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GoG-UNICEF GUYANA
AMAZON PROGRAMME:
WES SUBPROJECT

"Kaimanu Wizai – Kaniniu Wun":

Knowledge, Attitudes, Practices and Beliefs (KAPB Survey)

on

Water and Environmental Sanitation in 11 Amazon Programme Communities

UNICEF – GUYANA WORKING PAPER SERIES

October, 2001

By: Sanna-Leena Rautanen, (MScCivEng), United Nations Volunteer

"*Kalmanu Wizai – Kaniniu Wuri*": Knowledge, Attitudes, Practices and Beliefs Relating to Water and Environmental Sanitation in 11 Amazon Programme Communities

Field activities in July 2000 and January 2001

KAPB-surveys and WES-workshops in:

Region 9: Achiwib, Karaudarnau, Aishalton, Awarewaunau, Maruranau, Shea

Region 1: Santa Rosa/Kumaka, Karaburi, Kwebana, Kamwatta, Waramuri

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FOREWORD

A clean and healthy world: a world in which each person has drinking water and sanitation, participates in its sustainability, and lives in a healthy environment. Vision 21 for Latin America by the Regional Water Supply and Sanitation Collaborative Council (1999).

Article 24 of the Convention of the Rights of the Child recognises the right of children to the enjoyment of the highest attainable standard of health and the need to take appropriate measures to provide clean drinking water and sanitary conditions. Indeed, access to safe water supply and sanitation facilities is a fundamental human right with implications for primary health care, primary education and the overall well being of the community. The GoG-UNICEF Guyana Amazon Programme is working with communities to extend their local water supplies, to improve sanitation facilities and to facilitate sustainable local improvements related to health and hygiene issues. Though many water problems appear to be technical, they are rarely solved with technology alone but require full community involvement in assessing needs and problems and providing sustainable solutions.

Amongst the main planning and evaluation concerns for sustainable water and sanitation projects is the production of reliable baseline data in order to be able to assess the current situation and make plans for future activities. It is from this perspective that the Amazon Programme facilitated the production of this KABP Survey in Regions 1 and 9, through a training programme that relied mainly on University of Guyana students from these regions to carry out the surveys and workshops in their own areas. The KAPB surveys were also premised upon community participation to evaluate the local situation in each community and to make recommendations for future project activities.

It is hoped that this KAPB survey will also assist in planning for other components within the Amazon Programme, in order to facilitate an integrated approach to health, water and sanitation, and education activities.

The WUN initiative has been facilitated by Sanna-Leena Rautanen, presently a Water and Environmental Sanitation Officer and United Nations Volunteer for the GoG UNICEF Guyana Amazon Programme, under the supervision and support from Dr Mary S. Thompson, Technical Cooperation Officer, DFID[1], for UNICEF Guyana Amazon Programme.

Dr Sreelakshmi Gururaja
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[1] DFID: The Department for International Development (United Kingdom) funds Phase II of the GoG-UNICEF Amazon Programme

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Grateful thanks to the WUN Team, without whose commitment and enthusiasm, this project could not have been a success. They are to be commended for their hard work and the contribution of over 100 hours of their free time to be trained in WES issues, and to conduct the workshops and surveys. As a team, they have been truly inspiring in many ways, and I do hope we can keep this innovative initiative alive!

Special thanks to Dr. Mary Thompson, the Technical Co-operation Officer for the Amazon Programme, and Mr Juan Carlos Espinola, the previous Assistant Representative for UNICEF, for supporting the establishment of the WUN Team within the Amazon Programme. Without their support all this could not have happened.

Special thanks also to the new Assistant Representative, Dr Sreelakshmi Gururaja, for supporting the continuation of this initiative under her new leadership at UNICEF.

I would like to thank Mr. A. Sookoo, Ms. G. Mason-Hall and again, Dr Mary Thompson for contributing to the training of the WUN team as trainers to enable them to conduct the surveys and workshops with the communities concerned. Thanks also to the PRAxis Team (a Rupununi NGO) who has played an important role in encouraging the communities to go ahead with their water and sanitation related plans. PRAxis has greatly facilitated the practical progress from ideas formulated in workshops to reality in community development projects.

I would like to thank the Ministry of Education for releasing those WUN Team members who are teachers, in order to allow them to work in the communities, and thus contribute to a truly integrated programme of activities. Thanks also to Daniel Singh at GUYWA for facilitating the WUN Team member's input of the KAPB data into Excel in his office.

Further thanks are extended to Mr John Caesar, Dean of the Faculty of Natural Sciences, University of Guyana, for allowing me to be involved with this project alongside my role as a full time lecturer in the Environmental Studies Unit.

For facilitating the logistical arrangements in the Rupununi, special thanks to the Regional Democratic Council in Lethem, especially Mr Vincent Henry. Last but not least a very special thank you to the communities in Regions 1 and 9 for agreeing to participate in the KAPB survey, and for their warm welcome and collaboration with the WUN Team.

Sanna-Leena Rautanen

October, 2001

Georgetown, Guyana

EXECUTIVE SUMMARY

In 1995 UNICEF developed new strategies in Water and Environmental Sanitation (WES) to focus more on environmental sanitation and hygiene promotion, as well as training in operation and maintenance of water supplies. The new strategies also placed increased importance upon communication methods, and behavioural and attitudinal changes, using the school as a key channel to reach the wider community through sanitation and hygiene education. Pilot research and development projects are considered essential to develop sustainable and cost-effective approaches, as well as identifying best practice scenarios. Community participation and management, with continuous learning and dissemination of learning experiences are considered to be key factors. Intersectoral linkages with health, education, nutrition, environment and other development programmes are amongst the guiding principles. UNICEF recognises that country situations are different and regional diversity may require region-specific WES strategies. Within the operational strategies capacity building at different levels is recognised as the essential pillar for sustainability. [2]

The Amazon Programme places a strong emphasis on the social mobilisation and participation of communities, to foster an emphasis on community led projects and increased project sustainability. The Amazon Programme operates in an intersectoral environment with counterparts who cover primary health care and nutrition, education, WES and initiatives for capacity building and income generation at the community level. The WUN initiative was formulated as an Amazon Programme WES Strategy to respond to the wider UNICEF WES priorities. This report is the result of the KAPB surveys, which in themselves are but one part of a process which has included training of trainers (the WUN Team); conducting WES sessions within community members and school children; encouraging the communities to establish water and sanitation committees; identifying community WES projects to introduce and/or improve and extend local water supply and sanitation structures, and producing region specific IEC packages (WUN Kits).

Whilst the Amazon Programme WUN Team follows UNICEF WES priorities, their approach also coincides with DFID Guidelines for consumer-oriented and demand-led hygiene promotion[3] which are premised upon four action points.[4] The first stage deals with collaborative data collection. (A total of 1300 KAPB surveys in 11 Amazon Programme communities were conducted.) Stage two will focus on feed back and discussion with all key stakeholders. This report constitutes a key resource for continued dialogue under stage two, leading to stage three. Stages three and four will culminate in the formulation and implementation of hygiene promotion plans. Stages two and three are currently underway. The report and the WUN Kit will be used in follow up workshops to continue the dialogue with the communities.

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[2] UNICEF Strategies in Water and Environmental Sanitation. 1995.

[3] LSHTM/WEDC for DFID. 1998. DFID Guidance Manual on Water Supply and Sanitation Programmes.

[4] Collaborative data collection; feedback and discussion with key stakeholders; hygiene promotion plans, implementation, monitoring, etc.

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LIST OF ACRONYMS

ARI	-	Acute Respiratory Illnesses
CBR	-	Community Based Rehabilitation
CHW	-	Community Health Worker
DfID	-	Department for International Development (UK)
GBETT	-	Guyana Basic Education Teacher Training project
GoG	-	Government of Guyana
GUYWA	-	Guyana Water Authority
IEC	-	Information, Education and Communications
KAPB	-	Knowledge, Attitudes, Practices and Beliefs
NCERD	-	National Centre for Education Resource Development
RDC	-	Regional Democratic Council
SIMAP	-	Social Impact Amelioration Programme
VLOM	-	Village Level Operation and Maintenance
WES	-	Water and Environmental Sanitation
WUN	-	Water in Wapishana language

PART I

AMAZON PROGRAMME AND CAPACITY BUILDING FOR THE WATER AND ENVIRONMENTAL SANITATION SECTOR

Key words: Participatory action development, community involvement, participatory methodologies, human resource development, community empowerment

Photo 1. The WUN Team inspecting a well in Maruranau, Region 9

1. CAPACITY BUILDING FOR THE WES SECTOR

1.1 UNICEF, AMAZON PROGRAMME, WATER AND SANITATION

Children have a fundamental right to life, survival and development. This is only possible where they have access to basic services in an environment that is conducive to their health and well being.[5] Water and environmental sanitation (WES) plays a central role in UNICEF's mission to promote child survival and development. Improved water supply and environmental sanitation can directly and significantly affect community well being, leading to better health and a better quality of life for all community members. The concept of environmental sanitation covers all factors in the physical environment that may negatively impact upon human health and well being. WES in the Amazon Programme relates to drinking water from source to storage, disposal of solid waste and wastewater, drainage, vector control, and the safe disposal of human excreta.

The sustainability of WES projects has environmental, institutional, financial, technical, cultural and social dimensions. Good practice involves community consultation and full participation when planning, constructing and maintaining WES structures. Sustainable and successful WES projects should consider local needs and preferences. Technology should be chosen to reflect local conditions and be suitable for management, operation and maintenance by the local parties responsible. Many rural water projects focus on Village Level Operation and Maintenance (VLOM) management of rural water systems. In such systems, the use of local resources and materials is encouraged, and solutions based on local capacity and technical capability. These projects are also likely to be more sustainable due to dependence upon local human and financial resources[6]

In rural Guyana, water supply projects have rarely considered the wider community context. Project resources tend to be allocated to one or two key locations, such as schools, health posts and other public buildings. To improve the water supply and sanitation in communities in general, people should be offered technical support and know-how to improve safety and efficiency in existing systems. Technical support can also be offered in terms of material assistance, e.g. by providing cement for well improvement. The WUN[7] initiative attempts to deal with these issues, and several communities have already shown interest and initiative following WUN workshops. For example, a community-well pilot-project has been completed in Maruranau in South Rupununi where the community has refurbished and improved safety for 30 family wells, using the cement provided by the Amazon Programme. Subsequently, two other communities have also requested materials for similar projects, including VIP latrine construction. WES workshops were held in both these communities earlier this year.

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[5] The Convention on the Rights of the Child recognises the right of the child to the enjoyment of the highest attainable standard of health and with specific reference to clean drinking water, and the dangers and risks of environmental pollution (Article 24).

[6] DFID Guidance Manual for WES Chapter 1. http://www.lboro.ac.uk/well/gm/

[7] "WUN" is a Wapishana language word for water, and was chosen as a name for the team as well as for the information package to reflect the importance of cultural variations and the need for culturally sensitive development

This document outlines activities and results obtained by the WUN Team as a part of the Amazon Programme WES sub-project, aimed to address capacity building in the water and environmental sanitation sector in Amazon Programme communities. For an assessment of the technical aspects of the WES, see the recent WES report published in the UNICEF Guyana Working Papers Series.[8]

It is hoped that this document will assist the Guyana Water Authority (GUYWA), the Ministry of Health, the Ministry of Education, and other Amazon Programme counterparts in planning future activities.

1.2 OBJECTIVES AND METHODOLOGY OF THE "WUN"- SUB-PROJECT

The main objective of the WES sub-project is to improve the delivery and quality of WES services in hinterland regions. Crucial strategies for achieving this goal include local capacity building with community members to develop their skills in planning, development and maintenance of water and sanitation systems, and development of hygiene related knowledge and activities. The WUN initiative essentially addresses the capacity building aspects of the WES sub-project where the expected outputs are:

- Collaborative data collection;
- Transference of skills to and between key stakeholders;
- The creation of an enabling environment for further development in the WES and health sectors, including the development of school and community specific WES action plans.

This will be achieved through;

- Dialogue with key stakeholders;
- Technical training;
- Information, education and communication (IEC) strategies to raise awareness of water hygiene and environmental sanitation.

A direct output of the IEC component will be the creation of a WES information package (WUN Kit).

1.3 WUN - TEAM

The WUN Team is composed mainly of University of Guyana students from the Hinterland regions. In the initial WUN Team there were eight members of which four came from Region 9, three from Region 1 and one from Region 6. All are students at the University of Guyana, except one who attended the Technical Training Institute. They were or are studying in various departments, including Technical Education, Primary Education, Administration, Business Management, Surveying and Environmental Studies. Five members are also practising teachers. All the team members have a strong interest in community work and have experience with various

[8] Rautanen, Sanna-Leena. 2001. Assessment of the water supply and sanitation in six communities in Region 9. Field Trip Report., UNICEF Guyana Working Papers.

projects including Rights of the Child, Community Based Rehabilitation, Escuela Nueva, Santa Rosa Wildlife Club and malaria eradication. "Train the Trainer" sessions took place in Georgetown and aimed to update and supplement trainee's knowledge on:

- WES related issues;
- Survey methodology, including questionnaire design, coding and use of computers (especially the EXCEL software package);
- Participatory methodology, workshop planning, implementation and management skills.

Since five members of the team were teachers, the integration of education with WES issues became an important component in the process. Trainees were further trained in the use and coding of survey tools, as well as in health and hygiene issues, participatory training methods, monitoring and evaluation. Visiting speakers were invited to cover these topics. The trainees were also able to gain experience in computer use, including word processing, graphics and a spreadsheet. As part of this process a KAPB survey tool was developed and tested at the Amerindian Hostel in Georgetown., and consequently refined for use in the communities in Regions 1 and 9.

1.4 KAPB SURVEY

REGION 1

The WUN Team conducted the Region 1 KAPB surveys in July 2000. A total of 606 surveys were conducted in the following five Amazon Programme communities: Santa Rosa - Kumaka - Acuero, Kamwatta, Kwebana, Karaburi and Waramuri (Table 1.1 and Figure 1.1).

Table 1.1 Summary on total number of KAPB surveys completed in Region 1

Community	CHW	Teachers	Students	Households	Total
Santa Rosa/Kumaka/ Acuero	-	28	51 Community High 105 Primary 72 Secondary 228 Total	59	314
Karaburi	2	5	30 Primary	25	62
Waramuri	2	13	41 Primary	49	105
Kwebana	1	5	31 Primary	28	65
Kamwatta	0	4	40 Primary	16	60
TOTAL	**5**	**55**	**370**	**176**	**606**

The activities carried out were:

- surveys in five Amazon Programme communities;
- discussions with village captains, village councils, Amazon Committees, teachers and health workers on the interests, needs and priorities of the communities with reference to the WUN Kit.

- collection of media from village school children in the form of prose or art work for the production of posters and illustrations in the WUN Kit.

REGION 9

The WUN Team conducted the Region 9 KAPB surveys in January 2001. The activities carried out were:

- surveys in 6 Amazon Programme communities;
- discussions with village captains, village councils, Amazon Committees and teachers and health workers on the interests, needs and priorities of the communities with reference to the WUN Kit.
- collection of media from village school children in the form of prose or art work for the production of posters and illustrations in the WUN Kit;

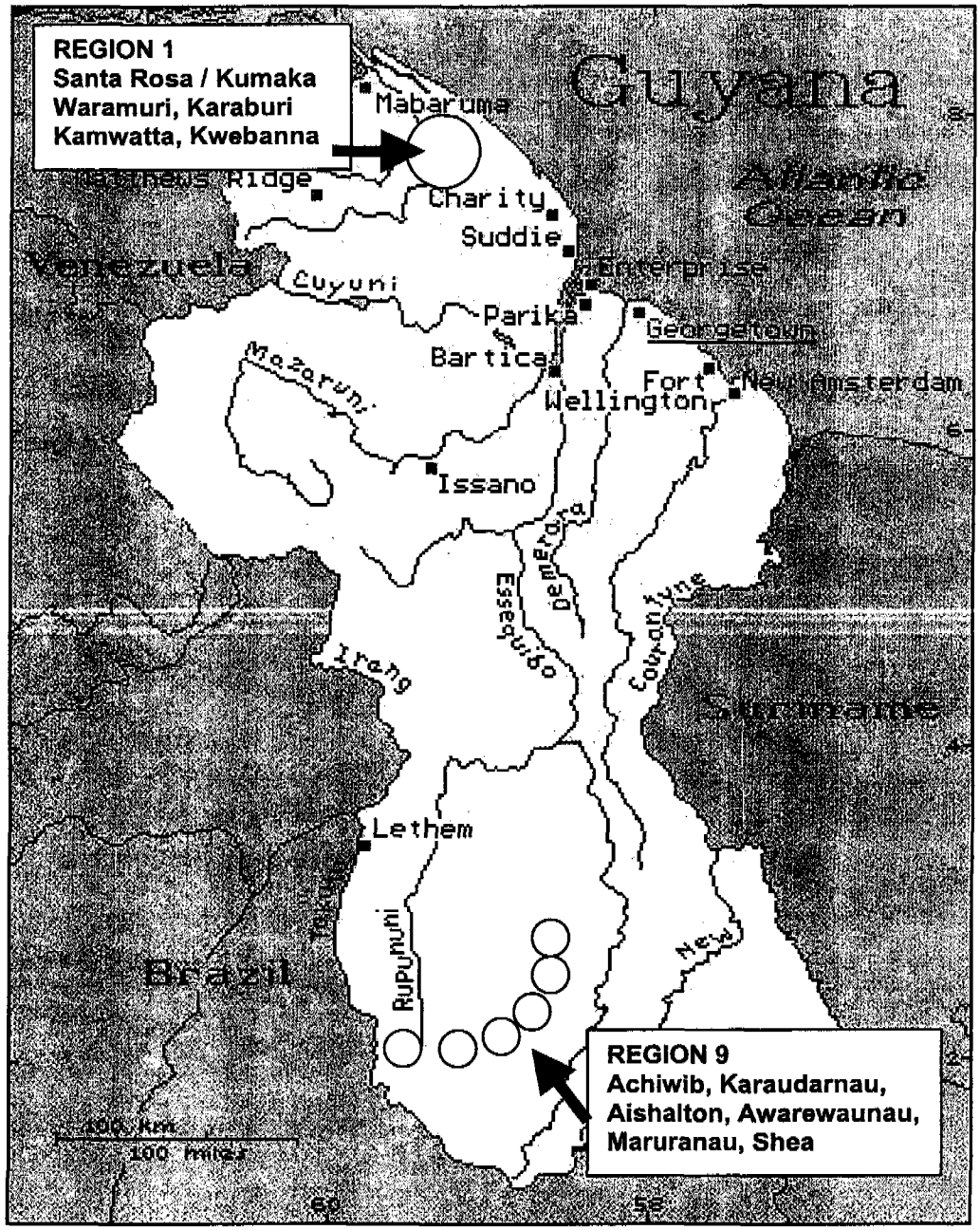
Other field work activities were also conducted (see Part II). A total of 694 surveys were conducted as part of the WES workshops in the following six Amazon Programme communities: Achiwib, Karaudarnau, Aishalton, Awarewaunau, Maruranau and Shea. (Table 1.2).

Table 1.2 Numbers of completed surveys in Region 9 (January 2001). Total number of teachers and student in brackets; N: Nursery School, P: Primary School, S: Secondary School

Community	Teachers	Schools	Households	Total
Achiwib	N: 1 (1) P: 2 (2) Total: 3 (3)	N: 0 (23) P: 48 (156)	17	68
Karaudarnau	N: 3 (3) P: 3 (8) Total: 6 (11)	N: 0 (54) P: 80 (321)	37	123
Aishalton	N: 4 (5) P: 7 (8) S: 3 (4) Total: 14 (17)	N: 0 (61) P: 75 (232) S: 80 (86) Total: 158	30	202
Awarewaunau	N: 2 (2) P: 4 (5) Total: 6 (7)	N: 0 (36) P: 16 (176)	72	94
Maruranau	N: 0 (2) P: 7 (7) Total: 7 (9)	N: 0 (31) P: 66 (226)	22	95
Shea	N: 2 (2) P: 4 (4) Total: 6 (6)	N: 0 (20) P: 42 (101)	31	79
Total	**N: 12** **P: 27** **S: 3** **Total 42 (53)**	**P: 330** **S: 80** **St I: 33** [9] **Total 443 (1298)**	**209**	**661 + 33 = 694**

[9] St Ignatius Secondary School children; students from across the Rupununi. A reference group.

Figure 1.1 Maps of Region 1 (Moruca) and Region 9 (South Rupununi)



PART II
WORKSHOPS, FIELD WORK AND WATER QUALITY TESTS

Key words: Field activities Region 1, WES - Workshops in Region 9, sanitation and VIP latrine building workshops in Region 1, water quality tests

Photo 2. Workshops in Karaudarnau, Maruranau and Awarewaunau, Region 9

2. WORKSHOPS AND FIELD WORK

2.1 FIELD ACTIVITIES

In Region 1 the WUN Team conducted KAPB surveys, activities with children, and water quality testing. In Region 9 more extensive field activities were conducted because by January 2001 the WUN Team was practised and experienced enough to conduct complete one-day WES workshops in each community, and the approach was therefore modified. The workshop format in Region 9 was extended and guided through the experience of the WUN Team in Region 1, especially an unplanned session in Karaburi, Region 1, where young and old members of the community came together with a range of issues for the group discussion. From this point forward the WUN Team agreed that KAPB surveys are useful tools in facilitating community discussions by providing a framework that covers a wide range of WES topics. It gives people time to relate the topics to their own household and community situations. Thus the KAPB survey is not only a data collection tool but can also be used to create entry points for discussion in WES workshops.

The following sections are divided into WES workshops (Section 2.3) and Water Quality Tests (Section 2.4). These two activities are linked. Although water quality testing in Region 1 was carried out as a separate activity to train WUN Team members to assess water quality, by the time the work was carried out in Region 9 the workshops and the water testing were intrinsically linked together. This was because the community were involved in workshops on water quality issues, including water source protection and hygienic maintenance of water stores.

2.2 WES WORKSHOPS IN REGION 9

Activities in Region 9 centred on workshops that covered the following goals:

- conduct KAPB-surveys in six villages;
- hold workshops on water quality, drinking water treatment, safe and sanitary water sources (wells) and home environment, and VIP latrine building;
- assess locally available materials and produce a detailed bill of quantities and cost estimates for VIP latrine construction, and build demonstration VIP latrine as part of the workshop in one community;
- test and discuss the results of the microbiological water quality of the school wells and 1-2 community wells as part of the workshops;
- distribute pilot water quality test material for the Community Health Workers (CHWs), and instruct CHWs in periodical inspection of the school wells and other locations when a problem is suspected;
- collect photographic and audio-visual material to be used in the WUN Kit (video, photos).

WORKSHOPS WITH COMMUNITY GROUPS

Six communities in Region 9 took an active part in workshops. People commented that although they are frequently invited to attend meetings, these are rarely interactive. The UNDP/WHO material about community health, water and environmental sanitation presented at the workshops were well received and could be adapted for the WUN Kit should UNDP/WHO agree.

Presentations by community members in the plenary sessions covered a wide range of topics, including good wells, environmental sanitation in the community, water and environmental sanitation in the household, water and sanitation related health, and *Visions for Future.* The workshop outputs will be used as source material for the compilation and production of the WUN Kit. Many of these presentations were made in the local language (Wapishana) and it is anticipated that the WUN Kit will be in a bilingual format (English and Wapishana).

Problems identified by the communities themselves included:

- Wells: incomplete structures, lack of availability of materials and skills;
- Water holes and shallow wells: these can collapse if dug deeper in an attempt to get water also during the long dry season;
- Unprotected, incomplete, shallow and unlined wells and water holes pose both quantity and quality problems.
- Shortage of maintenance personnel for community water structures;
- Shortage of pumps to clean contaminated wells;
- Latrines: these flood during the rainy season;
- Shortage of information regarding domestic sanitation – such as recommended distances of rubbish pits from homes, toilets from wells, and bathrooms from wells. In Aishalton the Environmental Assistant gave an additional presentation on this topic;
- Shortage of hand washing facilities near the toilets - discussion on appropriate designs;
- Shortage of drainage and fencing around the water sources (taps/hand-dug wells/pumps);
- Questions of responsibility with regard to supply and maintenance of water and sanitation infrastructure to schools, health posts, sub-district hospitals and communities (i.e. GUYWA, Ministry of Education, Ministry of Health, regional democratic councils, village councils and community members).

Full discussions were held on the problems as they exist at the present time leading to visions for the future under the title *"Community Expectations for 2003"*. From this vision the following overall goals were set by the various communities:

- Safe drinking water sources, coverage of storage jars to avoid contamination, education of persons in drinking water treatment for all homes;

- Properly constructed and secured burned brick wells for each home. Community maps were presented and well sites identified;
- Establishment of well committees with CHWs and Environmental Assistant (where available) to check the water quality and give guidance on upgrading wells;
- Local trained personnel to maintain wells and community water supply systems;
- Improvement and extension of existing community water supply (especially through overhead tanks and increased number of standpipes) to homes and schools;
- All health posts and district hospitals should have reliable and good quality water systems;
- More washing basins for hand washing at schools and at home. Suggestions included drums for the schools and buckets for homes, both with small taps installed at the bottom or some other means of getting the water without direct contact;
- Reduction in diarrhoea and other water-related health problems;
- Education on proper use of the VIP latrines;
- Proper VIP latrines for each family. VIP latrine plans and targets were set for schools and communities. Community maps were drawn and well and VIP latrine sites were identified;
- Improved environmental sanitation - e.g. public rubbish bins at and garbage disposal and burning sites at appropriate locations. All homes equipped with proper garbage disposal site;
- Other ideas included lights in the wider community and fencing of school compounds and health posts to keep the animals from "messing up" the yard.

WORKSHOPS WITH SCHOOL CHILDREN

Student activities were mainly directed at the Primary Form 3 school children and above (9 years and upwards). Smaller children participated in some of the activities, but only the older children did the surveys. In Aishalton team members spent a full day with primary and secondary pupils. The secondary students commented that previous workshops had been shorter and less in-depth, and appreciated the opportunity for involvement.

Activities included surveys, discussions, singing, drawing, and story writing. Students prepared presentations for the plenary sessions, which included teachers and parents. These were well received in all communities. Parents and teachers attended to participate in discussion of the children's contribution and the results teachers' sessions.

Presentations covered a wide range of issues, including school environment, garbage disposal, school water systems and toilets, as well as visions of a healthy place to live

and visions for the future of the school compound. Students also identified healthy habits, drawing pictures of boiling water, having water tanks with covers, having good drains, burning rubbish and cleaning the yard, as well as pictures illustrating personal hygiene practices and physical education. Groups identified issues relating to unhealthy environment, drawing pictures of littering, flies, "messing up" in the bushes and poisoning the fish. Students made very confident presentations for the adults about good wells and drinking water treatment at home.

All the material was photographed and left at the schools as a reminder of the importance of a healthy environment. Students' suggestions for the school compound included better toilets and separate toilets for the smaller children so that they would not mess up the other toilets; more garbage bins; better water systems (Aishalton, Awarewaunau, Maruranau); and fencing to prevent animals from "messing up" the school yard (Achiwib, Maruranau, Aishalton Secondary School). At a minimum, the water sources should be fenced and properly drained. In several locations the poor drainage attracted animals, especially pigs, to "mess" around the water places (taps/water tanks).

The need for strong water structures was also expressed. In some communities stand pipes and rainwater tank connections are made of PVC. Such structures cannot support children using and playing with them, nor animals using the posts for "scratching their backs". Concrete stand posts, iron piping and waste-not-taps were requested and recommended. Some communities already have these.

Students identified problems relating to garbage disposal. The usual practice is to burn the garbage in open holes. In Karaudarnau it was noted that more problems arise during the rainy season when the garbage is burned only about once a month. The location of the garbage sites was discussed but no action plan to improve the site was developed. Achiwib and Karaudarnau have now established a Water and Sanitation Committee that could address the problem. At the Aishalton Secondary School the students expressed their concern about having the garbage hole next to the location where the lunch was commonly sold and eaten. Garbage disposal methods and sites were further discussed in the plenary sessions with the parents and the teachers, as the household groups expressed similar concerns and problems relating to siting and method of garbage disposal. Community-wide strategic plans, also including schools, are amongst the issues for follow-up workshops.

Another environmental sanitation related issue raised by the children in most communities was that "*the smaller children mess up the toilets*". In the KAPB surveys toilets were frequently described as "*smelly*" or "*stink*". It was clear from the many presentations that students avoid the toilets even if in theory they agreed how important it was to use a toilet. Smaller seats or steps were recommended. No detailed maintenance plans were done although the maintenance of the toilets was discussed and agreed upon as an important issue. The task usually falls on the students. This issue could be re-considered when the VIP latrine construction commences.

WORKSHOPS WITH TEACHERS

Teachers were interviewed in small groups of two to six persons. Sessions began with the questionnaire to facilitate discussion and collect baseline information about

teachers' knowledge and attitudes relating to WES. A discussion about teaching methods and how water, sanitation and health issues could be integrated into the curriculum followed. Subject areas identified as possible vehicles for WES issues included mathematics, English and other languages, arts, and natural sciences. Some examples were discussed, such as using water as a topic for essay writing; and wells as an example relating to mathematical problems. Also teachers highly regarded songs, stories and poetry as tools in sanitation promotion. On two occasions teachers made a promotional song for the use of latrines.

In the discussions amongst themselves as well as in their presentations in the plenary sessions with all the other groups, teachers noted that students should be encouraged to ask questions and present ideas on WES issues. One way of doing this was demonstrated in the workshops where the children's groups presented their opinions on a wide range of WES issues through drawings and other media. Topics ranged from sanitation problems at the school to the school environment in general, and included future visions.

Teachers were very interested in water and sanitation issues and requested more workshops, textbooks and other teaching materials. Teachers also suggested designing posters using the local language. They agreed that the whole community could benefit from what is taught in school, and that at least one health, water or sanitation related issue could be raised every day. They noted that parents and other adults could be sensitised to WES issues through the Parent Teacher Association (PTA). More detailed analysis is presented in the KAPB survey results in Part III. The issue of formulating lesson plans, including setting objectives and formulating activities, was positively received by the teachers, particularly those who have 10-15 years of experience, but have no formal qualifications. In essence, these workshops touched upon a profound constraint in hinterland education, that there are few qualified teachers with formal training in these areas.

The following issues were raised in the teachers' presentations:

- ***Integrated Teaching Methodology and WES***

Integrate water and environmental sanitation issues into as many school curriculum subjects as possible e.g. art, languages and science. Teachers aimed to present at least one issue related to water, sanitation or health, in their classes every day. Workshops on integrated teaching methods and ideas for presenting WES issues in the classroom were requested. The existing curriculum could be adjusted to reflect community needs and interests, as has happened with the Wapishana Literacy Project in Region 9. Discussions could be held with NCERD to investigate incorporating WES topics into the Escuela Nueva Learning Guides[10].

- ***Music and Drama***

Use art, songs, poems, rhymes and stories to promote messages. Prepare posters in Wapishana to promote WES and health issues. Prepare texts and workbooks with exercises reflecting WES and health related issues.

[10] Escuela Nueva is a subproject of the Amazon Programme basic education project. Learning Guides are one of the tools used to provide appropriate and participatory primary education.

- ***Student Participation***

Encourage students to ask questions and present their ideas about health and sanitation. Remember that what is taught in school reaches the home via the students.

- ***Parent and Community Participation***

Use the PTA to promote health and sanitation in the wider community; and sensitise parents and community members through regular meetings on health and sanitation at school and in the community. Both parents and teachers should work to keep the school environment healthy. Parents should help to provide clean water during the dry season.

SANITATION WORKSHOPS

It was clear from the previous field visits to both Regions 1 and 9 that latrines at the schools and in the wider community require urgent attention. Apart from the overall poor condition of the latrines, they were inadequate in number. As part of this round of WES workshops in Region 9 it was decided to run a series of VIP Latrine workshops, focussing on use of local materials for construction and skills required to estimate bills of quantities. The objective was to facilitate the building of community and family latrines in a cost-effective manner, using local materials. The same exercise was repeated in Region 1 (April 2001) but is not a part of this report. However, latrine construction in Region 1 is currently underway as a result of the VIP latrine workshops in April.

- ***VIP Latrine Construction***

The VIP latrine construction groups consisted of five to ten participants who first covered a range of issues relating to environmental sanitation, focussing on *Ventilated Improved Pit* latrines (VIP). These workshops started with defining *the most appropriate community VIP latrine for 2001*. They were conducted in the Wapishana language, and defining "the most appropriate community VIP latrine" in Wapishana was the first task. The communities came up with very descriptive definitions to explain the main principles that make a VIP latrine VIP. These centred on comfort, lack of smell and prevalence of mosquitoes, with special attention paid to the vent pipe itself. The justification for better sanitation and the main principles of the VIP were discussed in a manner that promoted positive attitudes towards toilets to counter the prevalent negative associations many people have with latrines such as mosquitoes, pests and smells.

- ***Locally Available Materials and Estimating Bills of Quantity***

Factors that negate against the construction of VIP latrines include the cost and lack of availability of standard materials. Cost was a real issue in the workshops but it was agreed that local people could use many of the local materials (see below), as demonstrated in the workshop, and that as these are completely free. The construction of a proper VIP latrine at home need not be expensive. All communities made plans for VIP latrine construction in the future.

Costs and availability of materials for walls and roofing were discussed in-depth and varied between neighbouring communities. For example, the total cost of one VIP

latrine varied from GY$ 6,000 to GY$ 20,000[11]. In some areas wooden structures were not considered appropriate due to termite problems. Alternatives to cement were assessed as availability and costs are a problem. Certain kinds of ants' nests have cement-like material which can be substituted for the real thing.

The workshop included a section on estimating bills of quantities to assist the communities in determining overall costs for future construction of wells, VIP latrines and/or buildings. For many participants this level of planning was a new approach to construction work and is of particular relevance to communities who wish to bid for local contracts with government, donor or regional agencies.

In Maruranau a VIP latrine model was built utilising local materials. For example, bamboo was used for the vent and thatch for the roof. However, the bamboo was later rejected in preference for a PVC pipe because of termite problems. Many communities set targets for the number of good latrines by the end of this year (VIP 2001), and chose a foreman to direct the process in each community. This exercise is being followed up with regard to Amazon Programme Plans of Action for 2002.[12]

- ***Outcome from the VIP workshops***

The VIP workshops ended with wider community presentations in plenary sessions. These included translations of issues raised; technical explanations and draft work plans for each community. The following objectives were set:

Household sanitation:

- Each household should have a 2001 VIP latrine;
- All villagers should be encouraged to improve the condition of existing latrines;
- Each village should increase the number of household VIP latrines by 50%[13];
- Householders should try to improve present condition of available latrines.

Sanitation at community facilities:

- Improve the condition of existing latrines at schools and health posts;
- Plan better community facilities for children and community members in schools and health posts;
- Educate community members about the importance of proper latrines.

Capacity Building in Sanitation:

- Each community should construct a model VIP latrine in a central location (school, health post, market, other), with special consideration given to location in relation seasonal conditions;

[11] US$ 1 - GY$ 187 in October 2001.

[12] The Amazon Programme Plans of Action run January to December each year. There were no plans for family latrines in 2001, but rather school latrines. However, a pilot will be carried out with family latrines in Maruranau during 2001 and, following positive evaluation of that, requests from other villages can be considered either late 2001 or early 2002.

[13] This50% increase in VIP latrines is not based upon a baseline figure was used by communities to express their desire to significantly increase the number of VIP latrines in their communities.

- Each village should develop community work plans and draft proposals for UNICEF Amazon to consider provision of technical assistance and support, and supply of items not available locally (i.e. nails and cement).

2.4 WATER QUALITY TESTING

Water quality and related health issues were a major topic of discussion with CHWs, several of whom noted that they frequently visit homes in their community checking the wells and sanitation facilities at the same time. Due to lack of equipment their assessment is entirely based on visual observation, which is wholly inadequate for assessing water quality. However, they do give advice on issues such as distances of various activities from the water source (i.e. garbage disposal, washing), and health and hygiene practices. With the exception of the Aishalton Environmental Assistant (Region 9), responses to specific questions about well and sanitation facilities were vague and indicated that further guidelines could be provided on water source protection. Possibly a water source checklist should be added to the WUN Kit.

It was evident from the poor water quality test results in Regions 1 and 9 that workshops on disinfecting open hand-dug wells and water storage tanks should be recommended as follow up action. With regard to wells, it may be sufficient to pump them empty and brush the walls clean. However, to eliminate bacterial contamination, disinfecting with chlorine is needed. Common household bleach (5% chlorine) can be used for this purpose and is commonly available in village stores. This is an important training issue relevant to CHWs, teachers and householders alike, especially as chlorine is a hazardous material, which poses a problem if over used but is ineffective if insufficient amounts are used. A Technical Brief for well disinfection, including detailed calculations for chlorine dosage, will be included in the WUN Kit.

An institutional framework for water quality testing should be established and discussed with GUYWA, Ministry of Health and the Regional Authorities. Without this, community based basic water quality testing would not be sustainable as was noted in a meeting with the Regional Democratic Council in Lethem (Region 9). Water quality testing could be incorporated into an existing programme, for instance one dealing with prevention of diarrhoea or environmental sanitation in general. More detailed material and technical support, including a regular supply of water testing kits and related reagents, could be integrated into the activities of the above mentioned stakeholders. This matter should be followed up to clarify whether or not water testing is sustainable.

REGION 1

All the health facilities visited in Region 1 had water supply problems, in both quality and quantity[14]. Water is carried from the creeks and collected from rainwater collection systems, which are all in disrepair. There are no hand-washing facilities although rainwater tanks are used for this purpose. In the dry season these tanks are often empty. In Waramuri and Kwebana health posts, and in Kumaka sub-district hospital, there are flush toilets, but often no water from the rainwater tanks to flush them.

[14] Kumaka sub-district hospital and the health posts at Kwebana, Waramuri, Karaburi and Kamwatta

Bacteriological water quality was tested at Kumaka hospital, which has a set of overhead tanks and a large concrete water storage basin at the ground level. Three rainwater collection tanks were also tested. It was found that the rainwater tanks were seriously contaminated with faecal coliforms. The count was so high that it was impossible to count the plates even when a 50ml instead of 100ml sample was taken. The test was conducted twice for confirmation using UNICEF's portable OXFAM Water Test Kit. The issue was discussed with the medex[15] and the doctor in charge. Problem areas were identified, but as neither the medex nor the doctor was available for in depth discussions at the time of the visit, no practical action was taken to solve the problems which included:

- The tanks are rarely flushed completely empty and cleaned;
- The gutters are not cleaned, but are known to accommodate birds, rats and frogs, as well as bats;
- The rainwater tanks are occasionally pumped full from the nearby creek when the rainwater is not sufficient. This creek runs through the central area of Kumaka, between two hills.

However, the issue was brought to the attention of both GUYWA and the Ministry of Health. Further action is anticipated.

In Kumaka/Santa Rosa the school wells were tested. Of these neither was seriously polluted even though the secondary school had a high total coliform count. This well was under construction and contained very little water. Santa Rosa Primary School hand-dug well is located some 100m downhill from the old school building on the edge of a swamp, in close proximity to a graveyard. At the time of sampling the construction of the well was not finalised. The total coliform count was high but there were only four counts indicating faecal coliforms. Upon completion and disinfecting of the well, the water was tested by GUYWA, and found to be safe for drinking.

REGION 9

Water quality was tested in six communities in Region 9 (Table 2.3). At the time of the visit, two health posts (Karaudarnau and Achiwib) and the Aishalton Sub-District Hospital had benefited from improved water supply systems, installed by GUYWA. There were no problems with water quality in these cases, and the one borderline example (Karaudarnau) may have been related to the very recent construction works and dirty overhead tanks.

The PathoScreen Medium Presence-Absence method was used. This method has been developed for field conditions to detect faecal contamination within 24 hours, to monitor drinking water in tropical climates, to conduct emergency testing and to detect common waterborne pathogens. The method will detect salmonella and other hydrogen-sulphide producing organisms proven to be associated with faecal contamination and thus, the presence of coliforms. This method differs from traditional water quality tests that utilise *E.coli* as an indicator organism (which was used in Region 1). The PathoScreen method is particularly suitable for field conditions

[15] A Medex is a category of health professional in Guyana between the level of nurse and doctor

and remote areas because the medium does not need to be refrigerated and the sample does not have to be incubated at an exact temperature. The system can operate in Guyanese ambient temperature, between 25 – 35 C, a considerably wider range than most traditional methods, with the additional benefit that there is no need for incubators or other expensive equipment, much of which requires external energy sources.

A PathoScreen test kit was left with the CHWs in the six communities though a basic field-test kit of this would greatly assist all CHWs in their work. CHWs were instructed in PathoScreen method using only a sample bottle and a medium pillow containing the reagent. They were asked to use the kit if they suspected that water could have been the source of any health problems. They were also asked to keep records about how they use the 10-15 sample pillows that were left with the kit. The next group visiting the communities will gather feedback. Following analysis of the feedback, a further action plan should be drawn up to present to key stakeholders responsible for communities and/or water and sanitation.

The immediate outcome of the water testing exercises was very visual and attracted widespread attention. This was the first time that this method was used in the Hinterlands and the results appeared to be worrying in most cases (see table 2.3). Although a negative result does not indicate an immediate health hazard, it is a risk and it does mean that the water is unsafe. Plans to disinfect and protect the wells were discussed both in the workshops and on an individual basis. This matter should be followed up as a matter of urgency.

Table 2.3 Summary for each community on water quality tests.

- ***P**: Presence of pathogens, contaminated source, health risk.*
- **: Minor discoloration during the first 24 hours that turned into "Presence" during the next 12 hour period*
- ***A**: Absence of pathogens, water source not contaminated by these indicator organisms (faecal contamination).*

Achiwib	P	*	A	Notes
Nursery and Primary School/tap by the health post			X	The new overhead tank and the windmill had just been installed beside the School. The system was utilising one of the existing tube wells. The wider community actively uses taps by the Primary School.
El Niño hand-dug well with Indian Mk II handpump.			X	
Old open well near the Primary School.			X	Well has been in continuous use by the schools and health post. Good well. Should be maintained as a back up system.
Karaudarnau	P	*	A	Notes
Nursery and Primary School/tap by the health post.		X		The overhead tanks & windmill were set a few days earlier to utilise an existing tube well. It is suspected that the overhead tanks were never cleaned properly or that the contractor slightly contaminated the well in the process of installing the pump.

El Niño hand-dug well with Indian Mk II handpump in the School compound.			X	
Private hand-dug well		X		A typical small diameter open hand-dug well with well head but no cover nor proper lifting devices.
Aishalton	P	*	A	Notes
Nursery School rainwater tank		X		The tank *and* the gutters should be cleaned periodically. It is possible that the tank has never been cleaned properly as the system is relatively new.
Community well near the nursery school (open hand-dug well, working windmill)	X			Well utilised by the nursery school and several households. Structurally, this was a very good well. The bucket and rope has no lifting device. There is no drainage apron or cover.
Primary school handpump with Indian Mk II			X	Well tested clear for the bacteria, but the water has other qualities that people do not like, associated with geological formations.
Community well near the primary school	X			Well utilised by the nursery school and several households. Everybody brings their own bucket and rope. No lifting device. No drainage apron. Structurally this is a very good well, with cover, although the well head has a hole at the ground level facilitating direct entrance of the surface runoff.
Secondary school hand-dug well	X			Very good old well that has been abandoned for years and is visibly contaminated. It was suggested that the Industrial Arts class would construct a wind lass and the Environmental Assistant would help in the decontamination of well. A few sacks of cement could be used to refurbish the cracks in the well head as well as to make a drainage apron.
Private well near the secondary school – present water source for the school		X		Problem possibly related to the buckets and ropes used by the students.
Hospital			X	Sample taken from the tap inside one of the buildings.
Spring		X		Spring is said to run even in the driest seasons. Presently there is a wooden box on top of the actual spring but the site is open to all surface runoff and is frequently visited by animals. See photos.
Community well near the air strip ("La Rose Well")		X		Earth lined 6' diameter hand-dug well with low well head, but no drainage apron or lifting device.
El Niño hand-dug well with Indian Mk II handpump by the Community Centre	X			Problem possibly relating to the water seeping into the well from the manhole.

Private well 1.	X			Very deep, narrow diameter earth-lined well with well head but no proper lifting device. Buckets and ropes on the ground. The shop on the same premises could contribute to the contamination. The well was very low, with less than half metre of water at the time of the visit.
Private well 2.	X			Structurally very good well but not maintained by the previous owner. Cleaning process on going.
Private well 3.			X	Very good example of a hand-dug well with proper well head, lifting device (pulley) and a system that involves ropes and a bucket hanging inside the well.
Awarewaunau	P		A	Notes
El Niño hand-dug well with Indian Mk II handpump. (Also used by the school.)	X			Well has a problem with the yield as well as with the quality. The unsanitary condition may be a direct result of contamination from the cow corral some 200 m up hill from the site.
Health centre rainwater tank – small unprotected open (blue El Niño?) tank			X	Tested "absence" this time but as an open container it poses a risk.
Maruranau	P		A	Notes
Primary school rainwater	X			The parents have suspected quality of the rainwater for a long time. It is possible that the relatively new tanks have never been cleaned properly.
El Niño hand-dug well with Indian Mk II handpump	X			Problem possibly relates to the manhole cover, which allows water to seep into the well.
Private hand-dug well		X		An example of a very good private hand-dug well with well head and apron. Problem could relate to the lifting device, i.e. buckets and ropes.
Shea	P		A	Notes
Primary school open hand-dug well with windmill/tap by the school	X			The windmill had been repaired one day earlier and was working. The problem may relate to the over head tanks that have been out of use for more than a year, as well as to the open unprotected well by the windmill.
Health Centre Dempster-handpump		X		The pump had been repaired a day earlier and the contamination may relate to these activities. The site is far from any housing or corrals. The tube well should be protected.

PART III
KAPB SURVEY RESULTS COMMUNITY HEALTH WORKERS

Key words: Knowledge, attitudes, practises and beliefs, health workers, schools, students and teachers, households

Photo 3. Aishalton Environmental Assistant sampling a spring, Region 9

3. COMMUNITY HEALTH WORKERS

3.1 COMMUNITY HEALTH WORKERS AND WES

"Water supply and sanitation should be regarded as integrated components of primary health care and community development" WHO/UNICEF Guidelines 1978.

The connection between water supply, environmental sanitation (WES) and primary health care has long been recognised. Toilets or safe wells alone will not ensure the health of a community. Hygienic behaviour is equally important, and consequently hygiene promotion is an essential component of WES projects. Further, good structural hardware alone does not improve health unless it is used properly and maintained. Education and technical training are key components in a successful WES programme

Most of the disease agents that contaminate water and food are biological and originate from animal and human faeces. Because diseases associated with water are often communicable, the state of the water supply, environmental sanitation practices and hygiene habits in a community are directly related to the day to day work of the CHWs. They play a key role in promoting safe water sources, drinking water treatment, latrine building and hygiene habits.

Hygiene promotion must be based on what people can do and what they want to do. Household and students surveys tried to identify workable areas for improvement based on these guidelines. Hygiene promotion is inefficient if people cannot relate it to personal experience and concerns, or if they do not have an opportunity to discuss these.[16] People are unlikely to change their behaviour simply on the basis of a new set of instructions, whether these are delivered through posters, information leaflets or lectures. Community members, such as CHWs or teachers, play an important role in encouraging discussion and conveying messages in culturally sensitive ways and with an understanding of the current locally accepted practices.

For these reasons, CHW surveys were an integral part of the overall KAPB survey. The CHW surveys aimed to look at the current knowledge and practices rather than beliefs and attitudes. Although beliefs and attitudes were tested through statements of agree/disagree, these were a minor part of the CHW surveys. Because they are also members of community households, most CHWs also completed a household survey. In Region 1, staff of Kwebana, Waramuri and Karaburi health facilities were interviewed (a total of five people). The doctor from Kumaka sub-district hospital in Region 1 was unavailable. In Region 9, CHWs from all six communities were interviewed (a total of seven people).

[16] Van Wijk, C & Murre, T. Motivating Better Hygiene Behaviour: Importance for Public Health Mechanisms of Change. UNICEF and IRC The Netherlands. 46 p.

3.2 HEALTH POSTS AND WES

REGION 1

Kwebana Health Centre serves a large riverine community (780 people), and some itinerant miners. Until mid-2001 it also served over one hundred seasonal workers in the privately owned timber yard. This health facility utilises rainwater and river water as the principal water sources. Tidal salty water reaches Kwebana in the dry season. Although there are two flush toilets, the water must be fetched from the river. The same buckets are also used for washing. It is recommended that a well with a handpump be installed and the rainwater collection system be upgraded as a backup.

Waramuri Health Centre serves a community population of over one thousand, and some itinerant miners. The facility was renovated in the early 1990s. Its water system consists of a combination of a rainwater storage tank with a pump and an overhead tank supplied by a solar powered electrical pump. Because the pump was not originally designed to utilise solar power, the batteries quickly burned out. The pipes are broken and disconnected. A new hand-dug well was recently built beside the health centre. This is fitted with a handpump. Rainwater collection should be improved, and the gutters and storage tank cleaned. At present the flush toilet is not connected to a water supply. One member of staff reported that the toilet was not in good condition. The medex recognised that sanitation in the community was poor but suggested that this was due to a lack of co-operation in the community.

Karaburi Community Health Post serves around 580 community members and a few additional people from the surrounding area. The original system was installed to run on rainwater, although it is not properly set up and is not working. During the dry season water must be carried from the creek at the bottom of the hill, approximately 300m away. Although a new hand-dug well is being dug close by it will still be necessary to fetch water from a few hundred metres away. It is recommended that the rainwater collection system be renovated, the taps and connections repaired and in addition, that another tank is installed to utilise the other side of the roof. There is a toilet but it was reported not to be in "proper condition". A set of new double-compartment VIP latrines have been constructed to serve the primary school and these will also be able to serve the health post, which is in the same compound.

Medical waste, such as syringes, are typically buried. Other waste is disposed of in plastic bags and burned. At Karaburi waste is dumped into a pit. Kwebana and Waramuri Health Centres burn medical waste in a pit. No information was obtained on the frequency of covering or burning of pits, or whether people or animals have access. Handling and disposing of potentially hazardous medical waste could be a topic of continued training for CHWs and communities in Ministry of Health workshops.

REGION 9

Aishalton has a sub-district hospital that is presently managed by a resident medex, nurses, a CHW supervisor for the sub-region and additional staff. Water supply has been problematic, although at the time of the interviews and workshops, the windmill was working and the hospital had running water. The waste is burned and buried.

The hospital is in poor condition. However, the North American funded Remote Areas Medical (RAM) Team began renovations in April 2001.

Achiwib Health Post had recently had a new windmill and overhead tanks installed by the GUYWA contractor. The tap is now immediately adjacent to the health post. Drainage is already a problem and the surroundings of the tap are popular with the animals that come for the water. Although water sources in the village (usually shallow wells) are generally considered to be safe, respondents viewed water sources on the farms (usually creeks/ponds) to be generally unsafe. The latrine by the health post is relatively new and in good condition. Medical waste is burned and buried in the rubbish hole. A major problem for Achiwib is its remoteness from other communities and the fact that it is seasonally cut-off by flooding. The CHW, who is also Touchau[17], identified nutrition as a major concern.

Karaudarnau Health Post has a new windmill and overhead tank, installed by a GUYWA contractor. Taps were set up beside the school and the health post. There is a basic toilet in the compound. Medical waste is disposed of in a rubbish hole within the health post compound. The CHW considered that improved wells were also a priority in the community, as was garbage disposal. The CHW makes around 20 home visits every month, and advises on safe and sanitary wells and toilets at that time. He also pays monthly school visits, mainly promoting personal hygiene.

Awarewaunau Health Post is located in the same compound as the nursery and primary schools. The water supplies for both buildings are a hand-dug well and rainwater collected in a small, 200 gallon plastic tank that is located on the ground. There are no taps and neither the well nor the tank is covered. The medical waste is burned and buried. The toilet, although basic, is relatively new.

Maruranau Health Post is located in the school compound and would benefit from a functional windmill, and overhead tanks, as pipelines are already installed. The community has applied to SIMAP for assistance. At present, the water is sourced from a hand-dug well and rainwater. Community members have built a new toilet for the health post. Medical waste is burned in a garbage pit, although needles and lancets are disposed of down the toilet. Because the compound is unfenced, the principal problem for the health post and school is that it is not possible to keep animals away to stop them from "messing up" the yard.

Shea Health Post was relocated into a new building constructed in 1999. However, the CHW could not utilise this post until after November 2000 because of structural problems. The new building has no water system and no toilets. The handpump, located approximately 300m way on open savannah, was in working order. Medical waste is burned and buried in a pit.

3.3 PRINCIPAL HEALTH PROBLEMS

OPEN ENDED QUESTIONS FOR THE CHWs

In Region 1 the principal health problems cited were influenza, worm infestations, diarrhoea, A.R.I and scabies in no particular order. Malaria and "fever" were also

[17] Elected head of the village council: in Region 9 a "Touchau"; in Region 1 a "Captain"

mentioned. In Region 9 the list was very similar, but additional problems such as emergency health care and nutrition were raised. Health post conditions were also cited as problems arising under "Health Concerns". Respondents (figures in brackets) suggested that health posts could benefit from development of a range of basic facilities such as extension to the existing health post (2), lights (5), running water (3) and fencing (3).

Figures from recent records kept by the CHWs were collected. The data was not comparable between posts due to wide variations in recording periods, incomplete records, and in some cases no records. Further, these figures are probably estimates and causal diagnosis in health posts is not always reliable (e.g. for the cause of a symptom such as diarrhoea). Moreover, statistics may be under-recorded because people do not always consult with CHWs for some illnesses (especially diarrhoea); and because CHWs may be unable to identify or to reliably test for some illnesses and diseases (i.e. malaria, dengue, TB). Data provided for worm infestation are more likely to reflect the extension of the de-worming campaign amongst school children and other community members than actual cases of worms. Typically, figures for worm infestations were found to match exactly the numbers of school children. In addition, it is likely that many cases of diarrhoea, worm infestations, skin and eye infestations and others that pose no immediate danger go unrecorded.

The CHWs were also asked to identify which diseases in the list were related to water and sanitation (see table 8.1). All respondents associated diarrhoea with poor water quality. However, most did not associate water, (environmental) sanitation and most of the other illnesses. Only one in four people associated dysentery with water and sanitation. Only one in eight associated skin and eye infections, or typhoid with water and sanitation. Three in eight did not see a link between worm infestations or malaria and WES, and nobody saw a link between dengue or yellow fever. This particular result may be due to lack of information concerning these two illnesses, since further information was requested.

CHW and the communities in general showed a good understanding of treatment of diarrhoea with oral re-hydrating salts (ORS), and/or sugar and salt, although questions were still frequently asked. According to CHWs, the most common home treatments were coconut water and homemade re-hydration liquids using sugar and salt, although the surveys did not investigate whether the quantities used were appropriate. In Region 9 salt and lime, fruit fluids and bush medicine such as boiled young guava leaves, were mentioned (see Table 3.2). The most frequent questions asked by patients, as explained by the CHWs, related to the prevention of common diseases, drinking water treatment and location and construction of latrines.

Many respondents were interested in further training or education. One CHW wanted to be trained as a medex and all respondents were keen to learn more. One CHW suggested that "persons dealing with water and sanitation" should organise workshops in communities for information dissemination and training in water and environmental sanitation issues.

CHWs recognised the need for proper sanitation facilities (i.e. new latrines) as a major priority.

Table 3.1 Question: "Indicate which of the following illnesses relate to water and sanitation practices. Explain briefly how." The answers are those of the CHWs in the questionnaires. (N.A. - no answer)

Illness	If related to water and sanitation, how? (14 respondents)
Diarrhoea	***"Diarrhoea is one of the diseases related to water and sanitation because people use untreated water." "Yes, especially when the rain falls." "Diarrhoea is caused by water that is so because most people use the creek." "Improper water supply and drainage, and most households do not have a toilet." "Occurs during the first rains and dry season." "Yes" x 2 respondents.***
Dysentry(severe diarrhoea)	***N.A.x 12 respondents "Yes." "Yes, rainy season."***
Dengue	***N.A.x 14 respondents.***
Worms (intestinal)	***N.A.x 6 respondents. "Yes" x 2 respondents. "Yes. The larvae is spread by the rats (bats?) if the sanitation is kept unclean." "During rainy season because domestic animals in compounds."***
Skin infections	***N.A.x 12 respondents. "Yes."***
Eye infections (red eye)	***N.A.x 12 respondents. "Yes."***
Malaria	***N.A.x 6 respondents. "Yes" x 2 respondents. "Stagnant water, not destroying the breeding places." "Usually appears during dry season also where there is a nearby bushes or swamps."***
Typhoid	***N.A.x 12 respondents "Yes."***
Yellow fever	***N.A.x 13 respondents***
Vomiting	***N.A.x 6 respondents "Yes."***
Other:	***N.A.x 4 respondents ARI: Sudden change in weather. ARI worse in rainy season.***

Table 3.2 Answers by the CHWs to the open-ended questions. (There were 14 respondents. Not all of the respondents answered all of the questions.)

Q: When a patient comes to you with severe diarrhoea, what do you do?	**"Give ORS and advice to prevent diarrhoea" x 3 respondents.**
Q: What are the most common home treatments for the diarrhoea?	**"They use home made ORS based on salt and sugar." "Coconut water." "Salt and sugar, and coconut water." "Salt and sugar, coconut water, boiled water." "Salt and lime." "Boil young guava leaves." "Fruit fluids." "Coconut water." "Boiled water."**
Q: What are the most usual questions that people ask you?	**"What causes diarrhoea and what drug can be used to stop it?" "If rainwater is pure for drinking. Also if running water is pure for drinking." "What causes malaria, diarrhoea?" "Why does malaria come back after treatment?" "Why do you still get malaria even if you use bed nets?" Prevention of common diseases. "Treating of drinking water." "Siting and building of VIP latrines."**

Q: What kind of information would you like to have available? Please list three most needed issues:	**Posters x 2 respondents; Leaflets on diarrhoea x 3 respondents; Drawing materials & markers etc, Booklets for individual studies; Reading materials for CHWs; Transmission of yellow fever and typhoid. Dengue, yellow fever, diabetes, typhoid, guides and information about ARI, prevention of diarrhoea, environment.**
Q: What are the priorities at the health post? Please list three most urgent matters that should be dealt with:	**1. Pit latrine. CHW to be trained as Medex. Better water supply (2) Fence** **2. Lighting facilities. Adequate supplies of drugs and vaccines. Running water at the health post. Latrines.** **3. Training. Lighting system needed. Extension. Transportation/motor cycle.****
Q: Other comments and observations/issues discussed:	**"Would like the persons dealing with water and sanitation to come and hold meetings with residents, explaining the danger and importance of pure water and clean sanitation"; "Pit latrines and upgrading courses for the staff (nurse, medex)".**

STATEMENTS FOR THE CHWs

Statements were designed to test knowledge, attitudes, practices and beliefs relating to water, sanitation and health. Compared to the other surveys, the CHW survey did not emphasise beliefs. Rather, the focus was the health workers views about health and the community at large.

Half the CHWs in Region 1 agreed that community members are interested in health issues. Only one CHW in Region 9 disagreed with this view. Without community interest, it is difficult to disseminate information effectively and change health and hygiene habits, although when asked if it is easy to speak to the community about health and hygiene practices, all respondents in both regions agreed. Of four respondents in Region 1, one did not respond to the question of whether there were health issues that it is difficult to talk about, one agreed and another disagreed. In Region 9 one respondent cited "nutrition" as an example of a difficult issue to discuss.

All respondents felt there was insufficient information regarding water-related illnesses. All respondents also agreed that more information about water and related illnesses would be useful, although in Region 9 they also agreed that they have enough information. All respondents in Region 9 and all but one respondent in Region 1 agreed that CHWs are in a strong position to advise on health, hygiene, and safe drinking water. In Region 1, two respondents had visited schools and spoken to the students about health and hygiene, one person had not and one person did not answer the question. CHWs responded positively to the suggestion of strengthening the link between the schools and community health facilities. Ideas such as science classes looking through the microscope to see the difference between "good water" and "bad water" were welcomed.

According to all CHWs, communities do associate dirty water and diarrhoea. People are also aware of basic treatment methods for diarrhoea, namely oral re-hydration salts, the role of salt and sugar, and use of sensible home remedies such as coconut water. All respondents could and do give advice on prevention of diarrhoea. However,

CHWs reported that patients continuously request information on diarrhoea treatment and especially on prevention, and more information is needed.

All respondents agreed that the number of diarrhoea cases increases during the rainy season. However, most health workers did not associate poor sanitation and dirty water with most of the illnesses listed in the survey.

All health facilities in Region 1 had sanitation problems. Respondents considered improved sanitation as a top priority in the communities. In Region 1 only one in five CHWs felt that the community did not need more toilets. Three CHWs agreed and one agreed strongly. In Region 9 all agreed or agreed strongly. All respondents agreed that fewer diseases occur in a clean environment.

Only two questions in the CHW surveys investigated beliefs. The surveys asked whether people could become ill due to a curse. All respondents disagreed, but not strongly. The other question asked if certain fruits, when in season, can be associated with illness e.g. sores with pineapple, plum. In Region 1 three persons agreed, one disagreed and one did not respond. In Region 9 the responses were similar.

3.4 COMMUNITY HEALTH SERVICES AND THE WUN KIT

All informants agreed that there should be more information available for CHWs specifically and the community in general. Suggestions included leaflets on causes and prevention of diarrhoea, yellow fever, dengue and typhoid. General leaflets as well as reading materials for the CHW were popular ideas. In Region 9 some public awareness material produced by the Community Based Rehabilitation (CBR) project were still available, covering diarrhoea, malaria and sanitation. It is possible that the Amazon Programme could support the printing and distribution of a second set of these leaflets by the CBR project. One respondent also suggested that drawing materials and markers could be used by the CHW to present the message on WES in a local context, so that community members could relate to the problem in more depth. Even a blackboard in the waiting room of health posts could be utilised to reflect rotating health messages. The role of CHWs as health and hygiene promoters in schools should be strengthened by providing them with further ideas through the WUN Kit.

The majority of CHWs did not associate several illnesses (dysentery, dengue, skin and eye infections, typhoid, yellow fever, vomiting) given in the list with WES, particularly those with indirect links through vectors. Greater education on the link between mosquitoes and environmental sanitation is needed. These findings should be further discussed with the Ministry of Health so that the WUN Kit could incorporate existing priorities, messages and/or materials. For example, malaria awareness leaflets have already been produced and dengue posters and booklets are planned.

The WUN Kit for the CHWs should also address water quality. Briefs could respond to such questions as what makes a water source safe, what is good drinking water, how to treat water at home, summary of WES related illnesses and a check list for the sanitary inspection of the water sources and storage containers. Water quality testing is a matter that should be negotiated with the relevant authorities, as was explained in the Part II.

PART III
KAPB SURVEY RESULTS HOUSEHOLDS

Keywords: households, community water supply and environmental sanitation, health.

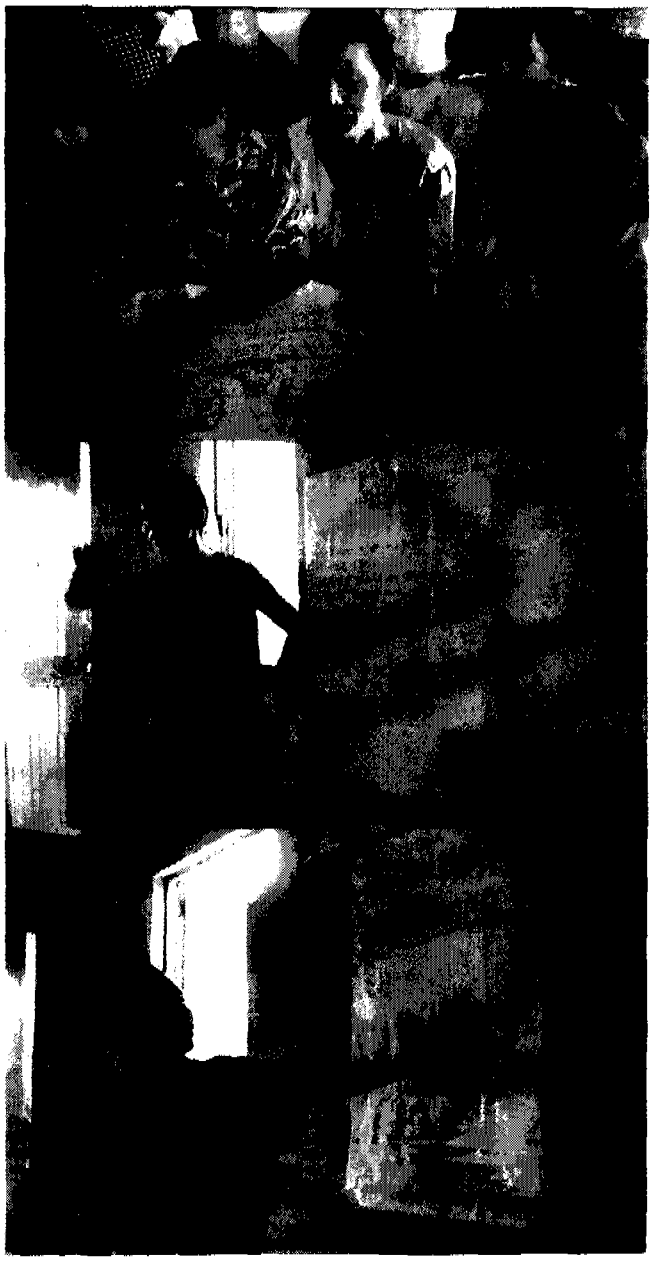


Photo 4. Workshop in Karaburi, Region 1

4. HOUSEHOLD KAPB SURVEYS REGIONS 1 & 9

4.1 HOUSEHOLD SURVEYS

Household surveys were conducted to gather baseline information to assist in planning community water and environmental sanitation (WES) improvements and in compiling the WUN Kit for the households. The findings could help with planning indicators for community based monitoring and evaluation of WES improvements. In Region 9 the surveys were also used as entry points to discussions in the workshops.

The household survey covered issues relating to WES and health, and was presented both in the form of structured questions and statements of agreement/disagreement. Household questionnaires included 38 questions and 26 statements although not all respondents answered every question. The total number of responses to each statement varied as sometimes people were unsure whether they agreed or disagreed, and marked both. Statements containing more than one tick or none at all were not coded. There was overlap between questions in the household and student surveys. This was used to evaluate differences in responses between parents and their school age children.

Mothers were the main target group for household surveys since they usually spend more time than fathers working within the household and with the children. Consequently, their behaviour and daily practices are expected to have a stronger influence on the well being of the children and adults alike.

In Region 1 (Moruca Sub-district) the WUN Team carried out 176 household surveys as one-to-one interviews in the five Amazon Programme communities. In Region 9 (South Rupununi) 209 household surveys were completed as part of the one day WES workshops in six Amazon Programme communities (Tables 4.1 and 4.3).

4.2 HOUSEHOLDS – REGION 1

Facilitators: Ms G. Gravesande, Ms E. Rodney, Mr O. Gomes.

DEMOGRAPHIC DATA

A total of 176 questionnaires were completed in Region 1. Of these, nearly two-thirds of the respondents were mothers and one-quarter fathers. A few individuals identified themselves differently, as "elderly" or "daughter in law". Typically 60% of households had five to nine members. Respondents were relatively young. Half fell within the age group 20- 40 years old, and almost a third were in the 41 - 60 age group. Basic demographic data giving the exact figures for each community surveyed in Region 1 is presented in table 4.1.

Eighty-six percent of the households had children attending school. Of these 20% claimed that their children always take water to school for drinking purposes and another 20% stated "sometimes". The rest, 57%, never took drinking water to school. The communities where most children never took drinking water to school were Kwebana (91%), Kamwatta (80%) and Waramuri (76%). The communities where

children most frequently took water to school were Santa Rosa (72%) and Karaburi (52%). The total of 91% of the parents claimed to teach their children about water, hygiene and/or sanitation. Although few examples were given, they included keeping tidy.

Table 4.1 Demographic data for household respondents in Region 1

Community Region 1	No. of surveys	Respondents (no)			Age group (years)				Members in household (no)		
	#	Mother	Father	Other	< 20	20-40	41 - 60	> 60	1 to 4	5 to 9	Over 9
Santa Rosa	58	45	7	6	8	24	19	7	18	35	5
Karaburi	25	12	9	4	5	17	2	1	9	14	2
Waramuri	49	28	15	6	2	22	20	4	6	30	13
Kwebana	28	13	8	6	2	22	3	0	9	16	2
Kamwatta	16	7	7	1	0	5	8	3	1	11	4
Total	176	106	46	23	17	90	53	15	44	106	26

WATER SUPPLY

Water source and use

Of all respondents 63% claimed to use over five buckets of water per day and 19% answered "*1 to 5 buckets per person*". Only three persons (2%) claimed that their water use was "*under one bucket per person per day*". However, the size of the bucket was rarely recorded and exact figures are difficult to obtain if the persons are not specifically asked to count every bucket they carry each day. More important questions investigated how the respondent felt about their household water source, whether it is perceived as reliable or safe, and whether they would use more water if the water was available or more easily accessible.

As expected rainwater was an important water source for all communities in Region 1 where 20% of all respondents relied solely on rainwater, with 18% relying on a combination of rainwater and water holes or ponds. Another 17% sourced water only from water holes or ponds. Details for each community can be seen in the Fig. 4.1 below. Given the diversity of water sources, it is important to address both rainwater and the surface water sources (ponds) in the WUN Kit.

Popular water sources in Region 1 were "ponds". These are usually small, shallow water holes located in dips in the terrain. The water usually originates from surface runoff or immediate subsurface runoff. They are not springs or wells tapping groundwater, and the water volume can be very small during the dry season. Animals frequently visit these sites as they are unfenced. Hand-dug wells were mentioned only in Santa Rosa/Kumaka.

To investigate water source satisfaction, respondents were asked to select a description relating to their water source. They were then asked whether they had any plans to

develop or improve their water source. Approximately 40% of respondents said that they were "*generally happy*" with their water source and commented: "*It is very good. No problems at all.*" However, 30% were dissatisfied and made comments such as "*No. It could be closer*" and "*access could be easier*". Clear differences in the level of satisfaction emerged between the communities In Kamwatta 63% of respondents were "*generally happy*" with their water source, a curious result since the majority stated that rainwater was their only source and all planned to improve their water source. However, in Santa Rosa nobody was completely happy. Overall, 61% planned to make improvements to their water source. (Fig. 4.2).

Water fetching and storage

Contamination of drinking water may occur during the fetching of water and water storage depending on the practices utilised in the processes and levels of knowledge of hygiene and health issues. The question of fetching water for household use is related to other issues such as gender, time, health and quantity of water available for personal hygiene. Carrying water is heavy work consuming time and energy and can have serious health effects. Studies on the effects of repeated carrying of heavy loads on the spinal column, show that the growth of bones in children can be affected.[18] However, none of these studies have been conducted in Guyana.

The time and energy used for water fetching could be reallocated to other tasks beneficial for family health and well-being. Examples include having a kitchen garden and income generating activities such as poultry farming, craft making or making preserves. Although the questionnaires did not investigate respondents preferred alternative uses of time, it was observed that farming and raising big families include a wide range of heavy tasks already.

In Region 1 distances travelled for water collection are greater during the dry season. Practically all households that collect rainwater have individual collection systems, requiring no water fetching for long distances and no involvement of other households during the rainy season. A large number of children collect water for domestic use, although the adult men and adult women appear to share the work quite evenly. Of the adult respondents 40% felt that water collection was everyone's job. Adults and children had different perspectives on division of labour as illustrated in Fig. 4.3.

Methods of water collection are important since poor hygiene may contaminate the water during collection at the water source or later during storage and use. Ideally, each water source would be equipped with a bucket and rope tied onto a water lifting device to ensure that the bucket and rope do not come into contact with the ground and would be exclusively used for that source. Judging by general observations in the field this kind of arrangement is very rare and no lifting devices were observed. Ponds are open water holes with no structures nor lifting devices, and are often used by animals.

Of all respondents 82% stated that they always used the same bucket or containers for fetching water, and 78% store water in buckets. In Karaburi all respondents claimed to use a bucket for the water storage and in Kamwatta 13 of 16 respondents said that they used buckets. Unfortunately, the questionnaire did not ask whether these buckets were

[18] Dufaut, A. How carrying water affects women's health. *Waterlines Vol. 6 No 3., January 1988*

covered in the home. This would be useful information and should be collected in future questionnaires. Tanks and drums were not very common as only 11% of respondents were using them for water storage. A few people said that water was stored in "*the same bucket that was used to fetch it*", or "*jars and bottles*" and "*other*".

Eighty-two percent of the respondents claimed that water containers were cleaned every day whilst 10% cleaned them weekly. No explanations on cleaning methods were provided, and this is another area for more specific questioning in a future questionnaire.

Questions were asked about where drinking water was stored and about its accessibility. Of all respondents 75% said that they kept their water on a table or a shelf and 17% said the water was kept on the floor. The others, 8%, said water was stored in the yard.

Fifty-one percent claimed that everybody, including young children, had access to this store whereas 31% stated that only adults and older children had access and 17% stated that only adults had access. Fifty five percent of respondents said that the water is removed from the store (usually the bucket) using a cup with a handle (ladle). Of all respondents 26% said that they used whatever cup was available and only 12% answered that they always used the same cup/ladle.

Drinking water quality and treatment

Drinking water was widely considered safe as 84% stated that their drinking water was safe whilst 7% stated that it was not safe and 9% stated "*sometimes safe*". These open-ended questions also asked people who responded positively to this question to explain what made the water safe to drink, but this part of the question was rarely answered. However, some people suggested seasonal problems. Others said water was safe because it was boiled or otherwise treated or that the water is safe "*because of the distance*" although the latter was not specified as distance from what to what. It was also claimed that water is safe because it is running. This is a common belief, as can be seen from the statements.

Of all respondents 45% said they treated their water. Responses varied between communities (Fig. 4.4). For those who responded positively, the main treatment method was boiling (42%), followed by filtering (22%) and bleaching (19%). Combinations of these methods were also used. It is unclear exactly what is meant by filtering, or how much bleach is used. Effective water treatment in the home should certainly be addressed in the WUN Kit.

The majority of respondents (78%) stated that the water is fine without treatment. Only a small minority cited the expense (6%), or resulting taste (8%), as a reason not to treat the water. However, the majority of the respondents (93%) were interested in knowing more about improving the quality of water for drinking, and two percent specifically enquired about filtration methods. Fig 4.4 and 4.5 show responses on drinking water quality at home and methods of treatment respectively.

Drinking water related statements

Most households use rainwater and/or water holes/ponds for their domestic water

source. From observations made in the field, the majority of households surveyed also used creek water. A number of statements were constructed to investigate beliefs and attitudes relating to these water sources. Responses to some of these statements are shown in Fig 4.6.

"*Creek water is better to use than well water* " This statement was set to reveal preferences that may influence a choice of water source, since it may prove difficult to promote wells or other protected water sources where creeks and rivers would be used anyway. The majority of respondents agreed or strongly agreed with this statement (i.e. Kamwatta, 75%; and Kwebana 71%). Both of these communities are located by the river. The highest percentage of persons who disagreed with the statement were in Karaburi. The WUN Kit should therefore also address contamination risks related to the creeks and rivers.

"*Running water is always clean*" This statement relates to attitudes or beliefs concerning running water, namely, creeks and rivers. Overall, 62% of respondents agreed with this statement, although this varied between communities. The figure was particularly high in Kwebana (89%) and Kamwatta (75%), both of which preferred creek water over well water. In Santa Rosa/Kumaka 71% agreed with this statement.

"*It is not harmful to bathe near the water place*" Of all respondents 45% agreed with statement.

"*Water from the well is not always safe*" Approximately half of all respondents agreed with this statement. However, even where running water (creeks) is preferred, it is not always considered *safe*. Some persons may be aware of the risks but prefer the creek water anyway because of taste or availability. The WUN Kit should include a checklist or illustration to indicate what makes well water safe, and the features of an unsafe well.

"*A fish in the well keeps water clean*" Forty-five percent of all respondents agreed with this statement. Kamwatta clearly had the lowest percentage of persons who were in agreement with this statement (6%), whilst Karaburi had the highest (64%). The WUN Kit should make the message clear: it is people who keep the well water clean, not the fish.

"*Rainwater is always pure*" Twenty-six percent of respondents strongly agreed whilst 48% agreed. In total approximately three in four people believe that rainwater is pure. Only one person disagreed strongly. In Kwebana, where 23% cited rainwater as their only water source, 78% agreed with this statement. In Kamwatta 56% used only rainwater and 80% agreed that it is always pure. In Karaburi 88% agreed with the statement, and 61% were utilising rainwater in combination with the river/creek or water hole /pond. Rainwater is as clean as the surfaces it meets and in the persons who contact it. This message should be illustrated in the WUN Kit.

"*You do not need a special cup to draw drinking water*". Although one quarter of all respondents said that they would use whatever cup is available to draw their water almost half agreed that a special cup should be used.

ENVIRONMENTAL SANITATION

Solid waste and latrines

Six questions addressed environmental sanitation including solid waste disposal and latrines. Of all respondents 45% said that they burn their waste and 24% throw the waste in a hole and bury it. The rest (11%) burn and bury household waste. No further information was collected on how burning was done and whether there were any problems with rodents, mosquitoes or other undesirable effects, such as flooding of the pits. A surprisingly large number (10%) answered that they "*throw it in the yard*". In the past, solid waste disposal was not a problem since most was organic and animals ate much of it.

Ninety-two percent of respondents in Moruca have a toilet. Although the question also asked for descriptions of the toilets, these sections were rarely completed. The majority who did provide an answer described their toilet as a wooden toilet, or one made of boards. Only 2% answered "*No. We use a toilet near by but it is not ours*". Persons who did not have a toilet were asked whether they planned to build one in future. Although the question was designed for those who did not have a toilet, it was also answered by those who already had one. Of 131 respondents, only 12 said that they had never planned to build one. There is therefore likely to be high levels of interest in making new latrines as most people who have one still have plans to improve them or to build another. Few problems were cited relating to latrines, although some issues were presented such as flooding, mosquitoes, cockroaches, ants, snakes and rats.

Environmental sanitation related statements

Ten statements addressed the issue of environmental sanitation in the home. Encouragingly, there was a high level of awareness about the relationship between health and using toilets, as well as about the importance of proper garbage disposal (Fig. 4.7). Ninety-one percent of respondents agreed with the statement: "*If all the people used the toilets, many illnesses could be avoided - using the toilet is more healthy than going to the bush*". Of the sample size of 173 households interviewed, the interpretation is that there are still 15 respondents who are unaware of this correlation.

"*Fewer diseases occur in a clean environment.*" This statement was agreed by 81% of respondents, leaving 19% that do not see the health benefits of a clean environment.

"*It is OK to 'mess' in the bushes. It has always been done. Besides, there is more privacy in the bush.*" Eighty-seven percent of the respondents disagreed with this statement. In correlating answers to the previous statements with this one it is clear that respondents are aware of the link between using latrines and health. However, 10% of respondents believe that there is no need to use a toilet

"*It is OK to urinate in the creek or in public.*" Eighty-six percent of all respondents disagreed with this statement. Again, although most people are aware that this is unhygienic, the remaining 14% think it is ok to urinate in the creek or in public.

"*Using a toilet is not comfortable. I would rather not use them.*" A high percentage of all respondents (41%) agreed with the statement, reflecting the overall bad state of the

latrines.

"Toilet paper is expensive. We usually use leafs and sticks." Of all respondents 24% agreed with the statement. This question is relevant when choosing an appropriate toilet design.

"Toilets are not important. There are other things to do first in this community." Over one third of the respondents think that toilets are important and a priority in the community as 63% disagreed or disagreed strongly with the statement. .

"Toilets breed mosquitoes" When people strongly believe that toilets breed mosquitoes, they are reluctant to build them. In all communities 75% agreed or strongly agreed with this statement. The views of the adults are compared with those of children in the Students chapter.

"Garbage can breed mosquitoes" and *"garbage should be burned and buried"*. Ninety percent of respondents agreed with both statements. There is a high level of awareness that unburied garbage can provide a breeding ground for mosquitoes and the issue need not be prioritised in the WUN Kit. However, technical recommendations could be given about prevention of breeding sites, garbage dump locations, and distances of rubbish disposal locations from water sources and houses.

Figure 4.1 Water sources in five communities in Region 1

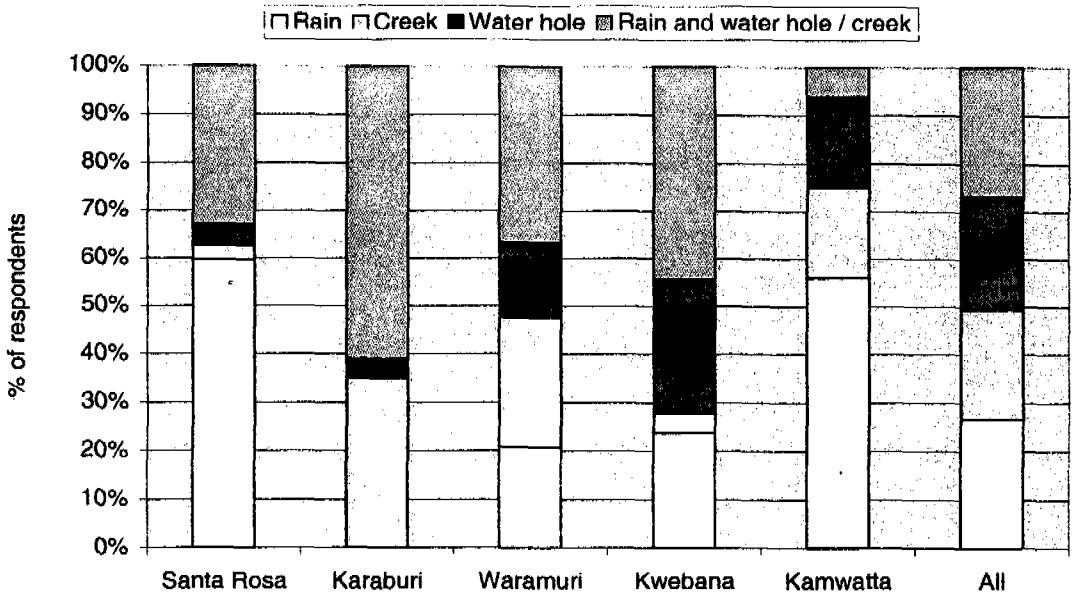


FIGURE 4.2 Water source satisfaction & improvements in Region 1

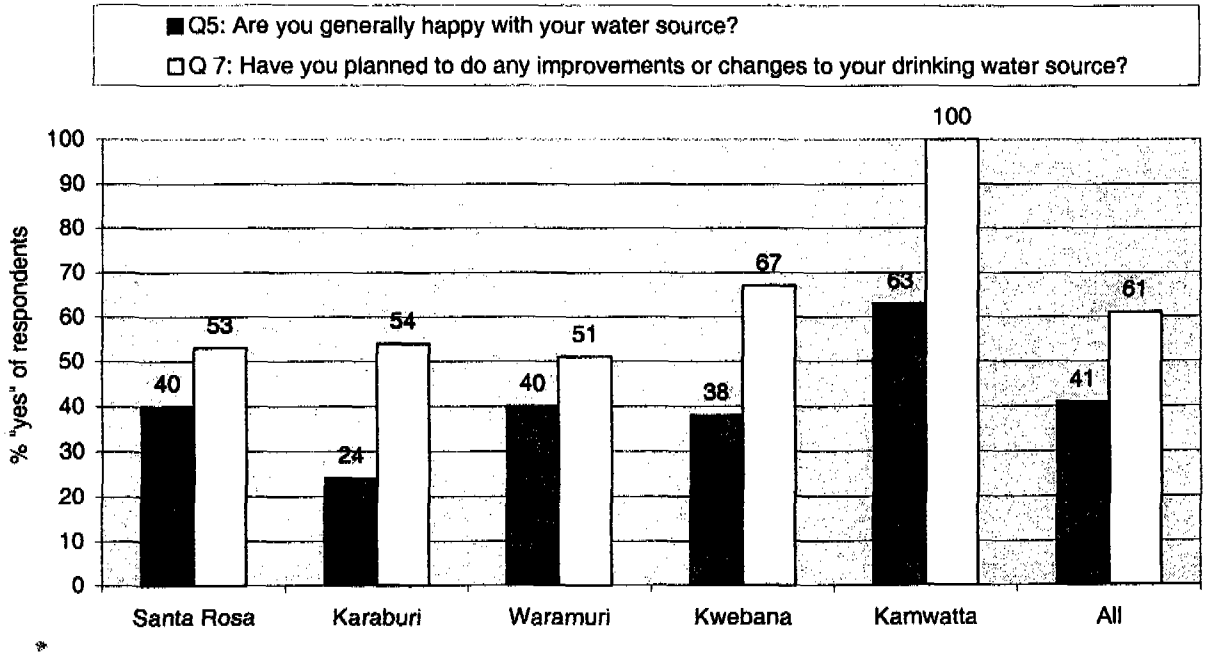


Figure 4.3a "Who does most of the water fetching for home?"
Answers by children and adults in Region 1

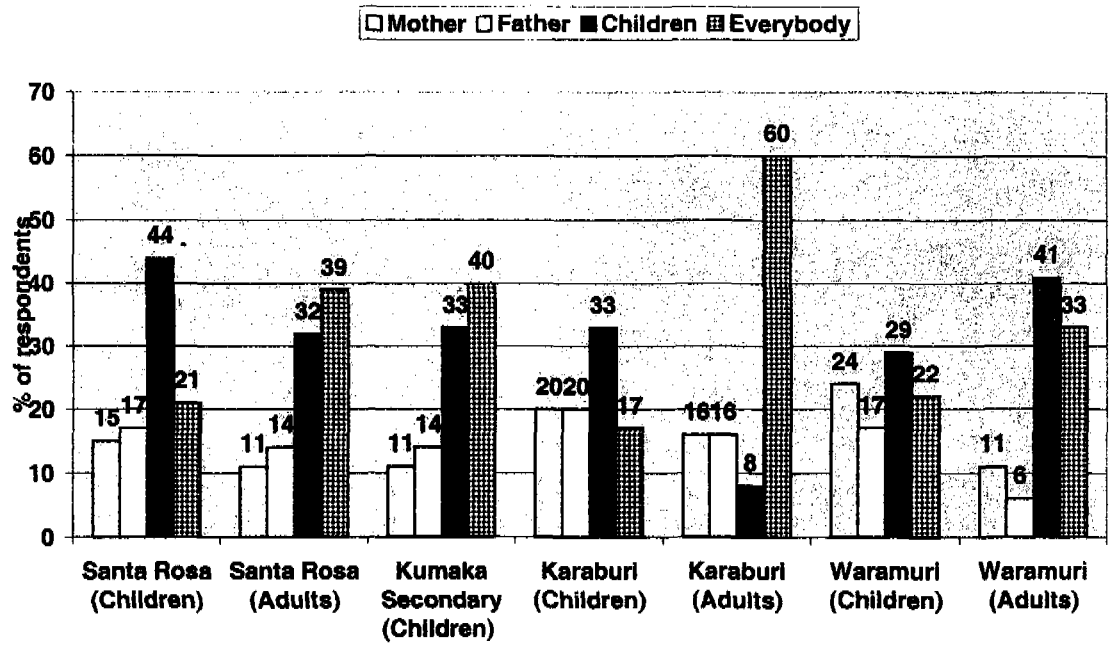


Figure 4.3 b "Who does most of the water fecthing for home?"
Answers by both adults and children in Region 1

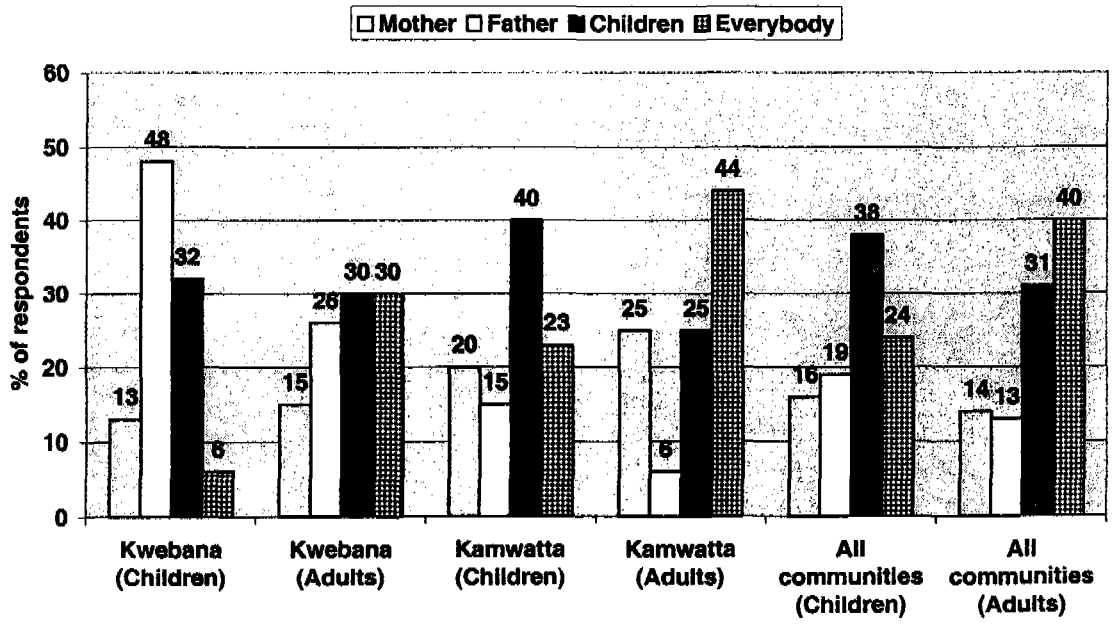


Figure 4.4 Drinking water quality at home in Region 1

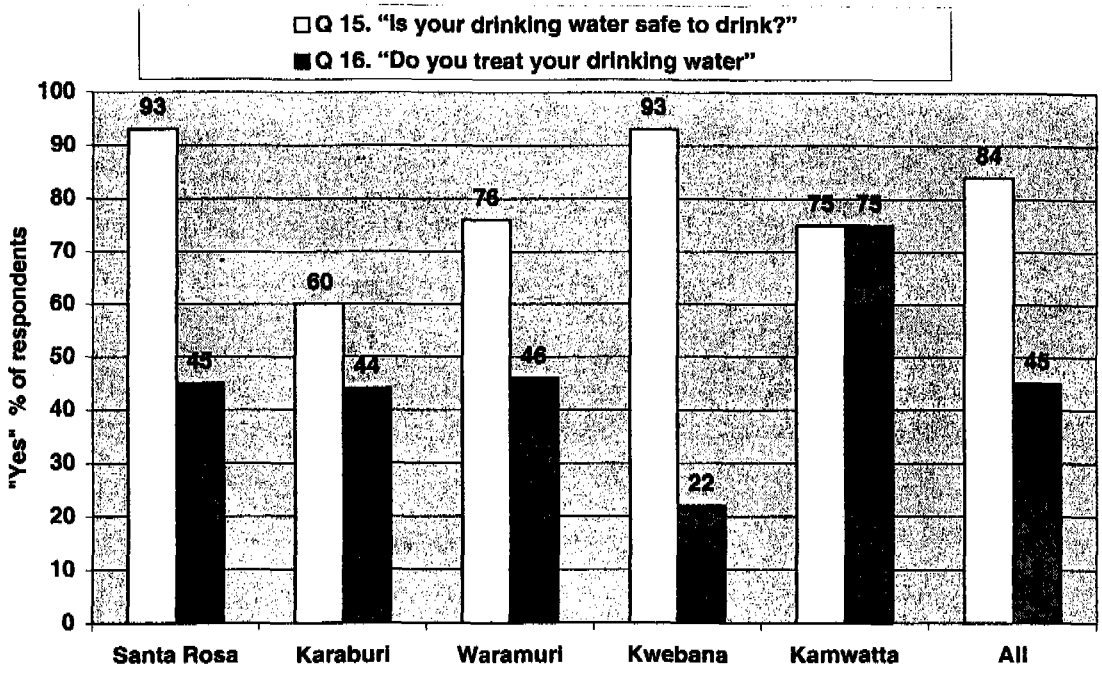


Figure 4.5 Methods of drinking water treatment in Region 1

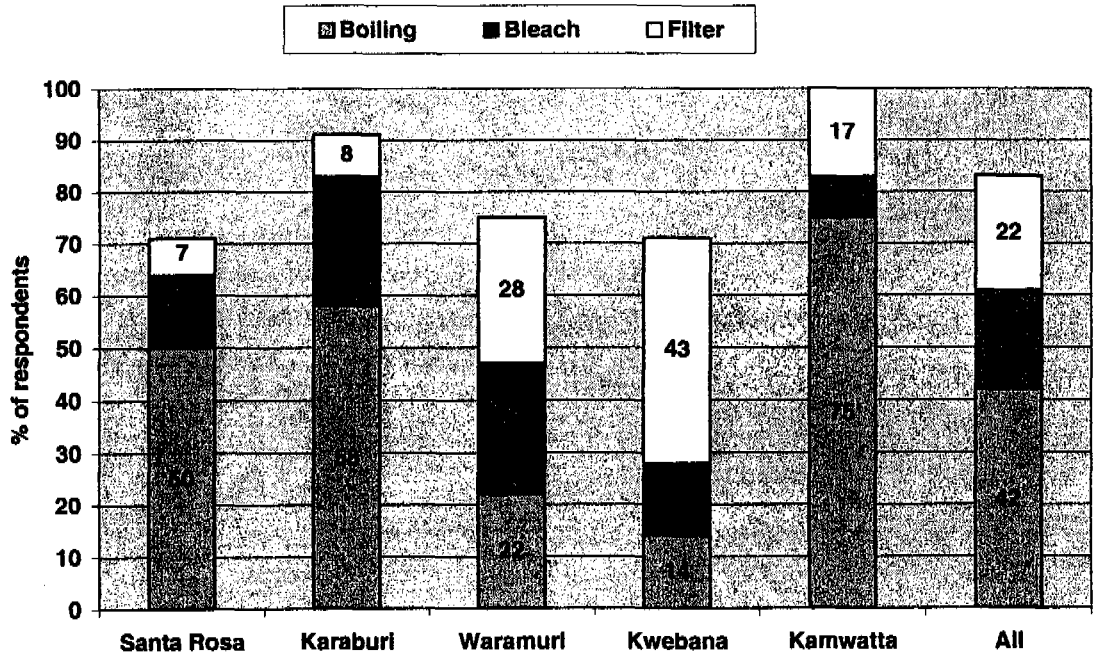


Figure 4.6 Drinking water related statements in Region 1

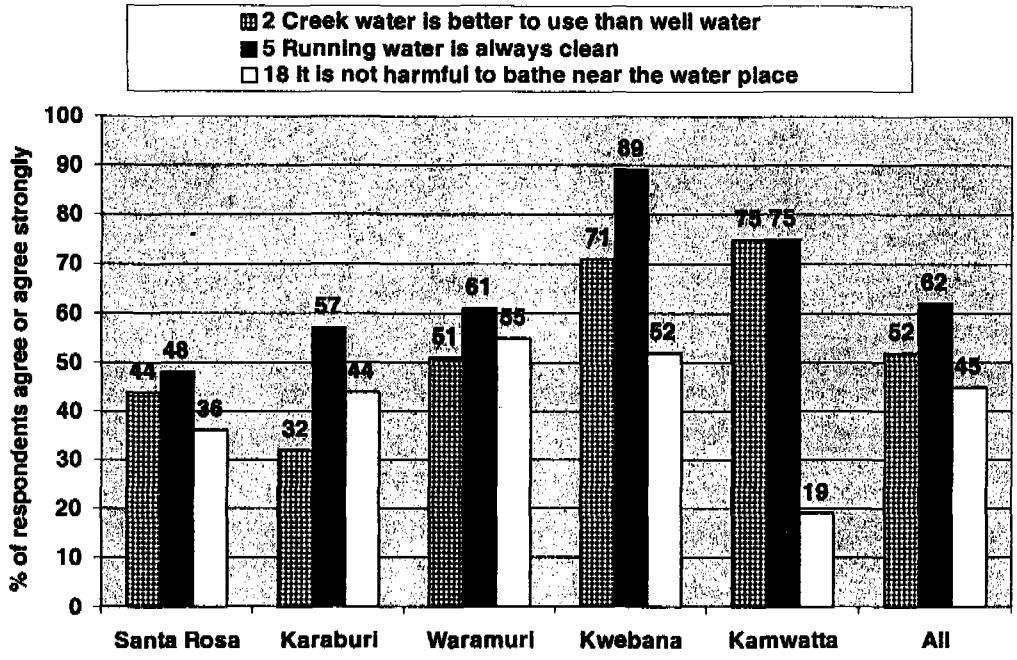
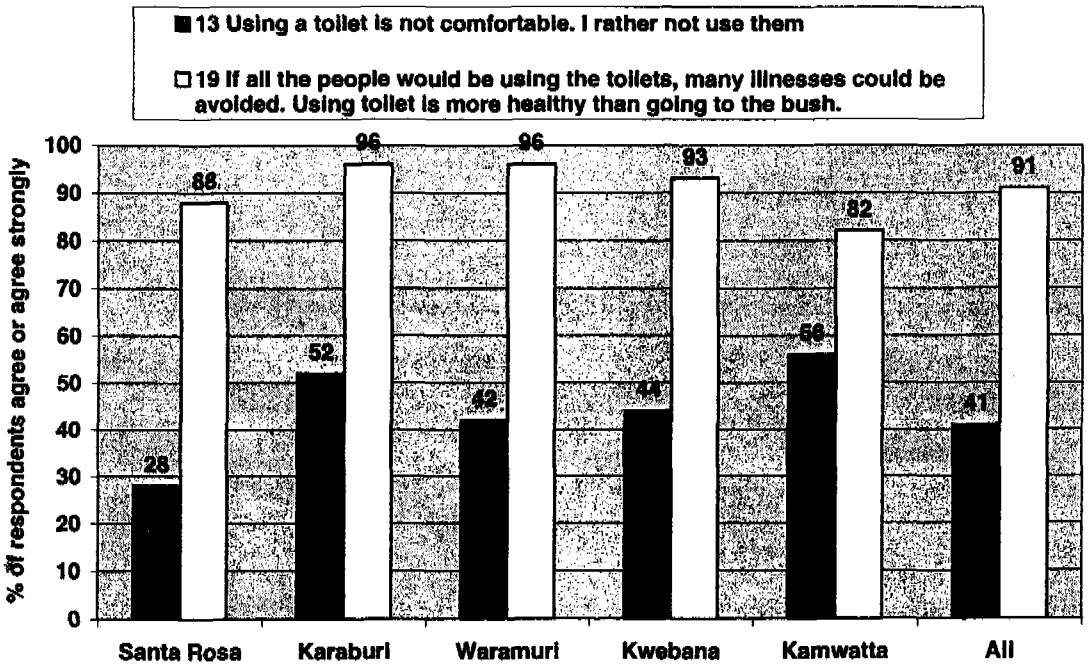


Figure 4.7 Sanitation related statements in Region 1



HEALTH

A series of health questions were asked to illustrate the respondents' understanding how WES and health are linked together and what, according to the respondents, were the most critical health issues in the community. The first question listed typical illnesses. Respondents were asked to cite those that related to poor water supply and sanitation. Of the 112 respondents 26% noted diarrhoea and 19% malaria. Thirty-four percent of respondents ticked "other", citing illnesses such as the common cold, or ARI (acute respiratory illnesses).

Some diseases on the list, such as typhoid, may be difficult to diagnose at a community level. Several others may pass unnoticed. For example, there was a case where the respondent denied that any of her children had any skin infection, or other health problem, when the respondent's baby clearly had a serious case of ringworm. Furthermore, a CHW reported 300 cases of intestinal worm infections in one community alone. In one community there were five suspected cases of typhoid.

The second question enquired about the most likely victims of the above mentioned diseases. As expected, children were identified as the most likely victims by 48% of the respondents, whilst a further 22% stated that "*children under 5*" are the most likely victims.

In the five communities of Region 1, practically all (98%) of the respondents go to a Community Health Post or Kumaka Hospital when ill. One person stated that the patient must rest at home, one person would go to a neighbour or relative who knows about illnesses, and one to medicine woman/man. Sixty-two percent of respondents said there was no village doctor. It was unclear to respondents whether "village doctor" meant a traditional medicine man or trained doctor or medex. This question was modified accordingly for Region 9. Typical illnesses treated at home include flu, fever and diarrhoea. Plant medicines are widely used, and 106 respondents out of 173 (61%) use plant medicines (see Table 4.2)

Table 4.2 Typical home treatments and plant medicines

Illness	Home treatment
Diarrhoea:	Coconut water, German bark and ants bush, coconut pulp with salt, guava bark;
Cold/flu:	Lemon juice, lime juice, lemon grass, cassareep, burned kerosene oil, cherries, bird pepper, broad leaf thyme, daisy tea;
Malaria:	Bamboo leaf ;
Other (illness not stated):	Corila bush, sweet broom, cashew bark, Lucas bark, pear leaf bark, crab oil, jamoon bark, leaf of life, young coffee leafs, wild tobacco.

Practically all respondents (99%) wanted more information about the diseases in table 4.2. There is clearly a general community interest in health-related issues and a need for more information. However, few people responded to the question asking whether more information about any other health issues was needed.

The following set of statements addressed hygiene practices, health and beliefs:

"*It is healthy to add more meat to a pot and not wash the pot.*" This practice is common in some interior locations where a traditional dish, pepperpot, is viewed as an on-going creation. However, the practice is clearly not prevalent in Region 1. For example, in Moruca 85% disagreed or disagreed strongly. The difference to Region 9 is clear.

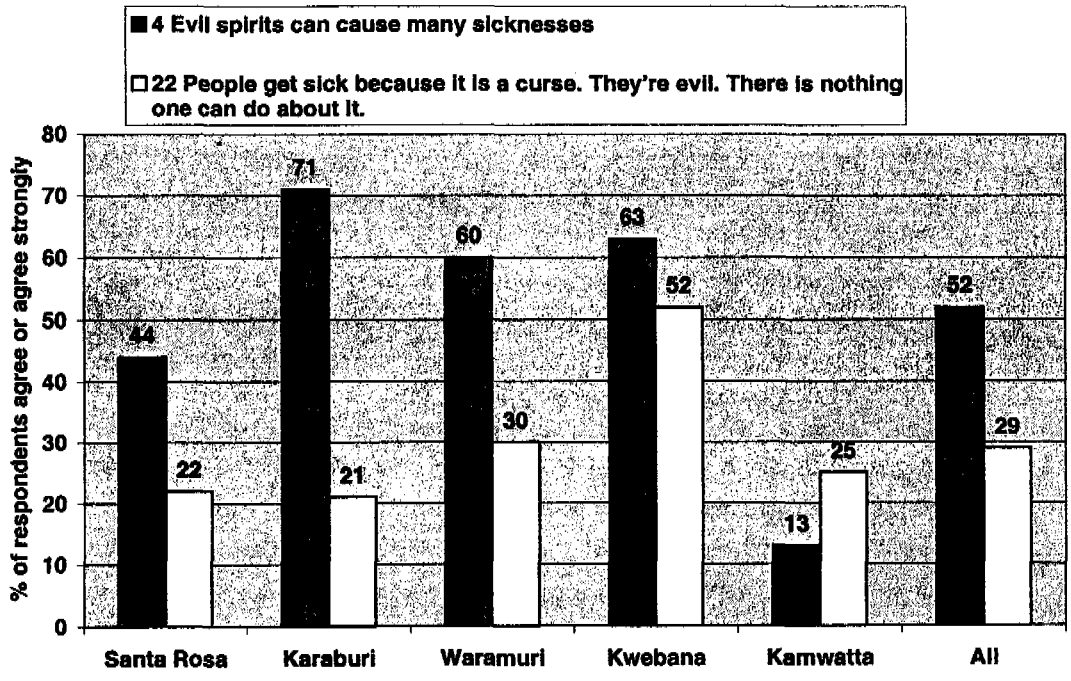
"*Certain fruits when in season are associated with illnesses e.g. sores: pineapple, plum.*" This statement was included to identify possible beliefs over the reasons for illnesses. Over half (59%) of the respondents agreed or strongly agreed. This question could be further elaborated by the nutrition working group to see if these kinds of attitudes are putting persons off from eating and using these fruits.

"*People get sick because it is a curse. They're evil. There is nothing one can do about it*" and "*Evil spirits can cause many sicknesses.*" These statements were put to find out if respondents took a fatalistic attitude to disease, and felt that this was something they had no power to influence. About one third of respondents believed that people became ill due to a curse, and nothing could be done about it. Half of the respondents agreed or strongly agreed that evil spirits can cause many sicknesses. It is possible that over half of all community members believe that sicknesses are or can be caused by factors outside their control, and not simply poor water and sanitation (Fig. 4.8).

"*The house must be swept every day and the yard should be kept tidy*" and "*Drinking water containers and food should always be covered*". Nearly all respondents (97%) agreed that the house must be swept daily and 90% agreed that garbage should be burned and buried. These results were as expected since individual yards and houses were well taken care of. A majority of respondents (91%) agreed that drinking water and food should always be covered. Only 15 persons out of 173 disagreed. Levels of food hygiene awareness are therefore high, and this issue is not a priority for inclusion in the WUN Kit.

"*There is more diarrhoea during the rainy season*" Eighty-one percent of respondents agreed or strongly agreed with this statement. This may be related to the high usage of ponds. Although poor maintenance and protection may contaminate a pond during any season, during the rainy season the surface runoff may originate from flooded latrine pits or rubbish holes, or just generally wash contaminants from the surface to the ponds.

Figure 4.8 Health related belief-statements in Region 1



4.3 HOUSEHOLDS – REGION 9

Facilitators: Ms G. Gravesande, Ms E. Rodney.

DEMOGRAPHIC DATA

Of a total of 208 respondents in Region 9, one hundred described themselves as "*mothers*" and 75 as "*fathers*". The "*Others*" included "*daughter*", "*son*" *and* "*elderly*". The number of surveys is equal to the number of adults attending the WES workshops. No door-to-door or face-to-face surveys were conducted in Region 9 although some questionnaires were distributed directly to the houses. In most communities, 20 to 30 people attended the workshops, although in Awarewaunau 72 people attended. The high turn out in Awarewaunau was because the workshop was held on a Sunday when people come in to church from remote households and farms. Most respondents (43%) were aged 20 to 40 years, and one third (32%) were 41 to 60 years. Almost half of the households comprised of five to nine members and one third comprised one to four persons (Table 4.3)

Of the 78% of respondents with children attending the school, one third reported that children carried water to school "*sometimes*", and in three out of five cases children never carried water to school. In Awarewaunau and Shea 84% and 85% of children respectively, never carried water to school. In Aishalton, Achiwib and Karaudarnau one fifth reported that their children always carried water to school.

Table 4.3 Demographic data for household respondents in Region 9

Community	No.	Respondents (no)			Age group (years)				Members of household (no)		
	Surveys	Mother	Father	Other	< 20	20-40	41 - 60	> 60	1 to 4	5 to 9	Over 9
Achiwib	17	7	5	5	3	5	8	1	5	9	3
Karaudarnau	36	18	14	3	3	20	10	0	8	21	7
Aishalton	30	13	9	3	3	14	4	1	8	11	6
Awarewaunau	72	41	19	6	6	32	23	4	26	26	15
Maruranau	22	9	20	3	3	7	12	0	5	16	1
Shea	30	12	18	0	1	12	9	8	14	14	1
Total	208	100	75	20	19	90	66	14	66	97	33

Just over half of parents categorised local school water systems as "*okay*". Achiwib and Karaudarnau, both of which have recently had windmills installed by a GUYWA contractor, showed high levels of parent satisfaction with the school water system. In Shea and Awarewaunau approximately two in five respondents agreed that the school water system was okay. However, in Maruranau, only 18% of respondents considered the facilities at the school acceptable. Under half (46%) considered the school latrines "okay". The lowest figures for approval of these school facilities came from Shea (21% "okay"), Karaudarnau (39% "okay") and Aishalton (36% "okay").

Practically all parents in the south Rupununi taught their children about water, hygiene and/or sanitation, including keeping clean, washing hands and brushing teeth. The lowest figure came from Shea where only 62% passed on these skills to their children.

WATER SUPPLY

Water source and use

In Region 9 about half of respondents rely on hand-dug wells, although there were evident differences between communities. One fifth of respondents rely on water holes and ponds, but no one relies on rainwater. Karaudarnau and Achiwib are the only communities where households use springs. Creeks and river water is rarely used except in Maruranau and Shea (See Fig 4.9). Of all respondents 63% reported using less than ten buckets of water per day for domestic purposes. The size of the bucket was not given.

One quarter of respondents were "*generally happy*" with their water sources. In almost all communities, except Shea and Aishalton, one third of respondents agreed that "*Yes. It is very good, no problems at all.*" Another one third felt that "*Yes and no. It depends on the season*". However, in Shea and Awarewaunau, there was dissatisfaction, and almost one-fifth replied "*No. I do not think it is safe/does not taste good*". In Shea more than half felt that "*No. It could be closer/easier to access*". Although Shea appears to be worst off, it was also the place where the fewest improvements had been planned (54% of respondents) (Fig. 4.10).

Usually, water sources are shared between at least two other households. Only one-third of respondents have sole use of a water source. One-quarter share with one other household and almost one-quarter share with more than six other households. In Achiwib and Karaudarnau almost half of all households reported being the sole user of a water source, probably because these communities are widely scattered. Conversely, in Shea only 7% of households are the sole users of a water source because a high percentage of households use creeks or rivers. In Awarewaunau and Aishalton, one-third of households share their water source between more than six households. In Maruranau two households out of five utilised their own water source and one out of five shared it with two to five other households.

The most popular alternative water source was a neighbour's hand-dug well. One fifth each of respondents use a creek/river, community well and "other" sources as alternatives, but differences between the communities are evident. In Achiwib nobody would use a creek/river as an alternative, but preferred a community well. However, in Shea half would use a creek/river. Under "other" the most usual method reported was to deepen a well or water hole.

Figure 4.9 Water sources in six communities in Region 9

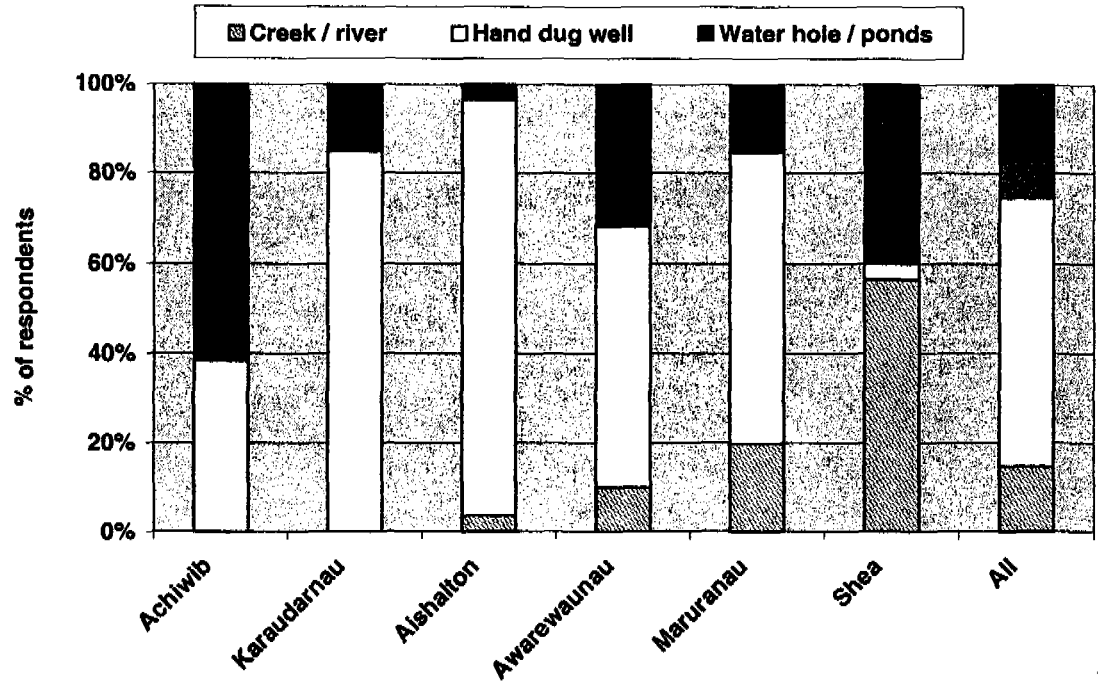
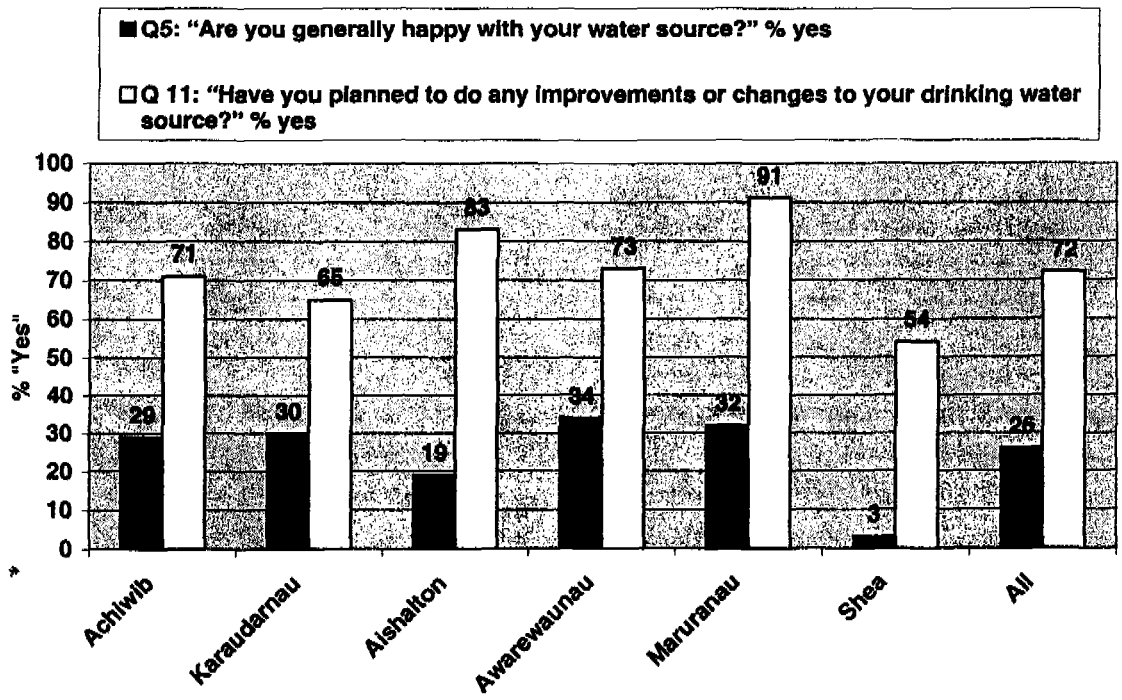


Figure 4.10 Water source satisfaction and improvements in Region 9



Water fetching and storage

As in Region 1, both children and adults were asked who fetched the most water for the home (Fig. 4.11). Unsurprisingly, children and adult perceptions of who did most of the work varied in all communities, the responses only correlating in Achiwib. The most consistent result between adults and children was that overall, the fathers were not major water carriers in most households.

Water is most commonly stored in buckets. Where reasons where given, the most common response was *"Because there are no other containers"*. On average 61% of respondents store water in buckets and 25% store water in the same bucket that was used to fetch it. Of all respondents 81% reported that the water store was cleaned daily, although the method of cleaning was not specified. Only Shea reported that some persons clean the water store rarely or not at all.

The most usual place for the store is on a table (86%). In Shea one fifth and in Achiwib almost one fifth also store the water *"on the floor"*. The water store was rarely in the yard. On average 44% stated that everybody, including the smaller children, have access to the water store. A cup with a handle, an improvised ladle, was usually used to get the water out from the store. One third of respondents use *"what ever cup is available"* although the differences between the communities are clear. Nobody in Achiwib used any cup available although in Maruranau nearly six persons out of ten would choose that option. One tenth of the persons in Karaudarnau, Aishalton and Awarewaunau would use *"always the same cup"*, although a minority of respondents in Shea (3%) and Maruranau (5%) chose this option.

Drinking water quality and treatment

Over half the respondents considered their drinking water safe to drink (Fig. 4.12). Communities with the most confidence in their own water supplies were Karaudarnau, Aishalton and Achiwib. Shea showed the least confidence in the quality of its drinking water, and it was also the community where the fewest households treated their drinking water. Only 4% of Shea households always treat their drinking water and only 7% occasionally treat it. However, in Achiwib more than half of the respondents treated drinking water, mostly utilising a filter. Filters were also popular in Maruranau, Awarewaunau and Karaudarnau. Unfortunately it is not exactly clear what is meant by a filter and in any case it may vary between communities. Given the widespread use of filters as a method of improving water quality, filter structures and related maintenance practices should be further investigated. It is possible that cloths and other fine sieves could be considered as filters.

Preferred methods of drinking water treatment in the home vary between communities (Fig. 4.13). Despite the consequent effects on water taste, bleach was still used by 11% of all respondents. Nobody used bleach in Shea and only 3% used it in Karaudarnau. However, in Maruranau almost one quarter of those who treat water use bleach. In Aishalton of the 30% who treat drinking water, 67% reported boiling the water. In Shea and Karaudarnau, boiling was the method of choice for half of those who treated drinking water. Of all respondents 57% answered that *"Water is okay without*

treatment", whilst 12% stated that *"It is costly to treat water"* and 11% that *"Boiling takes too much fire wood/fuel"*. A relatively high proportion of the respondents (16%) stated that they *"do not like the taste of the bleach"*. In Shea, just under half of the respondents (46%) did not like the taste of bleach but nobody minded boiling. Boiling was the least popular option in Maruranau and Karaudarnau where one fifth reported that boiling took too much fuel. In Achiwib and Aishalton around seven out of ten people (75% and 71% respectively) considered that the water did not need treatment.

On average, around 94% of respondents were interested in getting more information about how to make water safe to drink, although in Awarewaunau the figure was lower at 89%. Further information on the use of bleach, including correct proportions is needed, as well as information on filtration.

Drinking water related statements

Several questions related to water sources and drinking water. Fig. 4.14 summarises the five statements for the six communities.

"Creek water is better to use than well water" Creek water is preferred to well water although not as strongly as in Region 1 where over 70% agreed with this statement. The figures obtained for Region 9 are still unexpectedly high considering the low percentage of respondents who use creek water. For instance in Awarewaunau, where 53% use well water and only 9% reported using creek water, 42% stated that creek water is better than well water.

"Running water is always clean" Running water was most trusted in Awarewaunau, Achiwib and Shea. This is understandable in Shea where 48% of households use creeks and rivers, but rather surprising in Achiwib where nobody uses creeks or rivers as their main water source. Running water was viewed with the most suspicion in Aishalton and Karaudarnau.

"It is not harmful to bathe near the water place" Observations revealed that water sources, whether creeks, ponds or wells, are also popular places for washing clothes and bathing. One third of respondents felt that it is not harmful to bathe near the water place. The questionnaires did not specify what was meant by "near" since this is site-specific. Clearly, the use of water sources for other uses is potentially an opportunity for contamination. The WUN Kit should therefore include "safe" distances on their checklist concerning safe and sanitary wells and other water places.

"Water from the well is not always safe" More than half of all respondents (63%) agreed with the statement. Maruranau and Shea were the most suspicious of well water quality with 82% and 80% in agreement respectively. The results are interesting in the light of Maruranau's preference for hand-dug wells and the fact that one third of respondents were completely happy with the water source. In Shea, where rivers and creeks are the most popular water sources, only 3% of respondents were completely happy with their water source.

"A fish in the well keeps water clean" Many respondents believed that a fish in a well keeps water clean. Whilst it may help to keep the well clean from mosquito larvae, algae and other organic matter, it is likely to affect it's quality as drinking water. (Fig. 4.14 b)

Figure 4.11 a "Who does most of the water fetching for home?"
Answers by both adults and children in Region 9

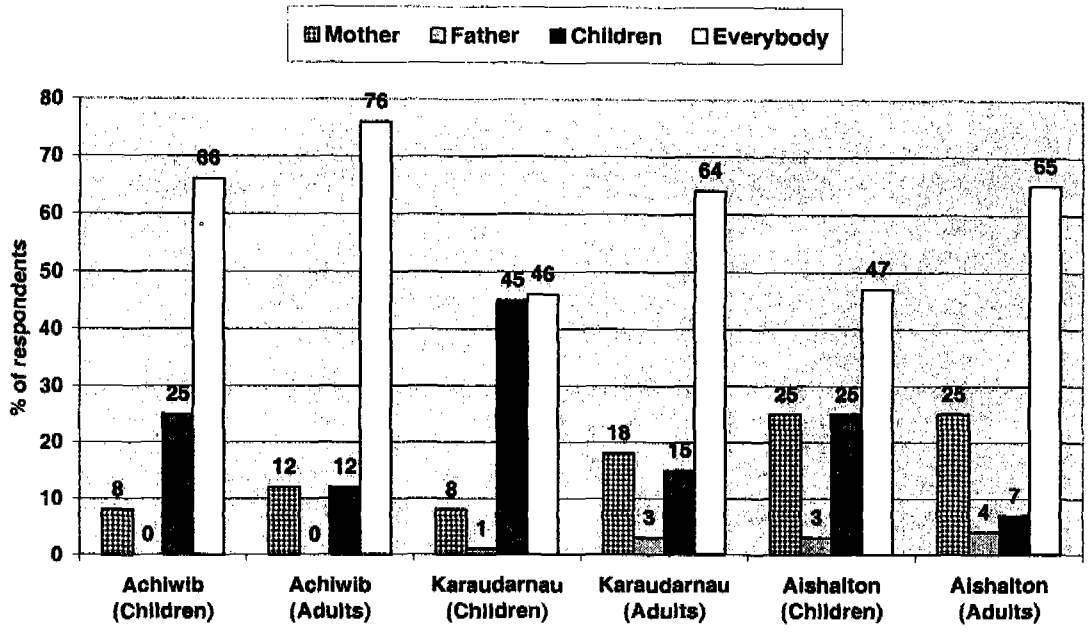


Figure 4.11 b "Who does most of the water fetching for home?"
Answers by both adults and children in Region 1

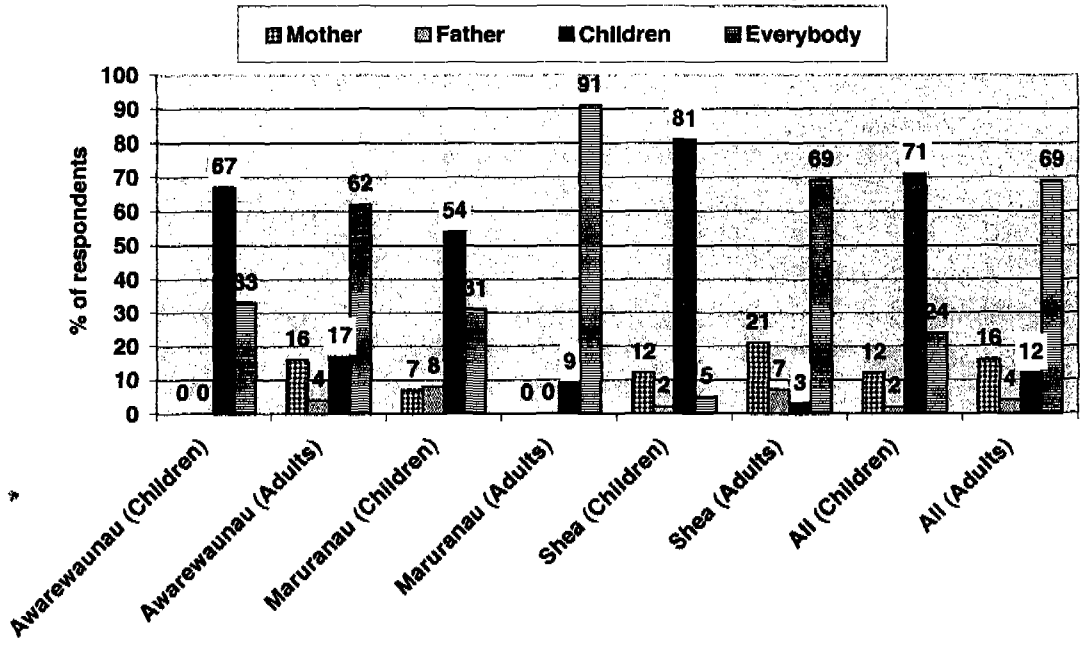


Figure 4.12 Drinking water quality at home in Region 9

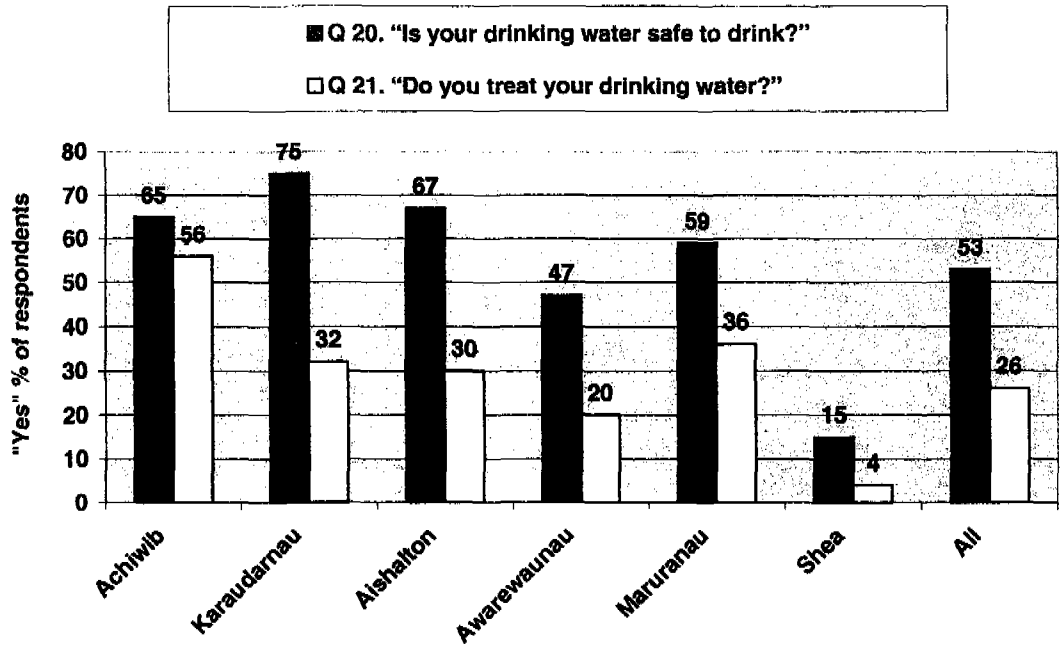


Figure 4.13 Methods of drinking water treatment in Region 9

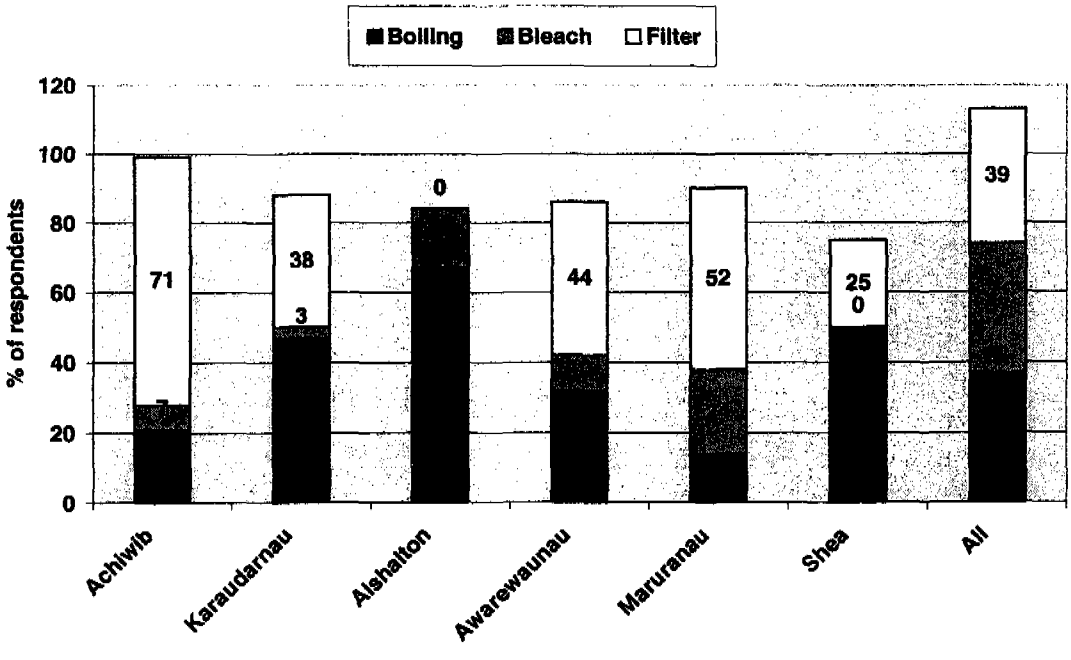


Figure 4.14 a Drinking water related statements in Region 9

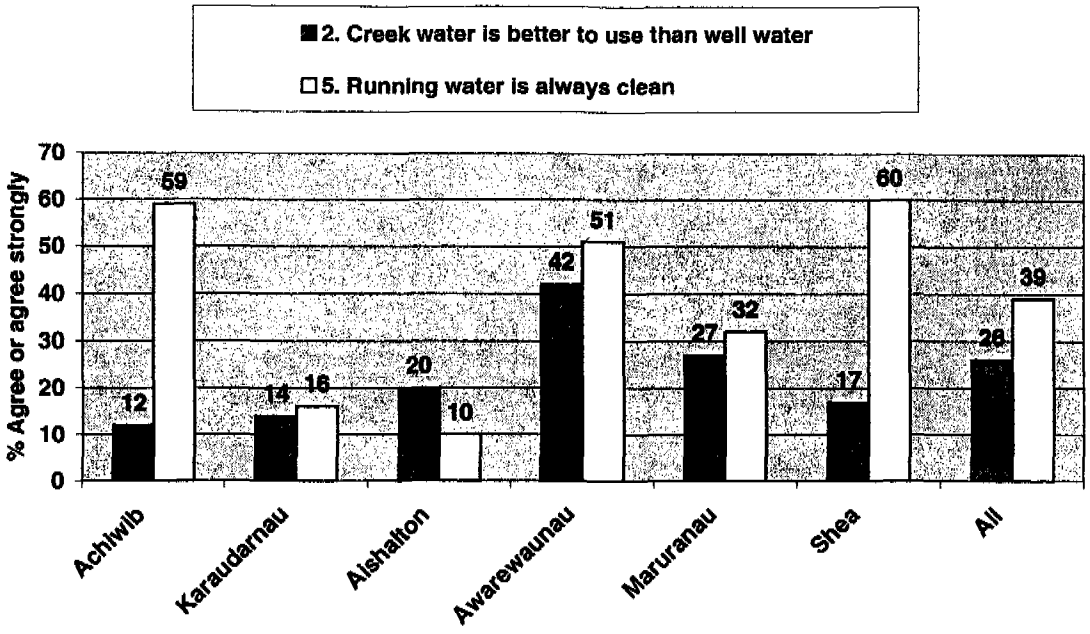
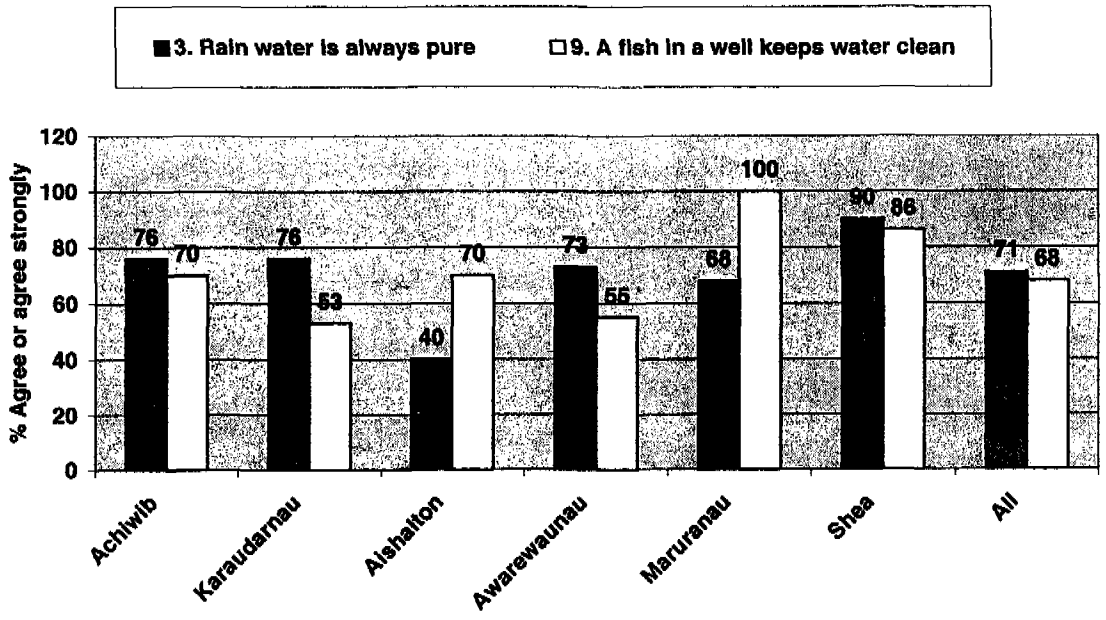


Figure 4.14 b Drinking water related statements in Region 9



"*Rainwater is always pure*" Even though rainwater is very rarely utilised in Region 9, it has a very good reputation and was highly trusted everywhere excepting Aishalton. In Aishalton only 40% agreed with the statement "*rainwater is always pure*", compared with Shea where 90% agreed. In all other communities, over 70% agreed, a surprising result given that nobody indicated that they currently use it or would use it in future. (Fig.4.14 B).

"*You do not need a special cup to draw drinking water*" Slightly less than half of the respondents agreed that you do not need special cups. This is a worrying result from a hygiene point of view; the WUN Kit should give some practical ideas how to make this aspect of water handling safer.

It is clear that the WUN Kit should include more information relating to water sources and hygiene at water sources. Views differ between communities and give rise to more questions. Does a healthy suspicion of well water quality in Maruranau indicate a higher level of education on these issues possibly due to a community well project? Is the suspicion of well water quality in Shea so great as to deter households from well construction? In Shea respondents were not "generally happy" with their water sources but they were not interested in improvements either.

ENVIRONMENTAL SANITATION

Solid waste and latrines

Respondents reported that waste was most commonly burned (47%) or buried (29%). A wide range of other methods were also reported. Fortunately, only 2% of respondents reported that they disposed of waste by throwing it in a river. Problems relating to waste disposal were discussed in the workshops. Location and flood protection of waste disposal pits were discussed in detail in several communities. More ideas about these issues are needed.

One third of the respondents reported having a latrine, but not a good one. One fifth of all respondents reported having a good latrine at home, but there was much variation between communities. Aishalton reported the highest percentage of good household latrines, (39%) and Shea the lowest (3%). Many households in Shea also suggested that they planned to build latrines, although more than one third did not have a toilet and used the bush. In Achiwib and Aishalton nobody reported using the bush. In Karaudarnau one quarter responded that they do not have toilet of their own but they use a toilet nearby. In Achiwib, one fifth reported using a nearby toilet which is not theirs.

On average 63% of those planning to build a toilet reported that they had some problems in doing so. This was particularly acute in Shea (85%) and Maruranau (81%). The fewest problems were reported in Aishalton (43%) and Karaudarnau (46%).

One third of respondents who had problems building new toilets said they were unsure how to build a good latrine. A further one third reported a lack of tools. In Maruranau (52%), Shea (44%) and Achiwib (40%) further latrine building skills would be welcomed. Achiwib was the only place where the procurement of materials posed no problem at all, although in neighbouring Karaudarnau over one third reported

problems in procuring materials. The materials/problems were not specified. Overall, procurement of materials posed a problem for one fifth of respondents who were planning to build a latrine. One in ten reported a shortage of time. This was particularly acute in Achiwib where one fifth reported that time available for latrine construction was limited.

WUN Team VIP latrine construction workshops were a success in Region 9 and five communities have already put forward proposals to build VIP latrines, mainly at the schools but also in the communities. The WUN Kit could further facilitate this process by offering direct technical instructions about what makes a good latrine, what a VIP latrine is, and how to prevent the main problems relating to pests, flooding and smell.

Environmental sanitation related statements

Fig. 4.15 presents the results of six of the following statements for Region 9. Those that are predominantly agreed in all communities are not illustrated in the graphs.

"*If all the people used the toilets, many illnesses could be avoided - using the toilet is more healthy than going to the bush*" Eighty percent agreed with the statement. However, this was lower than in Region 1 where 91% agreed. Karaudarnau had a surprisingly low percentage that agreed with the statement given that it was one of the first communities to create a Community Water and Sanitation Committee and put forward latrine-building plans. This is partly explained by the high number of persons who did not answer the question at all.

"*Fewer diseases occur in a clean environment.*" This statement had a high number of "no" answers (14%). Of those in Region 9 who did answer, 75% agreed with the statement compared with the 91% of respondents who agreed in Region 1. The phrasing of the question has to be changed.

"*It is OK to 'mess' in the bushes. It has always been done. Besides, there is more privacy in the bush.*" In Region 9 of those who did answer the question, 20% agreed, suggesting that one in five respondents see no problem with not using a latrine. This is clearly higher than the corresponding answers in Region 1 where one in ten agreed with the statement.

"*It is ok to urinate in the creek or in public.*" As one-fifth of respondents agreed that it was ok to "mess" in the bushes, one fifth also agreed that was ok to urinate in the creek or in public. The response is identical to Region 1.

"*Using a toilet is not comfortable. I would rather not use them.*" Responses varied widely between communities. The highest proportion of respondents who would rather not use toilets was from Awarewaunau and Achiwib. Karaudarnau and Aishalton had the fewest people who agreed with this statement. The result is likely to reflect the state of the existing latrines rather than attitudes alone.

"*Toilet paper is expensive. We usually use leafs and sticks.*" Fifty-eight percent of all respondents who answered the question agreed that toilet paper is expensive. This must be taken into consideration in the design of the toilets should any water-closed systems be considered at any location.

"*Toilets are not important. There are other things to do first in this community.*"

Twenty-nine of 188 respondents did not answer the question. Of those who did respond, 65% disagreed with the statement, a result very similar to that for Region 1 where 63% disagreed. Conversely, this suggests that one in three people do not think toilets are important. In Achiwib, where a high percentage of respondents had earlier agreed that they do not like using toilets, a high percentage also considered that toilets are not that important and that there are other things to do in the community. In the light of this disinterest by a significant proportion of the communities, approaches to sanitation promotion relating to construction and use of latrines have to be carefully considered.

"Toilets breed mosquitoes." On average three persons out of four agreed with the statement. Introduction of the VIP latrines aims to solve this problem but in practice the reality may be different. For this reason the WUN Kit should address the technical aspects of VIP construction, and also use and maintenance. In theory the structure should be sealed properly and all the ventilation holes covered with mesh. Furthermore, flies should be attracted to the light and be captured into the vent pipe. On observation, seat covers, where present at all, are often not in place, and the actual base structures are rarely properly sealed allowing any insect or even rodents to move around freely.

"*Garbage can breed mosquitoes*" and "*garbage should be burned and buried*". As in Region 1, Region 9 largely agreed with these statements (on average 88% and 89%, respectively). However, one person in ten does not associate insect vectors and garbage.

HEALTH

Health issues

The survey listed nine illnesses related to WES and asked whether anybody in the family had suffered from any of these diseases during the same year. Diarrhoea and malaria were the most common diseases reported with one third of respondents reporting family members who had suffered from these. Communities showed clear differences. In Achiwib, 71% of respondents listed diarrhoea as a common disease, but in Awarewaunau this figure was 24%. Only diarrhoea and malaria were reported in Achiwib. The highest figure for malaria was given in Aishalton (43%) and the lowest in Karaudarnau (19%). All the other communities gave figures ranging around one third for malaria and diarrhoea. Dysentery was mainly reported in Karaudarnau (13%), the other communities giving very low figures for this.

Skin infections were mostly reported in Karaudarnau (25%) and Shea (18%). Eye infections were reported mainly in Karaudarnau (10%) and Maruranau (10%). Worms were not often reported, except in Karaudarnau (25%) and Shea (18%). Community health workers (CHWs) views on this differed in all communities. Dengue was rarely reported although at the time of the visit Lethem was suffering a serious dengue epidemic. The question about the causes of these diseases was frequently left blank. Of those who responded to the questions about the reasons for the listed diseases, water was often mentioned. Drinking water, dirty water, mosquitoes and weather/season were the most common answers given with regard to the above

mentioned illnesses.

When asked who is most at risk from an unhealthy environment, one-third stated *"children under five"* and another one-third *"children"*. One-fifth stated *"older people"*. Achiwib gave the highest figure (59%) for the "children under five". The highest figure for older persons was given in Shea (38%).

When asked what they did if a member of the family got ill, the vast majority of respondents reported that they would go to the medex or CHW. In Achiwib one-fifth and in Karaudarnau one-tenth stated that *"the patient must rest at home"*. Some stated *"we go to the both, to the CHW and the piai woman"*. Although in Karaudarnau, Achiwib, Aishalton and Shea nobody mentioned going to a *piai*[19] woman or man, in Maruranau 14% mentioned this as an option. However, overall, 37% of respondents agreed that there was a *piai* man or woman in the community. These figures may reflect inhibitions about admitting to the continued use of traditional medicine as much as actual figures of use.

The usual diseases treated at home included flu/cold, diarrhoea, and malaria. Local medicines were used. Altogether 82% agreed on the use of plant medicines. The highest figures were given in Maruranau (100%) and Shea (96%), but other places also heavily utilise plant medicines: Karaudarnau 83%, Achiwib 88%, Aishalton 71% and Awarewaunau 72%.

Table 4.4 Typical home treatments and plant medicines in Region 9

Illness	Home treatment
Diarrhoea:	Sugar and salt and orange drink, ORS, coconut water, bitters, cashew tree bark, jamoon tree bark, boiled guava leaf, balata (bullet wood) bark, whity bark, lime juice with salt and sugar, honey and garlic and black pepper, (alcool);
Cold/flu:	Corila leaf, cactus;
Malaria:	Minecole roots;
Other (illness not stated):	Sweet broom, quinine tree, marran, tobacco, sweet kari, copiabu, matruz, lemon grass, wild thyme, senna, leaf of life,

On average 93% of respondents would like more information on these diseases, and others including measles, chicken pox, AIDS, TB, worms, cancer, diabetes, hypertension, sexually transmitted diseases, red eyes and sore eyes, dengue, eye sight and eye illnesses, snake bites and typhoid. The most common requests for information related to AIDS, cancer, and diabetes. It must be noted that AIDS was mentioned without HIV and that there seemed to be, generally, confusion on this matter. The Ministry of Health is presently training the CHWs and interested community members on issues concerning HIV/AIDS and tuberculosis. The issue is very relevant in Region 9 where young people often go to Brazil to work. The Ministry of Health is also addressing nutrition which is another important issue and which is outside of the scope of the WUN Kit.

[19] A Piai man or woman is a local medicine man/woman

Health and hygiene related statements

Seven statements related specifically to health and hygiene (Fig. 4.16), although in a more general sense, all the statements relate to this topic.

"*It is healthy to add more meat to a pot and not wash the pot.*" The Rupununi is famous for a local dish known as "pepper pot". This is usually prepared by tenderising the meat with a cassava-based preservative sauce, known as cassareep. Traditionally, more meat and cassareep are added and the dish is an on-going one. Thus, this statement was more relevant in Region 9 than in Region 1 and this was evident in the responses. On average, almost one person in four agreed that it is healthy to add more meat to a pot and not wash the pot; in Shea, almost half of the respondents agreed with this statement, and the figures were high for three other communities as well. Only Karaudarnau and Aishalton had low percentages of respondents who agreed with the statement.

"*Certain fruits when in season are associated with illnesses e.g. sores: pineapple, plum.*" Achiwib, Maruranau and Shea stand out with high percentages of respondents in agreement. It is not known whether this belief actually prevents persons from eating the fruit. There is some substance to this belief as eating too much fruit may cause diarrhoea.

"*People get sick because it is a curse. They're evil. There is nothing one can do about it*" and "*Evil spirits can cause many sicknesses.*" These statements attempted to identify the extent to which respondents believe that they can influence their own health or if they believe it is beyond their control. Surprisingly, there was much variation between communities as can be seen from the following figures. On average the results are similar to those for Region 1. Approximately one third of respondents who answered the first statement agreed with it, and half of those who answered the second statement agreed with it. The difference was most obvious in Shea where, despite the fact that almost three persons in four agreed that evil spirits can cause many illnesses, only one person in ten believed that people can get sick because it is a curse.

"*The house must be swept every day and the yard should be kept tidy*" and "*Drinking water containers and food should always be covered.*" Practically all agreed with these general housekeeping and hygiene statements. Field observations supported this. Overall housekeeping issues do not appear to be a topic for the WUN Kit.

"*There is more diarrhoea during the rainy season*" More people agreed with this statement in Region 9 (92%) than in Region 1 (81%). This may be because in Region 1 several households would utilise rainwater during the rainy season whereas in Region 9 rainwater was rarely utilised.

Figure 4.15 a Sanitation related statements in Region 9

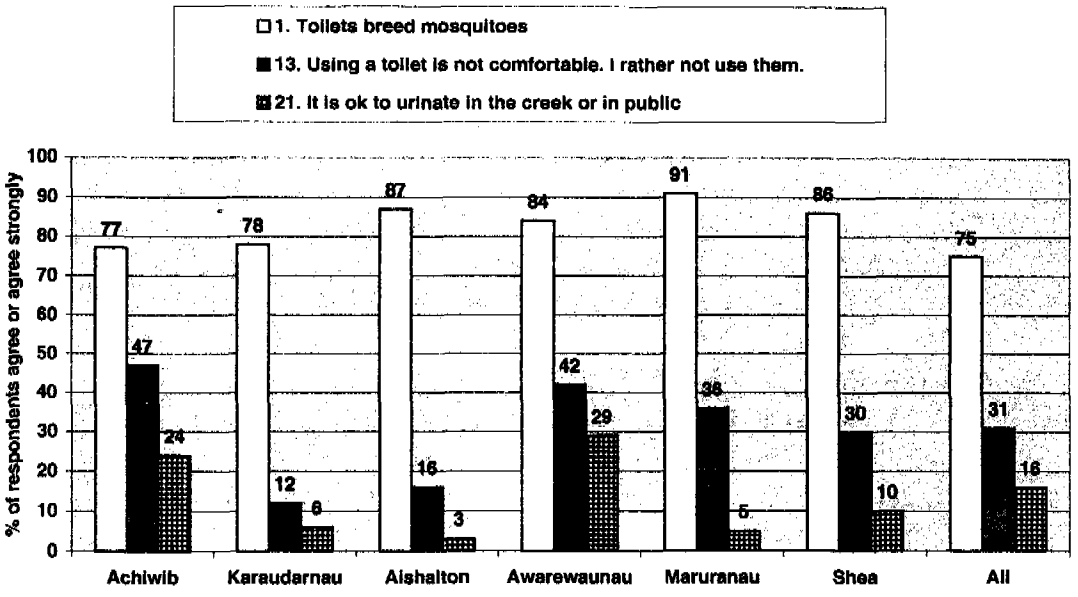


Figure 4.15 b Sanitation related statements in Region 9

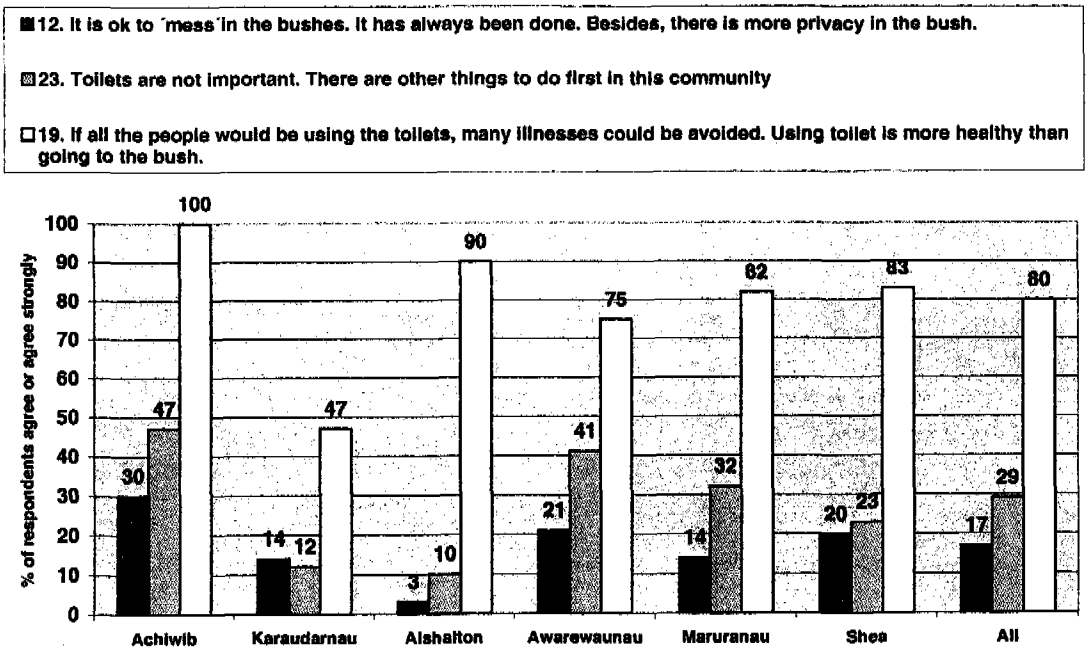


Figure 4.16 a Health related belief-statements in Region 9

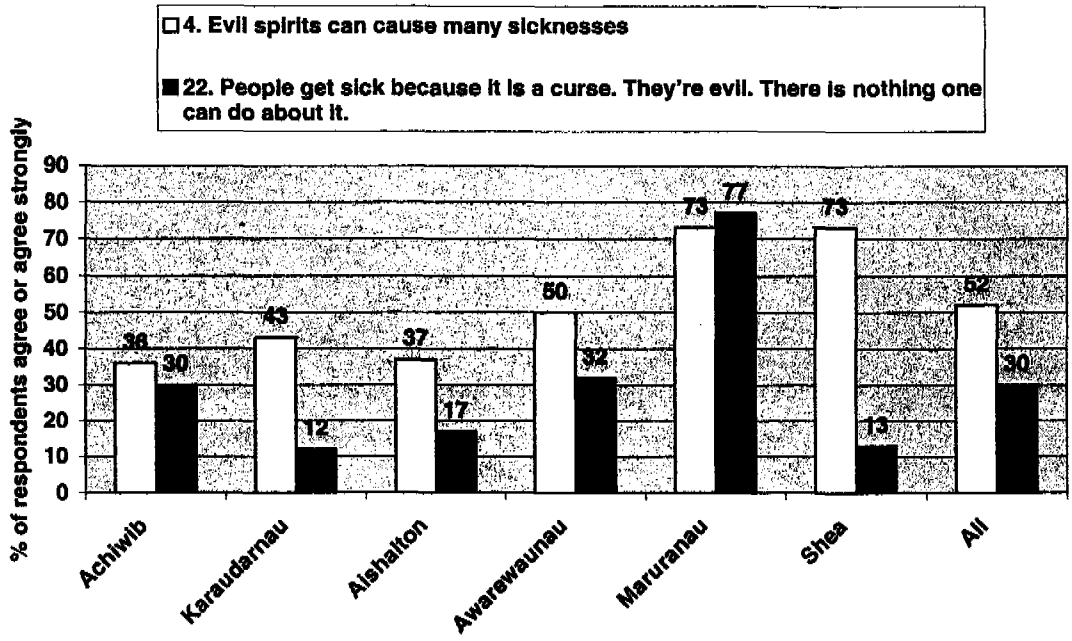
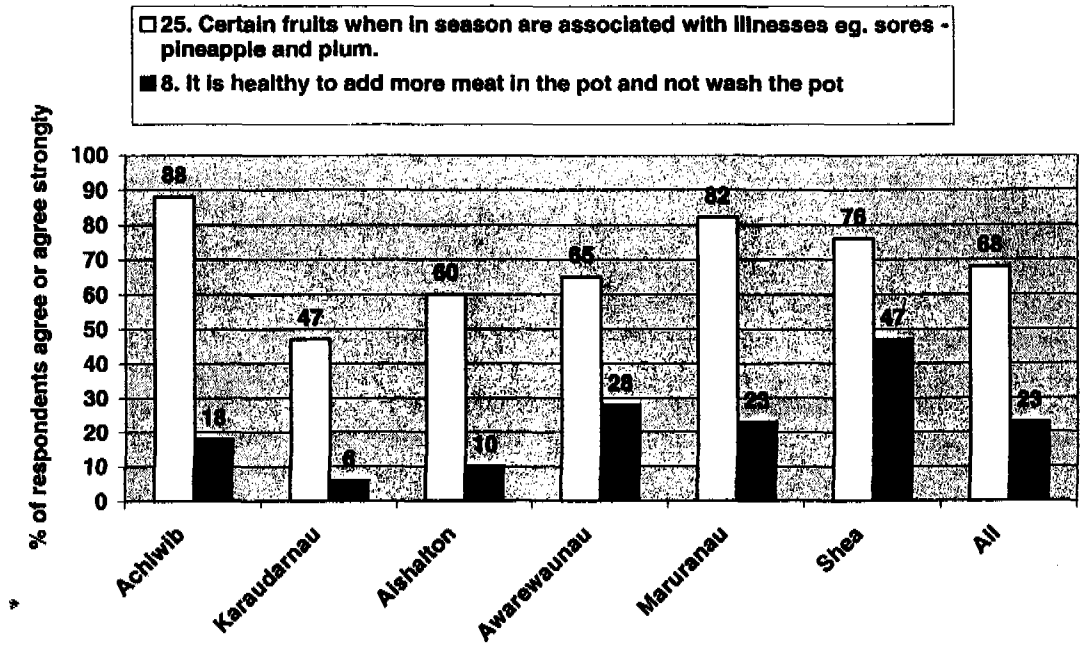


Figure 4.16 b Health related belief-statements in Region 9



4.4 HOUSEHOLDS' SURVEYS CONCLUSIONS

In total, the WUN Team completed 384 household surveys in Regions 1 and 9. Each survey included 38 questions followed by 26 statements, giving a total of 24,576 questions. If each household averaged four to six persons, the total of 384 households should cover between 1536 to 2304 persons. There is scope for more detailed statistical analysis, particularly relating to the correlation between various questions, such as gender differences within certain questions or differences between adult and child responses.

The question of whether running water is always pure as well as whether a fish in the well keeps it safe should be addressed in both regions. One explanation given to the popular belief that running water is safe was that when the water is running, it is changing and consequently carrying away or diluting the contaminants. The reasoning is that as long as the upstream stays clean, running water down stream stays clean. This issue should be addressed in the WUN Kit, emphasising the connections between activities both on land and up and down stream. Similar environmental cause-effect awareness should also be applied to stagnant water sources.

As expected, the regions differed in terms of preferred water sources. Region 1 should upgrade and maintain its rainwater collection systems and improve hygiene and structures at ponds. Region 9 should concentrate largely on improvement of its shallow wells and installation of appropriate hygienic lifting devices. For both regions the protection of water sources is an issue, as are hygienic water storage and handling. Ideas need to be developed so that safe extraction of water from water stores can be advocated to avoid contamination through carelessness and from small children.

Drinking water treatment at home is a major topic for the WUN Kit. If a community believes that their water is safe to drink, promoting drinking water treatment will be ineffective. The first part of this topic must address whether the water really is safe to drink and how it is possible to check this. Is water really the primary source of ill health, or are other aspects of hygiene more important? To some extent, drinking water quality can be assessed by reasoning such as the use of checklists to map all possible risks for water contamination. However, even if the source is safe, the water can be contaminated during fetching, storage and handling. A follow-up interactive workshop is recommended to demonstrate proper and effective treatment methods such as sand filters, bleach, UV radiation and boiling. Consideration would be given to the availability of materials, related costs and time needed. To verify the treatment result the water would be tested utilising a portable water testing kit.

Environmental sanitation problems are becoming more evident in densely populated areas and busy locations, such as markets, schools and community centres. Haphazardly disposed and randomly covered non-biodegradable rubbish creates breeding sites for insect vectors. The Environmental Protection Agency (EPA) has already produced material addressing littering and waste disposal issues, and it may be possible to liase with the EPA and use this material, modified if necessary to apply to hinterland areas.

PART III

KAPB SURVEY RESULTS

TEACHERS

Key words: Teachers, school environment, integrated teaching methods, hygiene promotion, WES and curricula

Photo 5. Teachers in action in Aishalton, Karaudarnau and Shea, Region 9

5. TEACHERS' KAPB – SURVEYS

5.1 TEACHERS' SURVEYS

Water and environmental sanitation (WES) is a fundamental prerequisite for sustainable human development. Schools play an important role in initiating change in the wider community. In rural areas the school system is one the most important instruments used to sensitise communities with regard to WES issues. According to UNCHS (Habitat),[20] water education should promote a better understanding of water as a key social, economic and environmental resource.

Teachers' surveys were conducted in the group sessions. The questionnaire acted as an entry point into more in depth discussions about the school environment, present practices and existing curricula with reference to WES and health. Integrated teaching methodology was an important framework when discussing how to incorporate WES into existing curricula. In Region 1 the Teachers' Survey had 21 questions followed by 12 statements. The survey was modified for Region 9 and consisted of a structured questionnaire with 34 questions. Questions were open-ended to encourage greater detail. In Region 9 there were 15 statements of agreement or disagreement. These were designed to identify the way the school curricula, both formal and hidden, addresses water, environmental sanitation and health issues, and how these issues are covered in children's learning at present. The majority of teachers also completed a Household Survey.

5.2 TEACHERS – REGION 1

Facilitators: Mr E. Jarvis, Mr K. Spencer

RESPONDENTS

In the Region 1 Amazon Programme communities a total of 55 teachers in the Santa Rosa Primary School and Kumaka Secondary School, and the primary schools of Waramuri, Kamwatta, Kwebana and Karaburi responded to the questionnaire and were interviewed. There was only one secondary school in the sub-district (Kumaka Secondary School at Kumaka).

Moruca is known for its teachers as the first school in the Hinterland, and was established at the Santa Rosa Mission. Of the respondents all but one of the teachers was local. Teachers represented a range of age groups, although more young teachers than old were interviewed. Just over half of the teachers were between 20 and 30 years old. Just over half (54%) of the teachers had been to Cyril Potter College of Education and one person had been to University of Guyana. Teaching experience was equally divided between the various categories. Table 5.1 summarises some key information from Region 1.

[20] United Nations Centre for Human Settlements (Habitat). Water Education in African Cities Report of an Expert Group Meeting 30 April – 2 May, 2001.

Table 5.1 Summary of Teachers Region 1[21]

Community	Teachers	Schools			Educational background			
	Total responded/total no of teachers at school	Nursery School Total responded/total no of teachers at school (total no of children)	Primary School Total responded/total no of teachers at school (total no of children)	Secondary School	Primary School	Secondary School	Cyril Potter College of Education	University of Guyana
Santa Rosa	20/30	2/5 (99)	18/25 (735)	-	4	3	12	0
Kumaka Secondary	7/11	-	-	7/11 (152)	0	1	5	1
Karaburi	5/5	*	5/5 (148)	-	3	0	2	0
Waramuri	13/15	2/2 (59)	11/13 (345)	-	5	1	6	0
Kwebana	5/6	1/1 (41)	4/5 (181)	-	2	0	3	0
Kamwatta	4/6	No Nursery	4/6 (274)	-	2	1	1	0
Total	**54/73**	**5/8 (199)**	**42/54 (1683)**	**7/11 (152)**	**16**	**6**	**29**	**0**

* At the time of the interviews, the Nursery School was being opened.

CURRICULA AND EXISTING TEACHING MATERIALS

The majority of teachers agreed that water, sanitation and health issues are an integral part of the children's education, and appreciate the significance and influence of their role as teachers. Only two persons disagreed with the statement *"I am in a strong position to promote healthy habits at the school and in the community in general."* Three persons did not agree with the statement *"Training and practising healthy habits at school have a positive influence on the children and the community at large."* Teachers agreed that WES and related health issues should play an integral part in the school's daily activities and practices. All agreed to talk to the students about hygiene habits, and 85% thought that students were also interested in these issues. All teachers claimed that children were constantly reminded about the importance of washing hands.

[21] In the column "Schools" the first figure gives the number of teachers surveyed and the second figure the total number of teachers at the school (e.g. 5/6 meaning that five teachers out of six teachers answered the survey). The figure in the brackets gives the total number of pupils in the school.

In Region 1 only two of 53 respondents stated that water related topics were not present in the curriculum. Altogether 47 teachers felt that the topics were also related to the community while two felt that they were partly related and one that they were not related. These responses indicate that water related topics are dealt with at all levels of the schools surveyed. Seventy percent of teachers said that they added locally relevant issues or topics to the curricula to make the water topic more accessible to students.

The majority (about 84%) of the teachers felt that students responded positively to hygiene education. The remainder may in fact be due to confusion over differences or similarities between the health curriculum and hygiene education.

Nearly 90% of the 51 teachers who answered the question agreed that the curriculum contained relevant health related topics. However, when asked whether they added any health issues to the main curricula to make the health topic more locally applicable, a significant number had difficulty in doing so. This suggests there is a need for workshops or seminars aimed at sensitising teachers about ways of incorporating WES issues into the main curriculum.

EXTRA-CURRICULA ACTIVITIES

Extra-curricula activities can play a significant role in conveying messages and promoting environmental sanitation in a positive and participatory way. Participatory methods are designed to encourage community members to make their own decisions, and enhance resourcefulness, self-reliance, and learning by doing, among other things. The WUN Kit could support these functions within existing institutional frameworks by offering further ideas and materials for existing groups and by encouraging and motivating these groups to actively address water and sanitation issues.

Many extra-curricula activities already have an environmental dimension, for example, wildlife clubs, clean-up campaigns and tree planting activities. One of the most active clubs in the sub-region is the Santa Rosa Conservation Club, which has active members in the Kumaka Secondary School. This club is mainly concerned with sea turtle conservation at Shell Beach. The club focuses on discouraging residents from slaughtering the marine turtles for food, and encourages them to seek alternative food sources such as rearing chickens, establishing fish ponds, etc. Although most teachers and pupils from all the schools surveyed were involved in these activities, the strongest involvement was from the Santa Rosa area. There were a few teachers who informed us that sewing and craft clubs were in operation but these were not very active. Some of these clubs should be revitalised as they play an important role in strengthening community culture.

When asked what they would like more information on or what they would like to be involved with, a significant number of teachers expressed interest in tree planting (14), destruction of mosquito breeding sites (15), making pit latrines (14) and cleaning school compounds (46). This suggests a high degree of environmental awareness in some individuals.

Teachers were interested in delivering information about water and health as well as composing songs and poems relating to these. There was also interest in promoting personal hygiene, reducing specific health problems such as worms, setting up a

school garden and wildlife clubs. However, there was very little interest in managing diarrhoea, making dish racks or making water filters.

SCHOOL WATER AND SANITATION FACILITIES

All schools surveyed had water and sanitation facilities, although many of them periodically experienced problems. During the rainy season all schools utilise rainwater. Problems are particularly acute during the dry season (March – April, October – November). At Karaburi and Kamwatta the problems were related to storage tanks. In both places the rainwater system could be improved through simply setting up more water tanks, repairing the taps and cleaning up the existing tanks and gutters.

All teachers agreed or agreed strongly that it is important that every school has good toilet facilities. The opinions were equally divided as to whether these facilities should be built close to the school: Fifty-six percent agreed or agreed strongly that these facilities should not be built close to the school.

At Santa Rosa, Waramuri and Kwebana, toilets and facilities for washing hands were considered adequate. Sanitation was the poorest in Karaburi and Kamwatta, where toilet facilities were all but absent This clearly requires urgent attention. The situation in Karaburi has been improved, and Kamwatta will follow in the nearby future.

According to the teachers, over 80% of the pupils use the sanitation and water facilities present in the school. Teachers could not explain why the remainder did not use the facilities provided. It is hardly surprising that the facilities are not used considering the seriously deteriorated condition of toilets. A few teachers felt that some children were accustomed to using bushes. Generally, however, there seems to be positive attitudes among children towards the use of water and sanitation facilities at school.

The majority of teachers (85%) confirmed that there were hand washing facilities at the school. Only six teachers stated that the facilities were not used. Hand-washing facilities did not exist in Kamwatta and Karaburi. Waramuri seemed to have a high use of the facilities and high degree of consciousness regarding hand washing. In most schools it was the teachers and older children who cleaned and maintained the water and sanitation facilities. The question "*how?*" was not answered.

Practically all respondents agreed that good quality drinking water and enough water also for washing is essential for every school. Only one person disagreed. Four persons agreed to the statement *"There are washing facilities at the school but these are not used by the students"*. However, the question was poorly worded and it is now unclear whether the 92% who did not agree did so because there were no washing facilities at the school at all or did so because there were washing facilities but students were not using them. This question was modified for the Region 9 survey.

Garbage disposal was very efficient in all schools surveyed. All favoured burning and burying of the garbage. School compounds were very tidy, although some littering took place around rubbish tips. Some of these tips are very close to the school buildings. When asked whether clean up campaigns to tidy the schoolyards were important, almost 91% agreed with the statement. Only six respondents felt them

unimportant and that they did not feel there were any garbage problems.

Teachers were asked whether improvements of WES facilities were needed at the school. Most teachers felt that there should be better water storage facilities, regular cleaning of water containers and the completion of wells started by UNICEF. No schools had a piped water system. Some teachers also felt that chlorine treatment or some other methods should be used to purify the school water. Some of the obstacles to improved facilities included a lack of funds and materials. Nobody listed priorities.

Self-help and parental and community involvement to improve water and sanitation facilities for the schools was discussed. In response to the question *"Is there anything that the students, parents and teachers could do as self-help with reference to water and sanitation?"* many teachers stated that the parents could help to complete the wells already started while at the same time getting involved in the construction of new and durable pit latrines. There was also a suggestion that parents become involved in ensuring that pupils have access to treated water. However, there seemed to be reservations about self-help as an option in improving WES facilities, since one-third of all respondents disagreed that self-help could be used. Most of these responses were in the Santa Rosa area where some people expect to be paid for work. However, in most other communities self-help was not rejected quite so emphatically though from observation problems with self-help do exist.

Only 23 teachers responded to the question about who should take the initiative with water and sanitation improvements. Nine respondents felt that the village council should initiate improvement of the school WES facilities, while four respondents considered that teachers should take the initiative. Only one teacher stated that the head teacher should take initiative and only two that organisations such as SIMAP or UNICEF should initiate improvements. Nobody considered that responsibility for such initiative should lie with GUYWA. It seems sensible that any programme to improve WES in schools should involve the village council.

Ninety percent of the teachers interviewed indicated that there were programmes, projects and activities planned with regard to the improvement of WES facilities in all schools surveyed. Most respondents mentioned the completion of wells at schools.

5.3 TEACHERS – REGION 9

Facilitator: Mr E. Jarvis

RESPONDENTS

A total of 42 teachers from six communities completed the survey in Region 9. These comprised 13 nursery school teachers, 25 primary school teachers and three secondary school teachers. On average 80% of all teachers in these communities participated in the survey. Just over half of the teachers had only received primary school education themselves compared to one third in Moruca (Region 1). For such teachers in Region 9, primary education is supported with additional courses, such as teacher upgrading courses and distance education through the GBETT. One person had attended the University of Guyana, and one had graduated from the Government Technical Institute.

The majority of teachers were local, and only two in 35 reported being from communities other than where the school was located. Half of the teachers were in the younger age group, 20 to 30 years old and 31% had only one to five years of teaching experience. Only four respondents had more than 15 years of teaching experience Some of the schools are seriously understaffed. See Table 5.2 for details.

Table 5.2 Summary of Teachers Region 9[22]

Community	Teachers	Schools *			Educational background			
		Nursery School	Primary School	Secondary School	Primary School	Secondary School	Cyril Potter College of Education	University of Guyana
Aishalton	Total 14 F: 9 M: 5	4/5 (61)	7/ 8 (232)	3/4 (86)	7	4	2	1
Achiwib	Total 3 F: 1 M: 2	1/1 (23)	2/2 (156)	-	2	0	1	0
Awarewaunau	Total 6 F: 2 M: 4	2/2 (36)	4/5 (170)	-	4	0	2	0
Karaudarnau	Total 6 F: 4 M: 2	3/3 (54)	3/8 (321)	-	3	0	3	0
Maruranau	Total 7 F: 2 M: 5	0/2 (31)	7/7 (226)	-	3	0	4	0
Shea	Total 6 F: 2 M: 4	2/2 (20)	4/4 (101)	-	4	0	1	0
Total	**42** **F: 21 M:21**	**12/15**	**27/34**	**3/4**	**23**	**4(*)**	**13**	**1**

CURRICULA AND EXISTING TEACHING MATERIALS

Nearly 90% considered the existing topics relevant to the community. How to treat drinking water and learning to care for and use water tanks correctly were considered important. In addition, the teachers recommended that the following issues be addressed in more detail: "*personal hygiene, environmental issues, clean up campaigns, animals messing up the water holes; poisoning water for the fish.*"

Teachers were asked if they added any issues to the main curricula to make the water topic more locally applicable. Of the 28 teachers who responded, 25 added locally applicable issues to the curriculum, such as "*Washing, cooking, food care, water wells and pumps. Contamination of water by poisoning (of fish). Water pollution. Erosion by water. Well design. Advising children to use only clean drinking water.*

[22] Note that for "Schools" column the first number gives the teachers surveyed followed by the total number of teachers in school. The total number of students as each school is given in the brackets. number of pupils in school. (e.g. *5/6 (200)* meaning that five out of six teachers answered the survey, the total number of students being 200).

Demonstrations and experiments to increase understanding. Also poems, songs, art etc. Demonstrating water treatment. Boiling water and adding bleach (4). Importance of water. Water cycle." Some felt that techniques for water purification should be included in the syllabus. A follow up workshop and the WUN Kit should address the issues listed above as far as possible, offering more practical ideas on how to approach these topics in the classroom.

Question no 5 was *"Does your curriculum contain any health related topics? If yes, give examples"*. Again, almost 90% of the respondents agreed, and 80% felt that the issues were also relevant to the community. One-fifth considered them partly relevant. Teachers provided examples of health-related topics in the main curriculum, which included: *"Health chat and demonstration. Health and safety practices. Health rules, healthy food and eating habits. Preserving foods. Food and nutrition (5). Care of teeth /dental care (5). Regular bath. Leisure and relaxation. Water and air pollution (2). Purification of drinking water . Keep home and surroundings clean (3). Road safety and use of traffic lights."*

Six respondents felt the health-related issues were partly relevant in the community. Examples given for particularly community-relevant topics included: *"Keeping clean, personal cleanliness/hygiene. Keeping the home/village clean. Nutrition: many persons use very starchy foods and very little greens and so nutrition is a very relevant issue. Encourage planting and use of vegetables. Participating in sports."*

Teachers were also asked whether they add any topics to the main curricula to make the health topic more locally applicable. Most of them (70%) agreed that they did. The following items were given as examples: *"Demonstrations, songs, poems. Wiping, sweeping. Invite CHWs to give talks (2). Carry class on educational tour e.g. hospital. Talk about pollution of drinking water. Boil water. Treating water with bleach. Prevention of sickness such as diarrhoea and malaria. Setting a good example. Making talking circles more often. Avoiding climbing trees and house tops etc. "*

Eighty-six percent of teachers agreed that students respond positively to hygiene education, although examples were rarely given.

From these answers it is clear that a wide range of issues are covered within the school curricula and that in general teachers recognise their importance within the community and as a result, do attempt to make topics as locally relevant as possible. For example, traditional fishing practices can include poisoning of a stream or creek, and this is still occasionally practiced in some areas. Some teachers talked about trying to address this issue in schools.

EXTRA-CURRICULA ACTIVITIES

There was much interest in a variety of activities that could take place within the school system. These involved such things as cleaning compounds at school or clean up campaigns, and milk and biscuit feeding programmes. Giving information about health, promoting personal hygiene and school garden each gained 21 "yes" responses indicating a high level of interest amongst the teachers.

The idea of building a pit latrine was well received. All respondents wanted more information and identified specific areas of interest, from health, composing songs and

other art forms, to building water filters and making pit latrines. There was some interest in practically all topics presented in the questionnaire.

Apparently few extra-curricula activities or clubs are arranged by the schools. Only in Aishalton, which mentioned "*Bring-and-Buy*" sales and games, were defined extra-curricular activities listed. This opposes the statement that "*Students have extra-curricula activities by the school and these are actively attended*", where a total of 85% agreed with the statement. For Region 9 we tentatively conclude that as far as the WUN Kit is concerned, there are no existing clubs that could benefit from extra material for their activities. Games and songs and other informal means of delivering health and water related messages could be offered to the schools.

SCHOOL WATER AND SANITATION FACILITIES

On average in all the schools, almost two in three teachers described the school drinking water supply as "*poor*". About one-fifth described it as "*satisfactory*" and less than one-fifth as "*good*". One third of the teachers agreed that "*I am satisfied with the present water supply at the school*", and all but one agreed that it is essential that every school have good quality drinking water and sufficient washing water.

Four in five teachers consider school washing facilities "*poor*". Only one respondent felt that they were "*good*". Three in four respondents said that there were no facilities to wash hands at the schools. All teachers agreed that every school should have good toilet facilities, although only one in four described the current school latrines as "*good*". Out of all respondents 30% considered them "*poor*". However, 38% agreed that "*I am satisfied with the present latrines at the school*". Only one teacher said that the children did not use these facilities. This does not correspond with what the children were saying (see chapter 6 for Students).

The most common response to the question of how often latrines were cleaned was "*once a week*" which was supported by 40% of the teachers. The remainder were divided between "*daily*" (10%), "*few times a week*" (18%),"*monthly*" (10%), "*sometimes*" (18%) and "*Nobody cleans the toilets*" (one person). Over half claimed that students and teachers both clean the latrines, although few questionnaires mentioned actual cleaning techniques. Maintenance and overall cleanliness are essential to ensure that latrines are comfortable and sanitary. If they are not, people will avoid using them.

Practically all teachers agreed that water and sanitation facilities by the schools should be improved. Only two respondents in 35 answered "*no*". Three priorities for action were listed as follows:

1. *Better toilets/VIP latrines (5); flush toilets; potable water supply for every family (3); hand washing basin/sink by the school (4); pipe and taps in/near the school building; making sure that the well water quality is good ("putting in medicine to prevent diarrhoea").*
2. *Washing facilities (3); kitchen garden to reduce malnutrition; toilets (1); running water at home; fencing of the school compound to keep animals from the school compound; handpumps in the community (1); more wells (2); to obtain basin, towel and soap for the school;*

3. *Hand towels, disinfectants (3); every school to have pit latrine; more pumps and completed wells; to build a washing stand.*

Respondents reported that a lack of money, materials, equipment and skills prevent many of these improvements from being carried out. The cost of materials and a shortage of cash to pay for the work were mentioned. A lack of co-operation and education were also mentioned. As expected, the most crucial material was cement. Other practical obstacles and problems were cited, including seasonal water table changes, particularly in the wet season when latrines may be flooded and cave in. In the dry season shallow wells frequently dry out. House flies breed in the toilet pits. Also open access to the school compound for animals (cows, pigs) makes it harder to keep areas around water stations clean. One practical recommendation stated that the schools be equipped with tools to maintain the pumps and other water facilities.

In response to the question "*what could the students, parents and teachers do as self-help with reference to water and sanitation*?" the following suggestions were put forward: "*Clean school environment, build better, more suitable ventilated latrines, make more wells. Clean wells. Add gravel for the drains near the pumps and keep them clean. Dig more wells (5) and toilets (4). A very common remark was that there is a need for more co-operation from the parents. Have a discussion on these issues (WES)*". The WUN Kit should respond to these ideas and further develop them in the follow-up workshops.

On average, 86% of teachers agreed that "*There is a strong tradition of self-help in this community and this could be used to improve the water and sanitation facilities at the school.*" When asked about whom should initiate the suggested improvements, the opinions were evenly shared between the Village Council and GUYWA, with one third each. The Ministry of Education was also mentioned (15%). Some persons offered combinations also involving teachers, but no respondent suggested that the Headmaster/Headmistress should take the initiative.

5.4 TEACHERS' CONCLUSIONS

Teachers and health workers are often key persons who have a strong personal influence on the present and future state of the community. Teachers in particular can function as role models, not only for the children but also within the community. Some teachers recognised this role. For instance when asked about adding issues to the main curricula to make it more locally applicable some persons mentioned showing good personal hygiene by example.

WES education need not be added as a new independent topic to existing school curricula. It is possible for water-related issues to come into practically any subject area, and teachers recognised this. The idea of adding WES issues to daily school routines and all subject areas in an integrated manner was well received. Practically all teachers agreed that it would be a good idea to use WES and health related issues as examples in teaching, whether it be writing essays, solving mathematical problems or doing practical exercises in sciences, not to mention the use of the theme in various arts or even games.

Teachers requested more ideas and materials to facilitate the incorporation of WES issues into the full range of the school curriculum. Follow up workshops with

teachers should focus on techniques for applying WES education. A range of ideas and materials should be suggested and a brainstorming session held with teachers about how to apply these locally or how to modify them to make them more locally applicable. These ideas should be extended to extra-curricula activities. All the schools have existing extra-curricula activities to a greater or lesser degree, such as clean up campaigns, sporting events and PTAs.

The surveys and related workshops focussed on integrated teaching methods. This approach could be refined to incorporate information gained from, for example, experiences of WES education techniques in Africa. The United Nations Centre for Human Settlements (UNCHS Habitat) in collaboration with the United Nations Environment Programme (UNEP) is presently implementing a water education programme in African cities as part of the Water for African Cities Programme. There is much to learn from their value-based approach and the materials developed within this initiative could be utilised in the WUN Kit in response to the findings of this survey.

PART III
KAPB SURVEY RESULTS
STUDENTS

Key words: Knowledge, attitudes, practises and beliefs, school environment, home

Photos 6. Students activities in Achiwib, Karaudarnau, Aishalton and Awarewaunau, Region 9

6. STUDENTS KAPB – SURVEYS

6.1 STUDENTS' SURVEYS

The Convention of the Rights of the Child requests that governments take measures to diminish infant and child mortality, to combat disease and malnutrition, and to ensure that parents and children are supported in the use of basic knowledge of hygiene and environmental sanitation. Children have a right to a safe environment (Article 24).

Recognising that children are highly vulnerable to health hazards in communities throughout the world, UNICEF has worked to promote improved water supply, sanitation and hygiene for many years. Studies show that poor water supply or environmental sanitation can affect child health in many ways, most frequently as a cause of diarrhoea and intestinal worms. If the school environment and sanitation facilities are not hygienic, the risk of disease transmission can be very high. Sanitation projects aimed at improving child health and welfare must address sanitation issues in both schools and at the household and community level.

Schools must have water and environmental sanitation (WES) facilities, although unless such facilities are used and maintained correctly, they will not reduce health risks. According to the UNICEF Manual on School Sanitation three factors must be considered if lasting changes in hygiene behaviour are to take place[23]:

Predisposing factors: promoters must understand children's knowledge, attitudes and beliefs relating to WES;

Enabling factors: availability of resources, such as latrines and safe water supply, enabling children to transform newly acquired knowledge, attitudes and beliefs into desirable behaviours;

Reinforcing factors: factors affecting the students' ability to sustain certain behaviour. This requires constant support from the teachers and parents.

The Amazon WES project addresses these issues in various ways. The KAPB surveys conducted in Region 1 and Region 9 aimed to identify the extent of children's knowledge and their current attitudes and beliefs relating to WES. The Amazon Programme is already working on resource development in the communities. Five communities in Region 9 have already established Water and Sanitation Committees to spearhead the construction of VIP latrines at schools and at home, and upgrading of family wells to improve local potable water. Survey and related workshop activities targeted both teachers and parents in order to ensure their involvement from an early stage.

Children are active members of the community and the school environment. They play a key role in ensuring that their environment is safe, and their role in community development should be recognised from a young age, as they contribute to community

[23] Manual on School Sanitation and Hygiene. Towards Better Programming. 1998. Water, Environment and Sanitation Technical Guidelines Series – No 5. UNICEF Programme Division in collaboration with IRC International Water and Sanitation Centre. P.2 (60 p.)

health and welfare by cleaning up the yards, burning the rubbish, carrying water, and other daily tasks. A major conclusion from the Teachers' Workshops was that adults should listen to children also on the matters concerning their environment and how to take care of it. The Student KAPB survey had 28 questions and 28 statements to which respondents could agree or disagree.

Several questions were similar to those in the household surveys (Chapter 4) in order to identify similarities and differences between adult and child responses. Children are less likely to have preconceived notions of what constitutes the "correct" answer and are therefore more likely to respond spontaneously in relation to their experiences. All surveys were conducted as group activities. A facilitator read through the questionnaire, providing additional explanations where needed. A total of 370 surveys were conducted in Region 1 and 465 in Region 9. Most respondents were primary school children from Form 3 and above. Both sub-districts had only one secondary school, although in Region 9 St. Ignatius Secondary School was used as a reference group, representing children from all over Region 9. In both regions the activities included drawing, writing and singing, and identifying and presenting visions for the future of the school.

6.2 STUDENTS – REGION 1

Facilitators: Ms P. Henry, Mr P. Atkinson, Mr G. Bhojedat

DEMOGRAPHIC DATA

In Region 1 surveys were carried out in Santa Rosa, Karaburi, Waramuri, Kamwatta and Kwebana primary schools, and in Kumaka Secondary School. A total of 270 students participated in the survey and related activities. Forty five percent of the total respondents (164 students) were 9 to 12 years old. Because only one secondary school was involved, the oldest age group (16 to 18 years) was also the smallest. Table 6.1 illustrates the number of students surveyed and household size. On average, a household comprises three to four adults, two to three young persons (10 to 18 years old) and two children under 9 years old in each household. The average number of persons in each household was 8.5. (Table 6.1).

Table 6.1 Number of respondents, age groups and household size Region 1.

School	Students	Respondents No. of children in each age group			Households No. of persons			
		9-12 yrs.	13-15 yrs	16-18 yrs	Adults over 18 yrs	Young persons 10-18 yrs #	Children Under 9	Total
Santa Rosa Primary	51 Community High 105 Primary	69	62	25	3	2	2	8
Kumaka Secondary	72	14	43	15	3	3	2	8
Karaburi Primary	30	21	7	1	4	2	2	9
Waramuri Primary	41	22	16	0	4	2	2	8
Kwebana Primary	31	19	11	1	3	4	2	9
Kamwatta Primary	40	19	16	5	3	4	2	9
All students	370	164	155	47	3.5	2.8	2	8.5

SCHOOL WATER AND ENVIRONMENTAL SANITATION

As with the teachers' survey, everybody agreed that it was essential for every school to have good toilets. However, in most places this is not the situation, and basic sanitation facilities, such as washing basins or even water for hand washing, is non-existent. The first set of questions on the questionnaire addressed issues relating to the school environment. Students were given open-ended questions about water supply, garbage disposal and toilets, as well as about health and hygiene education at the school.

School water supply

All six schools in Region 1 rely principally on rainwater for their water supply. This is supplemented by water from creeks and rivers during the dry season. Santa Rosa Primary has already benefited from a new well and windmill, facilitated through the Amazon Programme, although the overhead tanks are yet to be installed to facilitate water supply directly into the school. Presently the windmill is pumping the water to waste by the well. In Waramuri the primary school has an El Niño well with a handpump under construction. This can serve the nursery school as well. It is

expected that the wells planned by residents under the Amazon Programme in Karaburi, Kamwatta and Kwebana will be finalised in the near future.

Rainwater collection will remain an important source of water in Region 1. In most locations the rainwater collection systems are in need of improvement. Also the maintenance aspect has to be clarified as these systems are often both in disrepair and unhygienic.

All students were familiar with their water sources and 88% recognised the use of rainwater at school. Two statements were designed to assess how adequate, according to the children, the school water system was. Overall, 51% of the students in all communities agreed with the statement "*The school has enough drinking water for the students year round*". Slightly more, 59%, agreed with the second statement "*The school has enough water for the students to wash year round*". Kwebana and Waramuri had the highest proportion of respondents who agreed with both statements. (Fig. 6.1)

School latrines

Kwebana had recently opened a new SIMAP built school with a new set of ordinary latrines. At the time of the visit the water supply system was yet to be completed as the hand-dug well next to the school was in the very early stages of construction. Waramuri had several flush toilets in its new school building. This is a very rare situation in the Hinterland. Kwebana and Kumaka Secondary School both requested flush toilets, although their water supply is unreliable and therefore flush toilets are not recommended.

Kamwatta appeared to have no latrines at all, as there is only one latrine in very poor condition. The situation in Karaburi was similarly dire and requires urgent attention. The Amazon WES project has supported community initiatives in Karaburi and Waramuri to complete two four-compartment and one double-compartment VIP latrines for Karaburi Primary School and two double-compartment VIP latrines for Waramuri nursery school. There is still need for minor works to finish these.

This initiative is currently being repeated in Kamwatta where four double compartment VIPs are planned for the primary school. A major issue is that there are no purpose-built hand washing facilities near the latrines (old or new) in any of the schools, although rainwater tanks do have taps that can be used for this purpose.

Responses by the students illustrate clearly what they think about existing facilities and indicate the reasons why many are reluctant to use them, especially where they are in disrepair. In Kamwatta 93% of the students described the toilets as "*stink, do not use*" and the remaining 7% as "*nice, but do not use*". As stated above, the only remaining latrine is in serious disrepair and nearly 300 children have to use "the bush" as a toilet. In Karaburi the corresponding figures were 43% and 50%, leaving only 3% who said that they used the toilets, although saying that they "*stink*". It is hoped that this situation will have changed by now due to the construction of new VIP latrines. However, this will depend upon the maintenance of the VIPs and the results of hygiene education activities. In Waramuri, only 56% of the respondents agreed that they used the new flush toilets. Explanations pointed to the lack of water to flush the toilets when there is little or no rain. The new El Niño well will not solve the

problem relating to the flushing of the toilets. This is a handpump outside the school compound, serving also the nursery school.

At the time of the workshop in Kwebana, all students were happy to use the new latrines. These were not VIPs even though the standard SIMAP drawings usually do have ventilation pipes included. It is not known whether the contractors have left these vent pipes out in purpose to "cut some corners" or whether the vent pipes have been removed from the contract.

Many students described the toilets as "*stink*", "*untidy*", "*nasty*" or "*smelly*". Fig. 6.2 illustrates the four most common combinations of answers. Others, excluded from Fig. 6.2, only described the toilets without stating whether they used them or not. Most toilet descriptions mentioned the toilets becoming derelict.

Several statements related to the access and use of latrines both at home and at school. On average nine out of ten children agreed that all schools should have good toilets.

"*School toilets are really bad and smelly. I do not like to use them*" It was anticipated that responses to this statement should reflect the answers to the open-ended question earlier asking respondents to "*tell us something about your school toilets*". The negative descriptions correspond very well in most of the communities with the belief that the toilets are smelly and unlikely to be used by respondents (e.g. Santa Rosa Primary School, Kumaka Secondary School, and Waramuri Primary School, where the figures are virtually identical). In Kamwatta and Karaburi fewer respondents agreed with the above statement despite describing them as smelly earlier in the open-ended question where they were asked to describe their school toilets using their own words. (Fig. 6.3)

Many respondents agreed that "*Toilets breed mosquitoes*". This belief may prevent people from building toilets and may promote negative attitudes towards toilets. This issue was also addressed in the household surveys (Chapter 4). Fig. 6.4 compares adult and child responses to this statement. In all communities, 75% of the respondents agreed or strongly agreed that toilets breed mosquitoes, showing a strong correlation between child and adult responses.

The two statements "*I prefer to go to the bush than to the toilet*" and "*Toilets are not that important. I prefer the bush*" were set apart from each other to cross-check the preferences relating to toilet use. In four schools more people agreed with the second statement than with the first indicating inconsistency. For example, in Kwebana 7% first agreed that they prefer to go to the bush rather than use a toilet. When asked again later on, 22% indicated they would prefer the bush. (Fig. 6.5).

Despite the relatively high percentage of students who preferred using the bush, most children still claimed that they always use the toilet at home. This could be because school toilets are a lot less "nice" than the home toilets. On average, 96% of all respondents agreed that they always do use toilets at home, even though 31% of the students agreed that they do not *like* to use them. From the statement "*We have a toilet at home but I do not like to use it. It is smelly and breed mosquitoes*" it could also be interpreted that a high percentage of households do have a toilet. The wording of the statement may have been confusing, and for Region 9 it was decided that this kind of double-statement should not be used. This could also imply that hygiene issues are

taken more seriously at home than in a community situation. Santa Rosa appears to register the highest level of dissatisfaction with the use of home toilets with 43% of respondents saying that they have toilets at home but that they do not like to use them, and 99% saying that they always use the toilet at home. (Fig. 6.6).

The use of latrines and related hygiene practices should be addressed in follow up workshops and in the WUN Kit. The key questions are *"what makes a latrine worth using and what can we do about it?"* Outcomes should include a maintenance plan for the school latrines including a sanitary checklist. During the workshop a practical exercise could take place, such as painting and decorating the school latrines, and minor repairs could be undertaken as needed. Another group could design and construct a hand washing facility. These action plans have to be specified by the WUN Team.

School waste disposal

Schools and schoolyards in the interior are usually kept very tidy even though waste pits may be a problem. Pits can be very shallow, allowing animals and flooding to spread the contents out from the pit. These pits are not covered or fenced, and burying with soil does not take place before the pit is considered full. Burn-and-bury is the most common method of garbage disposal. Occasionally it may be difficult to burn the garbage, for example, during the rainy season when the pits may also flood. WUN Team members observed that some schools suffer from pits being too close to the school building and from littering in the pit area.

Children were asked to describe using their own words what is done with the garbage at school. Eighty-one percent of respondents said that garbage was disposed of in a pit and burnt. A few others said that bins were used. On observation and by the recommendations given by the children there should be more of these bins available. Garbage was not considered a problem, but on observation it is becoming one. The schools that only two years ago had very tidy yards now have shallow pits with garbage overflowing to the surrounding areas.

Figure 6.1 Statements relating to school water supply in Region 1

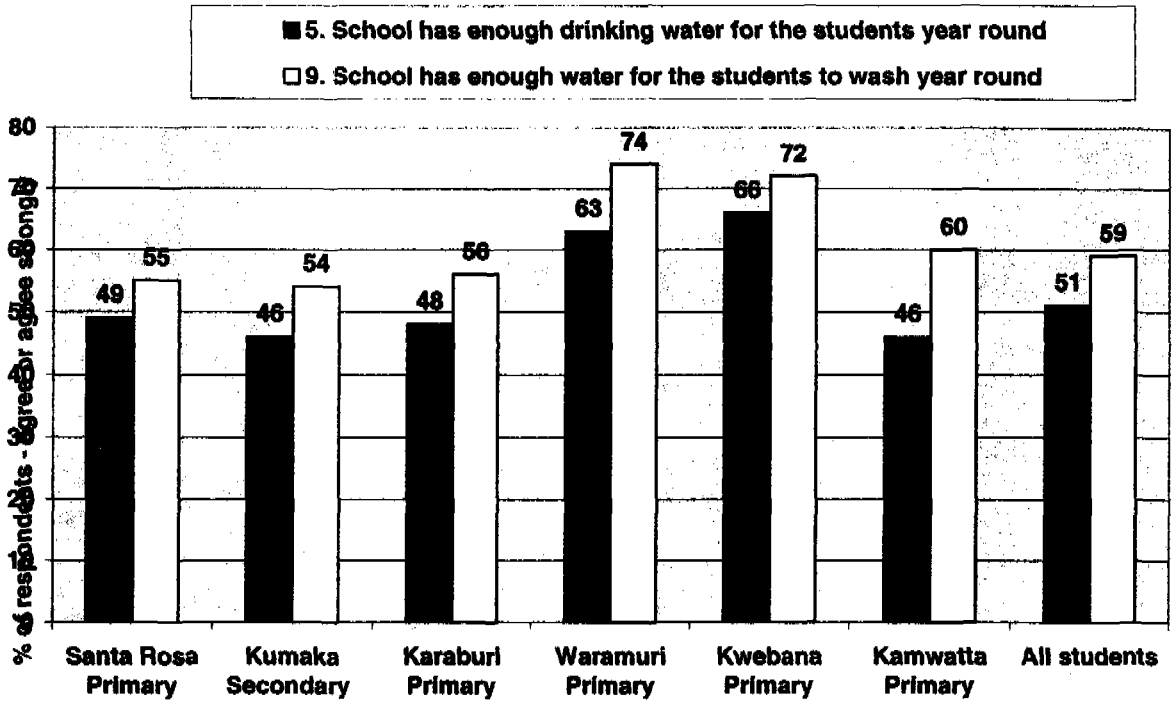


Figure 6.2 Students descriptions about the school toilets in Region 1

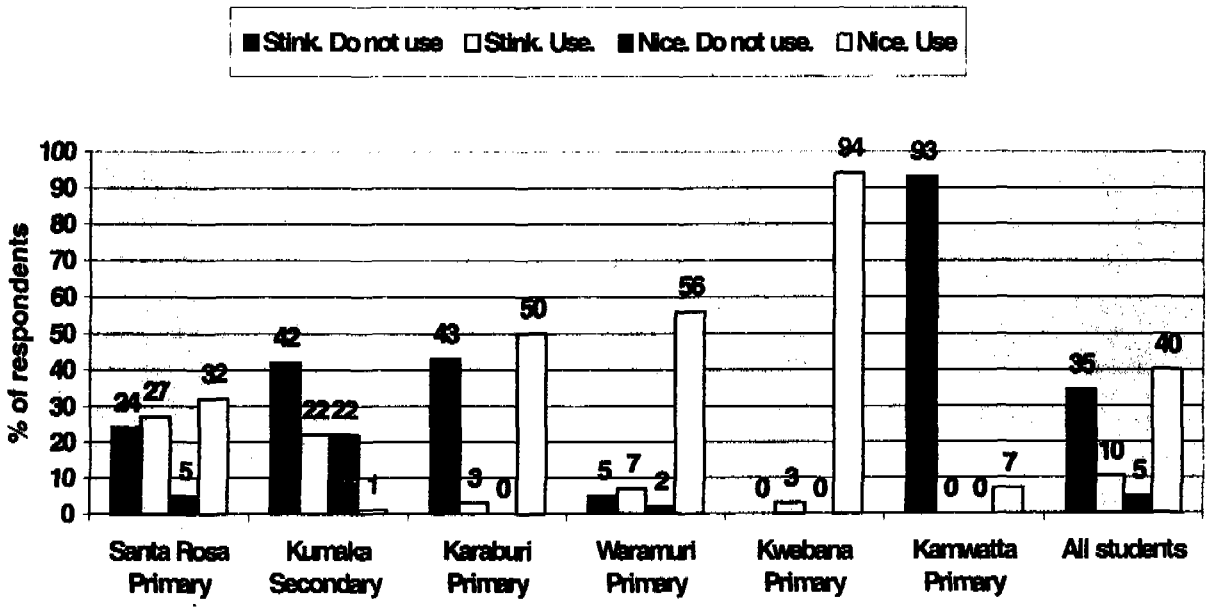


Figure 6.3 Statements relating to the condition of the school toilets in Region 1

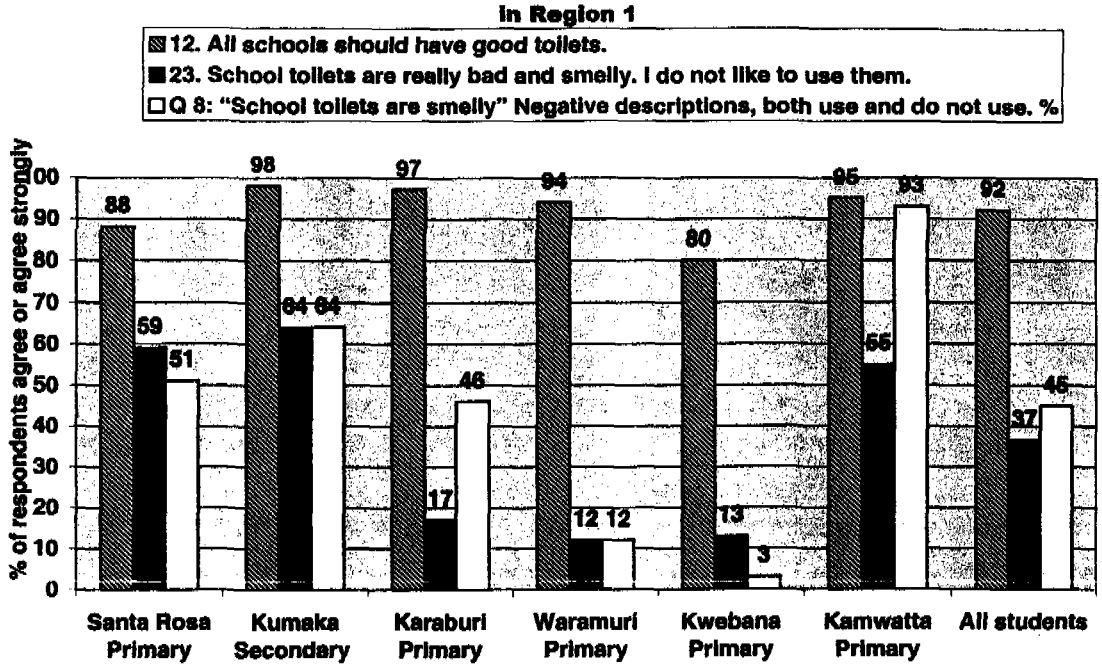


Figure 6.4 Statement: "Toilets breed mosquitoes" in Region 1

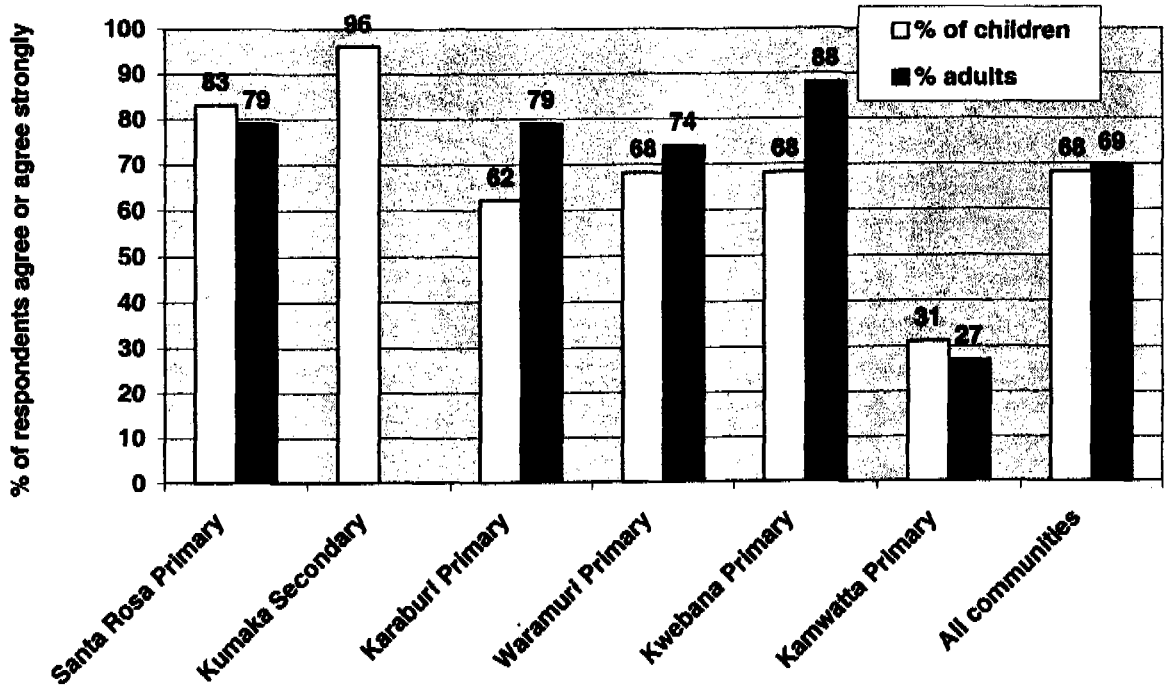


Figure 6.5 Attitudes towards toilets as stated by the children in Region 1

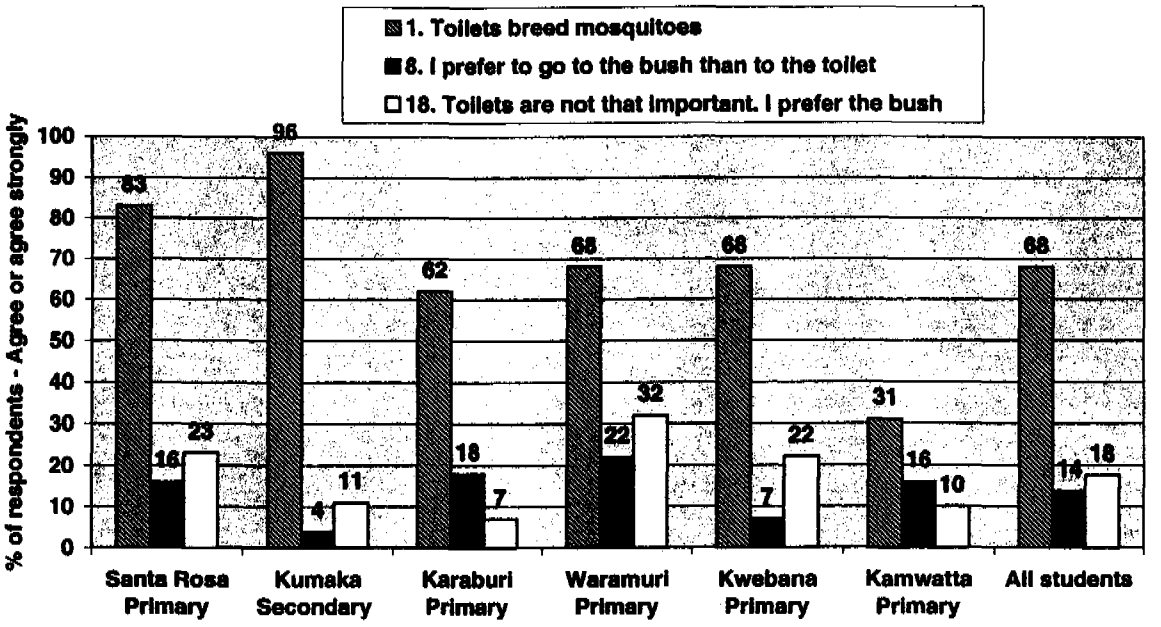
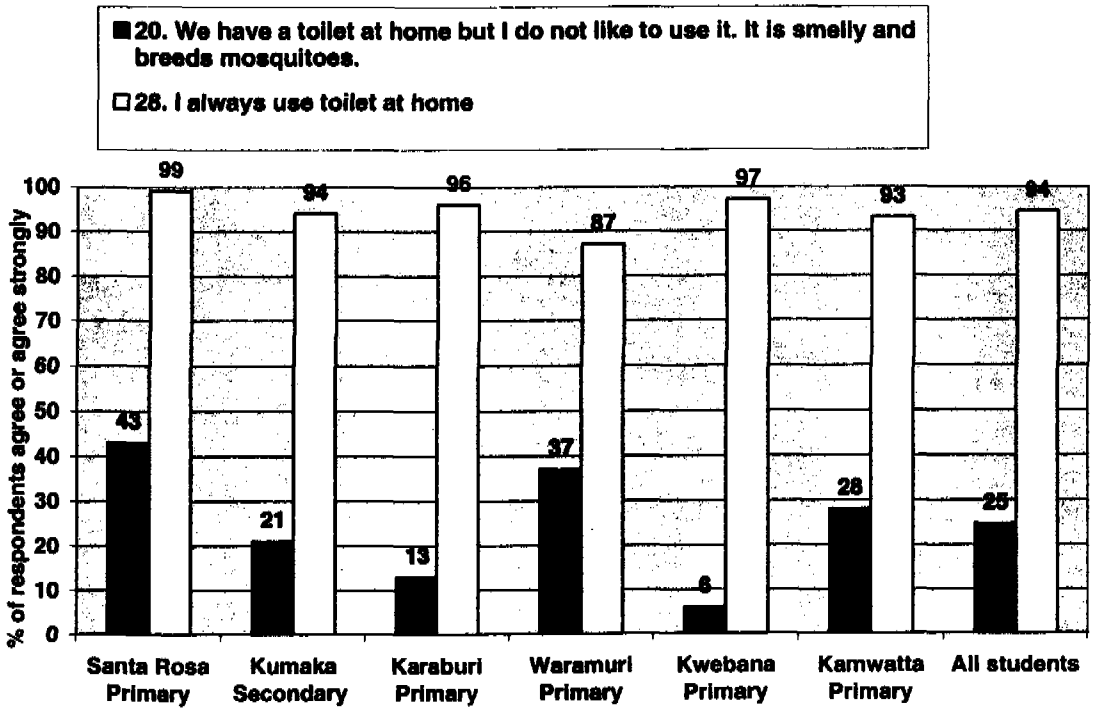


Figure 6.6 Statements relating to the toilets at home in Region 1



Hygiene education

Students were asked whether they talk about WES in school classes, and if so, were asked to provide details. Seventy percent of all children said they talked about water and sanitation in school lectures with a focus on a clean environment, hygiene and water. The remaining one third either did not have any lectures on the topics or did not respond to the question.

"*Do you learn healthy habits at the school? Give examples.*" Seventy-five percent of the students mentioned learning healthy habits at school. Most said they learnt about environmental and personal hygiene. The remaining one-quarter of the respondents did not respond. Washing hands, keeping oneself tidy and cleaning the yard together with physical education were the most common answers, although respondents were unclear what was meant by "*healthy habits*".

"*Do you talk about health with the teacher? What did you talk about the last time?*" *Fifty –six percent of* all children said that they did not talk about health in school or did not answer, although the remaining 44% were aware of the topic in school. Both students and teachers agreed that children were reminded to wash their hands after using the toilet. In Kwebana, the few students agreed that they talked about health with a teacher or that they learned health habits at school. The highest percentage of respondents who agreed with these statements was at Kumaka Secondary School, where practically all (98%) agreed that they learn healthy habits at the school.

"*I wash my hands*" and "*I do not wash my hands* " Hygiene habits were also addressed in statements pertaining to hand-washing following going to the toilet, including both use of a latrine and going to the bush. On average 88% of the children said that they washed their hands after going to the toilet. This corresponds well with the cross-checking question "*I do not wash my hands*" where only 17% of the respondents agreed with this statement. (Fig. 6.7).

Figure 6.7a Statements relating to hand washing in Region 1

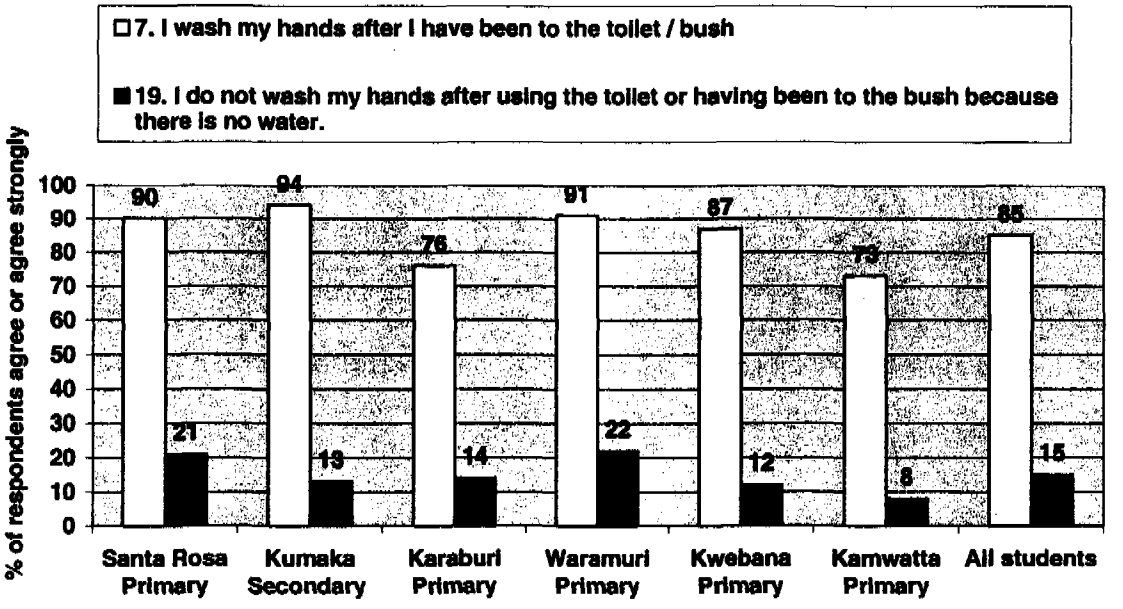
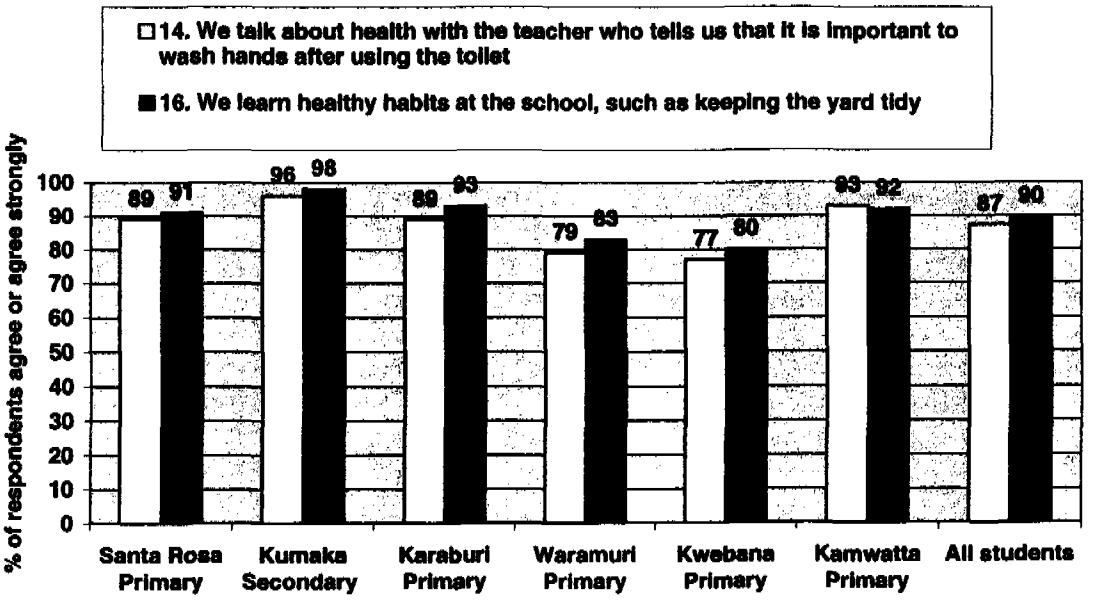


Figure 6.7b Statements relating to hand washing in Region 1



HOME AND DRINKING WATER

Water sources and quality

Questions for students about water and environmental sanitation at home were the same as the questions asked at a household level, and the results were similar. Children reported rainwater as the main source of water in the home (40%), followed by pond or water hole (22%) (Fig. 6.8).

There were five statements that related to drinking water quality in the home:

"*Nobody in my family has been ill because of water*". This question is asking how the respondents feel about the safety of their drinking water. As can be seen from Fig. 6.9, a majority (83%) of children felt that water at home is safe to drink. However, only 42% agreed that nobody in the family had been ill because of the water. (Fig. 6.9)

"*We treat our drinking water at home by boiling/bleaching*". A very high proportion of the respondents (83%) claimed that drinking water in the home was treated. This is anomalous since only 45% of the adults said that drinking water in their home was treated. It is possible that the children did not understand the question properly or do not know for a fact that this is done. (Fig. 6.9)

"*Once water is running, it is clean*" and "*Water is always good if it comes from the well*". Kumaka Secondary School children showed the least confidence in the reliability of running water as only 26% agreed with the statement. On average in all the schools 53% agreed with the statement. This corresponds well with the adult responses. Of all the communities, 62% of the adults agreed that running water is always clean. With regards to the quality of well water, 63% of respondents agreed that water is always good if it comes from the well. Children were the most positive about the quality of the well water. In Waramuri 86% of the children believed that well water has a high quality, followed by 80% in Karaburi. Again Kumaka Secondary School children were the most suspicious with only 29% agreeing with the statement that water is always good if it comes from the well. (Fig 6.10 a).

"*Rainwater is always pure*" and "*Water is good to drink if it is clear*". As with the adults, 73% of children believed that rainwater is always pure. Figures ranged from 49% in Kumaka Secondary School to 89% in Karaburi Primary School. Another belief is that clear water is also good water. Overall, an average of 63% of respondents agreed that clear water is good to drink. Again Kumaka Secondary School children were most suspicious about the quality of water, with 49% agreeing that water is good to drink if it is clear. The highest figure was in Waramuri, where 81% agreed that clear water is good to drink. (Fig 6.10b).

Figure 6.8 Water sources as given by the children in Region 1

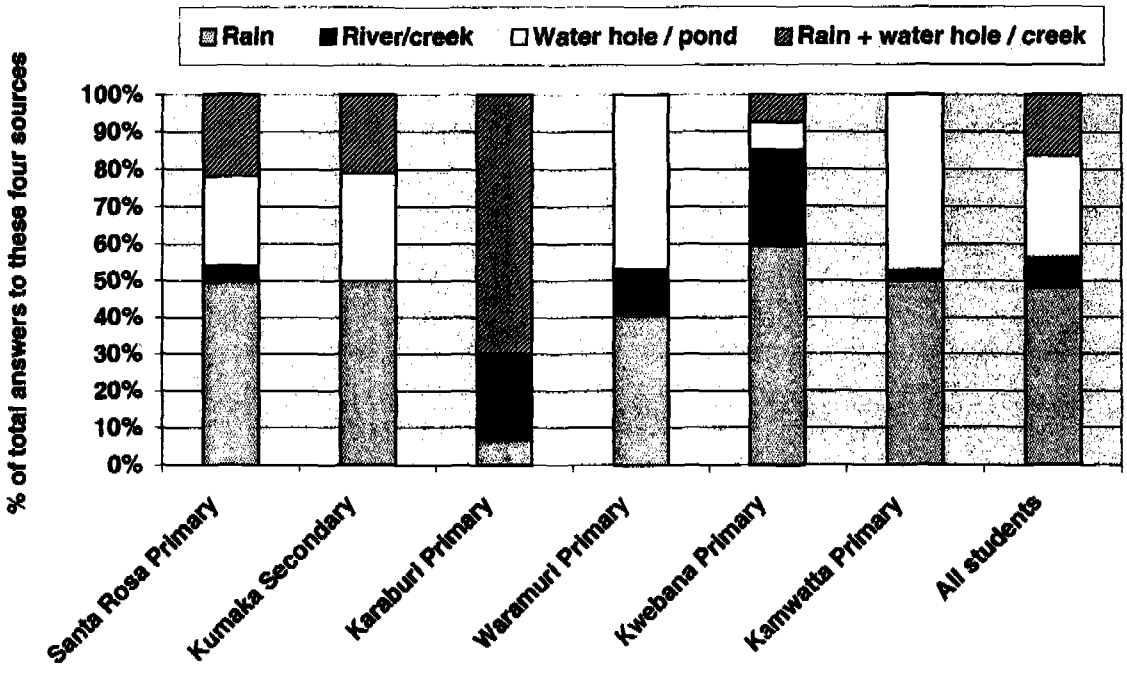


Figure 6.9 Statements relating to the safe drinking water at home in Region 1

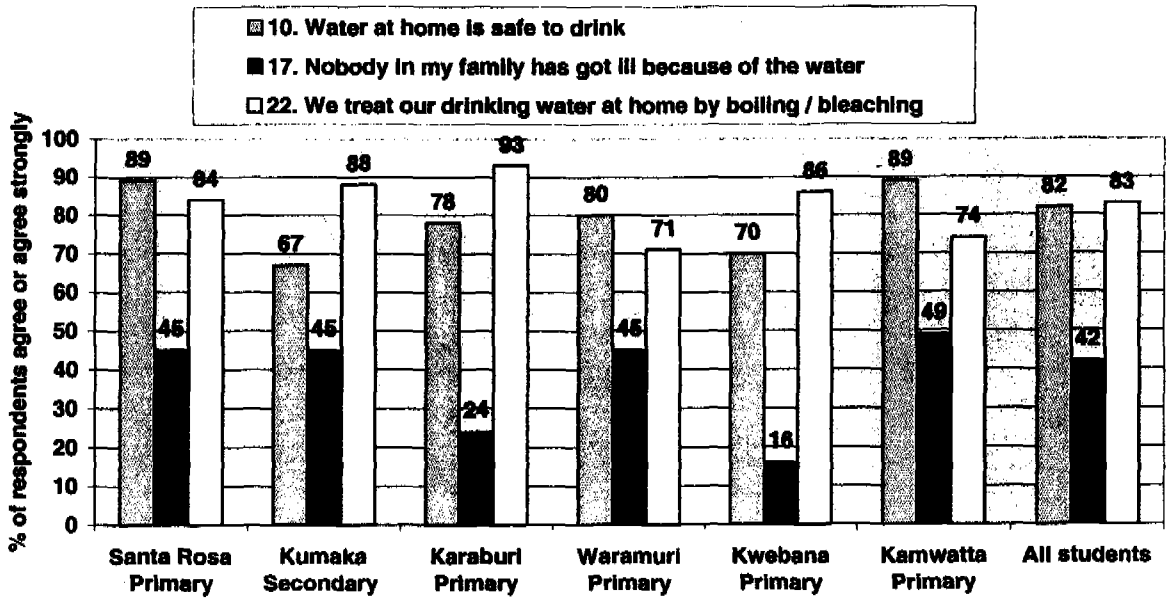


Figure 6.10 a Beliefs relating to the quality of the drinking water in Region 1

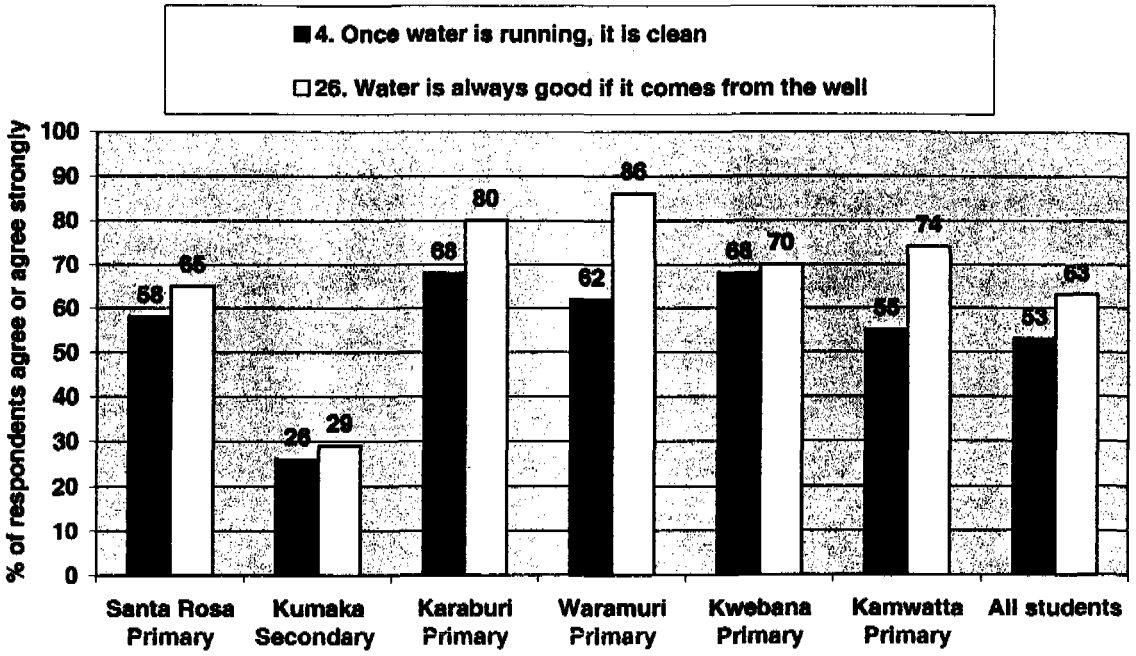
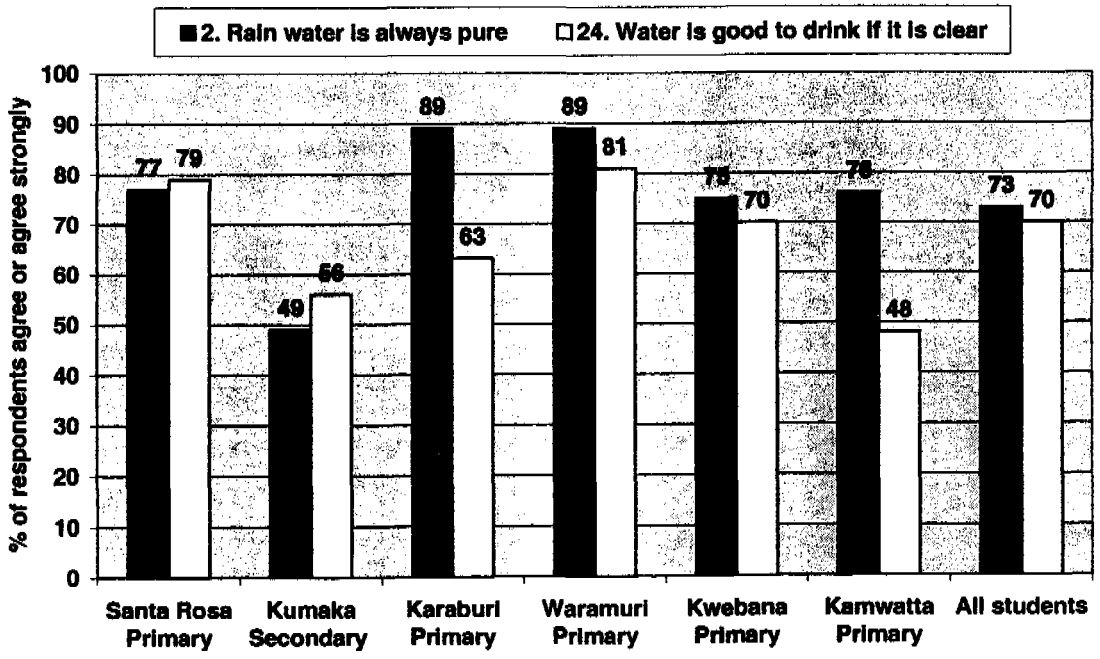


Figure 6.10 b Beliefs relating to the quality of the drinking water in Region 1



Water fetching

Water fetching consumes high levels of time and energy in the daily life of rural households. It can also negatively impact upon the health of those who have to carry water by hand as is the case in these communities. Because distances are relatively short, bicycles or animals are rarely used for fetching water. Improved water supply systems at the household level could save time and energy as well as reducing the negative effects of daily carrying of heavy loads. For a child, this additional time could be used for activities such as studying or playing.

The question about *"Who does most of the fetching of water at home?"* received very diverse answers from children and adults. Of all respondents in Region 1 children saw themselves as the main water carriers. (Fig. 4.3 in chapter 4.) On average 38% of the students stated that children do most of the water fetching for home use. This does not contradict the adult responses as 31% of the adults shared the view that children do most of the water fetching for home. However, within communities, the responses to this question were very varied and the children's responses did not always reflect the adult responses in individual communities. It is possible that the children are not aware of water fetched by others during school hours. Alternatively, children may be doing more water carrying work than their parents recognise. In all communities 70% of the students agreed with the statement that *"At home I spend a lot of time fetching water"*.

Water storage and handling at home

It is possible to contaminate drinking water in several ways, from poor hygiene at the water source itself, to dirty containers used for fetching, storing, or distributing the water from the water store. Ideally, the same buckets will always be used for water collection and these will not be used for any other purposes. Encouragingly, 73% of the children reported always using the same buckets/bottles, although the remainder said that they use any buckets or bottles available. This is reasonably close to the adult figure of 82% claiming always to use the same water containers.

Ninety-six percent of the children reported storing water in buckets followed by tanks or drums. A few mentioned using bottles and jars. The questionnaire did not ask whether these containers were covered, and this was not stated. Of all the households, 72% store water on a table or shelf, very rarely in the yard (5%). This supports the observations made informally in the villages by the WUN Team. Again, this is reasonably close to the adult figure, where 75% of respondents stated that water is stored on a table or shelf.

Slightly more than half of the children (56%) reported that everyone had access to the water, even the youngest household members, while 42% said that access was limited. One-third of the adults responded that only adults and older children have access to the store. Of the children, 57% reported that they use a cup with a handle for taking water from the store. However, only 11% of the children reported that this cup was limited to being used for removing water from the water store. This figure compares well with the adults (see chapter 4 Households).

All aspects of safe drinking water should be covered in the WUN Kit, not only the technical improvements relating to the water source. Practical ideas could be developed in the follow up workshops about hygienic water storage arrangements in the home, including ensuring that the utensil used for removing water from the water store is kept solely for that purpose.

HOME AND ENVIRONMENTAL SANITATION

A set of questions was designed to address general hygiene in the home. The first question was about whether animals were allowed into the house. Of all the student respondents, 42% stated that cats and other pets are allowed in the house, and 30% said that chickens are also allowed into the home. A very small minority (1%) said that pigs were allowed in the house. This may relate closely to what animals each household actually has, hence the very low figure for pigs. However, despite allowing these animals into the home, 80% believe that animals can spread disease and illness. Of these, 36% mentioned illnesses such as cold and fever, itches, vomiting and diarrhoea, scabies and sores. Tuberculosis was also commonly mentioned. Chicken pox and AIDS were mentioned in a few cases. The remaining 64% of respondents did not specify which diseases could be spread by animals.

Fifty-nine percent of the student respondents reported using bathrooms to bathe while 29% reported bathing in the river or creek. Only a minority (3%) said they bathe near the well, which is not surprising given the scarcity of wells in Region 1.

One question addressed hygiene education in the home. Although 56% of respondents agreed that their parents talk about being clean and keeping clean, a small minority (3%) answered "*sometimes*", and the rest (41%) answered "*no*" or did not respond. This indicates that schools play an important role in hygiene education.

The students' responses indicate that the most common method of garbage disposal is burning. On average 67% of the children reported burning their trash, and 25% said that they burn and bury waste. A minority (6%) admitted that they throw their garbage in the river or the yard. Forty -two percent of students reported that the garbage site was "*far*" from drinking water source and 27% said that the site was "*near*" to the drinking water source. The remainder did not respond.

Forty-five percent of the children reported that they threw wastewater out of the window and into a drain. The drain is usually just a shallow, small canal dug in the ground to lead the water away. Thirty-nine percent said they threw the water in a sink. The remaining 16% of respondents said that they used other means of disposing of wastewater such as throwing the water out of the window or into a river.

6.3 STUDENTS - REGION 9

Facilitators: Ms P. Henry, Mr K. Spencer

DEMOGRAPHIC DATA

In the six Amazon Programme communities in Region 9 a total of 403 students from six primary schools and one secondary school (Aishalton) answered the survey and participated in the related activities. There were 199 female and 186 male respondents.

In addition, a group of 46 students from the St. Ignatius Secondary School students' hostel were surveyed. These 46 students came from all areas in the Region 9, not just from the villages covered in this project. They were included as a reference group. Similarly, in Region 1, Kumaka Secondary School students are from various communities in Moruca sub-district, not only from the Amazon Programme communities.

Table 6.2 below shows the distributions of age groups and sex within the schools surveyed. Because only one secondary school was involved, the older age group was the smallest, with 50 respondents. The average number of persons in each household was seven. In an average household there were three adults, two young persons (10 to 18 years old) and two or three children under nine years old. (Table 6.2).

Table 6.2 Number of respondents, age groups & household size in Region 9

School	Students	Respondents No. of children in each age group		Households No. of persons				
	Total no. of respondents F: females M: males	9-12 yrs.	13-15 yrs.	16-18 yrs.	Adults over 18 yrs.	Young persons 10-18 yrs.	Children Under 9	Total
Achiwib	48 f: 14 m: 28	20	17	3	3	2	3	8
Karaudarnau	80 f: 41 m: 37	13	44	23	3	3	2	8
Aishalton Primary	75 f: 40 m: 35	53	16	6	3	2	2	6
Aishalton Secondary	80 f: 41 m: 39	28	47	5	3	2	2	6
Awarewaunau	15 f: 5 m: 10	3	9	3	3	2	3	7
Maruranau	66 f: 37 m: 19	27	26	7	3	2	1	6
Shea	42 f: 21 m: 18	21	18	3	3	2	2	8
St. Ignatius	46 f: 26 m: 20	13	28	5	2	2	2	6
All (Excl. St. Ignatius)	403 f: 199 m: 186	165	177	50	3	2	2	7

SCHOOL WATER AND ENVIRONMENTAL SANITATION

School water supply

The source of the school water supply varied in every community. Achiwib and Karaudarnau had recently had windmills installed with overhead tanks and standpipes. Aishalton Primary School relied on a handpump, which tested bacteriologically clean but suffered from other quality problems. Aishalton secondary school students were carrying water from a contaminated private well about 200 yards away. Awarewaunau utilised both an open community well and an El Niño programme hand-dug well with an Indian Mk II handpump. These were both located outside the school compound and

both tested positive for faecal contamination. Maruranau Primary and Nursery Schools are using a handpump outside the school compound. Near the handpump there is also an open well that has a windmill and trestle next to it, both of which are in disrepair. A new trestle is urgently needed and the village council has applied to SIMAP for assistance with this. Of the rainwater tanks by the new school building, one tested positive for faecal contamination. Shea Primary School has a hand-dug well with a windmill pump, which had recently been repaired and was pumping water to the school standpipes at the time of the visit. There is also a borehole that repeatedly dries out. At the time of the visit the handpump was not working.

Students were asked to describe the water systems at their schools. All students knew where the water came from, and occasionally provided detailed descriptions of the windmill and overhead tanks. More opinions about the school water supply were asked in the following statements.

"*The school has enough drinking water for the students year round*". Fifty-six percent of all respondents agreed with this, although there were striking differences between communities. Although so many students felt that there was not enough drinking water year round, they were more positive about supplies of water for washing. Overall, in the statement "*The school has enough water to wash year round*" 63% agreed. Again, results were highly variable between communities. See Fig. 6.11 for a comparison of statements relating to school water supply in Region 9.

School toilets

A set of questions was designed to investigate attitudes to school toilets and determine whether the children were using them. On average eight out of ten children agreed that all schools should have good toilets. However, in reality the state of facilities available at schools is critical, and urgent action is required. Shea, Awarewaunau and Maruranau primary schools had relatively new latrines, although these were not ventilated. Following WUN Team workshops on water and sanitation Karaudarnau and Achiwib have requested VIP latrines for their primary schools and key locations in the wider community. The Amazon Programme is also currently supporting a family well and latrine project in Maruranau as a pilot with a view to replication in other villages. The overall outcome of the family well pilot project has been very promising and certainly worth replicating with minor improvements. For instance, the training component has to be stronger and quality control put in place in terms of community-based monitoring of the process. [24]

Children often described the toilets as "*very dirty and always messy*", one student commenting that "*Sometimes people go there but not always*". In Aishalton the students mentioned seasonal problems, and commented that the toilet becomes wet and dirty in the rainy season. At the same time the adults reported that flooding was a major problem associated with pit latrines. Students suggested a range of improvements, including fixing doors, providing something to cover the odour, and regular cleaning. In many presentations, children also suggested that smaller children should have their own toilets as "*smaller children mess up the toilets*".

[24] Rautanen, Sanna-Leena 2001 Field Report 3rd October, 2001, for UNICEF GoG Amazon Programme

On average 43% of all students that responded to the survey said that the school toilets are "nice" and that they did use them. Another 25% stated that the toilets "stink" but they do use them. On average 17% stated that the toilets "stink" and they do not use them. (Fig. 6.12).

Surprisingly the highest percentage of students using the toilets and describing them as "nice" was in Karaudarnau, where 75% of the students described the toilets as clean and said that they did use them. With only three latrines serving eight teachers, 54 nursery school pupils and 326 primary school students, the number of toilets is inadequate and the toilet structures themselves are in urgent need of repair. Karaudarnau Water and Sanitation Committee has now submitted a request for materials to build VIP latrines in the school compound, following WUN Team workshops.

The St. Ignatius students, not included in the calculations for overall averages, were the least satisfied with their toilet facilities. In fact, St Ignatius dormitory, where the children are living, does have new flush toilets, but according to the children living in the hostel, the door is kept locked when there is no water to flush them. At such times, they have to use the two double-compartment latrines behind the hostel.

The most satisfied students appeared to be those from Aishalton Secondary, where only 3% commented that they did not use the toilets. However, 35% still described the toilets as "*stink*" even if they did use them. Fig. 6.12 presents results for the most common combinations of answers that indicate the variations between the communities. Other respondents, not included in Fig. 6.12, did not state whether they were using the toilets or not, but only described them.

Several statements related to the condition and use of toilets, both at home and at school. Details for each school can be seen in figures 6.13, 6.14, 6.15 and 6.16 below.

"*School toilets are really bad and smelly. I do not like to use them*" The responses to this statement, as anticipated, reflected the majority of answers given for the open-ended question "*tell us something about your school toilets*" (Fig. 6.13), which indicate dissatisfaction. Overall, more than half of the students agreed with the statement. The highest number of students who agreed with this statement were from the primary schools in Aishalton (60%), Maruranau (67%) and Shea (64%).

"*Toilets breed mosquitoes*". A majority of respondents agreed with this statement so this appears to be a commonly held belief that may prevent people from building toilets. At the very least it indicates negative attitudes towards toilets. In Maruranau all respondents agreed with the statement, though figures were high in all schools including the St. Ignatius reference group. Fig. 6.14 shows that the views of the children correspond well with those indicated by adults in the household surveys.

"*Toilets breed mosquitoes*", "*I prefer to go to the bush than to the toilet*" and "*Toilets are not that important. I prefer the bush*". Fig. 6.15 indicates a high level of belief amongst respondents that toilets breed mosquitoes, though this does not appear to prevent people from using the toilets or preferring them to the bush. The last two of these three statements were set to cross-check whether children considered toilets important or whether they preferred the "bush". The responses are very closely related and most children were consistent as can be seen from the high levels of agreement

with both statements. The reference school stood out with only a small minority (4% and 2% for the last two statements respectively) preferring the bush to the toilet. Shea registered the highest percentage of students preferring the bush (43% and 53%), followed by Maruranau (41% and 47%).

"*We have a toilet at home but I do not like to use it. It is smelly and breeds mosquitoes*" and "*I always use the toilet at home*". As in Region 1, opinions about the school toilets and toilets at home varied considerably (Fig. 6.16). Although a relatively high percentage of students said that they preferred using the bush (Fig. 6.15), most children claimed that they always used the toilet at home (an average of 85%, compared to 96% in Region 1). On the other hand, 47% agreed that "*we have a toilet at home but I do not like to use it. It is smelly and breeds mosquitoes*".

Only the reference school was consistent in their opinions with 26% agreeing that they had a toilet at home but did not like to use it and 80% saying that they always used toilets. For all other study schools, these figures did not correlate. Unfortunately, this means that it is not possible to know with certainty whether the children in the community actually use the toilet or not. This raises questions regarding whether they *like* to use it or whether they prefer to avoid it where possible. Even if they do not *like* to use it, do they still use it if possible? Why are these views so varied? The follow up workshops should endeavour to clarify some of the conflicting responses to these questions.

School waste disposal

As in Region 1, schoolyards in Region 9 were observed to be kept very tidy. This may also be because there is little inorganic garbage. Littering is becoming more common in the Rupununi through an apparent increased use of plastic bottles and plastic wrappers, which do not disintegrate like the more traditional organic waste. Aishalton Secondary School seemed to have the most serious garbage problem. This issue was raised by the children themselves in their presentations, indicating awareness of the problem. The dumping site was located close to the school, adjacent to an area where pupils and teachers commonly ate lunch, under the only cool shade in the compound.

The problems with the garbage pits are evident during the rainy season when it is difficult to burn the garbage. Flooding of these sites can also be a problem. As in Region 1, the garbage disposal method at every school in Region 9 was by burning and burying. Children were very familiar with this practice as they are usually closely involved with these activities.

Figure 6.11 Statements relating to school water supply in Region 9

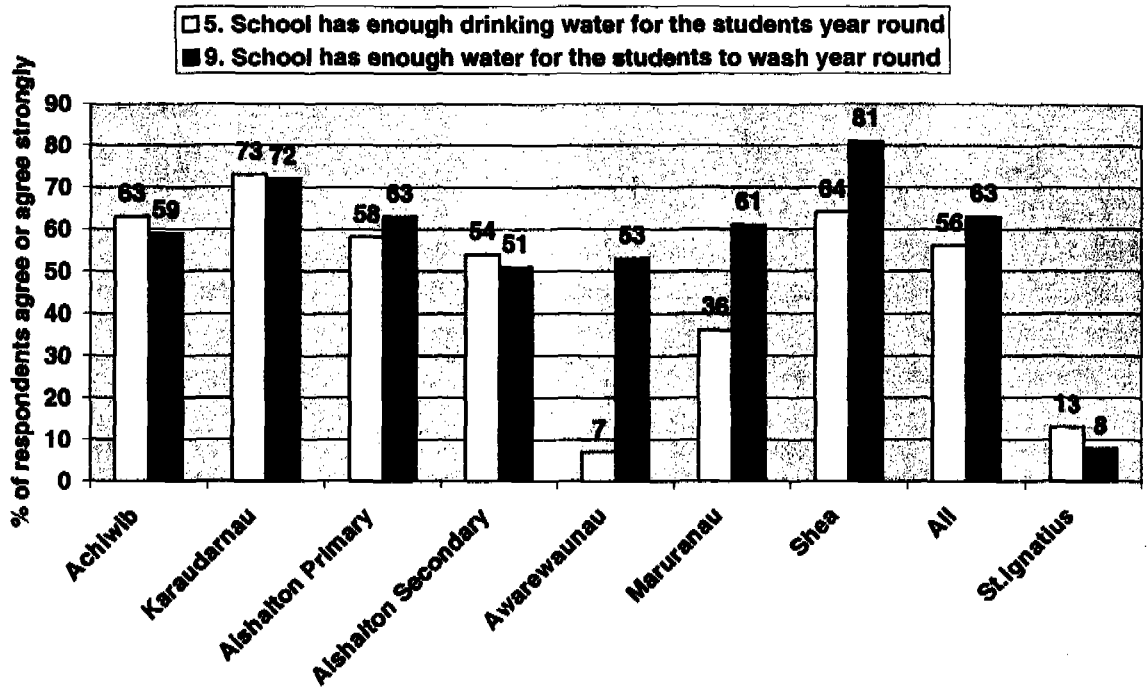


Figure 6.12 Students descriptions about the toilets in Region 9

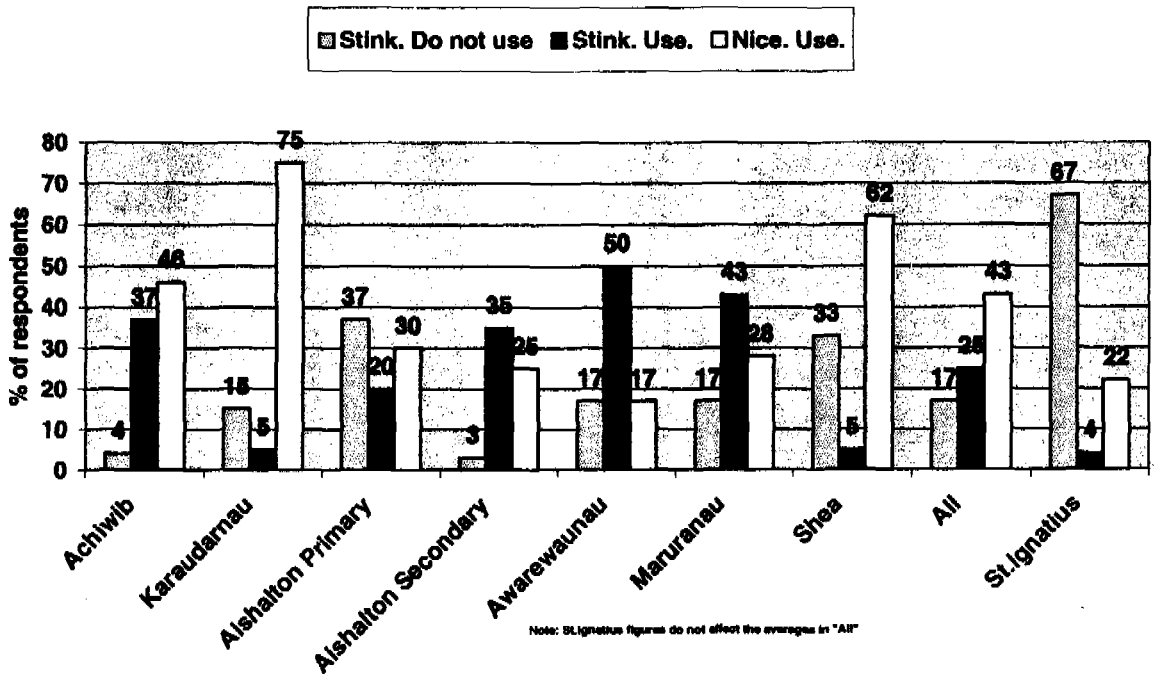


Figure 6.13 Statements relating to the condition of the school toilets in Region 9

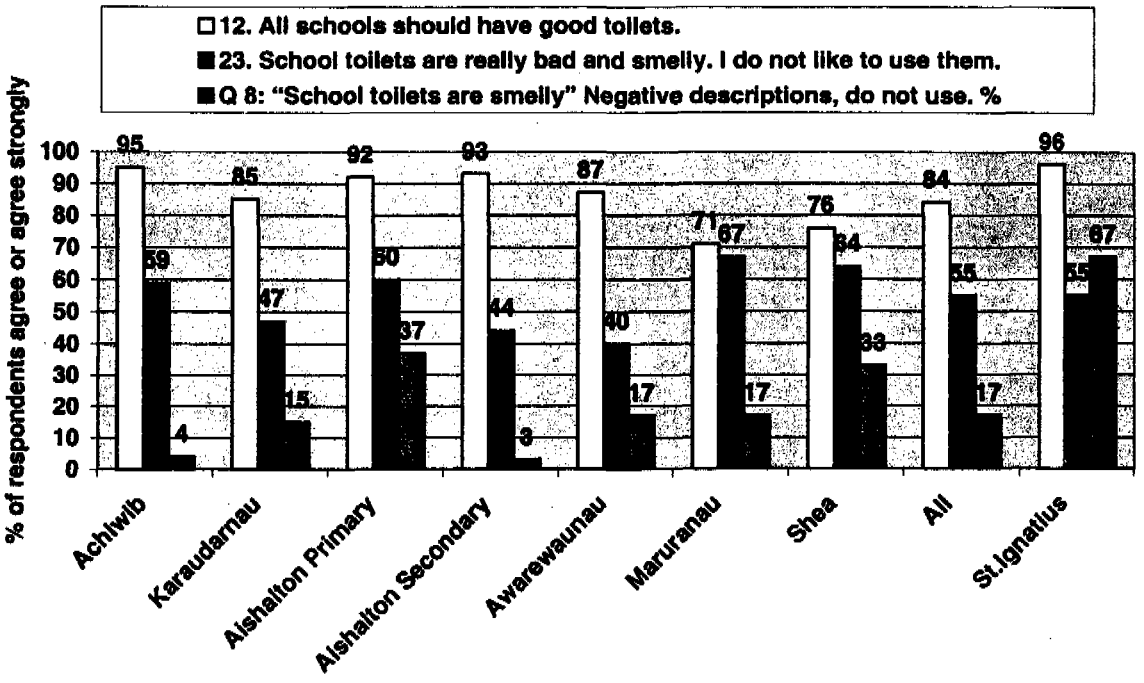


Figure 6.14 Statement 1. "Toilets breed mosquitoes". Statements by the children and adults compared in Region 9

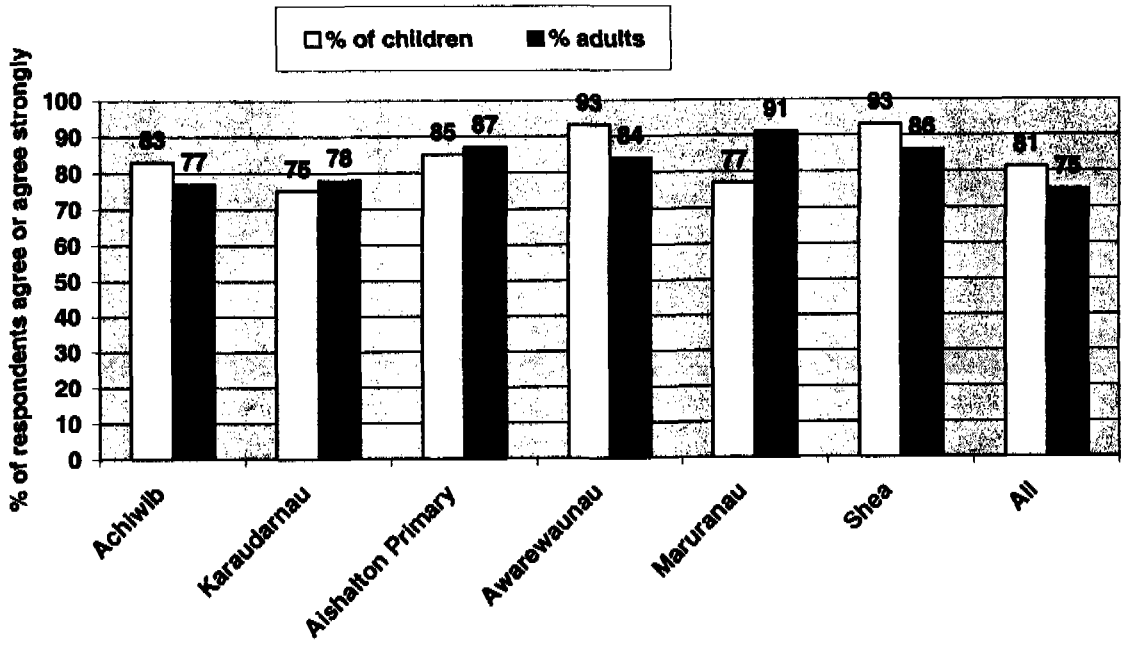


Figure 6.15 Attitudes towards toilets as stated by the children in Region 9

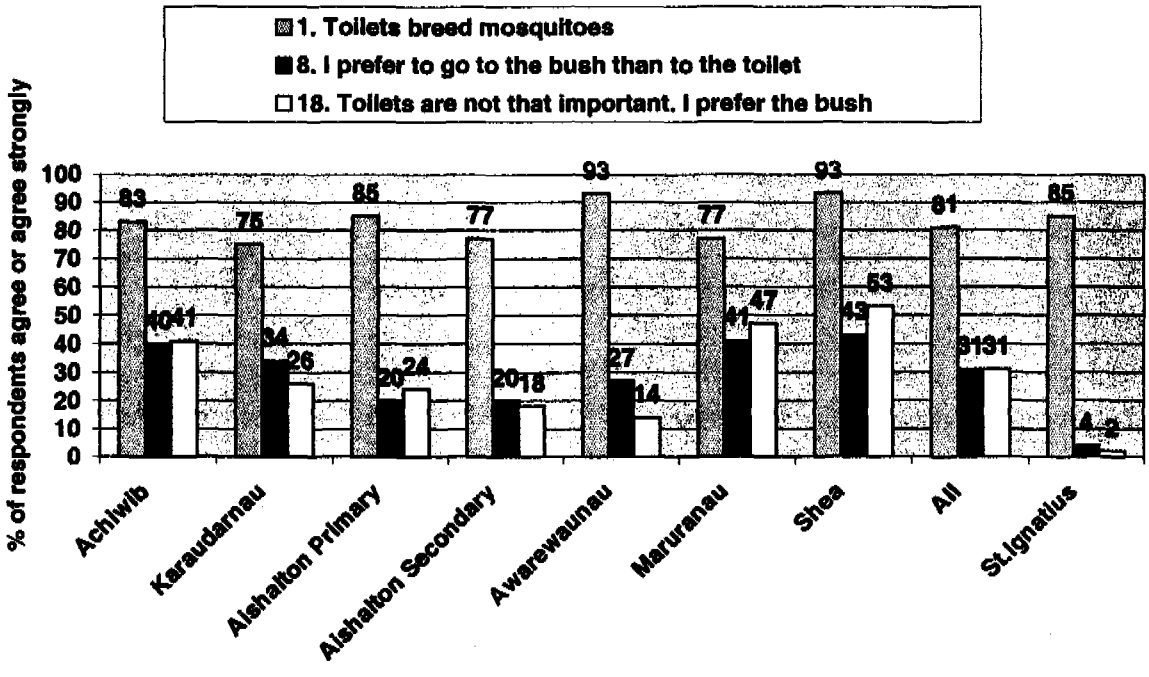
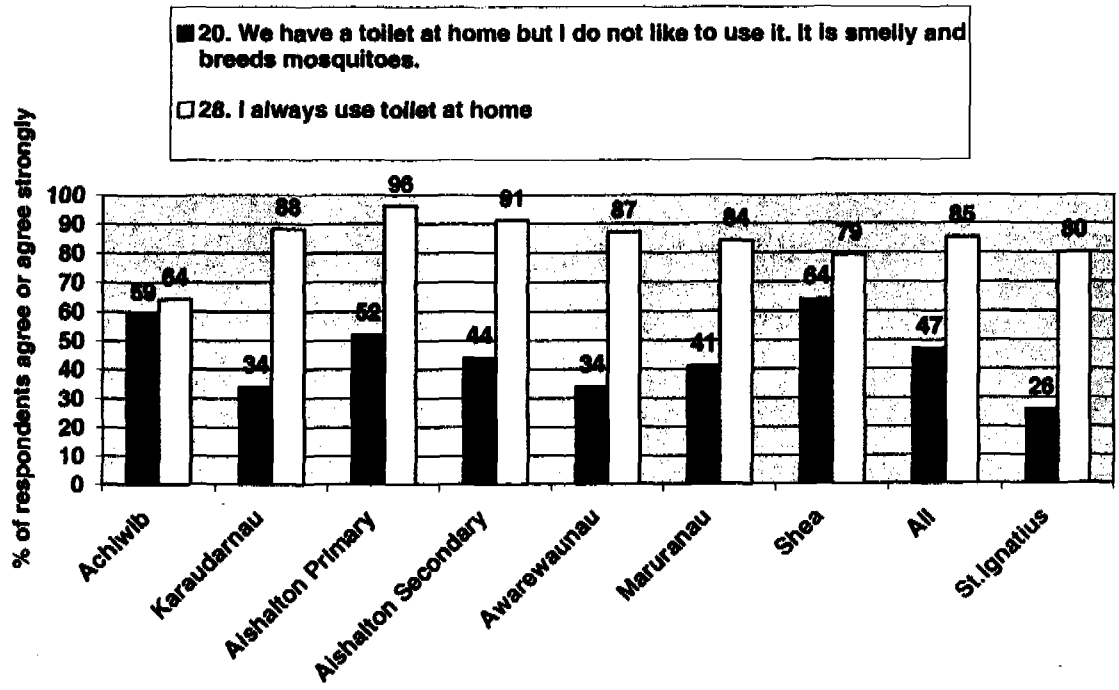


Figure 6.16 Statements relating to the toilets at home in Region 9



Hygiene education

Both open-ended questions and statements were designed to illustrate levels of health and hygiene education in school. The first question asked children if they learned healthy habits at school. Although overall, 55% agreed, there were striking differences between schools. In Achiwib and Karaudarnau most of the students felt that they learnt healthy habits at school (96% and 89% respectively), only 20% of children attending Aishalton Primary School and Awarewaunau Primary School agreed. As an example, Achiwib students described such healthy habits "*wash hands before eating*", "*wash hands after using toilets*", and "*keep your fingernails clean*". Specifically "*wash your hands before eating*" seemed to be a strong message.

When asked whether students talk about water and sanitation with their teachers, 70% of the students agreed that they did. Again there were clear differences between communities. For example, in Karaudarnau 87% answered "*yes*". Examples given included "*we must care for our wells*", "*we must drink clean water and clean the toilet*", "*we have to keep water clean*", "*we don't throw things inside wells*", "*we should care for the pumps*", "*we should use a clean cup to drink water*", "*we should clean the compounds*" and "*we should keep the tanks tidy*". In Awarewaunau and Shea the figures were only 40% and 18% respectively.

Students were also asked whether they talked about health with the teachers. Sixty-four percent of the children agreed that they did. Again, Achiwib and Karaudarnau reported the highest figures (84% and 91% respectively). However, in Shea, only 28% of the students reported talking about health with the teacher. The most common examples included washing hands after going to the toilet and other matters of personal hygiene. Fig. 6.17 illustrates the responses to questions asked about water, sanitation and health in the school.

"*I wash my hands* (...)" and "*I do not wash my hands* (...)" were the two statements set to check the hygiene habits. As in Region 1, in Region 9 almost nine children out of ten reported washing their hands, although they did not specify when. However, in contrast to this figure, more than one third of the children said that they do not wash their hands. Fig. 6.18 illustrates the responses.

Figure 6.17a Water, sanitation, health and school lessons in Region 9

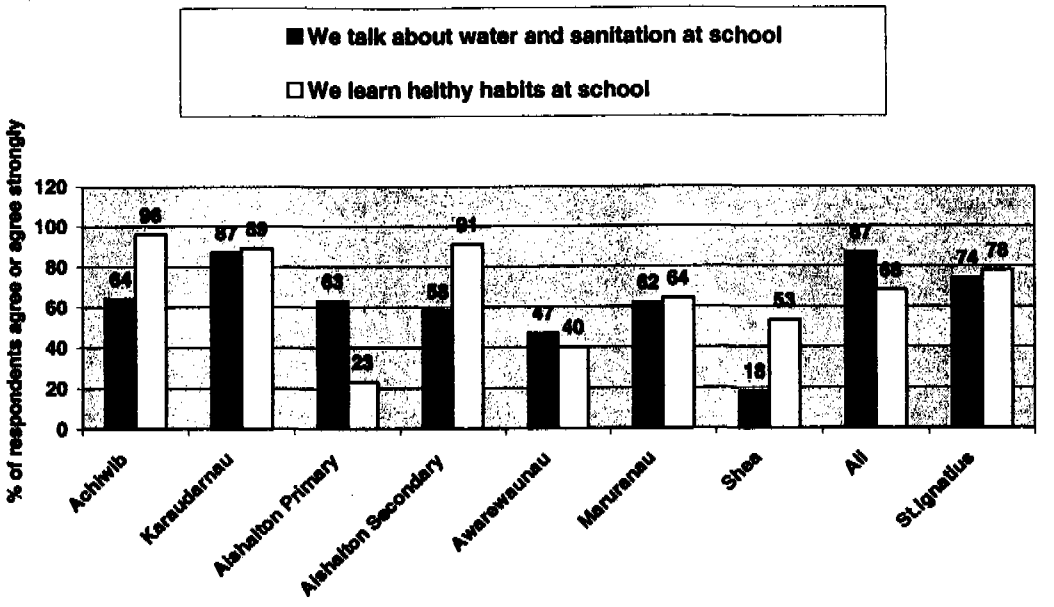


Figure 6.17b Water, sanitation, health and school lessons in Region 9

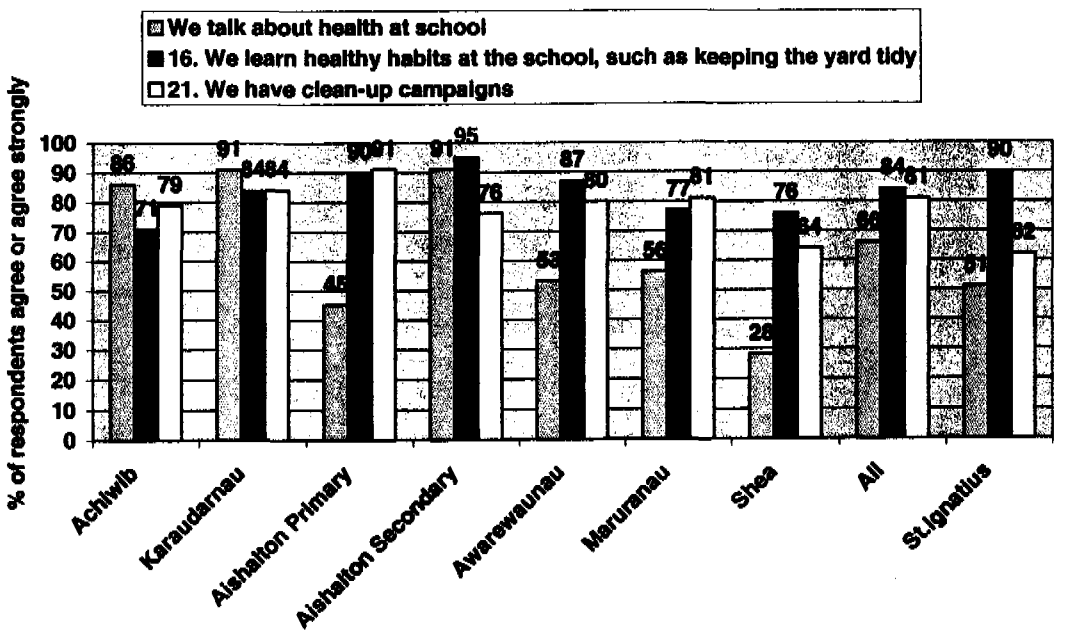


Figure 6.18 Statements relating to hand washing in Region 9

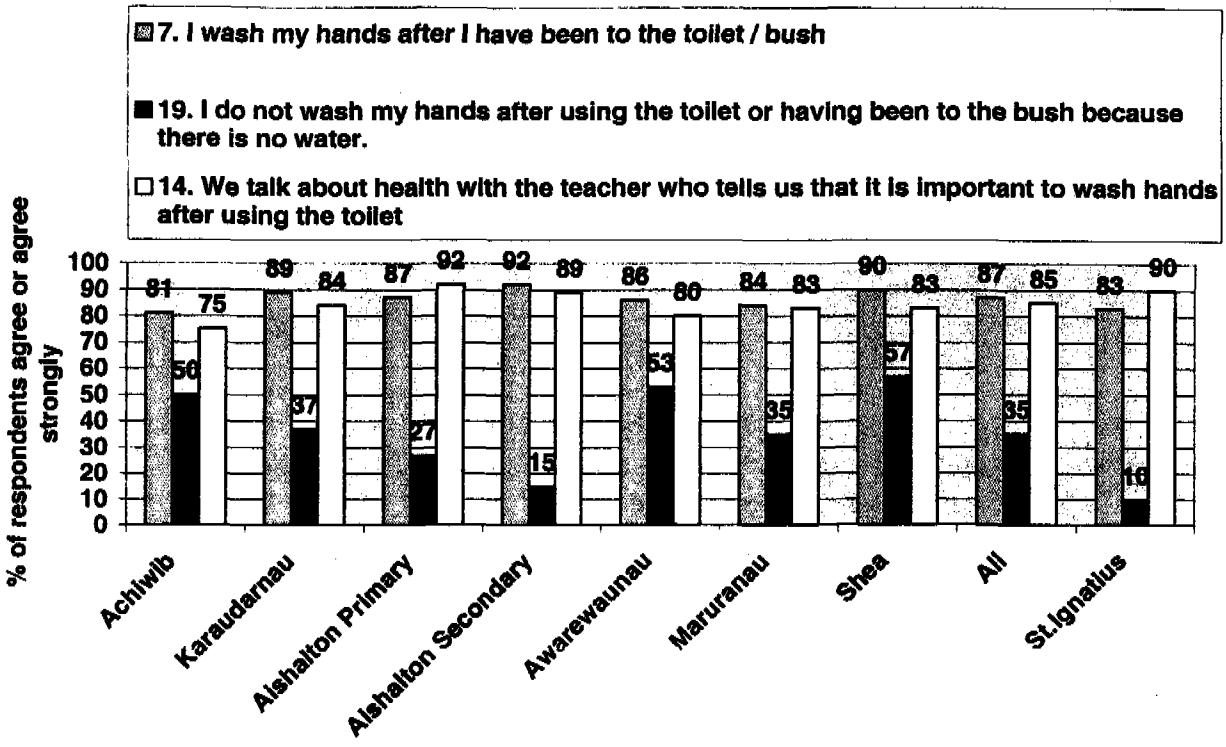
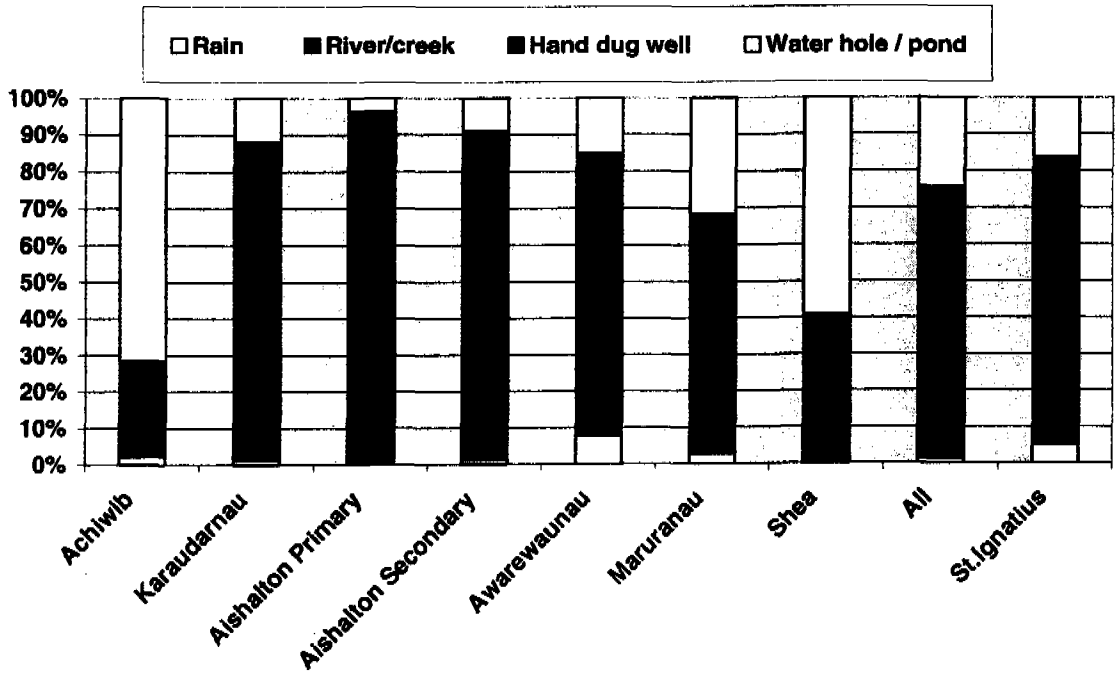


Figure 6.19 Water sources as given by the children in Region 9



HOME AND DRINKING WATER IN REGION 9

Water sources

In Region 9 all children (60%) reported that hand-dug wells were the main water source at home. The clear variations between the communities are illustrated in Fig. 6.19 above. Hand-dug wells were most popular in Karaudarnau (79%) and Aishalton (84% primary school and 78% secondary school). Hand-dug wells were least popular in Shea (only 2%) where households appeared to rely heavily on water holes/ponds (45%). Rainwater appears to be a very uncommon water source throughout Region 9 and accounted for only 1% of all water sources according to the children's answers. None of the adults reported relying on rainwater. Few respondents (3%) reported relying on spring water. In general, children were very aware of where their household water came from, and their responses corresponded well with the adults' responses. (Fig. 6.19).

Water quality

Several statements were designed to illustrate beliefs and practices relating to the quality of the drinking water and ideas about how safe this can be. A common belief is that rainwater is always pure even though rainwater is rarely used in Region 9. Overall, 70% agreed with this statement, although St. Ignatius and Maruranau children appeared to be the most suspicious about rainwater quality, with only 41% and 33% respectively believing this to be the case.

More children doubted the safety of running water. On average 47% of all respondents in Region 9 agreed that running water is always clean, compared with 62% who agreed in Region 1. The highest figure appears in Shea, where 69% agreed that running water is always clean. It is perhaps no co-incidence that in Shea one third of the students said that a creek or river was the main water source at home. However, in the other five communities, the percentage of households using creek or river water as their main water source was always less than 7%.

"*Water is always good if it comes from the well*". In Region 9 well water was the most popular water source. This is clearly reflected in the answers to the statement as, on average, 80% of all respondents agreed, the figure being lowest for Shea (68%). The highest figures were given for Aishalton Primary (88%) and Maruranau Primary (87%). From the two statements above it seems that the children either like to think or are taught to believe that their main water source, whatever it is, is safe. There is no household-specific health data available to verify the situation. (Fig. 6.20)

"*Water is good to drink if it is clear*". It appears that many people believe that if water is clear then it is also clean. On average 84% of the children in Region 9 agreed with this statement, compared with 63% in Region 1. Individual school figures ranged from 90% (Maruranau) to 40% (Shea).

"*Nobody in my family has been ill because of the water*". "*My sisters/brothers have had diarrhoea recently*" Two statements dealt with the beliefs respondents may hold about the safety of drinking water at home. First, the children were asked whether they

considered the water at home safe to drink. A majority (84%) agreed that it was, though this was lower than in Region 1 (92%). A further question related to perceptions about family illness in relation to water use. About half of the respondents agreed that someone in their family had been ill because of drinking water. The figure was highest for Shea (74%) and lowest for Aishalton Secondary (31%) and Maruranau Primary (33%) (Fig. 6.20).

"*We treat our drinking water at home by boiling/bleaching*". In Region 9 a much lower percentage of children said that drinking water at home was treated (53% compared to 83% in Region 1). It is possible that the children in both regions did not understand the question properly. Fig. 6.20 summarises the four statements for each school; Fig. 6.21 presents the statements relating to safety of drinking water at home.

Figure 6.20a Statements relating to the water source in Region 9

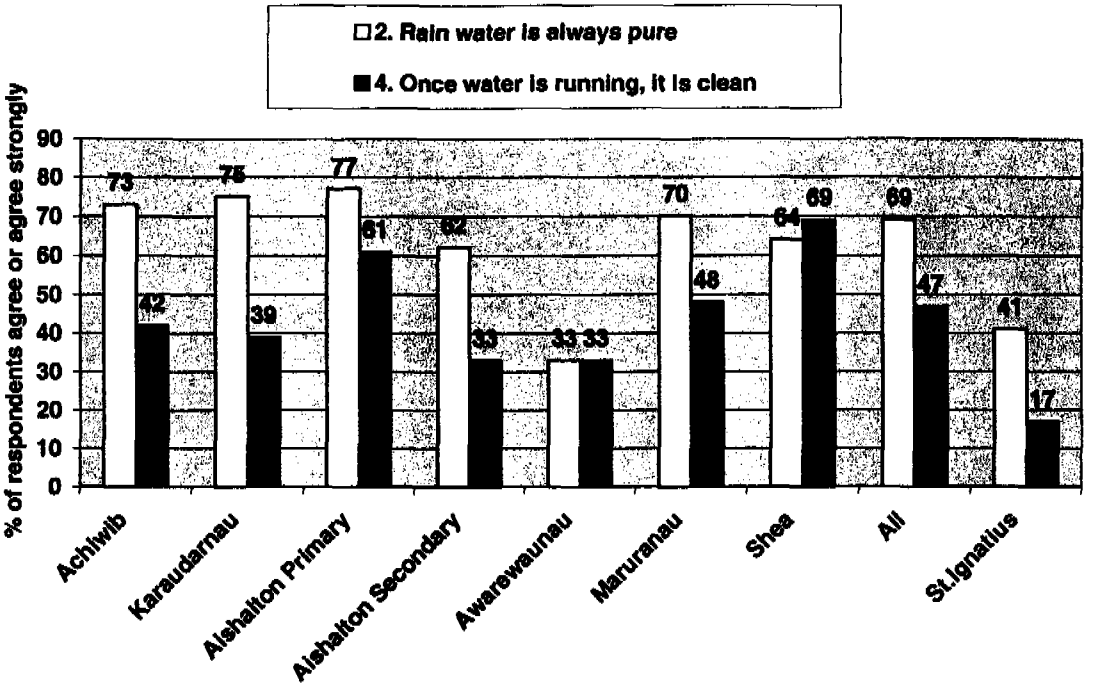


Figure 6.20b Statements relating to water source in Region 9

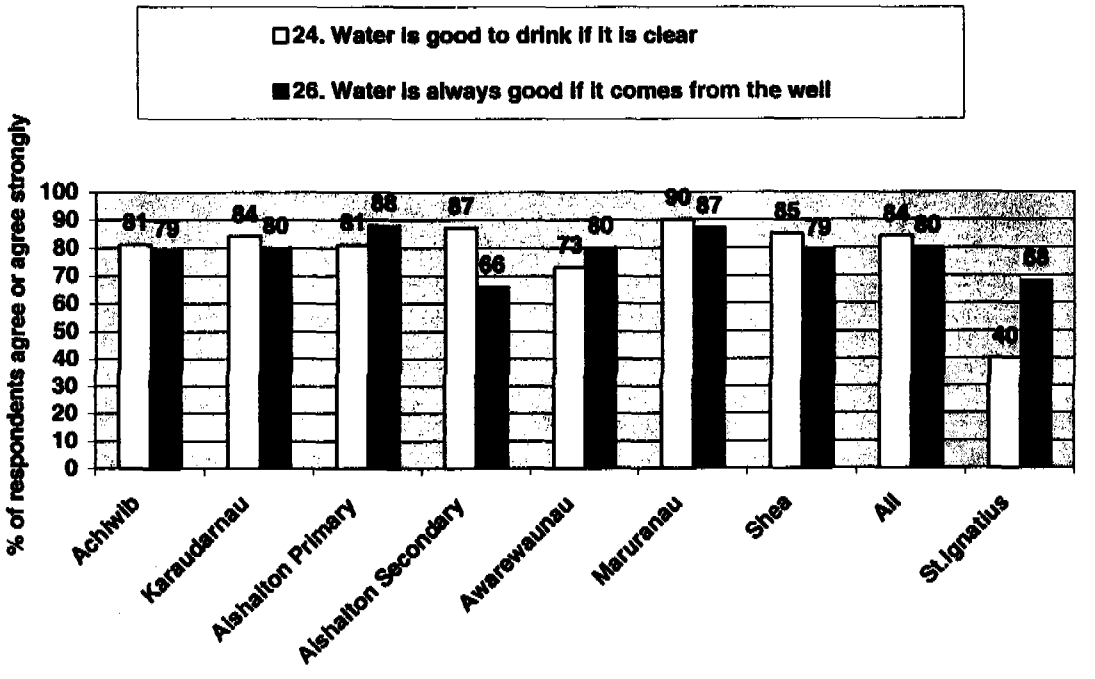


Figure 6.21 a Statements relating to the quality of the drinking water in Region 9

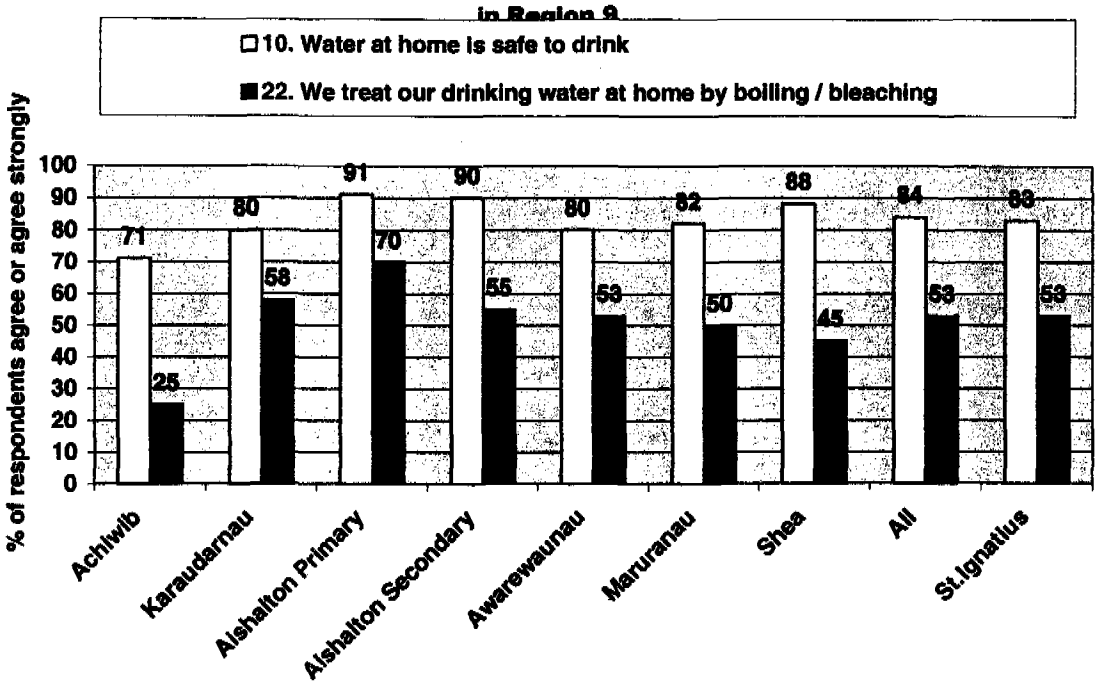


Figure 6.21 b Statements relating to the quality of the drinking water in Region 9

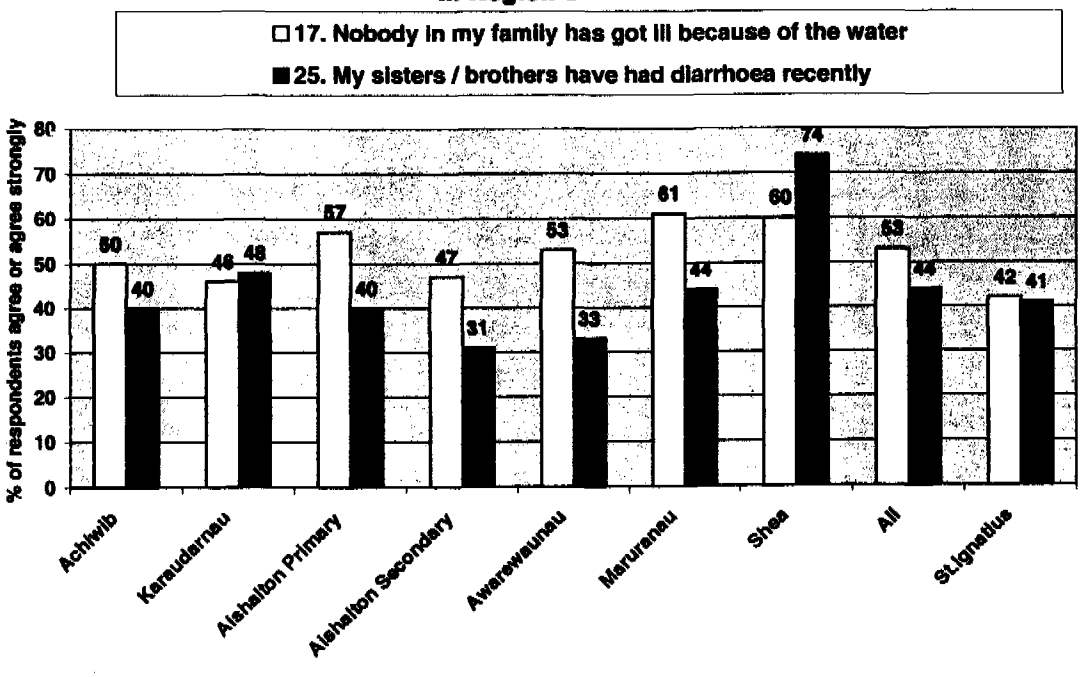
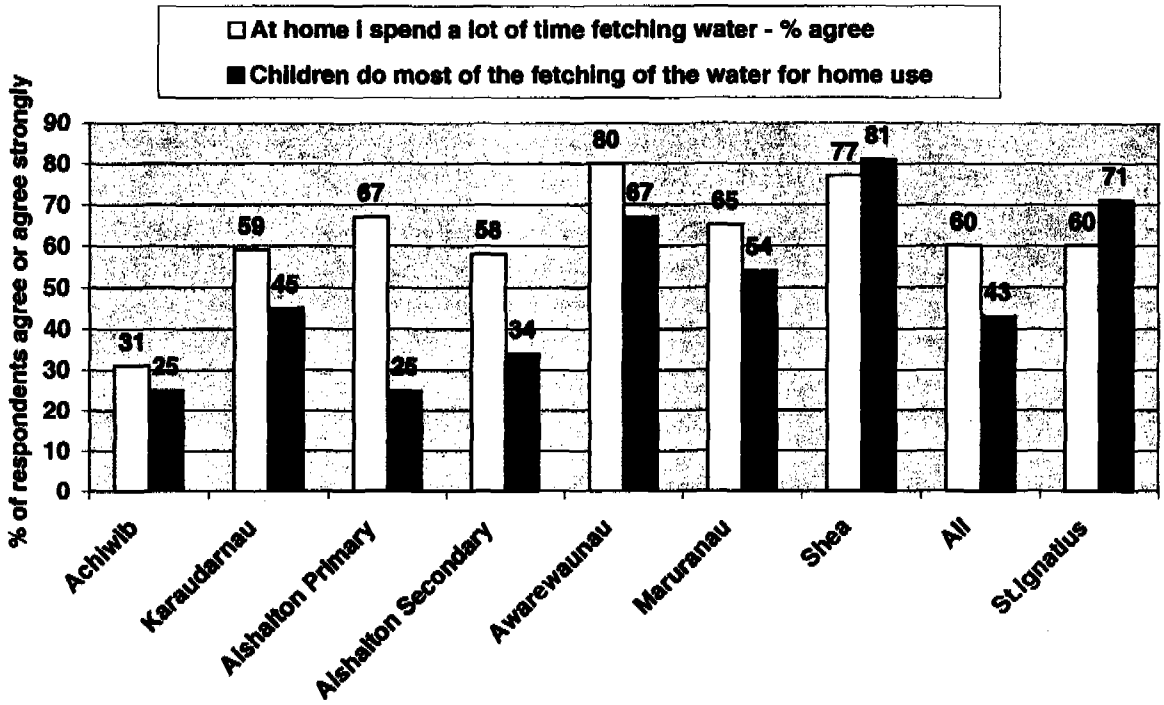


Figure 6.22 Water fetching at home in Region 9



Fetching Water

The overall situation concerning who does most of the water fetching for home is very different in region 9 compared to Region 1. (Fig.4.3 and 4.11 in chapter 4). For instance, in Region 9 fathers did not play a role in fetching water for the home, according to both children and adults. In Region 1 mothers and fathers received fairly similar recognition from both children and adult respondents. In Region 9 the role of the children as the main water collectors stands out.

"Who fetches the water most at home?" In both regions 1 and 9 this question was met with very diverse responses. On average 43% of the students in Region 9 considered that *"children"* fetch the water compared to 38% in Region 1. The reference group at St. Ignatius also gave a high figure (71%). However, these figures do not correspond well with the adult responses. Only 12% of adults in Region 9 responded that children did most of the water carrying compared to 31% in Region 1. See details for each community in Region 9 in the chapter 4 for Households. (Fig. 4.11). It is possible that the children are unaware of the amount of water fetched by others during the day while they are at school. On the other hand, it could be that the extent to which children perform this activity is not recognised by the parents. The only obvious correlation between child and adult answers to this question was that few respondents said the father of the household fetched the water.

"At home I spend a lot of time fetching water". This statement was presented to determine how children see their role as water carriers for the household. In all schools nearly two thirds of the children (60%) agreed or agreed strongly with this statement. However, the variation between communities was large; the highest percentages that agreed they spent a lot of time fetching water at home were in Shea (77%) and in Awarewaunau (80%), and the lowest percentage was in Achiwib (31%). In Shea 81% of the children and 3% of adults had stated that children do most of the water fetching for home. In Awarewaunau the corresponding figures were 67% and 17%, respectively. In Achiwib 25% of the children and 12% of the adults had stated that children do most of the fetching. Fig. 4.11 in chapter 4 compares child and adult responses for Regions 1 and 9 respectively. Fig. 6.22 below illustrates responses to the questions regarding who does most of the water fetching in the home for Region 9.

Water storage and handling at home

In Region 9 water is mostly fetched by hand, although bicycles were used in Awarewaunau (13%) and Shea (15%). In both Regions 1 and 9 about three out of four children said that they always use the same bucket, although the remainder who responded said they use any buckets/bottles available.

Of all children 84% said that water was stored at home in the same buckets used to collect water from the water source though 5% mentioned jars/bottles. Tanks and drums were most popular in Achiwib (10%), and jars and bottles in Awarewaunau (13%) and Shea (17%). The questionnaires did not ask whether these containers were covered or not, and this information was not volunteered by respondents. Ninety-one

percent practice good sanitation habits by keeping their water stored on a table or shelf. The highest figure for storage of water *"on the floor"* was given in Shea (10%).

Fifty-three percent reported that everyone had access to household water, even the younger ones. This left quite a large percentage that said that they did not have access or did not respond. Fifty-nine percent of respondents reported that they use a cup with a handle to retrieve water from the water store and 23% that they always used the same cup. The highest figures for the least desirable option, *"what ever cup is available"*, were given in Shea (27%), Aishalton Primary School (21%), and Achiwib (17%).

HOME AND ENVIRONMENTAL SANITATION

A set of questions was designed to address general hygiene in the home. The first question asked whether animals were allowed in the house. Over half of the children stated that no animals were allowed on the house, 15% said that *"cats and other pets"* were allowed in the house, and 14% said that chickens were allowed in the house. In Region 9, like Region 1, only a small minority (3%) said pigs were allowed in the house, the figure being surprisingly high for Awarewaunau (14%). This may be because Awarewaunau had a much lower number of respondents than the other communities, so one answer may much more strongly influence the overall community figure.

Three children out of four believe that these animals can cause illness and disease. The remainder did not believe this or did not respond. When asked what kind of illness and disease animals could cause the respondents' answers were varied and covered a wide range including colds, coughs, typhoid, malaria, TB, diarrhoea, rabies, measles, and scabies. Diarrhoea was cited more often in Karaudarnau (48%) and Awarewaunau (57%) than any other kind of disease. Several children also answered that animals did cause illness and disease but did not know what kind.

A question was designed to illustrate personal hygiene practices relating to bathing. Forty-nine percent of respondents reported bathing in the river or creek followed by 42% using bathrooms to bathe. By observation these bathrooms are usually washing areas sheltered by thatched walls. The ground may be covered with boards. In some cases the drainage from the washing area is directed to the kitchen garden. In Region 1, 29% said that they bathed in the creek or river. For both regions, only a minority (7%) said they bathed near a well. It seems that in Region 9, although the rivers and creeks are not used as a drinking water source they are preferentially used for bathing. These figures are likely to be influenced by distance. In Region 1, the creeks and rivers tend to be much closer to individual households as it is a riverine region with communities based along the rivers. This is not the case in Region 9, which is characterised by wide savannahs.

One question investigated hygiene education at home. Nearly four out of five children in Region 9 said that their parents talked to them about hygiene, compared with 56% in Region 1. However, there were clear differences between communities. None of the reference group in St Ignatius agreed that they talk about hygiene at home. The highest percentages responding "sometimes" were in Achiwib (25%), Aishalton Secondary (13%) and Maruranau (13%). Examples of conversations between children and

parents included keeping clean, brushing teeth and eating well.

The most common method of garbage disposal at households in Region 9 appears to be by burning. On average 57% of the children reported burning their trash, 17% said that they *"burn and bury"* it, and 19% that they *"throw it in a hole and bury it"*. A very low percentage admitted to *'throwing it in a river'* and *'throwing it in the yard.'* The surveys also asked the location of the garbage disposal site and questions were cross-referenced with responses to information about drinking water sources. However, responses were unclear. There were no guidelines on how to express distance so responses such as *"far"* or *"near"* were common, and it is also likely that more specific figures such as metres and minutes are not very accurate.

The last question enquired about disposal of wastewater. As in Region 1, slightly less than half of the children in Region 9 reported that they threw the water out the window and into a drain, followed by 39% who said they threw the water in a sink, and 16% reported using other means such as throwing the water out the window or into a river.

6.4 STUDENTS' CONCLUSIONS

In both regions children were very aware of their environment and of issues such as water, toilets and garbage disposal. This was reflected in their confident workshop presentations, survey responses, and the written and art work produced. Photos from these presentations are used in various parts of this report. The figures show that all communities and schools were different.

Water systems have been improving or are presently being improved in many schools. These improvements should be extended to those who are not presently benefiting from any WES related developments. However, technical solutions to ensure a steady water supply, regardless of season, or new VIP latrines alone, will not solve the problem. Poor drainage attracts pigs and other animals to "mess around" the standpipes. Hand-washing facilities must also be improved and promoted. The WUN Kit should include suggestions for small projects that could be incorporated into the classroom and the community These could include improving or maintaining the water supply systems by constructing water lifting devices for hand-dug wells or facilities for hand washing. Even soap making could be investigated.

It is clear from field observations and the surveys that school toilets are in a critical condition. The percentage of negative descriptions was very high and one in two respondents further claimed that they did not use toilets. VIP latrine construction is already being undertaken in some communities but building and improving the existing structures alone will not be sufficient to address this problem comprehensively. Promotion of latrine use, good maintenance practice and hygiene education are all linked together with the construction of the physical structures.

Reports on *"messed up"* toilets indicate that user maintenance and maintenance of structures is a problem. Toilets have to appear more acceptable and to be maintained in an acceptable condition. Both the students and the adults recommended improvements in this area, such as smaller seats for the smaller children or steps to the existing ones so that they would not need to "mess up" with the bigger seats standing on them. The WUN Kit should have a latrine maintenance check list and users log

book. Other cosmetic measures could be used to make the latrines more inviting, such as painting or decorating them.

School waste disposal is presently not considered a problem although practical problems relating to the site of the garbage pits were identified. Littering is becoming more of a problem in areas where there are more shops and consequently, more plastic wrappers are available. Siting, isolation of garbage disposal areas, flood protection and preventing the creation of mosquito breeding grounds could be covered in the WUN Kit as well as simple "*use the bins*" – awareness posters.

Although the surveys suggested that hygiene education is taking place in schools, it seems to be on a fairly *ad hoc* basis and the messages received by the children are not always clear. Children mainly recognised hand washing. Only in very few schools did more than one child report similar kinds of topics indicating that the messages had been clear enough for several children to have remembered the same thing. Even where the students agreed that they do talk about health or water, examples were rarely given. The same occurred when a high percentage of children agreed that WES issues were discussed at school. Children from only one school were able to give clear examples about exactly what they talk about with their teacher. This indicates that the message had been accurately received.

Although there are many areas of WES, which clearly need to be addressed, the follow-up workshops should be designed in ways that do not cause information overloads for participants. It is not feasible to address too wide a range of hygiene practices at the same time and not all issues arising from the initial surveys reported here can be addressed at once. The WUN Team should select key areas for further work arising from the results presented here.

PART IV
THE WAY FORWARD FOR THE WUN KIT

Key words: Summary on UNICEF, WES and Amazon Programme, conclusions for the KAPB survey, recommendations, contents of the WUN Kit

Photo 7. Children in Achiwib and Shea, Region 9

7. WAY FORWARD FOR THE WUN KIT

AIMS AND OBJECTIVES OF THE WUN KIT

As a result of the surveys the subject areas for the WUN Kit have been identified as summarised below. The contents should be carefully illustrated. Extensive use of print should be avoided except for materials aimed exclusively at teachers and CHWs who could then translate and convey key messages during community meetings on WES issues.

An option is to make the WUN Kit into an Escuela Nueva Learning Guide that would be supplemented with additional reading. This reading would be made available to the students and community members alike through the Escuela Nueva Library. The students, studying through their Learning Guides, would spread the messages to the wider community and in the process of doing so, the key messages would truly interpret the local situation.

The main objectives of the WUN Kit are to:

1. Strengthen capacity in communities to manage water resources and to improve environmental sanitation through training, providing information and encouraging the establishment of Community Water and Sanitation Committees;
2. Raise awareness of relevant region specific issues through public awareness posters and leaflets and promote a better understanding of the problems relating to WES and health by providing specific IEC materials to selected target groups These target groups are teachers, CHWs, Water and sanitation Committees, and Amazon Committees. Their roles will include facilitating dissemination of information in appropriate ways to the wider community;
3. Provide solutions in the form of technical briefs with reference to safe and sanitary wells and VIP latrines. These can be used as a training resource in demonstrating model VIP latrines and community well improvements utilising, as far as possible, locally available resources.

HOUSEHOLDS AND THE WUN KIT

The WUN Kit for the households has to include the complete water cycle in an integrated manner, from water sources to sanitation. The linkages between unsanitary behaviour and selected health issues have to be clarified. Promoting hygienic practices in the fetching and storage of water, as well as the concept of "safe and sanitary water sources", should be covered.

WUN Kit material for community use should be well and clearly illustrated with as little text as possible. Illustrations can be very powerful in conveying information. Material should be carefully prepared and pre-tested to avoid misunderstandings and wrong interpretations. It is recommended that in Region 9 both English and Wapishana language materials be used. The following specific topics came out of the surveys and will be addressed in the WUN Kit:

1. Any water source can be contaminated if the source is not protected. Rainwater and creek water alike can be polluted. Question to be addressed: what is pollution/contamination?
2. Technical options to protect the water holes, ponds and hand-dug wells;
3. Hand-dug wells – basic construction. Special cases: caving in, occupational health and safety; use of local materials.
4. Hand-dug wells – improvements. Special cases: drainage, well heads, options for lifting mechanisms utilising local materials, cleaning contaminated wells.
5. Drinking water treatment at home: filtration, UV (solar) water disinfection, correct doses of bleach;
6. Water storage and methods of retrieving water from the water store: a model for a water container with a small tap in the bottom, especially where several persons are likely to use the drinking water e.g. by the school or health facility.
7. Clarification of certain popular beliefs, namely:
    a. Well water is not necessarily clean even if there is a fish in it. There may be dirty buckets and ropes, and surface runoff can contaminate the well;
    b. Running water is not necessarily always pure;
    c. Rainwater is not always pure if the storage tanks and the gutters are not kept clean.

COMMUNITY HEALTH WORKERS AND THE WUN KIT

The Ministry of Health Regional Services covers water and sanitation in its CHW training and upgrading programmes. However, the emphasis is presently on HIV/AIDS and tuberculosis, so there is much scope to increase and improve WES training coverage. The Malaria Unit is also looking at the vector control aspects of sanitation. From the surveys it appears that there was a need for basic information about diarrhoea, both for the health workers and for the communities. There were also questions about how dengue and malaria are actually spread. Furthermore, questions arose as to why people may still get malaria even if they use bednets and how relapses occur even if people have taken medicines. It is not realistic to add all this information into the WUN Kit but the information will be forwarded to the relevant officers in the Ministry of Health. Public awareness material concerning malaria is presently being produced. Existing community health briefs, such as those done by the CBR, should be re-printed.

SCHOOLS AND THE WUN KIT

The material will be action and solution oriented, with a dynamic and positive approach so that it can be applied in different communities. Positive and solution oriented approaches mean that possible serious health risks and problem areas are approached in ways that will provide attractive visions for the future rather than solely pointing out what is wrong. It will not help to illustrate how worms can be spread through the soil when people are not using toilets, if at the same time the real toilets

remain uninviting and unhygienic.

Talking is not enough as was proven in the surveys. Hygiene promotion and water education has to be more action oriented. There has to be an input from the student that requires active thinking and processing of ideas so that it is relevant in the students' own life. However, this requires interactive learning, facilitated by teachers. An interesting and thought provoking activity is probably also something that children are happy to tell their parents about at home. Thus, there is scope for children to convey messages to the community at large.

The students' material could be made into a form of a set of Escuela Nueva Learning Guides. In this format there would be the basic learning guide with its briefings and activities, backed up with the material available from the Escuela Nueva Library. The Learning Guides have to be developed by the persons specialised in curricula development and Escuela Nueva. The WUN Team could supply ideas and materials and give feed back for the education team. There is plenty of WES and health related school material available globally and the challenge is to choose the relevant ones to be applied into the community specific situation. Through Escuela Nueva this could be possible.

The following specific themes or ideas could be used in making of the learning guides:

- *Running Water* – now you can see it, now you don't: The water cycle and how "everything" can move with the waters;
- *Toilet Users Manual – manners for educated people:* what is a Perfect Toilet, why use it and how to keep it Perfect? How you can make it happen? What could be done to the school toilets?
- *The Water Scientist Action Package – discoveries for young scientists:* Water related laboratory exercises for primary and secondary school level utilising appropriate (everyday) equipment that can be available in the communities;
- *Water Reader – for bookworms and others:* Set of water and environmental sanitation topics to be used during English lessons;
- *Arts, Water and the Environment:* Ideas for arts, including fine arts and music e.g. songs, poems, things to draw or sculpture;
- *Water Drop Multiplied by Ten:* Examples of the use of water and sanitation in mathematics e.g. measuring a toilet or a well or a pipeline, and preparing a bill of quantities for the materials used;
- *Adventures of Waldorf the Waterdrop:* Reprint of Waldorf the Water Drop, possibly a recording of the story and use of Waldorf in illustrations – to be discussed with the CBR;
- *Messages Illustrated:* Awareness posters: use the latrines, keep them tidy, wash hands, keep environment tidy, (EPA!), and a blank one for the schools to design their own poster.

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APPENDIX 1

KAPB Surveys

- CHWs
- Teachers
- Students
- Households

COMMUNITY HEALTH WORKERS' SURVEY

This questionnaire is designed to gather information about water and sanitation issues in community for UNICEF Amazon Programme. Your responses will be treated in the strictest confidence. We look forward to your honest responses and co-operation.

1. **Do you have a health post? Describe.**

2. **Where do you get water supply? What is its present condition? Describe.**

3. **Do you have a toilet? What is its present condition? Describe.**

4. **How do you dispose the (medical) waste? Describe the practices.**

5. **What are the major health problems in your community?**

6. **Estimate how many (if any) of the following illnesses have been treated at the Health Post during this year? How many times? Who are the most likely victims?**

   - ❑ Diarrhoea:_____
   - ❑ Dysentry*(severe diarrhoea)*:_____
   - ❑ Dengue:_____
   - ❑ Worms *(intestinal)*:_____
   - ❑ Skin infections *(scabies, sores)*:_____
   - ❑ Eye infections *(red eye)*:_____
   - ❑ Malaria:_____
   - ❑ Typhoid:_____
   - ❑ Yellow fever:_____
   - ❑ Vomiting:_____
   - ❑ Other:_____

7. **Indicate which of the following illnesses relate to water and sanitation practices. Explain briefly how.**

   - ❑ Diarrhoea:_____
   - ❑ Dysentry*(severe diarrhoea)*:_____
   - ❑ Dengue:_____
   - ❑ Worms *(intestinal)*:_____
   - ❑ Skin infections *(scabies, sores)*:_____
   - ❑ Eye infections *(red eye)*:_____
   - ❑ Malaria:_____
   - ❑ Typhoid:_____
   - ❑ Yellow fever:_____
   - ❑ Vomiting:_____
   - ❑ Other:_____

8. **When a patient comes to you with severe diarrhoea, what do you do?**
9. **What are the most common home treatments for the diarrhoea?**
10. **What are the most usual questions that people ask you?**
11. **What kind of information would you like to have available? Please list three most needed issues:**

12. What are the priorities at the health post? Please list three most urgent matters that should be dealt with:

13. Agree or disagree? Feel free to give comments.

Statements	Agree strongly	Agree	Disagree	Disagree strongly
1. There is interest in the community in the health issues.				
2. It is easy to speak to the community about health and hygiene practices				
3. It would be useful to have more information about water and related illnesses.				
4. People here know that dirty water can cause diarrhoea.				
5. People ask me about drinking water. I would like to be able to give them more advise.				
6. Toilets are not that important. We have other priorities here.				
7. Drinking water is a problem in this community.				
8. There is more diarrhoea during the rainy season.				
9. I have visited the school and have spoken to the students about health and hygiene.				
10. I have enough information about water related illnesses				
11. I give people advise about how to prevent diarrhoea.				
12. People can also get sick because it is a curse. There is nothing we can do about that.				
13. It is easy to speak to the community about health and hygiene practices				
14. More toilets are needed in this community.				
15. There are some health issues that it is difficult to talk about. (give example)				
16. I am in a strong position to give advise about hygiene and how to make drinking water safe.				
17. I don't think people are really interested in health in this community.				
18. Certain fruits when in season is associated with illness e.g. sores-pineapple, plum.				
19. Fewer diseases occur in a clean environment.				

TEACHERS' SURVEY

WATER – SANITATION – HEALTH

Dear teacher;

This questionnaire is designed to gather information about water and sanitation issues in your school/community. Information will be used by the UNICEF Amazon Programme. Your responses will be treated in the strictest confidence.

We look forward to your honest responses and co-operation. Thank you!

BASE LINE DATA FROM THE SCHOOL

1. **Name of the community and the School:**_____
   - ❑ Nursery School. No of teachers:_____ No of children:_____
   - ❑ Primary School. No of teachers:_____ No of students:_____
   - ❑ Secondary School. No of teachers:_____ No of students:_____

CURRICULA AND EXISTING TEACHING MATERIALS

2. **Does your curriculum contain any water-related topics?**
   - ❑ Yes. What are the main topics? _____
   - ❑ No. What topics should be included?_____

3. **Are these issues are relevant in this community?**
   - ❑ Yes.
   - ❑ Partly. Give examples: _____
   - ❑ No.

4. **Do you add any issues to the main curricula to make the water topic more locally applicable?**
   - ❑ Yes. Give examples: _____
   - ❑ No.

5. **Does your curriculum contain any health-related topics?**
   - ❑ Yes. Give examples:_____
   - ❑ No. What should be included?_____

6. **Are these health related topics are relevant in this community?**
   - ❑ Yes. Give examples:_____
   - ❑ Partly. Give examples:_____
   - ❑ No.

7. **Do you add any other topics to the main curricula to make the health topic more locally applicable?**
   - ❑ Yes. Give examples: _____
   - ❑ No.

8. **If there is hygiene education, do you see the students responding positively?**
   - ❑ Yes. Give examples: _____
   - ❑ No. Explain: _____

EXTRA-CURRICULA ACTIVITIES

9. **Is there any clubs (wild life clubs, crafts etc.) or other regular activities organised by the school?**
   1. _____
   2. _____
   3. _____

10. **Is your school involved in any of the activities listed as follows (tick your choice)**
    1. Tree planting.
    2. Making dish-racks.
    3. Making a pit latrine.
    4. Diarrhoea management by using sugar and salt solution.
    5. Destruction of mosquito breeding sites.
    6. Cleaning compounds at school and at home. Clean up campaigns.
    7. Giving information about health.
    8. Composing songs, poems and other art forms about water and health.
    9. Building water filters or other activities relating to drinking water.
    10. Promoting personal hygiene.
    11. Reducing some specific health problem such as worms (de-worming campaign).
    12. School garden.
    13. Water committee. Waste committee. Environment committee.
    14. Wild life club.
    15. Milk and biscuit feeding programme.
    16. Dental care.
    17. Other: (explain)

11. **Which activities would you like to be involved with? Write the numbers of the activities here:** _____
    _____
    _____

12. **Would you like to have more information about those?**
    - ❑ Yes.
    - ❑ No.

13. **Is there any other issue (which is not mentioned in the list above) that you would like to obtain more specific information to make these activities happen?**
    - ❑ Yes. Explain: _____
    - ❑ No.

SCHOOL WATER AND SANITATION FACILITIES

14. Describe the school drinking water supply *(good – satisfactory – poor)*:

- ❑ Good
- ❑ Satisfactory
- ❑ Poor

15. Describe the school washing facilities

- ❑ Good
- ❑ Satisfactory
- ❑ Poor

16. Describe the school latrines facilities

- ❑ Good
- ❑ Satisfactory
- ❑ Poor

17. Are students using the latrines?

- ❑ Yes.
- ❑ No. Why not?_____

18. How often the latrines are cleaned?

- ❑ Daily.
- ❑ Few times a week.
- ❑ Once a week
- ❑ Monthly
- ❑ Sometimes
- ❑ Nobody clean the toilets

19. Who takes care of the latrines?

- ❑ Students. How?_____
- ❑ Teachers. How?_____
- ❑ Students and teachers together. How?_____
- ❑ Parents. How?_____
- ❑ Nobody.

20. Are there facilities to wash hands at the school?

- ❑ Yes, students do use them.
- ❑ Yes, but students are not using them.
- ❑ No.

21. How do you dispose the garbage at the school?

- ❑ Burn
- ❑ Bury
- ❑ Burn and bury
- ❑ Other:_____

22. Should something be improved concerning water and sanitation facilities at the school?

- ❑ Yes.
- ❑ No.

23. If water and sanitation facilities should be improved, list priorities:

1. _____
2. _____
3. _____

24. If water and sanitation facilities should be improved, list obstacles or problems that may prevent these improvements from happening:

1. _____
2. _____
3. _____

25. What could the students, parents and teachers do as self-help with reference to water and sanitation?_____

_____

26. In your opinion, who should take the *initiative* with the water / sanitation improvements?

- ❑ Teachers
- ❑ Headmaster
- ❑ Village Council / NDC
- ❑ Regional Administration / Regional Education Officer
- ❑ Ministry of Education
- ❑ GUYWA
- ❑ Other / combination of the above (indicate who)

27. Has *anything been planned for the near future concerning water supply and* sanitation facilities?

- ❑ Yes. Explain: _____
- ❑ No.

PERSONAL QUESTIONS FOR THE TEACHERS:

28. Which village are you from? Name and region: _____

29. Years of teaching experience: Total: _____years In this specific school: ____years

30. Area of specialisation / areas of specific interest:_____

31. Other activities / organisations that you are involved with:_____

32. Educational background

- ❑ Primary School
- ❑ Secondary School
- ❑ Cyril Potter College of Education
- ❑ University of Guyana; specify the Department:_____
- ❑ Other:_____

33. Female or male?

- ❑ Female
- ❑ Male

35. Overall statements for the teachers:

Statements	Agree strongly	Agree	Disagree	Disagree strongly
1. It is important that every school has good toilet facilities.				
2. I talk to the students about hygiene habits.				
3. It is essential that every school have good quality drinking water and enough water also for washing.				
4. Students have extra-curricula activities by the school that involve health, water or sanitation issues and these are actively attended.				
5. I remind the students about the importance of washing hands.				
6. I am satisfied with the present water supply at the school.				
7. There is a strong tradition of self-help in this community and this could be used to improve the water and sanitation facilities at the school.				
8. I am in the strong position in promoting healthy habits at the school and in the community in general.				
9. Training and practising health habits at school have positive influence for the children and the community at large.				
10. The students would not be interested about hygiene or water.				
11. There are washing facilities at the school.				
12. Clean-up campaigns at the school are not very important.				
13. Toilets must not be built close to the school.				
14. We do not care if there is carbage around the school compound.				
15. I am satisfied with the present latrines at the school.				

☺ *THANK YOU!!!*

34. Age:

- ❑ Below 20 years
- ❑ 20 – 30 years
- ❑ 31 – 40 years
- ❑ 41 – 50 years
- ❑ Over 50 years

ASSESSMENT OF THE EXAMPLE SHEETS

Sheet no. 1

Sheet no. 2

Sheet no. 3

Sheet no. 4

Other comments:

HOUSEHOLD SURVEY

WATER - SANITATION - HEALTH

Dear Friend;

This questionnaire is designed to gather information about water and sanitation issues in your community to be used by UNICEF Amazon Programme. Your responses will be treated in the strictest confidence. We look forward to your honest responses and co-operation.

Name of the Community:_____ Date:_____

1. Status:
   - ❑ Mother
   - ❑ Father
   - ❑ Other:_____

2. Members of household:
   - ❑ 1-4
   - ❑ 5-9
   - ❑ Over 9

3. Age group:
   - ❑ under 20
   - ❑ 20-40
   - ❑ 41-60
   - ❑ over 60

WATER SUPPLY

4. How much water do you use every day at home? _____buckets

5. Are you generally happy with your water source?
   - ❑ Yes. It is very good. No problems at all.
   - ❑ Yes, mostly. We have problems only occasionally.
   - ❑ Yes and no, it depends on the season.
   - ❑ No. It could be closer / easier to access.
   - ❑ No. I do not think it is safe / does not taste good.
   - ❑ Other:_____

6. **Where do you get water:**
   - ❑ Rain water
   - ❑ Creek / River
   - ❑ Spring
   - ❑ Hand dug well
   - ❑ Water hole / pond
   - ❑ Faucet / pump
   - ❑ Tap
   - ❑ Other:_____

7. **If you are using any other water sources than rain water, how many other households use the same water source?**
   - ❑ Only us
   - ❑ One other house
   - ❑ Two to 5 households
   - ❑ More than 6
   - ❑ Other:_____

8. **How far are your water sources from home?**
   - ❑ Rain water _____ min.
   - ❑ Creek / River _____ min.
   - ❑ Spring _____ min.
   - ❑ Hand dug well _____ min.
   - ❑ Water hole / pond _____ min.
   - ❑ Faucet / pump _____ min.
   - ❑ Tap _____ min.

9. **How many months per year you can rely on these water sources?**
   - ❑ Rain water _____ months
   - ❑ Creek / River _____ months
   - ❑ Spring _____ months
   - ❑ Hand dug well _____ months
   - ❑ Water hole / pond _____ months
   - ❑ Faucet / pump _____ months
   - ❑ Tap _____ months
   - ❑

10. **Where do you get your water if your own water source dries up? (El Niño)**
   - ❑ Creek / River
   - ❑ Community well
   - ❑ Neighbour's hand dug well
   - ❑ Other:_____

11. **Have you planned to do any improvements or changes to your drinking water source? For instance, have you planned building a hand dug well?**
    - ❑ Yes. Explain:_____
    - ❑ No.

12. **If you have you planned to do something to your drinking water source, what might prevent you from doing it? For instance, time, materials, skills?** Explain:__
    _____
    _____

13. **Who does most fetching of the water for home use?**
    - ❑ Mother
    - ❑ Father
    - ❑ Children
    - ❑ Everybody fetches water, but mostly:_____

14. **What do you use to fetch the water?**
    - ❑ Always the same bucket / containers
    - ❑ Any bucket or container available
    - ❑ Other:_____

15. **How do you store your water? Describe the container *(size, cover, material)***
    - ❑ Tanks / drums:_____
    - ❑ Buckets:_____
    - ❑ Jars / bottles:_____
    - ❑ Clay goblets:_____
    - ❑ Basins:_____
    - ❑ Same bucket that was used to fetch it:_____
    - ❑ Other:_____

16. **How often do you clean this store? How?**
    - ❑ Daily. How?_____
    - ❑ Weekly. How?_____
    - ❑ Monthly. How?_____
    - ❑ Few times a year. How?_____
    - ❑ Rarely / not at all.
    - ❑ Other:_____

17. **Where do you keep this water store?**
    - ❑ On the floor
    - ❑ On a table / shelf

- ❑ In the yard
- ❑ Other:_____

18. Does everybody have access to this water store?

- ❑ Yes. Also the smaller children.
- ❑ No. Only adults and older children.
- ❑ No. Only adults have access.

19. How do you get the water out from this store?

- ❑ What ever cup is available
- ❑ Cup with a handle (laddle)
- ❑ Always the same cup / laddle
- ❑ The bucket has a tap
- ❑ Other:_____

20. Is your drinking water safe to drink?

- ❑ Yes. If yes, what makes it safe to drink?_____
- ❑ No. If not, why not?_____
- ❑ Sometimes. Explain (rainy season / dry season?)_____

21. Do you treat your drinking water?

- ❑ Yes
- ❑ Sometimes. When?_____
- ❑ No (go to question 22)

22. If you treat drinking water, how?

- ❑ Boiling
- ❑ Bleach
- ❑ Filter
- ❑ Other:_____

23. If you are not treating your drinking water or only sometimes, why not?

- ❑ Water is ok without treatment
- ❑ It is costly to treat water
- ❑ Do not like the taste of the bleach
- ❑ Boiling takes too much fire wood / fuel
- ❑ Other:_____

24. Would you like to know more about how to make water safe to drink?

- ❑ Yes
- ❑ No
- ❑ I would like to know especially about.... (explain)):_____

25. **Are your children attending school?**
- ❑ Yes. How far is the school?_____
- ❑ No.

26. **Do your children take water to school for drinking purpose?**
- ❑ Always
- ❑ Sometimes
- ❑ Never

27. **Do think that the school water system is ok?**
- ❑ Yes.
- ❑ No. Explain:_____

28. **Do think that the school latrines are ok?**
- ❑ Yes.
- ❑ No. Explain:_____

29. **Do you teach the children something about water, hygiene and/or sanitation?**
- ❑ Yes. Explain:_____
- ❑ No. Explain:_____

WASTE AND SANITATION

30. **How do you dispose your waste?**
- ❑ Throw it in a river
- ❑ Burn it
- ❑ Burn and bury
- ❑ Throw it in a hole and bury
- ❑ Throw it in the yard
- ❑ Other:_____

31. **Do you have a latrine at home?**
- ❑ Yes. Good one. Describe:_____
_____
- ❑ Yes. Not a good one. Describe:_____
_____
- ❑ No. We have plans to build one. Describe the plan:_____
_____
- ❑ No. We would like to have a latrine but we have no plans.
- ❑ No. We use a toilet near by but it is not ours.

- ❑ No. We go to the bush.

32. If you have made plans to build a latrine, do you have any problems with the plan?

- ❑ No problems. The plan will go ahead. (go to questions no 29.)
- ❑ Yes, there is a problem.

33. If you have made plans to build a latrine and face problems, what are they?

- ❑ I am not sure how to build a good latrine.
- ❑ Tools. What specially:_____
- ❑ Materials. What specially?:_____
- ❑ Time available.
- ❑ Other:_____

HEALTH

34. Has anybody in the family had any of the following illnesses during this year?

- ❑ Diarrhoea
- ❑ Dysentry *(severe diarrhoea)*
- ❑ Dengue fever
- ❑ Worms *(intestinal)*
- ❑ Skin infections *(scabies, sores)*
- ❑ Eye infections *(red eye)*
- ❑ Malaria
- ❑ Typhoid
- ❑ Yellow fever
- ❑ Other:_____

35. Who is the most likely victim?

- ❑ Children under 5
- ❑ Children
- ❑ Older people
- ❑ Other:_____

36. In your opinion, what has caused these diseases?_____

_____

_____

37. When a member of your family gets ill what do you do?

- ❑ The patient must rest at home
- ❑ Go to neighbour / relative, who knows about illnesses
- ❑ Go to CHW / Medex
- ❑ Go to Piai woman / man

❑ Other:_____

38. What kind of illnesses do you usually treat at home? How?_____

_____

_____

39. Do you use any plant medicines?

❑ Yes

❑ No

What types?_____

_____

_____

40. Is there a village doctor (Piai man / woman)

❑ Yes

❑ No

41. How does (s)he cure diarrhoea/ vomiting/ itches and worms?_____

_____

42. Would you like to know more about how to avoid and treat the illnesses mentioned above?

❑ Yes

❑ No

43. Is there any other health issue that you would like to get more information about?_____

_____

Any other comments:

_____

_____

_____

_____

☺ *THANK YOU !!!!*

44. Agree or diagree?

Statements	*Agree strongly*	*Agree*	*Disagree*	*Disagree strongly*
1. Toilets breed mosquitoes.				
2. Creek water is better to use than well water				
3. Rain water is always pure.				
4. Evil spirits can cause many sicknesses.				
5. Running water is always clean.				
6. We have a strong self-help tradition. Self-help could be used to build toilets or better well at the school.				
7. It is healthy to add more meat to a pot and not wash the pot.				
8. There is interest in the community in improving our drinking water sources and sanitation.				
9. A fish in a well keeps water clean.				
10. There is more diarrhoea during the rainy season.				
11. Water from a well is not always safe.				
12. It is OK to 'mess' in the bushes. It has always been done. Besides, there is more privacy in the bush.				
13. Using a toilet is not comfortable. I rather not use them.				
14. You do not need a special cup to draw drinking water.				
15. Toilet paper is expensive. We usually use leafs and sticks.				
16. The house must be swept every day and the yard should be kept tidy.				
17. Garbage can breed mosquitoes.				

Statements	*Agree strongly*	*Agree*	*Disagree*	*Disagree strongly*
18. It is not harmful to bathe near the water place.				
19. If all the people would be using the toilets, many illnesses could be avoided. Using toilet is more healthy than going to the bush.				
20. Garbage should be burned and buried.				
21. It is ok to urinate in the creek or in public.				
22. People get sick because it is a curse. They're evil. There is nothing one can do about it.				
23. Toilets are not important. There are other things to do first in this community.				
24. Drinking water containers and food should always be covered.				
25. Certain fruits when in season are associated with illnesses e.g. sores-pineapple, plum.				
26. Fewer diseases occur in a clean environment.				

☺ *THANK YOU AGAIN!!!!*

STUDENTS' SURVEY

WATER - SANITATION - HEALTH

☺

☺ **Dear Friend;**

This questionnaire is designed to gather information about water and sanitation issues in your school/community for UNICEF Amazon Programme. Your responses will be treated in the strictest confidence. We look forward to your honest responses and co-operation.

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PERSONAL QUESTIONS

1. **Name of the community:** _____
   Name of the School and class: _____
   Distance from the School (time or miles): _____

2. **How old are you?**
   - ❑ 9-12
   - ❑ 13-15
   - ❑ 16-18

3. **Are you...**
   - ❑ male
   - ❑ female

4. **How many persons live in your household?**
   - _____ Adults (Over 18 years)
   - _____ Young persons (10-18 years)
   - _____ Children under 9

5. **Are you member of any club?**
   - ❑ Sports club
   - ❑ Wildlife club
   - ❑ Other: _____

SCHOOL, WATER AND SANITATION

6. **Where does the school get the water? Tell us about the place:** _____
   _____
   _____

7. **Tell us something about your school toilets. Do you use them?**_____

_____

_____

8. **Tell us something about the garbage disposal at the school. What do you do with the garbage?**_____

_____

_____

9. **Do you talk about water and sanitation at your school lectures?**
   - ❑ Yes. Example:_____
   - ❑ No

10. **Do you learn healthy habits at the school?**
   - ❑ Yes. Example:_____
   - ❑ No

11. **Do you talk about health with the teacher?**
   - ❑ Yes. Example:_____
   - ❑ No

HOME AND DRINKING WATER

12. **Where do you get your drinking water at home?**
   - ❑ Rain.
   - ❑ River / Creek
   - ❑ Spring
   - ❑ Hand dug well
   - ❑ Water hole / pond
   - ❑ Faucet/pump
   - ❑ Tap (yard / in house)
   - ❑ Other:_____

13. **Who does most of the fetching of the water for home use?**
   - ❑ Mother
   - ❑ Father
   - ❑ Children
   - ❑ Everybody carries water, but mostly:_____

14. **How do you fetch the water home?**
   - ❑ By hand
   - ❑ By bicycle

- ❑ Other:_____

15. **What do use for fetching water?**
    - ❑ Always in the same buckets / bottles
    - ❑ Using any bucket / bottle available
    - ❑ Other:_____

16. **What do you store water in?**
    - ❑ Tank/ drums
    - ❑ Buckets
    - ❑ Jars / bottles
    - ❑ Clay goblets
    - ❑ Basins
    - ❑ Other:_____

17. **Where do you keep this water store?**
    - ❑ On the floor
    - ❑ On a table / shelf
    - ❑ On a chair
    - ❑ In the yard
    - ❑ Other:_____

18. **Does everybody have access to this water store? Also the smaller children?**
    - ❑ Yes
    - ❑ No

19. **How do you get the water out from the store?**
    - ❑ What ever cup is available
    - ❑ Always the same cup (laddle)
    - ❑ Cup with a handle
    - ❑ The bucket has a tap
    - ❑ Other:_____

HOME AND SANITATION

20. **What animals are allowed in the house?**
    - ❑ Chickens, birds
    - ❑ Pigs
    - ❑ Dogs
    - ❑ Cats and other pets
    - ❑ No animals are allowed in the house
    - ❑ Other:_____

21. Do you think that any of these animals can cause diseases?
- ❑ Yes
- ❑ No

22. If yes, what kind of diseases?_____

23. Where do you bathe?
- ❑ Bathroom
- ❑ River / creek
- ❑ Near the well
- ❑ Under the pump
- ❑ Other:_____

24. Do your parents talk to you about being clean and keeping clean?
- ❑ Yes. If yes, what do they tell you?_____
- ❑ No.
- ❑ Sometimes. Give examples._____

25. What do you do with your trash?
- ❑ Throw it in a river
- ❑ Burn it
- ❑ Burn and bury
- ❑ Throw it in a hole and bury
- ❑ Throw it in the yard
- ❑ Other:_____

26. How near this garbage site is to the place where you get your drinking water?
- ❑ _____

27. How do you get rid of wastewater?
- ❑ Sink
- ❑ Out the window and into the yard
- ❑ Out the window and into the drain
- ❑ Other:_____

27. **Agree or disagree?**

Statements	Agree strongly	Agree	Disagree	Disagree strongly
1. Toilets breed mosquitoes.				
2. Rain water is always pure.				
3. Many sicknesses are caused by evil spirits.				
4. Once water is running it is clean.				
5. School has enough drinking water for the students year round.				
6. We like playing by the place where we get the water (creek/well/windmill)				
7. I wash my hands after I have been to the toilet / bush.				
8. I prefer to go to the bush than to the toilet.				
9. School has enough water for the students to wash year round.				
10. Water at home is safe to drink.				
11. Water is very important for life.				
12. All schools should have good toilets.				
13. At home I spend a lot of time fetching water.				
14. We talk about health with the teacher who tells us that it is important to wash hands after using the toilet.				
15. We have enough water at home during the dry season.				
16. We learn healthy habits at the school, such as keeping the yard tidy.				
17. Nobody in my family has got ill because of the water.				
18. Toilets are not that important. I prefer the bush.				

Agree or disagree? Continued...

Statements	*Agree strongly*	*Agree*	*Disagree*	*Disagree strongly*
19. I do not wash my hands after using the toilet or having been to the bush because there is no water.				
20. We have a toilet at home but I do not like to use it. It is smelly and breeds mosquitoes.				
21. We have clean up campaigns at the school (how often?).				
22. We treat our drinking water at home by boiling / bleaching.				
23. The school toilets are really bad and smelly. I do not like to use them.				
24. Water is good to drink if it is clear.				
25. My sisters / brothers have had diarrhoea recently.				
26. Water is always good if it comes from the well.				
27. We must keep our environment clean to stay healthy.				
28. I always use toilet at home.				

☺ **Thank you!!!**