

WAHARA project Yearly Report 2011-2012

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This report was written in the framework of the WAHARA project – www.wahara.eu

WAHARA periodic Report

Report month 1-12

3.2 Core of the report for the period: Project objectives, work progress and achievements, project management

3.2.1 Project objectives for the period

Objectives

The project objectives for month 1-12 were:

1. To gain a thorough understanding of all local factors potentially affecting choice, suitability and performance of WH technologies in each of the four study sites (WP1).
2. To identify actors with a stake in WH technology development, including actors who might be negatively affected, paying attention to differences between land users, up- and downstream populations (WP1).
3. To map past and present WH technologies in study sites and document successes and failures in study sites and beyond (WP1).
4. To design a standard format for WH technology documentation (WP2)
5. To design a Quick-scan tool concept outline (WP4)
6. To create a website for WAHARA (WP7)

Recommendations

As this report describes the first reporting period of WAHARA, there were no previous reviews, and hence no recommendations

3.2.2 Work progress and achievements during the period

WP1 The potential for water harvesting in an array of settings in rainfed Africa

Summary of Progress

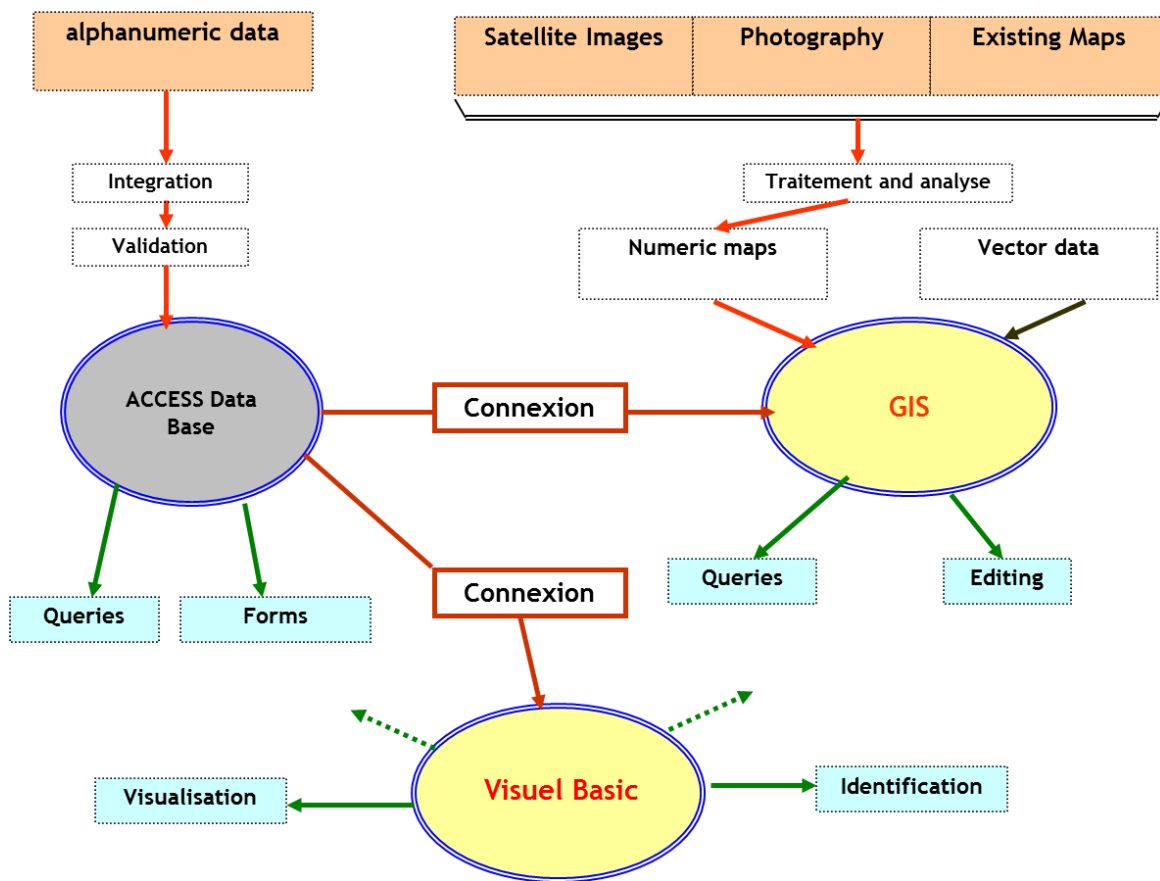
Task 1.1 Watershed inventory (m 1-12)

A template was prepared and sent to the national teams. It contained guidelines for creating study site descriptions that describe the biophysical and socio-economic characterization of the study

sites. Information was received from all study sites, and was compiled to become part of deliverable 1.1. The following table summarizes the main features of the four study sites:

	Burkina	Ethiopia	Zambia	Tunisia
Area (km2)	NE – 5000	East – 2400	South – 2300	SE – 1200
Rainfall (mm)	400-800	550-800	700-800	150-220
Bioclimate	Sahelo Sudan	Semi arid	Tropical conti	Arid
Population	140000	236000	73000	25000
Farming systems	Mixed	Mixed	Agroforestry, arable farming, dairy	Mixed
WH	Zai, ados, half moon, bund, cropping methods	Armo, diversion, spate, bunds, ponds, terraces, dams, eyebrow basins, deep trenches, cropping methods	Dams, cisterns, storage structures, quarries, cropping methods	Jessour, tabia, recharge structures, cisterns
Crops	Sorghum, millet, ..	Barely, maize, brocolli	Maize, cotton, groundnuts,	Olive, cereals
Water resources	Rain, dam, aquifer	Rain, springs, water storage,	Rain, wells, streams,	Rain, aquifer
Water use	Rainfed, irrigation, drinking	Rainfed agriculture, irrigation,	rainfed, drinking, livestock	Drinking, agriculture, industry,

A database was also set up to house both spatial and non-spatial information from the study sites; how this database is organised is shown below. Existing information is being entered in the database, and information that will become available during the duration in the project will be entered when it is available. Further information is given in deliverable 1.1.



Task 1.2 Stakeholder analysis and workshop (m 2-6)

A template was prepared and sent to the national teams. It contains guidelines for the organization and reporting of the workshop. Workshops were held in all 4 study sites. The following table summarizes the main inputs from four study sites:

	Tunisia	Ethiopia	Zambia	Burkina
Participants	Farmers, development agencies, local authorities, NGOs, regional organizations	Farmers, development agencies, authorities,	Farmers, Ministries of Agriculture, traditional leaders, policy makers	Innovative farmers, Political leaders, extension services, NGOs, national services, local authorities,
Presentations	WAHARA , development projects, national strategies, regional strategies	WAHARA	WAHARA	WAHARA (for different levels)

Main issues	Participatory approach, mutual cooperation, monitoring and evaluation, CC impacts and adaptation	Agr production, indigenous & introduced technologies, water supply, evaluation of experiences, scaling up, training, maintenance, M&E,	Lack and access to water, crop failure, funding,	Technologies and CC adaptation, dialogue between partners, needed trainings, field days visits, exch visits
WH ranking	Traditional (jessour, ..) and introduced (recharge)	Indigenous & introduced WH, one water bank by farmer, research for development,	RWH, stream banks, dams,	Priorities/groups: Zai, Half moon, Leguminous WH Other Tech (Africa)
Stakeholder platform	Yes	Yes	Yes	Yes

Stakeholders demonstrated that they know about WHT, and think that WHT can be important in their circumstances. They were able to indicate some main issues, and also ranked WHT (see table above). Stakeholders also expressed their willingness to take part in the WAHARA project. The stakeholder workshops are reported in more detail in deliverable 1.2.

Task 1.3 Continent-wide inventory of WH technologies and approaches (m 4-12)

Two reports have been produced:

a. Water Harvesting Technologies (WHT) in Africa - a literature review focused on Tunisia and Burkina Faso by Vincent Bardin (Wageningen Univ.) and supervised by J. de Graaff (Wageningen University), S. Chevalking (MetaMeta Research), and M. Ouessar (IRA Médenine)

b. Water Harvesting Potential for Africa – an assessment of costs and impacts by MetaMeta and Acacia Water

The document provides an overview of best practices in agricultural water management. It is prepared as an internal input in the WAHARA project – work package 1. This document contains an overview of the main techniques, their applicability and boundary conditions.

Over twenty cases are presented from different countries – each ‘good practice’ trying to describe the techniques and processes used – and as much as possible the costs and benefits quantified. Data on exact benefits are the ones most difficult to find, though of often useful orders of magnitude and proxies are given.

A synthesis of these 2 reports is given in deliverable 1.3. Additional information provided by the study sites was also included in this deliverable, e.g. reviews of grey literature and relevant information from the study site descriptions of WP1.1.

Task 1.4 Farm household agro-socio-economic survey (m 4-15)

The WP leader team prepared a draft template and it is under revision and discussion.

Task 1.5 Potential for WH in the study site (m 13-18)

Task starts after current reporting period

Significant results

- Description of the study site watersheds
- Organization of the first stakeholder workshops
- Elaboration of the first stakeholder workshop reports
- Collection of the available databases in the study sites: time series data, maps,
- Report on WH in Africa.

Reasons for deviations

There are no deviations to report

Reasons for not being on schedule

Due to delayed reactions from the study sites, the deliverables have not been produced according to planning. However, all activities planned for year 1 were completed in time for this report. Delays were caused by several factors, such as an amendment request that divided responsibilities between ACA and GART, and problems to translate documents from French to English.

Use of resources

Study site partners all spend several person months on WP1, which is in line with the amount of work that was due.

Corrective actions

Reminders were sent several times. IRA assisted in translation of documents from French to English, and administrative hurdles (e.g. amendment request) were also taken. As a result, a significant increase of project activities was obtained in all sites since January 2012. Because of this increased activity the deliverables scheduled for year 1 were still completed before submission of this report.

WP2 Participatory selection of WH technologies in the study sites

Summary of Progress

Task 2.1 Standard format for WHT documentation (m 1-9)

A standard format (WOCAT) has been discussed and it was assessed whether the WOCAT questionnaires needed to be adapted to be able to describe water harvesting techniques. As a test of the method, the 'ados' technology was described using the WOCAT questionnaires in Burkina Faso. Two workshop have been held to discuss the WOCAT files. It was concluded that the WOCAT questionnaires are able to describe the main features of WHT. This was confirmed by both CDE

(Centre for Development and Environment, University of Berne) and VU (Vrije Universiteit, Amsterdam), who are both heavily involved in WOCAT. Therefore, the WOCAT questionnaires and approach will be used for synthesis of technologies.

Task 2.2 Compilation of innovative WHT (m8-16)

This work has begun and the technologies are scheduled to be compiled in May and June 2012 if we receive material from all the study sites. Each study site is scheduled to document 4 WHT from their study site with the WOCAT questionnaires for Technologies and Approaches.

Task 2.3 Design replicable participatory selection methodology (m 10-16)

This work is ongoing. A workshop has been held in Burkina Faso and a methodology has been implemented. A preliminary choice of technologies for Sahelian countries has been made. The used workshop methodology is being revised to make it suitable for all study sites of WAHARA.

Task 2.4 Selection workshops (m16-18)

Task starts after current reporting period

Task 2.5 Design of choice-experiment (m 18-30)

Task starts after current reporting period

Significant results

The WOCAT questionnaires for technologies and approaches were found to be suitable for documenting WHT and the approaches belonging to these WHT

Reasons for deviations

No deviations

Reasons for not being on schedule

-

Use of resources

In year 1, activities in WP2 were mostly restricted to INERA. WP2 work in the different study sites is scheduled from year 2. Apart from INERA, only DLO spent some time on WP2 as they assisted in the discussion of the WOCAT questionnaires.

Corrective actions

No corrective actions needed

WP3 Adaptation and performance of WH technologies

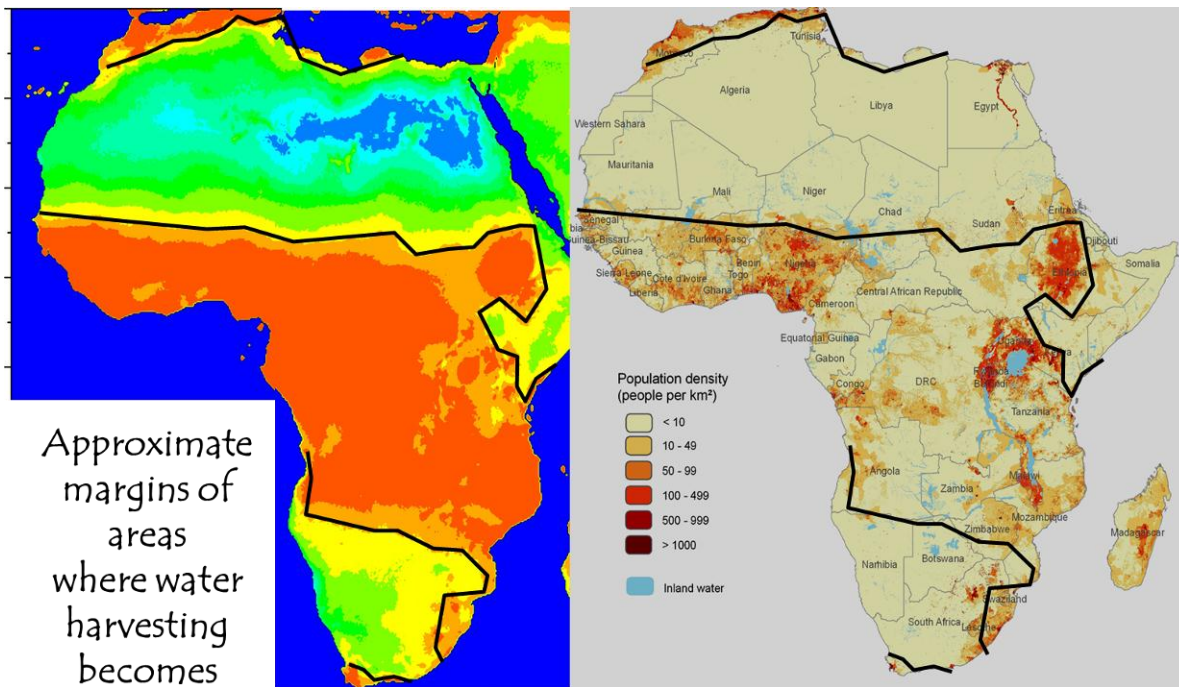
WP3 starts after month 12.

WP4 Modelling and impact assessment of WH technologies

Summary of Progress

Task 4.1 Continental-scale quick-scan tool development (m 9-16)

A concept outline for the quick-scan tool (internal deliverable 2, month 10) was developed. This outline shows the principles of the quick-scan tool and it also indicates which main factors are going to be included. The basic criterion is to indicate scope for WH by the number of months that precipitation is equal to or lower than 60% of PET. The tool is furthermore based on the assumption that the usefulness of water harvesting can be deduced from the ratio of receiving area to collecting area that would be needed to grow a crop. It is assumed that if this ratio is above 1, WH is not necessary, and that if it is very low (e.g. below 0.1) WH is not practicable any more. Hence, WH would be most useful in the range between 0.1 and 1. The map below shows which part of Africa falls between these limits, and also indicates (on the right) that this area shows a clear relationship with population density.



Approximate
margins of
areas
where water
harvesting
becomes
critical

Left: based on average climate

Right: population densities (Afri-Pop)

The current concept of the tool only uses climate data (rainfall) and population density. It will still be studied if it is useful to include other factors such as NDVI and topography. The tool will also be adapted to provide more information on the applicability limits of certain groups of WHT. Even in its current form, however, the tool already gives some indications regarding the use of specific categories of WHT under different conditions (see table below).

Appropriate water harvesting methods in relation to climatic controls (current and with future changes)

ϕ =Ratio of rainwater available to water required for crop growth	0.1	0.2	0.5	1	1.5
Dominant type of Agriculture	Extensive grazing	Tree crops and grazing	Cereals	Cereals	Cereals & Horticulture
Water harvesting techniques for cultivation	Long distance water transfers	Jessours & Flood water diversion	Micro catchments	Water retention techniques	Need for water retention in dry years
Water harvesting techniques for livestock management	Transhumance in steep lands: Nomadism in Flatlands	Stock ponds & Rangelands	Stock ponds & Rangelands	Livestock pens	Livestock pens

Additional factors include

Population and pop'n change (defining urgency of provision)

Terrain (for erosion and sedimentation) and

Proximity of higher rainfall areas (for water transfers)

Task 4.2 Hydrological model development (m 16-40)

Task starts after current reporting period

Task 4.3 Economic model development (m 16-40)

Task starts after current reporting period

Task 4.4 Model integration (m 25-40)

Task starts after current reporting period

Task 4.5 Scenario development and impact assessment (m 37-56)

Task starts after current reporting period

Significant results

Although the quick-scan tool is not completed yet, it does show potential for quickly assessing what category of WHT would be suitable under which conditions. Based on maps that show these conditions maps of Africa can be made that show where certain types of WHT could be useful. It should be realised though that this is only an indication, as local conditions are very important and cannot be included in a continental scale quick-scan tool.

Reasons for deviations

No deviations to report

Reasons for not being on schedule

Work is on schedule

Use of resources

So far, only UNIVLEEDS has worked on WP4

Corrective actions

None

WP5 Integration and scope for adapting WH technologies

WP5 starts after month 12

WP6 Adoption, knowledge transfer and dissemination to rainfed Africa

Summary of Progress

Task 6.1 Inventory of farmers' experiences (m 10-30)

Based on specific questions in the Farm household agro-socio-economic surveys that are going to be carried out (as part of WP 1, task 4), an overview of farmer's experiences with WHT (and related conservation agriculture) is made. This is then related to the existing overview of techniques, the WOCAT questionnaires and further tasks in WP 6.

Status of activities (month 12): surveys are set to be carried out, relevant questions from the survey have been identified so as to facilitate inclusion in the inventory.

Task 6.2 Inventory of Government and NGO approaches (m 19-30)

Task starts after current reporting period

Task 6.3 Design and establishment of a continuous review process of field experiments (m 22-57)

Task starts after current reporting period

Task 6.4 Identifying prospects for scaling-up WHT in Africa and options to achieve this (m 49-57)

Task starts after current reporting period

Task 6.5 Developing a multi-level strategy for scaling-up by joined learning and action (m 52-60)

Task starts after current reporting period

Task 6.6 Dissemination to stakeholders at all levels (m 10-60)

Compilation, synthesizing and dissemination of materials that enable and improve knowledge and experience sharing, peer reviews is a continuous process throughout the project's duration. The

task not only relates to project partners, but more important also to the project beneficiaries (farmers, development agents, etc.) and to local governments and similar projects (peers, implementers, etc.) A number of tasks have been identified to be continuous, thus also specific to the first months of the project (1 – 12). Although no deliverables needed to be uploaded and no milestones during month 1-12 were planned, underneath an overview of the activities and their status is given.

Activity: Share audiovisuals (and minutes) of stakeholder activities in SS

Status: stakeholder workshop meetings have been shared, other materials and sharing from SS pending

Activity: at field level periodic photographs at same places

Status: pending research commencement at field level

Activity: Identify dissemination product with all project partners (taped lectures, flashcards, short videos, school material, etc)

Status: various promising techniques have been identified, with short videos identified most useful for instruction, training and awareness raising at field level. Videos have been produced looking at what is widely called Tigray's Watershed Movement in Ethiopia, how a food-insecure and impoverished region has been able to find a way out of the situation through water harvesting and watershed-based ecological restoration. Furthermore a video on 10 water harvesting techniques (some of which also seen during the plenary meeting of 2012) has been compiled serving knowledge – knowledge transfer among WAHARA partners¹. Translation of videos (month 12 – 24) and other countries is pending.

References:

1. '[Land, Water and Livelihoods: Watershed Movement in Tigray](http://www.thewaterchannel.tv)' available at www.thewaterchannel.tv

2. Water Harvesting Techniques '[Stone Bunds](http://www.thewaterchannel.tv)', [Night storage of irrigation water](http://www.thewaterchannel.tv), [Hand-Dug wells in Tigray](http://www.thewaterchannel.tv), [Gully Treatment in Tigray](http://www.thewaterchannel.tv), [Micro-Dams](http://www.thewaterchannel.tv), [Area Closure Revives Economy of Tigray region](http://www.thewaterchannel.tv), [Spring Development](http://www.thewaterchannel.tv), [Spate Irrigation in Northern Ethiopia](http://www.thewaterchannel.tv), [Diversion Weirs](http://www.thewaterchannel.tv), [Micro basins](http://www.thewaterchannel.tv); all available at www.thewaterchannel.tv

Activity: Feed material to WAHARA website and other websites

Status: Supporting documentation has been sent, including project information in different languages

Activity: Set up, maintain and disseminate series of flashcards with main WH techniques – keeping track of distribution and usage

Status: Flash cards are in preparation on WHT techniques and practices, first batch to be shared by month 15.

Activity: Prepare series of taped lectures from different WAHARA countries and other countries that can be used in education

Status: For Ethiopia a series of lectures has been taped (Lecture series: 'Managing land, water and people: insights from Ethiopia'², translation (month 12 – 24) and other countries pending

¹ Videos initiated as WAHARA dissemination products, also supported through other project funding

² Videos initiated as WAHARA dissemination products, also supported through other project funding

References:

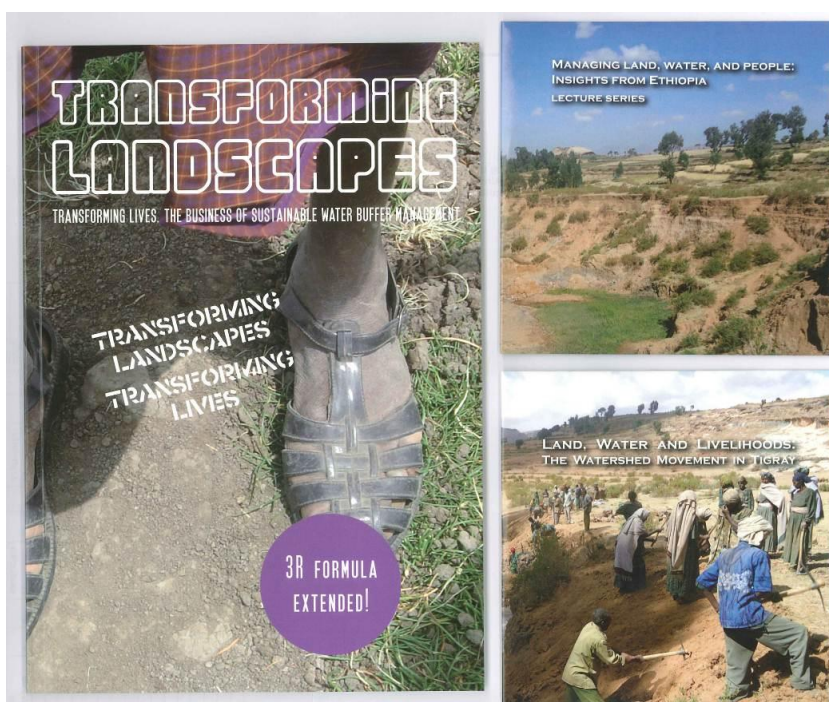
1. Part 1: [What is a Watershed? Why Watershed-based Development?](#) Part 2. [Watershed Management- Good Practices and Bad Examples from Ethiopia](#). Part 3: [Ethiopia's National Community-Based Water Management Guidelines](#); available at www.thewaterchannel.tv
2. [Water-Centred, Land-Use Guided Development Approach](#), available at www.thewaterchannel.tv

Activity: Prepare dissemination products in partnership and co-production with other incorporating findings from WAHARA

Status: pending, research results

Significant results

Sharable and commended dissemination products, i.e. flash cards and short videos. The figure below shows some dissemination products to which WAHARA contributed.



Reasons for deviations

none

Reasons for not being on schedule

none

Use of resources

Most work was done by the WP leader, MetaMeta, with some input from the study sites.

Corrective actions

None necessary

3.2.3 Project management during the period

Consortium management tasks and achievements

The following tasks and achievements, as listed in Articles II.2.3 and II.16.5 of the Grant Agreement were applicable in the first reporting period.

Allocation of financial contribution

The Consortium Agreement of WAHARA stipulates that the pre-financing received from EC will be allocated to partners in several parts. In agreement with this, 30% of this pre-financing was paid to the partners in July 2011. Partner 3 (MetaMeta) indicated in January 2012 that they needed another instalment. As the progress of MetaMeta was deemed satisfactory, another 20% of the pre-financing was transferred to MetaMeta in February 2012. The amendment request by which Partner 9 (ACA) became part of WAHARA was approved in January 2012. 50% of their pre-financing was transferred to ACA in February 2012. Payment of another 20% of pre-financing is scheduled for May 2012, for those partners who have not received this instalment yet. This payment will be made provided that progress by the partner is deemed satisfactory. If all partners receive this amount, all partners will have received 50% of their pre-financing by May 2012. The table below provides an overview.

partner	paid year 1	50% pre-fin.	difference
UNIVLEEDS	30164.40	50274.00	20109.60
MetaMeta	50274.00	50274.00	0.00
IRA	23020.20	38367.00	15346.80
INERA	23114.70	38524.50	15409.80
MU	18358.20	30597.00	12238.80
GART	20913.20	29255.52	8342.32
WU-LDD	21537.34	35895.56	14358.22
ACA	9216.48	9216.48	0.00
<i>sum</i>	<i>196598.52</i>	<i>282404.06</i>	<i>85805.54</i>

Accounts are being kept of all transactions.

Finances partners

For partner 8 (WU-LDD), costs were shifted between cost categories. Most of the work of WU-LDD will be done by Sandwich PhD students. These do not receive a salary, but only travel and subsistence cost. Total budget of WU-LDD remains the same. The new division of cost categories for WU-LDD is shown in the table below

Cost category	Original budget	Revised budget
Personnel RTD	129000	77279
Consumables	10000	30865
Travel and subsistence	25000	97750
Other specific costs	5000	5000
Overheads	104490	62596
Total	273490	273490
Requested from EU	205117.50	205117.50

Review of reports

All reports provided by partners and WP leaders were verified by the coordinator.

Monitor compliance of partners

The coordinator monitored for each partner whether they were complying with their obligations under the grant agreement

Maintenance of Consortium Agreement

A Consortium Agreement was put in place when the WAHARA project started. It was updated after ACA became partner of WAHARA. ACA also signed the accession form for the Consortium Agreement.

Overall legal, ethical, financial and administrative management

Assistance was provided to partners whenever required. No audit certificates are necessary for the first reporting period

Problems which have occurred and how they were solved or envisaged solutions

The main problem that occurred was a slow start to the work of WAHARA, which in particular affected WP1. This slow start was caused a.o. by delay in the contract negotiation process, which caused not only a delayed start, but also a delayed payment of the first instalment, by some uncertainty generated by the process to include a new partner through an amendment request, by a start of the project shortly before the summer break, and by some difficulties to translate results from French to English.

These problems were overcome by:

- IRA (WP1 leader) accepting WP1 documents in French, meaning an additional translation burden for them
- Approval of amendment request 1 by EC, resulting in a clear distribution of responsibilities between GART and ACA
- Frequent reminders

As a result, the speed of working significantly increased in the 3rd quarter of the first year, and the delayed tasks in WP1 were still completed in time for this report.

Changes in the consortium

A ninth partner was added to the WAHARA consortium with amendment request 1. The new partner is Agrotechnology Consult Africa BV (ACA), which is based in the Netherlands and Zambia, and which is responsible for WP5.

List of project meetings, dates and venues

The kick-off meeting of WAHARA was held from 9-11 May 2011, in Schoorl, the Netherlands. The second plenary meeting was held in early March 2012, and is thus part of reporting period 2.

Project planning and status

Because of a fixed starting date, and delay in the contract negotiation phase, WAHARA could only actually start in month 3 (May 2011). Because of this, the planning for especially the first year needed to be revised. There was some delay compared to the revised planning (especially for WP1 – see activity report and above), but the deliverables due for the first year were completed in time to be sent with this report.

Impact of possible deviations from the planned milestones and deliverables, if any

There are no deviations to report

Changes to the legal status of any of the beneficiaries

None

Development of the Project website

The WAHARA website (www.wahara.eu) was developed early in the first project year (as reported in deliverable 7.1). It is continuously being updated by the project coordinator (DLO).

Cooperation

WAHARA has established contacts with the WHaTeR project, which was funded in the same subject of the Africa call. Collaboration has so far included:

- A meeting between management teams of WAHARA and WHaTeR, to discuss the possibility of collaboration
- A meeting between the UK partners of WAHARA and WHaTeR
- An exchange of Advisory Board members. The project coordinator of WAHARA (Prof. Ritsema) is part of the Advisory team of WAHARA, and the scientific coordinator of WHaTeR (prof. Critchley) is part of the Advisory Board of WAHARA. In this capacity, Prof. Critchley attended the second WAHARA plenary meeting in March 2012.

There are also some contacts between WAHARA and other projects such as EAU4FOOD, but these contacts are less intense than with WHaTeR.

WAHARA has also provided information to CAAST-NET, including project fact sheet, project leaflets, a powerpoint presentation explaining the basics of WAHARA, and part of the Description of Work. Unfortunately, WAHARA was not able to attend the meeting organised by CAAST-NET in Brussels in September 2011.

Communication

Communication between partners is mostly through email, although phone calls are also used. The use of Skype is so far not possible for most African partners; their internet connection is not good enough for this. Phone connections are also not always good. Email generally works satisfactorily, although sending of large attachments proves problematical. A dedicated WAHARA ftp site is planned to overcome this problem.