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Evaluation of Inter Aide France's water supply projects in Ethiopia

English report

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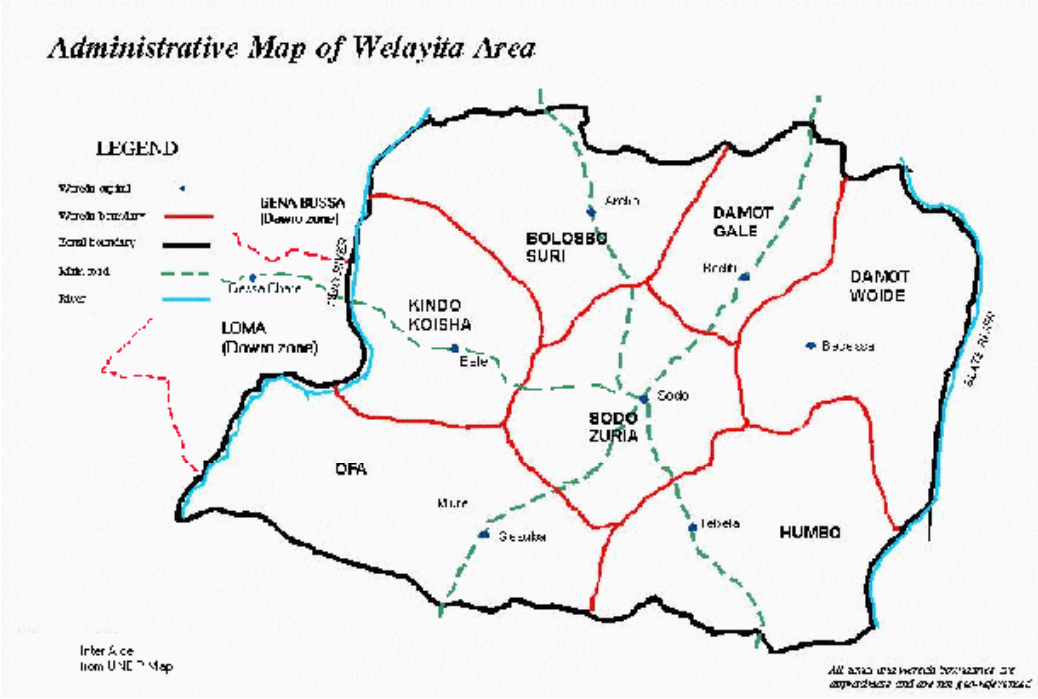
GENERAL BACKGROUND

I. DESCRIPTION OF THE AREA

The water supply projects of Inter Aide France have been implemented in the Southern Nations, Nationalities and People Region, specifically in the Wolayta zone. In this zone two projects have been operating: the Bele Water Supply project in the Kindo Koysha *wereda*, and the Gesuba Water Supply project in the Ofa *wereda*. The BWS project is extending on to the neighbouring *wereda* across the Omo river, in Loma Bossa (Dawro zone).

Kindo Koysha and Ofa *wereda* are two different valleys presenting lowland plateaux (1,000 to 1,300 m altitude) surrounded by highlands and ridges up to 2,400 m. Geographic and agro-climatic conditions have created three kinds of habitat:

- Lowlands (800 - 1,300 m), where water is scarce and soil is not very fertile. Climate is also warmer and drier in these plains where malaria mosquitoes and tsetse flies are found. Although unpopulated at first, these lands are being settled due to demographic growth.
- Midlands (1,300 - 1,700 m), where there are more springs and a more fertile soil, that can easily be farmed.
- Highlands (1,700 - 2,500 m), where precipitation and springs are even more frequent, the soil is very fertile (but sometimes harder to farm due to its uneven topography), and living conditions appear to be easier than in the two other areas.



Most families are farmers with some livestock (mostly cows, a few goats, sheep and poultry) and live in traditional houses scattered throughout the fields (no real grouped villages). The average family plot is about half an hectare, including the house.

II. WATER SUPPLY SPECIFICITIES IN THE AREA

Except in the lowlands, water resources are not scarce compared to arid zones elsewhere in Ethiopia and East Africa. But the population density (around 300 to 400 inhabitants per square kilometre on the average, up to more than 500 in some areas) is enough to make water supply difficult during dry seasons and highly dependent on precipitation.

As the settlement is rather spread out, most of the families are far from natural water points (springs, streams, ponds and rivers). The average distance to reach these water points appears to be greater than a 30-minute walking distance, discouraging families from fetching as much water as desired, because of the fatigue and the time involved in fetching water.

Outside of the project sites, most of the springs are not channelled to allow for a proper water supply, and cattle also use the same streams and rivers to drink. This results in a very poor quality of water.

Parasites are common for both humans and livestock (especially a type of leech that settles in cows throat), as well as many other waterborne diseases for humans (diarrhoea, intestinal parasitoses, skin diseases, etc.)

Family's water is stored daily in a traditional pot placed in a hollowed spot on the earthen floor of the house, and is often left uncovered. Users draw water from the pot by dipping a cup into it. Cups, like other utensils, are often stored on the ground, and are left exposed.

The small amount of water stored does not generally allow for washing cups, dishes and other utensils. Washing habits are difficult to appraise exactly, but it seems that the water restriction prevents many people from washing:

- their hands regularly before meals or after using latrines
- their feet daily after field work
- their clothing much more than once a month
- their children's face much more than once a week
- their bodies regularly

This situation is, of course, not as bad for families living near a spring, a stream or a river.

Except the water systems constructed by Inter Aide, the only other functional distribution networks are in the administrative centres of the two *wereda*, the towns of Bele and Gesuba. These water systems are operated by employees of the town council, and users have to pay for the service.

A few other water systems have been constructed by governmental agencies or NGOs, using boreholes or spring catchments and powered pumps (which requires payment from users to cover operational costs) to supply water through distribution networks, but none of them are currently functional. No private operators are involved in water supply in the area.

No other NGO is currently working on water supply issue in this area.

III. INTER AIDE'S INTERVENTIONS

Inter Aide France is working in three fields in Ethiopia: health, water supply and agricultural support.

III.1 The health project

The health activities began in Bele area in 1987, and in Gesuba area in 1989. They were initially giving support to local existing health offices (health centres, health posts).

Later on the health activities focused on TB control in Kindo Koysha in 1993, and in Ofa in 2001. Currently, the health project and the water supply project belong the integrated programme aiming to the main objective of improving the global health situation of the communities of Kindo Koysha, Ofa and Loma Bossa in facilitating their access to potable

water, TB information, diagnostic and treatment facilities, education about birth spacing methods and STDs prevention. A constant concern for project sustainability, beneficiaries involvement and institutional synergy and collaboration are one of the central orientation of the project objective.

The main activities of the health component of the programme are to detect and treat TB patients in order to reduce the incidence of the disease, to promote birth spacing methods, and to inform the target communities about tuberculosis and major reproductive health topics.

III.2 The agricultural project

The agricultural support project was initiated in Ofa in 1994, and extended to the neighbouring *wereda* to the North, the Damot Gale *wereda*. The project aims at improving the food security of the area through the development of various solutions that maintain and enhance land productivity and re-capitalisation of family income sources. The major activities of the project are soil and water conservation, propagation and diffusion of planting materials of economic value, introduction and promotion of new technologies of biological pest control, provision of training and extension, provision of agricultural inputs and construction of general service structures.

The impact areas of the project include thirteen peasant associations in Ofa and eight peasant associations in Damot Gale. The project is expected to benefit 650 households in Ofa and about 2,250 households in Damot Gale (total population of 14,500).

III.3 The water supply projects

a) History of the intervention

Bele and Gesuba water supply projects have been initiated as an extension to the existing health projects begun in Bele and Gesuba areas, intending to complete health improvement activities by addressing waterborne disease issues. At that time, only 2% of the population (that of the town of Bele) had access to piped water in Kindo Koysha.

In 19988, the first steps taken in water supply field started in the Bele area, and in Gesuba area in 1989. At that time, the intervention was conducted as a "needs-driven programme", going where some urgent needs for water supply were identified by a project staff survey. The communities were used to having to participate through labour for such projects, due to the strong enrolment policy implemented by the Mengistu regime. Because of this, maintenance of the systems by the communities brought unequal results.

Later on, after the fall of the Derg regime in 1992, the communities were much more reluctant to do compulsory collective works, which affected the progress of the project. The only communities still motivated to help with the construction of the water system were the ones where the demand for an improved water supply was stronger. In about 1996 in Kindo Koysha, and in Ofa in 1999, the project staff switched to a "demand-driven approach", intervening only in response to requests from the concerned population. This was a way to select the communities where the demand for an improved water supply was strong enough to ensure a good sustainability of water service.

The programme's auto-evaluation and re-orientation also evolved over the years. In the early years of the intervention, the programme first focused on primary results (number of constructed systems) to drive its activities, as seen in the reports up through 1994. Then the first tools to follow-up, not only the number of new beneficiaries but also the advancement of the different objectives, begin to appear in reports: number of water committees actually collecting money for maintenance, amount of money collected, surveys to measure household consumption, etc.

To achieve its final goal (durably improve the health situation), the programme began to include hygiene education to complete the impact of an access to safe water. The local populations own management and maintenance of the water system was the means to attain the goal of a sustainable safe water supply.

Since early 1993, a Water Committee has been systematically created to be responsible for the maintenance of each water point, after its construction. These committees collect money from the water point users, in order to handle the cost of possible repairs of the system. Local "Hydraulic Agents" (two per *kebele*) are trained by Inter Aide during water system construction in order to maintain the system, and are paid by the water committee whenever they repair the system.

b) Objectives of the programme

The final goal of the intervention is to obtain a sustainable improvement in health and economical situation of the targeted population.

This overall goal relies on the achievement of two specific objectives:

- the targeted communities have convenient access to safe water in a sufficient quantity to help them to increase their water use,
- and the sustainability of this access is ensured by the autonomy of the targeted communities to operate and maintain their water system, favoured by appropriate local conditions.

c) Institutional context

To be allowed in Ethiopia, NGOs have to obtain a national agreement on the general purpose of their intervention, and then to renew every three years technical agreements with regional relevant authorities[1]. The contents of interventions must therefore be compliant with the policy of the sector, and the assessment of the activities output by governmental experts are mandatory to renew the technical agreement.

These evaluations of the project activities have been mainly focusing on the accomplishment of the planned constructions (number of water points, of spring catchments, etc.), but did not develop a global evaluation of the project's impact. Action plans and quarterly advancement reports, as well as related annual balance sheets are provided to the supervising authorities, to be audited.

As this supervision is mostly an administrative follow-up, it cannot be used as a way to prepare the handing over of the water systems management to the relevant authorities when Inter Aide will withdraw from the area. Therefore, while the BOPED and the WMEDB[2] are part of the institutional framework of Inter Aide's intervention, they are quite absent of the operational framework at field level, where operation, management and maintenance of the water systems only rely on water committees and project staff.

There is a missing element at the *wereda* level in governmental authorities for the water and sanitation sector (while this administrative level is now frequently found in many African countries). Any other stakeholder in this sector has to take steps at the zone level to meet a governmental interlocutor for water supply issues.

But the recent administrative reform plans to implement a Water Desk in each *wereda* that would fill the gap.

IV. REASONS FOR EVALUATING

IV.1 A turning point phase for the programme

- **At operational strategies' level**: having accomplished approximately a 65% coverage in Kindo Koysha after 12 years of intervention, the project starts to re-deploy its means in the neighbouring areas where the coverage is less than 1%. Therefore it is particularly

[1] BOPED: Bureau Of Planning and Economic Development, directly issued of the Regional Council

[2] Water, Mine, Energy and Development Bureau

interesting to have an external point of view at the transition between assessment and prospect.

- **Regarding viability**: The progressive disengagement from Kindo Koysha (started in 2000, expected to be achieved by 2004-2005) underscores the importance of the steps of perpetuation which were implemented to secure the persistence of the results.
- **Concerning methods**: how to draw the quintessence of the methods aiming at improving action efficiency (particularly regarding staff productivity, protocol improvement, technical innovations and construction cost reduction) and to test their reproducibility?
- **And on information/communication level**: As the project's history is reaching a stage when it is essential to provide its main donors with objective elements of justification and verification.

IV.2 Objectives for the on-going project

- To appreciate the relevance of the intervention meaning the adequation of the objectives with respect to the stakes of the background and the needs of the target populations.
- To evaluate the achieved results as far as access to water is concerned in the area of methods efficiency (especially the average connection costs per capita), observed coverage rates, and changes induced in terms of behaviour.
- To evaluate the mechanism set up in the Kindo Koysha to ensure viability, from the viewpoint of its efficiency (is it addressing the relevant issues, who will secure the result conservation? When, how and under which conditions?) and of its reproducibility (what in the mechanism relates only to the background?).
- To evaluate the strategy of partial disengagement in Kindo Koysha and project re-deployment in Loma Bossa.

IV.3 Objectives for Inter Aide France

The matter is essentially to identify in the on-going programme:

- Technical methodological and organisational contents that are applicable in various backgrounds, particularly in the area of social and institutional viability, work organisation and methods
- Process innovations and techniques used which would deserve a wider dissemination
- Elements of external validation intended to our institutional and private donors concerning operational policies conducted up to now.
- Reflection sketches on technical and methodological deficiencies or inefficient strategies which would deserve to be explored.

V. METHODOLOGY OF THE ASSESSMENT

V.1 Project reports analysis

More than 25 reports from 1991/1992 to 2001/2002, both for Kindo Koysha and Ofa, were read to assess the evolution of the programme, and particularly its methodology. Other documents were analysed, such as governmental agreements, funding request, and other presentations of the programme.

V.2 Discussions with IAF project staff

These discussions took place in France (one day in Inter Aide's office), in Addis Ababa with the Inter Aide country supervisor, in Bele and Gesuba with the project officers and their staff (project assistant, animators, masons, etc.)

V.3 Field visits

The water points to be visited were systematically selected according to a set of criteria:

- Accessibility (possibility to connect one visit to another without driving to many km)
- Age of the Water Committee
- Follow-up by IAF (still on-going or completed)
- Agro-climatic location (highlands, midlands or lowlands)
- Size of the system
- Maintenance fund (collecting money or not)
- Type of the community: very rural (no market, scattered houses) to almost urban(near or inside a town)
- Maintenance history (had many breakdowns or not)
- Community involved in "food-for-work" programmes or not

As it was impossible to cross-check all these criteria to have a sample fulfilling all the requirements, the visits were organised according to the accessibility, and some small adjustment were made to have committees of at least one type of each criteria. The only type that was not in our sample for the Bele Water Supply project area is a water system without committee (only 5 of them are such, out of 179 water points constructed), or with a committee that does not collect money for maintenance (10 of such out of 152 existing committee that are supposed to collect money).

In Ofa *wereda*, all types of committee were visited.

Therefore, the following villages/PAs were visited in the two project areas:

	Village/water point	Kebele	Wereda	Number of users	Date visit	Date construction
1	Bola	Fechana	Kindo Koysha	380	13/01/2003	2000
2	Deka-Kere	Dega-Kere	Kindo Koysha	750	13/01/2003	1994
3	Fajana 4	Fajana	Loma Bossa	420	14/01/2003	1992
4	Subo	Subo-Tuloma	Loma Bossa	522	14/01/2003	2001
5	Ela-Becho	Ela-Becho	Loma Bossa	1,380	14/01/2003	2001
6	Gessa-Charre town	Wereda center	Loma Bossa	2352	14/01/2003	2002
7	Yele	Gendo-Wagcha	Loma Bossa	350	14/01/2003	2002
8	Tulicha	Tulicha	Kindo Koysha	360	15/01/2003	2000
9	Tulicha	Tulicha	Kindo Koysha	330	15/01/2003	2000
10	Yinafe 2	Borkesha	Kindo Koysha	480	15/01/2003	1992
11	Middle-Telo (*)	Borkesha	Kindo Koysha	450	15/01/2003	1992
12	Lay-Telo	Borkesha	Kindo Koysha	430	15/01/2003	1992
13	Demba-Galle	Gale-Wargo	Kindo Koysha	720	16/01/2003	1999
14	Gale-Qogo	Gale-Wargo	Kindo Koysha	480	16/01/2003	1999
15	Sere-Beleka (**)	Sere-Beleka	Kindo Koysha	320	16/01/2003	1994
16	Dakaya 3	Dakaya	Ofa	253	20/01/2003	under const.
17	Sere Esho 2	Sere Esho	Ofa	754	21/01/2003	1994
18	Guelda 4 (WP 2)	Guelda	Ofa	928	21/01/2003	1994
19	Guelda 4 (WP 3)	Guelda	Ofa	231	21/01/2003	1994
20	Dakaya 1	Dakaya	Ofa	517	22/01/2003	1997
21	Sadoye 1	Sadoye	Ofa	198	22/01/2003	1990
22	Lasho 1	Lasho	Ofa		22/01/2003	under const.
23	Zamo 3 (WP 1)	Zamo	Ofa	110	23/01/2003	1997
24	Zamo 3 (WP 2)	Zamo	Ofa	970	23/01/2003	1997
25	Zamo 3 (WP 3)	Zamo	Ofa	165	23/01/2003	1997
26	Zamo 5	Zamo	Ofa		23/01/2003	under const.
26	*Total*	*18*	*3*	*13,850*		

(*) visit of the water points, no community interviews.

(**) very low discharge due to tree roots blocking the intake pipe at the spring box.

a) Physical observations

The field visits were the opportunity to check the condition of a sample of water systems. Most of them are functional, regardless to their age, and only 2 systems in Kindo Koysha (the springs dried up) are not giving water. In Ofa, several systems (at least three of them) show a drastic decrease of the yield of the springs since 2002.

Secondary degradation can be seen on older water points (small cracks in concrete parts, rust on the doors, roughness of the washtub surface), but do not affect the service.

Most water points are clean (only moss on wet surfaces), but the ground drainage of some water point in the Ofa seem to be better as the whole surface of the water point area is covered with concrete, while other are only arranged with stones. Water points are always well protected by live-hedge with one entrance to the fountain, which encourages the cleaning by clearly delimiting the area, and avoiding crowd and cattle passage.

See the table "*Physical observations*" in appendix V.1, page 40, for more details.

b) Discussion with users and water committees

In almost all the water points visited, the evaluation team had interviews and discussions with water point users and water committee members (see "User interviews" in appendix V.2, page 41 for details). These discussions were mainly focusing on:

- most desired improvements expected from the water system
- users perception of the changes brought by the water point in their life

- new uses of water and other side effects detection
- past and present work of the Water Committee (money collection repairs, etc.)
- Water Committee's feelings about the risks of the water system management
- assessment of the Water Committee's autonomy

Beside these general topics, often a specific issue was brought to discussion, depending on the present users' particular history or response.

Most of the questions concerning water uses were asked to women (users found at the water point or women involved in the Water Committee), and several specific topics were focused on assessing the actual role women in the committee.

Some water committees showed us their accounting books when easily available, but that was not a systematic request from us.

These interviews brought the opportunity to meet some of the local Hydraulic Agents.

V.4 Interviews with relevant government office staff

As the *wereda* water desks are not implemented yet, the only governmental staff we met were the health office staff, and the *wereda* head bureau in each *wereda* concerned (Kindo Koysha, Loma Bossa and Ofa).

a) Health offices, in Gessa Charre, Bele and Gesuba

The goal of the health office visits were to collect data about the top ten diseases over the years in the different *wereda*, to make comparisons between the health situation before the water supply improvement and after. Unfortunately, these offices were only able to provide us with very recent data (2000 in Ofa, 2001-2002 in Kindo Koysha and Loma Bossa).

The only comparison that we could make would be between Loma Bossa where Inter Aide's intervention is very recent and does not concern a significant part of the population, Ofa, where the coverage is about 35% of the population and Kindo Koysha where the coverage reaches 65%, and the benefits from more than 10 years of water supply improvement could have been appraised.

But the worth of this comparison is limited by the possible inconsistency of the data collected (for example, there is no figure for "other diseases" in Loma Bossa, and that makes the overall number of diagnoses uncertain). See *Objective 3: hygiene improvement*, page 22.

b) Wereda administration officers in Bele and Gesuba

In both wereda, the evaluation team had meetings with wereda administrators. Since the wereda water desk staff is not implemented yet, general administrators were the relevant persons to be met. Interviews aimed at knowing the perception of Inter Aide's work by the local administration, and having some recent information about the role of the wereda administration regarding water supply.

c) Regional head office for water supply in Awassa

The regional administration is the first administrative level where a water supply department can be found (regional water bureau). The bureau head officer and the NGO co-ordinator were met at the end of the mission, in order to share with them the first findings of the field visits, and to collect their appreciation of Inter Aide's work in the region.

ACTIVITIES AND COMPLETION OF THE WATER SUPPLY PROGRAMME

The previously-stated goals of the water supply programme are pursued through the following means:

- bringing financial and technical support to communities in order to construct simple water systems which would provide water closer to the houses
- supporting users to take charge of the maintenance of these systems
- and teaching the population to properly transport, store and use the water for the improvement of hygiene

The following paragraphs present, first of all, the activities carried out by Inter Aide France, then give monitoring information on the accomplishment of theses activities.

I. SPECIFICATIONS OF THE WATER SYSTEMS

I.1 Gravity-flow systems

The programme implements gravity-flow systems without taps (free-flowing systems), using natural springs for water production. Thus the feasibility of a water system is directly linked with the availability of a spring having sufficient elevation above house level. In most cases, a few families have to walk down to the centre of the community to fetch water from the system.

a) Water production: spring catchment

Natural springs are identified by making use of community knowledge and by prospecting the area. The spring catchment is located as much upstream as possible, and is made in such a way that there are few chances for flow diversion when channelling it into the pipeline. A spring box is built (drainage, filter, intake, overflow, manhole, door) to catch the flow as much as possible and to protect the spring itself. Some spring boxes are protected by a fence built by the population, but protection areas, upstream from the catchment, are infrequent (the area is often used for agriculture without chemicals, rather than for cattle grazing).

b) Transport: the gravity pipeline, and break-pressure boxes

Buried PVC pipelines are used to carry the water from the spring location to the selected water points. In some cases galvanised iron pipes are used to cross over steep and rocky passing. Previously, 60 cm deep trenches were made to ensure pipe protection but were later deepen because of frequent pipe breaks due to agricultural activities.

The diameters of the pipes are calculated according to the yield and the slope of the pipeline so that the most economic size can be used without hampering water flow. Pipe diametering is also used to properly distribute the flow between two branches according to the demand.

When the elevation difference between the springs and the water points exceeds pipe requirements, a break-pressure box is made. For maintenance reasons, this box is now just an open room between upper and lower pipes[3], without any pressure-driven valves.

c) Distribution: distribution boxes

These concrete boxes (with manholes) are used if the systems supply water to more than one water point. The flow dispatch is set by the size of the pipes and the level of the different intakes inside the box.

[3] As there is no tap on the system, the break-pressure box never fills up, and the static pressure never increases, even if the incoming flow is not regulated by a pressure valve.

d) Water points: fountain, washtub and cattle trough

The standard elements of distribution at the water points are the fountain for filling containers (pots, plastic cans), the washtub for washing clothes, and the cattle trough. All three of these elements are present in 86% of the water points in Kindo Koysha, and in 85% of the 112 water points in Ofa. The washtub is located a few meters from the fountain from where women take water with pots, while the cattle trough is filled with the drainage of the fountain.

When the spring yield is insufficient for the estimated demand, a concrete tank is constructed to take advantage of the flow during the night, and allow a greater flow during peak demand. In such cases (only 5 in Kindo Koysha, 1 in Loma Bossa and 9 in Ofa), the fountain is fitted with auto-closing taps, to allow the reservoir to fill up as often as possible.

These water distribution devices have more or less similarly designed except for some adjustments suggested by users[4] or by project staff in order to lower construction time or material quantities.

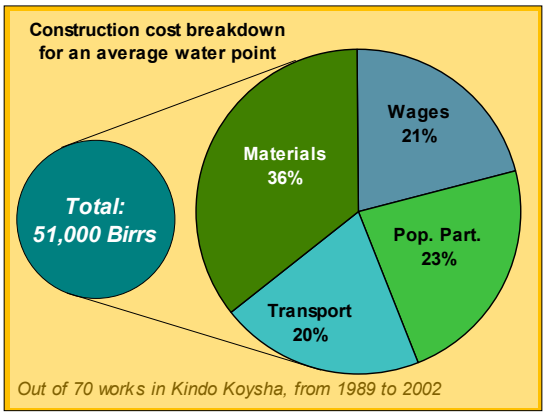
II. RESOURCES UTILISATION

II.1 Direct costs of the systems

The type of water system constructed by Inter Aide has proven itself to be the most relevant in the context of the project zone: the level of service is sufficient to meet the demand, and the direct costs of these systems are very low, compared to other water systems involving boreholes or powered pumps.

a) Low construction cost

Constructed systems do not involve complex equipment or works like elevated tanks or hole boring. All the digging (catchment, trenches, etc.) can be handled by the population (without machines), and the size of the concrete works does not require special machines.



The "Bill of quantities", computerised for 70 water points constructed in Kindo Koysha from May 1989 to October 2002, show that the average water point requires to spend less than 40,000 Birr and demands a population participation valued at a little less than 12,000 Birr[5] (23% of the total).

Taking into account the number of beneficiaries recorded in these files (about 900 per water point[6]), the average cost per capita (not including participation) is about 50 Birr (5.5 Euros) while, in Africa, the average investment ratio for rural motorised water system is about 50 US$ per capita.

This very low figure means that the water systems constructed by Inter Aide are very economical, due to their simple design for:

- mobilising existing water resources (no wells, no boreholes)
- protecting water quality

[4] E.g. raising the fountain pedestal to avoid lifting heavy pots from the ground, adding small tanks included in the washtub, changing fountain/washtub disposition…

[5] Population participation mainly includes local material provision (sand, stones, gravel, etc.), manpower to dig the trenches (valued at 5 Birrs/day) and accommodation for the masons.

[6] When analysing the water committee data, the average number of users registered per committees (supposed to contribute for the maintenance) is only about 550, raising the cost per capita to 100 Birrs.

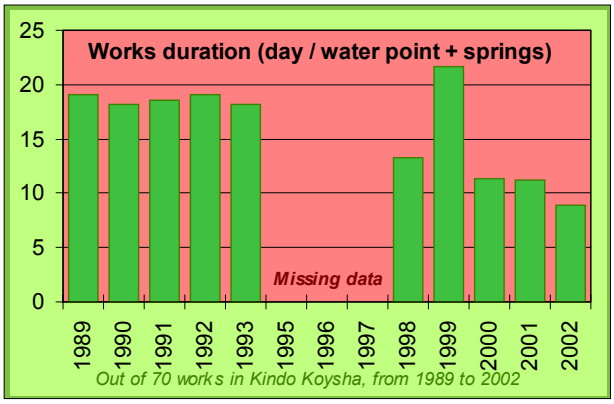
- bringing water closer to users, but at short distances (averaging less than 1,500 m) and only if lower than the spring (people living higher must take themselves the water up to their houses)
- working mostly as open-flow systems (storage devices are not frequent)

The choice of Inter Aide to use a high level of manpower rather than to buy expensive equipment resulted in:

- a significant participation required from the population to ensure a strong ownership of the systems by the community
- a lower overall cost of the intervention (no expensive assets demanding costly maintenance, fuel or transport)
- a certainly better efficiency as the work was not relying on some equipment with possible breakdowns and transport problems

Inter Aide has also improved the design of the different parts of the system in order to reduce construction time and material quantities, resulting in further reduction of water system costs.

For example, since 1997, the main concrete parts (fountains, cattle troughs and washtubs) are constructed using moulds (less concrete, no time lost waiting for one part to solidify before making the next). Pipe diameters are calculated precisely for the slope and water flow, allowing for smaller diameters to be used, thus lower costs.



This graph shows the evolution of the number of days spent on works each year, divided by the number of water points constructed and the number of springs captured. The time spent on works does not only depend on staff productivity, but also on the participation by the community. This means that improvements come either from technical optimisation or efficient local mobilisation (animation efficiency). Unfortunately, even if the works duration decreases, the cost-per-capita fluctuations induced by side factors (such as transport difficulties, number of springs to be captured in order to have a sufficient flow, number of users within walking distance of a water point, etc.) are much greater and hide the benefits due to design improvement.

b) Low operating costs

Gravity-flow systems generate low operating costs, as there is no need for energy, water treatment or the paying of wages. The only necessary work (water point area cleaning, spring box inspection) can be handled by the population (unhired workers).

c) Low maintenance costs

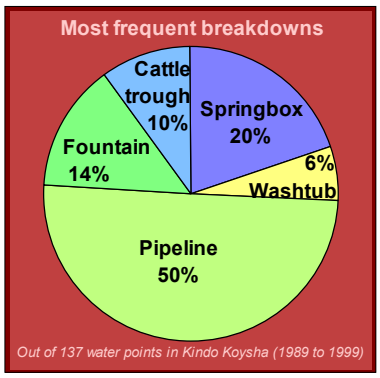
Maintenance is also very limited as there are no mobile parts to wear out (except the auto-closing taps on some water points), this is restricted to cleaning and repairing accidental breakdowns.

In Ofa, the systems constructed from 1990 to 2001 did not need any significant maintenance until 2002. The project staff had no real maintenance activities, and small repairs were done by Hydraulic Agents (local plumbers) without the help of Inter Aide, and were not recorded. In 2002, the project staff started a significant maintenance programme, mostly upgrading or rehabilitating the oldest spring boxes which had suffered from early design flaws.

In Kindo Koysha, all the maintenance activities have been registered since 1989, and their analysis (137 systems constructed between 1989 and 1999) shows that most of the repairs

were made on systems averaging 5 years old. A study by the project staff also shows that 50% of the systems encountered no breakdowns in the first eight years.

Most accidental breakdowns concern pipelines, as shown by the graph on the right, and it often happens when a farmer ploughs his field. Because of this, Inter Aide has increased the depth of pipe placement (to 0.8 or 1 m). Besides, some water committees would not hesitate to require the farmer the entire cost of the repairs.



This also means that the most important type of spare parts needed by water committees are PVC pipes, that are not readily available in the area, except from the Project supplies. This particular point was mentioned by many water committees interviewed as their main fear in the coming years.

The maintenance costs are deemed to be affordable for the water committees as long as it is limited to regular pipelines, taps or small concrete works. Maintenance of galvanised iron pipelines crossing rivers can be very expensive (one water committee had to spend 800 Birr on such a breakdown - fortunately they had the money in bank). Important maintenance of spring boxes or other large concrete parts can also be expensive, and probably unaffordable for most water committees.

II.2 Overall project costs

a) Bele Water Supply project staff

At first, the whole staff of 11 people dedicated itself to water system construction (85%) and project administration (15%). After 1992, the need to create sustainable water committees led to the development of an animation team, numbering up to 8 animators. This development tremendously change the staff's division of labour (52% construction, 38% animation, 10% administration).

In 2000, the project officer, a French expatriate, was replaced by his assistant. Now, the entire project team is 100% Ethiopian, consisting of 18 persons (50% construction, 33% animation, 17% administration).

Year	Project manager	Project assistant	Site foremen	Store keeper	Plumber	Masons	Mason assistants	Animators	Total
	1	1	1 2 3	1	1	1 2 3 4	1 2 3 4	1 2 3 4 5 6 7 8	
1989	1	1	1			4	4		11
1990	1	1	1			4	4		11
1991	1	1	3			4	4		13
1992	1	1	3			4	4		13
1993	1	1	3			4	4	3	16
1994	1	1	3			4	4	6	19
1995	1	1	2			4	4	8	20
1996	1	1	2		1	4	4	8	21
1997	1	1	2		1	4	4	5	18
1998	1	1	2		1	4	4	5	18
1999	1	1	2		1	4	4	5	18
2000	1	0	2	1	1	3	3	6	17
2001	1	1	2	1	1	3	3	6	18
2002	1	1	2	1	1	3	3	6	18

b) Gesuba Water Supply project staff

The same evolution happened in the Gesuba Water Supply project, with a slightly different distribution of the staff labour (15% overhead, 60% construction staff, 25% animation).

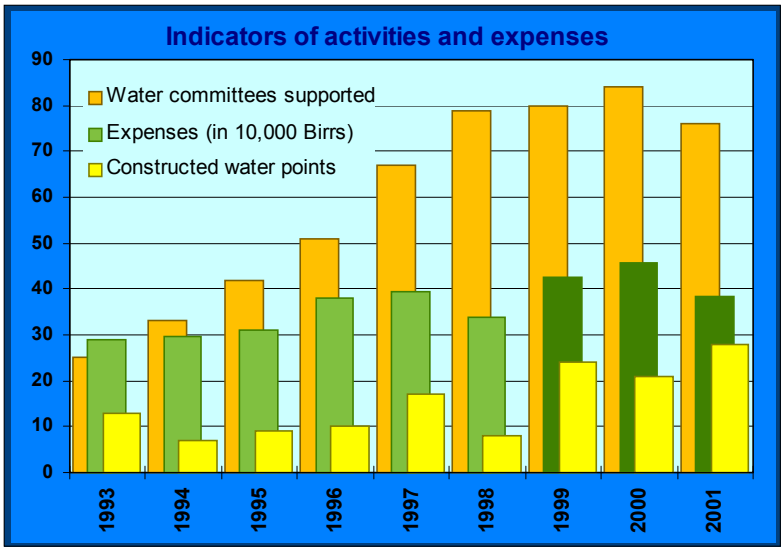
Year	Project officer	Project assis.	Adm. assis.	Tech. super-visor	Site foremen	Driver	Donkey drivers	Road workers	Plumber	Masons	Mason assistants	Animators	Total
	1	1	1	1	1 2 3	1	1 2 3 4	1 2	1	1 2 3 4	1 2 3 4 5 6	1 2 3 4 5	
1990	1	1			2		2			2	4		12
1991	1	1			2		2			2	4		12
1992	1	1			2		2			2	4		12
1993	1	1			3		4			3	6	3	21
1994	1	1			3		4			3	6	3	21
1995	1	1			3		4			3	5	4	21
1996	1	1			3		4	2		3	5	4	23
1997	1	1			3			2		3	3	5	18
1998	1	1			3			2		3	3	5	18
1999	1	1		1	3			2	1	4	4	4	21
2000	1	1	1	1	3	1		2	1	4	4	1 *	20
2001	1		1	1	2	1			1	4	4	5	20
2002	1	1	1	1	2	1			1	4	4	5	21

** animation was also taken in charge by the 3 site foremen*

c) *Actual project costs*

The evaluation team tried to make an accurate cost analysis of the projects. It became difficult because some reports gathered hydraulic and health project, others did not, and it would have required more closely studying each report budget in order to obtain consistent figures.

Some indications tend to show that the project resources did not significantly increase over the years, and evolved in a similar trend than that of the staff presented above.



For example, until 1998, BWS project used a truck for material transportation which was owned and amortised by the Project (purchase and amortisation costs were not included in the expenses, while maintenance costs were). After 1999, the project decided to rent a truck for approximately 60,000 Birr a year, which increased their expenses because this renting rate is much higher than the sole maintenance costs formerly included in the expenses.

Despite the artificial increase in expenses over the last three years (marked darker on the graph), the expenses have roughly followed the level of activity, and were kept as low as possible[7].

III. CURRENT METHODOLOGY OF THE PROGRAMME

III.1 On-demand intervention

The drawbacks of planning by need assessment are well known. There is a risk of selecting a community for a new water system because the need is considered to be high, while the water supply might not be the main priority for them, at least not enough to create a strong participation and involvement of the population. Works can be delayed, but most of all, the community is not likely to maintain an infrastructure it did not request.

[7] At least two of the IAF vehicles used during the mission have been on duty for over 300,000 km, and one over 200,000. Considering the roads in Ofa and Kindo Koysha, the good condition of these four-wheel drive cars is a real achievement!

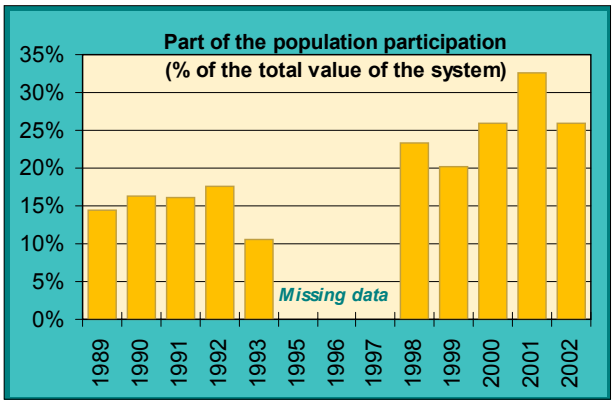
In the Bele area, since 92, Inter Aide is only surveying and prospecting new springs, and then responding to population requests, rather than to plan interventions on project's initiative. In the Ofa *wereda*, this shift in the operation mode of the project to an on-demand intervention has occurred in 1999. Nevertheless, a good number of the new water systems constructed were already the results of community requests. A part of the intervention was still planned according to other factors, such as the opportunity to access remote areas while a road was open, and not yet damaged by several rainy seasons.

This on-demand approach is major key factor for the sustainability of the systems, as it is a way to focus on communities that have both a need and a strong willingness to find a solution for this. The process for a community to submit a request to the project is a good sign of motivation, and future appropriation of the works.

III.2 Participatory approach

The appropriation of the system by the beneficiaries is the keystone of future sustainability. When users agree to gather in order to submit a request, and then to achieve a significant work or spend an important amount of money to obtain the improvement in water supply they were asking for, they will strongly feel that the system is the results of their efforts, their own property. Thus they are likely to be willing to maintain it in a good condition, not to lose the benefit of their work or money.

Convinced of the importance of this population participation, Inter Aide France has applied a participatory approach since the beginning. Future users of the water system are asked to bring a part of the material (stones, sand, water) and to provide a high level of manpower (stone crushing, trench digging, earthwork, embankment, fencing…).



This amount of participation is not only symbolic (the work is hard), it is sufficient to constitute a heavy commitment of the community. When the participation of the population decreases after the works are started, animators and masons often decide to withdraw and let the system unfinished. This strategy gives good results: the population pulls itself together, sometimes elects new persons for the water committee, and places a second request to Inter Aide France. In such cases (as in Zamo 5 where we interviewed the new committee 15 days after they resumed work), the feeling of ownership is very strong.

III.3 Management and maintenance model

a) Creation of user structures: the Water Committees

After the change of regime, the organisation of the communities for the maintenance purpose evolved. Since 1993, in both project areas, Inter Aide France requests the communities to create a Water Committee, elected to be responsible of the maintenance of the system. To base this organisation on users' ownership feeling, one Water Committee is created for each water point, even several water points are constructed on the same system.

In the Bele area, a first committee is created before the water point is finished (this "work committee" is the interlocutor of Inter Aide during the works, and signs an agreement on community's and Inter Aide's obligations). In Gesuba area, the future Water Committee is created on the third animation session, before the works begin.

The community is free to elect the persons of their choice on the committee board, but the animator explains the different tasks to be done, and, on animator's advice, all the communities elected at least 3 persons (president or chairman, cashier and secretary). During the last years, it was also advised that the committee should include 2 women, mainly

to be responsible of the cleaning of the water points. This is now considered as mandatory in Bele area due to an official regional by-law for water supply community management. In Gesuba area, this advice for two women in the committee has been introduced in September 2001 (before that date, no committee of this area included women). This advice was also given to older committee, and now, all committees include two women.

b) Training of a local technician: the Hydraulic Agent

Both in Gesuba and Bele projects, a local volunteer is trained during the works, in order to build his technical ability to solve the most simple and common breakdowns (pipe clogging, small masonry repairs, pipe replacement, etc.) This "Hydraulic Agent" signs an agreement with all the water committees of the *kebele*, that recognise him as their first interlocutor on technical issues. There are currently two hydraulic agents in each *kebele*.

c) Training and support: the way to autonomy for water committees

Training and support are also provided to the committee, in the form of animation sessions (including also a part of the population), drama demonstration (one on maintenance, one on hygiene education), and specific training (account keeping, money collection, basic diagnosis, cleaning operations, etc.) where all the committees of a *kebele* are gathered (good ones and weak ones, old ones and new) for a one-day training.

Animators continue to provide support to these committees, according to a minimum pattern: two visits in the first month after the water point construction, one monthly visit up to the sixth month, and one visit every two months for the next six months. After this first year, quarterly visit are made by the animator, until the committee is considered autonomous.

Of course, visits can be more frequent for weaker water committees.

d) Relative autonomy for maintenance issues

Bele water supply project implements a specific progressive hand-over of the maintenance responsibility to the Water Committee. The first repair that has to be done on the system is financially supported by the project as high as 70% of the spare parts and materials expenses. Technically the support provided depends on the complexity of the repair (everything that does not exceed the technical skills of the local Hydraulic Agent, is done by him, paid by the Water Committee). Then the financial support of the project's staff is decreasing with each new repair: the second one is supported for only 50% of the expenses, the third one for 30%, and starting from the fourth one, all repairs must be financed by the Water Committee, with only technical support from Inter Aide, if needed.

This process led to 77 autonomous water committees out of 146 in the Bele area.

In the Gesuba area, the project did not really provided maintenance support until last year. Before that, small breakdowns were repaired by Hydraulic Agents and Committees (coming to the project's office only to buy pipes and fittings), without financial support from the project.

Since last year, the project implemented a maintenance programme mainly focused on heavy rehabilitation of old systems, where damages were mostly due first designs drawbacks. This programme runs on the same basis as the new constructions: population participation in labour, without financial participation (expenses 100% covered by the project).

e) Tool banks

In every *kebele*, Inter Aide France implements tool banks managed by a special committee (one person from the Kebele Authority, two persons from the members of the different water committee present in the *kebele*). Essential tools for the work of Hydraulic Agents are bought (50% by IAF, 50% by the committees of the *kebele*), and kept at the *kebele* level. Each element can be rented 1.5 Birr per day by any water committee of the *kebele*. This renting fee is set to ensure the capacity of renewing the tools without any external financial help (360 rented day*element are necessary).

Tool bank content
1 Pipe wrench
1 Metal saw + blades
2 buckets
2 shovels
2 trowels
1 sledgehammer
1 regular hammer
1 litre of glue
4 pieces of sand paper
1 wood box + padlock + book

These tool banks have three objectives:

- reducing water committees' dependability for maintenance
- ensuring the availability of such tools at the *kebele* level
- dividing the cost of these tools (the market for water system maintenance would not be large enough for a private plumber to buy these tools)

III.4 Hygiene education

While the construction of new water systems help communities to have access to safe water near their houses, it appeared that the benefit from safe water could be partially or totally lost due to inappropriate transport, store and use. For this reason, Inter Aide started in 1997 to develop support to communities for hygiene education.

This support is implemented by the animators through discussions with users at water point, or house-to-house visits to discuss about the storage and use of water inside the house.

But the main education tool used is the "sanitation drama", a drama played by the animators (and also involving a few local users) around the water point with the attendance of most users (including children).

The evaluation team attended one of these drama, that proved to be very popular and quite efficient in showing the "good" and "wrong" habits regarding water use.

A survey by the animators showed that more than 50% of the houses around water points were applying the drama's recommendations. A few visited houses during the evaluation mission confirmed that some houses actually apply the whole set of recommendations or nearly not at all. This change of habits also seems to be encouraged by the action of Kebele Health Agents which recommendations are similar.

The dramas were first elaborated and implemented in the BWS project in 1997, and then introduced in Ofa (with slight changes and improvement from the GWS project staff) in 2001.

IV. QUANTITATIVE ACCOMPLISHMENT OF THE PROGRAMME

The evaluation team collected many data on the water points constructed in the three *wereda*, but from different sources. Unfortunately, some particular information was not consistent through the different *wereda* or years. For example it was difficult to gather for the same water points data as costs, money collected by the committee, number of users, length of the pipes, repairs made, etc. All these data were available, but on different water point bases, concerning different type of record (water systems, water points, water committees, etc.) and not for both Kindo Koysha and Ofa.

For this reason, the reader will notice that some indicators are measured only on a part of the systems and sometimes only on one *wereda*. But these restrictions were unavoidable in order to give ratios and average figures that make sense.

IV.1 Objective 1: access to safe water

The data used to build the following table were given by Inter Aide Office in France (except the population in Kindo Koysha and Ofa, taken from health offices). An estimated growth of 3%/year was used to update the number of users registered at the time of the different water point construction.

The 63% coverage achieved in Kindo Koysha can be considered as quite high. A 100% coverage could not be accomplished without a significant increase in the project means and in the per capita cost because:

- the project's approach is based on the voluntary request from populations
- in every *wereda* a certain part of the population lives disseminated and far from any spring
- if the length of the necessary pipes to bring the water increases and the number of users covered by one water point decreases (because of dissemination), viability is more than uncertain

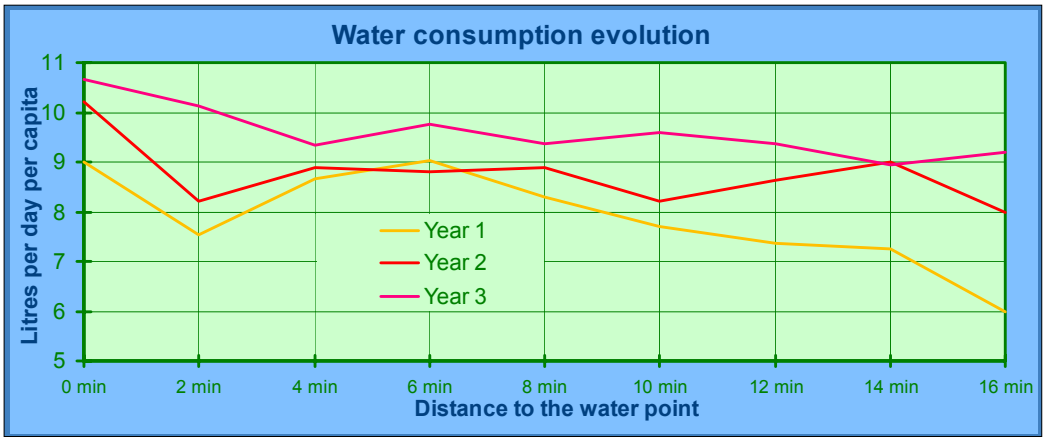
In Ofa, the situation is intermediate, with an overall coverage of 35%, which is the result of a lower rate of construction (9.25 water point per year, instead of 13.64 in Kindo Koysha), and a lower population density (1.40 m of pipeline per user and 394 users/water point in Ofa, instead of 1.18 m and about 500 in Kindo Koysha and Loma Bossa). The GWS suffered from different factors: problems of accessibility, difficulties to hire a new project officer in 2001, late reinforcement of the animation component (animation programme has been truly organised and systematically implemented since 2001 only).

Period	Kindo Koysha			Ofa			Loma Bossa			Total		
(estimated pop. growth: 3%)	water points	Users	update 2002	water points	Users	update 2002	water points	Users	update 2002	water points	Users	update 2002
1988-1989	7	5 221	7 781							7	5 221	7 781
1989-1990	20	13 533	19 582							20	13 533	19 582
1990-1991	15	6 685	9 391	6	2 200	3 091				21	8 885	12 482
1991-1992	10	3 491	4 761	10	3 300	4 501				20	6 791	9 262
1992-1993	10	5 296	7 013	7	2 800	3 708				17	8 096	10 721
1993-1994	6	3 103	3 989	8	2 475	3 182				14	5 578	7 171
1994-1995	13	5 569	6 951	14	2 681	3 346				27	8 250	10 298
1995-1996	9	5 605	6 792	7	1 738	2 106				16	7 343	8 898
1996-1997	12	4 460	5 247	9	2 455	2 888				21	6 915	8 136
1997-1998	12	5 168	5 903	10	6 600	7 539				22	11 768	13 442
1998-1999	30	14 813	16 428	7	4 000	4 436				37	18 813	20 864
1999-2000	28	13 649	14 696	11	7 210	7 763				39	20 859	22 459
2000-2001	9	4 064	4 248	8	3 366	3 519	8	3 232	3 379	25	10 662	11 145
2001-2002	10	4 818	4 890	14	4 900	4 973	11	5 484	5 566	35	15 202	15 428
Average	*13.64*	*6 820*	*8 405*	*9.25*	*3 644*	*4 254*	*9.50*	*4 358*	*4 472*	*22.93*	*10 565*	*12 691*
Total	**191**	**95 475**	**117 674**	**111**	**43 725**	**51 052**	**19**	**8 716**	**8 944**	**321**	**147 916**	**177 670**
Pop. in 2002			185 549			146 902			107 162			478 260
Coverage			**63%**			**35%**			**8%**			**37%**

Considering the figures prior to Inter Aide intervention (2% in Kindo Koysha and 0.8% in Loma Bossa) and the average coverage rate in Ethiopia (about 20%), the accomplishment for the objective 1 is quite significant.

The volume of water used by families is also certainly increasing in the years following the water point construction. Every user interviewed confirmed this (more water for usual purposes, and also for new uses), except very few people who, in fact, lived near the spring or the stream before the water point construction.

A survey by the project staff, between 1999 and 2002, recorded on a small sample the average volume of water fetched by different families according to their distance from the water point. A increase in the daily per capita consumption is shown by the data, but the size of the sample and the survey methods do not allow to take these figures as absolute values.



IV.2 Objective 2: autonomy level of water committees

a) The animation process

Achieving the autonomy of the water committees is the main goal of the animation component. For this purpose, 110 dramas were played between 1998 and 2002, with an estimated attendance of 21,800 people.

Regarding the technical autonomy, two hydraulic agents were trained in each of the 28 *kebele* covered in Kindo Koysha, and in most of the 27 *kebele* already involved with the project in Ofa. For 191 water points constructed in Kindo Koysha, 174 water committees were created (and 8 are going to be created), out of which 99 of them belong to a tool bank, and 132 have a bank account.

In Ofa, a survey by project staff in 1998 showed that nearly all the committees were highly depending on the animators (that were often acting instead of enabling committees to act). This lead in to define a precise follow-up programme, which includes committee training (one for 5 to 8 committees gathered in a same place), and a regular visit schedule. At least 75 committees in Ofa attended such a training.

The creation of "Kebele Committees", gathering one person from the Kebele Authority, and two from the water committees of the area, is started in Ofa. This Kebele Committee will manage the future tool banks, as they are already implemented in Kindo Koysha.

In Ofa, as the animation activities made a new start in 2001, there was a need to implement this improved programme (dramas, committee training, new goals) on all the water committees, even older ones. All committees are still followed-up by the project animators and only about ten committees are currently considered as autonomous by the project staff.

Kindo Koysha & Loma Bossa

Year	Constructed water points	Water committees created	autonomous	supported
1989	10	0	0	0
1990	21	0	0	0
1991	9	0	0	0
1992	12	2	0	2
1993	13	23	0	25
1994	7	8	0	33
1995	9	9	0	42
1996	10	9	0	51
1997	17	16	0	67
1998	8	12	0	79
1999	24	14	13	80
2000	21	29	25	84
2001	28	19	27	76
2002	0	14	12	78
Total	**189**	**155**	**77**	**78**
Average	*14*	*11*	*6*	*44*

According to water committee data in Kindo Koysha, 77 committees reached a satisfactory level of autonomy: they are deemed to be able to pay for the possible usual repairs on their system, and to take in charge the responsibilities necessary for this to last (collecting and managing money, organise use and cleaning of the systems, request for some assistance at the *Kebele* or *Wereda* level if necessary).

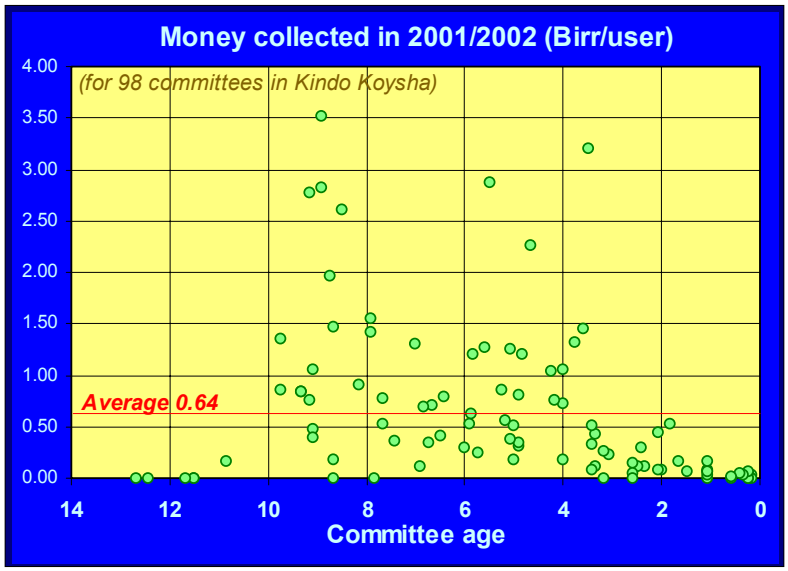
The average age of these autonomous committees is close to 6 years, while other committees average only 3.5 years of age.

As 21 committees will reach the age of 6 in 2003, 26 in 2004 and 35 in 2005, we can have an idea of the number of new committees reaching autonomy in the coming years.

b) Maintenance cost recovery: the main challenge

The average amount of money collected by committees since their inception does not make much sense for two reasons:

1. this amount varies with the size of the system (we will then focus on money collection per user)
2. the level of collection has dramatically increased over the last few years (as a result of animation) and cannot be compared with that of previous years.



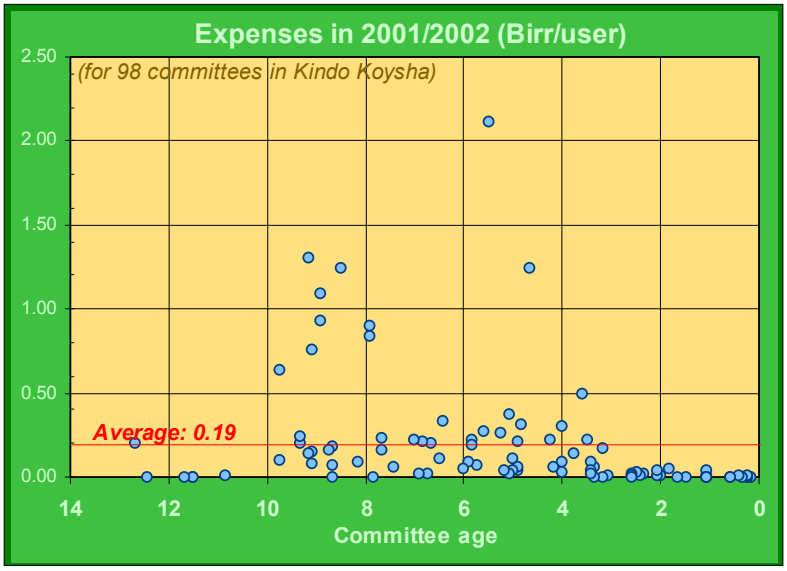
For example, the 2001/2002 report for the Bele project reads that the total amount of money collected in Kindo Koysha from the beginning until August 2001 is 33,880 Birr (less than 0.000783 Birr per year per user!!), while for the sole 2001/2002 period the money collected reaches 52,830 Birr (averaging 0.64 Birr/year for the sample of 98 committees for which we had the number of users[8]).

In Ofa *wereda*, the total amount of money collected since the beginning was 9,767 Birr in 2001 (which is in the same range as in Kindo Koysha). For the 2001/2002 period, 85 of the 103 water committees having set a contribution rate of 0.20 Birr per month per household (which equals approximately to 0.43 Birr/year/user), the overall expected collection should have been 7,837 Birr, which means 76 Birr per water point. But the collection ratio they performed in 2001-2002 collection period is only 33% on the average (equals to 0.11 Birr per user - 6 times less than in Kindo Koysha at the same period).

The level of provisions usually set for the sole network maintenance in larger water supply systems[9] is 2% of the network value. If it was used to appraise the level of collection that water committees should set as their goal, it would lead to an average of 360 Birr/year (assuming a material value of 18,000 Birr according to the bill of quantities computerised for 70 systems in Kindo Koysha) or between 0.5 and 1 Birr/year/user. This collection goal is very high compared to the amount of money actually collected by water committees, but this goal is certainly overestimated as the water systems constructed by Inter Aide France mainly involve distribution pipelines with very few particular fittings, no private connections (frequent points of problems) and a relatively low pressure in the pipelines. The maintenance of such networks is in fact far less expensive than regular pressurised networks.

[8] This figure could be underestimated as the only user numbers available were estimated users at construction time, from another source. It seems that the total number (detail not available) of users registered after the construction as "paying families" is much lower. This bias could lead to about 1 Birr/year/user.

[9] For larger water supply systems, five major parts are usually identified as generating maintenance costs: underground works (borehole, well), pumping equipment (pump, engine, power generator), storage (reservoir, elevated tank), distribution network, water points (public taps, standpipes, private connections)



In 2001/2002, 163 water committees in Kindo Koysha spent on repairs 29% of their year collection, while Ofa committees spent only 16% out of 9,676 Birr collected since the beginning of the project.

This figures give a relatively reliable idea of the actual maintenance costs faced by the water committees. But it is underestimated by the financial support provided by Inter Aide (only small repairs were funded by Ofa water committees, and Kindo Koysha committees are sharing with the project the costs of the 3 first repairs). It must also be noticed that the average age of water points is only 4.7 years in Kindo Koysha, which means that this rate of expenses will probably increase with the systems getting older.

The amount of money provisioned for the maintenance is one of the crucial issue, and a major indicator of the potential sustainability of the systems. Between the 0.034 Birr/year per user that are actually spent in Kindo Koysha, and the 0.75 Birr/year per user that would be provisioned in urban water systems, the range is very large and the truth is somewhere in the middle, but difficult to foresee.

The autonomy of committees regarding management and financial issues is thus not ensured yet. But the tremendous increase of the amount collected by Kindo koysha committees in 2001/2002 demonstrate the population capacity to fund these maintenance provisions. On top of this, it shows that committees' efficiency to collect this money is heavily variable (and probably linked to the animation's efficiency). In Ofa, if 0.20 Birr/month per family (043 Birr/year/user) was actually collected, the provision level would also be safer.

These two findings clearly demonstrate on which goal the project staff should focus: help committees to convince their users of the importance of theses provisions and to improve the collection efficiency.

For now, the problems might in fact concentrate on a small number of old water systems (high breakdown probability in the next following years) where committees did not collect much money from the beginning (large amount of money still to be recovered).

IV.3 Objective 3: hygiene improvement

The first outcome of the use of piped water, as it is perceived by the users[10], is the decrease of waterborne diseases. This improvement of life conditions has been stated in every interviews we had with users and water committees, and frequently ranked as first. It is noticeable that this effect is seen as the most obvious by the populations, while it is difficult to assess such an impact through health statistics.

Animators also confirm that the outcomes of the sanitation drama are well applied in the houses they visited (a survey in 1998 states that about 3 families out of 4 are properly storing and using water at home).

A decrease of waterborne diseases prevalence would objectively confirm the health improvement brought by the water systems, but it has been impossible to collect health data for several years. The only statistics that were available in *wereda* health offices only

[10] See *Decrease of waterborne diseases*, page 24

concern the last year[11] without any comparison being possible with a reference situation, prior to the project implementation.

Another analysis can be conducted with the available statistics by comparing the health situation in the three *wereda* where the progress of Inter Aide's action is different.

Cases diagnoses in Loma Bossa (07/01 to 06/02)

	Total cases	15501	100%
	Disease	**Cases**	**%**
1	Malaria	3347	22%
2	Diarrhoea (WBD)	2496	16%
3	Acute Febrile Illness (AFI)	1124	7%
4	Intestinal parasitosis (WBD)	1877	12%
5	Upper Respiratory Tract Infection (URTI)	1727	11%
6	Skin diseases (WBD)	1625	10%
7	Gastritis	854	6%
8	Rheumatism (joint sickness)	790	5%
9	Malnutrition	1175	8%
10	Eye disease (WBD)	486	3%
	Waterborne diseases (WBD)	**6484**	**42%**

NB: no "other diagnoses" are reported in Loma Bossa. This possibly missing data could significantly influence the prevalence of each disease.

In Loma Bossa, where the action has just started and the situation can be considered as still unchanged, the prevalence of waterborne diseases totalise 42% (for children under 5, they reache 65%). On the opposite, in Kindo Koysha where the access to safe water reaches 63%, the waterborne diseases count for 31% of the total cases (and only 19% for children).

But in Ofa, where the situation is expected to be intermediate as is the coverage, statistics are even better (although they do not specify children). This could be the result of other factors, such as the a lower access to health facilities in Ofa, or the unreliability of diagnoses.

The available data are shown in the surrounding tables, as a reference for future analysis.

Cases diagnoses in Kindo Koysha for 2001

	Total cases	15940	100%
	Disease	**Cases**	**%**
1	Malaria	4778	30%
2	Intestinal parasitosis (WBD)	3095	19%
3	Upper Respiratory Tract Infection (URTI)	2038	13%
4	Skin diseases (WBD)	1068	7%
5	Urinary Tract Infection	912	6%
6	Gastritis	699	4%
7	Diarrhoea (WBD)	489	3%
8	Anemia	257	2%
9	Eye disease (WBD)	223	1%
	Other Diagnoses	2381	15%
	Waterborne diseases (WBD)	**4875**	**31%**

Cases diagnoses in Ofa (07/01 to 06/02)

	Total cases	11079	100%
	Disease	**Cases**	**%**
1	Malaria	4477	40%
2	Intestinal parasitoses (WBD)	1538	14%
3	Upper Respiratory Tract Infection (URTI)	1439	13%
4	Skin diseases (WBD)	799	7%
5	Gastritis	496	4%
6	Tuberculosis	440	4%
7	Rheumatism (joint sickness)	303	3%
8	Urinary Tract Infection	289	3%
9	Diarrhoea (WBD)	164	1%
10	Eye disease (WBD)	151	1%
	Other Diagnoses	983	9%
	Waterborne diseases (WBD)	**2777**	**25%**

PROGRESS TOWARDS THE FINAL GOAL: BEYOND QUANTITATIVE ACCOMPLISHMENT, ASSESSMENT OF THE PROGRAMME IMPACT

The impact is constituted of the direct effects brought by the quantitative results of the programme, by the indirect effects that can be observed and are still relative to the programme's activities, and by side effects than can either be generated by the programme's activities or by any other external cause, but still contribute to the general impact concerning the final goal of the programme: ***to obtain a sustainable improvement in health and economical situation of the targeted population.***

Given the short duration of the assignment, it proved to be impossible to gather reliable quantitative indicators to measure the various effects, but the assessment exposed hereafter is based on the most noticeable and frequent indicators found in user expression during the interviews.

[11] See *Health offices, in Gessa Charre, Bele and Gesuba*, page 10

I. OBSERVED EFFECTS OF THE WATER SUPPLY IMPROVEMENT

The following list gathers all the various changes, resulting from Inter Aide's water supply project, that have been noticed through field observations, discussions with users, project staff and administrations, etc.

These effects are analysed and synthesised in the next chapter (*Main components of the impact*, page 27), to draw a picture of the impact.

I.1 Basic changes

The following changes brought by the implementation of a water system in a community can be identified as a base for most of the effects observed:

- the availability of water at the water point allow users to save time
- the water used by the beneficiaries has a much better quality
- the quantity of water used has increased

I.2 Decrease of waterborne diseases

The first impact of the water system, as it is perceived by the users, is the decrease of waterborne diseases. This improvement of life conditions has been stated in every interviews we had with users and water committees, and frequently ranked as first.

A reason for this might be the fact that animation is frequently laying stress on waterborne diseases, explaining that water from the system should be used for drinking and cooking to prevent from those diseases. In that manner, users are quoting the decrease of waterborne diseases as the main impact because they "know their lesson" from the animation. The "well-known lesson" could also come from the fact that when women would bring their sick children to the health post, the health agent would explain that the disease of their children finds its cause in the unsafe water he drinks.

In spite of this possible bias, users clearly stated the most common diseases they encounter in the community, and none of them were waterborne. Men, women confirmed that most of the stomach pains and intestinal diseases they remember became very infrequent after the water point was constructed and used.

Even if the decrease of such disease is difficult to asses in health statistics (see *Objective 3: hygiene improvement*, page 22), it is probably the first and major effect resulting from the water system constructions.

I.3 Frequent washing

The water systems allowed most of the users to save time on fetching water, and at the same time to use more water.

The large majority of users, in Kindo Koysha as well as in Ofa, explain that both time savings and available quantities allow them to wash more often:

- their feet (now every day after working in the fields, or every time they go the water point for some women)
- their whole body
- their clothes
- children (especially their faces and feet)

It is there difficult to distinguish between the impact of the water system itself and the hygiene education (recommending to wash more often than was previously practised), but the overall impact seems to make no doubt.

The demand for washing might not be the priority for many users prior to the water system construction, but it seems to be a major concern when the first issue of water quality and quantity is solved. In most of sites visited in Ofa, a demand for a shower has been

expressed, mostly by women. Since enough water is now available to wash more frequently, the issue of having a convenient place to wash is more acute than before.

According to people interviewed, the demand is rather for a closed washing place (in order to be out of sight) than for a piped system (which would also be appreciated). The few showers constructed in Bele area (at the water point) were all abandoned after some time, apparently because people - mostly women - disliked the fact that children could peep inside through holes or door interstices. The relevance of a public shower to address this demand has to be studied, but it certainly points out that the convenience of washing is now a concern, thus confirming that people wash more often.

I.4 Improved hygiene

Hygiene has not only improved by the possibility to wash more frequently, but also by the proper use of the water (covering the pot with clean cap, using a different cup to take water out of the pot and to drink, storing properly cups so that they remain clean, etc.).

These new habits, that were observed on field in several houses (a survey carried out by Inter Aide's Animators estimates that about 75% of the households are applying such recommendations) are assumed to be the result of the hygiene education programme of the Water Supply projects, but also from the local health agents support at the *kebele* level (similar recommendations coming from two different sources are very likely to be adopted).

I.5 Improved lifestyle

Many changes quoted by the users concern their lifestyle. These changes are mostly due to time savings and the availability of a greater quantities of water.

a) House care

Many women interviewed reported that they started to use water for new purpose: sprinkling the ground to fix the dust, washing home utensils, etc. This brings an improvement of house comfort (which is directly quoted by users) and probably contributes to more cleanness in the house (possible impact on health).

b) Convenient on-demand water supply

Instead of estimating their daily needs for water, and being limited to the amount fetched on this basis, many families can just fetch water according to the instant needs, without restricting the consumption of the family members, as they used to do previously (many women stated that, previously, they did not give water to a child every time he asked for it).

c) Facilities to guest

Women expressed their satisfaction about hosting guests any time and being able to provide them with fresh water, and especially piped water, as it is often asked by the guests.

d) Household peace

Some women explained that being able to manage the water supply of the family without being late to prepare meals, or being out of the house for long time in the day and even come home late at night, resulted in a more peaceful atmosphere with their husband.

I.6 More working time for men on the fields

Men often admit to be able to spend more time on their fields, because the breakfast can now be prepared earlier in the day, thanks to the short time needed to fetch the first pot of water in the morning.

I.7 Improved school attendance

As it was very frequently stated by interviewed users, the decrease of children's waterborne diseases contributed to reduce the number of days missed at school. Some people stated

that it was common for children to miss more than one day per week before the water supply system was constructed, while nowadays, missing a day at school is not common for a child.

Besides, the time saved by children on fetching water allow them to be on time at school in the morning, while some water points have been constructed near schools in order to provide a sufficient supply for the students, who no longer have to fetch water to bring at school.

I.8 Money savings

The savings induced by the improved water supply are not frequently stated by users, but most of women, when talking about the diminution of children disease, agreed to say that they really spend less money on medication for that purpose.

Other savings can result from the home-produced vegetables and fruits allowed by the gardening activities, but were not expressed as such by users when they were asked about possible savings relative to the water system.

I.9 New income generating activities

a) Gardening

New activities allowed by the water system are not directly stated by users as an advantage of the system. But when asked on the use of the time saved, and the new uses of the extra water they can fetch from the system, many women answered that they increased their gardening activities (mostly planting vegetables and fruit trees such as avocado trees) for their own family consumption, and even to sell some products to the market.

b) Craft

Other new activities were quoted by some women, like pottery, wickerwork, cotton spinning for cloth fabrics. Even if a part of these production are intended for family use, the rest can be sold, especially when the time saved on fetching water allows also to go more frequently to the market.

I.10 Reinforcement of management skills and capacity building

The experience acquired by water committee members can be a base for a local capacity to manage communal infrastructures and services. Money collection for collective purposes is already usual in the communities (Iddir), but they rely on very simple and non-formal management. For most of the communities, the water system was the first infrastructure to be managed by the users. So this activity is assumed to build the local capacity, but the outcome of the various interviews did not reveal strong improvement in this area, except of course for the water system management.

I.11 Contribution to transportation facilities improvement

Both in Kindo Koysha and Ofa, the water supply projects had to open (with population participation) some roads to reach the sites with trucks and pick-up to bring the materials. Even if theses roads were mostly directed to springs catchment, and not intended for the communities, they contributed to reduce the isolation of many communities.

In Ofa, road workers were employed by the project to maintain the roads and especially the particular works (bridges, slabs), and in Kindo Koysha several bridges were rehabilitated by Inter Aide. The impact of these road construction or maintenance are not only due to Inter Aide's intervention, as most of them were open or rehabilitated by SOS Sahel (in Kindo Koysha) or collective work organised by the *wereda* administration, but a part of the maintenance (especially in Ofa) was a contribution from Inter Aide water supply projects.

I.12 New expenses for the users

The maintenance contributions constitute a new money-consuming liability for populations that are on low incomes. However these expenses are deemed to be affordable for the

population. The amount of money collected for maintenance results from the committee efficiency rather than the population's capacity to pay.

I.13 Water is fetched mostly by children

While fetching water from distant sources was mostly the burden of women and sometimes men, it is now very common to see children filling up plastic cans of various capacity at the water point. This new activity for them does not seem to increase the burden on children, as the use of the water point (especially with containers adapted to the size of the child) is very convenient, and seemingly appreciated by children (a couple of women reported that among the various duties that can be assigned to children, fetching water from the water system was there favourite). On top of this, the older children used to help their mothers to fetch water from distant places, which is no longer the case in covered areas.

II. MAIN COMPONENTS OF THE IMPACT

The final goal of the intervention is to obtain a sustainable improvement in health and economical situation of the targeted population.

Although the expected improvement in health situation in the three *wereda* is difficult to assess without consistent data, it seems to be locally attested from users' point of view. The **reduction of waterborne diseases** was confirmed by users in every site visited.

Besides, user interviews confirmed that Inter Aide projects meet population demand according to their means (safer water, closer to houses, in a greater quantity, quite inexpensive service). Users' satisfaction makes no doubt.

The impact on the economic situation is more difficult to assess, as it is influenced by many independent factors. The main observed effect having a potential positive impact on economic situation is **time saving**, because they allow men to spend more time on their fields and some women to start or increase some income-generating activities (and to go earlier and often to the market to sell products).

Other effects of the project also have some effect on the economical situation, but on a secondary level:

- cattle's health improvement increases the viability of raising livestock
- employment generated by the project has a strong impact on the staff families, but this is a small scale effect (about 40 persons for the two hydraulic projects)

III. SUSTAINIBILITY OF THE RESULTS

The durability of the impact mostly depends on the sustainability of population access to safe water in a fair quantity. Thus, the sustainability targeted is that of the water supply.

III.1 System appropriation by the population

Since the public service of water supply is not operated by governmental agencies, but relies on communities' efforts, a strong feeling of ownership is essential to enable local management and maintenance.

On this aspect, the field visits and interviews witnessed that users clearly consider that water systems are property of the local communities, and managed by the users' water committee. Some water committees decided to establish an internal rulebook for the use of the water system, and imposed fine on users damaging or not properly using it.

Given the current institutional situation (the WMEDB has no local officer yet at the *wereda* level), people have very limited trust in any governmental authority to take charge of such public service in rural areas.

Ownership feeling seems to be satisfactory.

III.2 Water committee autonomy

a) From the animation point of view

The water committee autonomy has been a major concern of the projects in Bele and Gesuba. The operation of the systems does not require much skills and, with the presence of an hydraulic agent in the *kebele*, committees do not depend on Inter Aide or any governmental office to run the systems and ensure the day-to-day upkeep.

The committees considered as autonomous by the Inter Aide must fulfil the following criteria (taken from the BWS project documents):

- The water points should give function or service
- The Committee should be a bank account member
- The committee should be a tool bank member
- Maintenance fees should have increased from less to more
- The committee should have training
- The Committee should do all the activities by themselves
- The Committee should report quarterly
- The Committee should have one general meeting a year

As detailed in *Objective 2: autonomy level of water committees*, page 20, the number of committee reaching that stage is increasing, but the hand-over phase needs to be completed (more than 50% of the existing committees in Kindo Koysha still need to be supported by the project animators, and 100% of Ofa committees also need this follow-up).

This relatively slow progress is not worrying because the animation programme built up by the two project teams seem to be fruitful, and such process has to take a certain time. However, GWS project must now make up for the lost time, and the proportion of autonomous committees must reach as quick as possible that of BWS project.

The real autonomy issues concern maintenance: financial capacity, skills, tools and spare parts.

b) Financial autonomy

The financial autonomy for maintenance is uncertain for two reasons:

- it is difficult to evaluate if a committee is "safe" regarding the money collected, because it is difficult to appraise the cost of possible breakdowns
- even if committees have a sufficient amount of money when they are declared autonomous, it might change quickly because the collection efficiency is strongly depending on committees' ability to convince users to contribute money, especially in the early years when breakdowns are infrequent.

From that point of view, the two projects still have to solidify committees' financial autonomy when handing-over the systems.

c) Technical autonomy

The sustainability of water supply requires **maintenance capacities at local level**. The option taken by Inter Aide is to construct systems as simple as possible, in order to demand a very low level of skill for the maintenance. The projects developed these skills through water committees (maintenance drama, committee training) but mostly through hydraulic agents (more specific training during the water system construction).

In the beginning of the BWS project, these new skills were not durably available at the local level because many hydraulic agents would take advantage of their new skills to find a job in another area. To reduce this turnover, the project decided to select future hydraulic agents on a lower level of education, thus less likely to have other job opportunities.

The most useful skills for the regular maintenance of the systems can be considered as available at the local level for a few years. However, a complete sustainable network of hydraulic agents would require later the possibility of training new agents when needed, independently from the project structure. Two solutions could be envisaged:

- Inter Aide projects could identify a specific hydraulic agent that would be sustainably settled in the area and would have teaching abilities to train new hydraulic agents. There would only remain the issue of the funding (who is going to pay the training?)
- the responsibility to supervise the hydraulic agent networks could belong to the future *wereda* water desk.

But it is even more important to solve the problem of heavy maintenance or future rehabilitation, for which no permanent competencies exist in the area. These particular skills would be needed for example to repair or rehabilitate spring boxes (leaks, flow diversion, decrease of the water level), or to add or renew water points (masons skills are not frequent in the area). This level of competencies are neither available nor needed at the *kebele* level, but should be present at least at the *wereda* level.

The technical sustainability of the systems would not be secured until the projects find a competent operator or organisation to fill this gap.

The sustainability of water supply also requires **maintenance supplies at local level**. The project implements tool banks in every *kebele* (already working in Kindo Koysha, and soon in Ofa) for hydraulic agents and committees to be able to service the systems without investing in expensive tools for a rather infrequent use. The functioning of these tool banks must be analysed by the project in the coming years to assess their financial viability. They bring a solution for the small equipment, but, like for the higher level skills needed, some other **specific tools** must be available in the *wereda* (e.g. screw plate for galvanised pipes).

There is a similar problem with **spare parts**. Some of them can be found on the local market, but that is not the case of the main component (and most likely to be needed for repairs): **PVC pipes**.

Very accurately, many committees told us that, to them, the availability of PVC pipes and fittings are more of a concern than their cost itself.

In the absence of any existing supply chain for this kind of materials, Inter Aide must find an alternative supply that would sustain after the NGO's departure.

This issue is already at the centre of project staff concerns. They are currently in the process of testing locally made PVC pipes, that would enable an easier supply (but still not sustainable at the *wereda* level because the only market would be the systems constructed by Inter Aide).

Project officers also consider the set up of a dedicated shop that would open on market day in Bele and Gesuba, and probably need external financial support from Inter Aide to be viable. This could be a temporary solution for a couple of years after the NGO leaves the area, but this would not constitute a sustainable option for a longer time.

IV. POTENTIALS AND RISKS FOR THE FUTURE

IV.1 Potentials

a) Technical sustainability of the systems

All systems have a limited lifetime, and the investment to renew them must be considered. Fortunately, in the case of these gravity-flow systems, most parts do not need to be renewed as a whole, but are progressively renewed while maintaining the system (pipes, fittings, etc.).

For users, in charge of the renewal of as much as possible of the systems, it is much easier to handle small and frequent maintenance expenses than to face a huge (re)investment cost every twenty years for example.

b) Gravity-flow systems diffusion

Thanks to the Inter Aide's intervention, these systems are now prevailing in the concerned *weredas*, and knowledge about their maintenance is developing. For now, the specific technical skills are concentrated in Inter Aide's staff, but the prevalence of this type of system will probably advocate for its replication by any other operator intervening on water supply in the area.

c) Inter Aide skill-transfer approach

The necessary technical skills to catch spring and design a gravity water system are less and less relying on expatriates (100% Ethiopian staff in Bele Water Supply project, transition phase in Gesuba Water Supply project to have a 100% Ethiopian staff soon). Although these skills are not permanent in the area (as stated by GWS project staff, technicians will probably follow the project if it was transferred to another area), they are at least contributing to develop national competencies.

d) An upcoming governmental structure for rural water supply

The WMEDB is currently in the process of developing a new structure dedicated to rural water supply, that will be active at field level, based in the *wereda* offices. This "water desk" could be the missing element after Inter Aide's departure, completing committees and hydraulic agents skills. The role of this coming structure should be adapted to the existing situation in the Kindo Koysha and Ofa, which requires a close partnership with Inter Aide staff during a sufficient time before the system supervision can be efficiently handed over to them. Inter Aide's activities in water supply in the Ofa and Kindo Koysha *wereda* can even be a reason for the WMEDB to implement this new structure in priority in these two *wereda*.

IV.2 Risks and limits

Major risks for the sustainability of the water supply, or limits of the projects' results have been identified above:

- water committees' financial capacity for maintenance
- availability at the local level of skills and spare parts

Some other risks or limits are listed below, but can be considered as secondary, or out of Inter Aide's responsibilities, compared to the ones above.

a) Springs constancy

The availability of springs to supply water is a great advantage of the area, but this must not hide the fact that the sustainability of the water supply heavily depends on rainfall or other factors that affect spring yields such as flow diversion. Springs have always been part of the scenery for users, but in order to secure their own water supply they should be concerned by spring protection.

b) Demographic growth

Demographic growth is recurrent risk in the area, having negative impact on many aspects. Concerning water supply, it has to be taken into account for the increase of the demand, and the land pressure on springs (which, for example, would hamper the implementation of protection areas around the springs).

c) Uncertainty on skills that will remain at local level

Most of the local Inter Aide staff is Ethiopian, and native from the local area. But there is no certainty that they will stay in the area (thus achieving the local capability improvement),

because they will probably prefer to follow Inter Aide programme in other places, or move to another area where they can find job opportunities thanks to their new skills.

d) Limited improvement of health situation

Although it is a main objective of the projects, health improvement will be limited by the fact that water supply improvement only impacts on waterborne diseases prevalence, but not on other diseases like malaria for example.

Another limit for the effort made to upgrade families' habits regarding water use and home hygiene will remain as long as families will share the small, unventilated space of their house with the cattle.

e) Bele's town water supply

The water supply in Bele is known to be unsafe (bacteriological contamination), because of a lack of maintenance on the pipes. Population is not directly in charge of the maintenance as the staff of the water bureau are employees of the town council. In spite of their professional position, it seems that they are not implementing a sufficient level of maintenance to ensure a proper water supply.

Inter Aide was once involved in the water system upgrade (and extension to neighbour *kebele*), and handed over the responsibility of the maintenance to new water committees created for the new branches (out of Bele town). They are actually keeping their branches in a fair condition, but the water they get has a poor quality as the necessary maintenance on the prime pipeline out of the spring box is not properly done by the town's water bureau.

V. NEEDS FOR REPLICATION

The considerable experience acquired in Kindo Koysha and then after in Ofa allowed Inter Aide to capitalise their knowledge and develop their process and methods.

The implementation of the GWS project can be considered as a first and early replication process, using BWS project experience. But, even if the GWS project benefited from methods and inputs from the BWS project, the time lag between the two projects is very short. Loma Bossa and Damot Gale areas will more likely benefit from the experience in Kindo Koysha and these projects will probably be implemented as replications.

The following paragraphs present the main factors that are strongly linked with the local context and that would probably require adaptations of the project methods. Most of these factors are already known by the two project staff (technical difficulties).

V.1 Context variables

a) Water springs characteristics

The success of gravity-flow systems highly depends on the availability of springs, and their location compared to that of the population. As already experienced in the various type of habitat in the existing project zones (lowlands, midlands, highlands), efficiency and productivity parameters (number of water points constructed per year, time and cost per water point, etc.) can be strongly influenced by the distance to the springs.

Spring yields are also a key factor influencing the possible coverage attainable. In implementing similar activities in new *wereda*, Inter Aide will have the option to cover the water needs that can be addressed by the available spring yields or to set a similar coverage goal as in Kindo Koysha, and develop alternative designs (reservoirs, river catchment + treatment) to reach that goal.

b) Materials availability, and transportation facilities

Project officers already know very well the strong impact of materials availability (sand availability is a real concern in the region) and their transportation on costs. This must be

studied to evaluate the feasibility of a replication in a new area, by setting the acceptable cost level for materials.

c) Population density

The population density and the type of settlement (grouped or disseminated) are two major parameters impacting on the possible coverage of water systems. In Damot Gale, the higher population density will probably result in a greater number of users per water point, which would facilitate the intended coverage, but could require to adapt the design of the water points (wider area, more taps, improved accessibility to reduce queuing time, several washtub, etc.)

d) Population participation

As observed elsewhere in Africa, user demand can significantly be demonstrated by the level of population participation (in labour, in materials or in money).

As user participation is an efficient way to test and create a strong ownership feeling for the system, the Project approach placing population involvement at the centre of the methodology should remain the same.

However, the level of participation can vary independently from the user demand, when it is influenced by other factors as the intervention of other NGOs, international agencies or governmental programmes (such as "Food For Work").

Therefore, user demand must be re-assessed by Inter Aide when starting action in a new *wereda*, in order to set the level of participation required to the population according to local context influence.

e) Population awareness on water quality issues

User demand is significantly orientated toward water quality and not only quantity or access facility. This is an important specificity of the context in Kindo Koysha and Ofa, that is not forcefully expected in other area.

The hygiene education component of the Project activities may have to be adapted according to the local "sensitivity" regarding water quality and health consequences.

RECOMMENDATIONS FOR THE PROGRAMME'S FUTURE ORIENTATION

I. TECHNICAL RECOMMENDATIONS

I.1 The water point design

The design of water points has evolved through the years, mostly according to the programme officer inputs, with a slight difference in the two project areas. The main objective of this evolution was to reduce the quantities of various materials needed to construct the water point, and also to save time on the construction.

It is recommended that the outcomes of these evolutions should be compared and exchanged between the two projects, with a strong input from the users (thus mainly women and children). A survey carried out by the animators among several communities (using different designs and covering the various uses of water) could help to finalise a design (with possible alternatives according to specific contexts) that would be closely adjusted to the users demand.

I.2 The replicability of the design and techniques

While the quantities of materials needed to construct a water point must be optimised in order to reduce the costs of construction, the use of moulds reduces the chances of such water points to be constructed with a low skill level, when Inter Aide's assistance is no longer available.

For example, the construction of a simple cattle trough with bricks or concrete blocks could easily be achieved by any local mason in many African countries. By using such techniques, Inter Aide could have contributed to a significant transfer of skill towards local operators.

Unfortunately, while masonry is a common skill in many African areas (where at least a part of the houses are constructed in concrete blocks), this type of skill is very uncommon in the projects areas (sand is not widely found and difficult to transport). Thus, communities are actually depending on the project staff for the construction, rehabilitation, modification or replication of any part of the water points.

It is recommended to develop training activities for local operators (Hydraulic Agents for example) in masonry and alternative techniques, in order to decrease the dependency of communities on project intervention, and to allow them to better control the evolution of their water points.

I.3 Taking into account the risk of water table degradation

The communities seem to have a strong feeling of ownership on the water system, and the water committees are teach how to keep theses system as functional as they were after their construction.

But the risk of a decrease of the water table level is generally not considered. As it is not a question of good maintenance, one could say that the committees are powerless on this issue. However, it seems important that the water committees should be aware of this risk, and be trained to monitor the spring discharge, in order to take necessary action to manage this risk (construction of a reservoir, installation of automatic taps, or even catchment of a new spring if that technique was locally known).

Besides, a good evolution of spring catchment design has been recently implemented by the projects and takes into account a possible drop of the water table level without any risk of applying a back-pressure on the spring (the level of the intake pipes in the spring catchments is as low as possible).

II. MANAGERIAL RECOMMENDATIONS

II.1 The follow-up of the project's activities

Hardly any follow-up tools are described in the annual reports, and the documentation available in the projects offices do not give much examples of such tools. Most of the documents used by the project staff relates to the construction progress, while the follow-through of water committees is not enough documented.

It is recommended that some specific tools should be developed (and gathered in order to constitute a "control panel" for the project officer) to provide sufficient information on the project progress so that the project officer can more easily direct the efforts of the staff.

This is partly due to the difficulty to use computers to manage data and reports, because power only available in Sodo. A few months ago, both Gesuba and Bele towns have been connected to a 24h (or almost) power grid. This major change will allow for the use of computers for many purposes, and the interest of computerised data will rise. But it implies that some people among the staff are trained to computer use.

Both in Ofa and Kindo Koysha, the existing follow-through tools seem to be mostly maps and this is a first good step. These media are understandable and useful for every member of the

team. The need for documentation and tools is rather for the direction of the project, and for external report purpose.

II.2 Objectives and follow-up of the animator's work

Animators are spending a long period of time with the communities, and far from the office. This distance makes it difficult for the management staff to provide support to the animators, but also to follow-up and control their work. Some examples in Gesuba show that a closer follow-up is needed to be certain of the animation work.

It is recommended that the follow-up of animators should be tighten, and mostly that some clear objectives should be set to give them a responsibility on the results, and not only a programme which application is difficult to assess.

II.3 Staff capacity improvement

As it was discussed with Gesuba Water Supply project staff, certified short-time training should be provided as much as possible to the staff, in order to give an official value for the competencies they developed throughout the project.

II.4 Quantitative objectives of the project

Up to now, the specific objectives annually set mostly relate to the number of water points constructed. As the sustainability of the water supply is a major goal of the project, this should appear in the annual specific objectives. For example, the number of water committees having reached a satisfactory level of autonomy each year should be part of the objectives.

This is a way to ensure that the increase of the number of new water points is not made to the expense of the sustainability of their management.

II.5 The particular issue of the financial autonomy

Having supported more than one hundred committees for the GWS project, to almost two hundred for the BWS project, animators have certainly developed their own appreciation of water committees' autonomy. But regarding financial capacity, which is a major concern for the project phase out, autonomy must be clearly appraised.

The current animation process make committees aware of the necessity to collect money, but only suggest the rate of 10 or 20 cents per month per household because it is widely practised by other committees. It might make some of them feel safe because they apply a "standard" rate and do not face many breakdowns in the first years, while their systems might cost a lot more to maintain in the following years.

A maintenance provision must be calculated for each system, according to its size or the particular parts involved. From this provision, a clear goal for the money to collect would be set to the different committees using the system. That way, the level of the collection would become an indicator for the project staff, and a criteria for autonomy.

The process to estimate this maintenance provision can be developed by analysing the "maintenance history" of the older committees. Relevant data already exist for the BWS project (they were used for the analysis in II.II.1.c) page 13), but are incomplete (no data concerning costs), the recent maintenance programme implemented in Ofa should be the opportunity to start a similar survey.

III. INSTITUTIONAL RECOMMENDATIONS

III.1 The future institutional set up

For the time being, the organisation of the water supply sector mostly relies on two actors: the communities through water committees, and Inter Aide France.

The latter will progressively leave the *weredas*, and water committees will need some external support. Currently, the governmental structure cannot provide this support at field level, but it is planned that an appropriate body will be implemented in the near future.

The population participation and the autonomy of water committees must remain the basis of the future institutional set up (and the water supply policy). But a sustainable intervention of a governemental office is necessary to build a relevant, efficient and durable institutional set up for the rural water supply, independently from any NGO.

This involvement of national administration is already prepared in Kindo Koysha (and débuting in Ofa) with the elaboration of specific data files for each water point per *kebele*, gathering relevant information, to be given at first to the *kebele* authorities, and later to the future *wereda* water desk.

While plans and technical data are essential to enable the administration to carry out its mission, this is not sufficient. The coming governmental office must develop the relevant skills that are necessary for its mission, through an extensive practice at field level in the project zones.

The evaluation team recommends (as its main recommendation) that Inter Aide projects support (and even to give rise to) the implementation of the new governmental structure and its involvement at field level, in order to clearly demonstrate the type of support that is needed by water committees. The future water desk needs a good knowledge of project history, of the approach used and the methodology that was developed, in order to preserve the benefits and good results of Inter Aide's intervention.

As previous agreements awarded by the regional administration were positive, there should be a more "bilateral" agreement, including provisions ensuring that the local water desk is handed over the responsibility of providing support to water committees and ensuring that spare parts and specific skills (like spring catchment and pipe sizing) are available in the *wereda*.

The handing over of the water systems should be done by groups at the end of each agreement period, to allow for a progressive implementation and auto-adjustment of the governmental support to water committees.

APPENDIX

I. TERMS OF REFERENCE OF THE MISSION (EXTRACTS)

B. Object of the evaluation

1. Founder postulates

They are two:

- 🕮 The first of basic postulate was to opt originally for the technical and technological viability rather than for the financial one. Actually the recourse to spinning systems has as a consequence to make non operational any strategy of recovery of cost based on the invoicing of consumed water. This choice as therefore required the elaboration of alternative strategies and the project has strived to gather thanks to other means the conditions of possibility of a real economic viability but also of a social and institutional viability (the viability being understood as a complex set of competences of adhesion and of organization able to secure the continuity of supply in water across time).
- 🕮 The second postulate was to privilege the access to potable water through its direct consequences on two variables considered as fundamental: the individual consumption and the time of collection. The expected impact of a modification of these variables is based on the assumption:

- That an increment of consumption of water is made to the benefit of a use other than ingestion (notably the one linked to corporal hygiene) and decreased at the end the risks of domestic pollution by enabling faster rotations and smaller duration of stocking.
- That the reduction of time of collection entails a redistribution of resources to the productive sphere.

2. Questions to be dealt by the evaluators

2.1 The one of the appreciation of the relevance of the objectives: to evaluate the degree of relevance of the action in the frame of the objectives set by the project. The matter is to judge globally the adequation of these objectives with the fundamental needs of the target population on one hand and the key elements- geographic, demographic, sanitary, socio-economic – of the incriminated context on the other hand.

2.2 The one of the relevance of the founder postulates mentioned above: the evaluation will take place in a perspective of validation or invalidation of these postulates:

- By an analyzes of the organizational mounting set up in the frame of the process of the sustainability of the results of the action. The matter will be to measure the relevance and the efficiency of the mechanism under the viewpoint of the complimentarity of the role of each one of the actors of their own autonomy of functioning of the normalization of the their interaction of the integration of different levels of mobilized resources and by the aptitude of the system to guarantee the socio-economic and institutional viability of the achievements. The levels performed in the mechanism are the following ones:

  - The users committees responsible for the usual maintenance the protection and cleaning of the water points of the collection of the contributions as well as for the management of incidents occurring on the network. They have at their disposal when this is possible remunerated account opened to a micro finance institution accessible exclusively to withdrawals motivated by the financing of intervention on the network.
  - The hydraulic agents or community technicians trained on the site operating upon request oft he committees as capable to solve 90% of the technical problems. They are remunerated on the basis of a salary by the committees.
  - The tools banks progressively constituted at the level of the kebele (commune) by an investment financed up to 50% by the overall concerned committees . They are controlled by a management committee elected by the users committees. Their essential function is to

manage the proceeds generated by the loan of tools, which are provided upon a daily rent payment.

- o The cell of maintenance is an emanation of the project which intervenes upon a written request of the committees for major repairing according to principle of a sliding financing. Its vocation being to ensure a transition with future institutional structures at the lowest cost, it is structurally limited to the minimum a polyvalent operator, a stock of material and a mean of transport. On account of these activities is transmitted regularly to the authorities.
- o The institutional actors: (micro finance agency, local authorities, WMED branches) whose function will be to connect the action of the basic organizations with the administrative environment thanks to specific provision of services. The establishment of a complete descriptive, technical and organizational documentation including the plans of the work their geographic localization, the cost of the constructions, the composition and the structure of the committee, the diverse authorizations from the authorities the protocol of disengagement, the historical of the water point. The constitution of these archives will allow a complete restitution of the information related to each water point to the future local representation of the WMEDB.

– By an examination of the validity of the protocols of consumption measures effected in the frame of the action witnessing a steady increment of that one. Then by a consecutive evaluation of the impact of these increment on the daily practices of the users (notably as far as hygiene is concerned) which ever may be the nature of the this impact: qualitative and or quantitative, expected or not positive (in terms of acquired benefit) or not perceived or not by the beneficiaries. By analyzes of the data concerning an estimate of the average gains of time generated by the present of the water point. To propose a quantification of these profits valued in the frame of family economy.

2.3 The one of the result achieved and the means implemented to attain them:

– What are the most significant results to be under scored as from the start of the action.
– To evaluate the degree of efficiency of the action: meaning its efficiency to respond to objectives set according to consumed resources. To propose if the case arises steps which can improve this efficiency.
– To evaluate the follow-up system the monitoring and internal systems operating in the project from the view of its capacity to measure the results and effects of the actions into inflict the methods and strategies according to these measures, in other terms will be appreciate the faculty of this system to ensure by a constant questioning of its own choices a requirement of improvement of permanent of the actions (under the angle of the efficiency and the viability notably).

2.4 The one of the relevance of the strategy of progressive disengagement and of reproduction of the action in the neighboring zones non-operated by the project.

2.5 The one that the evaluator will deem relevant to raise in the course of his mission.

C. Methodology

For the mission of evaluation:

The evaluation will be based on the study of the available result through the progress report the investigation data, the internal evaluation tables and globally the whole system of documentation built in the information frame of the project. These data regard notably the technical longevity the evolution of the water consumption according to the distance of the water point the autonomy of the committees measured with a yard of the execution of specified tasks the continuous recording of the interventions of the maintenance cell the invested cost.

It will be based on the conversations with different actors of project the technical teams: the direct recipients and the representatives the users committees, the local authorities and other institutional actors involved at a certain level in the project.

It will be conducted around discussions with heads of the project Ethiopian and expatriates the program director based at Addis Ababa, the operation head and the regional director at Versailles.

It will be based at last on the elements collected during numerous visits on the field on the basis of a sampling according to key parameters: the seniority of the works and the techniques used the autonomy of the committees, the accessibility of the site, the intensity of the needs (according to the difference of scarcity of water linked essentially to the altitude). The various stage of the operational technology.

For the restitution

At first restitution will have as a frame the overall actors involved locally in the implementation of the project representatives: of users committees, operators, local authorities protecting organisms at a zonal and regional level.

A preparatory meeting will take place at the headquarter of Inter Aide to define the final restitution organized with the F3E in presence of representatives of donors and other concerned bodies.

An additional report condensed in English and repeating the main conclusions and recommendations will be provided to the co-signatories of the approval of the project.

D. Means

1. Human means: to eternal evaluators

One expert in access to potable water a foreigner will lead the evaluation. A very food command of English is imperative. A certain technical expert report in the matter of evaluation is required plus specifically concerning the sectors of efficiency results compared to means. And different forms of viability, technical, institutional, socio-economic. A previous experience in East Africa is preferable but not necessary. Beyond the aforesaid technical competences the following capacities are highly recommended:

- Of rapid diagnosis of the physical and human environment under the viewpoint of its constraints and its resources.
- Of dynamic understanding of the background and it essential stakes.
- Of synthetic reconstitution of the historical of the project and its major progresses.

He will be backed by an Ethiopian counter part recruited locally. His competences as far as access to potable water is concerned will not be considered as decisive. His experience in the fields of Ethiopian institutions in the evaluation of projects and local populations will be privileged the later will be specifically in charge of making interviews in national language (Amharic) and local language (Wolaytigna) wished but not required. According to the pre-established tables, to coordinate and pilot, the meetings with the authorities and the institutional organs of protection, he will be liable as well to put the evaluation mission in the administrative and regulatory frame of the intervention of NGO's in Ethiopia by restitution the evolution of the actions and the general background within the legal mechanism of the established agreements.

2. Time frame

The integral mission will last 24 days out of which 2 are spent for the trip.

We forecast 2 days of preparation in France for the consultation of the available documents and the meeting with the coordinators of the project.

The mission on the spot will have to take place between November 2002 and January 2003 for a duration of two weeks in Ethiopia divided in one day of preparation in Addis Ababa including a meeting with the attaché of cooperation from the French Embassy 11 days on the sites of intervention 2 ½ days of secondary travel Addis-Soddo, 2 days of restitution (Bele, Soddo, Awassa, Addis). 3 days of drafting in Europe for the production of a provisional report in French and a digest in English.

1 day of preparation and final restitution

1 day for the production of the final report

II. TIME TABLE OF THE MISSION

Date	Location	Activity
10-11/01/2003	Addis Ababa	Meeting with IAF staff and report review
12/01/2003	Addis - Bele	Travel to the project zone
13/01/2003	Kindo Koysha	Field Visits
14/01/2003	Loma Bossa	Field Visits
15-17/01/2003	Kindo Koysha	Field Visits
18-19/01/2003	Soddo	Data analysis and report outline
20-23/01/2003	Ofa	Field Visits
24/01/2003	Soddo - Awassa - Addis	Region Water Office visit
25/01/2003	Addis Ababa	Preparation of draft report

III. ORGANISATIONS AND PEOPLE MET DURING THE MISSION

Name	Organisation	Position	Place of work
Ato Teferi Chinesho	Health post	Head of the health post	Fechena PA
--	Loma-Bosa Health centre	Head of the health centre	Gesa-Charre
Ato Madebo Mena	Kindo Koysha *wereda* health office	Head of the health centre	Bele
Ato Mekonnen Shiferaw	Kindo Koysha *wereda* health office	Sanitarian of the health center	Bele
Lieutenant Teshome Dilu	Kindo Koysha wereda administration office	Administrator	Bele
--	Ofa wereda health centre	Head of the health centre	Gesuba
--	Ofa wereda administration office	Administrator	Gesuba
Ato Meskelu Tumiso	Regional Water Bureau	NGO Coordination desk	Awassa
Ato Asfaw Dengamo	Regional Water Bureau	Bureau head	Awassa

IV. ABBREVIATIONS

Abbreviation	Definition
BOPED	Bureau Of Planning and Economic Development
BWS	Bele Water Supply
EB	Ethiopian Birr
GWS	Gesuba Water Supply
IAF	Inter Aide France
NGO	Non Gubernatorial Organisation
PA	Peasant Association
PVC	PolyVinyl Chloride
STD	Sexually Transmissible Diseases
TB	Tubercle Bacillus (tuberculosis)
WBD	WaterBorne Disease
WMEDB	Water, Mines and Energy Development Bureau
WP	Water Point

V. SUMMARY RECORDS OF USERS AND COMMITTEES INTERVIEWS

V.1 Physical observations

Description	Existing condition during visit	Problems seen
Condition of the water points	Clean and well fenced, no queuing has been seen in any of the water points (except a water point inlet door is locked for Loma Bossa town as the tank is completely used and requires some time to fill). Only on few water points are people seen washing their clothes while washing basins are mixing the wasted material with another user. It is seen that the washing basing is flat and not very much convenient to dump clothes in a bowl of water.	The faucets used when there are tankers are with good durability that is working more than five years in most cases but while trying to pour water to their containers the water washes their hands and this may cause contamination
Water committee	A committee of three men was originally established by the IAF and later on, to fulfil the required guidelines of the regional bureau, two women members were added to the existing three men and making a committee of five persons. The responsibility of women is only to keep the water point area clean. However in some visited villages they also work in cash collection and decision making process. But general, the women committee members are not empowered to have decisive roles within the committees.	The responsibility of women in water committees shouldn't only to work in mobilising for cleaning around water points. As they are the most benefited ones from the construction of the water supply schemes they have to have a decision-making role within the committee.
Maintenance capability	As per the discussion with some of the trained hydraulic agents (water technicians), they said they are capable of maintaining the their scheme as long as they have supplies of materials (especially pipes and fittings) from IAF project office at Bele. But all are worried when they are asked if they can manage with the supply after the project is phased out, as they could not get parts easily from the local market. It is known that the water committees who are not getting any support from the IAF project office are still maintaining their respective schemes and only they are coming to the office when they require parts.	It is clear that when Bele water supply project in Kindo Koysha wereda is phased out, it will be difficult to get the parts easily from the nearby town of Bele.
Annual cash contributions	Cash is contributed annually by every water committee and it will be deposited in a separate bank account in the Omo micro finance institution at Bele town. We have seen their bankbooks that are kept by the cashier. It is the cashier who saves the money and the bankbook is addressed by his name. The money is withdrawn by co-signatories of the three members of the water committee (The chair person, the secretary and the cashier)	No problem is seen in keeping the contributed money and how to use it for the required maintenance work. However, it is advisable to have all the water points to have their own water committees and should have contribution started while the money should be kept in a similar manner in the saving accounts.
Documentation	There is a good record of water users, the contribution they made and expenditure they make	This should be strengthened and applicable to other similar works.

V.2 User interviews

No	Expressions
1	Now we are travelling shorter distances to fetch from water points within our villages. Previously we are travelling longer distance in a rugged and mountains road (about an hour single trip in most cases) and with a lot of time in queuing for water that usually takes a lot of our time and energy to perform our day-to-day activities. We are sometimes times stay up to the night due to long queues fetching water from sands in the stream beds and we have experiences that a hyena eats our child and the torrential river takes them away and died (in Dega-Kera PA).
	Before we were going to fetch water early in the morning and came back late in the morning while our husbands are waiting in the house for coffee and breakfast (in the area to drink coffee is a common practice). Due to this he will be delayed to go to the field and works only little time.
2	Our children are going to school regularly and on time
3	The school enrolment have increased (discussion with school teachers)
4	We are in peace with our husbands as we can prepare meals on time
5	We have extra time to use for social activities
6	We can make pots, traditionally made house hold utensils, spin so that we can use them in our houses and sell them in the market and have an extra income. We also grow some vegetables and coffee seedlings in our garden (especially for those households close to the water points).
7	We have now less abdominal problems than it was before we had the water points
	The hygiene education we get from the IAF through dramas (called sanitation drama by the project office) helped as to properly handle the water we fetched. We also receive hygiene education while we are clinics for treatment that we came to know clean and properly water from taps is useful for our health.
8	We and our children feel healthy as we drink clean water
9	We look clean as we wash our body and clothes more frequently so that we are comfortable to be among our friends or when we go to clinics.
	Our children faces are clean and they have less skin disease
	We spent less money in health care and less regularly visit health offices
	Our cattle are now drinking water from the troughs that are clean and without worms (leaches). Previously our cattle were dying because of leech worm that multiply in river water
	Except the disease caused by tsetse flies that are dangerous to our cattle there is an improvement in the conditions of the cattle and their productivity
	Expressions of sustainability
	We contribute regularly so that the money shall be available whenever there is a need for maintenance. Most of the beneficiary people are contributing in cash while those who didn't contribute are poor or old people. But all the people can fetch water even if they are not paying but whenever those users who are capable to pay the fees but are not willing to pay are punished by the traditional internal rules that can be as much as social discrimination that is meant a lot to them.
	If there is damage to our system we are ready to maintain the scheme as soon as possible by using our available funds and if it is not sufficient we will raise especial contribution.
	We will not drink water form any other source except from the taps and when we are in the fields or on journey we will carry our water using containers.
	If the system is broken we will not fetch water until it is maintained but we prefer to go the next water point in the next village for fetching water.
	The system is ours and we will keep it carefully like we are keeping our individual houses.
	We are able to maintain the schemes ourselves. However we need assistance for the supply of materials so that we can purchase it from Bele town (IAF project office).
	We are worrying it will be a big problem for us if we couldn't get supplies from IAF office at Bele.
	We can borrow from our tool banks (in rental basis) so that we can repair our schemes (not for all schemes).

	We have our internal rules to determine the amount of contribution (annual contributions to cover only maintenance costs) and to increase these contributions whenever we found it necessary to raise it so that we can cover our maintenance costs especially to be used in future whenever higher costs are required for especially replacing and/or repairing the pipeline. (the annual contribution range from 3.6 Birr/year to??). We are feeling that the a huge mount of money is expended to construct the schemes and if we were supposed to construct it covering the expenses by ourselves then the contribution from all of the wereda people may have not been sufficient.
	We are using more water than we used to as we have water close by and we can fetch any time we want. We are not planning for fetching water as we used to and for example while the coffee pot is on fire we just go and fetch water before it is boiled enough.
	We don't store water in our houses as we can fetch it whenever we want it without any significant effort.
	As the area we are living is malaria prone area, we are usually attacked by malaria but as there is no other abdominal disease like we do have it before we have a better resistance to survive.
	We had food shortage especially in some seasons during these seasons we are weak and the intestinal disease we had will affect us a lot as we are already week but now a days we are feeling stringer though the famine exists as usual. During the famine (that is usually caused by water shortage) the cattle are going to rivers that are usually with very little water, partly stagnant and having leeches and they will be easily collapsed. But after the water points they are drinking water from the troughs connected that are part of the system and can be stronger than before.
	The water points are all fenced by growing trees and well protected. Besides, except in some fewer cases, the water point area is clean as the women groups are cleaning areas around the water points regularly in rounds. The people are also respect regulations about keeping the water area clean (not throwing unused materials around the water point, not drying clothes on the fences of the water points, etc. and if some body is doing so he/she will be punished by the their internal rules).
	We are contributing for water whatever problem we do have and even in the period of famine or drought.
	There are two water committees existing in our small town (Loma Bossa wereda center also called Gessa Charre town) one is organised by IAF and an autonomous committee that is using a system from a spring source with gravity flow and the other is from borehole and managed by another committee organised under the structure of the wereda council. The one from the spring is working smoothly while the one from the borehole is not functional serving only two months after construction. The set payment from the spring source is only annual contribution of 10 Birr per user. The borehole system is constructed first and the payment for fetching was 20 cents per a container of 25 litres. The people still afford (as they are residing in the town and have some kind of small business) to pay this amount that is very expensive as compared to annual contributions of less than 10 Birr. But the water committee is not autonomous to decide by its own for the maintenance and requests the involvement of the wereda council which has never given the prior it and when it dead it also requires the zonal office and the regional office through a chained bureaucratic process. As the result the borehole water supply system is not working (though a lot of investment is dumped for the construction), as the water committee couldn't make its own initiation to contribute additional money and to decide how to maintain the scheme by itself.
	We are not willing to extend the water supply scheme to other village unless and otherwise somebody else from IAF told us that the water would be sufficient for us.
	Though there is no queuing for the time being we afraid we will have water shortage in future (Pofa village, Wedu-Chere PA) as the water is very little and we request to IAF so that a water tank should be constructed to store the night and unused flow.
	We contributed in labor, supply of stones and wood, transportation of construction materials, supply of stores, supply of accommodation and food to staff to IAF staff who are staying with them in the village as we know the water supply is ours and is helpful to ourselves.