system forms no problems because the quantity of water is more then enough. This is very pleasant for the inhabitants.

  During the dry season (3 months a year) the water is not so abundant. A water supply of 2 l/sec. ought to be enough for the community but because the taps are open the whole day a lot of water disappears into the fishponds without being used, which is a needless waste. A remedy for this could be to store the water.

1. Building storage tanks at the location of the [redacted] places, with taps to open if the inhabitants want to fetch water.
2. Closing the taps at the standpost after use. The water will be stored then in the storage which has already been built at the place of the springcapping. The advantage of this method is that it is not necessary to build new storage tanks.
   It might be difficult to change the habits of the inhabitants, and to make them close to the taps because:
   - The taps are quite far from the washing place.
   - The access to the standpost is closed by a kind of gate, to protect the standpost.
   - The inhabitants are not used to closing the taps because most of the year this is not necessary.

During the monitoring of the project, attention must be paid to these aspects and it is necessary to find a good solution for the water problems during the dry season.

The small amount of water during the dry season does not only affect the water supply of the inhabitants, but also has consequences for the condition of the fishponds. There is not enough water to supply the large number of fishponds with clear, running water during the dry season. The consequence is that many ponds fall into disuse and change into stagnant mudpools, which form a brood place for all kinds of vectors and mosquitoes. This could have bad consequences for the health of the inhabitants.
More information to the inhabitants about the use of the fishponds and its relation to health conditions is necessary.

It is a positive point that a money saving system has been formed. It is to be hoped that the cadre will get some experience with this so that it can be used more effectively in the future. More attention to this system must be paid during the training and the monitoring.
It is a pity that the inhabitants only pay such a small amount of money. Regarding their income and economic benefits from the project they should be able to pay more, which would speed up the possibility of financing other improvements.

Appendix 5. Design of the standpost, windmill and gravity-systems.

2. DESIGN OF A STANDPOST

The layout of the scheme and the siting of the standposts is one of the most important aspects in the design of a public standpost water supply system. In general, standposts should be located as near to as many houses as possible, easily accessible to all users, but protected from vehicular traffic. The walking distance to the farthest dwelling should preferably not exceed 200 metres (m).

A standpost consists of a platform with a drainage facility, a supporting structure for the pipe and taps, a stand for buckets, the service pipe with valve and meter (optional), and the taps.

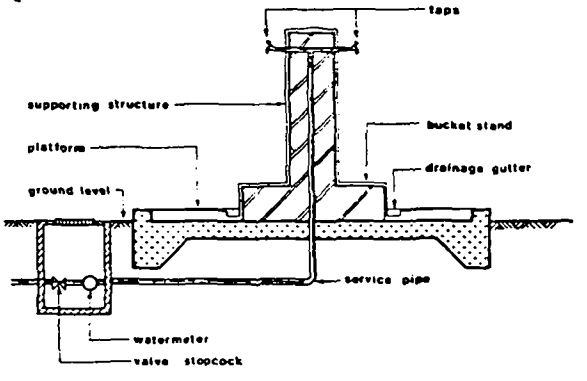


FIGURE 1

CROSS SECTION OF A PUBLIC STANDPOST

The platform should extend for at least 1.5 m around the taps and be constructed of hard, impermeable material, preferably concrete or masonary. It should be raised at least 0.10 m above the ground to ensure good drainage and slope away from the taps towards a drainage channel. Alternatively the platform may slope inwards: the waste water is then collected in a gutter underneath the taps and is discharged into a drain.

The slope of both platform and drainage channels should be in the range of 1:50 (2%) and 1:20 (5%). The minimum dimension of the gutter is 0.20 m wide and 0.05 m deep at the beginning of the drain.

If possible, the waste water should be put to some use, for instance: irrigation, cattle watering or fish farming. It may also be led through an open channel to a watercourse, an existing storm-water drain, a soak-away pit or trench.

A soak-away pit consists of a hole of approximately 0.5 m^2 and 0.80 m deep filled with rubble or gravel through which waste water can filter into the soil.
The required length of soak-away trenches depends on the permeability of the soil: in clay soils relatively long trenches are necessary: in sandy soils short ones will suffice.

The *supporting structure* and the attachment of the taps should be solidly constructed. The best way to protect the pipe is to encase it in a brick or concrete column of at least 0.30 m square. To protect the taps, the supporting structure should extend 0.10 m above them.

Underneath the taps a *raised stand* can be constructed to support buckets and containers whilst being filled. The height of the stand, and of the taps themselves, is determined by the size of the containers used, the manner of carrying them, and the question of whether children as well as adults will fetch water.
For example, if people carry containers on their heads, the stand should be 0.9 to 1.0 m high, with the height of the tap above it dependent on the containers size. Children would need a stand 0.5 m high in this case.
The distance between the tap and the top of the container should be less than 0.5 m in order to reduce the spillage of water.

The *service pipe* or supply pipe may be of galvanized steel or PVC, but PVC pipes should only be used where they are covered and cannot be damaged either by misuse or accident. The necessary pipe diameter is dependent on the required discharge capacity, on the type and number of taps at the standpost and on the water pressure. Normally, the diameter of the service pipe is in the range of 12 mm (½-inch) to 36 mm (1½-inch).

The *rain valve* or stopcock should be installed in a space which can be locked. *Water meters* may provide important information for studies on consumption and wastage, for calculations of future consumption and on decisions regarding the need for additional public standposts: and may serve as means for establishing the payment due for water used. Meters should only be used when they serve a definite purpose and when regular maintenance in a workshop by properly qualified and equipped staff is available. Every meter should be housed in a box which can be locked and should be inconspicuously located.

The *flow control mechanism* most frequently used is the ordinary screw tap with washers. Possible alternatives are: a ball or plug valve tap: spring-loaded or gravity operated taps: volumetric or delayed-closing valves. Reference is made to Annex 10.

Other features can be included in the design, depending on the users' needs and on provisions made for supervision and revenue collection. The standpost may be surrounded by a wall or fence with a locking gate for protection during unsupervised hours. A curb 0.2 m high can prevent damage by traffic, while a wall 0.8 m high around the standpost area and a cattle grid at the entrance, rules out pollution by animals.

(WHO-IRC; 1979)
PSWS, Technical papers no. 14.

6. spring water tapping

6.1 Introduction

Springs are found mainly in mountainous or hilly terrain. A spring may be defined as a place where a natural outflow of groundwater occurs.

Spring water is usually fed from a sand or gravel water-bearing ground formation (aquifer), or a water flow through fissured rock. Where solid or clay layers block the underground flow of water, it is forced upward and can come to the surface. The water may emerge either in the open as a spring, or invisibly as an outflow into a river, stream, lake or the sea (Fig. 6.1). Where the water emerges in the form of a spring, the water can easily be tapped. The oldest community water supplies were, in fact, often based on springs.

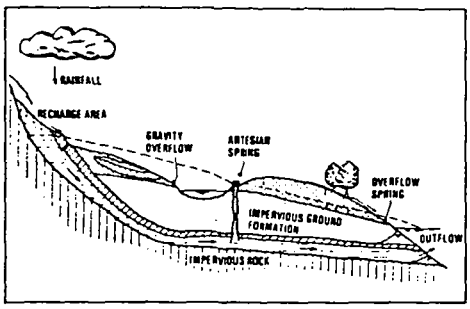


Figure 6.1.
Occurrence of springs

The best places to look for springs are the slopes of hill-sides and river valleys. Green vegetation at a certain point in a dry area may also indicate a spring, or one may be found by following a stream up to its source. However, the local people are the best guides, as they usually know most springs in their area.

Real spring water is pure and usually can be used without treatment, provided the spring is properly protected with a construction (e.g. masonry, brick or concrete) that prevents contamination of the water from outside. One should be sure that the water is really fed from the groundwater and not a stream that has gone underground for a short distance.

The flow of water from a spring may be through openings of various shapes. There are several names: seepage or filtration springs where the water percolates from many small openings in porous ground; fracture springs where the water issues from joints or fractures in otherwise solid rock; and, tubular springs where the outflow opening is more or less round. However, to understand the possibilities of water tapping from springs, the distinction between gravity springs and artesian springs is most important. A further sub-division can be made into depression springs and overflow springs.

Gravity springs occur in unconfined aquifers. Where the ground surface dips below the water table, any such depression will be filled with water (Fig. 6.2).

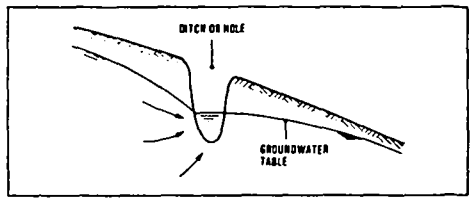


Figure 6.2.
Gravity depression spring

Gravity depression springs usually have a small yield and a further reduction is likely when dry season conditions or nearby groundwater withdrawals result in a lowering of the groundwater table.

spring water tapping

A larger and less variable yield from gravity springs is obtained where an outcrop of impervious material, such as a solid or clay fault zone, prevents the downward flow of the groundwater and forces it up to the ground surface (Fig. 6.3). At such an overflow spring, all water from the tributary recharge area is discharged. The flow will be much more regular than the recharge by rainfall. Even so, an appreciable fluctuation of the discharge may occur and in periods of drought some springs may cease to flow completely.

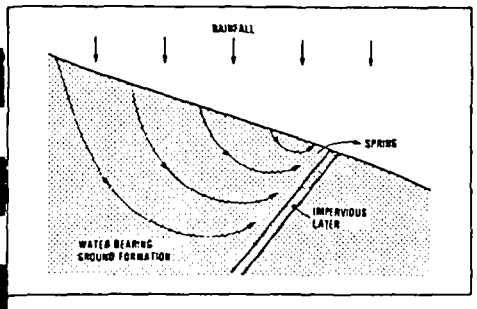


Figure 6.3.
Gravity overflow spring

Artesian* depression springs are similar in appearance to gravity depression springs. However, the water is forced out under pressure so that the discharge is higher and shows less fluctuation. A drop of the artesian water table during dry periods has little influence on the groundwater flow (Fig. 6.4). Artesian fissure springs (Fig. 6.5) form an important variant of this type of spring. They exist in many countries and are widely used for community water supplies.

* Artesian groundwater is groundwater that is by an overlaying impervious layer prevented from rising to its free water table level, and therefore is under pressure.

spring water tapping

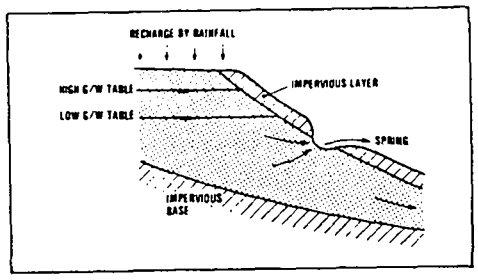


Figure 6.4.
Artesian depression spring

spring water tapping

6.1 Tapping artesian springs

In outward appearance, artesian depression springs are quite similar to gravity depression springs but their yield is greater and less fluctuating, as the water is forced out under pressure.
To tap water from an artesian depression spring, the seepage area should be surrounded by a wall extending a little above the maximum level to which the water rises under static conditions. For sanitary protection the storage chamber should be covered (Fig. 6.11).

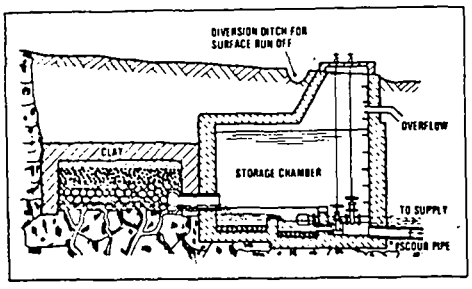
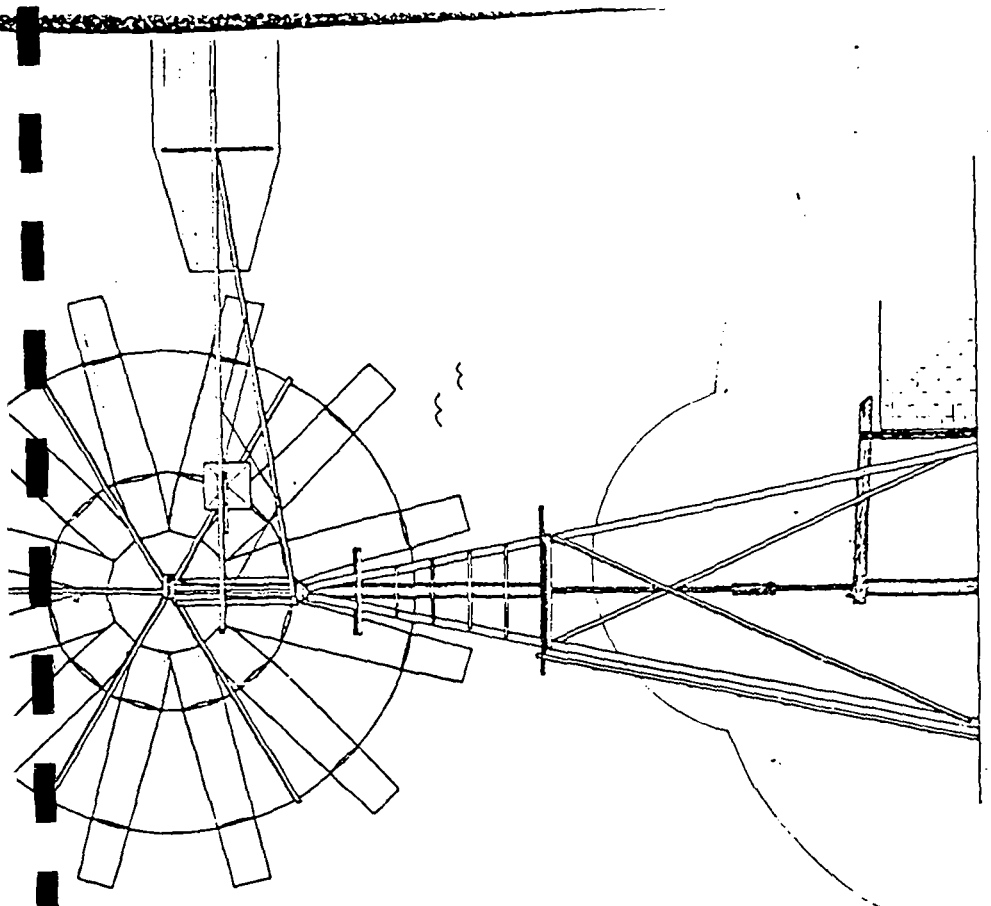
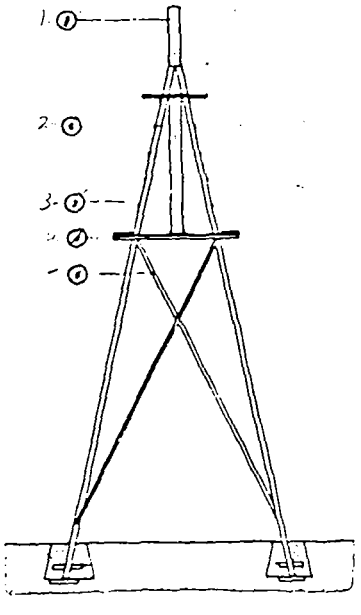


Figure 6.11.
Artesian depression spring

For artesian depression springs of large lateral extent, a system of drains will have to be used discharging the collected water into a storage chamber. From where it flows to the supply area. To increase the infiltration rate and for protection of the water quality, the recharge area should be cleaned of all debris. For granular top layers, it may be necessary to cover the recharge area with layers of graded gravel for the entrapment of fine suspended solids.

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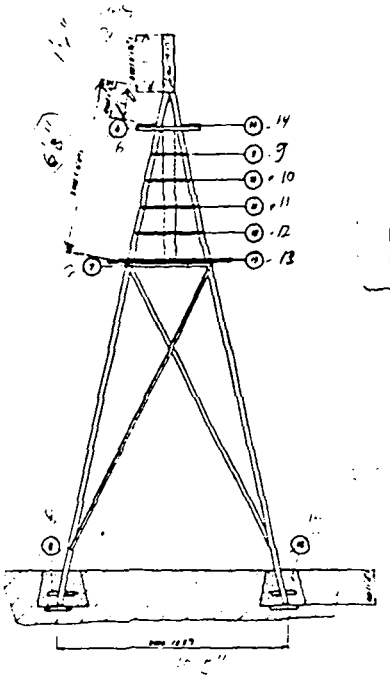
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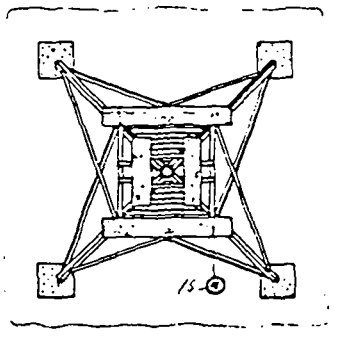
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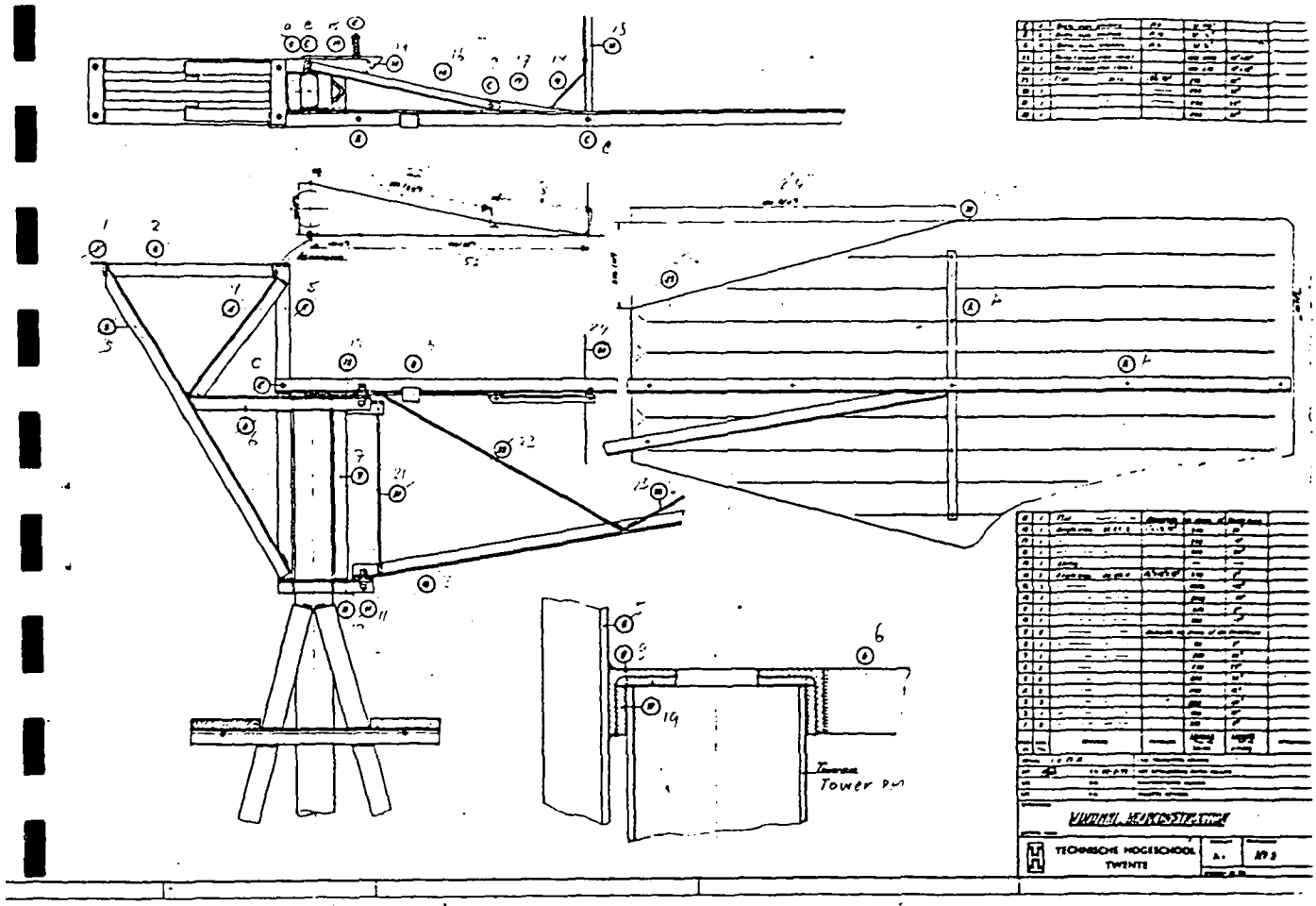
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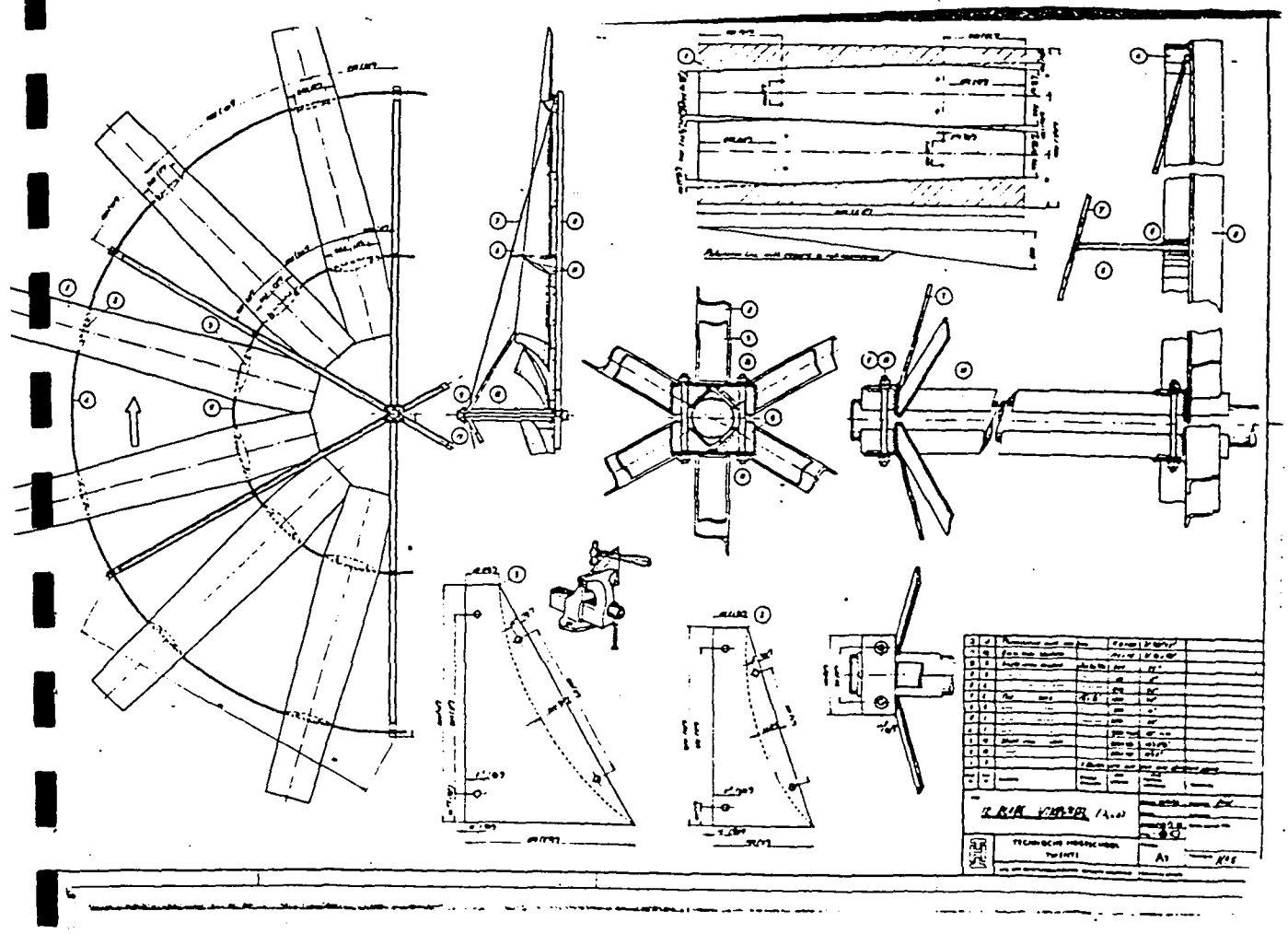
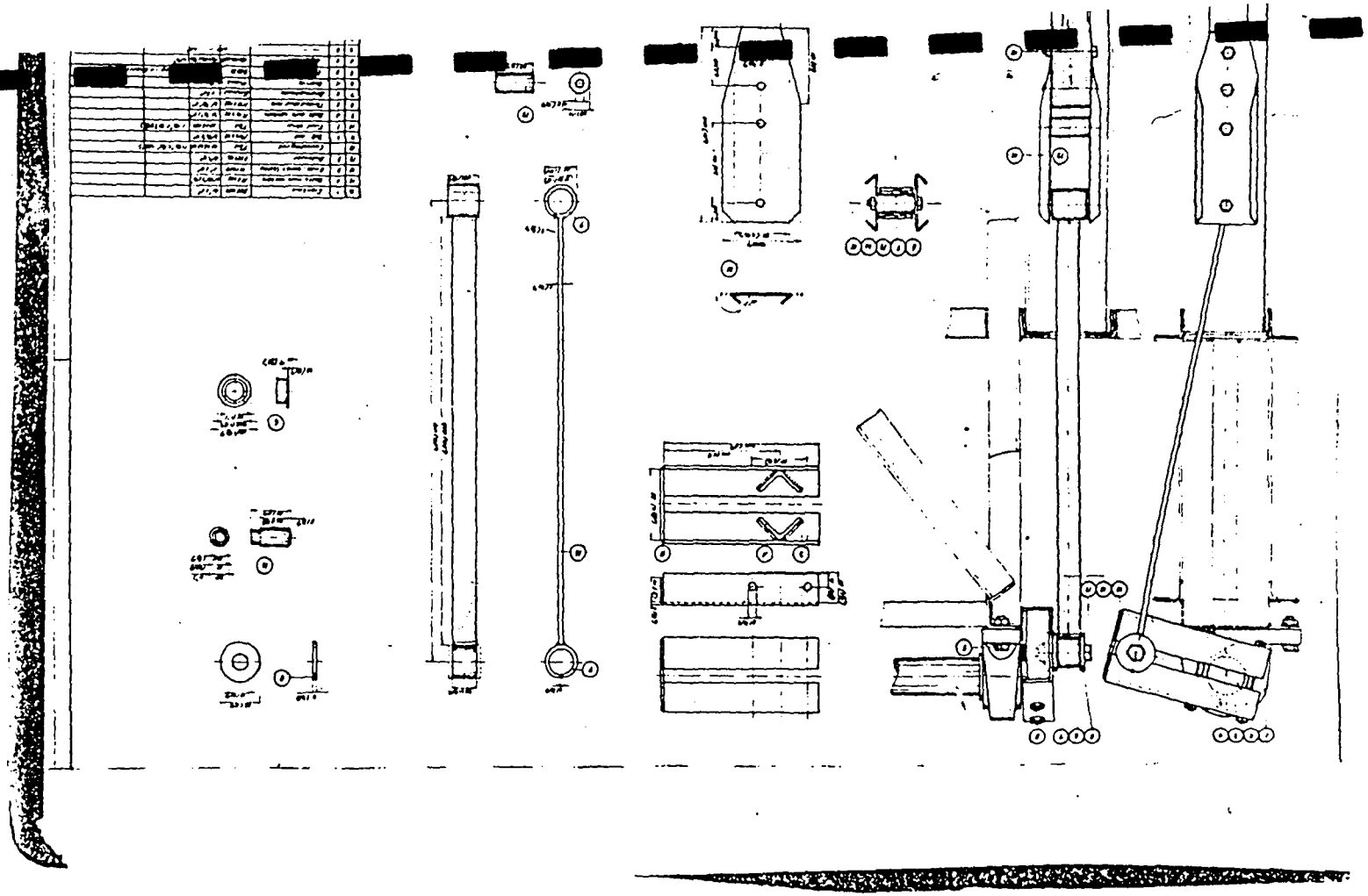




APPENDIX 6.

Criteria for the selection of the cadre.

The selection of the cadre is one of the crucial points of the participation process in the villages.
Lessons can be learned from experiences in this project, and it is useful to have good criteria for the selection of the cadre, so that the problems which appeared now need not to be repeated.
Criteria for this selection:

a. Personal characteristics.
- active, enthusiastic person, well accepted by the inhabitants.
- still young, (25-40 years).
- able to work.
- willing to work for the community without being paid.
- must have time and energy to spend on the community.
- must be able to read, to write and to speak the local language as well as the Indonesian language.
- inhabitant of the village.
- good contacts with the other inhabitants and trusted by them.
- not too dominant or selp opiniated, must be able to work and discuss with others.

b. Group characteristics.
- Finally a cadre group must be formed which represent different qualities:
  - technical
  - social
  - organizational
  - financial
  - formal

- Some inhabitants of the PSWS-block/RT must be a member. Possibilities are someone with leading qualities and someone living near the location of the standpost. This is important for good contacts with the community.
- Some LKMD-members and village officials must be involved, for contact with the local authorities.
- Not all the members need to be highly educated. The lower educated persons can also have a very important function. During the training the big differences in education level gave problems but it would be better to adapt the training to this level than to adapt the selection of the cadre to the level of the training.
- The women must be represented as well. How this can be achieved still has to be discussed.
- If the village head is an active man, he can play an important role. If not, his leading task must be taken over by someone else (who is not involved in a political game with the villagehead).

- In spite of all the criteria the most important point is of course, that the members of the group can get on well together and with the other inhabitants.

Kabupaten/Kodya . . . [illegible]apura

[redacted] inst [redacted] : [redacted] ba [redacted]

LAPORAN BULANAN DATA KESAKITAN

No. Urut	JENIS PENYAKIT	Jumlah Kasus baru menurut Golongan Umur (th) < 1	1 – 4	5 – 14	15 – 44	> 45	Jumlah Kasus Baru	Lama	Jml. Kunj. Kasus
1	2	3	4	5	6	7	8	9	10
01.	PENYAKIT INFEKSI PADA USUS								
0101.	Kolera								
0102.	Diare (termasuk tersangka Kolera)	3	2	2	1	2	10	—	10
0103.	Dysentri Basiler (Sigelosis)	—	1	—	—	—	1	-	1
0104.	Tipus perut								
0105.	Paratifus								
0106.	Infeksi penyakit yang lain								
02.	PENYAKIT TUBERKULOSA								
0201.	TB Paru BTA (+)	—	—	—	—	—	7	3	10
0202.	TB Paru Klinis								
0203.	TB alat tubuh lain termasuk alat pernafasan lain.								
03.	PENYAKIT BAKTERI LAIN								
0301.	Pes (Sampar)								
0302.	Kusta L								
0303.	Kusta non L	—	—	—	—	—	1	1	2
0304.	Difteria								
0305.	Batuk Rejan								
0306.	Tetanus								
0307.	Anthrax								
0308.	Penyakit penyakit yang lain								
04.	PENYAKIT VIRUS								
0401.	Poliomyelitis akut								
0402.	Cacar air								
0403.	Campak								
0404.	Radang hati menular								
0405.	Rabies								
0406.	Trakhoma								
0407.	Dengue								
0408.	DHF								
0409.	Radang otak tularan serangga (Anthropod – encephalitis)								
0410.	Penyakit virus lain								
05.	RIKETSIASIA DAN PENYAKIT KARENA ARTHROPODA LAIN.								
0501.	Malaria Tropika								
0502.	Malaria Tertiana								
0503.	Malaria Kwartana								
0504.	Malaria Ovale								
0505.	Malaria Mix								
0506.	Malaria tanpa pemeriksaan laboratorium (Klinis)								
0507.	Penyakit penyakit lain								
06.	PENYAKIT KELAMIN								
0601.	Siphilis								
0602.	Infeksi Gonokok								
0603.	Penyakit penyakit yang lain								
0706.	Taeniasis [redacted]								
[redacted]	Cysti[redacted]								
0708.	Penyakit cacing lain								
0709.	Scabies								
0710.	Penyakit kulit lain karena jamur (mikosis)								
0711.	Penyakit penyakit lain								
0712.	Ascariasis		3				3	—	3
08.	PENYAKIT ENDOKRIN DAN METABOLIK SERTA GANGGUAN IMUNITAS								
0801.	Gondok Endemik								
0802.	Kencing Manis								
0803.	Penyakit penyakit yang lain								
09.	DIPISIENSI GIZI								
0901.	Kwashiorkor								
0902.	Maramus Gizi								
0903.	K.K.P.	—	1	—	—	—	1	=	1
0904.	Difiensi Vit. A								
0905.	Difisiensi Vit. lain								
0906.	Difisiensi Gizi yang lain	—	3	—	—	—	3	—	3
10.	GANGGUAN JIWA								
001.	Gangguan kepribadian								
002.	Psikosa								
003.	Gangguan Neurosa								
004.	Ketergantungan Alkohol/Obat								
005.	Retardasi mental								
006.	Penyakit yang lain								
11.	PENYAKIT SUSUNAN SYARAF								
101.	Epilepsi								
102.	Meningitis								
103.	Penyakit penyakit yang lain								
12.	PENYAKIT MATA								
01.	Glaukoma								
02.	Katarak								
03.	Kebutaan/penglihatan kurang								
04.	Conjunctivities	—	—	1	1	2	4	1	5
05.	Kekeruhan kornea								
06.	Radang saluran kelenjar mata								
07.	Penyakit-penyakit yang lain								
3.	PENYAKIT PADA TELINGA DAN MASTOID								
4.	DEMAM REMATIK DAN PENYAKIT JANTUNG REMATIK								
5.	PENYAKIT TEKANAN DARAH TINGGI								
[illegible]	PENYAKIT PEREDARAN DARAH PARU DAN PENYAKIT JANTUNG LAINNYA								
[illegible]	PENYAKIT LAIN DARI SUSUNAN PEREDARAN DARAH								
	Wasir								
	Varices								
	Penyakit yang lain								
[illegible]	PENYAKIT SALURAN PERNAPASAN BAGIAN ATAS	6	11	12	9	[illegible]			

Appendix 7. Diseases in the area of Cirebon.

Kode Puskesmas [ ][ ][ ][ ][ ][ ][ ][ ]

Bulan [ ][ ]

Tahun [ ][ ][ ][ ]

1	2	3	4	5	6	7	8	9	10
1902.	Bronkhitis	—	1	—	1	1	3	1	5
1903.	Influenza								
1904.	Asma								
1905.	Penyakit penyakit yang lain								
20.	PENYAKIT RONGGA MULUT								
2001.	Karies Gigi								
2002.	Penyakit Pulpa dan jaringan penjukal								
2003.	Penyakit gusi dan jaringan periodontal								
2004.	Kelainan dento fasial termasuk maloklusi								
2005.	Penyakit yang lain								
21.	PENYAKIT LAIN PADA SISTEM PENCERNAAN								
2101.	Tukak lambung	—	—	1	7	6	14	4	23
2102.	Radang usus								
2103.	Hernia								
2104.	Penyakit hati mendahan								
2105.	Penyakit yang lain								
22.	PENYAKIT PADA SALURAN KENCING								
23.	PENYAKIT ALAT KELAMIN LAKI2								
24.	PENYAKIT ALAT KELAMIN PEREMPUAN								
25.	KEGUGURAN								
26.	SEBAB KELAINAN KANDUNGAN LANGSUNG								
2601.	Perdarahan pada kehamilan dan masa nifas								
2602.	Keracunan kehamilan								
2603.	Hamangum persalinan								
2604.	Persalinan normal								
2605.	Kelainan yang lain								
27.	PENYAKIT KULIT DAN JARINGAN BAWAH KULIT	5	15	6	5	5	36	2	41
28.	CACAT BAWAAN								
29.	KEADAAN TERTENTU PADA MASA PERINATAL								
2901.	Trauma lahir								
2902.	Asphksia								
2903.	Lahir mati								
2904.	Tetanus neonatorum								
30.	NEOPLASMA								
3001.	Tumor jinak								
3002.	Tumor ganas								
31.	KECELAKAAN								
32.	Penyakit Penyakit lain/Kecelaan yang lain							1	
3201									
3202.									
3203.									
3204.									

1. Jml dokter umum [ ]
2. Jml dokter gigi [ ]
3. Jml Paramedis perawatan [ ]
4. Jml. Paramedis non perawatan [ ]
5. Jml. tenaga administrasi (lainnya) [ ]

..... februari 19 86

Pimpinan Puskesmas,

(.....)

NIP.

Appendix 8. Education level of the men.

education men Sukamulia

Percent of Total

Value Labels	0 10 20 30 40 50 60 70 80 90 100
	!....!....!....!....!....!....!....!....!....!....!
no school	* (0)
sd fin	********** (7)
sd not fin	********** (12)
smp fin	* (0)
smp not fin	*** (1)
sma fin	* (0)
sma not fin	* (0)
more	* (0)

education men Playangan

Percent of Total

Value Labels	0 10 20 30 40 50 60 70 80 90 100
	!....!....!....!....!....!....!....!....!....!....!
no school	****** (2)
sd fin	********** (8)
sd not fin	********** (10)
smp fin	* (0)
smp not fin	* (0)
sma fin	* (0)
sma not fin	* (0)
more	* (0)

education men Gumulung Tonggoh

Percent of Total

Value Labels	0 10 20 30 40 50 60 70 80 90 100
	!....!....!....!....!....!....!....!....!....!....!
no school	********** (6)
sd fin	********** (7)
sd not fin	********** (8)
smp fin	*** (1)
smp not fin	* (0)
sma fin	*** (1)
sma not fin	*** (1)
more	* (0)

Appendix 9. Water and human health.

Water and human health

Where people live, water is present as without water no life on earth is possible, neither for man, animal of plant. In rural areas of developing countries, however, the amount available may be rather limited, either because the source has a small capacity or is a large distance away, while by chemical and bacteriological contamination the water may contain outright poisons, endangering the human life for which it is essential. According to Bradley, the impact of water on human health may be subdivided into four groups of diseases:

a. Water-borne diseases, caused by a pollution with faecal matter. The water now acts as a passive vehicle for infecting agents such as worm eggs, protozoa, bacteria and virusses, giving rise to various illnesses with as most important representatives helminthiasis, amoebe dysentery, typhoid with cholera, shigella and other diarrhoeal disorders, infective hepatites and about one hundred enteric viruses responsible for gastro-enteritus. Public water supplies in particular may be an important link in this faecal-oral transmission chain, providing pathogenic organisms freely and indiscriminately to yound and old, poor and rich.

b. Water-washed diseases in case personal hygiene suffers from the lack of adequate amounts of water. On one hand this provides another pathway for faecal-oral transmissions mentioned above, while on the other hand it causes skin and eye infections as scabies and trachoma as well as other illnesses such as bacillary dysentery and louse-borne fever.

c. Water-based diseases due to aquatic animals that form a necessary part of the life cycle of infecting agents. Some of these, causing schistosomiasis for instance, are able to penetrate the unbroken skin and induce illnesses when the water is only used for paddling, washing of clothes, etc. For other infections such as with the guinea worm, the water must be ingested as unvoluntarely may occur during bathing and swimming.

d. Water-related diseases are brought about by insects that breed in water, spreading malaria, yellow fever, etc., or bite near water giving rise to onchocerciasis, sleeping thickness and many others, making the river valley unfit for human habitation.

To prevent the illnesses a) to c) mentioned above, the population must be provided with safe water, free from pathogenic organisms, in amounts adequate to maintain personal cleanliness, house and municipal hygiene. The people must also be brought to use this water freely, overcoming the trouble of fetching it over some distance, accepting a different taste or a slight colour due to innocuous mineral compounds. In particular the population must be taught to avoid other water sources even for secondary purposes such as washing and swimming. In water scarce areas this is not too difficult, but in those wet countries where being clean belongs to the way of life, public laundry places, showers and even swimming pools should complement the water supply system.

(Riedÿk. W; ed; 1982)

Appendix 10. Fishponds.

Fishponds.

In Indonesia a very common way to collect excretal waste is to make a fishpond. It appears that the fishes flourish well with it and at the same time it is a good way to handle the waste water too. It might seem as if this way of excreta reuse has bad consequences for the health, in practise if handled in the right way, not much problems do occur.
The main kinds of health hazards associated with this way of excreta reuse:

Occupational hazards.

There may be an occupational hazard to those who are employed to work with excrete collection and reuse, but there is little epidemological evidence. Workers may accidentally swallow pathogens or carry them home on their clothes or bodies.

A specific occupational hazard of excreta use could be schistosomiasis, but only in areas where the disease is endemic and where intermediate snail hosts are present in the ponds. This helminth disease, particularly Schistosoma japonicum, has been related to excreta reuse. Eggs may survive in faeces for more than 1 week so that if fresh excret excreta is applied to ponds, containing certain amphibious snail hosts, the latter may become infact infected. Larvae are shed into the the water following development within the snails and can bore into the human skin to infect pond workers. The avoidance of using fresh excreta can control the disease in areas where the helminth is endemic; storage of excreta for two weeks would render it free of eggs.

Consumption of Contaminated Organisms.

The degree of risk varies considerably with the type of pathogen concerned. It should be stressed that although there is little danger of disease from eating well cooked fish or vegetables since the heat destroys pathogens, the consumption of raw, partially cooked or improperly preserved products, can be a serious health hazard. Perhaps the most significant health hazard, which is generally overlooked, is the danger from handling and preparing contaminated products.

Environment for Disease Vectors

There is little or no danger of mosquitos breeding in ponds containing fish, since mosquito larvea are consumed by the fish.

Appendix 11. About IRC.

Public Standpost Water Supplies

An appropriate level of service for many communities in developing countries

IRC

Public Standpost Water Supplies Project PSWS

Public Standpost Water Supplies Project

The development of improved approaches to well-known technology

The Public Standpost Water Supplies Project is one of a series of integrated demonstration projects in which IRC is working in close cooperation with a number of developing countries.

In these projects, the essential technology is integrated into a wider community-based framework for water supply and sanitation which includes practical finance, administration and organization, and community education and participation.

The project aims to develop and promote improved approaches to public standpost systems through demonstration projects and studies and also by the publication of guidelines and the results of field experience.

The Place of Public Standpost Water Supplies

Public standpost water supplies are piped systems serving the community through shared taps, either on their own or in combination with house connections. These systems are technically straightforward and are an appropriate level of service for many communities in developing countries.

Particularly in rural areas, where scattered housing makes house connections expensive and poor urban areas where little revenue can be generated, public standposts could be the most appropriate means of water supply.

In those areas where public standpost water supply is feasible, it is more attractive than point sources, such as wells and hand pumps, because:

- the impact on community health is greater
- less time is spent in fetching water
- there is greater convenience for users
- extension to individual or groups of households is feasible.

Standpost systems may often be more suitable than house connections as more people can be served with a piped water supply for the same cost.

Properly approached, drinking water supply through public standpost systems is a feasible option that is both appropriate and attractive for many communities in developing countries.

Project Objectives

Unfortunately, many public standpost water supplies fail or have limited success, because of difficulties related to public ownership, financial management, operation and maintenance, and also inadequate attention to sanitation. Above all, there is insufficient involvement and education of the community. In response to this:

the main objective of the PSWS Project is to stimulate the development of more appropriate and successful methods to plan, implement, and manage public standpost water supplies with communities in rural and urban fringe areas.

The project is made up of four linked activities:

- demonstration schemes in a number of countries wishing to take part
- preparation of manuals and guidelines
- ongoing evaluation and feedback into the project
- transfer and application of the generated knowledge both within the participating countries and internationally.

Keynotes of the Project

Encouragement of community awareness and participation at every stage of the project.

Recognition that the success of water supply and sanitation systems is determined as much by non-technical components (socio-cultural, organizational and economic) as by the more technical components.

Promotion of a fully integrated approach by bringing together:
- numerous aspects relating to planning, implementation and management
- inputs from various institutions and organizations at country level
- inputs from community, district, regional and national levels
- cooperative activities between the participating countries and other interested countries.

Parallel Development of water supply, sanitation and hygiene education.

Execution on a multi-country basis, initially in Indonesia, Malawi, Sri Lanka and Zambia.

Implementation of project activities in the participating countries through and by national staff.

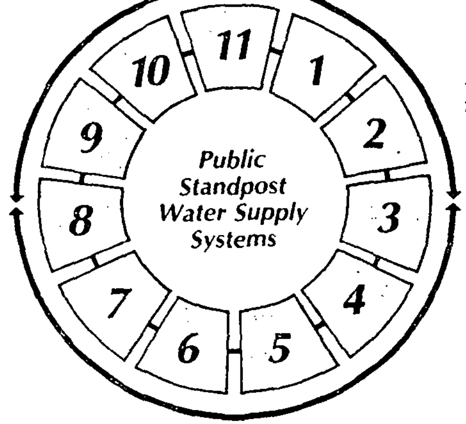
Development of a number of local demonstration schemes within the national water supply and sanitation programmes of the countries taking part.

Stimulation of the transfer of generated knowledge and experience both within the participating countries and internationally.

Photo: H. Wallrafen

The components, which often overlap and many of which have direct bearing on others, include:

1. community participation
2. community hygiene education
3. social aspects
4. financial management and administration
5. operation and maintenance
6. sanitation
7. training and manpower development
8. organization and legislation
9. planning, economics and evaluation
10. technical aspects, design and construction
11. materials, parts and equipment.



3. Assessment of linkages

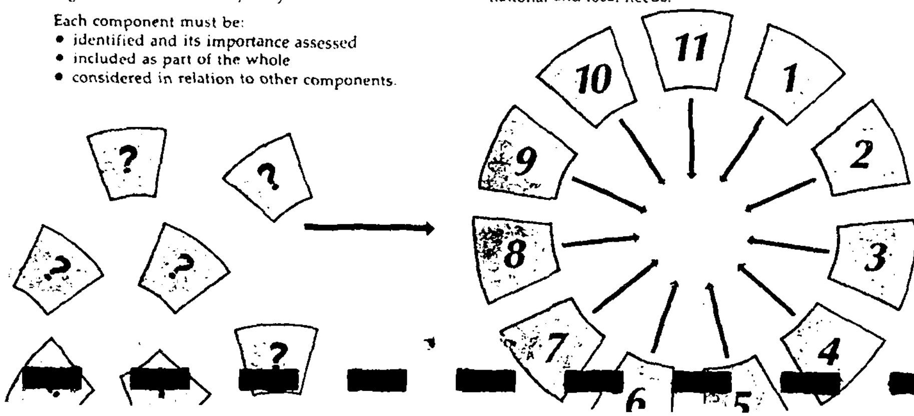
Project Framework

Integration of related components

The essential theme of the project is that in the planning, implementation and management of public standpost water supplies various organizational, economic, socio-cultural and technical components should be brought together and considered jointly.

Each component must be:
- identified and its importance assessed
- included as part of the whole
- considered in relation to other components.

This way of handling the various components of a water supply project can have a considerable impact on the effectiveness and costs of the completed system.
The participating countries are identifying and giving priority to the components most relevant to their national and local needs.



Study, Demonstration, Sharing of Experience

Within the framework of the project each participating country is developing improved approaches to public standpost water supplies. This is being done through study of the problems, demonstration of better approaches, and sharing of experience.

Study

The problems and successes encountered with public standpost water supplies are investigated. From this, appropriate ways to avoid difficulties in the future are being developed. Special attention is given to:

- hygiene education and community participation
- financial management, including revenue generation and administration
- organization of operation and maintenance.

Demonstration

In discussion with the local people, the national project staff have selected small communities in rural and urban fringe areas, where community-based integrated approaches can be demonstrated, monitored, and refined:

- in Indonesia, the West Javan communities of Cikijing, Jagasiri, Playangan, Kesenden/Kampung Melati and Gumulung Tonggoh
- in Sri Lanka, in the communities of Haldumullah, Padaw[redacted]ebahu[redacted]nd Ob[redacted]pura

in Za[redacted]the co[redacted]es of M[redacted]mpol[redacted]

Sharing of experience

The experience gained in the project is being shared with many others concerned with water supply and sanitation. This takes place not only within each country, but also amongst participating and other interested countries and agencies:

- Country projects are being developed as a part of the national water supply and sanitation programmes. Therefore, the findings can be more easily applied in future larger investment programmes, and impact of the project is increased through a leverage effect.
- Based on the experience gained, a series of reports, guidelines and manuals are being prepared by national staff for practical use and in support of training courses and workshops.
- International meetings are being held for project staff and others to share their experiences. The first of these was held in Thailand in 1984, at which the experience of piped water supplies in that country was added to the discussion.
- Exchange visits of national project staff and advisory visits by them to other countries are being encouraged
- IRC is sponsoring the publication and distribution of manuals, guidelines and reports of meetings, prepared in support of the project.

Community Participation

Photo: WHO

For the success of any development activity designed to improve the socio-economic and health status of a community, public support and participation leading to local organization are of first importance. Therefore, it is essential to include health education and community participation in the planning, implementation, and management of public standpost water supply systems.

The community-based approach assists in improving health and the pace of social development and helps to promote user acceptability and a sense of responsibility. This is of major benefit to the proper operation and maintenance and financial management of the completed schemes and their impact.

It is particulary important that women as the main household managers of water participate in this process.

In the PSWS demonstration schemes the community is taking an active role at every stage including:

- implementing hygiene education programmes
- planning service levels
- agreeing financial and maintenance responsibilities
- participating in design and construction
- carrying out day-to-day management of the completed schemes
- ongoing evaluation.

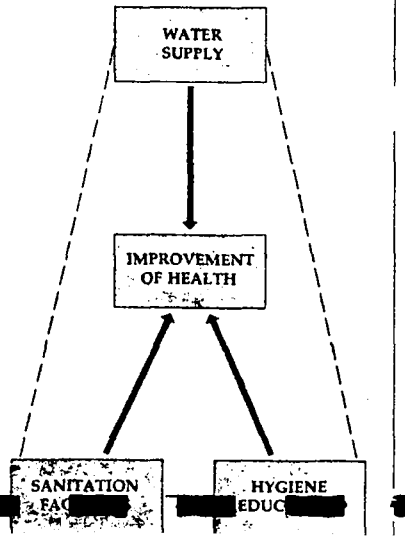
Water Supply, Sanitation and Hygiene Education

The essential links

While access to a sufficient and safe water supply is essential to achieve major improvements in community health, this has only a limited impact if not accompanied by adequate sanitation facilities.

It is equally important that the community develops its own understanding that the benefits of clean water supply and proper sanitation only come through improved hygiene behaviour. This can best be achieved by hygiene education based on dialogue.

These linkages are recognized and promoted and form a most important theme within the PSWS Project.



Organizational Aspects

Country activities

Most of the work on planning and implementing activities in each of the four countries is being carried out by national and local agencies and institutions. In each country, a Project Management Committee made up of representatives of interested agencies has been formed and a Project Manager appointed, usually assisted by a Project Officer. Four coordinating institutions have overall responsibility for the country projects.

The development of Local Water Committees and the training of caretakers at each of the local demonstration schemes are most important aspects of the project.

IRC support

IRC has a supportive and coordinating role, including information and technology support; coordination between the country programmes; organization of regional and international meetings and seminars; organization of bilateral working visits; engagement of consultants on specific topics; preparation of manuals, guidelines and other publications; and the administration of the project as a whole.

International liaison

Working links have been developed with international agencies such as WHO, World Bank, UNDP, UNICEF and UNESCO, and other organizations participating in water supply and sanitation with developing countries, together with others active in the field of small piped supplies in many countries. This network is being continuously developed and extended.

How to contact IRC

Office Address: Prinses Margrietplantsoen 20,
The Hague, The Netherlands

Postal Adress: P.O. Box 93190,
2509 AD The Hague, The Netherlands
Telephone: 070-814911
Telex: 33296 IRC NL
Cable: Worldwater, The Hague

About IRC...

The United Nations has declared the decade 1981 to 1990 to be the 'International Drinking Water Supply and Sanitation Decade'. This action emphasizes the global severity of the problem caused by lack of safe drinking water and sanitation facilities, a problem which is faced by more than 1,500 million people today. In response to the United Nations call for 'clean drinking water and adequate sanitation for all by 1990' many developing countries have established ambitious goals.

IRC strives to assist developing countries attain these goals by supporting programmes for water supply and sanitation in rural and urban fringe areas, where the need for assistance is greatest. IRC is an information-oriented organization whose role is to promote the generation and transfer of practical knowledge and experience, technology and methodology. This includes information on technology, social and organizational aspects, with emphasis on innovative know-how. With this approach IRC tries to close the gap between practical knowledge and the needs of water supply and sanitation agencies. The primary target group includes government agencies and other organizations concerned with planning, implementation and management.

The Centre's activities form a package of information dissemination, training, demonstration and advisory services. The accent is on information support and services, with specific attention being given to:

- appropriate technology
- community education and participation
- human resources development
- programme evaluation and planning.

IRC promotes international cooperation in water supply and sanitation in the spirit of Technical Cooperation among Developing Countries TCDC called for by the United Nations. The Centre works closely with government agencies and institutions in developing countries, and with WHO, UNDP, UNICEF, other UN organizations and the World Bank.

The integrated demonstration project on Public Standpost Water Supplies is being sponsored in the period 1982 – 1985 by the Netherlands Ministry of Foreign Affairs, Directorate General for Development Cooperation (DGIS).

Appendix 12. Economical input in SM.

[redacted]ARAN BIAYA KRAN UMUM DI BLOK SUKAMULYA DESA JAGASARI
KECAMATAN CIKIJING KABUPATEN MAJALENGKA

Uraian Pekerjaan	Volume Pekerjaan	Harga Satuan	Jumlah harga
[redacted]N PERSIAPAN TANAH.			
eratakan tanah/persiapan	40 m^3	Rp 1000,-	Rp 40.000,-
alian tanah untuk Bronkapte-[redacted]	8.5 m^3	Rp 1000,-	Rp 8.500,-
a[redacted]n tanah Bak Penampung	24.5 m^3	Rp 1750,-	Rp 42.875,-
alian tanah pipa distribusi	224 m^3	Rp 1000,-	Rp 224.000,-
alian tanah kran umun	4.5 m^3	Rp 1000,-	Rp 4.500,-
			Rp 319.875,-
RJAAN PONDASI.			
[redacted]si Batu kali Bronkapte - [redacted] I	9.2 m^3	Rp 45000,-	Rp 414.000,-
ondasi Batu kali Bronkapte - ing II	1.5 m^3	Rp 45000,-	Rp 67.500,-
			Rp 481.500,-
RJAAN BAK PENAMPANG AIR.			
r[redacted]an pasir	1.5 m^3	Rp 7000,-	Rp 10.500,-
eton tunbuk 1 : 3 : 5	0,40 m^3	Rp 80000,-	Rp 32.000,-
eton Bertulang 1 : 3 : 5	4.56 m^3	Rp 225000,-	Rp 1.026.000,-
l[redacted]ukur thonson	1 buah	Rp 50000,-	Rp 50.000,-
l[redacted] Tutup Bak	1 buah	Rp 70000,-	Rp 70.000,-
unci	2 buah	Rp 1500,-	Rp 3.000,-
lesteran dan acian	28,55 m^2	Rp 2250,-	Rp 64.237,50
s[redacted]ngan Bata merah	5,6 m^3	Rp 4500,-	Rp 25.200,-
t[redacted] Udara / vent	2 buah	Rp 10000,-	Rp 20.000,-
			Rp 1.300.937,50

Uraian Pekerjaan	Volume Pekerjaan	Harga Satuan	Jumlah Biaya
K[redacted]AAN BRONKAPTERING I & II			
H[redacted]mparan batu belah	10.6 m^3	Rp 10000,-	Rp 106.000,-
Hamparan Koral	7.4 m^3	Rp 12000,-	Rp 88.800,-
B[redacted]on Tunbuk	0.9125	Rp 80000,-	Rp 73.000,-
P[redacted]angan bata (Saluran air [redacted]gan)	9.6 m^2	Rp 4500,-	Rp 43.200,-
Plesteran dan Acian	9.6 m^2	Rp 2250,-	Rp 21.600,-
P[redacted]a U / Vent	3 buah	Rp 10000,-	Rp 30.000,-
			Rp 362.600,-
E[redacted]AAN PASANGAN KRAN UMUM			
Pasangan Beton Tumbuk 1 : 3 : 5	2,9 m^3	Rp 80000,-	Rp 232.000,-
U[redacted]gan Pasir	1.6 m^3	Rp 7000,-	Rp 11.200,-
P[redacted]angan Bata Merah	7.2 m^2	Rp 4500,-	Rp 32.400,-
Plesteran dan Acian	2.8 m^2	Rp 2250,-	Rp 6.300,-
			Rp 281.900,-
ERJAAN PIPA DISTRIBUSI.			
U[redacted]gan Pasir	99 m^3	Rp 7000,-	Rp 693.000,-
P[redacted]angan Pipa Distribusi	832 m	Rp -	Rp 4.049.500,-
			Rp 4.742.500,-
[redacted]AIN - LAIN			150.000,-

REKAPITULASI BIAYA

I. PEKERJAAN PERSIAPAN	Rp	319.875,-
II. PEKERJAAN PONDASI	Rp	481.500,-
III. PEKERJAAN BAK PENAMPUNG AIR	Rp	1.300.937,50
IV. PEKERJAAN BRONKAPTERING I & II	Rp	362.600,-
V. PEKERJAAN KRAN UMUM 4 BUAH	Rp	281.900,-
VI. PEKERJAAN PIPA	Rp	4.742.500,-
VII. BIAYA LAIN-LAIN	Rp	150.000,-
	Rp	7.639.312,50

TERBILANG : Tujuh juta enam ratus tiga puluh sembilan ribu tiga ratus dua belas 50/100 rupiah

Rencana anggaran biaya pergalan dinas selama pelaksanaan - fisik di Cikijing.

1. Uang Harian	45 hari	x Rp31.000.-	Rp 1.395.000.-
2. Uang Transport	14x2	x Rp 2000.-	Rp 56.000.-
Jumlah			Rp 1.451.000.-

Bandung, 1 Agustus 1985.

Sofyan Saari Absor.