

Review of Sida Supported Activities in the Water and Sanitation Sector in Bolivia

December 1996

Kristina Boman
Uno Winblad

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Foreword

The Swedish International Development Cooperation Agency, Sida, has been supporting various activities within the water and sanitation sector in Bolivia since 1989. The Swedish support has been channelled through UNICEF and the UNDP/WB Water and Sanitation Programme in the Andean Region, UNDP/WB-AN.

The Review was carried out in order to assess the results and achievements of the Swedish support as well as to make recommendations on possible continued support to the sector in Bolivia. The views presented in the Report are those of the authors and are not necessarily shared by Sida.

The present Review recommends Sida to continue the support to UNICEF provided that the programme is redirected to also systematically integrate sanitation and hygiene training. The Review also includes detailed recommendations on ecological sustainable sanitation.

The Review is recommending Sida to continue the support to the UNDP/WB-AN. The Review recommends the UNDP/WB-AN to always apply a consensus building strategy and systematically inform other actors in the sector about its existence and objectives. It is further stressed that various donors should be involved in this type of network. Finally, the Review gives recommendations on a draft project proposal for improved water and sanitation services in marginal urban areas.

The Review provides a good background for further discussions within Sida on possible future support to the water and sanitation sector in Bolivia. We also hope that the Report will be useful for the actors in the sector in Bolivia as well as for other donors. The Report will be available in the Spanish language.

Stockholm in December, 1996

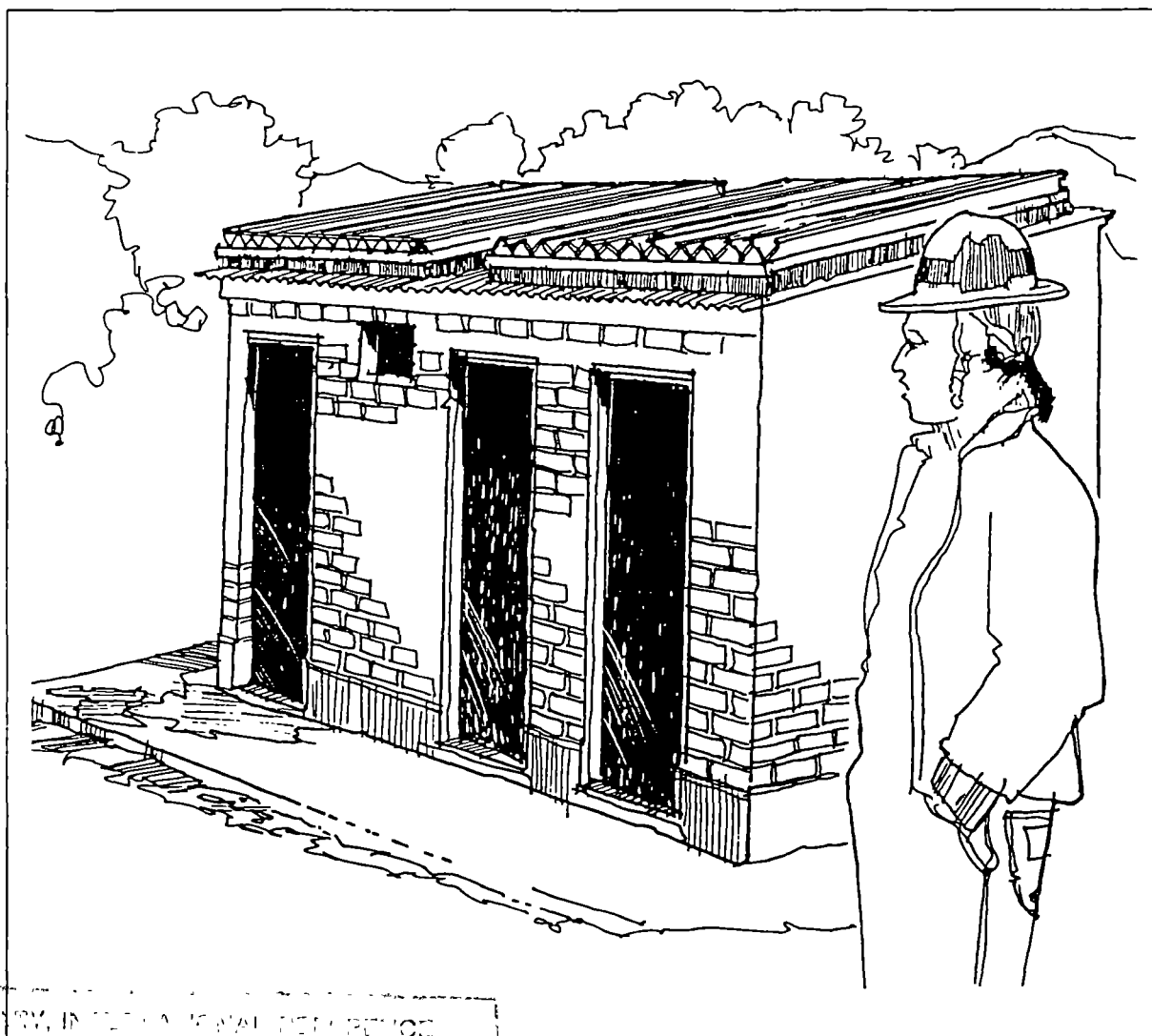


Bengt Johansson
Programme Officer, Department for Natural Resources and the
Environment, Sida

Final Report

REVIEW OF SIDA SUPPORTED ACTIVITIES IN THE WATER AND SANITATION SECTOR IN BOLIVIA

December 1996



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ACRONYMS AND ABBREVIATIONS

A,O&M	Administration, Operation and Maintenance
ANESAPA	Asociación Nacional de Empresas de Servicio de Agua Potable y Alcantarillado
CORDEPO	La Corporación Regional de Desarrollo de Potosí
CSRP	Civil Service Reform Programme
DINASBA	National Directorate of Water and Sanitation
FIS	Fondo de Inversión Social Ministerio de la Presidencia
FNDR	Fondo Nacional de Desarrollo Regional
PPL	Popular Participation Law
PROA	Centro de Servicios Integrados para el Desarrollo Urbano
PROSABAR	Bolivian Rural Water and Sanitation Project / Proyecto de Saneamiento Básico Rural
RWSG-AN	The Regional Water and Sanitation Group - Andean Region
SEMDE	Servicios Múltiples para el Desarrollo
SIF	Social Investment Fund
SRSP	La Secretaría Regional de Salud de Potosí
UNASBA	Departamental Water and Sanitation Unit
UNDP	United Nations Development Programme

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RESUMEN EJECUTIVO

El Asdi ha venido financiando acciones en el sector de Agua y Saneamiento de Bolivia desde 1989 cuando se inició el apoyo al Programa PROANDES de UNICEF. El apoyo de Suecia se incrementó al finales de 1993 al decidir el Asdi financiar la nueva iniciativa del Programa PNUD - Banco Mundial de Agua y Saneamiento: La Red Andina.

El PROANDES, el que consiste de seis subproyectos diferentes, trabaja en las áreas rurales pobres de la Sierra boliviana. El subproyecto de Agua y Saneamiento ha recibido de Asdi US \$ 653,600 entre 1990 y 1994, y en 1996 US \$ 490,000 lo que hace un total de US \$ 1,143,600 entre 1990 y 1996. Para 1997 está programado un monto de US \$ 405,000. El apoyo de parte del Asdi a la Red Andina asciende a aproximadamente US \$ 670,000 por un período de dos años y medio. Los presentes acuerdos entre el Asdi y estos programas se terminarán en 1997 y 1996, respectivamente, y hasta ahora los programas no han sido evaluados.

Con el propósito de evaluar los resultados del apoyo sueco al sector de agua y saneamiento y para lograr un diálogo con UNICEF y PNUD - Banco Mundial referente a las políticas de sus respectivo programas de agua y saneamiento, el Asdi comisionó la presente evaluación.

El estudio fue llevado a cabo por Kristina Boman (encargada de la Misión) de Boman & Peck Konsult AB, Uno Winblad y Fernando Caballero en septiembre de 1996. Todos los miembros del equipo participaron en la evaluación del subproyecto de Agua y Saneamiento del PROANDES, mientras la evaluación del Programa de Agua y Saneamiento de PNUD - Banco Mundial fue realizada por Kristina Boman y Fernando Caballero.

El informe contiene varias conclusiones y recomendaciones y, debido al carácter de la tarea, muchas de ellas tratan asuntos técnicos enfocados hacia el mejoramiento de los programas. Para que el Resumen Ejecutivo sea lo más corto posible, este relata sobre todo las conclusiones y recomendaciones generales.

UNICEF - PROANDES

Las principales conclusiones referentes al subproyecto de Agua y Saneamiento del PROANDES son las siguientes:

— El proyecto ha resultado muy exitoso en cuanto a la construcción de sistemas de agua. Desde su inicio en 1989 hasta 1995, se han construido 511 sistemas de agua para 111,538 beneficiarios. El 37% de la población meta del PROANDES ha sido provista del acceso al agua potable. La construcción de sistemas de agua es relevante tanto a los objetivos de desarrollo de Suecia como a las necesidades del grupo meta. La tecnología empleada es apropiada para las comunidades y UNICEF ha logrado disminuir los costos de inversión tanto en el diseño como en la construcción de los sistemas.

— El área meta del PROANDES es el más pobre de Bolivia y casi ninguna otra organización, a excepción de Yacupaj, se encuentra trabajando con agua y saneamiento en la región. El subproyecto de Agua y Saneamiento ha logrado atraer financiamiento

nacional del Fondo de Inversión Social (FIS) para las provincias del norte de Potosí y sur de Cochabamba, las que normalmente han recibido pocos fondos de donantes nacionales e internacionales.

— A pesar de los logros arriba mencionados, el subproyecto de Agua y Saneamiento no ha alcanzado su objetivo general, el "acceso mejorado y ampliado al agua potable y servicios de saneamiento rural para las familias campesinas en sus comunidades". La razón es que tanto el componente de saneamiento como el de educación en higiene han venido atrasándose. La meta planificada para sanitarios (letrinas) familiares no ha sido alcanzada, y menos del 2% de la población meta del PROANDES ha recibido capacitación sistemática en educación de salud e higiene.

— El componente de saneamiento se ha concentrado en la dotación de sanitarios y, generalmente no parece haber una educación sanitaria eficiente, explicando el por qué y cómo usar las instalaciones o la higiene personal en relación a la defecación. La impresión general es que donde existen y funcionan razonablemente bien los sanitarios, son utilizados. No se detecta una necesidad de la tecnología VIP en el Altiplano ya que existen alternativas con un mayor costo eficiencia. El sanitario de sello hidráulico no es adecuado en áreas con escasez de agua o donde las personas usan materiales sólidos para la limpieza anal. El potencial valor horticultural o agricultura de las excretas humanas, las que podrían usarse ventajosamente como fertilizantes, no ha sido aprovechado.

— El programa carece de una estrategia bien definida referente al desarrollo del componente de promoción de la higiene y no existen promotores capacitados.

— Las unidades de saneamiento, es decir las duchas solares y los sanitarios de sello hidráulico, no son sostenibles debido a su tecnología demasiado complicada y sensible, la falta de preparación para la administración, operación y mantenimiento así como la falta de fondos comunitarios para reparaciones. El diseño y la tecnología de las unidades solares deben ser revisados.

— Los sistemas de agua y saneamiento de UNICEF no son costosos comparados a los de otros proyectos en Bolivia, a lo contrario parecen tener un costo menor.

— Los costos administrativos de UNICEF Bolivia para el proyecto de Agua y Saneamiento se estiman al 12% para el año 1995. Incluyendo el costo que deduce la sede de UNICEF en Nueva York, los costos administrativos suben a 18%. En 1996, el porcentaje tomado por UNICEF en Nueva York bajó al 3%, lo cual implica que el costo de administración disminuye respectivamente.

— El proyecto ha tratado de promover la igualdad entre los sexos y ha desarrollado una estrategia para este fin. Esto debe considerarse positivo pero la estrategia necesita ser mejor desarrollada y aplicada consistentemente por todas las ONGs que implementan los proyectos.

— No existe un sistema para el cálculo de costos de inversión. La recuperación de costos se logra parcialmente por medio de la contribución de las comunidades en la forma de materiales locales y mano de obra. Según un estudio puntual de costos de inversión realizado por UNICEF, el promedio de la recuperación para sistemas de agua es del 36% y para sanitarios del 66% al 74%.

— Se han realizado actividades de capacitación en la administración, operación y mantenimiento de los sistemas de agua construidos, pero solamente el 60% de las comunidades ha recibido la capacitación completa. Además, las políticas y metodologías utilizadas para la capacitación necesitan revisarse. La preparación en la administración, operación y mantenimiento de las unidades de saneamiento no ha sido suficiente para garantizar la sostenibilidad.

— Las propicias en las que trabaja el PROANDES son las más pobres de Bolivia y la situación de salud de la población en general y de los niños y niñas en particular, es mala. Las inversiones en agua, servicios de saneamiento e higiene son importantes para disminuir la tasa de mortalidad infantil y para mejorar las condiciones de salud y de vida de la población de la región. UNICEF ha logrado desarrollar la capacidad de las ONGs para implementar proyectos de agua en el área. La Misión opina que este "sistema de aprovisionamiento" podría adaptarse para implementar proyectos de agua, saneamiento e higiene, es decir para proyectos integrales enfocados hacia el mejoramiento de la salud de la población rural de estas provincias. Se recomienda, por lo tanto, que el Asdi continúe financiando el subproyecto de Agua y Saneamiento después del 1997, siempre que:

- UNICEF redirija la asistencia de acuerdo a las recomendaciones presentadas en el presente informe,
- UNICEF continúe tratando de atraer fondos de PROSABAR y FIS para las ONGs y las municipalidades, — esto es necesario para disminuir la dependencia de los fondos del Asdi,
- UNICEF continúe y fortalezca su diálogo con DINASBA para dar a conocer las experiencias de UNICEF y al mismo tiempo estar al día con los desarrollos del sector.

La recomendación más importante referente el subproyecto de Agua y Saneamiento es que el proyecto sea reorientado de un proyecto de "provisión de agua" a un proyecto integrado de agua, saneamiento e higiene. Las recomendaciones detalladas se presentan en el capítulo 4.

Por otro lado se recomienda que el desarrollo del subproyecto de Agua y Saneamiento sea monitoreado anualmente por el Asdi y que el resultado se discuta en las revisiones anuales del PROANDES. Además, después de 18 meses debe realizarse un pequeño estudio sobre la reorientación del subproyecto. Especialistas del sector deberían apoyar al Asdi en el seguimiento y diálogo de políticas con UNICEF.

EL PROGRAMA DE PNUD-BANCO MUNDIAL

El Programa de Agua y Saneamiento de PNUD - Banco Mundial en la región andina (RWSG-AN) parece haber tenido dos fases: del 1991 al 1995 y del 1996 para adelante. Antes de 1996, RWSG-AN concentraba sus esfuerzos a tres proyectos diferentes: Yacupaj, PROSABAR y FASBASE. El Programa venía trabajando en Bolivia, principalmente, y en pequeña escala en el Ecuador, pero no tenía proyectos en el Perú y solamente uno al nivel regional.

En 1996, RWSG-AN incrementó sus actividades tanto en cada país como a nivel regional. El Perú fue incluido por primera vez y se iniciaron tentativas de coordinar las experiencias entre los países.

RWSG-AN, por medio de su trabajo con Yacupaj y PROSABAR, ha logrado un impacto muy importante en el sector de agua y saneamiento en el área rural de Bolivia. La Misión opina que el Programa, a través de la implementación y documentación de la experiencia de Yacupaj ha influido positivamente en la creación de PROSABAR. Debido a la magnitud de PROSABAR y a su conexión con la agencia coordinadora del sector de Agua y Saneamiento, DINASBA, el trabajo de RWSG-AN influirá en el sector en su totalidad.

En Bolivia, el proyecto ha logrado los objetivos expresados en la carta de acuerdo con al Asdi y con los objetivos del Programa y el trabajo ha sido relevante tanto para el sector como para los beneficiarios.

A pesar de los logros en Bolivia, el RWSG-AN no ha logrado los objetivos expresados en la carta de acuerdo con Suecia de manera completa. Antes de 1996, el intercambio de experiencias entre las comunidades fue casi nulo y ninguna red regional existía. Además, para este período es difícil detectar los objetivos a largo plazo y las estrategias para el establecimiento de la cooperación regional.

Los costos de administración ascienden al 27% del costo total del Programa. Este representa un costo administrativo bastante alto y refleja la fase corriente del desarrollo del Programa, es decir "el nuevo comienzo". Si la propuesta para el proyecto de agua y saneamiento en áreas urbano-marginales es aprobada, los costos de administración bajarían al 13% del presupuesto total, lo que representa un nivel más aceptable.

Desde 1996, RWSG-AN cuenta con una estrategia específica que define cómo trabajar con los países incluidos en el acuerdo con Suecia y cómo lograr sus objetivos, incluyendo un intercambio de experiencias y coordinación entre los diferentes países andinos. Además, el RWSG-AN tiene el potencial para influir positivamente en el desarrollo de los sectores de agua y saneamiento en la región andina.

El Programa de Agua y Saneamiento de PNUD - Banco Mundial goza de una posición única dentro del sector de agua y saneamiento, lo que le permitirá contribuir a la solución de varios de los problemas comunes del sector. Sin embargo, debido al carácter descentralizado del Programa, el éxito de un programa regional dependerá de la capacidad de su personal propia.

La experiencia de la región andina muestra que el Asdi necesita realizar un seguimiento de los resultados del Programa de Agua y Saneamiento de PNUD - Banco Mundial de una manera más continua y atenta que anteriormente, y que las decisiones referentes al financiamiento deberían basarse en un documento que describe claramente los objetivos, las actividades planificadas y el presupuesto. El acuerdo entre el Asdi y el Banco Mundial es poco definido y no corresponde a los requerimientos normales del Asdi.

Las recomendaciones principales son que:

— Suecia continúe financiando el RWSG-AN pero que se incluyan las contribuciones de donantes adicionales. Para cualquier red es importante contar con varios donantes, ya que esto aporta al desarrollo de una concertación en el sector y, de esta manera, contribuye al alcance de los objetivos del Programa,

— la decisión de continuar el financiamiento sueco se base en un documento que describa claramente los objetivos, las estrategias, las actividades planificadas y el presupuesto del RWSG-AN,

— el Asdi monitorée los resultados del RWSG-AN,

— el RWSG-AN informe las otras organizaciones del sector sobre su existencia y su misión,

— el RWSG-AN aplique siempre una estrategia que fortalezca la concertación, es decir trate de incluir el mayor número posible de organizaciones en sus diferentes actividades. Con el fin de alcanzar el objetivo del Programa de "un proceso de aprendizaje dentro del sector", todas las actividades deberían basarse en experiencias previas de diferentes tipos de organizaciones y en una comunicación eficiente con los actores del sector de agua y saneamiento. Este proceso debería comenzar al inicio de cualquier proyecto.

LA PROPUESTA PARA AREAS URBANO- MARGINALES

En mayo de 1996, DINASBA y RWSG-AN presentaron una propuesta de proyecto preliminar al Asdi. Esta propuesta se refiere a un proyecto piloto para áreas urbano-marginales cuyo objetivo a largo plazo es "mejorar las condiciones de vida de los pobres del área urbana por medio del acceso sostenible y mejorado a servicios de agua y saneamiento". La situación esperada al final de este proyecto es:

- haber formulado políticas del sector y fortalecido las instituciones, es decir las agencias nacionales y las municipalidades,
- haber probado y desarrollado modelos institucionales, mecanismos de financiamiento y opciones tecnológicas para las áreas urbanas marginales,
- haber dotado a la población de bajos ingresos de las áreas urbanas marginalizadas con servicios de agua y saneamiento,
- haber documentado y divulgado las experiencias.

La estrategia subyacente de RWSG-AN para este proyecto es la de reproducir el proceso de Yacupaj - PROSABAR en las áreas urbano-marginales. El Programa ha discutido ya las posibilidades de financiamiento de un proyecto de agua y saneamiento grande para comunidades urbano-marginales con el Banco Mundial y, de acuerdo a la información obtenida del Programa, el Banco tiene interés en financiar un gran proyecto de inversión utilizando las experiencias del proyecto piloto

La conclusión principal es que el proyecto, si es implementado correctamente, será muy relevante y podría ser el punto de partida para la solución de los problemas de agua y saneamiento de las áreas urbano-marginales. La Misión considera esto una inversión

estratégica para Suecia, una inversión pequeña con la posibilidad de grandes efectos laterales positivos.

Se recomienda que el Asdi considere el financiamiento del proyecto pero que participen también otros donantes. La participación de donantes adicionales es importantes ya que facilita la aceptación y la implementación de las normas y metodologías resultantes del proyecto.

Sección 6.2. contiene recomendaciones sobre el contenido de la propuesta. La recomendaciones sobre la preparación de un apoyo de Asdi se presenta en la continuación.

1. RWSG-AN y DINASBA preparan una propuesta detallada considerando las recomendaciones en sección 6.2. Si otro donante financiara parte del proyecto, se modificaría el presupuesto.

2. Asdi evalúa la propuesta incluyendo un análisis de las actividades, el presupuesto y la capacidad institucional actual de DINASBA y RWSG-AN.

3. Asdi da seguimiento anual a los resultados del proyecto. Se recomienda una evaluación medio termino. La participación de un especialista del sector de agua y saneamiento es recomendable.

4. Para el fortalecimiento institucional de DINASBA, Asdi puede considerar de dirigir parte de sus fondos para el "Civil Service Reform Programme" puestos profesionales en DINASBA. Naturalmente se lo hará siempre y cuando que Asdi lo considera vital el apoyo del DINASBA para el desarrollo del sector.

EXECUTIVE SUMMARY

Sida has financed activities in the water and sanitation sector in Bolivia since 1989, when a support to the UNICEF PROANDES programme was initiated. The Swedish support was increased at the end of 1993 when Sida decided to fund the UNDP-World Bank Water and Sanitation Programme's new initiative: the Andean Network.

PROANDES which consists of six different subprojects works in the poor rural highlands of Bolivia. The Watsan subproject has received US \$ 1,143,600 from Sida between 1990 and 1996. Another US \$ 405,000 is programmed for 1997. The Sida support to the Andean Network is approximately US \$ 670,000 which will be used during two and a half years. The current agreements between Sida and the programmes will be end in 1997, and up to now, the programmes have not been evaluated.

In order to assess the results of the Swedish support to the sector and to achieve a policy dialogue with UNICEF and the UNDP-World Bank Water and Sanitation Programme, this review was commissioned by Sida.

The study was conducted by Kristina Boman (team leader) from Boman & Peck Konsult AB, Uno Winblad and Fernando Caballero during September 1996. All team members participated in the assessment of the Watsan sub-project of PROANDES, while the evaluation of the UNDP-World Bank Water and Sanitation Programme was done by Kristina Boman and Fernando Caballero.

The report contains several conclusions and recommendations and due to the character of the task, many of them deal with technical issues i.e. how to improve the programmes. The general conclusions and recommendations are presented below.

UNICEF — PROANDES

— The project has been very successful in the construction of water systems. Since its initiation in 1995, it has constructed 511 water systems for 111,538 beneficiaries, which represent 37% of the PROANDES target population. The construction of water systems are relevant considering both the Swedish development objectives and the needs of the target group. The technology of water systems are appropriate for the villages and UNICEF has succeeded to cut the investment costs.

— The PROANDES target area is the poorest in Bolivia and almost no other organisation is working with water and sanitation in the area. The Watsan subproject has succeeded to attract national financing from the Social Investment Fund (SIF) for provinces in northern Potosí and southern Cochabamba. These areas have received little financing from different national donors.

— In spite of the achievements mentioned above, the Watsan subproject has not achieved its overall objective i.e. "improved and extended access to potable water and rural sanitation services for farmers' families in their communities". The reason is that both sanitation and hygiene education have lagged behind. The planned output for family toilets has not been achieved, and less than 2% of the PROANDES target population have

been given access to toilets. Less than 1% of the target population have received systematic training in health and hygiene.

— The sanitation component has been concentrated on the provision of toilets, and generally there seems to be no effective hygiene education explaining how to use the toilets and personal hygiene in relation to defecation. The general impression is that where toilets (of whatever type) are available and functioning reasonably well they are also used. There is no need for the VIP technology in the dry areas of the Altiplano as more cost-effective alternatives are available. The water seal toilet is not suitable where water is in short supply and where people use solid material for anal cleaning. The potential fertiliser value of the human excreta has not been utilised by the Project.

— The Project lacks a well defined strategy on how to develop the hygiene promotion component and there are no trained promoters.

— The sanitation units i.e. the solar heated showers and pour flush toilets are not sustainable due to a too complicated and sensitive technology, lack of preparation for administration, operation and maintenance (A,O&M) and lack of community funds for repairs.

— UNICEF water systems and toilets are not expensive compared to other projects in Bolivia, rather they appear to have a lower cost.

— The administrative cost of UNICEF Bolivia for the Watsan project is estimated to 12% of the total budget. If the UNICEF headquarters cost recovery cost is included the figure increases to 18%.

— The project has designed a strategy to improve the equality between the sexes. This is positive, but the strategy needs to be further developed and consistently applied by all NGOs implementing the projects.

— There is no system for cost calculation, and cost recovery is achieved through communities' contributions in local material and labour. According to a cost study conducted by UNICEF, the average cost recovery of total investment cost for water systems is 36% and for toilets between 66% to 74%.

— The Project has organised training in A,O&M of constructed water systems but only 60% of the communities have received the full training. Moreover the policies and methodologies for training need to be revised. The preparation for A,O&M for sanitation units has not been sufficient to guarantee the sustainability.

The provinces where PROANDES is active are the poorest in Bolivia and the health of the population in general, and children in particular, is bad. Investments in water, sanitation and hygiene are important to decrease the infant and child mortality rates and to improve the health and living conditions of the population in the area. UNICEF has developed the NGOs' capacity to implement Watsan projects, and together they have created an efficient system to implement water projects. The Mission believes that this "delivery system" could be adapted to implement water, sanitation and hygiene projects i.e. real integrated projects to improve the health of the target population. It is therefore

recommended that Sida continues to finance the Watsan subproject after 1997 providing that:

- UNICEF redirects the assistance according to the recommendations given in this report,
- UNICEF continues to try to achieve funds from PROSABAR and SIF for the NGOs and the municipalities. This is necessary to decrease the dependence on Sida funds,
- UNICEF continues and strengthens its dialogue with DINASBA. The purpose is that UNICEF shares its experiences and simultaneously stays informed about the development of the sector.

The most important recommendation regarding the Watsan subproject, is that the project is reoriented from being a "provider of water supply" to an integrated water, hygiene and sanitation project.

It is also recommended that Sida annually monitors the development of the Watsan subproject, and that the result is discussed at the annual reviews of PROANDES. Moreover, after one and a half years, a small study of the reorientation of the Watsan subproject should be made. Sector specialists should support Sida in the monitoring of, and policy dialogue with UNICEF.

THE UNDP — WORLD BANK PROGRAMME

The UNDP-World Bank Water and Sanitation Programme in the Andean region, (RWSG-AN) appears to have had two phases: 1991 to 1995 and 1996 onwards. Prior to 1996, RWSG-AN concentrated its efforts to three projects: Yacupaj, PROSABAR and FASBASE. The Group was working predominately in Bolivia and to some extent in Ecuador. No activities were undertaken in Peru and very few at the regional level.

In 1996, RWSG-AN increased its activities both in each country and at the regional level. Peru was included, and efforts to co-ordinate experiences between the countries were initiated.

RWSG-AN has, through its work with Yacupaj and PROSABAR, had an important impact on the rural water and sanitation sector in Bolivia. The Mission believes that the Group through its implementation and documentation of the Yacupaj experience influenced positively in the creation of PROSABAR. Due to the magnitude of PROSABAR and its connection with the co-ordinating agency of the water and sanitation sector, DINASBA, RWSG-AN work will influence the whole sector.

In Bolivia the project has achieved the objectives expressed in the letter of agreement with Sida as well as the objectives of the Programme. The work has been relevant both for the sector and for the beneficiaries.

In spite of the achievements in Bolivia, RWSG-AN has not completely achieved the objectives expressed in the letter of agreement with Sweden. Prior to 1996, there was almost no interchange of experience between the countries and no network was established. Moreover, it is difficult to detect the long-term objectives and strategies for how the regional co-operation was going to be established.

The administration cost accounts for 27% of the total Programme cost. An administration cost of 27% is quite high and reflects the current phase of development of the Programme, i.e. "the new start". If the project proposal for water and sanitation in marginal urban areas is approved, the administration cost would go down to 13% of the total budget, which is a more acceptable level.

Since 1996, RWSG-AN has a well defined strategy of how to work with all the countries included in the agreement with Sida. The strategy also addresses the how to achieve the objectives including the co-ordination and interchange of experience between different Andean countries. Moreover, RWSG-AN has the potential to positively influence the development of the watsan sectors in the Andean region.

The UNDP-World Bank Water and Sanitation Programme has a unique position in the water and sanitation sector, which gives it the potential to contribute to the solving of several of the common problems in watsan sectors. However, due the decentralised character of the Programme, the success of the Programme in a particular region will depend on the ability of its staff.

The experience from the Andean Region shows that Sida needs to follow up the results of the UNDP-World Bank Water and Sanitation Programme more closely than previously done, and that the funding decision should be based on a document that clearly describes the objectives, planned activities and budget. The agreement between Sida and the World Bank is too vague and does not follow the normal Sida requirements.

The main recommendations are that:

— Sweden should continue to finance RWSG-AN but that other donors also should contribute. For any network it is important that various donors contribute since this facilitates consensus building in the sector and thereby the achievement of the Programme's objectives.

— The decision to continue Swedish financing should be based on a document that clearly describes objectives, strategies, planned activities and a budget for RWSG-AN.

— Sida follow up the results of RWSG-AN.

— RWSG-AN informs the other organisations in the sector about its existence and its objectives.

— RWSG-AN always applies a consensus building strategy i.e. tries to involve as many organisations as possible in its different activities. In order to achieve the Programme's objective of "a learning process in the sector", all activities should be based on previous experiences of different type of organisations and an efficient communication with the actors. This process should start from the beginning of any endeavour.

THE DRAFT PROJECT PROPOSAL FOR MARGINAL URBAN AREAS

In May 1996, DINASBA and RWSG-AN submitted a draft project proposal to Sida. The proposal regards a pilot project for marginal urban areas. The long term objective is to "improve the living conditions of urban poor through sustainable, improved access to water and sanitation services". The expected outputs of the projects are:

- to have formulated sector policies and strengthened the institutions i.e. national agencies and municipalities,
- to have tested and developed institutional arrangements, financing mechanisms and technology options for the marginal urban areas,
- to have provided low income population living in marginalized urban areas with water and sanitation,
- to have documented and disseminated the experiences.

The underlying strategy of RWSG-AN is to copy the Yacupaj — PROSABAR process in marginal urban areas. The Group has already discussed the possibilities for financing of a large watsan project for marginal urban communities with the World Bank, and according to the information given by the Group, the Bank is interested to finance a large investment project utilising the experiences of the pilot project

The overall conclusion is that the project, if implemented correctly, will be relevant and can be the starting point to solve the watsan problems in marginal urban areas. The Mission considers it to be a strategic investment for Sida — a small investment with a possibility to large spin-off effects.

It is recommended that Sida should consider the financing of the project but that other donors also participate. The participation of other donors are important since it will facilitate the acceptance and the implementation of the norms and methodologies resulting from the project.

Section 6.2. includes some technical recommendations regarding the content of the proposal. Here we recommend how to proceed with the preparation of a possible Sida support .

1. RWSG-AN and DINASBA should prepare a detailed proposal considering the recommendations given in section 6.2.. If the first phase of the project will be financed by Belgium, the project budget should be reduced accordingly.
2. Sida should assess the proposal making an analysis of the activities, the budget and the prevailing institutional capacity of DINASBA and RWSG-AN. Sida should be careful to detect any changes in the capacity of the organisations compared.
3. Sida should monitor the results of the project annually. A mid-term assessment is recommended and the participation of sector specialists could be useful.
4. To strengthen the capacity of DINASBA, Sida could consider to earmark some of the funds of the Civil Service Reform Programme for medium level posts in DINASBA. Naturally, this should only be done if Sida considers that DINASBA's activities are vital for the development of the watsan sector.

1. INTRODUCTION

Sida has financed activities in the water and sanitation sector in Bolivia since 1989, when a support to the UNICEF PROANDES programme was initiated. PROANDES has six different sub-projects of which the water and sanitation project (Watsan) is one. In 1994, Sida undertook an evaluation of the PROANDES programme but Watsan was not assessed in detail. A second period of co-operation between Sida and PROANDES started in July 1993 and will end in 1997.

The Swedish support to the Bolivian water and sanitation sector was increased at the end of 1993 when Sida decided to support the UNDP-World Bank Water and Sanitation Programme's new initiative: the Andean Network. The agreement put forth approximately US 670,000 of Swedish assistance during a two and half year period. Up to now Sida has not evaluated the progress of the Andean Network.

In order to assess the results of the Swedish support to the sector and to achieve a policy dialogue with UNICEF and the UNDP-World Bank Water and Sanitation Programme, this review was commissioned by Sida.

1.1. Objective of the study

According to the terms of reference which are attached in annex 1, the objectives of the consultancy are to assess the progress and achievements of: the Watsan sub-project of the UNICEF PROANDES programme and the Andean Network within the UNDP-World Bank Water and Sanitation programme including a project proposal for marginal urban areas.

Based on the result of the assessment, the Mission should provide Sida with three recommendations. First, it should suggest corrective measures to be taken within the remaining agreement period, and secondly, it should recommend whether Swedish funding should continue beyond the present agreement periods. The third recommendation to be given by the Mission regards the preparation of future Swedish support to the marginal urban water and sanitation sector in Bolivia.

1.2. Methodology

The study was conducted by Kristina Boman (team leader) from Boman & Peck Konsult AB, Uno Winblad from Winblad Konsult AB and Fernando Caballero during September 1996. All team members participated in the assessment of the Watsan sub-project of PROANDES, UNICEF, while the evaluation of the UNDP-World Bank Water and Sanitation Programme was done by Kristina Boman and Fernando Caballero.

The work was characterised by a dialogue with Sida, UNICEF and the UNDP-World Bank Water and Sanitation Programme. Several discussions were held with the co-ordinator and the staff of Watsan including the NGOs that are implementing the projects at community level. The Mission also reached outside UNICEF and the Andean Network. At one point Mr Winblad was asked to hold a presentation on sanitation at DINASBA, the organisation that co-ordinates and regulates the water and sanitation

sector in Bolivia. Representatives from different organisations such as SIF, DINASBA and PROSABAR participated in the meeting.

The data collection for the assessment of both Watsan and the Andean Network started with the studying of documentation in Sweden. Thereafter, the Mission interviewed personnel at both organisations in La Paz and at several other institutions and organisations in the water and sanitation sector in Bolivia. The objective was to get a complete picture of the activities of the study objects through comparing their opinions with those of the sector.

Data collection for the analysis of the Andean Network included interviews with NGOs such as CARE and Caritas, government institutions like SIF, DINASBA, PROSABAR and other donors such as UNICEF and the Embassy of the Netherlands. A complete list of interviewed persons are included in Annex 1. The Mission also visited villages where the Yacupaj project had been active.

Additional data to analyse Watsan was gathered through interviews with three NGOs working in the programme and through field visits to approximately 15 villages in the geographical area where the programme is active, i.e. in northern Potosí and southern Cochabamba. The visits covered the work of three NGOs in both Aymará and Quechua speaking communities. The field trip meant 7 days of continuous travel and covered approximately 20 villages and 1,400 kilometres of dusty roads.

The programming of villages to visit during the field visit was done by the Mission, and the visits was conducted in two different ways. The so called "long visits" included focus group interviews with community members, the water committee and a group of women. The interviews were complemented by direct observations of water systems and sanitation facilities. The "short visits" meant that the team came unannounced to the village, checked the installations and made informal interviews with community members. Almost all interviews were conducted in Quechua or Aymará.

The data were analysed through comparisons with the Yacupaj project and the Consultants' previous experiences. Moreover, the standard evaluation criteria of Sida such as fulfilment of objectives, relevance and sustainability were applied. Each consultant in the team was responsible for specific sections of the study, but all conclusions and recommendations were discussed thoroughly within the team before they were presented to UNICEF, Sida and the UNDP-World Bank Water and Sanitation Programme at two meetings September 26. The report was compiled by the team leader.

1.3. Outline of the report

In line with the terms of reference for the consultancy, a large part of the report covers the UNICEF programme. Moreover, as called for in the Terms of Reference, the report includes both a general assessment of the Programme's progress and a detailed technical analysis of the work methodologies. Some sections of the report therefore give detailed information on engineering and methodologies. The Mission has done this on purpose since it concluded that this information could be beneficial for the future work of the Programmes.

The report starts with a brief description of the water and sanitation sector in Bolivia which serves as the basis for the analysis of the Programmes' progress, especially the UNDP-World Bank Water and Sanitation Programme.

Chapters 3 and 4 cover the water and sanitation sub-project of PROANDES and include the conclusions and recommendations. The UNDP-World Bank Programme is described and analysed in chapter 5 while the project proposal for marginal urban areas and other future Swedish support is covered in chapter 6. Annex 6 includes a summary of the recommendations given in the report.

2. WATER AND SANITATION IN BOLIVIA

Bolivia has one of the lowest levels of water and sanitation coverage in Latin America and in the world. On the national level, 58% of the population has access to potable water and only 43% to safe excreta disposal. Naturally the coverage in rural and marginal urban areas are far below the national figures.

The diverse cultures and ecological zones of the country make it more complicated to develop national plans and policies for the sector in comparison to other countries with more homogenous conditions.

In 1991, a co-ordinating unit for both rural and urban water and sanitation was created in Bolivia. The institution, abbreviated DINASBA, was given a wide range of responsibilities like for example:

- prioritise investment plans for the sector,
- develop proposals for international financing,
- co-ordinate the actors in the sector,
- develop and disseminate norms and standards for the sector,
- promote appropriate technology,
- maintain a data base on the national coverage and investment need.

Although being an important institution in Bolivia, the organisation is restricted due to lack of human and financial resources. Currently, eight professionals are working in DINASBA and this is far from sufficient to undertake all the assigned responsibilities. Financing has been provided the Government, UNDP and PROSABAR, but the organisation is dependent on external financing to maintain the current level of activities. It is probable that the Director of DINASBA will be financed through the Civil Service Reform Programme (CSRP) which will start in 1997, however the CSRP does not foresee the financing of other professional posts at DINASBA.

Another problem for DINASBA is its hierarchical position within the Government. DINASBA is a "dirección" in the sub-secretariat of urban development which in turn depends on the national secretary of popular participation and belongs to the Ministry of Human Development. The status of "sub-secretary" limits DINASBA's power to influence the actors in the sector and to promote the sector at the government level. However, according to the latest information received it is possible that DINASBA will become a so called "Superintendencia de Aguas", which is regulated in the special Sector Law (SIRESE) "Ley del Sistema de Regulación Sectorial". Such a change would imply that DINASBA would have more power to co-ordinate the water and sanitation sector.

The different sector actors are illustrated in figure 1. Note that the illustration does not indicate relative importance of the actors nor any hierarchy. Moreover, the illustration serves as an introduction to the watsan sector and should not be regarded to be 100% correct. Most of the actors are described in sections 2.1. and 2.2..

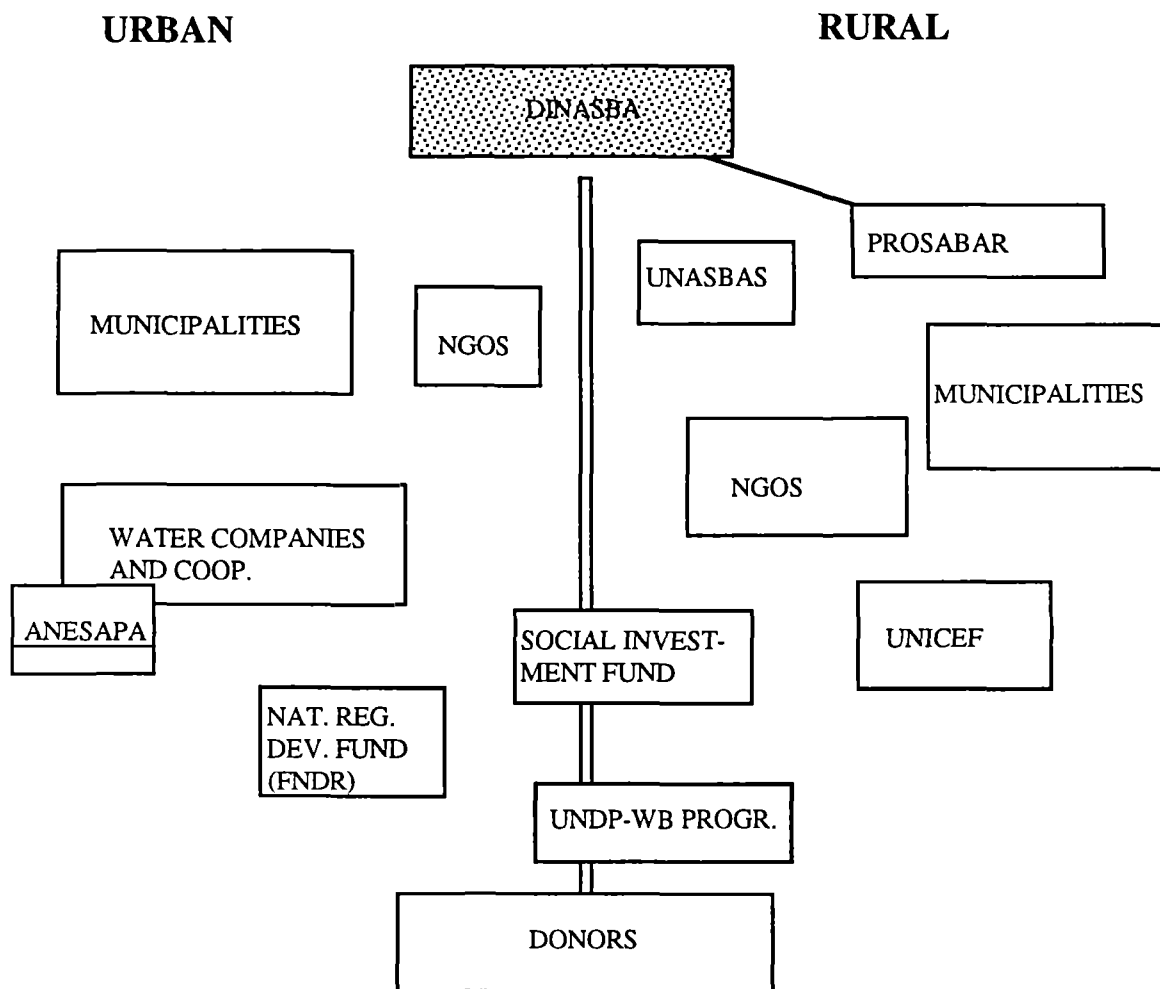


Fig 1: The Bolivian Water Sector

2.1. Rural areas

The coverage of basic water and sanitation services in the rural areas are very low. It is estimated that only 24% of the population have access to potable water and that only 18% have a safe system for excreta disposal.

The rural water and sanitation sector itself is in a process of structural change. Traditionally, the sector has been characterised by a couple of specialised institutions, like CARE, UNICEF, and CARITAS, which have acted independently and have obtained their own funding. The Social Investment Fund (SIF) has also financed construction in rural water supply and school sanitation. The investments in the sector have been low and there has not existed enough capacity to implement large programs in water and sanitation services.

In 1994, the World Bank decided to finance a large national rural water and sanitation programme, PROSABAR to be administered by DINASBA. The programme managed to obtain support from OPEC, and other donors such as the Netherlands, Belgium, Japan and the European Community are interested to support the programme. The already contracted funds for 1995 to 2000 amount to US \$ 35 million which means that PROSABAR is a very large programme for Bolivia. It is interesting to compare with UNICEF, which is one of the largest actors in the rural watsan sector — PROSABAR has approximately 9 times more funds than UNICEF had for the period 1993 to 1998.

Other actors in the sector, such as CARE and CARITAS, have more problems to receive independent funds for water and sanitation projects than they had before. They are now doing some implementation for PROSABAR.

The general objectives of PROSABAR are:

- to improve the health and the living conditions of rural population in Bolivia,
- to achieve an efficient utilisation and sustainability of the water and sanitation systems built.

In addition to the construction of systems and the training of beneficiaries, the Programme includes a component for institutional development of sector organisations. Special efforts will be made to strengthen DINASBA, and the Programme has a system for monitoring and evaluation of results which will give continuous feedback to the sector.

The strategy of PROSABAR includes a large social component with for example hygiene education and training for administration, operation and maintenance of installed systems. The projects are to be executed by NGOs, organisations and private companies, and SIF is responsible for contracting for the construction of infrastructure while PROSABAR contracts for the social component.

During 1994 and 1995, PROSABAR developed the methodology of work which was based on experiences from the sector. Organisations like UNICEF, CARE and the Yacupaj project participated in meetings to give their experiences to PROSABAR¹.

The Mission believes that PROSABAR could be important for the rural water and sanitation sector in Bolivia. Firstly it has the potential to attract more funding for investments for poor rural people. Secondly, due to its location within DINASBA, the Programme can be basis for a continuous improvement of norms for the sector, and it can also be a tool for DINASBA to influence other actors and to co-ordinate activities. Thirdly, PROSABAR's social component is advanced and could therefore be a valuable complement to organisations like SIF that concentrate on the construction of infrastructure. Fourth, PROSABAR could be the tool to co-ordinate donors' activities in and contributions to the sector. This would probably be one of the first countries where the co-ordination is done internally instead of in donors' offices.

However, PROSABAR is facing substantial problems with implementation. So far only 15 water systems have been or are being built, 100 projects are in the process of "bidding" and 267 have been approved. Furthermore, no sanitation projects have been approved or executed so far. The goal to reach 2000 villages or 346,000 persons with potable water and 234,000 with safe excreta disposal up to year 2000 will therefore be difficult to achieve.

It can be concluded that the rural water and sanitation sector financially is dominated by PROSABAR. The other active actors are the Social Investment Fund and UNICEF. It is impossible to foretell if PROSABAR will be able to live up to the expectations, and thereby dominate the sector also when considering the level of implementation. Whatever its result, it will influence the rural water and sanitation sector in Bolivia — positively or negatively.

2.2. Marginal urban areas

The coverage of water and sanitation in urban areas are 78% and 63% respectively². But only 39% of the households obtain their water from a household connection or a yard pipe. The majority of the 39% who do not have an improved service are bound to live in marginal urban areas. The situation is similar for sanitation services for which 49% of the households are equipped with improved sanitation facilities, i.e. connection to sewerage or improved on-site sanitation. In addition to the level of coverage it should be mentioned that the urban population is growing at an average rate of 4,1% annually while the rural population remains stable.

Sewage coverage is also considered to be lower in the poorer areas of the cities.

The municipalities are responsible for water and sanitation services within its area, and the services are provided by municipally owned enterprises, co-operatives and private companies (water companies). The sector organisation, ANESAPA, estimates that 180

¹ Like in all other circumstances, the participation in these meetings did not mean that PROSABAR adopted the methodologies of all the organisations. For example, PROSABAR chose to use a different design and construction criteria compared to UNICEF.

² World Resources Institute et al., World Resources 1996 - 1997, Oxford Press.

different water companies are active in the urban areas. Out of these, nine are members in ANESAPA and these nine cover approximately 50% of the end users. However, more than 50% of the water companies are not organised which also means that their level of co-ordination is lower.

According to the plans of the Government, the municipal water companies will be privatised in the near future.

The water companies do not normally attend the marginal urban areas, i.e. low income areas. For a various number of reasons like for example lack of economic resources, problems with legal land titles, these areas sometimes fall outside the municipal development plans.

Moreover, the marginal urban areas have received little international support to improve water and sanitation services, and the Mission did not find one donor who was active. Large donors like the Interamerican Development Bank and the German organisation GTZ support urban or peri-urban areas but do not seem to have special activities for marginal urban areas. There are no norms or regulations for investments in marginal urban areas, and the experiences that exist in the country are not known by the sector. In short, the marginal urban sector in Bolivia lacks co-ordination, norms, regulations, technical solutions and investment capital.

3. THE WATSAN COMPONENT IN UNICEF'S PROANDES

UNICEF support to the water and sanitation sector in Bolivia started in 1960 with a small funding from the UNICEF office in Peru. With the start up of the UNICEF office in Bolivia the support increased, and between 1970 and 1982 funding and assistance was provided to the water and sanitation activities of the Ministry of Health.

Due to changes in the Government's policy, the support to the Ministry of Health's national programme was in 1983 replaced by a direct assistance to four departments via the departmental development corporations, CORDEPAs.

The PROANDES programme started in 1989, and the water and sanitation programme was included as a subproject in PROANDES. The first four years the main source of funding came from the Spanish UNICEF committee. The Swedish assistance to PROANDES started in 1991. The Swedish financial support the Watsan subproject between 1991 and 1996 amounts to US \$ 1,143,600. The UNICEF Committee in Spain has provided US \$ 2,438,400 during 1989 to 1996.

3.1. Project objectives and results

According to the latest project document, the overall objective of PROANDES is to "provide greater access to the Andean farmer's families living in the provinces of northern Potosí and southern Cochabamba to necessary basic services, to improved care for children and mothers, and sufficient household food security"³. The objective is to be achieved through the implementation of the following different subprojects:

- maternal and child health,
- food security,
- child development,
- water and sanitation,
- women development,
- administration of community and local development.

The geographical target area is rated as the poorest in Bolivia, and the total target population is estimated to 300,000.

The overall objective of the water and sanitation subproject (Watsan) is: "improved and extended access to potable water and rural sanitation services for farmers' families in their communities". The objective is to be achieved through the provision community water systems, family toilets, school sanitation, sport and sanitation units and training to community members. The school sanitation consist of two showers and two pour-flush toilets, and the sport and sanitation unit includes a sport field, showers and pour-flush toilets and laundry facilities.

³ UNICEF, Programme Document PROANDES, June 1995.

The table no 1 summarises planned and actual outputs per year and type of intervention⁴:

YEAR	SPENT OR BUDGETED US \$	# WATER SYSTEMS	# FAMILY TOILETS	# SCHOOL SANITAT. UNITS	# SPORT & SANITAT UNITS	# WATER COMMITTEES TRAINED	# OF PERSONS GIVEN HEALTH AND HYGIENE EDUCAT
1989-92 planned		40% of all villages	40% of all villages			i.n.a ⁵	40% of all villages
1989-92 achieved	Spain 1,233,000 Sweden. 425,000 Italy 103,200	211 systems = 30% of villages.	1% of villages.			120	360 people trained
1993-94 planned		160	1000	i n a		i n.a.	i.n.a.
achieved	Spain 628,900 Sweden 228,600 SIF 82,600	165	100	20		140	400 ⁶ people trained
1995 planned		135	225	28		i.n a	120 courses at village level
achieved	Spain 206,300 SIF 98,700	143	300	10		20	0 courses 60 people trained ⁷
1996 planned	Spain 370,200 Sweden 490,000 SIF 495,200	140	1500	100		140	mass education campaign
total funds & beneficiaries 1989-1995	total funds 1989 to 1995 3,006.300	111,538	3,978 ⁸	10,000 ⁹	2,250 ¹⁰	320 of the 519 committees trained	820

Table 1: Planned and achieved outputs

Besides the achievements shown in the table, the Watsan subproject has also undertaken institutional development of the nine NGOs which implement the projects at village level.

⁴ Sources: information from the Watsan Co-ordinator and the Plans of Action for 1995 and 1996.

⁵ I n a means that the information is not available.

⁶ These received one or two days training in health and hygiene since some of these subjects were included in the courses for water committees.

⁷ These received one or two days training in health and hygiene since some of these subjects were included in the courses for water committees.

⁸ Estimated through: 663 latrines * 6 beneficiaries = 3,978 latrines. 563 pour flush latrines and 100 VIP.

⁹ A total of 100 sanitation units have been constructed. Number of beneficiaries is approximately 100 per unit = 10,000.

¹⁰ 15 units * 150 beneficiaries.

3.1.1. FULFILMENT OF OBJECTIVES

Based on the information presented above, the following conclusions can be drawn about project results and its achievement of outputs and objectives:

— The Watsan subproject has achieved planned outputs in relation to construction of water systems. The project has succeeded to provide 37% of the target population of PROANDES with new or improved water systems. The project has constructed an impressive number of systems per year, maybe the largest annual quantity in Bolivia. This must be considered as a substantial achievement of the Watsan subproject.

— The Watsan subproject has succeeded to attract national financing from SIF for provinces in northern Potosí and southern Cochabamba which normally have received little financing from different national and international donors. Furthermore, Watsan submitted 48 project proposals for construction of water systems to PROSABAR three years ago. Due to the slow start up of PROSABAR, none of the proposals have been approved so far.

— The project has provided improved water systems to the poorest area in Bolivia, where almost no other organisations are working.

— In spite of the achievements mentioned above, the Watsan subproject has not achieved its overall objective i.e. "improved and extended access to potable water and rural sanitation services for farmers' families in their communities". The reason is that all other areas except construction of water systems have lagged behind. The planned output planned for family toilets has not been achieved, and has provided less than 2% of the PROANDES target population with access to toilets. 199 water committees have not received systematic training in administration, operation and maintenance. This represents 41% of the water systems built. Less than 1% of the target population of PROANDES have received systematic training in health and hygiene education.

3.1.2. RELEVANCE

The relevance of the project should be analysed from two perspectives: relevance in relation to the Swedish objectives for international co-operation and relevance in relation to the needs of the target group.

The project is coherent with the objectives for Swedish international co-operation since it targets the poorer strata of the population and will lead to improved living standards and influence the economic development of the target population.

The relevance of the project for the target group, i.e. whether it solves a major problem for them, can be analysed from two different perspectives: improvement in living conditions and in the health.

By bringing water closer to the houses, the work burden of women and children decreases and more time can be spent on other activities. Moreover, better access to

water, facilitates several activities such as construction and irrigation¹¹. The conclusion is that the Watsan subproject leads to an improvement in the living conditions of the target group. Furthermore, the project addresses the health situation of the target population. Through the construction of the water systems, the beneficiaries get access to both a larger quantity and a better quality of water. Depending how the water is used, the health of the beneficiaries can improve.

Although the project must be considered to be relevant for the beneficiaries' health, it would have been much more so if it had put more emphasis to sanitation and hygiene. Studies have shown that access to safe excreta disposal systems and hygiene education normally have a higher health impact than water supply.

The overall conclusion is that the project is relevant but that it should have been given an integrated approach with equal emphasis on water supply, sanitation and health and hygiene education.

¹¹ During the field visits the team saw several examples of water from the systems being used for construction and irrigation. Naturally this is not true for all villages.

3.2. Costs

A cost analysis should be done with caution. The starting point is that the normal systems for cost calculations do not give enough data for comparisons between projects. However, although reliable data is not available, cost analysis are an important part of a project assessment since it gives an idea of the cost effectiveness of the activities.

The compromise between this necessity for analysis and the lack of data is to critically analyse cost data from different projects, adjust the calculations to allow for comparisons of costs and then compare the data carefully. The purpose of the comparison should not be to establish the percentage of cost difference, but rather to see whether the evaluated project is within an acceptable cost range.

In Bolivia the Mission obtained investment cost data from UNICEF, SIF, Yacupaj and PROSABAR. The data could not be directly compared since all projects had used different systems for cost calculation, for example the Yacupaj data did not include local material and labour while the UNICEF data did not include V.A.T. on materials purchased. The Mission re-calculated the investment costs for the different projects to create a basis for comparison. Although a lot of effort went into the calculation, the result must be considered as **an approximation!** The table presents the estimated investment costs in US \$ for UNICEF and an average of the three other projects, "others".

Description	Water Systems		Pour-flush Toilet		V.I.P. Toilet	
	UNICEF	Others	UNICEF	Others	UNICEF	Others
Local material	573	366	26	20	26	17
Other material	2 050	5 513	20	44	16	33
Local labour	862	2 725	25	26	25	29
Other labour	407	318	0	9	0	13
Supervision & Training	462	1 517	8	17	8	16
TOTAL	4 354	10 439	79	116	75	108
Cost per beneficiary	36	43	13	19	13	18

Table 2. Estimates of investment costs

When analysing the figures cautiously, it can be concluded that:

- UNICEF's water systems and toilets are not more expensive than other projects,
- UNICEF has low investment costs for water systems because the organisation does not pay V.A.T., and uses less costly construction material and has omitted valves from the distribution tanks,
- in comparison with the other projects, UNICEF's toilets are cheaper due to a reduction in external material and labour.

The Mission estimated the cost of administration, operation & maintenance for an average water system, a pour-flush and a V.I.P. toilet and a sanitation unit¹². The estimated monthly cost in Bolivian currency per family is indicated in the table. 1 Boliviano equals

¹² Cost calculation is based on the estimates of investment costs made previously, an estimation of the required A,O&M per year and 10% of annual inflation.

approximately 1,30 SEK. The table includes four different alternatives: the lowest cost is without operator and recovery i.e. collection of funds for replacement of the system at the end of its life time without external financing. The highest cost alternative is number 3 which includes both the payment of an operator and recovery.

Description	Water S.	Toilet	Sanitation unit
1. A,O&M with operator without recovery	2,80		0,61
2. A,O&M without operator without recovery	1,44	0,58	0,20
3. A,O&M with operator with recovery	7,82		3,03
4. A,O&M without operator with recovery	6,49	1,53	2,63

Table 3: Estimation of costs of administration, operation and maintenance

Section 3.8. includes comments on the calculated costs for A, O &M.

3.3. Administrative costs

The administrative costs for the Watsan sub-project are estimated in the table. The calculation is based on figures from 1995 and includes three levels of administration: the UNICEF offices in La Paz and Cochabamba and the NGO offices at the department levels.

Table 4: Estimation of administration cost

Item	% Watsan	% Administr.	Annual cost	Adm. cost	Financed by:
			US \$	US \$	
<i>UNICEF La Paz</i>					
Rent and utilities	6%	100%	97 411	5 845	UNICEF
Telephone and fax	6%	100%	35 059	2 104	UNICEF
Salaries co-ordination	20%	100%	62 000	12 400	Spain / Sweden
Salaries secretaries	30%	100%	23 000	6 900	Spain / Sweden
Salaries directory level	6%	100%	80 000	4 800	Spain / Sweden
Central administration	6%	100%		0	UNICEF
<i>UNICEF Cochabamba</i>					
Rent and utilities	80%	100%	1 360	1 088	Spain / Sweden
Salaries administration	60%	100%	16 500	9 900	Spain / Sweden
Salaries drivers and mess.	60%	20%	10 900	1 308	Spain / Sweden
Salaries co-ordination	80%	30%	42 700	10 248	Spain / Sweden
Office costs	80%	100%	4 584	3 667	Spain / Sweden
Equipment	80%	100%	0	0	Spain / Sweden
Telephone and fax	80%	100%	3 700	2 960	Spain / Sweden
<i>NGOs</i>					
Rent and utilities	100%	100%	1 200	1 200	Spain / Sweden & NGOs
Administration	5%	100%	50	3	Spain / Sweden
TOTAL				62 422	
TOTAL TURNOVER WATSAN 1995				513 900	
% of administration cost UNICEF BOLIVIA				12%	
% covered by UNICEF				20%	
% covered by Spain and Sweden				80%	
Additional cost recovery cost UNICEF New York				6%	

The Sida funds cover two types of administration in UNICEF, one is the so called cost recovery cost which is 6% of the total funds provided by Sweden and which is deducted directly by UNICEF Headquarters. The other type of administrative cost is the administration of the Watsan project in Bolivia. The administration in Bolivia is estimated to 12% of the total Watsan budget for 1995¹³.

20% of the administration is paid by UNICEF and the rest by the supplementary funding to the project, i.e. by Sida and the UNICEF Committee in Spain.

The level of administrative costs for Watsan in Bolivia i.e. 12%, can be considered reasonable for a programme of its size. But if the cost recovery share for UNICEF New York is included the administration costs represent 18% of the total programme costs.

Like for every development co-operation it is important that Sweden continuous to press for the lowest possible total administration costs for the projects that it supports, and that Sida negotiates with the agencies to minimise the Swedish contribution to the overall administration cost.

Again, considering only the Watsan operations in Bolivia, the costs can be considered reasonable. This also reflects the Mission's general impression — that the Watsan subproject tries to keep costs low and to use as much funds as possible for the beneficiaries. Moreover, in 1996 the cost recovery cost charged by UNICEF New York was reduced to 3% and the total administrative costs are therefore 15%.

3.4. Systems for cost calculation and cost recovery

Like many other water and sanitation projects, the Watsan subproject does not have a system for calculation of total investment cost per constructed system. The NGOs involved in the project calculate the cost of material and labour per system and community, but these calculations are not complete, since they for example, do not include cost of training in administration, operation and maintenance and the community's contribution in labour and local material.

In 1994 and 1995, UNICEF calculated the total investment cost of 67 water systems implemented by the Project. The calculation was made through a special study and therefore it is not equal to a system that continuously produces the total investment cost per constructed system.

Naturally it would be good to have a system for cost calculation since this allows comparisons between different implementation strategies and provides complete information to donors. Such a system would be relatively easy to develop, but all the same it would require development of tools and training of personnel. Considering that the Watsan subproject continuously tries to decrease investment costs, and that project urgently needs to improve several other areas, the development of a complete cost calculation system must be considered a low priority for the moment.

¹³ The administrative costs paid by the NGOs are not included in the calculation. However these costs are bound to be quite small and could increase the administrative cost by a maximum of 1%.

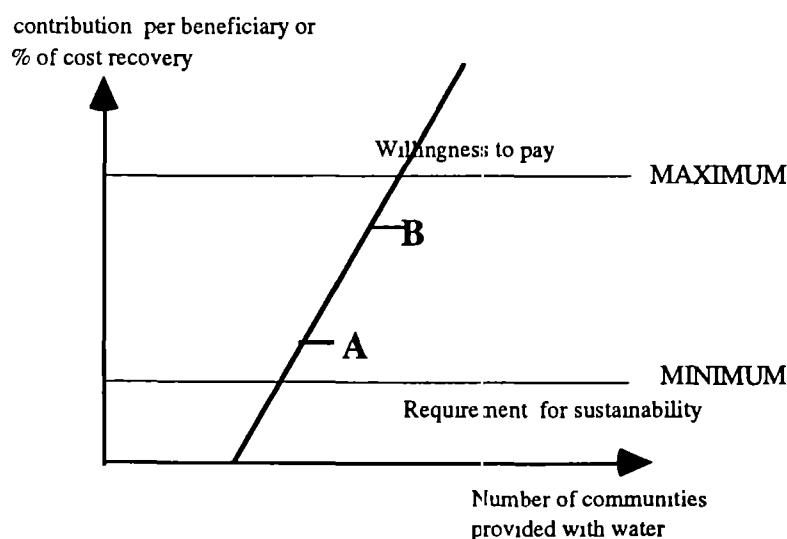
However, it is important that the project has sufficient information to make cost effectiveness analyses of different strategies for improved sanitation. Since the basis for cost effectiveness analyses is cost information, the project needs an easy system for cost calculation of sanitation interventions. Such a system can be limited to the contributions of UNICEF and the NGOs.

An analysis of the level of cost recovery must start with a definition of the term cost recovery. The degree of cost recovery is defined as the % of total investment cost that is covered by the beneficiaries. The beneficiaries' contribution can be in the form of free labour, local material and / or cash.

UNICEF applies a system where the community contributes with local material, transportation of local material and unskilled labour for the construction of the system. The degree of cost recovery varies from system to system, but according to the study of investment costs conducted in 1994¹⁴, the beneficiaries contribute on average 36% of the total investment cost. The Yacupaj project had a higher level of cost recovery for water systems than the Watsan subproject. In addition to providing local material, transportation of local material and unskilled labour, the beneficiaries paid 30% of the cost of non local material.

However, UNICEF has a higher level of cost recovery for toilets than Yacupaj. In both projects, the beneficiary contributes local material and labour, but the Yacupaj utilised more non local material for the toilets and sometimes also skilled labour. The Mission has calculated that UNICEF cost recovery rate is 65% for pour-flush toilets and 74% for VIP which should be compared to the 38% of the Yacupaj project.

The question is if UNICEF should increase the level of cost recovery. This question is very difficult to respond to since it depends on various factors. The diagram (Fig. 2) illustrates the most important factors when defining the appropriate level of cost recovery for a given type of technology and programme budget.



¹⁴ UNICEF Bolivia, The Cost of Development — Water Systems in Bolivia, Report nr 2, 1995.

Fig 2: Definition of cost recovery level

The vertical axe indicates the level of cost recovery or the contribution per beneficiary and the closer to the arrow, the higher is the cost recovery or the contribution. The horizontal axe shows the number of communities that can be provided with water.

An horizontal line marked with "maximum" indicates the highest possible level of cost recovery. This maximum level is determined by the beneficiaries' willingness to pay¹⁵ for the services. The project can never recover more than the community is willing to pay. Sometimes however, the willingness to pay can be higher than the availability of cash in a given moment of time. If this is the case, the project can give the community a credit that is amortised over time or the contribution can be given in labour or material, i.e. not in cash.

An horizontal line marked with "minimum" shows the lowest appropriate level of cost recovery. Below this level of cost recovery, the beneficiaries' contribution is not sufficient to create a feeling of ownership and can therefore harm the sustainability of the system. Sometimes it is argued that the higher the cost recovery, the higher the sustainability of the system. This argument has never been proved, and it seems more likely that as long as the contribution signifies a sacrifice large enough a higher contribution will not increase the chance of sustainability. For example, if a family has spent 20 days to carry sand and stones and dig ditches for the community water system, it is not likely that a cash contribution of 50 bolivianos will further increase their willingness to maintain the system.

The line marked with "A" and "B" shows the hypothetical number of communities that can benefit from a water system at different levels of cost recovery, given a certain amount of financing. For example with a cost recovery of 30% the project can provide 100 villages with water systems, while with a cost recovery level of 60%, 130 villages can be attended. As can be seen from this discussion, the decision of level of cost recovery, ultimately is a decision of how large subsidies should be given to how many villages.

Since no Willingness-to-pay study has been made by UNICEF, it is impossible to determine the maximum level of cost recovery possible for construction of water systems in dispersed communities in Northern Potosí and Southern Cochabamba. Yacupaj's rule of 30% of cash contribution indicates that the level of cost recovery could be higher than UNICEF's. However, it is unclear if the communities covered by Yacupaj had a better economic situation than the communities covered by the Watsan subproject. Therefore, the experience of Yacupaj does not prove that 30% of cash contribution would work in the UNICEF projects.

The Mission does not believe that UNICEF's current level of cost recovery is below the minimum level necessary for sustainability. Factors such as training of committees and

¹⁵ Willingness to pay is considered similar to the concept of demand used in economics, i.e. meaning that the person both can and want to pay for the services. The willingness to pay is therefore a function of the desire and the ability to pay.

active involvement of communities are more likely to increase the sustainability of the systems compared to increased cost recovery.

The decision regarding the level of cost recovery must be taken by UNICEF itself, but one aspect that should be considered is the financial policy developed by PROSABAR.

PROSABAR plans to demand 30% in cash contribution from the municipality and/or community benefiting from the system. However, it is not clear how this policy will be applied in practice and how large the community contribution will be. If the communities attended by PROSABAR has the same economic level as the ones benefiting from PROANDES, it would seem reasonable that the same level of cost recovery should be applied in both the projects. But if PROSABAR's financial policy in practice excludes poor communities, it is important that UNICEF continues to apply a lower level of cost recovery than PROSABAR.

3.5. Technology used for water systems

The overall conclusion is that UNICEF is using an appropriate technology in terms of its "functioning, easiness to operate and maintain and its cost". The Watsan sub-project has been successful in the technology used in the water systems.

The Watsan subproject has systematised and simplified the pre-investment phase of the projects, i.e. the methodologies used for studies and design have decreased both the time and money required. In this way UNICEF has been able to attend more communities for a given budget and time period.

The construction technology used are within the national norms but UNICEF has continuously improved it — to make it more appropriate and cheaper. The program uses a standard design and so-called politubo instead of PVC, which lowers the both the cost of material and labour.

3.6. Sanitation

The number of toilets built as well as the investment costs were presented in the sections 3.1. and 3.2.. In this section, a detailed description and analysis of the sanitation technology and work methodology will be made.

3.6.1. FINDINGS FROM THE FIELD VISITS

Four specific sanitation technologies have so far been used in the programme: the simple pit toilet, the VIP toilet, the pour-flush toilet and the cistern-flush toilet (see Appendix 4).

On the outskirts of a non-programme village in the province A. de Ibanez the Mission came across a series of traditional, very simple pit toilets built entirely from local materials, see fig 3.

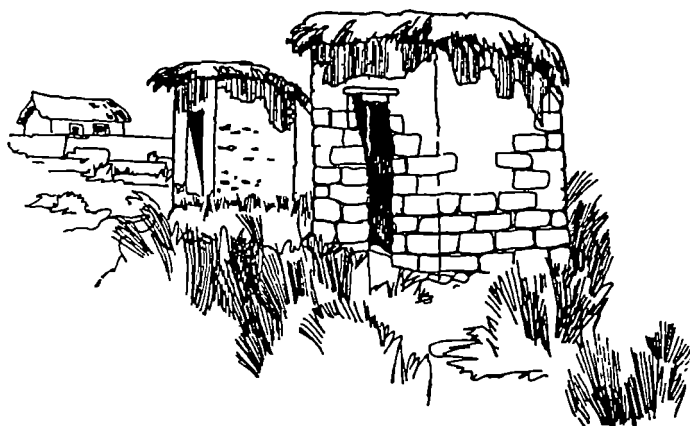


Fig 3. Self-built toilets

The toilets had been built by the villagers themselves about eight years ago on the advice of an NGO. Each toilet was used by one or two families. Some were nearly full and were to be replaced by similar structures. The toilets were completely odour-free and the contents dry due to dehydration. For a pit toilet to function like this there must normally be urine separation. Due to the low air humidity at this high level (4,000 m) dehydration of the pit content was possible without any special arrangements. (See Appendix 4: Pit toilet with urine separation, El Salvador.) In the same village there was also a more recently built school toilet which seemed to work the same way, fig. 4.

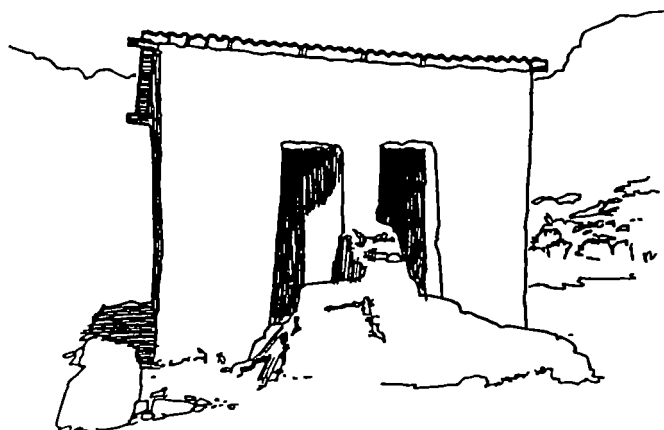


Fig 4: Community-built school toilet

In the next village, Camani, we inspected a similar toilet built by the villagers about a year ago. It was used by eight families. The toilet was already full and the contents were semi-liquid. This is what a pit toilet normally looks like and there was also a marked odour. The difference between this toilet and those previously described must be due to overload. With too many users the liquid load will be too high for the natural dehydration of the contents of the pit.

In one visited village, 12 out of 35 households had been provided with so called “VIP toilets”. Due to design and/or construction deficiencies (too narrow vent pipe, no fly-screen) none of the toilets we inspected functioned as a VIP toilet. They nevertheless seemed to work fairly well but the added VIP features (vent pipe and more walls to provide a dark interior) increased the cost without providing any benefits.

During our field visit we also came across some flush toilets of various types. Most of them were blocked and filthy. In some cases the flush system was broken. These were usually school or sport ground toilets combined with solar shower units. We also came across flush toilets under construction or just completed at private households.

All flush toilet system we have seen in the project areas have only one soak pit. The project has no experience of what happens when the soak pit has to be emptied. Moreover, there seemed to have been no effective hygiene education explaining why and how to use the toilets and on personal hygiene in relation to defecation.

3.6.2. ANALYSIS

The programme has in practice defined sanitation as the mere provision of toilets. The Mission would like to introduce a broader concept of sanitation¹⁶: “Good sanitation is a state of cleanliness and a healthy environment, free from contamination. Sanitation is the process of creating and maintaining these conditions.”

The main components of a sanitation system are nature, society, process and device:

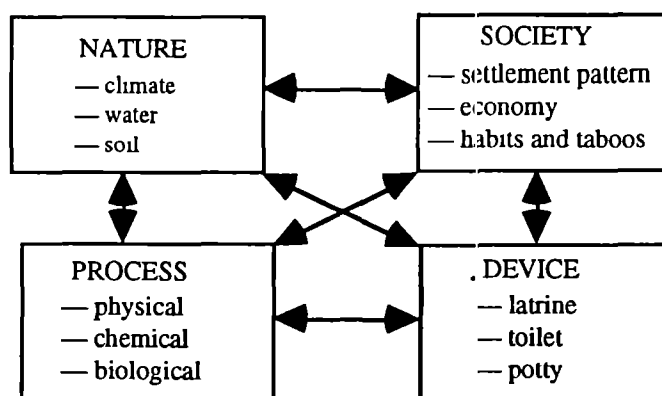


Fig. 5: Components of a sanitation system

When discussing sanitation we have to consider all these components and not only the device. The social aspects of sanitation are absolutely essential in the creation and

¹⁶ Source: WHO Working Group on Sanitation Promotion, 1995.

maintenance of a clean and healthy environment. Below each of the components are analysed for the UNICEF project area:

Nature

The project areas are located at altitudes of 3000-4000 m. The air humidity is extremely low (46%), there is little rainfall (19,7 to 140 mm per year) the ground water table is low and the solar radiation is high. Water is in short supply. There is very little vegetation and much of the ground is bare. For most of the year there are no flies. The ground is sloping steeply and the soil usually pickable.

Society

The target population is living in isolated villages consisting of small clusters of houses. 95% of the rural population is living in “poverty” or “extreme poverty” (calculated by the Unidad de Analisis de Politicas Sociales of the Ministerio de Desarrollo Humano on the basis of the 1992 census).

There seem to be no strong taboos related to the disposal or reuse of human excreta. Where well functioning toilets have been provided they are also used. People use solid materials for anal cleaning.

Process

Particularly in poor rural communities it is essential to use human excreta as fertiliser and soil conditioner. The urine and faeces excreted by one person in a year contain the nitrogen and micro nutrients required to grow the food consumed by that person. However, before reuse the pathogenic organisms in the excreta must be destroyed or rendered harmless. This can be done through a number of physical, chemical and biological processes including heating, dehydration, and decomposition.

Device

Every sanitation system incorporates some kind of device for receiving, storing and/or processing human excreta and anal cleaning material. In its simplest form the “device” is just the surface of the ground. It can also be a shallow or deep hole, a potty, a composting toilet, a flushing pan connected to soak pit or septic tank etc. Some devices have the function of receiving and temporarily storing the excreta. Others have the function of facilitating the destruction of pathogenic organisms in the faeces.

Taking all these factors into consideration, what would be a suitable sanitation device for the target communities?

- | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none">* the fact that water is in short supply indicates a <i>non-flush</i> system;* the use of stones etc. for anal cleaning indicates a <i>drop</i> technology;* the low humidity indicates a <i>desiccating</i> process;* the intense solar radiation indicates the feasibility of a <i>solar heated</i> device;* the poverty, the subsistence economy and the falling soil fertility of the target areas point at a <i>reuse</i> system, preferably based on <i>separation</i> of urine and faeces. |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Such devices do exist in various parts of the world: the in-house desiccating toilet in Ladakh, the "Septum" toilet in Sweden, the "Sirdo Seco" toilet in Mexico, the "Tecpan" toilet and the pit toilet with urine separation, both in San Salvador, the "Inodoro Abonero" promoted by FUNHABIT in the Province of Cotopaxi in Ecuador and the LASF (Letrina Abonera Seca Familiar) promoted by UNICEF in Central America (see Appendix 4). By studying each of them it should be possible to develop models suitable for and acceptable to the Watsan subproject's target communities. The conditions for a dry, reuse-based sanitation system in the project areas are in fact so favourable that a fairly simple device would do.

3.6.3. CONCLUSIONS AND TECHNICAL RECOMMENDATIONS

The general impression of the Mission is that where toilets (of whatever type) are available and functioning reasonably well they are also used.

Conventional, simple pit toilets can function very well in the project areas, particularly if the users add some dry material (soil, ash, husks) after defecation. The less urine that enters the pit, the better. Men and children should therefore be encouraged to urinate in a simple urinal outside the toilet. (The urinal could be a shallow pit filled with a mix of grass and animal manure.) This type of toilet can be built entirely with local materials, possibly with the exception of the squatting slab which for durability and ease of cleaning should be made of reinforced concrete or ferrocement.

There is a great scope for developing pit toilets of a new design, particularly adapted to the terrain (steep slopes) in the project areas.

There is no need for the VIP technology in the dry areas of the Altiplano since more cost-effective alternatives are available. Fly-breeding in toilets is not a problem at these altitudes. Thus there is no need to create a dark room above the squat hole. Nor is a vent pipe justified unless the toilet is placed close to the house.

Toilets with water-seal are not suitable where water is in short supply and where people use solid material for anal cleaning. The emptying of the soak pit is a particularly unpleasant task where there is a single soak pit.

The potential horticultural/agricultural value of human excreta seems to be virtually unknown to the villagers in the project areas. On the Altiplano there is a great scope for reusing urine and "depathogenized" faeces as fertiliser and soil conditioner. This important aspect of sanitation should therefore be included in the programme.

Toilet prototypes for reuse, so called "ecological toilets" should be developed, for instance in co-operation with the Sida-funded SANRES programme (an international R&D programme for ecological sanitation). The SANRES programme has accumulated and documented experiences of various types of dry sanitation systems in high mountain areas around the world (Ecuador, Guatemala, Mexico, Pakistan, Ladakh/India, and Bhutan). These experiences could be used in the development of sanitation systems for settlements on the Bolivian Altiplano. The Mission's impression is that natural as well as social conditions in the programme areas would make it possible to develop relatively simple but still effective and safe toilets for rural as well as urban households.

School toilets serve at least two purposes: to make it possible to keep the school compound and its immediate environment free from faecal contamination and to strengthen the health and hygiene messages of the school curriculum. As the schools in the project villages are usually small, a simple toilet similar to the pit toilet for households outlined above, might do. But to serve the second purpose the toilet should be durable, easy to use, easy to clean and odour-free. It must also have easy-to-use hand washing facilities.

A school toilet with its hand washing facilities is as much a part of the school as is the classroom. It should therefore be built together with and to the same standards as the rest of the school.

A school toilet is subject to much heavier use and abuse than a household toilet and should therefore be given a better finish, more easy to keep clean and to maintain. Considering the specific conditions in the project areas we recommend for school toilets regular pit toilets with vent pipes plus special urinals for boys as well as for girls. An alternative could be pit toilets with urine separation.

No type of communal toilet, including school toilets, can function properly without supervision and regular cleaning and maintenance.

3.7. Hygiene education

Health and hygiene promotion is the weakest component of the Watsan subproject. In some villages there has been no health education or hygiene promotion whatsoever. In other cases there might have been a few meetings or even a short course but nothing on the scale required.

As part of the programme UNICEF is providing sanitation units with solar heated showers, see fig 6 and 7. These units are usually combined with toilets. Some of them are located at schools, some at sport grounds.

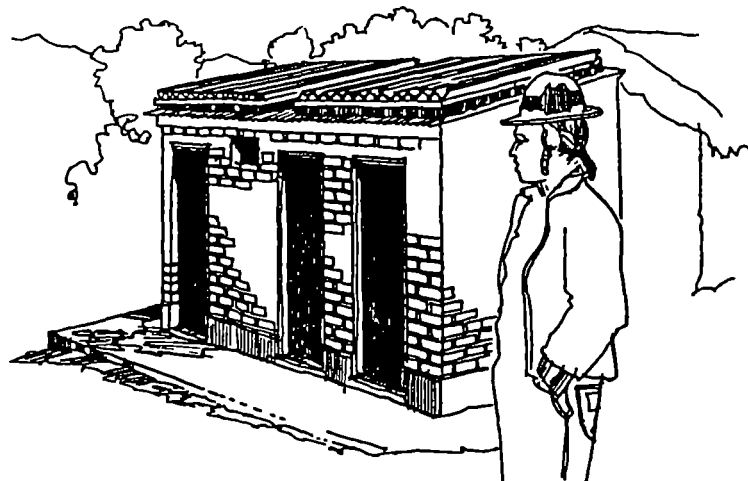
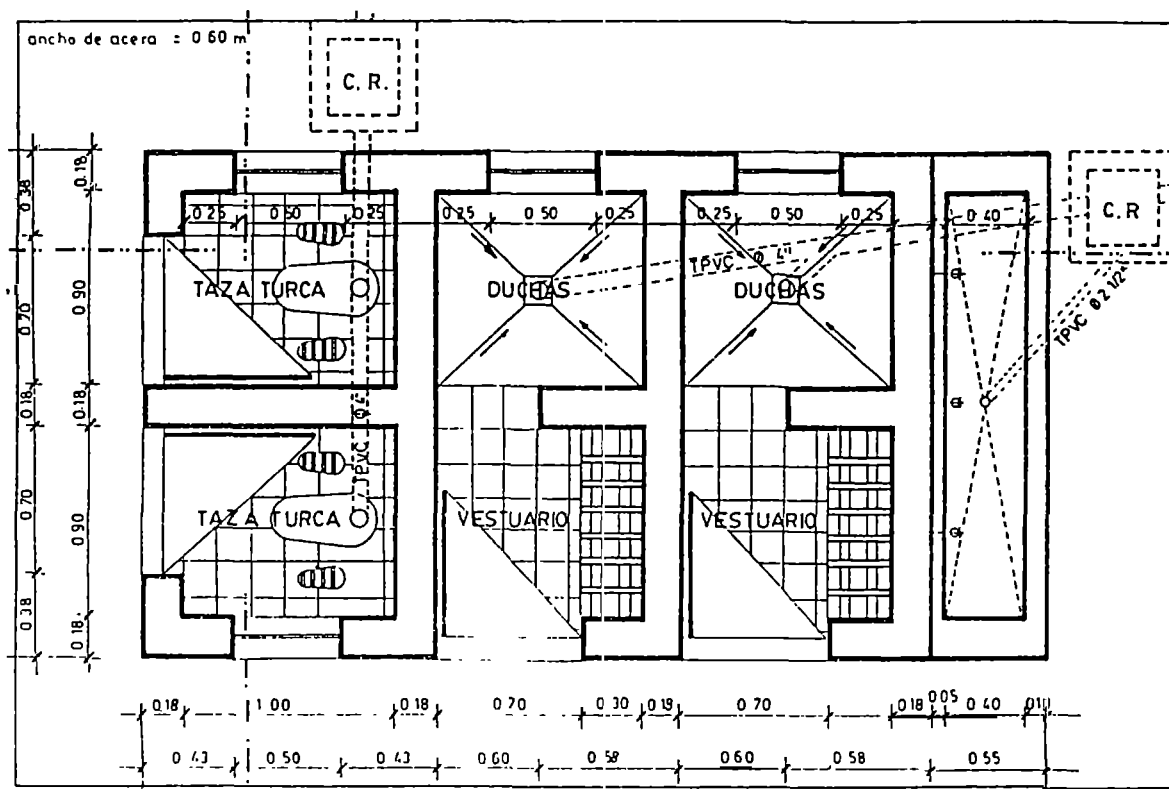


Fig 6: Shower/toilet unit with solar heater (perspective)

Fig 7: Shower/toilet unit, standard plan

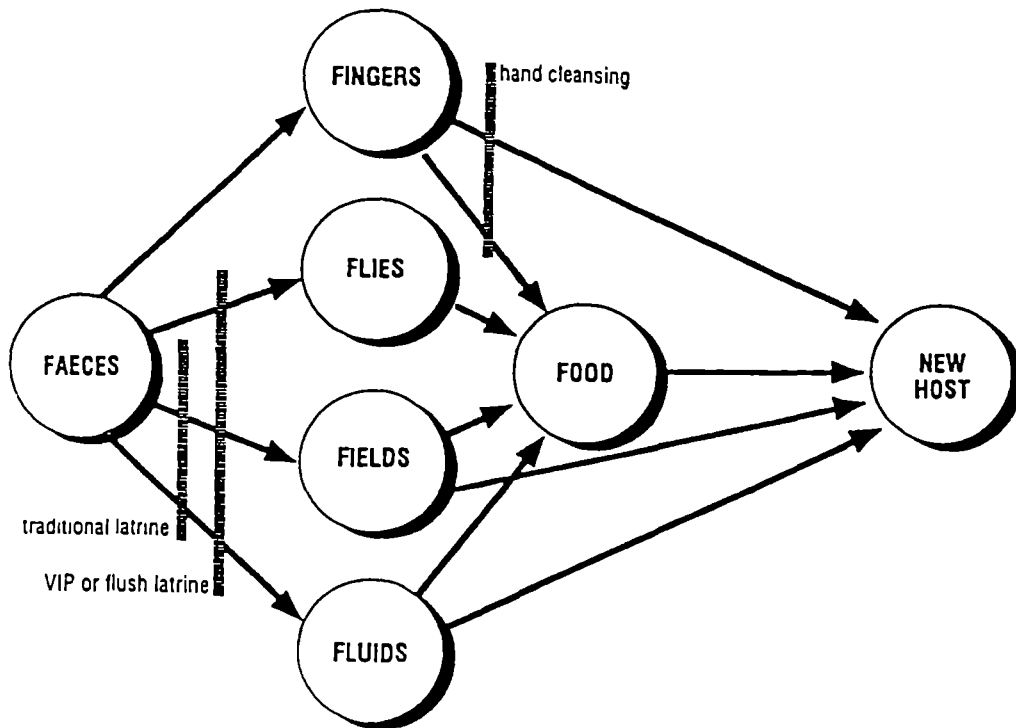


Many of the units visited by the Mission did not function properly. They are expensive and over-engineered, and the communities are not able to operate and maintain them properly.

Better health and hygiene cannot be achieved through engineering measures alone. Any intervention in the field of water supply and sanitation must be accompanied by, even preceded by, effective health and hygiene education with the participation of the total target population, school children as well as adults both men and women.

PROANDES strategy for water and sanitation is based on the assumption that to achieve its health objectives, every household must have access to high quality water supply and sanitation installations. A hygienic toilet, one which effectively isolates human faeces from the environment, is traditionally regarded as a prerequisite to improved health. In some cases it is so, but a toilet itself cannot improve health as indicated in the figure below.

Fig. 8: Faecal-oral transmission routes with some of the important barriers. The diagram illustrates the point that no toilet can prevent the spread of entero-pathogens.



Most toilet types will break the "food", "fluids" and "fields" transmission routes and some will also break the "flies" route. But no type of toilet can prevent the contamination of fingers and hands - probably the most important route for the spread of enteropathogens. Here the barrier is provided by appropriate hygiene behaviour, particularly effective hand cleansing after defecation, after handling nappies etc., and before handling food.

Epidemiological evidence shows that even in the absence of toilets, diarrhoeal morbidity can be reduced with the adoption of improved hygiene behaviours (WHO 1992). The implication of this is that hygiene interventions need not wait for the introduction of conventional toilets but should precede water supply and sanitation improvements.

3.7.1. CONCLUSIONS AND RECOMMENDATIONS

The Watsan subproject lacks a well defined strategy on how to develop the hygiene promotion component. There are no suitably trained and motivated promoters, there is little involvement of women and there is no strategy on how to reach women and children.

Water supply, sanitation and hygiene promotion are equally important to achieve a health impact — and neither is effective without the others. Our most important recommendation is therefore that Watsan must allocate much more resources to hygiene promotion. Hygiene promotion must be the starting point for any intervention.

Already when initiating contacts with the community, time should be allocated to a broad discussion of health and hygiene problems and high-risk behaviours should be identified. During this preliminary period women should be encouraged to form groups to promote such activities.

The community should select a health and hygiene representative to be given further training by the Watsan subproject. Hygiene promotion should run simultaneously with the engineering interventions and must continue until improved hygiene habits have become part of life of the target community. This is likely to take years rather than months. The intensive, time-consuming hygiene interventions required cannot be undertaken by project staff from outside the village. Community members, particularly women, must be the actual "doers" of the promotion work.

Experience from similar programmes in other parts of the world indicate that it is necessary to provide continuous training and support to the village hygiene promoters. All the hygiene promoters in a certain locality (a municipality or group of villages) should be encouraged to form a network for mutual support. Part of the project budget should be set aside for regular (monthly) meetings between the network members. During these meetings, facilitated by the implementing NGO, the village based hygiene promoters can discuss common problems, their knowledge of health and hygiene issues can be upgraded and their teaching skills improved. These meetings will also provide feedback to the NGO and eventually UNICEF on what is going on in the village.

The provision of training to primary school children in communities where watsan projects are introduced should be an important component of the hygiene and sanitation promotion strategy of this programme. In each community co-ordination and collaboration mechanisms should be established with school teachers so that they will take over the responsibility for this training to children attending the schools. UNICEF's programme should provide training to teachers, adequate educational material for each age group as well as a follow-up of the implementation.

The hygiene promotion programme for adults as well as school children should focus on the promotion of a limited number of specific hygiene habits that will be put into practice by the total population - even before water supply has been improved and toilets provided:

- washing hands after handling faeces and before handling food,
- drinking water from safest possible source,
- preventing water from being polluted when stored,
- depositing human faeces in a safe place - never on the surface of the ground,
- particular care about faeces of babies, young children and people with diarrhoea,
- serving small children only freshly cooked or re-cooked food.

The current standard design of shower units with solar heated water, see fig 7, should be completely revised as it is neither cost-effective, nor sustainable. It should be possible to develop a simple but still tough and durable solar water heater for village level operation and maintenance. There is, for instance, no need for steaming hot water. Lukewarm water will serve the purpose. There is no need for pipes, taps and shower heads. A bucket and a ladle will do. There is no need for piped drainage to a soak pit, thick brick

walls, flush-toilets etc. One possibility might be to combine the shower unit with the school greenhouse.

3.8. Equality between men and women

The 1992 and 1993 evaluations of the PROANDES programme¹⁷ concluded that women did not participate sufficiently in the Watsan subproject. The project responded to the recommendations given in the evaluations by including women's participation in decision making as one of the project targets. The target is to be achieved through two strategies. Firstly, at least 30% of the members of the water committees should be women, and secondly, women should participate in the training courses on administration, operation and maintenance.

In order to facilitate the implementation of the strategies, the PROANDES subproject of Women's Development conducted gender awareness training for NGO employees working with programme. It is estimated that the training benefited 50% of the personnel working in the Watsan subproject.

The strategies utilised by the Watsan subproject should be compared with the results from the MISSION's field visits which showed that:

- women's participation varies substantially between different communities. In some of the visited villages, women normally participate in all meetings and the villagers tend to recognise both men's and women's contribution to development. In other communities women are excluded from meetings.
- women's participation in the water projects varied between the different NGOs. Some NGOs had involved both women and men in meetings regarding the water project and women had taken part in decisions regarding the system. Other NGOs had only involved men in the project and had not even consulted women on issues such as design of laundry facilities.
- some NGOs do not have sufficient knowledge about gender issues and how promote equality between the sexes,
- the Watsan subproject eases women's work burden and can therefore make their participation in other activities, such as women's development, easier.

In order to further analyse UNICEF strategies to achieve women's participation it is useful to compare them with the strategies utilised in the Yacupaj project. The main strategies of Yacupaj were:

- that both women and men should participate in all meetings regarding the project,
- to involve women in decisions regarding the location of public standposts,
- to promote women's participation in the water committees,

¹⁷ Cortes R., Medina M., Recacochea R., Molina Rivero R., Informe de Evaluación del PROANDES — Bolivia, 1992.
Recacochea R., Informe de Evaluación de los Programas de Agua Potable de PROANDES, 1993.

- to sensitise project beneficiaries on the roles of men and women through special training sessions at the village level.

From the above it can be concluded that the Watsan subproject has tried to improve equality between the sexes, but that the strategies utilised needs to be further developed and consistently applied in all communities. The first step to improve equality is to assure that both women and men have access to information. Information is a prerequisite for decision making and must therefore be part of the strategies. This strategy was used by Yacupaj through demanding that everyone should participate in project meetings.

Another important strategy, which also was used by Yacupaj, is to involve both men and women in the process towards equality. Women's participation and empowerment are sensitive issues that change the power balance in the society. Changes in the power balance can lead to harsh experiences for both women and men. To ease the process for everyone, it is important to sensitise both men and women and to openly discuss men's and women's roles in society. Recommendations on how Watsan can promote equality between the sexes are given in chapter 4.

3.9. Administration, operation and maintenance of installed systems

The system for administration, operation and maintenance (A,O&M) of constructed systems is village based. The NGOs occasionally give some support, but in general, the community is solely responsible. The municipalities have generally not assumed responsibility for A,O&M of rural water and sanitation, but as a result of Popular Participation Law, their roles might increase in the future.

3.9.1. A,O&M OF WATER SYSTEMS

The Watsan sub-project assists the community to form village water committees which are responsible for the administration and operation of the system as well as for the supervision of the operator maintaining the system.

The operator receives a practical training through his or her participation in the construction of the system ("ayudante del albafiiil") and some operators participate in the course on A, O &M which reinforces the practical training. The water committees are given some training through "discussions" with the extension workers of the NGOs during the construction of the system. Some of the committee members also participate in the course on A,O&M which is organised by the Project.

During the village visits, the Mission analysed the knowledge and the practice of A,O&M of water systems, and the most important conclusions are presented below.

The operators generally have good knowledge of the water systems. This is probably a result of their participation in the construction, and the fact that systems use an appropriate technology which is easy to operate and maintain at village level¹⁸.

¹⁸ 95% of the water systems use only two valves and 3 plugs which is little compared to designs used by other projects.

One problem which was present both in Yacupaj and UNICEF financed projects is the dependency on the operator. In some villages the operator had migrated or moved and a replacement had not been properly trained.

Preventive maintenance is undertaken in most of the villages. The maintenance involves the cleaning of the collection and distribution tanks and is done in accordance with the recommendations of the NGOs.

The UNICEF policy and methodology for administration, operation and maintenance is not universally applied in the programme. Firstly, the NGOs have different methods for community participation and training in A,O&M at village level. For example, in two of the visited villages there were no water committees and there seemed to exist a misunderstanding between the community and the NGO about the purpose of a water committee. One of the NGOs was purchasing the spare parts to the system for the community. Both of these measures affect the sustainability negatively. It is important that the community is responsible for all the activities of A,O&M from the very beginning of the project. *The role of the NGO should be to assist not to DO!*

Secondly, a high number of water committees have not participated in the training courses on A,O&M and are therefore not prepared sufficiently. The methodology of the course is appropriate since it uses a participatory methodology and Aymará and Quechua. However, there are problems with the course objective and the participants. The objective is not clear and there is a lack of consistency between the objective and the participants. Some of the participants are neither operators nor committee members, and the Mission therefore questions the value of training them.

In most of the villages the committee is charging a monthly tariff of B 0,50 per family. This tariff was charged both in UNICEF and Yacupaj supported projects and is not based on an analysis of the cost of A,O&M. According to the calculations made in section 3.2., the tariff does not cover the costs. The communities seem to make additional collections of contributions when needed. The decision to collect a higher monthly tariff or make additional collections should naturally be made by the community, but it is important that the Watsan subproject informs the whole community of the cost and discuss the most convenient way to cover it.

From the above it can be concluded that UNICEF needs to revise its policies and methodologies for training in administration, operation and maintenance and that all NGOs must be trained in the policies. More and better preparation must be given to the community members (both women and men) and the water committees. All operators should be given reinforcement training at a special course. Moreover, for reasons of sustainability the water committees that have not received training so far, must be given that as soon as possible. Further recommendations are given in chapter 4.

3.9.2. SANITATION UNITS AND SPORT AND SANITATION UNITS

Like any other installation at village level, the sanitation units depend on the community participation for its sustainability. The UNICEF policy is that O,A&M should be done by the community themselves. For school sanitation units the teacher should also participate.

The Yacupaj project had also constructed solar heated community showers. The numbers constructed were few and the absolute majority are not working anymore. According to information only one or two units are still functioning.

The UNICEF constructed units, visited during the field study, were quite new. In some visited villages the teacher alone or together with the school committee¹⁹ had taken responsibility for the O,A&M of the units constructed in conjunction with the school. As was also mentioned in section 3.4., some units had severe problems with operation i.e. the usage of them, and many visited units had already or will face problems with maintenance. This is valid for both the showers and the pour flush toilets.

The frequency of showers, i.e. usage, per child seems to vary considerably from school to school. Units that are managed by the school teacher and where both the teacher and the parents want the children to shower, are probably used regularly by the school children. In other schools, where the teacher does not oblige the children to shower, it is doubtful how often the showers are used.

In most of the visited villages, the showers are not regularly used by the grown ups. Some community members use them but far from the majority. Especially women seemed to be hesitant and many said: "we do not know how to use them". Naturally the Watsan project can not be expected to change the behaviour of adults totally, but the Mission believes that the lack of promotion and training in hygiene and the usage of the showers, have led to less utilisation than could have been possible.

The problems of corrective maintenance that were observed and can be expected to exist in the future, are most likely due to:

- an unnecessary complicated and sensitive technology,
- that no special training has been provided on how to maintain the units,
- lack of community funds to pay for repairs, which probably is a result of too low community involvement and contribution in the construction of these units.

The overall conclusion is that UNICEF needs to accompany the construction of the sanitation units with a process of community involvement and training. Moreover, it is absolutely necessary that both the teacher and the community committee are totally committed to the unit and has discussed in detail the utilisation and the maintenance of it.

3.10. Sustainability

The sustainability of the project will be analysed from the following two perspectives:

- the sustainability of the activities of the programme, i.e. whether the NGOs can continue making investments in basic water and sanitation services after the UNICEF funding has ended,
- the sustainability of the investments as such, i.e. whether the *systems constructed* by the programme are sustainable.

¹⁹ School committees have representatives from the community and have the responsibility and the authority for the functioning of the school. The committees should exist at every school.

Due to problems with lack of human and/or financial resources, the activities of many development projects are not sustainable. The situation of the Watsan subproject is better than many other projects. The activities of the NGOs working in the Watsan subproject are sustainable considering human resources but not when taking the financial resources into account. The activities of the NGOs are almost totally financed by UNICEF, and at this point it is not possible to determine if they will be able to achieve funding from other sources when the UNICEF support is terminated. If the watsan sector in Bolivia continues to receive the same magnitude of funding as today, it is possible that the activities of the NGOs even will be financially sustainable. I.e. that the NGOs would be able to receive funding from a national entity like SIF or PROSABAR.

The sustainability of the investments made by the Watsan sub-project have been commented previously in the report. The overall conclusions are that:

- the water units are likely to be sustainable for quite some time, but improvements are needed in training for A,O&M and in tariff collection. It is impossible to foresee the number of years that a system will be sustainable since this depends on what actually happens in the village and whether the system will be affected by accidents like for example "a vehicle" breaking the tubes. The reasons why the Mission considers that the water systems are sustainable are firstly, the technology used by UNICEF, which is easily managed at the community level and has a low cost of replacement, and secondly, the considerable importance given by the communities to the water systems,
- the sanitation units constructed will have problems with their sustainability,
- when the toilets, especially the V.I.P. model, are accepted and used properly by the community they have a good chance to be sustainable since they are constructed with mostly local materials and community labour.

3.11. Project management

The issue of project management was not originally included in the terms of reference for the Mission, but Sida has asked the Consultants to comment on the method for project management based on an analysis of project documents.

Such an analysis shows that the Watsan subproject during 1995 and 1996 has used an LFA-like system for project activity plans and reports. The annual action plan for 1995 shows the number of systems planned and the expected costs and the so called "informe de avance" (the result report) for 1995 shows the number of systems built and the real cost. The Mission considers that the information is detailed enough to facilitate a donor's monitoring of project results.

4. THE WATSAN COMPONENT IN THE UNICEF PROANDES PROGRAM — RECOMMENDATIONS

Due to the technical character of the Mission, several of the recommendations given in this chapter are highly technical. All the recommendations are given to Sida but several of them concern UNICEF and can therefore be used in Sida's dialogue with PROANDES.

4.1. Continued Swedish support

Although, this report presents several shortcomings of the PROANDES Watsan subproject, the overall conclusion is that the programme has succeeded to construct many water systems in one of the most needed areas in Bolivia where few other organisations are working with basic water and sanitation.

The provinces where PROANDES is active are the poorest in the Bolivia and the health of the population in general, and of children in particular, is bad. Investments in water, sanitation and hygiene are important to decrease the infant and child mortality rates and improve the health and living conditions of the population in the area. UNICEF has developed the NGOs' capacity to implement Watsan projects, and together they have created an efficient system to construct water projects in the area. The Mission believes that this "delivery system" could be adapted to implement water, sanitation and hygiene projects i.e. real integrated projects to improve the health of the rural population in the area.

It is therefore recommended that Sida continues to finance the Watsan subproject after 1997 providing that:

- UNICEF redirects the assistance according to the recommendations given in this report,
- UNICEF continues to try to obtain funds from PROSABAR and SIF for the NGOs and the municipalities. This is necessary to decrease the dependence on Sida funds,
- UNICEF continues and strengthens its dialogue with DINASBA. The purpose is that UNICEF shares its experiences and simultaneously stays informed about the development of the sector.

It is also recommended that Sida monitors the development of the Watsan subproject and continues the policy dialogue with UNICEF. The monitoring of the reorientation of the programme should be done annually and the result should be discussed at the annual reviews of PROANDES. Moreover, after one and a half years a small study should be made of the reorientation of the Watsan subproject. Sector specialists should support Sida in the monitoring of and policy dialogue with UNICEF.

4.2. Hygiene promotion

The most important recommendation is that the Project changes its focus. Water supply, sanitation and hygiene promotion must be integrated activities. All are equally important and neither will be effective without the other.

Watsan should develop a strategy for hygiene promotion at village level. Contents of the strategy were presented in section 3.7., and in the following its main elements are summarised.

— Hygiene promotion should be the starting point for any water supply and sanitation intervention in a community. Hygiene promotion should then run simultaneously with the construction activities and continue until the desired result, a change of hygiene behaviour, has been accomplished.

— In each community the local change agent(s) must be trained, retrained, upgraded and supported over several years. This could be done through NGO-supported networks of change agents.

— School teachers should give extra training in health and hygiene for school children during the implementation of the project in the village.

— Hygiene promotion, like all other components, should utilise participatory methodologies. A limited number of specific hygiene habits should be promoted.

— If possible the hygiene promotion could be co-ordinated with the other subprojects of PROANDES, for example with the health subproject. However, the hygiene component should only be co-ordinated if the result will be good quality hygiene promotion for every village that benefit from water. The cost of the activities should also be considered. Naturally a co-ordination can be difficult if the subprojects are not active in the same villages simultaneously and if the projects have different focus. The advantages and disadvantages of co-ordination should be evaluated by the Watsan sub-project.

4.3. Sanitation

Section 3.6. contained detailed recommendations for sanitation and a summary of these are given here.

The Project needs to revise its emphasis and strategies, and the concept of sanitation should be extended from the current narrow one of “providing toilets” to the wider one of “creating and maintaining a healthy environment”.

Toilet prototypes adapted to the special circumstances in the Project area needs to be developed. UNICEF should in co-operation with DINASBA undertake a study of locally appropriate toilet models (with and without reuse) for the Altiplano environment. The results should be widely disseminated through a number of workshops. (For detailed proposal, see Appendix 5.)

— The possibility of using human urine and depathogenized human faeces as fertiliser and soil conditioner should be advocated.

— Each household should have its own toilet but these units cannot be delivered to the people — they must come about through their own efforts as a result of hygiene promotion.

— School facilities should be based on well-built, durable pit toilets and must include hand washing arrangements.

4.4. Equality between men and women

In order to further promote the equality between men and women, it is recommended that the Watsan subproject develops a more detailed strategy and that this strategy is applied by all NGOs.

The project strategy should include the following components:

— Both women and men should participate in meetings concerning the project.

— A special training session should be held in the community. The training should include an analysis of women's and men's social roles and contribution to the daily work. Moreover, the reasons why women ought to be represented in the water committee should be discussed in the session. The training should be conducted before the water committee is selected.

— Women who are members of water committees should always participate in courses on administration, operation and maintenance organised by the project. However, it is important that women's participation do not exclude men from training. Therefore, committees with female members should be allowed to send one more person to training than all male committees.

— The Watsan subproject should co-ordinate its work with the Yahui Yapina at community level. Special meetings for women could be organised through Yahui Yapina in which women are encouraged to participate actively in the watsan activities.

— In communities where the majority of the men migrate parts of year, at least one woman should be trained as operator.

In addition to the recommendations given above, UNICEF should train all NGO staff involved in the Watsan subproject in gender awareness and promotion of equality. The training should also include explanation of the improved strategy to promote equality within the project.

An assessment should be made after one year of implementation of the strategy. The assessment should analyse how the different NGOs have implemented the strategy and what effects it has had on women and men in the communities. The evaluation should of course recommend further improvements to be undertaken by the project.

4.5. Systems for calculation of costs and cost recovery

It is recommended that the Watsan subproject develops a simple system for cost calculation of sanitation interventions. The system should provide information about:

- investment costs paid by UNICEF and the NGOs per community,
- investment cost per beneficiary .

A simple system would only require a cost calculation form that includes cost of labour and material and number of beneficiaries. The form could be filled out by the NGO undertaking the work in the community and can also be the basis for payment of the NGO. The system for cost calculation should be integrated with the system to monitor and document project results.

In relation to cost recovery, it is recommended that the Watsan subproject within two years studies the economic level of the beneficiaries and the cost recovery policy of UNICEF and PROSABAR projects. The advantages and disadvantages of the different cost recovery strategies as well as appropriateness to have different strategies should be carefully assessed.

4.6. Administration, operation and maintenance of installed systems

The whole policy and the methodologies used for training of A,O&M needs to be revised and developed. All NGOs should be trained in the new policy.

It is recommended that UNICEF undertakes a study in 10 villages of how A,O&M is working, and based on the results of such study, develops the contents of the training for A,O&M.

The Mission would recommend that the following strategies are considered in the new policy:

— During at least two sessions, the A,O&M of the system should be discussed with the community members (men and women). The sessions should be conducted in the local language and utilise participatory techniques. The focus should be the need for A and M, how the water will be used, how the community can maintain its system and the role of the water committee.

— The operators should continue to participate in the construction of the system and should receive a special course, where only operators participate.

— Water committee members should be trained in the village and some representatives at a special course. The water committee should be responsible for the replacement of the operator.

— The objectives and contents of the courses for the committees and the operators should be modified based on the training needs assessment that should form part of the study mentioned above.

— The work of the water committee should be monitored and they should be visited by the NGO.

Moreover, training should be given to the water committees that have not received the full preparation i.e. the courses on A,O&M.

4.7. The re-orientation of the programme.

The recommendations given in this chapter imply a re-orientation of the Watsan subproject from the construction of water systems to an integrated water, hygiene and sanitation project. Naturally, these changes will require time and human resources and will mean that fewer water systems can be constructed per year, and that the cost per system will increase.

The re-orientation can be done in different sequences and the Mission recommends the following:

To start as soon as possible

- Initiate the short study on toilet models.
- Start the development of the new strategy and work methodology at village level for the project. This will include the development of hygiene promotion strategy, the aggregation of the strategies for equality, the sanitation promotion and the training of A, O &M. The NGOs need to be trained in the new strategy and to adapt its human resources to the new requirements.
- Start the training of the 199 committees that have not participated in the courses. The training could be done on village level or in the training centre.
- Start the study of A,O&M which will serve for reorientation of the preparation.

To begin within one year

- Start to implement the newly developed hygiene and sanitation components in the communities where water systems have been constructed.
- All new villages that are included in the Watsan subproject should receive an integrated project.
- Develop the new strategy for training in A,O&M.

5. THE UNDP-WORLD BANK PROGRAMME

The UNDP-World Bank Water and Sanitation Programme has five regional programmes. The operations in the Andean region was initiated in 1991 when the Government of the Netherlands asked the Program to implement the Yacupaj project in Bolivia.

In the fiscal year 1993/94, the operations in Bolivia was expanded to also include Ecuador and Peru, and so called Andean Network for Water and Sanitation was created. According to the Annual Report of the Water and Sanitation Programme 1993/94, "the Andean Network will act as a catalyst over the next two and a half years in an effort to develop a learning approach to the provision of services to the poor in the sub-region. The lessons are to be disseminated among donor agencies and national public and private sector institutions, both in-country and at the regional level."

The strategy was to initially focus its activities on developing monitoring and evaluation processes with governments and national institutions linked to World Bank funded investments. The Network concentrated its efforts on the Ecuador Health Project (FASBASE) and the Bolivia Rural Water and Sanitation Project (PROSABAR).

In February 1994, an agreement for funding was signed with Sida, according to which Sweden would finance administrative and operational expenses for the operations of the Programme in Laos, South Asia and the Andean region. A total of US \$ 545,000 was to be provided to the Andean operations over a three year period.

The letter of agreement between Sida and the Programme does not include any detailed project description, nor is there any special project document that specifies objectives, expected output and planned activities of the Andean operation financed by Sida²⁰. According to the agreement the objectives were to:

- create a Network of Andean countries and donors interested in the Region,
- build over time, a mechanism for systematic learning for project successes and failures in the Andean region,
- disseminate "best practices" for eventual incorporation into project design and implementation.

In 1996, it was decided to strengthen the activities of the Programme in South America. The Network was transformed into a Regional Water and Sanitation Group (RWSG-AN) similar to the ones existing in the other regions where the Programme is active. A detailed country workplan for the Andean Region was developed which covers activities in Bolivia, Peru and Ecuador . Two new staff members were recruited.

²⁰ The Country Work Plans and the Annual Reports produced by the Programme contain information about objectives and plans but only on a yearly basis. Moreover, it is difficult for an individual donor to monitor the progress based on these reports since there is no comparison between planned and achieved output.

The development of the detailed workplan forms part of the new system for monitoring and evaluation of the Programme's activities. This system is a result of the global evaluation of the Programme conducted in 1995²¹.

5.1. Programme result and relevance

The table shows the activities undertaken by RWSG-AN in the different countries and in the region since its initiation:

Year	Bolivia	Other countries	Regional	Financing in US \$	Number of staff
1991	* implementation of Yacupaj			UNDP and the Netherlands	2 persons
1992	* implementation of Yacupaj * participation in the study National System for Capacity Building in the Water and Sanitation sector			UNDP and the Netherlands	2 persons and 2 consultants for the study
1993	* implementation of Yacupaj * technical assistance for watsan pilot project in marginal urban areas in Cochabamba and Santa Cruz			UNDP and the Netherlands	
1994	* preparation of WB financed PROSABAR * documentation of the Yacupaj project * preparation of document "Water and Sanitation in Marginal Urban Areas"	Ecuador technical assistance to FASBASE, a World Bank financed rural watsan pilot programme Design of the watsan component in FASBASE		Bolivia 1 UNDP 59,816 for Yacupaj 2 UNDP for preparation of PROSABAR 3 Sweden 19,688 for co-ordinator Ecuador: UNDP 142,438 for TA to FASBASE	Bolivia: 1 persons 2 consultants Ecuador 1 person and consultants
1995	* technical assistance to PROSABAR development of financial policy and the monitoring system. * Documentation of the Yacupaj project — video and sustainability study. * One seminar to disseminate Yacupaj experiences to the sector	Ecuador technical assistance to FASBASE	* personnel from FASBASE made study visit to Yacupaj project	Bolivia and regional. 1 Sweden: 144,920 2 UNDP: 126,737 for TA to PROSABAR. Ecuador UNDP: 138,800 for TA to FASBASE	Bolivia 1 co-ordinator for 8 months, and 1 consultant. Ecuador: 1 person and consultants

²¹ An Evaluation of the UNDP - World Bank Water and Sanitation Program — Report of an Independent Team, 1996.

<p>1996 (9 months)</p>	<p>* technical assistance to PROSABAR * support to the sector 1 national seminar on institutional development * proposal for marginal urban areas</p>	<p><u>Ecuador</u> * TA to FASBASE * preparation of national rural watsan programme. * meeting with the new Government. * discussions for a project in marginal urban areas.</p> <p><u>Peru.</u> * 1 seminar to disseminate the Yacupaj experiences. * discussions for a pilot programme in rural areas</p>	<p>* development of a regional programme * contacts with different actors in the three countries. * project proposal for a marginal urban pilot project on regional level to the WB.</p>	<p><u>Bolivia and regional:</u> (6 months) 1 Sweden 127,504 2 UNDP TA for PROSABAR 3 WB 4,200.</p> <p><u>Ecuador:</u> UNDP TA for FASBASE 10,390</p>	<p>Bolivia and regional. 2 full time professional staff and 3 consultants Ecuador 1 person and consultants</p>
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Table 5: RWSG-AN activities 1991 to 1996

The table shows that RWSG-AN has had four different donors since its initiation: the Government of Netherlands, the UNDP, the World Bank and Sweden. With the exception of the small contribution from the World Bank, all donors but Sweden have earmarked their funds, i.e. the funds has been destined for certain activities such as technical assistance to a specific project.

As can be seen in the table, RWSG-AN seems to have had two phases: 1991 to 1995 and 1996 and onwards. Prior to 1996, RWSG-AN concentrated its efforts to the implementation and technical assistance to three projects: Yacupaj, PROSABAR and FASBASE. The Group was working predominately in Bolivia and to some extent in Ecuador and had no activities in Peru and only one at the regional level.

In 1996, RWSG-AN increased its activities both in each country and at the regional level. Peru was included for the first time and efforts to co-ordinate experiences between the countries were initiated.

5.1.1. PROGRESS AND FULFILMENT OF OBJECTIVES

The analysis of the progress of RWSG-AN including the fulfilment of objectives should consider both the objectives stated in letter of agreement with Sida and the objectives of the Programme itself. The objectives and strategies of the Programme is expressed in the Programme Strategy for the 1990's:

- supporting sustainable investments i.e. large projects,
- capacity building i.e. improving the rules governing the sector and enhancing performance of organisations and human resources in the sector,
- dissemination of lessons and knowledge,

As was concluded in the global evaluation of the Program, it is very difficult to measure the success of the program against the three objectives mentioned above. In order to measure the result of the Program, the evaluation team defined five statements that define the desired situation at the end of the project. These end situations were that:

- the national and local capacity at all levels would have been strengthened,
- sector policies and strategies would have been shifted away from government - driven top down approaches to decentralised and demand-driven bottom-up approaches,
- qualitative improvements would have been made in the design and implementation of large scale, sustainable investment projects,
- development and implementation of a systematic learning process for testing of new techniques,
- sector co-ordination would have improved,

RWSG-AN has, through its work with Yacupaj and PROSABAR, had an important impact on the rural water and sanitation sector in Bolivia. The Mission believes that the Group through its implementation and documentation of the Yacupaj experience influenced positively in the creation of PROSABAR. Not only has RWSG-AN assisted the World Bank and the Government of Bolivia with the design of PROSABAR but the bare existence of the Group and its Yacupaj experience has probably influenced in the decision to finance a large integrated rural water and sanitation programme.

Due to the magnitude of PROSABAR and its connection with the co-ordinating agency of the water and sanitation sector, DINASBA, RWSG-AN's work will influence the whole sector.

Several of the programmes initiatives, such as Yacupaj and the National Study for Capacity Building in the Water and Sanitation sector, have resulted in further projects or strengthening of sector, but there are also examples of where RWSG-AN has undertaken activities that appear isolated. Examples of these are the technical assistance provided to marginal urban areas in Cochabamba and Santa Cruz in 1993 which, up to now, have had little influence in the sector.

The work in Ecuador has not advanced as much as it has in Bolivia. The work has mainly consisted in the technical assistance to the implementation in FASBASE. The documentation and dissemination of experiences have not started and the experiences have not been translated into a large investment project.

As was mentioned before, up to 1996, there had been no work in Peru and hardly no work at the regional level. Recently, RWSG-AN has begun to create a network and started more activities in each country.

The conclusion is that RWSG-AN has been successful in Bolivia but has not achieved much in the other countries or at the regional level.

In Bolivia the project has achieved the objectives expressed in the letter of agreement with Sida and the objectives of the Programme. The work with Yacupaj — PROSABAR has to some extent influenced positively all the six desired situations at the end of the Programme, i.e. it has increased the capacity at different levels, the national policy has been altered to base itself on a more demand-driven, bottom-up approach, the social aspect and training has been included in large scale investments for the sector, a system for systematic learning is being introduced and the sector co-ordination has increased.

However, RWSG-AN has not completely achieved the objectives expressed in the letter of agreement with Sweden. There has been almost no interchange of experience between the countries and no network exists. What is worrying is that RWSG-AN up to 1996, seems to have done very little at the regional level. Moreover, up to 1996, it is difficult to detect the long-term objectives and strategies for how the regional co-operation should be established. Of course, it can be argued that the strategy was to gain experience with PROSABAR and to disseminate it to the other countries. This is an interesting strategy but the Mission believes that the Group could have achieved much more in the meantime, like for example organised seminars to exchange experiences between the countries.

5.1.2. RELEVANCE

RWSG-AN's work in Bolivia has been relevant both for the sector and for the beneficiaries. Yacupaj helped the target group to solve their problems with water and sanitation, and PROSABAR is an opportunity to co-ordinate and regulate the sector.

The Mission can not judge the relevance of the work in Ecuador since the country was not visited.

5.2. Influence on national policies and other projects and institutional development

The extent to which RWSG-AN has influenced national policies and other projects in the sector as well as its work with institutional development have been partially commented on in section 5.1.. Below, the conclusions are further developed.

5.2.1. NATIONAL POLICY AND INSTITUTIONAL DEVELOPMENT

RWSG-AN has had an important influence on the national rural water and sanitation policies in Bolivia. The Group has through different activities such as its work with Yacupaj and PROSABAR and the participation in the study "National System for Capacity Building in the Water and Sanitation Sector" contributed to the development of national policies in the rural area. All these activities have also led to institutional development of the sector.

The Group has, with the exception of DINASBA and the institutions working with the Yacupaj project, not interacted much with other programs in the sector. Naturally the Group has participated in sector meetings, but outside these, there has been little contact with other organisations. The Mission noted that most actors in the sector do not have an accurate idea of RWSG-AN. The Group is often referred to as the World Bank or as the Yacupaj project and none of the interviewed organisations (i.e. donors, NGOs or UN) knew the mission of RWSG-AN.

RWSG-AN has, so far, not had much influence on sector policies and institutional development in Peru and Ecuador. The main reasons are that few activities have been implemented and that, its work in Ecuador through FASBASE is in an early stage. As mentioned previously, RWSG-AN has increased its activities during 1996 which probably will result in influence on sector policies and institutional development in the future.

5.2.2. INFLUENCE ON OTHER PROJECTS

RWSG-AN has had a large influence on PROSABAR. The influence is due to the experiences of Yacupaj and the technical assistance given by RWSG-AN both in the design and the implementation of the programme. However, it is important to highlight that PROSABAR has used experiences from various projects in Bolivia. Although, Yacupaj has contributed substantially to PROSABAR, experiences from CARE Bolivia and UNICEF have also been used.

RWSG-AN and Yacupaj has so far not influenced other projects in Bolivia. The only organisations that are using experiences from the project are the NGOs that implemented it. It is probable that the strategy used for the implementation of Yacupaj i.e. to test the policies first, document and then disseminate the experiences, has led to the low impact on other projects. If other projects had been involved from the beginning of Yacupaj, the results would have been more easily disseminated.

During 1996, RWSG-AN has started to disseminate the experiences of Yacupaj — PROSABAR in Peru and Ecuador. The main focus of the dissemination has been on how a pilot project can serve as the basis to improve the sector and to develop a large investment programme.

5.3. Administrative costs

An estimation of the administrative costs of the Programme for the fiscal year 1995/96 is presented in the table:

Item	Cost paid by		Total cost US \$
	Sida	UNDP	
Administration of the Programme	29 423		29 423
Secretaries and administration staff	10 369	12 182	22 551
Purchase of office equipment	4 704		4 704
Office rent, electricity and other costs	24 108	19 920	44 028
TOTAL	68 604	32 102	100 706
Total budget for fiscal year 95/96	380 000		
Administration cost in relation to total budget	27%		

Table 6: Estimation of RWSG-AN administrative costs

The calculation includes only administration costs for the Latin American offices, i.e. the office in Washington is not included. The total administrative cost for the period is estimated to be US \$ 100,706. Sida pays approximately 68% of the total administration cost and the rest is financed by the UNDP.

The administration cost accounts for 27% of the total project cost. An administration cost of 27% is quite high and reflects the current phase of development of RWSG-AN. As

mentioned before, the Project is in the middle of a "new start". When an organisation starts its activities, it requires a larger administration to develop work plans and project proposals. The administration cost in relation to the total budget should and must go down when RWSG-AN has settled at the new level of activities.

For example, if the project proposal for water and sanitation in marginal urban areas is approved, the administration cost of the Programme would decrease. Estimating that the marginal urban water and sanitation project has the following cost data:

Administration cost of the project: (10% of total budget)	US \$ 150,000
Total project budget:	US \$ 1,500,000

When including the proposal, the total administrative costs will be US \$ 250,000 and account for 13% of the total budget, which is a more acceptable level.

5.4. Main conclusions and recommendations

The main conclusions are summarised below:

— RWSG-AN has been successful in Bolivia. The work has been relevant for the needs of both the target population and the sector.

— The Group has not achieved the objective of regional interchange of experiences and the creation of the Andean Network, which was the basis for the co-operation with Sweden.

— Since 1996 RWSG-AN has defined a strategy for how to work with the all countries and achieve its objectives. The new plans are interesting and the Mission believes that these will achieve a co-ordination and interchange of experience between the countries. Moreover, with the planned level of staff and activities, RWSG-AN has the potential to influence positively the development of the watsan sectors in the Andean region.

— The UNDP-World Bank Water and Sanitation Programme has a unique position in the water and sanitation sector which gives it the possibility to contribute to the solving of several of the common problems in the watsan sectors of different countries such as: lack of co-ordination among donors, lack of national policies and norms, a concentration on delivery of infrastructure, weak national institutions, no documentation and dissemination of experiences and lack of investment capital. However, the success of the Programme will depend on the ability of the staff at the country offices. To finance a well functioning Regional Group of the Programme is a strategic investment for Sweden.

— Sida needs to follow up the results of the UNDP-World Bank Water and Sanitation Programme more closely than previously done. A decision to finance a project should be based on a document that describes the objectives, planned activities and budgets. The current agreement between Sida and the World Bank is too vague and does not follow the normal Sida requirements.

The main recommendations are that:

- Sweden continues to finance RWSC-AN, but that other donors also should contribute. For any network it is important that various donors contribute since this facilitates the consensus building in the sector and thereby the achievement of the Programme's objectives²².
- The decision to continue Swedish financing should be based on a document that clearly describes objectives, planned activities and a budget for RWSG-AN.
- Sida monitors the results of RWSG-AN.
- RWSG-AN informs the other organisations in the sector about its existence and its objectives.
- RWSG-AN always applies a consensus building strategy i.e. tries to involve as many organisations as possible in its different activities. In order to achieve the Programme's objective of "a learning process in the sector", all activities should be based on previous experiences of different organisations and an efficient communication with the actors. This process should start from the beginning of any endeavour.

²² According to information received from RWSG-AN during the compilation of the final report, the Governments of Switzerland and the Netherlands have already confirmed their financial support to RWSG-AN. The solicited contribution from Sweden is approximately 25% of the regional budget.

6. THE PROJECT PROPOSAL FOR MARGINAL URBAN AREAS

This chapter describes and analyse the DINASBA - RWSG-AN project proposal for water and sanitation in marginal urban areas.

6.1. Description of the project proposal

In May 1996, DINASBA and RWSG-AN submitted a draft project proposal to Sida. The proposal regards a pilot project for marginal urban areas. The long term objective is to "improve the living conditions of urban poor through sustainable, improved access to water and sanitation services". The expected situation at the end of the project is:

- to have formulated sector policies and strengthened the institutions i.e. national agencies and municipalities,
- to have tested and developed institutional arrangements, financing mechanisms and technology options for marginal urban areas,
- to have provided low income population living in marginalized urban areas with water and sanitation,
- to have documented and disseminated the experiences.

The underlying strategy of RWSG-AN is to copy the Yacupaj — PROSABAR process in marginal urban areas. The Group has already discussed the possibilities for financing of a large watsan project for marginal urban communities with the World Bank, and according to the information given by the Group, the Bank is interested to finance a large investment project utilising the experiences of the project proposal.

The strategy of the project will be based on the principles developed²³ by the Nordic donor community and which were endorsed at the 1992 International Conference on Water and Environment in Dublin. When applied in the project, these basic principles will result in a demand driven approach (the project will give the communities what they want and are willing to pay for), to offer different technology and financial options and base the project on partnerships between the public and private sector and the consumers. The "Dublin" principle of women's central role is not mention in the proposal.

The project budget is estimated to US \$ 1,500,000 for a three year period and the main phases of the project are: an investigation to generate the basis for a pilot project, the implementation of a pilot project and the dissemination of the experiences.

In June 1996, RWSG-AN and DINASBA presented a proposal to the Government of Belgium which partly overlaps the document sent to Sida. The proposal to the Belgians covers the first activity to be undertaken in the project, the investigation.

²³ The principles are that (a) water and land resources should be managed at the lowest appropriate level (b) water should be considered as an economic good, (c) fresh water is a finite and vulnerable resource, essential to sustain life development and the environment, and (d) women play a central role in the provision, management and safeguarding of water.

6.2. Analysis of the project proposal and technical recommendations

The project proposal can be analysed using the concepts of relevance and viability.

The relevance refers to whether the project is solving a major problem for the target group and the sector. As was described in chapter 2, the coverage of water and sanitation in marginal urban areas is low. Although there are no studies over the consumption and cost of water and sanitation in marginal urban areas in Bolivia, it can be assumed that these Bolivians are paying more for water than the citizens that are connected to the municipal water systems. According to information from El Alto, the population that are not connected to the water system purchase water from vendors. The cost is B 5²⁴ per 200 litres which translates into a monthly cost of B 52 (for an estimated family consumption of 2100 litres or 70 litres per household per day). The B 52 should be compared to the cost of B 30 per month that municipal water companies charge for 5000 litres and more. A water system that would provide the population with better service to a lower cost is relevant to improve the living conditions of the poor in marginal urban areas. A good solution for excreta disposal — maybe in combination with washing facilities — that are considered appropriate by the population will also improve their living conditions.

Considering the low coverage of sanitation and the problems with sewage systems, the project is probably relevant to improve the health of the target group. However, the project proposal does not mention hygiene education — but the Mission takes it for granted that the project will address the health of the population and that the health hazards and its causes in marginal urban communities will also be covered in the investigation and that hygiene education, if deemed necessary to improve the health, is included in the pilot projects.

The project is also relevant for the needs of the sector. The watsan marginal urban sector is not co-ordinated, has not documented and disseminated the experience of previous projects and lacks norms and regulations. Furthermore, few actors including both donors and national organisations are working with marginal urban areas, and little funding is available. The project will address several of the weaknesses of the sector, and through the participation of DINASBA, national norms and work methodologies for marginal urban areas will be issued. The interest of the World Bank to fund a larger programme on the basis of the results of the project further adds to the relevance of the project.

The preliminary proposal does not outline the division of roles between DINASBA and the Group. Provided that DINASBA will participate in the project co-ordination (as recommended below), the project will also assist to strengthen DINASBA as an institution.

The project is also relevant for the objective of interchange of experiences between the countries in the Andean region. Most countries in Latin America face severe problems with basic water and sanitation in marginal urban areas, and the problems tend to get aggravated through the privatisation of the national water companies. Private companies normally have no interest to attend the marginal urban areas where investment costs are high due to their location and payment capacity is considered to be lower.

²⁴ The value of the Boliviano is approximately 1,30 SEK for 1 Boliviano.

The viability of the project refers to the likelihood that it will achieve its objectives. The viability concerns the question whether the planned activities and resources will lead to the achievement of the project's objectives. Due to that the proposal is still in draft version, it is not possible to assess the viability in detail, and therefore only general comments will be given.

The project as such is quite difficult. It involves the co-ordination of the sector, a thorough analysis of the situation and the implementation of several pilot projects. The level of difficulty makes the quality of project personnel extremely important both in the Group and in DINASBA. Considering that the current staff at the two institutions have experience from Yacupaj and PROSABAR and with a similar scheme in Africa, the Mission believes that they have the capacity to implement the project. However, Sweden should be careful to assess any replacement of staff at either of the organisations.

The project proposal does not delineate the responsibilities of implementation between DINASBA and RWSG-AN. The Mission considers that the active participation of both institutions is crucial for the success of the project. DINASBA's participation is necessary for its institutional development, the implementation of the developed norms and the co-ordination of the sector actors. The Group is needed for technical assistance and to facilitate the implementation of the pilot project.

The work method described in the preliminary project proposal appears to be appropriate, but the Mission would like to emphasise the need for consensus building and the utilisation of existing experiences. The project should involve the sector actors from the very beginning of the project, and their experiences should be used for the investigation. The Mission visited for example an NGO working in El Alto that had interesting experiences from basic services in marginal urban areas. The involvement of water companies, ANESAPA and NGOs working in the sector facilitate the dissemination of the project's results.

Since dissemination of results is one of the expected project outputs, the project should have a specific communication strategy including both objectives and activities.

The proposal does not give details about sanitation, but considering that few technological options exist in Bolivia, it is important that the project considers experiences from other countries and especially ecologically balanced toilets. The pour-flush toilet should not be considered as the obvious solution without investigation other options. Moreover, given the relative scarcity of water and the high cost of water born sewage, the pilot project should carefully study the financial and environmental implications of dry versus water born sanitation solutions.

The proposal defines that 20% of the costs will be paid by the beneficiaries. The Mission recommends that the percentage of cost recovery is defined in the investigation since others experiences show that the level of cost recovery could be higher.

It is important that the pilot projects are tested in different marginal urban areas that are representative for the whole country. This will facilitate the "going to scale" of the pilot project, i.e. the replication in a larger program.

6.3. Recommendations for Swedish financing

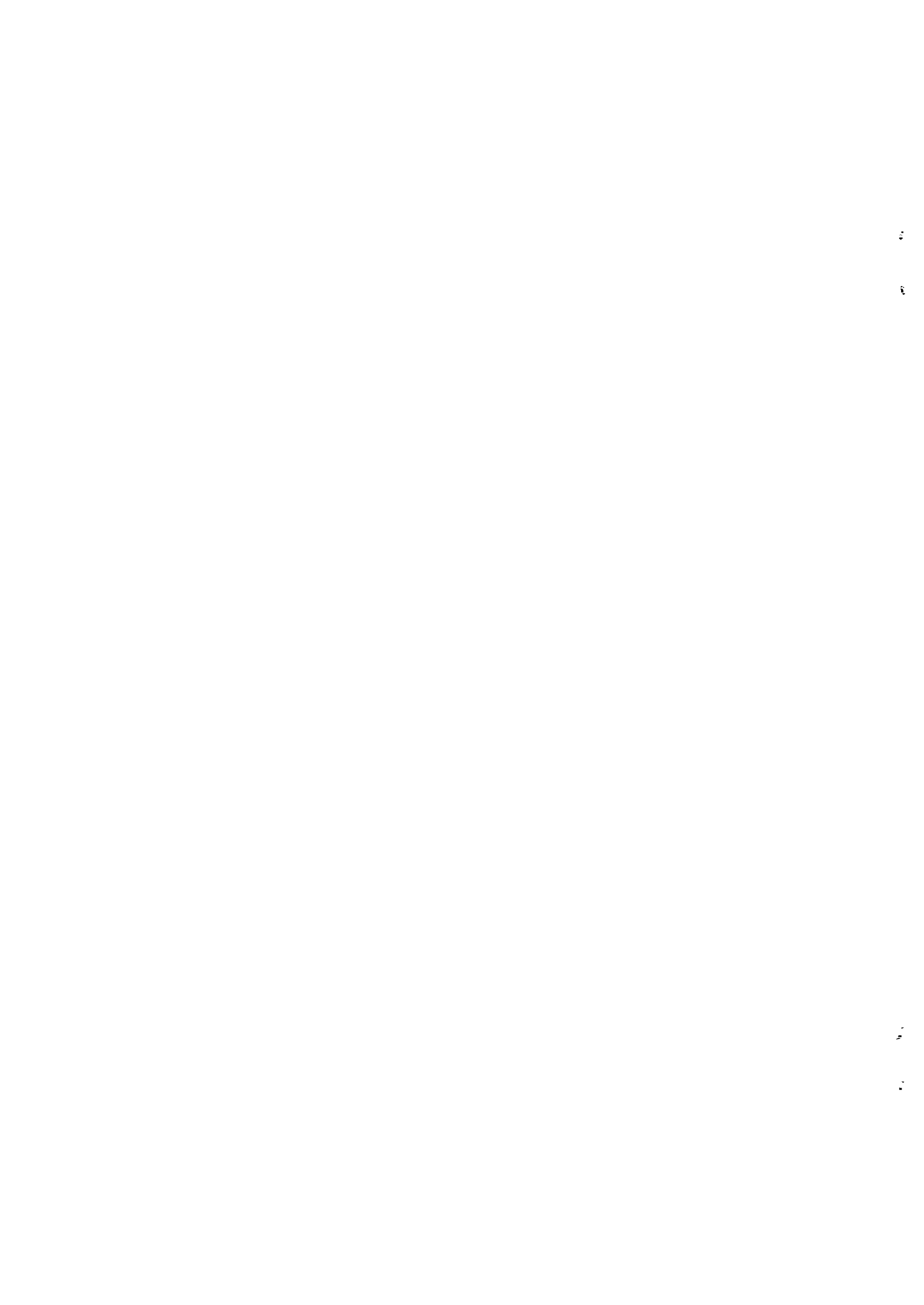
The overall conclusion is that the project, if implemented correctly, will be relevant and can be the starting point to solve the watsan problems in marginal urban areas. The Mission considers it to be a strategic investment for Sweden — a small investment with a possibility to large spin-off effects.

It is recommended that Sida considers the financing of the project, but that other donors also participate. The participation of other donors are important for the acceptance of the project results.

The following steps are recommended to further prepare the Swedish support:

1. RWSG-AN and DINASBA should prepare a detailed proposal considering the recommendations given in section 6.2.. If the first phase of the project will be financed by Belgium, the project budget should be reduced accordingly.
2. Sida should assess the proposal and the assessment should include an analysis of the activities, the budget and the prevailing institutional capacity of DINASBA and RWSG-AN. Sida should be careful to detect any changes in the capacity of the organisations compared to when this review was made.
3. Sida should monitor the results of the project annually. A mid-term assessment is recommended and the participation of sector specialists could be useful.
4. To strengthen the capacity of DINASBA, Sida could consider to earmark some of the funds of the Civil Service Reform Programme for medium level posts in DINASBA. Naturally, this should only be done if Sida considers that DINASBA's activities are vital for the development of the watsan sector.

ANNEX 1. TERMS OF REFERENCE



Department for Natural Resources and the
Environment
Bengt Johansson

1996-08-27

Dianenummer

Natur-1996-0045

**TERMS OF REFERENCE FOR A REVIEW OF SIDA SUPPORTED ACTIVITIES IN
THE WATER AND SANITATION SECTOR IN BOLIVIA**

1. BACKGROUND

Sida is supporting two different programmes related to water and sanitation in Bolivia:

- The PROANDES programme (Programa Andino de Servicios Basicos Contra la Pobreza) through UNICEF; and
- The UNDP/WB Regional Andean Network for Water and Sanitation

The PROANDES programme was carried out in a first phase between 1989 and 1993 (June). A second phase, 1993-1997 is under implementation. The total budget for this phase is USD 12,000,000. The agreed Sida-contribution for PROANDES July 1, 1993 - June 30, 1994 was SEK 7,400,00 (approximately USD 1,000,00) and for the period July 1, 1994 - June 30, 1995 SEK 10,580,000 (approximately USD 1,463,777). These contributions have been paid in full to UNICEF. The existing agreement is valid for the period July 1, 1995 - December 31, 1997 and includes an indicative contribution to PROANDES of an amount of SEK 23,400,000 (approximately USD 3,231,642). No disbursement has been made within the new agreement. Totally, beginning in 1987 and up to July 1996, Sida has disbursed SEK 39,963,000 to PROANDES. It is estimated that approximately 25% of the Swedish contribution has been allocated to the Water and Sanitation component.

The programme is working in the poorest part of Bolivia and is reaching approximately 300 000 people. An evaluation of the PROANDES programme was made in April, 1994. The evaluation did not assess the water and sanitation component in great details. Sida has in its discussions with UNICEF emphasised the importance of giving the hygiene education, sanitation and costing higher priority in the programme. This Review and its recommendations will form an important input in the discussion between Sida and UNICEF



on the content and design of a possible continued Sida support to the programme.

The World Bank is also supporting a rural water and sanitation project, PROSABAR, at a national scale in Bolivia. The PROSABAR project seems to give higher priority to the implementation of the sanitation component of the programme. Both the PROANDES and PROSABAR project could gain from increased exchange of experiences in the future.

Sida decided in December 1993 to support the UNDP/WB Regional Andean Network for Water and Sanitation in La Paz with an amount of SEK 4,500,000 during a two and a half year period. The objective of the project is to build a mechanism for systematic learning from project successes and failures in the Andean Region, for dissemination of "best practices" and for their eventual incorporation into project design and implementation. The Swedish funds are financing a Regional Coordinator, short term consultancies and specific training activities. The Sida contribution is channelled through an amendment to a Trust Fund Agreement, signed in February, 1994. UNDP/WB is responsible for the monitoring and financial control of the project. Sida has not actively followed-up the project and its results. It is envisaged that UNDP/WB will request Sida to prolong its support to the project. This Review and its recommendations will form an important input in Sida's assessment of such a request.

Sida is at present preparing a proposal on a country strategy for the Swedish bilateral cooperation with Bolivia for the period 1997 to 1999. In the referred strategy support to activities in the water sector will be considered. One possible project to be funded by Sida is the development of methods (technical, economical and organisational) to improve the water supply and sanitation in the peri-urban areas in Bolivia. A project proposal will be presented by the World Bank and a request for Swedish funding is expected shortly. This Review will provide input in a possible preparation of future Swedish support to the water and sanitation sector in Bolivia.

2. OBJECTIVE

The main objectives of the Review is to assess the progress and achievement of (i) the UNICEF/PROANDES water and sanitation component especially regarding sanitation, hygiene education and economic aspects and (ii) the Swedish support to the UNDP/WB Regional Andean Network for Water and Sanitation in La Paz. Based on the above, recommendations shall be made on corrective measures to be taken during the remaining project period as well as comments on the justification of continued support beyond the present project periods. The Review shall also comment on the

preparation of possible future Swedish support to the water sector in Bolivia.

3. SCOPE OF WORK

The Review shall include a gender perspective i.e. analysis made, statistics and results presented should, when possible, consider impact and consequences for men and women and their respective roles.

The consultant shall concentrate, but not necessarily be limited to, the following issues;

A. The UNICEF/PROANDES water and sanitation component:

- Present and assess briefly the overall progress of the water and sanitation component since its initiation in relation to agreed objectives and plans including a discussion on relevance of the component (considering the needs of the target group and other programmes in the sector);
- Assess the sanitation part of the programme including level of technology, costs and the possibilities to cover the costs locally, acceptance of technology and methods, cultural acceptance, local production, coordination with improvements of water supplies and hygiene training, training and capacity building;
- Assess the hygiene education and health training and its integration into other activities, the methods to involve the users, the production and distribution of materials (in local languages);
- Make a summary of the investment costs and costs for operation and maintenance (when applicable) of different parts of the component i.e. various types of improved water supplies, latrines, hygiene education/health training including a differentiation of community, national government and foreign contributions. The summary should be based on available reports and studies and unit costs shall be presented when possible.
- Assess the systems for costing and cost recovery including a description of the financial system(s) to organise and administer the collection and handling of funds to cover future costs for replacement and operation and maintenance including a brief discussion on the institutional and financial sustainability of the project. Comment on the policy for pricing of water.
- Present and comment on the administrative costs including the UNICEF recovery costs and other overhead costs.

- Briefly compare the methods, results, costs and experiences of the PROANDES water and sanitation component with those of the PROSABAR supported by the World Bank.
- Give recommendations to Sida on the need and appropriateness of continued Swedish support to the water and sanitation component within UNICEF/PROANDES beyond the present agreement period.

B. The UNDP/WB Regional Andean Network for Water and Sanitation:

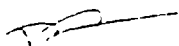
- Present and assess briefly the overall progress of the Network since its initiation in relation to agreed objectives and plans including a discussion on relevance of the project (considering the needs of the target group and the overall policies in the sector).
- Discuss UNDP/WB's work with and influence on national policies, institutional development and exchange of experiences between different countries in the region.
- Comment on its interaction with an influence on other projects such as the PROANDES and PROSABAR.
- Present and comment on the administrative costs of the Network.
- Give recommendations to Sida on the need for continued Swedish funding of the Network.

C. Procedures for the preparation of possible future Swedish support to the water sector in Bolivia

- Comment on the appropriateness of methods and concepts proposed by the World Bank to improve the water supply and sanitation in peri-urban areas in Bolivia as outlined in a project document envisaged to be presented in July 1996.
- Comment on the appropriateness of channelling Swedish funds to the project and, if appropriate, propose further steps in the preparation of such a support (possible appraisal etc).

4. Consultant

The Review shall be carried out by a team of two international consultants and one local consultant (hereinafter called the Consultant) covering relevant technical, economical and organizational aspects. The Consultant shall be able to work in the Spanish language and have knowledge of the region and its characteristics.



One of the members of the consultant team shall be appointed as a team leader and will be responsible for the elaboration of a joint report from the Review.

It is envisaged that one or two professional staff at relevant ministries or authorities will participate in the Review and provide technical and other background information to the Team. The professionals will not participate in the writing of reports.

5. Reporting

The report is to be the product and responsibility of the two international consultants, each one contributing certain sections as agreed within the team and in addition, offering professional views on all sections of the report.

The team leader shall be responsible for the planning and co-ordination of the mission, the distribution of work and responsibilities among the team members and the finalization and presentation of the report to Sida.

The Consultants shall present draft written conclusions to relevant line ministries, UNICEF and the Sida representative before departure from Bolivia. It is envisaged that such a presentation will be made in one joint meeting in La Paz.

The Consultant shall present a Draft Report to Sida in 5 copies not later than two weeks after finalizing the field-visits.

The Consultant shall present a Final Report to Sida in 5 copies not later than two weeks after receiving SIDA's comments on the Draft Report.

All reports shall be written in the English language. The Executive Summary of the report shall also be presented in the Spanish language. The Consultant shall, on request from Sida, be prepared to translate the entire report into Spanish.

6. Time schedule

The Review will be carried out in September 1996. It is envisaged that field visits are undertaken during one week and visits to relevant ministries and other organisation in La Paz are undertaken during one week. If needed, one of the international consultants may spend a third week in Bolivia for additional interviews and field visits.

ANNEX 2. LIST OF PERSONS INTERVIEWED

In Sweden

Gardell Kristina, DESO/Halso, Sida
Johansson Bengt, Natur/Afrika, Sida
Olstedt Ann-Charlotte, DESO/Und, Sida
Sjöman Lena

In Bolivia

Allaga D.M. Pedro A., División Técnica, ANESAPA
Alvéstegui Alfonso J., Asesor Técnico Nacional, PROSABAR
Aramburo A. Joaquín, Jefe Regional de Operaciones, FIS
Aristizabal Gladys, Consultor, Programa PNUD - Banco Mundial de Agua y Saneamiento
Bartelink Alexander, Primer Secretario, Embajada de los Países Bajos
Bracamonte Juan, Consultor UNICEF, Federación de Campesinos
Caceres Humberto, Consultor, Programa PNUD - Banco Mundial de Agua y Saneamiento
Camacho Alvaro, Consultor, Programa PNUD - Banco Mundial de Agua y Saneamiento
Camarlinghi Laura, Oficial de Capacitación, UNICEF
Candarillas Dante, ex extensionista Proyecto Yacupaj, IPTK
Chumacero Virginia, Asesora Social Departamental, PROSABAR
Copaja Angel, Director, SEMDE
Cornale Guido, Oficial de Programas, UNICEF
De Ruiz Lourdes, Directora Ejecutiva, PROSABAR
Flores Dilma, Oficial, Embajada de Suecia
Gomez Rosario L., División Desarrollo Recursos Humanos, ANESAPA
Gustafsson Catharina, Coordinador Svalorna Bolivia
Jara Jorge, Representante, UNICEF
Loez Magno Norman, Director Area Chayanta, IPTK
Mathys Alain, Regional Manager, Programa PNUD - Banco Mundial de Agua y Saneamiento
Mejía Gastón, Director Ejecutivo, PROA
Murillo Mirtha, Responsable de Sistema de Información
Navarro A. Erico, Director Nacional de Saneamiento Básico, Ministerio de Desarrollo Humano, Secretaria Nacional de Participación Popular, Subsecretaria de Desarrollo Humano
Pacheco Winston, Gerente Administrativo y Financiero, PROA
Paredes Benjamin, Director Ejecutivo, CENATEC
Paredes Teodicio, Director de Obras, Visión Mundial
Pasos César, Coordinador PROANDES, UNICEF
Raúl Bascón, Jefe de Area — Vivienda, PROA
Robbets Jan, Primer Secretario, Sección de Cooperación para el Desarrollo, Embajada de Suecia
Ruizara Oswaldo, ex extensionista Proyecto Yacupaj, IPTK
Sanchez B. Oswaldo, Consultor Nacional en Ingeniería Sanitaria, Fondo Nacional de Desarrollo Regional
Soto Bety, Asesora Social
Torrico Enrique, Jefe de Departamento de Saneamiento Básico Rural, Ministerio de Desarrollo Humano, Secretaria Nacional de Participación Popular, Subsecretaria de Desarrollo Humano
Urbe José, Jefe de Proyecto Consultorias, PROA
Vera Rafael, Consultor, Programa PNUD - Banco Mundial de Agua y Saneamiento
Walker Ricardo Contreras, Director de Agua, Federación de Campesinos
Wolf Alfredo, Asistente de Saneamiento Básico, CARE
Yamashita Kayo, Experto Asesor para DINASBA, JICA

Zuleta José, Oficial de Agua y Saneamiento Proandes, UNICEF

Visted villages

Yacupaj projects in Potosí

- * Chacapampa, Chayanta province
- * Kancha, Chayanta province
- * Patahuayllas, Chayanta province
- * Tomaicuri, Chayanta province
- * Balsera Pampa, Chayanta province
- * Lucas Kahua, Chayanta province

Unicef project in Potosí and Cochabamba

- Kamami, Bustillos province
- Jiskanki, Bustillos province
- Phalawkami, Bustillos province
- Pongoma, Bustillos province
- Cutimarca, Bustillos province
- Nueva Palca, Bustillo province
- Cayo Cayo, Ibañez province
- Caywani, Ibañez province,
- Jistarata, Bustillos province
- Cochini, Ibañez province
- Layupampa, Ibañez province
- Quequesana, Ibañez province
- Tolapampa, Bolívar province, department of Cochabamba
- Malchochapi, Ibañez province
- Vila Vila, Ibañez province
- Chirocasa, Charcas province
- Llallawani, Bilbao province
- Chacatani, Bilbao province

ANNEX 3. LIST OF WRITTEN SOURCES

Aguilar O , Blanco G., Cáceres H., Proyecto de Saneamiento Basico Rural en Comunidades Dispersas de Potosi "Yacupaj" — Informe de Evaluación Final, PNUD / Banco Mundial Programa de Agua y Saneamiento, 1994.

Alvestegui A., Opciones Tecnicas — Niveles de Servicio, PROSABAR, 1995.

An Evaluation of the UNDP-World Bank Water and Sanitation Program — Report of an Independent Team, The World Bank, 1996.

Cortes R., Medina M , Recacochea R., Molina Rivero R., Informe de Evaluación del PROANDES — Bolivia, 1992.

Different training manuals produced by SEMDE and UNICEF.

Draft Country Workplans Andean Region FY96, UNDP - World Bank Water and Sanitation Program, 1996

Letter of Agreement between the Swedish International Development Authority and the International Bank for Reconstruction and Development and the International Development Association concerning Swedish Support of the UNDP - World Bank Water and Sanitation Program.

Mejoramiento de las Condiciones de Saneamiento Básico en Zonas Urbano — Marginales — Presentación de la Propuesta, Programa PNUD / Banco Mundial de Agua y Saneamiento, 1996.

Planes de Accion Anuales 1995 y 1996 — Proyecto 04 "Agua y Saneamiento".

"Proyecto Yacupaj" Bol/90/004 — Informe Final, Programa PNUD / Banco Mundial de Agua y Saneamiento, 1994.

Rebublica de Bolivia Ministerio de Desarrollo Humano, Subsecretaria de Desarrollo Urbano, Dirección Nacional de Saneamiento Básico con la cooperación del Programa PNUD / Banco Mundial de Agua y Saneamiento y la Agencia General de Cooperación para el Desarrollo del Gobierno de Belgica, Diagnostico e Identificación de Principios y Estrategicas de Saneamiento Básico para Zonas Urbano-Marginales de Bolivia — Documento de Proyecto, 1996.

Recacochea R., Informe de Evaluación de los Programas de Agua Potable de PROANDES, 1993.

Republic of Bolivia, National Directorate of Water and Sanitation DINASBA, Peri-Urban Water Supply and Sanitation in Bolivia — a New Strategy for Poor Urban Dwellers — Project Proposal Draft 1, Programa PNUD / Banco Mundial de Agua y Saneamiento, 1996.

Resumen de Politicas y Estrategias de Implementación del Proyecto Yacupaj, Programa PNUD / Banco Mundial de Agua y Saneamiento.

Sara J , Gross A., Van den Berg C., Rural Water Supply & Sanitation in Bolivia — From Pilot Project to National Program, UNDP - World Bank Water and Sanitation Program, 1996.

Final report

Soto T. B., Cortés G.G., Caviedes S. E., Yacupaj Sustentabilidad de los Servicios de Agua y Saneamiento, Programa PNUD / Banco Mundial de Agua y Saneamiento, 1995.

Staff Appraisal Report — Bolivia Rural Water and Sanitation Project, The World Bank, 1995.

UNDP-World Bank Water and Sanitation Program, Annual Report July 1994 — June 1995, IBRD / The World Bank, 1996.

UNICEF and Government of Bolivia, Master Plan of Operations — Country Programme of Cooperation 1993 - 1997.

UNICEF Bolivia, The Cost of Development Report 2 — Water Systems in Bolivia, 1995.

UNICEF, Programme Document PROANDES, 1995.

ANNEX 4

Non-conventional sanitation solutions of potential interest to UNICEF's PROANDES programme

Pit toilet with urine separation

UNICEF's watsan programme in El Salvador has found that conventional pit toilets function much better with urine separation. When only faeces plus the material used for anal cleaning are dropped into the pit the contents rapidly dry, they do not smell and fly-breeding is no problem.

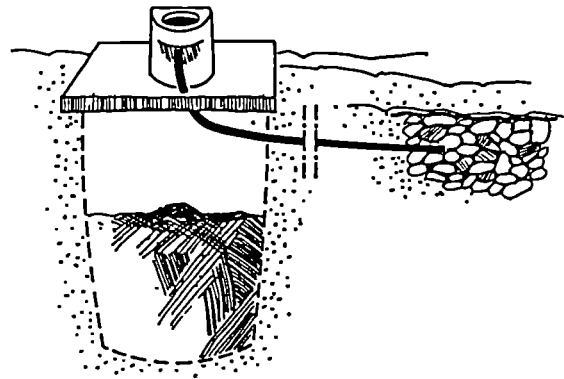


Fig A4-1: Pit toilet with urine separation, El Salvador

The figure above shows this latrine with a seat, as built in El Salvador. For use in Bolivian rural areas it should be equipped with squatting slab, see figure below.

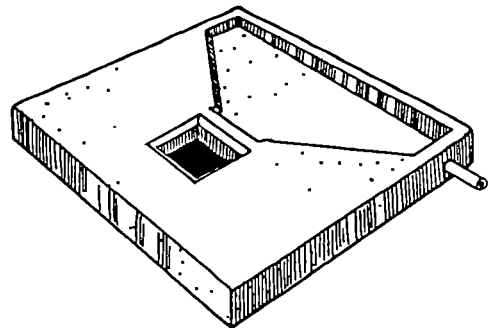


Fig A4-2: Squatting slab with urine separation

Urine can be directed into a shallow soakpit, but a better solution would be to collect it in a container and, after dilution, use it as a fertilizer in garden or greenhouse.

Indoor, dry earth-toilet

Ladakh is a dry highland in the western Himalayas. Natural conditions are similar to those of the Altiplano. In Ladakh most houses have indoor toilets which are on the upper floors. On the floor of the toilet room there is a thick layer of soil from the garden. In the floor a drop-hole leads to a small ground-floor room. This room can only be reached from the outside, see figure A4-3.

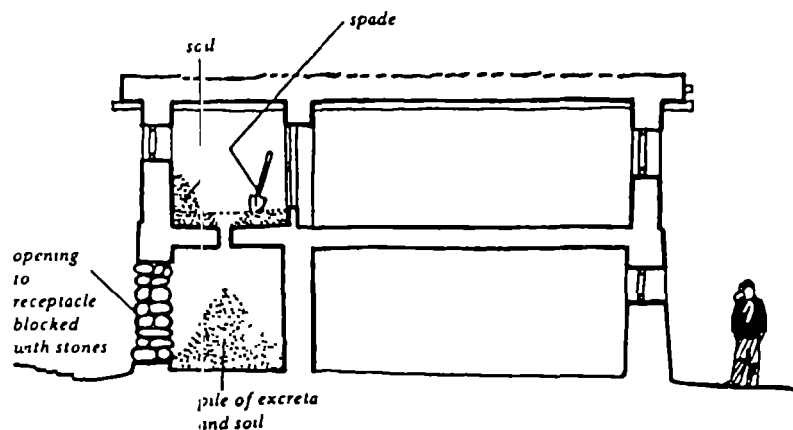


Fig A4-3: Section through a Ladakhi house with indoor, upper-floor earth toilet

People excrete on the soil which is on the floor. Then they push soil and excreta together down the drop hole. They may add ashes from the kitchen.

The entrance of the ground-floor room is blocked with stones. The dehydrated and depathogenized faeces are removed in spring and autumn and spread on the fields.

The LASF toilet

The LASF, *Letrina Abonera Seca Familiar*, is a Central American adaptation of the double-vault Vietnamese toilet. This type is suitable when households want to use urine and depathogenized faeces as fertilizer and soil conditioner. Fig A4-4 shows the Vietnamese original.

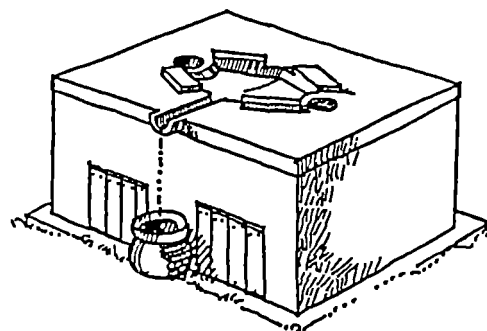


Fig A4-4: Toilet for fertilizer production, Vietnam

The toilet vaults (chambers) are built entirely above ground from stone, bricks or adobe. They are covered with a squatting slab made of concrete. Urine flows into a container. After dilution with 5 parts of water the urine is used in the garden as a fertilizer.

Only one drop hole is used. The other one is covered with a stone. Each time they defecate, people sprinkle ashes or a soil/lime mixture on the faeces. When the first vault is nearly full it is topped up with earth and the drop hole closed. The other drop hole is now used. When the second vault is nearly full, the first one is opened and emptied. The contents are used as fertilizer.

A solar heated toilet

UNICEF in Guatemala and El Salvador has together with the Sida-funded SANRES programme been testing some versions of a solar-heated desiccating toilet with urine separation. The main purpose of the solar heater (a black painted aluminium lid facing the sun) is to increase the evaporation of excess liquid from the desiccation chamber, see figure A4-5.

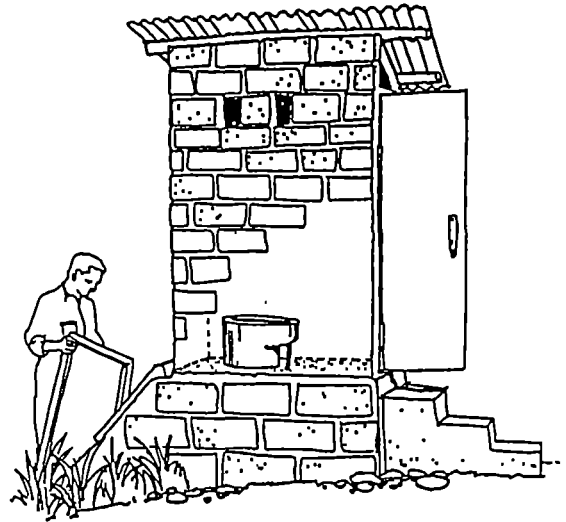


Fig A4-5: Solar-heated, desiccating single vault toilet, El Salvador

The solar heater is probably not necessary in areas where the air humidity is as low as on the Altiplano. This has to be tested though.

Another version of the solar-heated toilet is used in Ecuador. There it is called the “Inodoro Abonero” and has two chambers and a vent pipe. This type of toilet has been promoted by the Fundacion Ecuatoriana del Habitat (FUNHABIT), see fig A4-6.

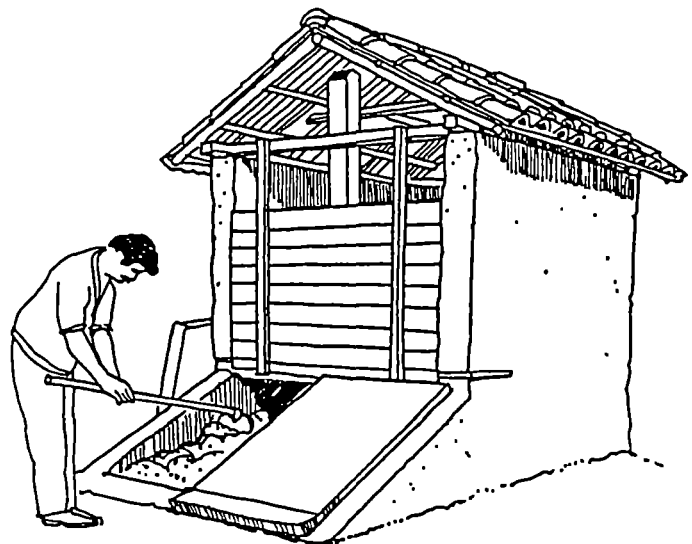


Fig A4-6: Solar-heated, desiccating double vault toilet, Ecuador

Indoor, dry earth-toilets in Sweden

Non-conventional sanitation is not only for poor communities. In Sweden a number of high standard desiccating and composting toilets have been on the market for many years. Fig A4-7 shows one example based on urine separation and desiccation. The urine is stored in an underground tank and collected periodically by nearby farmers. The system is often combined with on-site treatment of grey-water (water from kitchen, bath and laundry).

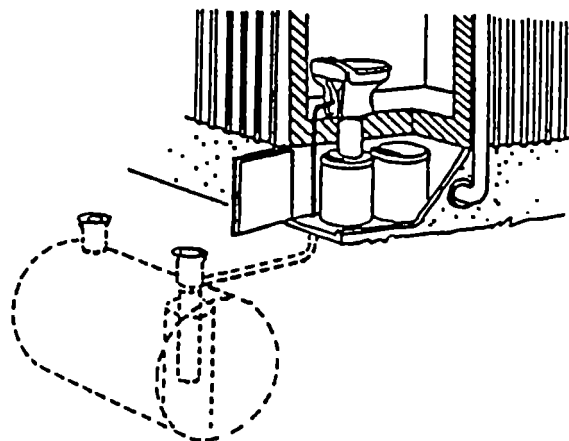


Fig A4-7: Desiccating toilet with urine separation, Sweden

ANNEX 5. DRAFT OUTLINE OF PROPOSED WORKSHOP FOR THE DISSEMINATION OF A NEW SANITATION TECHNOLOGY

Purpose

To disseminate the findings of a proposed study of sanitation alternatives for Altiplano conditions.

Participants

Government and ESA officials involved in rural and urban sanitation, NGO staff, extension workers. Max 20 participants per workshop.

Duration

Four days, including practical work.

Curriculum

Mornings are devoted to lectures and discussions on the theory and practice of ecological sanitation with special reference to the conditions on the Altiplano. Human excreta as a problem. Human excreta as a resource. Health risks. Pathogen destruction. The properties of urine and faeces. Problems and risks. Fertilizer potential. Case studies. Social marketing. Follow-up.

Afternoons and evenings are devoted to practical work. Construction of full-scale prototypes.

Facilities required

Course centre with lecture room and accommodation. Storage room for building materials and tools. Back-yard for construction.

ANNEX 6. SUMMARY OF RECOMMENDATIONS

Below the general recommendations are summarised. The purpose of the summary is to facilitate Sida's dialogue with UNICEF and UNDP-WB. The detailed technical recommendations are not included in this summary but references are given when this is applicable.

Part 1: Recommendations UNICEF

SECTION IN REPORT	RECOMMENDATION	ACTION PROPOSED TO BE TAKEN BY	PROPOSED TIME FRAME
4.1. Continued Swedish support	1. Sida should consider further financing provided that UNICEF: a) redirects the programme, b) continues to opt for financing from national sources, c) continues its dialogue with DINASBA 2. Sida should monitor development of WATSAN and continue policy dialogue	For (1) a) to (1) c) UNICEF, For (2) Sida	Continuous activities
4.2. Hygiene promotion	1. Change the project's focus towards integrated project 2. Develop a strategy for hygiene promotion (technical recommendations included)	UNICEF	As soon as possible
4.3. Sanitation	1. Revise emphasis and strategies 2. Develop toilet prototypes 3. Revise the design of solar heated showers "sanitation units" (technical recommendations included)	For (1) & (3) UNICEF For (2) UNICEF in coop. with DINASBA	As soon as possible
4.4. Equality between men and women	1. Develop a more detailed strategy (technical recommendations on strategy content included) 2. Train NGOs on basic gender theory and the new strategy 3. Assess the strategy after one year of implementation	UNICEF	(1 and 2) during 1997. (3) during 1998
4.5. Systems for cost calculation and cost recovery	1. Develop simple cost calculation system (technical recommendations included) 2. Analyse the advantages and disadvantages of the cost recovery policy used by PROSABAR	UNICEF	(1) during 1997 (2) when PROSABAR is more functional
4.6. Administration, operation and maintenance of installed systems	1. Undertake a study of A, O & M in 10 villages or so. Based on study results redesign the policy and methodologies used for training (technical recommendations are included) 2. Train the communities which have already got the water systems but which have not received the full training in A,O&M	UNICEF	(1) during 1997 (2) continuous activity to be completed within 2 to 3 years

Part 2: Recommendations RWSG-AN

SECTION IN REPORT	RECOMMENDATION	ACTION PROPOSED TO BE TAKEN BY	PROPOSED TIME FRAME
5.4. Main conclusions and recommendations	<ol style="list-style-type: none"> 1. Sida needs to follow up the results of the UNDP-WP programmes more closely 2. A decision to finance a UNDP-WB should be based on a project document which describes objectives etc.. 3. Sida should consider future funding possible 	Sida	Continuous activities
5.4. Main conclusions and recommendations, cont.	<ol style="list-style-type: none"> 1. RWSG-AN should inform other actors in the sector about its existence 2. RWSG-AN should utilise a consensus building strategy 	RWSG-AN	Continuous activities
6.2. Analysis of the project proposal and technical recommendations	<ol style="list-style-type: none"> 1. Both DINASBA and RWSG-AN should participate in the implementation 2. Consensus building strategy should be used to involve the actors from the beginning in the project 3. A special communication strategy should be developed 4. The financial and environmental implications of dry versus wet sanitation should be analysed 5. Health and hygiene problems should be included in the diagnostic survey 6. The percentage of cost recovery should be defined in the diagnostic survey not before the study 7. Pilot projects should include different national conditions 	<p>(1) DINASBA and RWSG-AN</p> <p>(2) to (7) the project implementators</p>	<p>(1) to (3) as soon as possible and also continuous</p> <p>(4) to (7) during the project implementation</p>
6.3. Recommendations for Swedish financing	<ol style="list-style-type: none"> 1. Sida should consider financing, but other donors should also participate 2. A new detailed project proposals should be developed 3. Assessment of the proposal 4. Earmark funds from Civil Service Reform for DINASBA 5. Monitor the project results annually and a mid-term assessment 	<p>(1) and (3 to 5) Sida</p> <p>(2) RWSG-AN</p>	

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STYRELSEN FOR INTERNATIONELLT UTVECKLINGSSAMARBETE

105 25 Stockholm, Sweden

Tel: 08-698 50 00. Fax: 08-20 88 64

Hemsida: <http://www.sida.se>

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