



SIXTH FRAMEWORK PROGRAMME



PRIORITY 6

Sustainable development, global change and ecosystems

Contract for:

SPECIFIC TARGET RESEARCH PROJECT

Annex I - "Description of Work"



Project acronym:

ROSA

Project full title:

**Resource-Oriented Sanitation concepts
for peri-urban areas in Africa**

Proposal/Contract no.: 037025

Related to other Contract no.: *(to be completed by the Commission)*

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1 Project summary

The UN Millennium Development Goals (MDGs, target 10) call for halving the proportion of people without access to safe drinking water and basic sanitation by 2015. ROSA promotes resource-oriented sanitation concepts as a route to sustainable and ecologically sound sanitation in order to meet the MDGs.

These concepts shall be applied in four cities in East-Africa, namely Arbaminch (Ethiopia), Nakuru (Kenya), Arusha (Tanzania) and Kitgum (Uganda). The consortium comprises 2 partners from each of these countries, a university and an end-user. For the pilot cities strategic sanitation & waste plans (SSWPs) will be developed for the whole city area. These SSWPs will come up with the best solution for the city combining several techniques (resulting in hybrid systems) according to the local requirements.

Within the project a part of the SSWPs will be developed in peri-urban areas, where there is a lot of research need for resource-oriented sanitation. Research topics addressed within ROSA are targeting the gaps for the implementation of these concepts in peri-urban areas. They include e.g. an implementation study of the updated WHO-guidelines for use of waste and excreta, the improvement and adaptation of resource-oriented sanitation technologies and the development of community based operation and management strategies.

For the implementation of the complete SSWPs the ROSA consortium will develop possibilities for financing. This will be facilitated by the already existing international network of the consortium and the strong link of the activities to on-going programmes/projects in East Africa (e.g. the Lake Victoria Region Water and Sanitation Initiative, LVWATSAN, of the UN Habitat (<http://www.unchs.org/categories.asp?catid=462>), the Water and Sanitation Programme (<http://www.wsp.org/>) hosted by the Worldbank, the Dutch ISSUE Programme (<http://www.ecosan.nl/page/135>), the Swedish EcoSanRes Programme (<http://www.ecosanres.org/>), etc.).

Dissemination activities will be focused on establishing the local East African network between universities, end-users, etc. This network will ensure the consolidation and the replication of the knowledge gained within the region.

2 Project objectives

The World Health Organisation (WHO/UNICEF, 2003) stated that, "*around 1.1 billion people globally do not have access to improved water supply sources whereas 2.4 billion people do not have access to any type of improved sanitation facility. About 2 million people die every year due to diarrhoeal diseases; most of them are children less poverty, normally peri-urban dwellers or rural inhabitants. [. . .] Providing access to sufficient quantities of safe water, the provision of facilities for a sanitary disposal of excreta, and introducing sound hygiene behaviours are of capital importance to reduce the burden of disease caused by these risk factors.*"

The UN Millennium Development Goals (MDGs; UN, 2000), agreed at the UN Summit 2000, that half of the people without access to safe drinking water today should have access by 2015. This goal was completed at the UN World Summit 2002 in Johannesburg, South Africa, with the formulation of the demand for access to basic sanitation (UN, 2002).

"Sanitation" refers to the principles and practices relating to the collection, removal or disposal of human excreta, household waste water and refuse as they impact upon people and the environment. In developing countries, the main focus of sanitation is to reduce health risks in urban, peri-urban and rural areas. While the criteria used in this definition are the degrees of minimising health risks and environmental pollution, resource-oriented or ecological sanitation concepts move a step further by applying an ecosystem view to the problems of sanitation. It relies on the perception of wastes as resources within the system.

The ROSA project proposes resource-oriented sanitation concepts as a route to sustainable sanitation and to meet the UN MDGs. These concepts shall be applied in four pilot cities in East-Africa, namely Arbaminch (Ethiopia), Nakuru (Kenya), Arusha (Tanzania) and Kitgum (Uganda). These cities have a population of several 10'000 inhabitants and represent typical cities in East Africa. All pilot cities have common problems, e.g. that they are situated in dry regions resulting in a lack of water. Another problem for all cities is the relatively high growth rate of the population. Sanitation facilities and the people in the pilot areas are poor, there is lacking sanitation and waste management. Adaptable, affordable and replicable solutions for sanitation of peri-urban areas in the pilot cities that are based on source separation shall be developed. For sustainability of the implemented solutions integrated stakeholder based management concepts will be developed and tested including end-users, service providers and authorities.

For all pilot cities strategic sanitation & waste plans (SSWPs) will be developed for the whole city area. These SSWPs will come up with the best solution for the city combining several techniques (resulting in hybrid systems) according to the local requirements. Within the project the focus of implementation will be in the peri-urban areas away from the city centres. Mainly because the peri-urban areas are a favourable scope and most pressing need for innovative sanitation based on livelihood improvement and low-cost, though sustainable concepts. Experience with the implementation of these systems for single houses and in rural areas does exist. In these circumstances, the house owner is responsible for operating and maintaining the system. In more densely populated peri-urban areas communal and/or municipal management has to step in. The specific research objectives addressed in the ROSA project are focused on applied research and include:

- an implementation study of the updated WHO-guidelines for use of waste and excreta in agriculture and aquaculture in peri-urban areas and the integration of resource-oriented solutions in regulatory frameworks,
- the development of operation and management strategies for peri-urban areas,

- the development of decentralized solutions for greywater treatment in arid and semi-arid areas including the optimisation of constructed wetland design taking into account the local conditions,
- the integration of resource-oriented sanitation into local settlement structures, and
- the development of local structures for financing of sanitation.

The implementation phase within the ROSA project will be focused on the peri-urban areas of the pilot cities. However, for the remaining parts of the cities the consortium will develop possibilities for financing the implementation of the whole SSWP. This will be possible due to the already existing international network of the participating consortium members and the strong link of the activities to on-going programmes/projects in East Africa (e.g. the "Lake Victoria Initiative" of the UN Habitat, the Water & Sanitation Programme of the Worldbank, the ISSUE programme of WASTE, the networking activities of the Swedish EcoSanRes programme, etc.)

Finally, based on the experiences in developing the SSWPs for the pilot cities, general guidelines for strategic sanitation and waste planning, such as HCES and Strategic Sanitation Planning, will be tested and improved based on practical implementation. A lot of experience exists within organisations working in the field of sanitation and waste management in developing countries. However, up to now few general applicable frameworks for the development of a SSWP including all key stakeholders, taking into account the different local needs, have been applied. The SSWP will include appropriate technologies for sanitations that are based on source separation and waste management such as described in the ISWM Assessment Methodology (WASTE, 2004). A local network between the participating universities and end-users, respectively, shall be established and shall be the starting point for an East African network on resource-oriented sustainable sanitation. This network shall be organised in close cooperation with ongoing networking activities e.g. the Swedish EcoSanRes programme and IRC in the Netherlands.

The overall objectives of the ROSA project can be summarized as follows:

1. to add to the current efforts for promoting resource-oriented sanitation concepts as a route to sustainable sanitation and to fulfil the UN MDGs,
2. to research the gaps for the implementation of resource-oriented sanitation concepts in peri-urban areas,
3. to develop a generally applicable adaptable framework for the development of participatory strategic sanitation & waste plans (SSWPs), and
4. to implement resource-oriented sanitation concepts in four pilot cities in East Africa (Arbaminch, Ethiopia; Nakuru, Kenya; Arusha, Tanzania; and Kitgum, Uganda).

The following table shows the overall project objectives in relation to the milestones/dates when they will be achieved.

Objective	Milestone (Date) when objective will be reached
1. Promotion of resource-oriented sanitation concepts	<ul style="list-style-type: none"> • MS6: Local network run by the East African universities (month 24)
2. Researching the gaps for the implementation in peri-urban areas	<ul style="list-style-type: none"> • MS2: Preliminary research results ready (month 12) • MS7: Research activities finished (month 30)
3. Application and testing of generally adaptable frameworks for the development of SSWPs,	<ul style="list-style-type: none"> • MS3: SSWPs for 4 cities developed (month 12) • MS8: Framework for SSWP developed (month 34)
4. Implementation of resource-oriented sanitation concepts in four pilot cities in East Africa	<ul style="list-style-type: none"> • MS5: Solutions implemented (month 24) • MS9: O&M strategies evaluated and adapted (month 34)

3 Participant list

List of Participants

Partic. Role*	Partic. No.	Participant name	Participant short name	Country	Date enter project**	Date exit project**
CO	1	University of Natural Resources and Applied Life Sciences Vienna Inst. of Sanitary Engineering	BOKU	Austria	1	36
CR	2	Hamburg University of Technology, Institute of Municipal and Industrial Wastewater Management	TUHH	Germany	1	36
CR	3	EcoSan Club, Austria	ESCA	Austria	1	36
CR	4	WASTE Advisors on Urban Environment and Development	WASTE	The Netherlands	1	36
CR	5	London School of Hygiene and Tropical Medicine, Disease Control & Vector Biology Unit, Department of Infectious and Tropical Diseases	LSHTM	United Kingdom	1	36
CR	6	Makerere University, Department of Civil Engineering	MAK	Uganda	1	36
CR	7	University of Dar es Salaam, Department of Water Resources Engineering	UDSM	Tanzania	1	36
CR	8	Egerton University, Department of Water and Environmental Engineering	EGE	Kenya	1	36
CR	9	Arbaminch University, Research & Publication Coordination Department	AMU	Ethiopia	1	36
CR	10	Kitgum Town Council	KIT	Uganda	1	36
CR	11	Arusha City Council	ARU	Tanzania	1	36
CR	12	Municipal Council of Nakuru Department of Environment,	NAK	Kenya	1	36
CR	13	Arbaminch Town Water Service	ARB	Ethiopia	1	36

* CO = Coordinator
CR = Contractor

** Normally insert "month 1 (start of project)" and "month n (end of project)"
These columns are need for possible later contract revisions caused by joining/leaving participants

4 Relevance to the objectives of the Global Change and Ecosystems Sub-Priority

Relevance

The objectives of the ROSA project are in full agreement with:

- the EU Water Initiative - EUWI (EC, 2004a),
- the Africa-EU Partnership (AMCOW and EC, 2003), and
- the Environmental Technologies Action Plan ETAP (EC, 2004b)

and therefore also in full agreement with the objectives as stated in the call.

The EU Water Initiative (EUWI), launched at the World Summit on Sustainable Development (WSSD) in Johannesburg in September 2002, clearly defines the interrelations between water, sanitation and health issues: "*Water provision, sanitation and health are closely interrelated. One of the primary causes of contamination of water is the inadequate or improper disposal of human (and animal) excreta. This often leads to a cycle of infection and contamination which remains one of the leading causes of illness and death in the developing world*" (EC, 2004a). Consequently, in order to meet the Millennium Development Goals (MDGs), sustainable concepts for an integrated water resources management are essential and the EUWI calls for safe water and sanitation (W&S) through cost-effective approaches: "*...new investment should, where necessary, adopt new approaches that are more cost-effective and address at least some of the limitations identified with conventional waterworks and their management. In water-scarce areas, analysis of the different functions may help reduce water wastage, for example, by replacing it by other media for heat exchange and the transport of sewage. In peri-urban and rural areas, community-based approaches, including awareness campaigns, public health and hygiene training and appropriate sanitation technologies, have demonstrated their ability to bring about tangible improvements*" (EC, 2003).

The main objective of the ROSA project is the promotion of resource-oriented sanitation concepts being an innovative, affordable, adaptable and replicable approach to sustainable sanitation. It is aimed to develop and introduce integrated appropriate low cost technologies together with community based management concepts. Decision making will be done including stakeholder participation with a strong emphasis on institutional frameworks and socio-economic constraints.

While solutions for rural areas do exist, plans for peri-urban settlements are still a challenge: "*Access to water and sanitation facilities ... is constrained by the inadequacy of the existing systems and managing structures to face a growing demand for freshwater and sanitation services.*" (EC, 2004a).

The ROSA project tackles peri-urban more densely populated areas. Community based management structured shall be researched and implemented. It is obvious that by taking into account the whole water cycle resource-oriented sanitation concepts also consider water resource protection and drinking water supply.

One goal of the Africa-EU Partnership 2004-2005 Work Program is to ensure that the action programs balance human water needs with those of the environment. "*The EUWI would seek to ensure that investments in WSS are consistent with an integrated approach to water resources management, and that due attention is paid not only to water quantity but also to its quality*"

aspects" (AMCOW and EC, 2003). Sustainable management of water resources and improved water use efficiency is also critical in agriculture, the largest user of freshwater. As food production is the main activity, on which much of the economic growth, diversification and development relies, sustainable management of the necessary water resources is in the interests of society as a whole (EC, 2004a).

The ROSA project promotes resource-oriented sanitation concepts in which an integrated approach to sustainable sanitation and therefore water resources management is the key factor.

In the specific domain of the call it is stated that "*the participation of local research institutions and end-users is requested.*"

The ROSA project involves four East African countries: Ethiopia, Kenya, Tanzania, and Uganda. Each country is represented by one university and one end-user in the consortium as a full project partner.

Summarizing, the objectives of and the work carried out in the ROSA project are in full agreement with the EU Water Initiative and the Africa-EU Partnership. Resource-oriented sanitation concepts are promoted as a way to sustainable sanitation. Affordable technologies together with community based management will be implemented. Four East African universities and four East African end-users are participating as full project partners. The ROSA project therefore is in full agreement with the requirements of the specific domain of the call.

One of the main areas of the Environmental Technologies Action Plan (ETAP; EC, 2004b) for the European Union is to promote environmental technologies in developing countries. Developing countries themselves have a key role to play by ensuring good governance, transparent and predictable regulatory frameworks, including environmental regulations and protecting intellectual property rights. They also need to improve education and training policies, in order to develop the capability of local workers to adapt technologies to upgrade them and eventually to reach a higher grade of technological autonomy.

The ROSA project promotes innovative low-cost environmental technologies in developing countries. The local university partners play a key role in the project by being the WP leaders for the work in their country. The country networking (local project consortium) and the overall East African networking that is proposed will allow reaching a higher grade of technological autonomy.

The main diffusion barriers of environmental technologies in developing countries are firstly the lack of information about potential environmental technologies and secondly the lack of adequately trained staff (EC, 2004b). Without knowledge of the costs and benefits throughout the life-cycle potential customers can not be expected to buy or use the technologies. Where a technology is new, it requires training to be installed, operated and maintained properly.

The ROSA project tackles the identified barriers of environmental technologies in developing countries. Information, education and communication (IEC) material will be produced for distribution among the stakeholders. Extensive training of the staff will ensure proper operation and maintenance of the systems and therefore enhance sustainability prospects of relevant investments.

The objectives of the ROSA project are in full agreement with the ETAP. ROSA promotes innovative affordable environmental technologies in developing countries. The network among the East African partners will allow reaching a higher grade of technological autonomy. The identified barriers of environmental technologies in developing countries will be tackled. By meeting the objectives of the ETAP the ROSA project is in full agreement with the objectives of the Global Change and Ecosystems Sub-Priority.

State-of-the-art

In most parts of the world, basically two options to tackle sanitation problems are applied which can be described as "drop and store" and "flush and forget" (e.g. Esrey et al., 2001; GTZ, 2003). These conventional forms of wastewater management and sanitation systems are based on the perception of faecal material, which is considered as repulsive and not to be touched. The design of the technologies is furthermore based on the premise that excreta are waste and that waste is only suitable for disposal (Esrey et al., 2001).

Water-borne sanitation as used in conventional sanitation systems (Figure 1) is based on the collection and transport of wastewater via a sewer system, using (drinking) water as transport medium. The system mixes

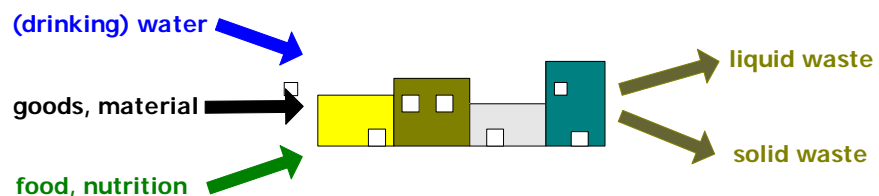


Figure 1: Conventional sanitation concept (Langergraber and Müllegger, 2005)

comparatively small quantities of potentially harmful substances with large amounts of water and the magnitude of the problem is multiplied. In addition, both the construction, and operation and maintenance of the necessary hardware for the "flush and discharge" options (sewer, wastewater treatment, drinking water treatment) are a heavy financial burden. Even in developed countries, these conventional systems are directly cross subsidised and the chances to ever become financially sustainable are low.

Conventional sanitation systems have even more fundamental shortcomings than their high costs such as over-exploitation of limited renewable water sources, pollution of soil and groundwater, waste of valuable components in wastewater and the difficulty for an effective removal of pollutants (Wilderer, 2001). Also in the European Union (before the EU enlargement in May 2004), still 37 of the 527 cities with more than 150'000 inhabitants discharge their sewage without adequate treatment; Brussels is a well-known example (EC, 2004c).

Looking on conventional on-site wastewater disposal systems applying the "drop and store" principles the pit latrine in its various forms is still the dominantly used device in developing countries (Esrey et al., 2001). The obvious disadvantages, like soil and groundwater contamination with pathogens, bad odour, fly/mosquito breeding, pit collapse or the distance from the house make clear that this cannot be a viable alternative. However, in densely populated areas, the limits are obvious: Digging a new pit when the old one is full often leads to the question where to build the new one?

Further problems greatly concern the agricultural sector. The produced nutrients on farms (in terms of food) are transported on a one-way flow to municipalities and discharged as waste. At present, this steady loss of nutrients on farms is compensated for by mineral fertiliser of fossil origin. Also,

the UN realizes the limits of conventional systems and the urgent call for action: "*The fact is that in contrast to the water supply system where even in urban areas the supply can be augmented through local spot sources, the sanitation problem does not have any low cost environmentally safe solution and so, focus on eco-sanitation needs to be considered*" (UN, 2003).

Resource-oriented or ecological sanitation systems are an alternative approach to avoid the disadvantages of conventional wastewater systems. The ecological sanitation paradigm in sanitation is based on ecosystem approaches and the closure of material flow cycles (Figure 2). Human excreta and water from households are recognised as a resource (not as a waste), which should be made available for re-use.

According to Niemczynowicz (2001), the basic motivation behind the need to reshape the management of nutrients and streams of organic residuals may be found in the so-called "*basic system conditions for sustainable development*" for water and sanitation management, formulated in the Agenda 21 (UN, 1992):

- The withdrawal of finite natural resources should be minimised.
- The release of non-biodegradable substances to the environment must be stopped.
- Physical conditions for circular flows of matter should be maintained.
- The withdrawal of renewable resources should not exceed the pace of their regeneration.

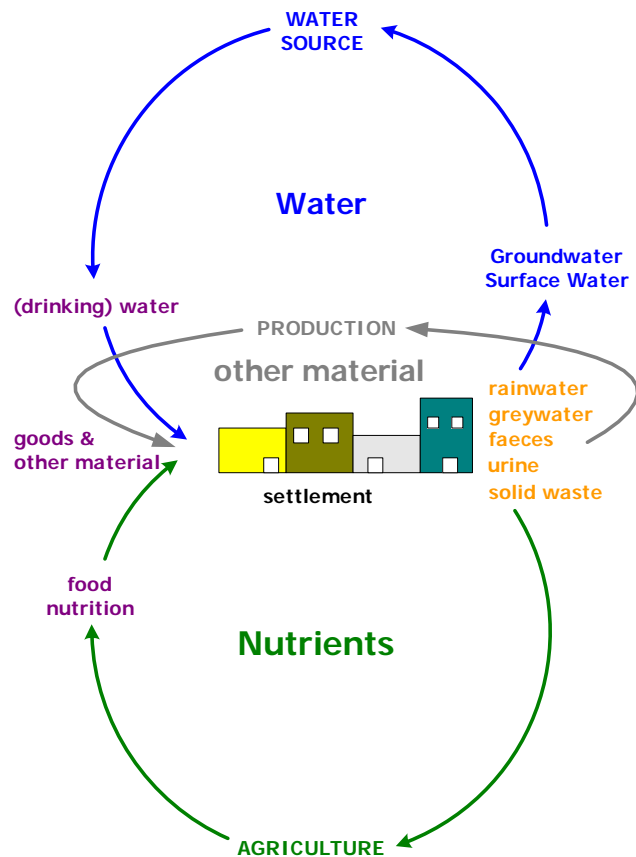


Figure 2: Resource-oriented or ecological sanitation system (Langergraber and Müllegger, 2005)

Ecological sanitation represents a holistic approach towards ecologically and economically sound sanitation. It is a systemic approach where single technologies are only means to an end and are not ecological per se but only in relation to the observed environment. The applied technologies may range from natural wastewater treatment techniques to compost toilets, simple household installations to complex, mainly decentralized systems (Otterpohl, 2004), but will include also low-cost sewerage and on-site sanitation systems.

According to Werner et al. (2004), resource-oriented sanitation systems:

- reduce the health risks related to sanitation, contaminated water and waste,
- prevent the pollution of surface and groundwater,
- prevent the degradation of soil fertility, and
- optimise the management of nutrients and water resources.

The principles underlying ecological sanitation are not novel. In different cultures, sanitation systems based on ecological principles have been used for hundreds of years. EcoSan systems are

still widely used in parts of East and Southeast Asia. In Western countries, this option was largely abandoned as "flush and discharge" became the norm. Only in recent years, there has been a revival of interest in these techniques (Esrey et al., 1998).

Resource-oriented sanitation systems are based on collecting and treating the different wastewater flows separate to optimise the potential for reuse (e.g. Esrey et al., 1998; Wilderer, 2001). The different fractions include:

- blackwater (wastewater from the toilets, a mixture of urine and faeces), and
- greywater (wastewater without excreta respectively from kitchen, bathroom and laundry),
- separately collected urine (also called yellowwater), and
- separately collected faeces are called faecal sludge or faecal matter, respectively, depending on if flush water is used or not.

Recommendations how to sanitise human excreta before use have been developed and are continuously extended and updated (e.g., Schönning, 2004; Jönsson et al., 2004). The characteristics of the different streams of wastewater, the possibilities for reuse and the hygienic hazards can be summarised as follows (Langergraber and Müllegger, 2005):

- Most of the soluble nutrients are found in urine. If urine is separated and converted to agricultural usage, the biggest step towards nutrient reuse and highly efficient water protection will be taken.
- The hygienic hazards of wastewater originate mainly from faecal matter. Separation opens the way to hygienisation and finally to an excellent end-product.
- Wastewater that is not mixed with faeces and urine is a great resource for high quality reuse of water.
- Source control should include evaluating all products that end up in the water. High quality reuse will be far easier when household chemicals are not only degradable but can be mineralised with the available technology.

Just recently a strong debate on economic issues of ecological sanitation concepts raised in Water 21, the member journal of the International Water Association (IWA, the world-wide water professionals organisation), showing the need for correct information on the one hand and for transparent cost calculations on the other hand (McCann, 2005). Examples for the implementation on a larger scale will increase the number of implemented examples for resource-oriented sanitation concept significantly and therefore cost data will become more accurate. A recent study (2006) by Mayumbelo shows that an ecological (urine diversion) sanitation approach in Lusaka, Zambia, provides not only the only environmental sound solution, but is also financially the best option.

Only a few research projects funded by the EC have been dealing with resource-oriented sanitation systems up to now: e.g. ZerO-M, an INCO-MED project, and SWAMP, a LIFE project, are dealing with concepts and technologies to achieve close-loop usage of water flows in small municipalities or settlements (e.g. tourism facilities). In these projects solutions based on source separation have been implemented and possible savings could be shown. However, up to now no EC funded project on resource-oriented sanitation concepts was run in East Africa.

The advantages of the proposed resource-oriented sanitation concepts can be summarized as follows:

Resource-oriented sanitation concepts are a way towards a more ecological sound sanitation. The concepts are based on source separation and reuse. Hygienic hazards are well known and guidelines for the treatment and save use of urine and faeces are available. There are many technological options so that most social and economic conditions can be met. Creativity is

needed to find the appropriate technology and the best way of implementing, operating and financing.

Although there are a lot of advantages the degree of risk to public health presented by the use of waste and excreta in agriculture and aquaculture has to take into account. These include the consideration of national, socio-cultural, economic and environmental factors and goes beyond the bacteriological and chemical quality of the treated waste. In places where wastewater, excreta and greywater are used in agriculture and aquaculture, especially at the subsistence level, the health benefits from increased household food security and better nutrition may outweigh some of the potential negative health impacts.

The ROSA project aims to understand and evaluate the equilibrium between benefits of reuse and public health risks in the four pilot cities. The health risks from the use of excreta and grey water in agriculture are placed into the context of the overall level of public health and disease prevention within a given population.

Examples of implementations in the target countries and other developing countries

All over the world a steadily increasing number of case studies exist mainly for rural areas and to a less extent also for peri-urban and urban areas. The short description of examples for implementation is based on the experience of the partners and therefore mainly limited to the target countries. Other information has been taken from a review by WSP-AF (2005) and from the EcoSanRes Global Database on Ecosan Projects – Africa (EcoSanRes, 2006).

- Ethiopia: To get in contact with human faeces is generally unacceptable from a cultural point of view (WSP-AF, 2005). Although this cultural resistance several projects have been implemented over the last years. Since several years SUEDA (Society for Urban Development in East Africa), a NGO, is active in this field. Up to 300-400 urine separating toilets have been constructed up to now mainly in and around the capital Addis Abeba. Further implementation work has been done by the Catholic Relief Service and by a German consortium of TUHH, Otterwasser and TU Braunschweig.
- Kenya: EcoSan technology was introduced in Kenya in the late nineties and there are now about six projects in the country (WSP-AF, 2005). Less than 100 toilets have been constructed up to 2002. KWAHO (Kenya Water for Health Organisation) has implemented about 40 toilets; the on-going ISSUE programme in e.g. Nakuru is another example for the activities in this field.
- Tanzania: Several activities have been reported: e.g. EEPCO (Environmental Engineering and Pollution Control Organization) implemented about 160 toilets and 20 urinals in Dar Es Salaam, Hai (Kilimanjaro) and Kisarawe District; and WEPMO (Water and Environmental sanitation Projects Maintenance Organisation) 82 toilets in Dar Es Salaam.
- Uganda: In Uganda, people generally consider EcoSan as a good sanitation alternative for excreta management and recovery of nutrients. Although most people are repulsive against use of faeces there seems to be no social or cultural taboos against reuse of urine in agricultural production. Some service providers, such as the National Water and Sewerage Corporation still regard sewage collection, treatment and disposal using conventional methods as the absolute method of human excreta management. The EcoSan concept, as it is known today, only began in 1997, with the Austrian funded South-Western Towns Water and Sanitation Project (swTws, initially in Kisoro town in Kisoro District, now extended to

15 districts). Through the Ministry of Health EcoSan is cautiously promoted as one of the options for problematic environments such as collapsing soils, high rock or water table (WSP-AF, 2005). The Directorate of Water Development (DWD) of the Ministry of Water, Lands and Environment plays a leading role in promoting urine diversion toilets and has constructed a number of these toilets countrywide. Other organisations active in Uganda are e.g. the Austrian NGO EcoSan Club (Lugazi District, Kigtum, Southwest region, Naggalama Hospital, Kalungu Girls' Secondary School - Masaka District, etc.), SIDA (Kampala Ecosan project), and the Lake Victoria Initiative (Masaka). Further examples for implementations are in Musonzi (Kalangala District) and a demonstration toilet at the Faculty of Technology of Makerere University. According to the EcoSan Liaison Officer in the Directorate of Water Development, Ministry of Water and Environment, Uganda, there are over 6'000 dry urine diverting toilets in use in Uganda.

- Other countries in Africa: Experience with ecological sanitation systems is reported from West Africa (e.g. Senegal, Mali, Burkina Faso, Côte d'Ivoire – these countries are also partners in the EC funded NETTSAF Co-ordination Action) and Southern Africa (e.g. Malawi, Mozambique, South Africa, Zimbabwe).
- Other developing countries: Experience is available in Latin America (especially Mexico, Ecuador, Costa Rica) and Asia (e.g. China, India, the Philippines, etc.).

Description of the 4 pilot cities

The four pilot cities have been mainly selected based on the working experience of the European partners in the target countries. Although there are similarities in lacking sanitation and waste management in the four pilot cities specific problems can be identified:

- Arbaminch (Ethiopia): Arbaminch town is situated in the Southern Nations Nationalities and Peoples Regional (SNNPR) state, 250 km from the regional capital Awassa and some 505 km from Addis Ababa, the capital city of the country. The population of Arbaminch has been projected from 60'700 persons in the year 2000 to 115'000 persons in to the year 2015 and to 165'000 persons in the year 2025. This corresponds to an overall growth rate of 4.5 % per annum compounded. The present population is 76'000. The present water supply is fed by Arbaminch springs, a reasonably abundant group of springs discharging at the base of the escarpment to the east of the town. The water supply system was extended in 1987 and much of the mechanical and electrical equipment has reached to the end of its economical life. Operation for 20 hours per day is reported. The distribution network covers 25 public taps and almost 3000 private connections. All connections and public taps are metered. The scheme is run by AWSSE. There are no facilities for wastewater collection and treatment. Only institutions like Arbaminch University, Arbaminch Teacher Training College and the Arbaminch Textile Factory have their own wastewater collection and treatment facilities . More than 85 % of the population use conventional pit latrines. Most commercial and governmental institutions use Septic tanks which need frequent removal. Therefore, a general sanitary solution is very much needed for the city of Arbaminch. Based on the local experiments the critical point of operating sanitation systems in peri-urban areas is maintenance. Since July 2006 a demonstration facility is available at a construction site at Arbaminch University that was planned and constructed by TUHH. It is planned that Arbaminch University will conduct fertilizer experiments using the treated waste.
- Nakuru (Kenya): In Nakuru the wastewater problem is apparent: lake Nakuru, a tourist-income earner of 20'000 visitors per month is at risk due to plastic waste from town, and leakage from pit latrines and soak pits. The Nakuru Municipal Council (NMC), the Nakuru

business Association (NBA), the informal sector (Jua Kali), a variety of NGOs and District Officers (DO) and the District Development Officer (DDO) are jointly aware of these problems. They are also aware of joining in NAWASCO, the privatized water and sanitation company, and the Family Finance bank. All these stakeholders are united in a recently established Municipal Support Group on Environment (MSGE). Also three funding agencies work closely together through partners (ITDG through JICA and Comic Relief; WASTE through its ISSUE programme). Otieno (2005) reported that most households in Nakuru are not connected to the sewerage network; only 19% of the built-up area of the municipality has access to sewer system which is concentrated in the CBD and older residential areas of the municipality representing population coverage of about 40 %. The other settled areas are served by pit latrines (85 %), septic tanks (11 %) and cesspits. A survey using a questionnaire showed that 9 % and 15 % of the people responding (more than 230) have knowledge of urine diversion toilets and reuse of human waste as fertilizer, respectively. It was concluded that it is necessary to improve the level of knowledge on EcoSan before implementation in larger scale.

- Arusha (Tanzania): Arusha Town is one of the fastest growing urban centres in Tanzania. It's population is estimated at 516'000, with a 4 % growth. It is the hub of the Northern Tanzania tourism circuit, and a centre of agricultural and horticultural activity. It is a bustling town with a wide variety of medium and small enterprise and manufacture. It hosts the UN International Criminal Tribunal for Rwanda and the headquarters of the East African Union. Situated at an elevation between 1400 and 1600 m on the slopes of the densely wooded Mt. Meru, a 4500 m high volcanic massif, it is blessed with a generally temperate climate and overall good rainfall. However, urban infrastructure has been largely unable to keep up with the demands of an explosively growing population. Arusha town can be described as a 'green island' in a sea of semi-arid steppe that is subject to rapid environmental degradation and erosion, even leading to occasional famine among the pastoralist population of the district and the region at large, contributing to a rather uncontrolled population influx. Therefore, Arusha has, despite its lush and agreeable outward appearance, some of the ugliest and fastest growing slums in Tanzania, mostly in the lower (drier) parts of the city. Water supply is the responsibility of the Arusha Urban Water Supply and Sanitation Authority (AUWSA), a recently formed semi-autonomous government authority, and one of the better performing institutions of its kind in the country. With foreign assistance, a major overhaul of the organisation's systems has recently taken place. The main water supply system is fed by a gravity system from the slopes of Mt. Meru, and by boreholes. Most slum dwellers receive their drinking water from AUWSA operated standpipes. Water supply and -demand, despite recent improvements, are in continuous precarious balance, a situation aggravated by rapid environmental degradation and uncontrolled deforestation of the slopes of Mt. Meru. AUWSA provided figures stating the %age of the urban population provided with clean drinking water as 91 %, whereas only 9 % of the population, mostly in the old city centre and its immediate surroundings, are connected to formal piped sewerage and treatment ponds, with only 33 km of main sewerage in existence. The biggest problem is the lack of technical solutions to extend the coverage beyond the centre. AUWSA calculated a financial demand of at least 7.8 Mio. USD to increase the coverage to 30% (not including treatment of wastewater, respectively upgrading of existing treatment plant to Tanzanian Standards) using conventional means. Assuming an exponential increase in cost in relation to the distance from the centre this problem becomes even more obvious. In Arusha AUWSA is in charge of addressing sanitation issues and as per now can not offer any acceptable alternative to conventional sewer systems. There are no demonstration facilities with EcoSan concepts such as urine diverting toilets in Arusha up to now.
- Kitgum (Uganda): Kitgum Town is located in Northern Uganda, being the administrative centre of Kitgum District, with a population of 40'000. The situation in Kitgum Town is

characterised by 3 major factors: a) the exponential growth of the population, worsened by influx of people – both semi-permanently and as night commuters – fleeing from insecurity in the villages due to a precarious security situation, b) the extremely low per capita income and inadequate access to external funding (government or international) and c) the lack of human resources as a result of the insecurity. Starting from a sanitary situation based, if at all, on the use of pit latrines altogether these framework conditions lead to the present situation where only a minority of people have access to sanitation facilities. Even though the Town Council ranks the sanitation problems starting from solid waste management and uncontrolled wastewater discharge in the central areas of town, the lack of adequate facilities in the peri-urban areas of town seems equally important, particularly when considering the number of people concerned and the problems faced with conventional solutions. Another problem which surfaced only recently is the creation of huge refugee camps at the outskirts of town. At present app. 40'000 people live in these camps semi-permanently with only very limited provision of sanitation facilities. Summarised the situation in Kitgum Town with regard to sanitation can best be described by the rapidly growing extremely poor population without acceptable sanitation facilities and without an immediate view for a solution. The area ratio peri-urban/town centre is about 50/1. The main problem regarding sanitation is that obviously conventional solutions can not solve the problem, pit latrines due to lack of space (or lack of equipment to empty sealed pits and lack of safe dump site) and sewer and treatment plant due to a lack of financial resources. The Town Council concentrates their – limited – activities on the installation of conventional solutions for the core area. Consequently the most recent development plan (2003-2006) lists the planning for a sewer system for the town centre as one of the objectives under the heading “Health and Environment”. No plans for the development of sanitation services for peri-urban areas exist up to now. Within the "Kitgum Town Water Supply and Basic Sanitation Programme" (since 1999) the construction of dry urine diversion toilets has been promoted and partly financially supported. Since 2 years a local “Organisation for Dry Toilets and Sanitation” exists, promoting the use of dry toilets and supporting customers in construction and users in operation and maintenance. In parallel starting in 2003 within the National Strategy to promote Ecological Sanitation in Uganda the Directorate of Water Development supported the District Water Offices and the Regional TSU’s (Training and Support Units) in gaining know-how on dry toilet construction and use.

Innovations

Innovations are expected to be resulting from the research activities, to a more or lesser extent, in a number of fields related to political-legal, social-cultural, institutional-organisational, technical, environmental, health, and financial-economic aspects. The implementation study of the WHO-guidelines will produce mainly political-legal and environmental-health related results. Institutional-organisational innovations can be expected from operation and management strategy development. Technical innovations will result from the greywater treatment/constructed wetland part as well as from integration of the concepts into local settlement structures. This topic will also be produce results related to social-cultural aspects. Finally financial-economic matters will be tackled when local structures for financing of sanitation will be developed.

In general the research activities within ROSA shall improve the competitiveness of resource-oriented sanitation concepts in mainly peri-urban areas. The activities in the five fields are described in more detail below:

1. Study on the implementation of the updated WHO-guidelines for use of waste and excreta in agriculture and aquaculture and the integration of resource-oriented solutions in regulatory frameworks

During 2006 the updated version on the "Guidelines for a safe use of waste and excreta in agriculture and aquaculture" (WHO, 2006, 1989) will be published. Within the project the new guidelines will be tested in the peri-urban areas of the four pilot cities in Ethiopia, Kenya, Tanzania and Uganda, respectively. Especially the topic of implementation of the guidelines in peri-urban areas will be researched.

The degree of risk to public health presented by the use of waste and excreta in agriculture and aquaculture has to take into consideration national, socio-cultural, economic and environmental factors. It goes beyond the bacteriological and chemical quality of the treated waste. In places where wastewater, excreta and greywater are used in agriculture and aquaculture, especially at the subsistence level, the health benefits from increased household food security and better nutrition may outweigh some of the potential negative health impacts. If over strict standards are introduced and the perceived advantages of waste reuse are high, it is likely that the standards will not be adhered too and public health will be compromised. It is important that equilibrium is established between maximization of benefits of reuse and minimization of public health risks. The proposed research aims at understanding and evaluating this equilibrium point in the four pilot cities and places the health risks from the use of excreta and grey water in agriculture into the context of the overall level of public health and disease prevention within a given population.

Although the guidelines will be assessed in four different settings, the implications of the findings will have global significance.

Tasks:

- Work with each partner to develop a coordinated approach and protocols for undertaking the research
- Develop the quality control mechanisms
- Carry out research into the break point which balances maximising the benefits and minimizes the health risks within each city.
- Validate and/or recommend adjustments to WHO Guidelines.
- Publish joint findings analysis from the four pilot cities including recommendations to adjust WHO Guidelines.

2. Develop (community based) operation and management strategies for resource-oriented sanitation concepts

A great challenge for resource-oriented sanitation systems is the introduction of reuse systems in urban and peri-urban areas. In densely populated areas the treatment and reuse of excreta and greywater can rarely occur in the same location and hardly by the users themselves. However, well prepared structures for operation and maintenance of the sanitation system are mandatory for its acceptance. The development of more sophisticated logistical arrangements by service providers for the collection, transport and treatment of the various fractions is a crucial point. This includes an intensive training of the staff in emptying the dry toilets, collecting the liquid and solid fractions of the human disposal and transporting them to the utilization areas. The user behaviour as well as the support by service providers has to be built up and trained in the frame of the project. For sustainable operation and maintenance of the concepts the question who pays for the service has to be addressed seriously.

Even more critical are the health, cultural and economic aspects in marketing of the products, the integration of excreta-based products into local agricultural and resource-management activities, e.g. marketing of fertiliser and soil conditioner, social acceptance of fertilised crops, and reuse of treated wastewater.

Tasks:

- Short review of existing operation and management strategies for sanitation systems in urban and peri-urban areas
- Development of logistical concepts and technologies for collection, transport, treatment and utilisation of excreta and greywater
- Identification of treatment, reuse and utilisation options in densely populated areas
- Development of marketing strategies for the products
- Development of cost recovering concepts for operation and maintenance systems
- Establishment of local service providers to plan, install, operate and maintain the systems and train the users

3. Development of decentralized solutions for greywater treatment in arid and semi-arid areas including the optimisation of constructed wetland design taking into account the local conditions

Amount and composition of greywater are well known in water rich regions (e.g. Lange and Otterpohl). In areas with sufficient water resources constructed wetlands are used in many resource-oriented sanitation concepts for greywater treatment (Langergraber and Haberl, 2004).

Constructed wetlands (CWs) or wetland treatment systems are wetlands designed to improve water quality. CWs are worldwide used to treat different qualities of water. Being a simple, affordable, and sustainable technology CWs are also suitable for the application in developing countries (e.g. Denny, 1997; Haberl, 1999; Shrestha et al., 2001).

However, in dry regions no investigations on greywater have been carried out. Neither amount nor composition is known. It is quite obvious that the amount of greywater is too low for using constructed wetlands. Small compact treatment systems shall be developed applicable for single (sustainable???) or clusters of households.

Tasks:

- Analysis of amount and composition of greywater in arid and semi-arid areas (based in interviews, theoretical calculations and measurements)
- Development of treatment methods
- Test of the new decentralized solutions in the pilot cities

Under European conditions, construction material (especially substrate and plants) can be selected more or less according to the requirements. However, in developing countries, locally available materials commonly have to be used. Limited experience is available on the use of local plant species. Therefore, the design must not anticipate the availability of certain materials but has to consider local conditions.

Tasks:

- Survey of materials already used for and local available material for constructed wetlands
- Measurement of material properties for selected materials
- Development of a simple design tool that is based on simple methods to characterize the locally available filter material

4. Integration of resource-oriented sanitation into local settlement structures

Up to now, resource-oriented sanitation systems in Africa have been mostly implemented in rural areas. Usually those toilet facilities are constructed outside in yards or gardens. However, the adaptation of these systems to peri-urban areas requires an analysis of the specific conditions in those settlements (e.g. available area) and the socio-cultural preferences. It is expected that the conditions of the pilot cities will be representative for a wide range of peri-urban areas in Eastern Africa as well as Sub-Saharan Africa in general. Based on this, solutions for the appropriate integration into local settlement structures and architecture need to be developed and implemented.

Particularly regarding the construction of resource-oriented toilet pilots inside the buildings only limited experience is available. One aim of this project is the co-operation with local enterprises and construction firms, in order to develop replicable solutions suitable for large-scale implementation.

The situation in Ethiopia differs in so far from other African countries as the Ethiopian government is pursuing the plan to increase the number of apartments and multi-storey houses in urban and peri-urban settlements by large scale housing programmes. Up to now multi-storey buildings are relatively uncommon in African peri-urban settlements. However, it is expected that in the long-term more and more African countries will implement this kind of houses so that the sanitation solution for multi-storey buildings developed for Ethiopian conditions will be transferable to other African countries.

Tasks:

- Review of existing implementations of resource-oriented sanitation systems in densely populated, peri-urban areas
- Characterisation and analysis of the available systems
- Adaptation and development of appropriate solutions for a variety of technical conditions in peri-urban areas in Eastern Africa, e.g.
 - According to type of location, i.e. single houses, apartments, common ablution blocks, public buildings, schools etc.
 - According to required technical and financial needs, i.e. simple low-cost technologies, adaptation to multi-storey houses including apartments resulting in more sophisticated and advanced technical solutions
- Identification of settlement factors influencing the implementation of appropriate sanitation systems, e.g. characteristics like population density and settlement patterns in the four pilot cities
- Development of possible designs suitable for the given setting in the pilot cities in East Africa addressing the specific challenges like reduction of required space, appropriate ventilation etc.
- Integration of sanitation systems into housing areas (pilot projects) considering the specific requirements of peri-urban, densely populated areas.
- Technical amendments for improving the robustness and acceptance of the system for replication and large-scale applications
- Cooperation with local enterprises and construction firms in order to build up local capacity
- Specification of construction guidelines in order to support the dissemination of the sanitation systems
- Recommendations and implications for urban planning and design

5. Development of local structures for financing of sanitation

Conventional public finance in sanitation in the past had generally focused on subsidies for household and public toilets, and grants for urban sewerage and solid waste systems. Despite, supply driven finance programmes (by international organisations) sanitation provision remains to be local on-site affair. "*In financing, the past reliance of governments on household subsidies for toilets tended to ignore or even crowd out household resources*" (The Challenge of Financing Sanitation for meeting MDG, WSP 2004). Assessments within the ISSUE programme of WASTE suggest that local financial institutions are willing to support private sanitation initiatives, once they are presented as business opportunities.

The proposed study will explore the options for local financing of sanitation, based on the assumption that sanitation is financed and/provides by households and local providers, often without support of (local) governments.

The study will focus on how financing of sanitation (and related sector, such as solid waste and water supply) 'works' in the four cities. Because sanitation promotion relating to demand and supply of sanitation is situation specific, a comparison will be conducted in the four cities with respect to:

Tasks:

- *Clarity in Institutional Mandates:* Determining institutional mandates across ministries and at different levels of government
- *Sources and Allocation of Financial Resources:* Identifying all potential sources of finance, both public and non-public, and their use and appropriate mix in relation to incidence of benefits and costs
- *'Fundable Activities' and Financing Mechanisms:* Identifying activities to be funded, related financing mechanisms for flow of funds to create reliable and predictable cash-flows, provide fiscal incentives for promoting sanitation with local governments and ensure appropriate targeting of needed subsidies and grants
- *Addressing Tradeoffs in Public Allocation:* Determining tradeoffs in allocation of public funds to appropriate sanitation activities

The following table shows which European partner is responsible for the different research topics in the ROSA project. The East African university partners are involved in all research topics.

Research topic	European partner
1. Implementation study of the new WHO guidelines and integration of resource-oriented solutions in regulatory frameworks	LSHTM
2. Development of operation and management strategies	ESCA
3. Development of decentralized solutions for greywater treatment in arid and semi-arid areas including the optimisation of constructed wetland design taking into account the local conditions	BOKU
4. Integration of resource-oriented sanitation into local settlement structures	TUHH
5. Development of local structures for financing of sanitation	WASTE

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5 Potential Impact

Strategic impact

The potential impact of the ROSA project can be manifold and occurs in different time horizons:

- during the project life time:
 - The most direct impact is that by implementing resource-oriented sanitation concepts in peri-urban areas the ROSA project directly solves sanitation problems of several hundred people.
 - By developing strategic sanitation & waste plans (SSWPs) for the whole city the sanitation and waste problems of several ten thousand people are considered
 - Local project consortia will identify and bring together the main stakeholders, end-users, private service providers, local authorities, CBOs, NGOs, etc.
 - Local project consortia shall guarantee local project ownership
 - By training of personnel, human capacities will be improved in the local project consortia, municipalities and universities.
- in the medium term echoing the results from the ROSA project:
 - By forming local project consortia the required knowledge in the cities will be identified and also available after the project ended.
 - Trained personnel, technicians and decision makers will be available after the end of the project allowing easier and proper implementation of resource-oriented sanitation concepts.
 - By establishing links to possible financing organisations the sanitation and waste problems of several ten thousand people can also be solved after the ROSA project has been finished
 - By developing a common framework for SSWPs a great number of middle size cities can be addressed solving the sanitation and waste problems of millions of people.
 - The establishment of the East African sanitation network (planned in close cooperation with the activities of the EcoSanRes programme) will help to have good exchange of experiences with other universities, municipalities, etc. interested in resource-oriented sanitation concepts.
- in the longer term the ROSA project may lead to impacts in various fields:
 - Environmental: Resource-oriented sanitation concepts (potentially) save resources (materials, water, energy etc.) Only when the approach is picked up by large population segments – therefore the implementations are necessary to have showcases for these concepts in more densely populated areas such as in peri-urban areas.
 - Socio-economic: By implementing resource-oriented sanitation concepts on a larger scale as many people as possible will get to know, accept and benefit from the sanitation option proposed.
 - Institutional: The current institutional frameworks shall be adjusted and adapted to a new sanitation approach and handling i.e. university curricula will offer new courses.
 - Legislative: legislation and regulations shall allow and encourage new sanitation approaches that will reach more people, in particular those living in low-income areas;

- e.g. the setting of realistic appropriate sanitation objectives and standards - for various (related) aspects of sanitation systems in Africa
- Political: representatives of a broad political spectrum adopt resource-oriented sanitation as a challenge and option for development in Africa.
 - Policy: decision makers support the development of Strategic Sanitation and Waste Plans (SSWPs) that contribute to a resource-oriented approach to urban environment management.
 - Technical: Current technological practices will become more environmental oriented, new technologies will supplement the current sanitation systems.

The strategic impact ROSA aims for is mostly in medium term. The strategic sanitation & waste plans for the whole city consider the sanitation and waste problems of several ten thousand people and by establishing links to possible financing organisations the sanitation and waste problems of these people could also be solved after ROSA has been finished. The local project consortia shall gain capacity for planning, implementing, operating and maintaining of resource-oriented sanitation concepts. The local project consortia shall ensure local project ownership and be the starting point of the East African sanitation network allowing that the knowledge gained stays in the region.

Innovation related activities

Several fields are researched within the ROSA project: decentralized solutions for greywater treatment in arid and semi-arid areas, the implementation study of the new WHO "*Guidelines for a safe use of waste and excreta in agriculture and aquaculture*" in peri-urban areas, community based operation and management strategies, constructed wetland design taking into account the local conditions integration of resource-oriented sanitation into local settlement structures, integration of resource-oriented solutions in regulatory frameworks, and the development of local structures for financing of sanitation.

The first research results will be ready in time so that they can be taken into account for the decision on the solutions to be implemented in the pilot areas. The research results will be disseminated at international workshops and conferences that are planned within the ROSA project to be hold in conjunction with the project meetings as well as at international conferences and in scientific journals. These workshops/conferences will give an opportunity to meet practitioners and researchers involved in other ongoing and planned programmes in the range of WSP, ISSUE (led by WASTE), IRC, TUHH and ESCA (are partners in the EU funded Co-ordination Action NETSSAF), SEI (EcoSanRes) and GTZ.

Innovations result from the research activities and will tackle a number of aspects to a more or lesser extent:

- The WHO-guidelines implementation study will result in innovations in mainly political-legal and environmental-health aspects,
- the operation and management strategy development in institutional-organisational and economic aspects,
- the greywater treatment/constructed wetland part in technical aspects,
- the integration into local settlement structures in mainly social-cultural and technical aspects, and

- the development of local structures for financing of sanitation in financial-economic aspects.

The added-value in carrying out the work at a European level

In the ROSA project five leading organisations in the field of resource-oriented sanitation concepts from Europe, i.e. BOKU, TUHH, ESCA, WASTE and LSHTM, form a consortium with four East African countries. Although the ROSA project focuses on East Africa the regional differences are clear. Each European partner has specific experience in different countries thus allowing working on the problem in a bigger area and by developing a general framework for the SSWP to reach more endusers.

The ROSA project takes ongoing initiatives at European level into account. It has already been mentioned that the objectives of and the work carried out in the ROSA project are in full agreement with the EU Water Initiative and the Africa-EU Partnership. As far as the proposers are aware, no other research projects in this field have been funded by the EU in East Africa.

Potential impact

The potential impacts of the ROSA project can be summarized as follows:

- by promoting resource-oriented sanitation concepts for middle size cities sanitation and waste problems of ten thousands of people are solved within the project (or after the project when the full SSWP is implemented, respectively).
- by combining the knowledge from five leading European organisations that have different experiences in the different East African countries the maximum input is assured to tackle the obvious sanitation and waste problem in Ethiopia, Kenya, Tanzania, and Uganda together.
- by foreseeing a number of dissemination and exploitation activities the optimal use of the project results will be ensured whereby the focus is laid on establishing the local network between the universities and endusers in East Africa so that the knowledge gained stays in the region.

5.1 Contributions to standards/ policies/ regulations:

There are several possibilities where work carried out in the ROSA project can contribute to standards/ policies/ regulations:

- the framework for the strategic sanitation and waste plans (SSWPs) including the developed, tested and evaluated community based operation and management strategies could be replicated as a standard for medium sized African cities
- the implementation study of the updated WHO-guidelines can show problems with the new guidelines and finally lead to an improvement of the guidelines or at least to a description of how to apply the guidelines in peri-urban areas.

- the research on the design of constructed wetlands taking into account the local situation can result in design guidelines for developing countries thus initiating their wider application in developing countries.
- design recommendations for the integration of resource-oriented sanitation into the local settlement structures of the countries will be developed.
- resource-oriented sanitation, in particular the aspect of water and nutrient recovery, can be integrated into regulatory frameworks.

5.2 Risk assessment and related communication strategy

In general it can be assumed that implementing resource-oriented sanitation concepts in the pilot areas of the four East African cities will reduce the risks related to direct contact with human excreta. Risks related to the reuse of treated excreta will be considered as follows:

- Risks related to the reuse of treated wastewater and treated faecal matter will be researched in detail within the project by the study on the implementation of the updated WHO-guidelines for use of waste and excreta in agriculture and aquaculture
- The information, education and communication (IEC) material produced includes the guidelines how to handle treated wastewater and faecal matter for the local people.
- The operation and management strategy for the systems in peri-urban areas will also take care of and therefore reduce risks, i.e. by having well trained operators.

6 Project management and exploitation/dissemination plans

6.1 Project management

Project management and decision making structure

The **Project Manager (Co-ordinator)**, Dr. Günter Langergraber (BOKU), has the overall responsibility for the organisation, planning and controlling the project. The Co-ordinator represents the sole contact person for the project with the European Commission (EC) and will ensure the punctual delivery of reports and deliverables to the EC. The Co-ordinator is responsible for the efficient administration of the project, calling, organising and chairing, the Project Management Board meetings and proposing the agenda (including the preparation of the basic data needed for decisions to be made by the Project Management Board). The Co-ordinator will monitor and integrate financial and administrative data from the partners, and will prepare the technical and financial data for submission to the EC.

The Co-ordinator is responsible to monitor and supervise all workpackages to be able to consolidate vision, animate partners' work, provide ad-hoc operational advice where required, etc. Visits of the pilot cities by the co-ordinator shall help to identify potential shortcomings at the level of local implementation timely and therefore allow corrective actions in time.

External advice/review will be offered by Mr. Helmut Jung from the co-ordinating partner (BOKU). Mr. Jung is widely regarded and experienced person in the field of sanitation in Africa and will be not actively participating in the day-to-day project work of the ROSA project.

The **Project Management Board** consists of one representative of each project partner and the Co-ordinator. The Project Management Board team is the formal decision-making body of the consortium where all decisions relevant for project (e.g. financial, contractual and administrative matters, changes of the workplan to a significant degree) are made. Also the final evaluation of results as well as the decision on the content of the reports and deliverables to be despatched to the EC is made by the Project Management Board.

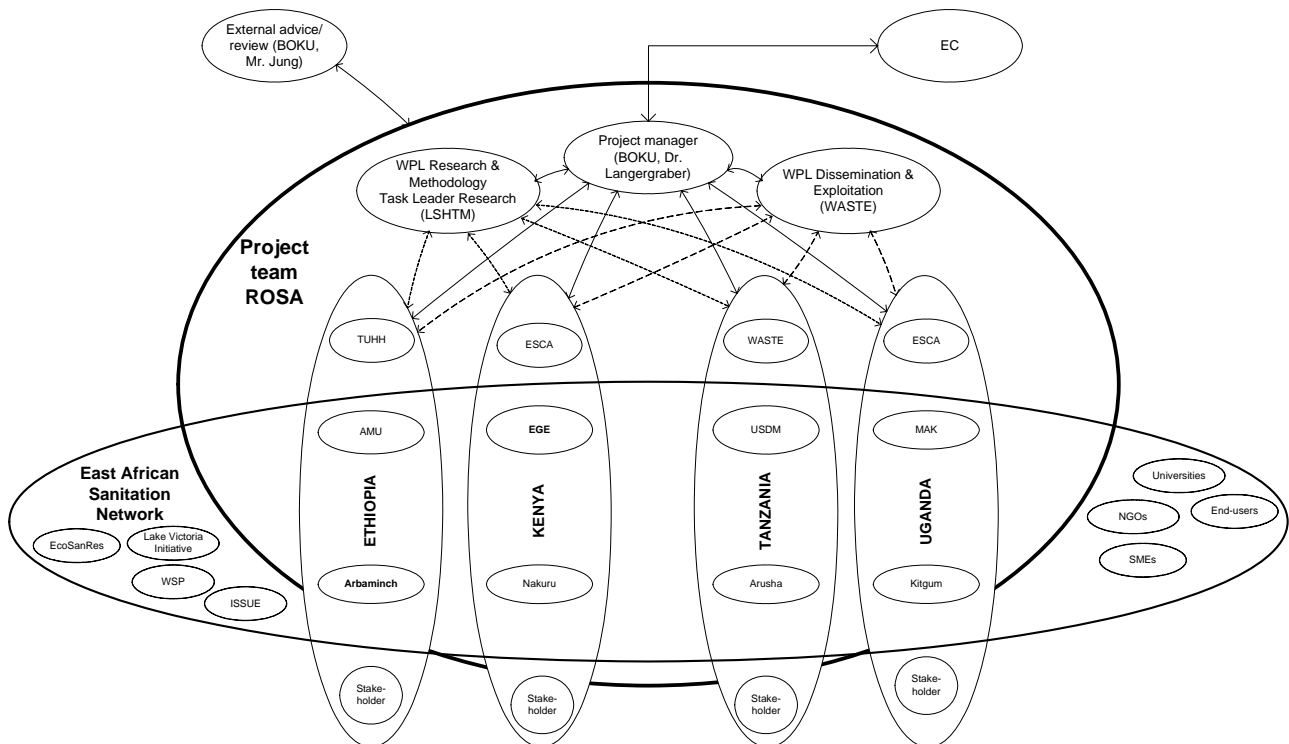
The **Workpackage Leader (WPL)** is responsible for managing a workpackage (WP) and together with the **Task Leader** responsible for all work conducted by participants in the workpackage and tasks. The WPL establishes, in co-ordination with the Task Leader and the participating partners, the detailed schedule of the WP and the work in progress.

The work is organised in four WPs relating directly to the activities in the countries and two cross-cutting workpackages (WP3 "Research and Methodology" and WP8 "Dissemination and Exploitation").

- Management of WP4 through WP7 is organised in a similar way. The WPs are lead by the East Africa university partners; each university is closely linked to a European partner who together with the WPL is responsible for the work progress. The two starting partners in each country (municipality and university) and the European partner will form a local project consortium targeting a co-operation between complementary partners who together will be able to achieve the objectives of the project. The municipality, the university and the European partner shall sign a Memorandum of Understanding (MoU) within 6 months after the start of the project. The MoU will be similar for all countries and describes collaborative activities to be carried out and responsibilities of the partners (see Appendix B).
- In WP3 the work in the countries will be consolidated, and research results and tools applicable for all countries will be produced. LSHTM as the Task Leader for the Tasks

related research will be the responsible body to co-ordinate the scientific activities and to give scientific advice to the project. LSHTM as the WPL of WP3 together with the Co-ordinator will ensure that the research results will be taken into account in the decision making process in the countries.

- The East African network between the universities and the end-users that shall be established in WP8 shall ensure that the results obtained in the project stays in the region. This network shall include all parties related to sanitation such as universities, end-users, SMEs, NGOs, etc. shall be established in close cooperation with the networking activities of the EcoSanRes programme and will be closely linked to other ongoing initiatives and programmes in the region (e.g. ISSUE, WSP, Lake Victoria Initiative, etc.).



WPL ... Workpackage leader

Conflict management

For all possible conflicts that can occur (e.g. diverging views regarding the project roll-out strategy, encompassing issues such as medium-term objectives and longer-term exploitation policies) a solution shall be found that is acceptable for the whole consortium. The principal conflict resolution procedure will clearly be proactive by creating an open, consenting and coherent working climate between the partners.

As mentioned above, the Project Management Board is the formal decision-making body of the consortium where all decisions relevant for the project are made. In case that no common decision can be found the majority decides whereby every partner has one vote (resulting in 13 votes total, the Co-ordinator is neutral). Details will be defined in the Consortium Agreement.

Communication strategy

At the project management level the communication strategy will be based on electronic communication for the daily business using email and internet telephone (e.g. Skype). Besides the electronic communication personal meetings play an important role in the ROSA project. The Kick-off meeting and the Final meeting will be the starting and finalization point of the project, respectively. Project Management Board meetings are planned every 6 months and therefore a good controlling of the project is guaranteed.

Meeting	Contents	Participants	Frequency
Kick-off meeting	<ul style="list-style-type: none"> Detailed planning of project 	<ul style="list-style-type: none"> Project team members (at least one representative per partner) 	Single event
Project Management Board Meeting	<ul style="list-style-type: none"> Board for all decisions relevant for project Final evaluation of results Decision on the content of the reports to be sent to the EC 	<ul style="list-style-type: none"> Project Management Board members (one representative per partner) 	Every 6 months
Final meeting	<ul style="list-style-type: none"> Closing of project 	<ul style="list-style-type: none"> Project team members (at least one representative per partner) 	Single event

It is planned that after the project meetings in East Africa (the Kick-off meeting will be held in Vienna, Austria, all other meetings in East Africa) the European partners spend additional time in East Africa for work on the project. Additional travels are planned between the Project Management Board meetings for the European partners responsible for a country.

Management of knowledge, intellectual property and other innovation-related activities

Matters of knowledge and intellectual property will be defined in detail in the Consortium Agreement. The agreement will be signed latest 4 months after the Kick-off meeting.

Already at the proposal stage it has been agreed that all knowledge that exists in organisations before the project starts will stay the intellectual property of the organisation. Further on the results of the research activities will be published by the organisation(s) that carried out the work. Nevertheless, the published research results will be part of the public domain.

6.2 Plan for using and disseminating knowledge

The first version of the "*Plan for using and disseminating knowledge*" will be drafted at the beginning of the project in the Preparation-WP. It will be maintained during the project and the final version will be ready at the end of the project.

Dissemination and exploitation of the project results is tackled manifold:

- A project website will be installed in the very first months of the project to show the activities within the project to the general public.
- Workshops and conferences will be organised within the ROSA project. The workshops and conferences will be in conjunction with the project meetings and will be organised by the university partners in close cooperation with the European partners. It is planned that the workshops/conferences are held under auspices of local authorities (i.e. the local EU

delegations or/and WSP-AF). At these conferences mainly the project results shall be presented. Additional invited speakers (mainly from the East African region, e.g. from the Water and Sanitation Programme) will highlight special topics. It is also aimed to invite presenters from other ongoing related projects to increase the knowledge exchange and to invite participants from authorities and funding organisations. The East African audience shall be addressed with these conferences also to establish the local East African network (see next point). Press conferences shall be organised to increase attention to media including local radio.

- A local network for resource-oriented sanitation in East Africa shall be established within the existing activities of EcoSanRes and closely linked to WSP-AF and new activities such as the Co-ordination Action NETSSAF (also funded by the EU within FP6). The network shall attract universities and end-users, and all other local institutions and projects involved in the topic. Creating the network will be a key factor in knowledge transfer and to keep the knowledge alive in the East African region.
- In addition to the East African workshops/conferences the research results shall be presented at international conferences and papers for publishing in international journals will be prepared. This ensures the distribution of the results among the scientific community worldwide.
- By using the already existing networks of the project partners to the ecological sanitation community helps to spread best practice examples from the ROSA project.
- The planned technical description of the implemented technologies will help to create knowledge and to disseminate the project results among local planners.

Connection to other national or international (research) activities

The ROSA project supports the goals of the EU Water Initiative (EUWI). Some of the linkages that are planned with EU funded activities:

- Information on project results and participation in EUWI meetings/working groups
- Knowledge exchange with and active participation in the activities of the WSSTP (Water Supply and Sanitation Technology Platform)
- Co-ordination with related projects (thematic and/or regional) in the FP6 (INCO, 4th call Global Change, etc.), e.g. the Co-ordination Action NETSSAF

The activities within the ROSA project are strongly connected to other international activities in East Africa. The planned local East Africa network will be established in cooperation with the worldwide networking activities of the Swedish EcoSanRes programme and ISSUE (WASTE) and linked with other organisations such as the Water and Sanitation Programme (WSP-AF) of the Worldbank.

Under the ISSUE programme of WASTE a sanitation programme in Nakuru and Dar es Salaam started. The ISSUE programme is an innovative and learning programme in the form of capacity building, institutional development and organisational strengthening. The ROSA project can add a stronger research component to the ongoing global ISSUE programme.

It is also planned to cooperate with other programmes, such as the UN Habitat Lake Victoria Initiative, and ongoing projects by the proposed networking activities and the organisation of the local East African workshops/conferences.

6.3 Raising public participation and awareness

Public participation and awareness will be raised by the following activities:

- Due to the local project consortia in every pilot city the public participation in the development of the SSWPs and the decision on and implementation of resource-oriented sanitation concepts will be an objective from the very beginning.
- The ROSA project website will show the activities within the project to the general public.
- The information, education and communication (IEC) material will be used for other IEC activities in the region helping to spread the knowledge on resource-oriented sanitation concepts in general and on the ROSA project in particular.
- Workshops/conferences will be organised within the ROSA project in conjunction with project meetings (see above), press conferences shall be organised in connection to these workshops/conferences.
- The report on "*Raising public participation and awareness*" will be prepared at the end of the project.

7 Workplan – for the full duration of the project

7.1 Introduction - general description and milestones

Implementation plan introduction

As mentioned before the overall scientific and technological objectives of the ROSA project are:

- to add to the current efforts for promoting resource-oriented sanitation concepts as a route to sustainable sanitation and to fulfil the UN MDGs,
- to research the gaps for the implementation of resource-oriented sanitation concepts in peri-urban areas,
- to develop a generally applicable adaptable framework for the development of strategic sanitation & waste plans (SSWPs), and
- to implement resource-oriented sanitation concepts in four pilot cities in East Africa (Arbaminch, Ethiopia; Nakuru, Kenya; Arusha, Tanzania; and Kitgum, Uganda).

To achieve these objectives the work is divided into eight workpackages (WPs). The first WP concerns project management, the second WP is dedicated to the final preparation of the activities in the ROSA project. Further the project consists of four workpackages (WP4-WP7) relating directly to the activities in the countries and two cross-cutting workpackages (WP3 "Research and Methodology" and WP8 "Dissemination and Exploitation").

- Work in WP4 through WP7 is organised in a similar way. The WPs are lead by the East African university partners. Each local university leads the WP in close co-operation with a European partner. There will be joint responsibility between the European and African partners based on a MoU (see Appendix B) that will be similar for all programme countries. The Table below summarises the WP leaders, responsible European partners and end-users for the target countries Ethiopia, Kenya, Tanzania and Uganda.

Country	WP leader	European partner	End-user
Ethiopia	AMU	TUHH	Arbaminch
Kenya	EGE	ESCA	Nakuru
Tanzania	UDSM	WASTE	Arusha
Uganda	MAK	ESCA	Kitgum

- In WP3 and WP8 the work in the countries will be consolidated, and research results and tools applicable for all countries will be produced. Dissemination and exploitation activities are carried out in East Africa and on an international level. The local project consortia shall be the starting point for the East African network that shall be established in close cooperation with the EcoSanRes programme and ISSUE activities. The East African network shall ensure that the knowledge gained within the project stays in the region.

The work to be carried out in each of the three years of the duration of the ROSA project can be described as follows:

Year 1: Preparing the ground, basic research, development of the SSWPs

In the initial phase of the project the detailed work to be carried out will be defined in WP2 "Preparation". This will allow a smooth work within the other WPs.

In WP3 "Research and Methodology" one ongoing activity throughout the project is the consolidation of the work that is performed in WP4-7. Research activities start with the first research questions to be addressed within the five topics. These priority research questions shall be discussed and defined during the Kick-off meeting. The first research results will be available and evaluated by month 12 so that they can influence the decision on the measures to be taken.

The work in East Africa in WP4-7 starts with enabling the environment, i.e. conducting baseline studies, the creation of awareness, and start of forming a local project consortium. After the basic data have been obtained (assessment and baseline study) and collected the strategic sanitation & waste plans (SSWPs) can be developed. This will be done in close cooperation with the end-users. In months 12 the SSWPs for all pilot cities will be available so that they can be finally discussed and agreed on at the 1st annual project meeting and their preliminary versions can be presented at the 1st local conference to be organised with the annual meeting.

The first activity in WP8 "Dissemination and exploitation" is to set-up the project homepage. Further dissemination activities are ongoing throughout the project. The preparation of the information, education and communication (IEC) material as well as with the initial activities to establish a local network in East Africa, is the main work to be carried out in the first year in WP8. Finally the 1st East African workshop/conference to be held in conjunction with the 1st annual meeting has to be organised.

Year 2: Implementation, detailed research, network establishment, financial organisation

Decision on the area of implementation is the first step that has to be carried out in WP4-7. The solution to be implemented including their management and operation strategies will be developed with stakeholder participation. The main part of the work in year 2 will be the implementation consisting of detailed design, preparation of the local sites for construction, construction work, training of the operators, and implementation of the community based structure for operation and management. At the end of year 2 the implementation for all pilot areas in the four cities should be completed.

In WP3 consolidating the work carried out in WP4-7 continues in the second year of the project. Research activities will focus on open details that could not be solved during the first year. Activities and evaluation of research will be finished at the end of the second year. To finance the whole SSWPs activities for attracting additional financing will be started. In the second half of the second year the work on the common framework for the SSWPs will begin.

Dissemination activities in WP8 are ongoing. IEC material will be ready at the beginning of year 2. The local network in East Africa will be maintained by the East African universities starting at the end of the second year of the project. First research results will be also published during this year including presentations at the 2nd East African workshop/conference organised again in conjunction with the second annual project meeting.

Year 3: Operating and monitoring, evaluation, dissemination and exploitation

In the third year the work in WP3 focuses on the organisation of additional financing of the SSWPs and the work on the common framework for the SSWPs.

In WP4-7 operation and monitoring of the systems implemented will be the main activities. Finally the systems will be evaluated. The evaluation of the systems shall be carried out by end-users from other countries, e.g. the system in Kitgum will be evaluated by the end-users from Arusha and so on, allowing a direct knowledge transfer between the endusers.

Dissemination and exploitation activities in WP8 are intensified in the 3rd year by publishing research results and preparing the technical descriptions of the implemented solutions, respectively. The 3rd and 4th East African workshop/conference that will be organised in conjunction with the 5th project team meeting and the final meeting, respectively, give the optimal platform to share the results with a local audience.

Table of Milestones (MS)

No.	Milestone Title	Month
MS1	Project started	M0
MS2	Preliminary research results ready	M12
MS3	SSWPs developed	M12
MS4	Mid-term review report	M18
MS5	Solutions implemented	M24
MS6	Local network run by the East African universities	M24
MS7	Research activities finished	M30
MS8	General framework for SSWP developed	M34
MS9	O&M strategies evaluated and adapted	M34
MS10	Project finished	M36

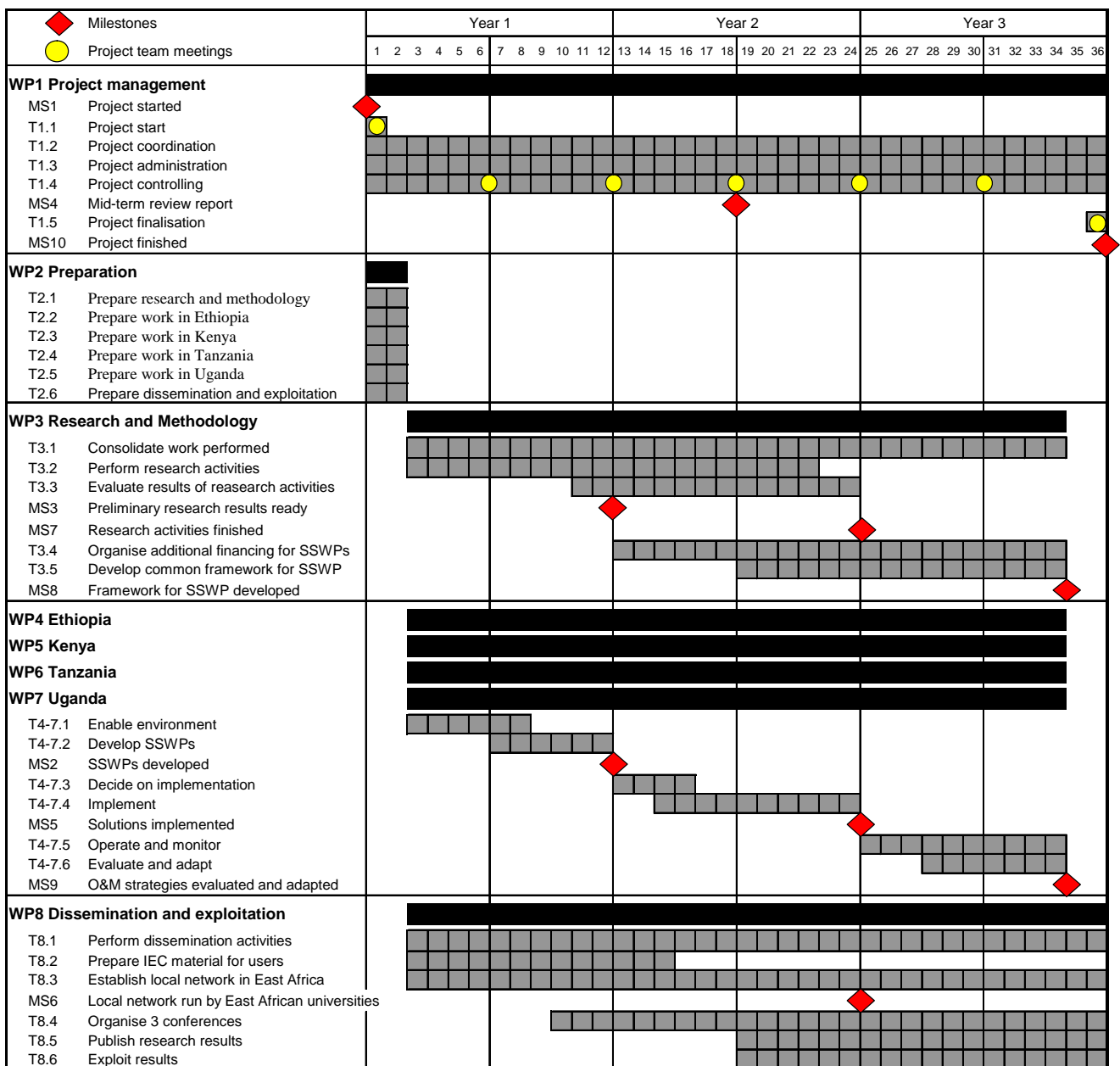
Meeting Schedule

This list provides a schedule of the meetings in month (Mn), title and main targets.

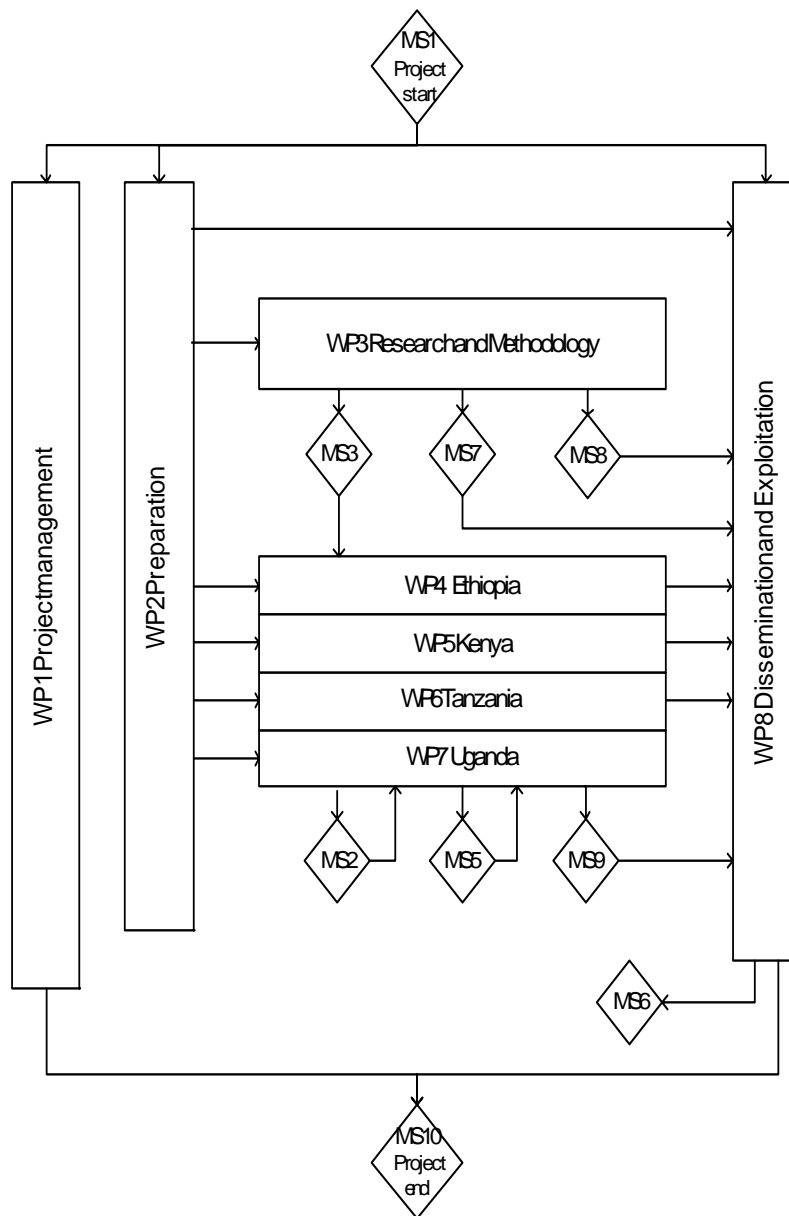
- *Kick-off meeting (M1)*: Main targets: Detail planning for year 1 including the definition of the priority research questions in the five research topics, harmonisation of the project management standards, administrative and financial aspects.
- *1st project team workshop (M6)*: Main targets: Common evaluation of the first results regarding the basic studies in the four pilot cities, consolidation of the activities in research and in East Africa, preparation of the 1st East African workshop/conference, and preparation of the 6-months report.
- *2nd project team workshop (1st annual meeting, M12)*: Main targets: Common discussion on the developed SSWPs, discussion on the first research results and how to incorporate them into the decision phase, and preparation of the 1st annual and financial reports, respectively. Combined with the 1st local East African workshop/conference.
- *3rd project team workshop (M18)*: Main targets: Presentation of IEC material, ongoing research activities, status of decision/implementation in the four pilot regions, preparation of the 2nd local East African conference, and preparation of the 18-months report.

- *4th project team workshop (2nd annual meeting, M24):* Main targets: Common discussion of the research results, reports on the implementation, detailed planning of the monitoring and evaluation, and preparation of the 2nd annual and financial reports, respectively. Preparation of the 3rd East African workshop/conference. Combined with the 2nd East African workshop/conference.
- *5th project team workshop (M30):* Main targets: Report on operation – first experiences, preparation of the 4th East African workshop/conference, and preparation of the 30-months report. Combined with the 3rd East African workshop/conference.
- *Final meeting (M36):* Main targets: Presentation of the final results and preparation of the final report. Combined with the 4th East African workshop/conference.

7.2 Work planning and timetable



7.3 Graphical presentation of the components



- MS2 SSWPs developed
- MS3 Preliminary research results ready
- MS5 Solutions implemented
- MS6 Local network run by the East African universities
- MS7 Research activities finished
- MS8 Framework for SSWP developed
- MS9 O&M strategies evaluated and adapted

7.4 Workpackage list

Work-package No ¹	Workpackage title	Lead contractor Short Name ²	Person-months ³	Start month ⁴	End month ⁵	Deliv-erable No ⁶
WP 1	Project management	BOKU	29	0	36	D1.1, D1.2, D1.3, D1.4, D1.5, D1.6
WP 2	Preparation	BOKU	36	0	2	D2.1, D2.2, D2.3, D2.4, D2.5, D2.6
WP 3	Research and methodology	LSHTM	264.5	3	34	D3.1, D3.2, D3.3, D3.4
WP 4	Ethiopia	AMU	198.5	3	34	D4.1, D4.2, D4.3, D4.4, D4.5, D4.6, D4.7
WP 5	Kenya	EGE	200	3	34	D5.1, D5.2, D5.3, D5.4, D5.5, D5.6, D5.7
WP 6	Tanzania	UDSM	198.5	3	34	D6.1, D6.2, D6.3, D6.4, D6.5, D6.6, D6.7
WP 7	Uganda	MAK	198.5	3	34	D7.1, D7.2, D7.3, D7.4, D7.5, D7.6, D7.7
WP 8	Dissemination and exploitation	WASTE	201.5	3	36	D8.1, D8.2, D8.3, D8.4, D8.5, D8.6, D8.7, D8.8
	TOTAL		1326.5			

¹ Workpackage number: WP 1 – WP n.

² Short name of the contractor leading the work in this workpackage.

³ The total number of person-months allocated to each workpackage.

⁴ Relative start date for the work in the specific workpackages, month 0 marking the start of the project, and all other start dates being relative to this start date.

⁵ Relative end date, month 0 marking the start of the project, and all ends dates being relative to this start date.

⁶ Deliverable number: Number for the deliverable(s)/result(s) mentioned in the workpackage: D1 - Dn.

7.5 Deliverables list

Del. no. ⁷	Deliverable name	WP no.	Lead participant	Nature ⁸	Dissemination level ⁹	Delivery date ¹⁰ (proj. month)
WP1 Project management						
D1.1	Kick-off meeting	1	BOKU	O	CO	1
D1.2	Project presentation	1	BOKU	O	PU	3
D1.3	Consortium Agreement	1	BOKU	O	CO	4
D1.4	Reports to EU (management and activity)	1	BOKU	R	CO	6,12,18,24,30,36
D1.5	Project team workshops	1	BOKU	O	CO	6,12,18,24,30
D1.6	Final meeting	1	BOKU	O	CO	36
WP2 Preparation						
D2.1	Detailed research plans	2	LSHTM	R	CO	2
D2.2	Detailed work plan for Ethiopia	2	TUHH	R	CO	2
D2.3	Detailed work plan for Kenya	2	ESCA	R	CO	2
D2.4	Detailed work plan for Tanzania	2	WASTE	R	CO	2
D2.5	Detailed work plan for Uganda	2	ESCA	R	CO	2
D2.6	Detailed dissemination and exploitation plan	2	WASTE	R	CO	2
WP3 Research and methodology						
D3.1	Preliminary research results	3	LSHTM	R	CO	12
D3.2	Report on implementation of WHO guidelines	3	LSHTM	R	PU	30
D3.3	Financial planning for the implementation of the whole SSWP in the four pilot cities	3	WASTE	R	CO	33
D3.4	Common framework for SSWP	3	WASTE	R	PU	33
WP4 Ethiopia						
D4.1	Memorandum of Understanding	4	TUHH	O	CO	6
D4.2	Assessment and baseline study	4	AMU	R	CO	8
D4.3	Strategic sanitation & waste plan	4	AMU	R	CO	12
D4.4	Decision on the area and sanitation system for implementation	4	AMU	O+R	CO	16
D4.5	Implementation of the chosen sanitation system	4	AMU	O	CO	24
D4.6	Operation, maintenance and monitoring of the sanitation system	4	AMU	O	CO	33
D4.7	Evaluation report	4	AMU	R	CO	33

⁷ Deliverable numbers in order of delivery dates: D1 – Dn

⁸ Please indicate the nature of the deliverable using one of the following codes:

- R** = Report
- P** = Prototype
- D** = Demonstrator
- O** = Other

⁹ Please indicate the dissemination level using one of the following codes:

- PU** = Public
- PP** = Restricted to other programme participants (including the Commission Services).
- RE** = Restricted to a group specified by the consortium (including the Commission Services).
- CO** = Confidential, only for members of the consortium (including the Commission Services).

¹⁰ Month in which the deliverables will be available. Month 1 marking the start of the project, and all delivery dates being relative to this start date.

WP5 Kenya						
D5.1	Memorandum of Understanding	5	ESCA	O	CO	6
D5.2	Assessment and baseline study	5	EGE	R	CO	8
D5.3	Strategic sanitation & waste plan	5	EGE	R	CO	12
D5.4	Decision on the area and sanitation system for implementation	5	EGE	O+R	CO	16
D5.5	Implementation of the chosen sanitation system	5	EGE	O	CO	24
D5.6	Operation, maintenance and monitoring of the sanitation system	5	EGE	O	CO	33
D5.7	Evaluation report	5	EGE	R	CO	33
WP6 Tanzania						
D6.1	Memorandum of Understanding	6	WASTE	O	CO	6
D6.2	Assessment and baseline study	6	UDSM	R	CO	8
D6.3	Strategic sanitation & waste plan	6	UDSM	R	CO	12
D6.4	Decision on the area and sanitation system for implementation	6	UDSM	O+R	CO	16
D6.5	Implementation of the chosen sanitation system	6	UDSM	O	CO	24
D6.6	Operation, maintenance and monitoring of the sanitation system	6	UDSM	O	CO	33
D6.7	Evaluation report	6	UDSM	R	CO	33
WP7 Uganda						
D7.1	Memorandum of Understanding	7	ESCA	O	CO	6
D7.2	Assessment and baseline study	7	MAK	R	CO	8
D7.3	Strategic sanitation & waste plan	7	MAK	R	CO	12
D7.4	Decision on the area and sanitation system for implementation	7	MAK	O+R	CO	16
D7.5	Implementation of the chosen sanitation system	7	MAK	O	CO	24
D7.6	Operation, maintenance and monitoring of the sanitation system	7	MAK	O	CO	33
D7.7	Evaluation report	7	MAK	R	CO	33
WP8 Dissemination and exploitation						
D8.1	Project website	8	BOKU	O	PU	3
D8.2	IEC material prepared	8	ESCA	O	PU	12
D8.3	East African local network established	8	WASTE	O	PU	12
D8.4	Workshops/conferences organised	8	LSHTM	O	PU	36
D8.5	Research results published	8	LSHTM	O	PU	36
D8.6	Technical description of the implemented technologies	8	UDSM	O	PU	36
D8.7	Final plan for using and disseminating knowledge	8	BOKU	R	CO	36
D8.8	Report on raising public participation and awareness	8	WASTE	R	CO	36

7.6 Workpackage descriptions

Workpackage Number	1		Start date and end month:								0 – 36		
Workpackage Title	Project Management												
Participant No:	1	2	3	4	5	6	7	8	9	10	11	12	13
PM / participant:	15	0.5	0.5	0.5	0.5	2	2	2	2	1	1	1	1

WP Leader: BOKU

Objectives

The project management WP will ensure the successful achievement of project goals and delivery of the results in a professional and cost-effective manner, as well as maintaining successful communication channels between project partners and to the EC. The Project Management workpackage covers:

- Coordination of the technical activities of the project;
- Overall legal, contractual, financial and administrative management;
- Supervision of the implementation of the Consortium Agreement and other agreements such as the MoU between organisation collaborating in each country;
- Obtaining audit certificates by each of the participants if requested;
- Obtaining any financial security such as bank guarantees if requested by the Commission;
- Overseeing science and society issues related to the research activities conducted within the project;
- Overseeing the promotion of gender equality in the project;
- Consolidate vision, animate partners' work, provide ad-hoc operational advice where required;
- Identify potential shortcomings at the level of local implementation

The Coordinator (Project Manager), who is WP-Leader for this workpackage, is responsible for the communication with the EC. He has standardised procedures for management of EU projects in line with EC guidelines.

Description of work

T1.1 Project start (BOKU, M0)

The Coordinator is responsible for the project start. The Kick-off meeting in Vienna will be the official start event. Its purpose is to harmonise project expectations and standards, plan the first year in detail and train the partners on administrative and financial issues of EU projects.

T1.2 Project coordination (BOKU, M0 – M36)

The Coordinator is responsible for coordinating the overall activities in the project including overseeing the work in the other workpackages, especially to ensure the linking of the work in WP3 and WP8 to the work in the country WPs (WP4-7).

T1.3 Project administration (BOKU, M0 – M36)

Simple and transparent management tools will be made available to the partners including a secure partner only part on the ROSA project homepage. Project administration will include overall legal, contractual, ethical, financial and administrative management. Maintenance of the Consortium Agreement and liaison with the European Commission also falls under this task. The Coordinator will be the sole contact point for the EC.

The Project Management Board Meetings and project team workshops will be organised in close collaboration with the partners, who will be assisted by the European partners take in over the local organisation of meetings, when in their home country. A schedule of project team meetings is given above.

Each partner will prepare their part of the periodic activity and management reports. In particular the Task Leaders are responsible for consolidating the reports regarding the tasks, the Workpackage Leaders regarding the workpackages. The periodic reports finally will be consolidated and produced centrally by the Co-ordinator for submission to the EC.

Internal reports will be prepared every 3 months, more frequently than requested by the EC, to ensure proper project controlling and to enable the timely identification potential shortcomings.

T1.4 Project controlling(BOKU, M0 – M36)

The Co-ordinator controls the progress of work in the project. Controlling includes work progress as well as financial resources. Therefore all partners shall provide the data on activities and resources spent every three months. For controlling the work in the implementation phase the co-ordinator will visit each of pilot cities at the beginning of the project (after the Kick-off meeting) and at least once during the implementation phase to have a first hand view of local context, progress, problems, etc.

T1.5 Project finalisation (BOKU, M36)

At the end of the project the Co-ordinator is responsible for the finalisation of the project. The final project workshop will mark the official end of the project period. The tasks of the final workshop are the presentation of the final results and the preparation of the final report. All partners contribute to the preparation of the final report that will be consolidated by the Co-ordinator for submission to the EC.

Deliverables

D1.1 Kick-off meeting (M1)

D1.2 Project presentation (M3)

D1.3 Consortium Agreement (M4)

D1.4 Periodic reports to EC (technical and activity) (M6, M12, M18, M24, M30, M36)

D1.5 Five project team workshops (M6, M12, M18, M24, M30)

D1.6 Final meeting (M36)

Milestones and expected result

MS1 Project started (M0)

MS4 Mid-term review report (M18)

MS10 Project finished (M36)

Workpackage Number	2		Start date and end month:								0 – 2		
Workpackage Title			Preparation										
Participant No:	1	2	3	4	5	6	7	8	9	10	11	12	13
PM / participant:	1.5	1.5	1.5	1.5	2	4	4	4	4	3	3	3	3

WP Leader: BOKU

Objectives

In this WP the work to be carried out will be defined in detail. This includes the detailed planning/definition of research and methodology, of the work to be carried out in Ethiopia, Kenya, Tanzania, and Uganda, respectively, and of dissemination and exploitation activities. The preparation phase will result in a detailed work plan for the upcoming workpackages.

Description of work

T2.1 Prepare research and methodology (LSHTM, M0-M2)

Preparation includes the detailed planning of the research activities for all research topics, and the consolidation of the work performed.

T2.2 Prepare work in Ethiopia (TUHH, M0 – M2)

In this Task the work to be carried out in Ethiopia will be planned in detail by the responsible partners, i.e. TUHH, AMU and ARB In particular the start phase of the project work including the baseline study, awareness creation, and the organisation of the local network as the first steps to the strategic sanitation & waste plan (SSWP) to be developed will be defined.

T2.3 Prepare work in Kenya (ESCA, M0 – M2)

Similar to Task T2.2 in this Task the work to be carried out in Kenya will be planned in detail by the responsible partners, i.e. ESCA, WASTE, EGE and NAK

T2.4 Prepare work in Tanzania (WASTE, M0 – M2)

The work to be carried out in Tanzania will be planned in detail by the responsible partners, i.e. WASTE, USDM and ARU

T2.5 Prepare work in Uganda (ESCA, M0 – M2)

As in the previous Tasks the work to be carried out in Uganda will be planned in detail by the responsible partners, i.e. ESCA, MAK and KIT

T2.6 Prepare dissemination and exploitation (WASTE, M0 – M2)

Here the preparation of the information, education and communication (IEC) material for users will be planned, as well as the first steps in establishing the local network in East Africa. The first dissemination activities such as the project web-site and the organisation of workshops/conferences will be discussed in detail. In this task also the first draft of the "*Plan for using and disseminating knowledge*" will be prepared.

Deliverables

D2.1 Detailed research plans (M2)

D2.2 Detailed work plan for Ethiopia (M2)

D2.3 Detailed work plan for Kenya (M2)
D2.4 Detailed work plan for Tanzania (M2)
D2.5 Detailed work plan for Uganda (M2)
D2.6 Detailed dissemination and exploitation plan (M2)

Milestones and expected result

The detailed planning of all WPs will allow a fluent work progress.

Workpackage Number	3		Start date and end month:					3 – 34					
Workpackage Title			Research and methodology										
Participant No:	1	2	3	4	5	6	7	8	9	10	11	12	13
PM / participant:	13	12	7	9.5	15	50	50	50	50	2	2	2	2

WP Leader: LSHTM

Objectives

In this WP the work to be carried out for all sites regarding research activities and the methodological framework is summarized. This includes firstly coordinating, carrying out and evaluating the research activities, secondly consolidating the activities in the four pilot cities that shall thirdly result in a common framework for a sustainable sanitation & waste plan (SSWP) for medium size cities.

Description of work

T3.1 Consolidate work performed (BOKU, M3-M34)

The Task leader is responsible for the consolidation of the work carried out in the four countries. He will be assisted by the responsible European partners and the East African University partners.

T3.2 Perform research activities (LSHTM, M3-M22)

As already described before the following research topics will be investigated:

- Implementation study of the new WHO "Guidelines for a safe use of waste and excreta in agriculture and aquaculture" (to be published) in peri-urban areas including the integration of resource-oriented solutions in legal frameworks
- Development of operation and management strategies for peri-urban areas
- Development of decentralized solutions for greywater treatment in arid and semi-arid areas and optimisation of constructed wetland design taking into account the local conditions
- Integration of resource-oriented sanitation into local settlement structures
- Development of local structures for financing of sanitation

The task leader is responsible for the coordination of the research activities and the evaluation of the research results (see Task 3.3)

T3.3 Evaluate results of research activities (LSHTM, M11-M24)

The results of the research performed will be consolidated by the Task leader and evaluated by the project team. The special focus during the evaluation of the research results is on the applicability of the research results within the local conditions and the suitability for implementing. The preliminary research results (MS2) will be ready in time so that the results can be included in the decision on the implementation.

T3.4 Organise additional financing for SSWPs (WASTE, M13-M34)

As the implementation within the ROSA project is only in peri-urban areas strategies for the financing of the whole SSWP developed shall be developed and organised.

T3.5 Develop common framework for SSWP (WASTE, M19-M34)

Based on the experiences gained from the development of SSWPs for the four pilot cities a common framework the SSWPs for medium site cities will be developed. The SSWP framework shall allow that the experiences gained can be reproduced in other cities. The sanitation part will be based on resource-oriented sanitation concepts, the waste management part on the ISWM Assessment

Methodology. The SSWPs will also include the findings of the research topics including on operation and management strategies, decentralized solutions for greywater treatment in arid and semi-arid areas, integration of resource-oriented sanitation into local settlement structures and local structures for financing of sanitation.

Deliverables

D3.1 Preliminary research results (M12)

D3.2 Report on implementation of WHO guidelines (M30)

D3.3 Financial planning for the implementation of the whole SSWP in the four pilot cities (M33)

D3.4 Common framework for SSWP (M33)

Milestones and expected result

MS2 Preliminary research results ready (M12)

MS7 Research activities finished (M30)

MS8 Framework for SSWP developed (M34)

Workpackage Number	4		Start date and end month:								3 – 34		
Workpackage Title			Ethiopia										
Participant No:	1	2	3	4	5	6	7	8	9	10	11	12	13
PM / participant:	2	9.5	1	1	1	2	2	2	52	2	2	2	120

WP Leader: AMU

Workpackage Number	5		Start date and end month:								3 – 34		
Workpackage Title			Kenya										
Participant No:	1	2	3	4	5	6	7	8	9	10	11	12	13
PM / participant:	2	1	7	5	1	2	2	52	2	2	2	120	2

WP Leader: EGE

Workpackage Number	6		Start date and end month:								3 – 34		
Workpackage Title			Tanzania										
Participant No:	1	2	3	4	5	6	7	8	9	10	11	12	13
PM / participant:	2	1	1	9.5	1	2	52	2	2	2	120	2	2

WP Leader: UDSM

Workpackage Number	7		Start date and end month:								3 – 34		
Workpackage Title			Uganda										
Participant No:	1	2	3	4	5	6	7	8	9	10	11	12	13
PM / participant:	2	1	9.5	1	1	52	2	2	2	120	2	2	2

WP Leader: MAK

Objectives

This WP4, WP5, WP6, and WP7 contain the work to be carried out in Ethiopia, Kenya, Tanzania, and Uganda, respectively. WPs4-7 are led by the local universities and supported by the European institution. As the methodology applied is the same the workpackages will be described together. The following European partners are responsible for the pilot cities/countries:

- Arbaminch (Ethiopia): TUHH
- Nakuru (Kenya): ESCA and WASTE
- Arusha (Tanzania): WASTE
- Kitgum (Uganda): ESCA

For the work in the country the municipality, the university and the European partner will form a local project consortium and sign a Memorandum of Understanding (MoU) that describes collaborative activities to be carried out and responsibilities of the partners (see Appendix B). In particular the European partners

- Supervise and assist the University in co-ordinating the activities of ROSA in the country;
- Supervise and assist partners in financial reporting;
- Supervise and assist tendering procedures and evaluate the tenders;

- Assist partners by providing technical support, e.g. identification of possible relevant small and micro enterprises or business venture, conduct of feasibility studies, promotion and management of sustainable financing and evaluation and monitoring;
- Make available to and/or provide partners with information, databases, manuals and guidelines; and
- Prepare training, workshops, seminars, study tours and other forms of exchanges by providing the means so experts, trainees and participants meet in the most productive way.

Description of work WP4-7

T4-7.1 Enable environment (M3-M8)

At the start an assessment study, a baseline study, and awareness creation are the tasks to be performed. A local project consortium will be founded by the starting partners in each country (municipality, university and European partner). A MoU will sign that describes collaborative activities to be carried out and responsibilities of the partners. The local project consortium has to be extended by including other stakeholders, decision makers, SMEs, etc. The creation of the local project consortium is crucial in the beginning because it guarantees the involvement of the different parties in the communities from the very beginning as well as the creation of local project ownership. The European partner will act as a co-facilitator of this procedure.

T4-7.2 Develop SSWPs (M7 – M12)

The strategic sanitation & waste plans (SSWPs) will be developed in close cooperation with the end-users. For discussions with city councils it is important to discuss solutions for the whole city (strategic sanitation & waste plan). For the implementation within the project the implementation of the sanitation part of the overall SSWP in a peri-urban area will be taken into account. The solution in this area has to fit in the overall SSWP, i.e. it will be derived from it.

T4-7.3 Decide on implementation (M13 – M16)

Based on the SSWP the area of implementation has to be decided by the city councils. Stakeholders will be participating to find the proper resource-oriented sanitation concepts for the area of implementation. After the consolidation of the technical, social and economical requirements the most appropriate solution will be selected. An important point here is to decide on the management and operation strategy for the sanitation system.

Although no details on implementation can be listed at the beginning of the project some strategic orientations can be given: The implementation shall be carried out for a household model unit (about 20 to 100 households) and shall include also pilot demonstration units in public institutions, e.g. schools, public buildings, markets, etc. Local companies will be sub-contracted for the construction work to be carried out. This will again create local knowledge in constructing resource-oriented sanitation concepts.

T4-7.4 Implement (M15 – M24)

The first step of the implementation phase is the detailed design as well as preparation of the local sites for construction. In parallel to the construction work is the local operators and users will be trained. Finally the strategy for operation and management has to be implemented.

T4-7.5 Operate and monitor (M25 – M34)

The official start of the operation will be a handing-over event. Then the systems have to be operated and maintained according to the implemented concepts by the municipality in close cooperation with the local project consortium. The persons operating and maintaining the sanitation system will be employed by the municipalities. The performance of the implemented sanitation

system will be monitored by the municipality that will be assisted and supported by the university in this task.

T4-7.6 Evaluate and adapt (M28 – M34)

Evaluation consists of four levels:

- the technical performance of the sanitation system,
- the operation and maintenance,
- the community based management strategy, and
- the user acceptance.

The evaluation of the systems shall be carried out by end-users from another country supported by their European partners, e.g. the system in Kitgum will be evaluated by the end-users from Arusha and so on.

Deliverables WP4-7

D4-7.1 Memorandum of Understanding (M6)

D4-7.2 Assessment and baseline study (M8)

D4-7.3 Strategic sanitation & waste plan (SSWP) (M12)

D4-7.4 Decision on the area and sanitation system for implementation (M16)

D4-7.5 Implementation of the chosen sanitation system (M24)

D4-7.6 Operation, maintenance and monitoring of the sanitation system (M33)

D4-7.7 Evaluation report (M33)

Milestones and expected result

MS3 SSWPs developed (M12)

MS5 Solutions implemented (M24)

MS9 Operation and maintenance strategies evaluated and adapted (M34)

Workpackage Number	8		Start date and end month:					3 – 36					
Workpackage Title			Dissemination and exploitation										
Participant No:	1	2	3	4	5	6	7	8	9	10	11	12	13
PM / participant:	10	7	5	5.5	6	30	30	30	30	12	12	12	12

WP Leader: WASTE

Objectives

This WP is focused on the dissemination and exploitation of the project results. The main aim is that the knowledge gained during the project work by the East African partners will be promoted in the project region, i.e. East Africa, by establishing a local network of the universities and end-users. The results will be also shared to the extent possible with projects active in other African sub-regions, i.e. NETSSAF, SWITCH etc. Activities in this workpackage will be initiated by the European partners. The longer the project runs the more activities will then be made and more initiatives will be started by the East African partners to ensure that the knowledge gained will be used in the region.

Description of work

T8.1 Perform dissemination activities (BOKU, M3 – M36)

Public relations activities will include preparation, hosting, updating and maintaining of a project website (<http://rosa.boku.ac.at>). Further on the work done within the project shall be presented at conferences and general publications on the project will be submitted. Within this task the "*Plan for using and disseminating knowledge*" is maintained during the project and finalized the end. In addition the "*Report on raising public participation and awareness*" will be prepared.

T8.2 Prepare information, education and communication (IEC) material for users (ESCA, M3-M15)

In this Task information, education and communication (IEC) material will be prepared. The IEC material will be used for stakeholder participation in the development of the SSWP as well in the decision process on which area/solution to be implemented. The IEC material will be freely available from the ROSA project website (<http://rosa.boku.ac.at>).

T8.3 Establish and maintain local network in East Africa (WASTE, M3 – M36)

A local network for resource-oriented sanitation in East Africa shall be established within the framework of EcoSanRes. This will be done in close cooperation with the ongoing programmes in the region, e.g. by WSP-AF. The network shall be between universities, municipalities and all other local institutions involved in the topic. The network will be initiated with the help of WASTE and the operation of the network should be taken over by the East African universities and suggested for 'adoption' by the EcoSanRes programme as a regional centre of excellent on sustainable sanitation. In addition, the cooperation with international education and research institutes will be explored, such as UNESCO-IHE and IRC as well as a continuation of collaboration within the programmes of the European ROSA partners.

T8.4 Organise workshops/conferences (LSHTM, M10 – M36)

Organisation and carrying out of four workshops/conferences in East Africa is the work to be carried out in this Task. The workshops/conferences will be coupled to the project team meeting, so that the results of the work can be presented. During the conferences press conferences will be organised in association with the local EC Delegation (and EU member states bilateral

representations where applicable). Further other projects running in this region shall be invited to present their result to enable a proper exchange of knowledge. The organisation shall be carried out in close cooperation with programmes/organisations in East Africa (such as WSP-AF, EcoSanRes, GTZ, UN Habitat).

T8.5 Publish research results (LSHTM, M19 – M36)

The research shall be presented at conferences and published in scientific journals.

T8.6 Exploit results (USDAM, M19 – M36)

Exploitation of results will include e.g. the preparation of a technical description of the implemented technologies. These technical descriptions of the single technologies implemented shall be mainly prepared for local planners. The material will be also accessible for free at the ROSA project website (<http://rosa.boku.ac.at>).

Deliverables

D8.1 Project website (M3)

D8.2 IEC material prepared (M12)

D8.3 East African local network established (M12)

D8.4 Workshops/conferences organised (M36)

D8.5 Research results published (M36)

D8.6 Technical description of the implemented technologies (M36)

D8.7 Final plan for using and disseminating knowledge (M36)

D8.8 Report on raising public participation and awareness (M36)

Milestones and expected result

MS6 Local network run by the East African universities (M24)

8 Project resources and budget overview

8.1 Efforts for the project (SPREP Effort Form)

STREP Project Effort From Full duration of project

Project Acronym: ROSA


	1	2	3	4	5	6	7	8	9	10	11	12	13	
	BOKU	TUHH	ESCA	WASTE	LSHTM	MAK	UDSM	EGE	AMU	KIT	ARU	NAK	ARB	TOTAL

Research / Innovation Activities														
WP2 Preparation	1.5	1.5	1.5	1.5	2	4	4	4	4	3	3	3	3	36
WP3 Reasearch and methodology	13	12	7	9.5	15	50	50	50	50	2	2	2	2	264.5
WP4 Ethiopia	2	9.5	1	1	1	2	2	2	52	2	2	2	120	198.5
WP5 Kenya	2	1	7	5	1	2	2	52	2	2	2	120	2	200
WP6 Tanzania	2	1	1	9.5	1	2	52	2	2	2	120	2	2	198.5
WP7 Uganda	2	1	9.5	1	1	52	2	2	2	120	2	2	2	198.5
WP8 Dissemination and exploitation	10	7	5	5.5	6	30	30	30	30	12	12	12	12	201.5
Total Research / Innovation	32.5	33	32	33	27	142	142	142	142	143	143	143	143	1297.5

Management activities														
WP1 Project management	15	0.5	0.5	0.5	0.5	2	2	2	2	1	1	1	1	29
Total Management	15	0.5	0.5	0.5	0.5	2	2	2	2	1	1	1	1	29

TOTAL ACTIVITIES	47.5	33.5	32.5	33.5	27.5	144	144	144	144	144	144	144	144	1326.5
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8.2 Overall budget for the full duration of the project

Contract Preparation Forms									
		EUROPEAN COMMISSION 6th Framework Programme on Research, Technological Development and Demonstration		Specific Targeted Research or Innovation Project				A3.1	
Please use as many copies of form A3.1 as necessary for the number of partners									
Proposal Number		037025			Proposal Acronym		ROSA		
Financial information - whole duration of the project									
Particip ant n	Organisation short name	Cost model used	Estimated eligible costs and requested EC contribution (whole duration of the project)	Costs and EC contribution per type of activities			Total (4)=(1)+(2)+ (3)	Total receipts	
				RTD or innovation related activities (1)	Demonstration activities (2)	Consortium Management activities (3)			
1	BOKU	AC	Eligible costs	Direct Costs (a)	195'250.00	.00	92'500.00	287'750.00	.00
				of which subcontracting	15'500.00	.00	3'500.00	19'000.00	
				Indirect costs (b)	35'950.00	.00	17'800.00	53'750.00	
				Total eligible costs (a)+(b)	231'200.00	.00	110'300.00	341'500.00	
				Requested EC contribution	231'200.00	.00	110'300.00	341'500.00	
2	TUHH	AC	Eligible costs	Direct Costs (a)	214'300.00	.00	8'550.00	222'850.00	.00
				of which subcontracting	.00	.00	6'000.00	6'000.00	
				Indirect costs (b)	42'860.00	.00	510.00	43'370.00	
				Total eligible costs (a)+(b)	257'160.00	.00	9'060.00	266'220.00	
				Requested EC contribution	257'160.00	.00	9'060.00	266'220.00	
3	ESCA	AC	Eligible costs	Direct Costs (a)	267'500.00	.00	7'700.00	275'200.00	.00
				of which subcontracting	.00	.00	4'200.00	4'200.00	
				Indirect costs (b)	53'500.00	.00	700.00	54'200.00	
				Total eligible costs (a)+(b)	321'000.00	.00	8'400.00	329'400.00	
				Requested EC contribution	321'000.00	.00	8'400.00	329'400.00	
4	WASTE	AC	Eligible costs	Direct Costs (a)	269'500.00	.00	9'500.00	279'000.00	.00
				of which subcontracting	.00	.00	6'000.00	6'000.00	
				Indirect costs (b)	53'900.00	.00	700.00	54'600.00	
				Total eligible costs (a)+(b)	323'400.00	.00	10'200.00	333'600.00	
				Requested EC contribution	323'400.00	.00	10'200.00	333'600.00	
5	LSHTM	AC	Eligible costs	Direct Costs (a)	203'000.00	.00	9'000.00	212'000.00	.00
				of which subcontracting	.00	.00	6'000.00	6'000.00	
				Indirect costs (b)	40'600.00	.00	600.00	41'200.00	
				Total eligible costs (a)+(b)	243'600.00	.00	9'600.00	253'200.00	
				Requested EC contribution	243'600.00	.00	9'600.00	253'200.00	

Contract Preparation Forms



EUROPEAN COMMISSION
6th Framework Programme on
Research, Technological
Development and Demonstration

**Specific Targeted
Research or Innovation
Project**

A3.1

Please use as many copies of form A3.1 as necessary for the number of partners

Proposal Number	037025	Proposal Acronym	ROSA
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Financial information - whole duration of the project									
Particip ant n	Organisation short name	Cost model used	Estimated eligible costs and requested EC contribution (whole duration of the project)		Costs and EC contribution per type of activities			Total (4)=(1)+(2)+ (3)	Total receipts
					RTD or innovation related activities (1)	Demonstration activities (2)	Consortium Management activities (3)		
6	MAK	AC	Eligible costs	Direct Costs (a)	142700.00	.00	3200.00	145900.00	.00
				of which subcontracting	.00	.00	2000.00	2000.00	
				Indirect costs (b)	28540.00	.00	240.00	28780.00	
				Total eligible costs (a)+(b)	171240.00	.00	3440.00	174680.00	
				Requested EC contribution	171240.00	.00	3440.00	174680.00	
7	UDSM	AC	Eligible costs	Direct Costs (a)	149800.00	.00	3300.00	153100.00	.00
				of which subcontracting	.00	.00	2000.00	2000.00	
				Indirect costs (b)	29960.00	.00	260.00	30220.00	
				Total eligible costs (a)+(b)	179760.00	.00	3560.00	183320.00	
				Requested EC contribution	179760.00	.00	3560.00	183320.00	
8	EGE	AC	Eligible costs	Direct Costs (a)	151900.00	.00	3400.00	155300.00	.00
				of which subcontracting	.00	.00	2000.00	2000.00	
				Indirect costs (b)	30380.00	.00	280.00	30660.00	
				Total eligible costs (a)+(b)	182280.00	.00	3680.00	185960.00	
				Requested EC contribution	182280.00	.00	3680.00	185960.00	
9	AMU	AC	Eligible costs	Direct Costs (a)	118500.00	.00	3000.00	121500.00	.00
				of which subcontracting	.00	.00	2000.00	2000.00	
				Indirect costs (b)	23700.00	.00	200.00	23900.00	
				Total eligible costs (a)+(b)	142200.00	.00	3200.00	145400.00	
				Requested EC contribution	142200.00	.00	3200.00	145400.00	
10	KIT	AC	Eligible costs	Direct Costs (a)	147000.00	.00	2500.00	149500.00	.00
				of which subcontracting	15000.00	.00	2000.00	17000.00	
				Indirect costs (b)	26400.00	.00	100.00	26500.00	
				Total eligible costs (a)+(b)	173400.00	.00	2600.00	176000.00	
				Requested EC contribution	173400.00	.00	2600.00	176000.00	

Contract Preparation Forms



EUROPEAN COMMISSION
6th Framework Programme on
Research, Technological
Development and Demonstration

Specific Targeted Research or Innovation Project

A3.1

Please use as many copies of form A3.1 as necessary for the number of partners

Proposal Number	037025	Proposal Acronym	ROSA
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Financial information - whole duration of the project									
Participan t n	Organisation short name	Cost model used	Estimated eligible costs and requested EC contribution (whole duration of the project)		Costs and EC contribution per type of activities			Total (4)=(1)+(2)+(3)	Total receipts
					RTD or innovation related activities (1)	Demonstration activities (2)	Consortium Management activities (3)		
11	ARU	AC	Eligible costs	Direct Costs (a)	139850.00	.00	2450.00	142300.00	.00
				of which subcontracting	15000.00	.00	2000.00	17000.00	
				Indirect costs (b)	24970.00	.00	90.00	25060.00	
				Total eligible costs (a)+(b)	164820.00	.00	2540.00	167360.00	
				Requested EC contribution	164820.00	.00	2540.00	167360.00	
12	NAK	AC	Eligible costs	Direct Costs (a)	154150.00	.00	2550.00	156700.00	.00
				of which subcontracting	15000.00	.00	2000.00	17000.00	
				Indirect costs (b)	27830.00	.00	110.00	27940.00	
				Total eligible costs (a)+(b)	181980.00	.00	2660.00	184640.00	
				Requested EC contribution	181980.00	.00	2660.00	184640.00	
13	ARB	AC	Eligible costs	Direct Costs (a)	132700.00	.00	2400.00	135100.00	.00
				of which subcontracting	15000.00	.00	2000.00	17000.00	
				Indirect costs (b)	23540.00	.00	80.00	23620.00	
				Total eligible costs (a)+(b)	156240.00	.00	2480.00	158720.00	
				Requested EC contribution	156240.00	.00	2480.00	158720.00	
TOTAL			Eligible costs	2728280.00	.00	171720.00	2900000.00	.00	
			Requested EC contribution	2728280.00	.00	171720.00	2900000.00		

Contract Preparation Forms



EUROPEAN COMMISSION
6th Framework Programme on
Research, Technological
Development and Demonstration

**Specific Targeted
Research or Innovation
Project**

A3.2

Proposal Number	037025	Proposal Acronym	ROSA
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Estimated breakdown of the EC contribution per reporting period				
Reporting Periods	Start month	End month	Estimated Grant to the Budget	
			Total	In which first six months
Reporting Period 1	1	12	925000.00	.00
Reporting Period 2	13	24	1150000.00	700000.00
Reporting Period 3	25	36	825000.00	450000.00
Reporting Period 4	37	48	.00	.00
Reporting Period 5	49	60	.00	.00
Reporting Period 6	61	72	.00	.00
Reporting Period 7	73	84	.00	.00

Overall budget for the full duration of the project including sub-categories

Activity Type	Personnel		External Services (No overheads)	Consumables	Travel and subsistence	Overheads	Total Costs	EU contribution	
	MM	EUR	EUR	EUR	EUR	EUR	EUR	%	EUR
BOKU - Mgmt	15	€ 67'500	€ 3'500	€ -	€ 21'500	€ 17'800	€ 110'300	100%	€ 110'300
BOKU - Res / Innov	32.5	€ 146'250	€ 15'500	€ 14'000	€ 19'500	€ 35'950	€ 231'200	100%	€ 231'200
1 BOKU	47.5	€ 213'750	€ 19'000	€ 14'000	€ 41'000	€ 53'750	€ 341'500		€ 341'500
TUHH - Mgmt	0.5	€ 2'550	€ 6'000	€ -	€ -	€ 510	€ 9'060	100%	€ 9'060
TUHH - Res / Innov	33	€ 168'300	€ -	€ 13'000	€ 33'000	€ 42'860	€ 257'160	100%	€ 257'160
2 TUHH	33.5	€ 170'850	€ 6'000	€ 13'000	€ 33'000	€ 43'370	€ 266'220		€ 266'220
ESCA - Mgmt	0.5	€ 3'500	€ 4'200	€ -	€ -	€ 700	€ 8'400	100%	€ 8'400
ESCA - Res / Innov	32	€ 224'000	€ -	€ 8'000	€ 35'500	€ 53'500	€ 321'000	100%	€ 321'000
3 ESCA	32.5	€ 227'500	€ 4'200	€ 8'000	€ 35'500	€ 54'200	€ 329'400		€ 329'400
WASTE - Mgmt	0.5	€ 3'500	€ 6'000	€ -	€ -	€ 700	€ 10'200	100%	€ 10'200
WASTE - Res / Innov	33	€ 231'000	€ -	€ 8'000	€ 30'500	€ 53'900	€ 323'400	100%	€ 323'400
4 WASTE	33.5	€ 234'500	€ 6'000	€ 8'000	€ 30'500	€ 54'600	€ 333'600		€ 333'600
LSHTM - Mgmt	0.5	€ 3'000	€ 6'000	€ -	€ -	€ 600	€ 9'600	100%	€ 9'600
LSHTM - Res / Innov	27	€ 162'000	€ -	€ 13'000	€ 28'000	€ 40'600	€ 243'600	100%	€ 243'600
5 LSHTM	27.5	€ 165'000	€ 6'000	€ 13'000	€ 28'000	€ 41'200	€ 253'200		€ 253'200
MAK - Mgmt	2	€ 1'200	€ 2'000	€ -	€ -	€ 240	€ 3'440	100%	€ 3'440
MAK - Res / Innov	142	€ 85'200	€ -	€ 30'500	€ 27'000	€ 28'540	€ 171'240	100%	€ 171'240
6 MAK	144	€ 86'400	€ 2'000	€ 30'500	€ 27'000	€ 28'780	€ 174'680		€ 174'680
UDSM - Mgmt	2	€ 1'300	€ 2'000	€ -	€ -	€ 260	€ 3'560	100%	€ 3'560
UDSM - Res / Innov	142	€ 92'300	€ -	€ 30'500	€ 27'000	€ 29'960	€ 179'760	100%	€ 179'760
7 UDSM	144	€ 93'600	€ 2'000	€ 30'500	€ 27'000	€ 30'220	€ 183'320		€ 183'320

Activity Type	Personnel		External Services (No overheads)	Consumables	Travel and subsistence	Overheads	Total Costs	EU contribution	
	MM	EUR						EUR	EUR
EGE - Mgmt	2	€ 1'400	€ 2'000	€ -	€ -	€ 280	€ 3'680	100%	€ 3'680
EGE - Res / Innov	142	€ 99'400	€ -	€ 30'500	€ 22'000	€ 30'380	€ 182'280	100%	€ 182'280
8 EGE	144	€ 100'800	€ 2'000	€ 30'500	€ 22'000	€ 30'660	€ 185'960		€ 185'960
AMU - Mgmt	2	€ 1'000	€ 2'000	€ -	€ -	€ 200	€ 3'200	100%	€ 3'200
AMU - Res / Innov	142	€ 71'000	€ -	€ 30'500	€ 17'000	€ 23'700	€ 142'200	100%	€ 142'200
9 AMU	144	€ 72'000	€ 2'000	€ 30'500	€ 17'000	€ 23'900	€ 145'400		€ 145'400
KIT - Mgmt	1	€ 500	€ 2'000	€ -	€ -	€ 100	€ 2'600	100%	€ 2'600
KIT - Res / Innov	143	€ 71'500	€ 15'000	€ 51'000	€ 9'500	€ 26'400	€ 173'400	100%	€ 173'400
10 KIT	144	€ 72'000	€ 17'000	€ 51'000	€ 9'500	€ 26'500	€ 176'000		€ 176'000
ARU - Mgmt	1	€ 450	€ 2'000	€ -	€ -	€ 90	€ 2'540	100%	€ 2'540
ARU - Res / Innov	143	€ 64'350	€ 15'000	€ 51'000	€ 9'500	€ 24'970	€ 164'820	100%	€ 164'820
11 ARU	144	€ 64'800	€ 17'000	€ 51'000	€ 9'500	€ 25'060	€ 167'360		€ 167'360
NAK - Mgmt	1	€ 550	€ 2'000	€ -	€ -	€ 110	€ 2'660	100%	€ 2'660
NAK - Res / Innov	143	€ 78'650	€ 15'000	€ 51'000	€ 9'500	€ 27'830	€ 181'980	100%	€ 181'980
12 NAK	144	€ 79'200	€ 17'000	€ 51'000	€ 9'500	€ 27'940	€ 184'640		€ 184'640
ARB - Mgmt	1	€ 400	€ 2'000	€ -	€ -	€ 80	€ 2'480	100%	€ 2'480
ARB - Res / Innov	143	€ 57'200	€ 15'000	€ 51'000	€ 9'500	€ 23'540	€ 156'240	100%	€ 156'240
13 ARB	144	€ 57'600	€ 17'000	€ 51'000	€ 9'500	€ 23'620	€ 158'720		€ 158'720
Sum	1'326.5	€ 1'638'000	€ 117'200	€ 382'000	€ 299'000	€ 463'800	€ 2'900'000		€ 2'900'000

8.3 Management level description of resources and budget.

Comments to the overall budget

For all partners the Additional Cost (AC) model is applied.

The management costs sum to 171'720 EUR, which represents 5.92 % of the EC contribution (2'900'000 EUR). The partners accept that only consortium management tasks and audit costs can be covered by the management costs.

Human resources

The following table gives the allocation of man months to each workpackage and task, respectively, as well as the personnel cost per man month used for each partner.

	Partner:	1	2	3	4	5	6	7	8	9	10	11	12	13														
															EUR/MM:	4'500	5'100	7'000	7'000	6'000	600	650	800	450	500	450	500	350
															Leader	BOKU	TUHH	ESCA	WASTE	LSHTM	MAK	UDSM	EGE	AMU	KIT	ARU	NAK	ARB
WP1	Project management	BOKU	36	15	0.5	0.5	0.5	0.5	2	2	2	2	1	1	1	1												
WP2	Preparation	BOKU	2	1.5	1.5	1.5	1.5	2	4	4	4	4	3	3	3	3												
T2.1	Prepare research and methodology	LSHTM	2	0.25	0.5	0.25	0.5	0.75	1	1	1	1				3												
T2.2	Prepare work in Ethiopia	TUHH	2	0.25	0.5			0.25				2																
T2.3	Prepare work in Kenya	ESCA	2	0.25		0.5		0.25			2				3													
T2.4	Prepare work in Tanzania	WASTE	2	0.25			0.5	0.25		2			3															
T2.5	Prepare work in Uganda	ESCA	2	0.25		0.5		0.25	2				3															
T2.6	Prepare dissemination and exploitatic	WASTE	2	0.25	0.5	0.25	0.5	0.25	1	1	1	1																
WP3	Research and methodology	LSHTM	32	13	12	7	9.5	15	50	50	50	50	2	2	2	2												
T3.1	Consolidate work performed	BOKU	32	4	2	1	1	2	4	4	4	4																
T3.2	Perform research activities	LSHTM	20	4	5	3	3	5	30	30	30	30																
T3.3	Evaluate results of reasearch activitie	LSHTM	14	2.5	2	1	1	5	6	6	6	6		2		2												
T3.4	Organise additional financing for SSV	WASTE	22	1	1.5	1	2	1	3	3	3	3																
T3.5	Develop common framework for SSV	WASTE	16	1.5	1.5	1	2.5	2	7	7	7	7																
WP4	Ethiopia	AMU	32	2	9.5	1	1	1	2	2	2	52	2	2	2	120												
T4.1	Enable environment	AMU	6	0.25	2							10				16												
T4.2	Develop SSWPs	AMU	6	0.5	2	0.5	0.5	0.25				10				16												
T4.3	Decide on implementation	AMU	4	0.25	1	0.5	0.5	0.25				6				6												
T4.4	Implement	AMU	10	0.5	2							12				28												
T4.5	Operate and monitor	AMU	10	0.25	1			0.5				6				36												
T4.6	Evaluate and adapt	AMU	7	0.25	1.5				2	2	2	8	2	2	2	18												
WP5	Kenya	EGE	32	2	1	7	5	1	2	2	52	2	2	2	120	2												
T5.1	Enable environment	EGE	6	0.25		1	1.5				10					16												
T5.2	Develop SSWPs	EGE	6	0.5	0.5	1.5	1.5	0.25			10					16												
T5.3	Decide on implementation	EGE	4	0.25	0.5	1	1	0.25			6					6												
T5.4	Implement	EGE	10	0.5		1.5	0.5				12					28												
T5.5	Operate and monitor	EGE	10	0.25		1		0.5			6					36												
T5.6	Evaluate and adapt	EGE	7	0.25		1	0.5		2	2	8	2	2	2	2	18												
WP6	Tanzania	UDSM	32	2	1	1	9.5	1	2	52	2	2	2	120	2	2												
T6.1	Enable environment	UDSM	6	0.25			2				10					16												
T6.2	Develop SSWPs	UDSM	6	0.5	0.5	0.5	2	0.25			10					16												
T6.3	Decide on implementation	UDSM	4	0.25	0.5	0.5	1	0.25			6					6												
T6.4	Implement	UDSM	10	0.5			2				12					28												
T6.4	Operate and monitor	UDSM	10	0.25			1	0.5			6					36												
T6.5	Evaluate and adapt	UDSM	7	0.25			1.5		2	8	2	2	2	2	2	18												
WP7	Uganda	MAK	32	2	1	9.5	1	1	52	2	2	2	120	2	2	2												
T7.1	Enable environment	MAK	6	0.25		2			10							16												
T7.2	Develop SSWPs	MAK	6	0.5	0.5	2	0.5	0.25	10							16												
T7.3	Decide on implementation	MAK	4	0.25	0.5	1	0.5	0.25	6							6												
T7.4	Implement	MAK	10	0.5		2			12							28												
T7.5	Operate and monitor	MAK	10	0.25		1		0.5	6							36												
T7.6	Evaluate and adapt	MAK	7	0.25		1.5			8	2	2	2	2	2	2	18												
WP8	Dissemination and exploitation	BOKU	34	10	7	5	5.5	6	30	30	30	30	12	12	12	12												
T8.1	Perform dissemination activities	BOKU	34	4	1	0.5	0.5	0.5	4	4	4	4																
T8.2	Prepare IEC material for users	ESCA	13	1	1	2.5	1	1	4	4	4	4	6	6	6	6												
T8.3	Establish and maintain local network	WASTE	34	1	1	1	3	1	8	8	8	8	6	6	6	6												
T8.4	Organise workshops/conferences	LSHTM	27	2	2	0.25	0.25	2	6	6	6	6																
T8.5	Publish research results	LSHTM	18	1	1	0.25	0.25	1	4	4	4	4																
T8.6	Exploit results	UDSM	18	1	1	0.5	0.5	0.5	4	4	4	4																
Sum (MM):				47.5	33.5	32.5	33.5	27.5	144	144	144	144	144	144	144	144												
				3.6%	2.5%	2.5%	2.5%	2.1%	10.9%	10.9%	10.9%	10.9%	10.9%	10.9%	10.9%	10.9%												

For calculating the personnel cost per man month for the East African partners each partner was assigned 4 persons funded by the project money. The personnel costs have been calculated using the

figures as given in the table below. A weighted mean value of monthly personnel costs was used for the calculation assuming that each University partner will hire 1 Post-doc, 2 PhD students and 1 technician, the Municipality 1 Post-doc, 1 PhD student (i.e. person that finished master studies) and 2 technicians, respectively.

	Currency	Monthly salary in local currency			Monthly salary in Euro			Mean
		Post-doc	PhD student	Technician	Post-doc	PhD st.	Techn.	
MAK	UGX	1'950'000	1'300'000	650'000	830	554	277	600
UDSM	USD	1'000	800	500	777	622	389	650
EGE	KES	90'000	60'000	40'000	977	652	434	700
AMU	ETB	7'000	5'000	3'000	660	472	283	500
KIT	UGX	1'950'000	1'300'000	650'000	830	554	277	500
ARU	TZS	1'000'000	700'000	500'000	629	440	315	450
NAK	KES	80'000	60'000	40'000	869	652	434	550
ARB	ETB	6'500	4'500	3'000	613	424	283	400

The following conversion rates have been used (6 Aug 2006):

1 US Dollar (USD) =	0.7770200	EUR
1 Uganda Shilling (UGX) =	0.0004258	EUR
1 Tanzanian Shilling (TZS)	0.0006290	EUR
1 Kenyan Shilling (KES) =	0.0108600	EUR
1 Ethiopian Birr (ETB) =	0.0943300	EUR

Material resources

The table below offers a detailed overview of the cost for consumables

- *Consortium meetings / conferences*: For each consortium meeting EUR 1'000 are requested for each local organiser; for the organisation of each of local East African conferences/workshops EUR 5'000 (allocated to MAK, UDSM, EGE and AMU); for participation at conferences EUR 3'000 are requested for all partners except the endusers.
- *Research activities*: For research activities EUR 10'000 are requested for BOKU, TUHH and LSHTM, EUR 5'000 for ESCA and WASTE, and EUR 16'500 for MAK, UDSM, EGE and AMU.
- *Construction materials*: For each pilot city EUR 50'000 are requested for construction material. Construction work to be done will include construction of toilets and facilities for treatment of urine and faeces.
- *Printing of IEC materials*: EUR 5'000 are requested for printing of information, education, and communication materials for MAK, UDSM, EGE and AMU.

	1 BOKU	2 TUHH	3 ESCA	4 WASTE	5 LSHTM	6 MAK	7 UDSM	8 EGE	9 AMU	10 KIT	11 ARU	12 NAK	13 ARB
Consumables (EUR)	14'000	13'000	8'000	8'000	13'000	30'500	30'500	30'500	30'500	51'000	51'000	51'000	51'000
Consortium meetings	1'000					1000	1000	1000	1000	1000	1000	1000	1'000
Participation at conferences	3'000	3'000	3'000	3'000	3'000	3'000	3'000	3'000	3'000				
Organisation of workshops/conferences						5'000	5'000	5'000	5'000				
Research activities													
	10'000	10'000	5'000	5'000	10'000	16'500	16'500	16'500	16'500				
Construction materials													
WP4 ETH													50'000
WP5 KEN													
WP6 TAN													
WP7 UGA										50'000	50'000	50'000	
Dissemination activities													
Printing of IEC materials						5'000	5'000	5'000	5'000				

Travel and subsistence

The table below shows the details on travel and subsistence costs. Travels for BOKU have been subdivided into Management and Research/Innovation activities. The following costs (travel and subsistence) have been used for the calculation of the meeting costs:

- 1'000 EUR per travel Europe - Europe
- 2'000 EUR per travel Europe - East Africa
- 1'000 EUR per travel within East Africa

	1 BOKU	2 TUHH	3 ESCA	4 WASTE	5 LSHTM	6 MAK	7 UDSM	8 EGE	9 AMU	10 KIT	11 ARU	12 NAK	13 ARB
	Mgmt	Res/Innov											
Travel and subsistence	21'500	19'500	33'000	35'500	30'500	28'000	27'000	27'000	22'000	17'000	9'500	9'500	9'500
7 Project Team Meetings													
M1: Kick-off workshop (AUT)	0	0	1	1	1	1	1	1	1	1	1	1	1
M6: Technical meeting (UGA)	1	1	1	1	1	1	1	1	1	0	1	1	1
M12: Annual meeting (TAN)	1	1	1	1	1	1	0	1	1	1	1	1	1
M18: Technical meeting (ETH)	1	1	1	1	1	1	1	1	0	1	1	1	0
M24: Annual meeting (KEN)	1	1	1	1	1	1	1	0	1	1	1	0	1
M30: Technical meeting (TAN)	1	1	1	1	1	1	1	1	1	1	0	1	1
M36: Final meeting (UGA)	1	1	1	1	1	0	1	1	1	1	1	1	1
Trips to Brussels	2	0	0	0	0	0	0	0	0	0	0	0	0
No of travels Europe-Europe	2	0	1	1	1	0	0	0	0	0	0	0	0
No of travels Europe-East Africa	6	6	6	6	6	1	1	1	1	1	1	1	1
No of travels within East Africa	0	0	0	0	0	5	5	5	5	5	5	5	5
Total project meetings	14'000	12'000	13'000	13'000	13'000	7'000	7'000	7'000	7'000	7'000	7'000	7'000	7'000
Implementation	7'500	2'500	15'000	20'000	15'000	7'500	17'500	17'500	12'500	7'500	2'500	2'500	2'500
Research/Innovation	0	5'000	5'000	2'500	2'500	7'500	2'500	2'500	2'500	2'500	0	0	0

Travel costs for implementation and research activities have been assigned to each partner as a sum. It is planned that after a meeting in East Africa work in the countries will be carried out, i.e. saving flight costs. The calculation for travel costs for implementation is based on one additional visit between the meetings, i.e. allowing a visit of the responsible European partner every three months. For the calculation the daily allowances as given in the table below have been used:

	European partners	East African partners
	Travel from Europe to	Travel in the county
Ethiopia	169 EUR	150 ETB 14.15 EUR
Kenya	166 EUR	4'000 KES 43.44 EUR
Uganda	149 EUR	55 USD 42.74 EUR
Tanzania	187 EUR	60'000 UGX 25.55 EUR

For the co-ordinator visits of each pilot city at the beginning of the project and at least once during the implementation phase has been foreseen. For TUHH 80 travel days for Ethiopia are planned, for ESCA 80 days for Uganda and 50 days for Kenya, and for WASTE 80 days for Tanzania and 30 days for Kenya. For LSHTM 20 days for each pilot city have been foreseen. For each of the East African university partners 250 days for visiting the pilot cities have been foreseen.

Own resources brought in by the Additional Cost (AC) Partners:

- BOKU
 1. Salary of permanent staff contributing to the project:
 - Professor: 100'000 EUR/year (5%, 3 years → 15'000 EUR)
 - Senior researcher: 80'000 EUR/year (5%, 3 years → 12'000 EUR)
 - Computer technician (webpage): 50'000 EUR/year (5%, 3 years → 7'500 EUR)
 - Secretary: 30'000 EUR/year (10%, 3 years → 9'000 EUR)

Total personnel at Institute: ca. 43'500 EUR

Additional at university level: Salary of staff from the financial office

2. Facilities, resources, disc-space, and labour to set up, maintain and update the ROSA project web page.
 3. Equipment of technical laboratory hall to run the lab-scale experiments, and equipment of labs for microbiological, chemical and physical water analysis.
- TUHH
 1. Salary of permanent staff contributing to the project:
 - Professor: 98'300 EUR/year (7%, 3 years → 20'500 EUR)
 - University assistant: 76'000 EUR/year (5%, 3 years → 11'400 EUR)
 - Lab technician: 42'000 EUR/year (5%, 2 years → 4'200 EUR)
 - Chemical laboratory worker: 29'000 EUR/year (5%, 2 years → 2'900 EUR)Total personnel: ca. 39'000 EUR
 2. Halls, laboratory, workshop, equipment
 - Two technical halls including equipment for lab-scale and pilot scale experiments. The halls, which have a total area of more than 200 m², are connected to the public sewer.
 - Laboratory including equipment for chemical, microbiological and physical analyses.
 - Workshop with equipment.
 3. Wastewater for lab- and pilot-scale experiments from different sources: raw domestic wastewater from public sewer, urine from urine separating toilets, faecal material from dry toilets, greywater.
 - ESCA
 1. Rent and operating costs for office
 2. Computer equipment
 - WASTE
 1. WASTE and ISSUE office facilities in The Netherlands, Kenya and Tanzania.
 2. Modest office staff support from ISSUE staff in Kenya and Tanzania.
 3. WASTE and ISSUE staff effort to link ROSA and its partners to other programmes
 - LSHTM
 1. Support of experience research staff specialising in waste water quality, sanitation marketing, communication, epidemiology, monitoring and evaluation, statistics, personal hygiene etc.
 2. Support of management and finance officer
 3. Access to DFID supported WELL data bases and resource centres

8.4 Sub-contracting

External services are required for

	1 BOKU	2 TUHH	3 ESCA	4 WASTE	5 LSHTM	6 MAK	7 UDSM	8 EGE	9 AMU	10 KIT	11 ARU	12 NAK	13 ARB
Externals (Subcontracting) (EUR)	19'000	6'000	4'200	6'000	6'000	2'000	2'000	2'000	2'000	17'000	17'000	17'000	17'000
Number of audits required	3	2	3	3	2	1	1	1	1	1	1	1	1
Audit costs	3'500	6'000	4'200	6'000	6'000	2'000	2'000	2'000	2'000	2'000	2'000	2'000	2'000
Consultants	15'500												
Construction company Ethiopia													15'000
Construction company Kenya												15'000	
Construction company Tanzania											15'000		
Construction company Uganda										15'000			

Sub-contracting for management purposes is requested for

1. External audits: 3 audits are foreseen for BOKU, ESCA and WASTE, 2 audits for TUHH and LSHTM, and 1 audit for each East African partner. Audit costs are assigned as management costs to each partner. For the European partners the costs assigned are based on experience or existing contracts. 2'000 EUR are assigned to each East African partner. The East African partners will be given advice and support on the need for good record keeping by the European partner and especially by the co-ordinator.
2. Technical and socio-economical consultants: EUR 15'500 are foreseen for subcontracting of local consultants in special fields that can not be covered by the project partners. The costs for subcontracting the consultants are assigned to BOKU.

For implementing of the resource-oriented sanitation concepts subcontracting construction companies:

3. Construction company Ethiopia: For subcontracting a firm for construction work in Arbaminch 15'000 EUR are assigned to Arbaminch.
4. Construction company Kenya: For subcontracting a firm for construction work in Nakuru 15'000 EUR are assigned to Nakuru.
5. Construction company Tanzania: For subcontracting a firm for construction work in Arusha 15'000 EUR are assigned to Arusha.
6. Construction company Uganda: For subcontracting a firm for construction work in Kitgum 15'000 EUR are assigned to Kitgum.

The tendering for local contracts will be supervised by the responsible European partners and the award of the local contracts will be approved by the co-ordinator. Relevant performance clauses will be integrated in the contract.

9 Ethical issues

Ethical issues checklist

Table A. Proposers are requested to fill in the following table

Does your proposed research raise sensitive ethical questions related to:	YES	NO
Human beings		X
Human biological samples		X
Personal data (whether identified by name or not)		X
Genetic information		X
Animals		X

Table B. Proposers are requested to confirm that the proposed research does not involve:

- Research activity aimed at human cloning for reproductive purposes,
- Research activity intended to modify the genetic heritage of human beings which could make such changes heritable
- Research activity intended to create human embryos solely for the purpose of research or for the purpose of stem cell procurement, including by means of somatic cell nuclear transfer.

Confirmation:	YES	NO
the proposed research involves none of the issues listed in Table B	X	

10 Other issues

10.1 Gender issues

The ROSA project tackles gender issues twofold: on the one hand, the issue of water that is strongly related to women, and on the other hand, by involving highly qualified female researchers and consultants in a prominent role within the project.

A) Gender issues related to sanitation

It is generally agreed that women in a lot of cultures play a major role in water supply and sanitation. By implementing a project dealing with sanitation one definitely has to have a closer look to gender issues.

Including gender in (ecological) sanitation means to go beyond a participatory approach. It means to have a closer look onto social relationships, to see the different roles of community members and the complicated structure between women and men, girls and boys. A gender perspective perceives that women and men are not a homogenous group, that is to be regarded even for women under women and men under men depending e.g. on the social status or ethnic group. The relations between women and men are also context-specific, which differ from culture to culture and from community to community. Thus including gender is not only a matter of involving women in a

sanitation project; it's first of all to make gender roles and interdependences visible and to include this knowledge into implementation processes.

The role of men is almost clear: making decisions but bearing (in many cases) the consequences to women, especially of hygienic inadequacy and all related after-effects. Actually the technicians' world is still a men's world, where the respective roles are fixed. Men tend to solve any sanitation problem with a technical solution or even with ignoring the problem inherently, often without thinking of secondary damages in a mid-term or long-term. On the other side bringing a gender perspective into sanitation can't get away from seeing the role of women and their manifold duties, which are often underestimated and too less attention is paid. Their contribution to every day's life is often neglected, even though women are responsible for the well being of their families.

Discussing women and (ecological) sanitation is always a question of hygiene and the related consequences: they bear responsibility for a sufficient (drinking) water supply and for home respectively community-based sanitation. Family hygiene is in the hand of women as it is caring for the ill when hygiene is insufficient. Women also take care of children, old family members and have to ensure food security in many societies. This is the key element to involve female community members not only into sanitation, but also into ecological sanitation. Nevertheless, when introducing Ecological Sanitation the whole family has to be involved in decision making process and in trained activities, so that the responsibility of operation will not be a burden only to women. All family members shall take equal tasks and be able to handle with the system components.

Crop production and agricultural activities are mainly women duties, as long as the harvested crops are meant for home consumption or for the local market, reaching from urban roof gardening to small house gardens or subsistence agriculture. Women are directly affected by any improvements concerned to agriculture, like the increase of soil fertility and thus food production. Ecological sanitation gives a strong effort to agricultural activities, like the possibility of reusing products which are conventionally seen as waste: diluted urine as direct fertiliser on different crops, or sanitised and composted faeces/organic waste as soil conditioner as well as treated greywater for irrigation, where water is scarce. A better family health status due to nutritious food and a well-balanced nutrition has direct effects. Selling surplus of fruits and vegetables can guarantee supplement income, which is directly in the hand of women and most likely spend for a better living standard and e.g. education for children.

→ As the ROSA project tackles water issues the gender perspectives have to be taken in account seriously. The ROSA project will include women in the decision making and planning processes. The different roles of women and men in the different countries will be looked at.

B) Women directly involved in the ROSA project team

High qualified and engaged female researcher and consultants of are involved in the ROSA project, e.g.:

- Kisten Sleytr, Dipl.-Ing., PhD candadate (BOKU)
- Franziska Meininger, Dipl.-Ing. M.Appl.Sc. (TUHH)
- Martina Hammer, M.Sc. (TUHH)
- Elke Mülleger, Dipl.-Ing. (ESCA)
- Verele de Vreede, M.Sc. (WASTE)
- Mirjam Geurts, B.Sc (WASTE)
- Marion Jenkins, Dr. (LSHTM)
- Robinah Nakawunde Kulabako, M.Sc. (MAK)
- Carolyne Nekesa, M.Sc. (NAK)

10.2 Policy issues

The ROSA project goes far beyond its research activities, e.g.

- Specific topics will be researched that are necessary to implement resource-oriented sanitation concepts in more densely populated areas. By implementing resource-oriented sanitation concepts in peri-urban areas in 4 cities in 4 East African countries (Ethiopia, Kenya, Tanzania and Uganda) a big number of people will directly benefit from the project activities.
- The activities planned to be carried out for developing the SSHPs include the preparation of IEC material that will have a benefit for the educational purposes. In addition the operators of the system will be trained.
- The local East African network to be established should guarantee that the knowledge gained within the projects stays in the region.

Appendix A - Consortium description

A.1 Participants and consortium

Introduction

The consortium of the ROSA project comprises 13 partners, 5 European and 8 East African partners, respectively. Each of the four East African countries selected (Ethiopia, Kenya, Tanzania and Uganda) is represented in the ROSA project by one university and one community. Each European partner has long-term (manifold) experience in East Africa:

- BOKU in Kenya, Tanzania and Uganda
- TUHH in Ethiopia
- ESCA in Kenya, Tanzania and Uganda
- WASTE in Kenya, Tanzania and Uganda
- LSHTM in Tanzania, Uganda

Role of the participants

BOKU is assigned to be the coordinator of the ROSA project. Besides the conventional management issues BOKU is also responsible for consolidating the activities in the four countries

The East African universities are assigned to be the workpackage leaders i.e. the responsible partners for their country. The following table summarises the responsibilities in relation to the countries.

Country	End-user	WP Leader	European partner
Ethiopia	Arbaminch	AMU	TUHH
Kenya	Nakuru	EGE	ESCA
Tanzania	Arusha	UDSM	WASTE
Uganda	Kitgum	MAK	ESCA

There are numerous established relationships between European and East African partners in the consortium:

- BOKU has a university partnership with both UDSM and MAK since the mid of the 1990s, further on Dr. Saenyi, principal researcher at EGE, completed his PhD at BOKU
- TUHH has established contacts to AMU – Dr. Chafu, presently the president of AMU, completed his PhD at TUHH
- ESCA has a long working relationship with Kitgum Town Council and Arusha City Council
- WASTE has established contacts to Arusha City Council, Nakuru City council, and Egerton University

Partner descriptions

1) BOKU (AT)

- Organization name: Institute of Sanitary Engineering and Water Pollution Control at the Department of Water, Atmosphere and Environment of the BOKU - University of Natural Resources and Applied Life Sciences, Vienna.
- Type: University institute
- Size: about 30 people, half of them scientists, annual turnover is between 1 and 1,5 M Euro
- Full range of activities: Active in education, applied science and research for water quality management. The institute is emphasising an integrated approach, the topics include a wide range of disciplines (e.g. water treatment technologies, sustainable water management, measurement and control, aquatic chemistry/microbiology, modelling, strategic planning methods). BOKU is well known and internationally reputed in all matters of water treatment and management. BOKU is one of the major Austrian research and educational organisations in this field. The personnel are active in education, applied science and research for water quality management. BOKU is experienced in contributing to interdisciplinary and international projects, in close contact with other research institutions, administrative bodies, professional associations and industry.
- Degree of involvement in the project: As the Coordinator of the ROSA project BOKU is the first contact point for the partners and therefore an important connection between the partners and the EC.
- Qualifications: BOKU has developed its scientific knowledge as leading partner in several international projects including EC funded projects (as co-ordinator and partner). The further infrastructure consists of chemical and microbiological laboratories and a technical laboratory for pilot plants in almost all usual scales.
- Expected benefits from participating: International research activities in the field of reuse-oriented sanitation solutions and on the application of constructed wetland technology in developing countries.

Key personnel involved:

- Dr. Günter Langergraber is assigned to be the co-ordinator of the ROSA project. Dr. Langergraber completed his PhD at BOKU in 2001 (Development of a simulation tool for constructed wetlands for wastewater treatment). He is working as research assistant at BOKU since 1997.
- Prof. Raimund Haberl finished his master degree in 1974, PhD in 1979 and finally his Habilitation in 1986. He studied "Civil Engineering and Water Management" at the BOKU, is member of SIG since 1974 and heading SIG since 2000. In 2005 he was assigned a full professorship. Prof. Haberl is member of several national and international bodies in the field of water management, e.g. Chairperson of the IWA-Specialist Group on "The use of Macrophytes in Water Pollution Control".
- Mr. Helmut Jung shall act as an external adviser/reviewer for the project consortium. He is widely regarded as one of Austria's leading experts in the water supply and sanitation sector. He has over 25 years of professional experience and a broad range of project experience, mainly in Africa, working on projects for improved water supply and sanitation. He is increasingly involved in sector wide policy dialogues and programme development with a specific focus on decentralisation in the water sector.

2) TUHH

- Organisation name: Institute of Municipal and Industrial Wastewater Management, Hamburg University of Technology, Germany
- Type: University
- Size: Turnover 75 MEUR, approx 1.300 personnel, of which 600 are professors, researchers, and engineers.
- Full range of activities: The TUHH is one of the youngest universities in Germany as well as one of the most successful. The interdisciplinary organizational structure of the TUHH effectively encourages successful collaboration between all branches of engineering. The TUHH plays an important role in the scientific community on a national and international scale. The Institute of Wastewater Management is involved in education activities as well as research and implementation projects in the field of domestic and industrial wastewater management. The main focus of the work is on source-separation sanitation concepts allowing the efficient use of water and nutrients.
- Degree of involvement in the project: TUHH will be involved in research activities and is the main contact organisation for the partners in Ethiopia.
- Qualifications: Extensive research experience and development activities in the field of ecological sanitation. Besides the research on wastewater technologies aiming at resource recovery, the Institute is involved in a wide range of development and implementation activities aiming at the dissemination of source-separating sanitation concepts (e.g. in Indonesia, Romania, Ukraine). It has several laboratories for microbial and chemical analyses and an area for the implementation of pilot experiments. TUHH has already been active in Ethiopia within the frame of a low-cost housing project. The Institute of Wastewater Management is concerned with international e-training courses as well as with university education for Diploma and Master courses in civil and environmental engineering at TUHH.
- Expected benefits from participating: The expected project results will strengthen TUHH's capacities in the implementation of resource-oriented, source-separating sanitation concepts particularly in African countries.

Key personnel involved:

- Prof. Ralf Otterpohl studied civil engineering at the RWTH Aachen (Germany), where he also did his PhD. After working for six years as a research assistant at RWTH Aachen he set up the consultancy "Otterwasser GmbH" (formerly "Otterpohl Wasserkonzepte") in Luebeck, Germany. Since 1998 he is director of the Institute of Wastewater Management at TUHH heading a team of 20 researchers from Europe as well as developing countries. As one of the first Professor Otterpohl focused on source separation based innovative sanitation concepts. He is chairman of the IWA "specialist group on ecological sanitation" and has been involved in many international wastewater projects focusing on sustainable sanitation.
- Ms. Franziska Meinzinger studied civil engineering at the University of Karlsruhe (Germany) and the University of Cape Town (South Africa) (diploma degree 2001). After that she pursued a Master's degree in International Rural Development at Lincoln University (New Zealand). Since 2003 she is working as a research assistant at the Institute of Wastewater Management at TUHH. She has been involved in projects in Tunisia, Ukraine, Bulgaria and Ethiopia.

- Ms. Martina Hammer studied agronomy at the University of Hohenheim in Germany (B.Sc. in 2002) and agroecology at Norges Landbrukshøgskole in Norway (M.Sc. in 2004). She is currently working as research assistant at the Institute of Wastewater Management at TUHH and has project experience in Cuba, Thailand and Ecuador.

3) ESCA

- Organisation name: EcoSan Club, Austria.
- Type: NGO
- Size: about 20 members in the association, no fixed employees.
- Full range of activities: The EcoSan Club Austria was funded as a non profit association in 2002 by a group of people active in research & development as well as planning & consultancy in the field of sanitation. The underlying aim is the realization of ecological concepts to close material cycles in settlements. In addition to the main activities of the association - promotion of EcoSan principles, international networking, and provision of information on EcoSan.
- Degree of involvement in the project: ESCA is the main European partner for implementation in Uganda and Kenya.
- Qualifications: Long term working experience in the field of ecological sanitation in Uganda, Kenya and Tanzania as well as other countries in Europe, Asia and the Middle East.
- Expected benefits from participating: The work within the project is in full accordance with the activities of ESCA. Therefore the project's expected result will support the achievement of the associations aims.

Key personnel involved:

- Mr. Markus Lechner studied "Civil Engineering and Water Management" at the BOKU - University of Natural Resources and Applied Life Sciences, Vienna (diploma degree 1994). From 1996 to 2000 he was research assistant at BOKU. Since 2000 Mr. Lechner is running his own consulting company. He is also founding member of the EcoSan Club Austria. Mr Lechner was involved in Projects in e.g. Austria, Uganda, Kenya, Tanzania, South Africa, Cabo Verde, the Philippines, Jordan and Palestine.
- Ms. Elke Müllegger studied "Landscape Architecture and Planning" at the BOKU - University of Natural Resources and Applied Life Sciences, Vienna (diploma degree 2002). From 2001 to 2004 she was research assistant at BOKU. Ms. Müllegger is member of the EcoSan Club Austria and has project experience in Uganda and Kenya.
- Mr. Stefan Jung studied "Civil Engineering and Water Management" at the BOKU - University of Natural Resources and Applied Life Sciences, Vienna (diploma degree 2004). Mr. Jung's diploma thesis was on water and wastewater systems in rural areas in Uganda. Mr. Jung is member of the EcoSan Club Austria and has project experience in Uganda.

4) WASTE

- Organisation name: WASTE Advisors on Urban Environment and Development
- Type: Non-for-profit consultancy group registered as foundation under Dutch law

- Size: 15 employees
- Full range of activities: WASTE is an adviser for development projects in countries in Africa, Asia, Latin America and Eastern Europe. WASTE aims at sustainable improvement of the urban environment and amelioration of the living conditions of the low-income population.

WASTE is active in four fields:

- Decentralised low-cost and ecological sanitation management
- Solid waste management and resource recovery
- Community based environmental improvement
- Micro and small enterprise development and financing

The focus of activities is on low-income urban areas in order to develop with local residents tools and means for their own development, enabling them to improve their living conditions, the environment and to create employment as a sound economic base for their future. A crucial focal point for WASTE is the role of small-scale entrepreneurs and their (potential) contribution to the provision of urban services and their integration in the municipal services e.g. in resource recovery and the removal of urban waste.

- Degree of involvement in the project: WASTE will be responsible for the activities in Arusha (Tanzania) together with UDSM and for substantial inputs in Nakuru (Kenya), the establishing of the local East African network of practitioners (linked to existing networks) in the four countries, and the research concerning a) logistics and, b) financing of sanitation.
- Qualifications: Long term experience and on-going projects in Tanzania, Uganda and Mali in the field of (ecological) sanitation and sludge management. Participation in the creation and implementation of a plastic recycling centre in Tanzania, and various other solid waste management project around the world
- Expected benefits from participating: WASTE hopes to strengthen its ongoing relation with key stakeholders in the field of 'sanitation provision for all' in East Africa. Adding additional urban scale sustainable sanitation experience to its ongoing global ISSUE programme. Mobilising specific demand for local venture investment in improved sanitation. Contributing to the chance that the Millennium Development Goals can be met in 2015. Up-scaling of previous experience in ISSUE programme cities around the world.

Key personnel involved:

- Aat van der Wel (regional project manager, Arusha) Studied mechanical engineering from 1964-1968 at Delft University of Technology, and economics and marketing at a variety of institutions. He has worked and lived in Tanzania from 1979 until 2004, in a variety of managerial and advisory positions in official Netherlands development assistance, as well as in the private sector. He has a special interest in, and knowledge of, African socio-political history, and has widely travelled in the eastern and Southern parts of the continent. His fields of experience are rural water supply, marketing- and general management, private sector development, civil society and private sector organisational facilitation, local governance, and grass-root societal interaction. Among his several places of residence in Tanzania was Arusha, where he lived and worked from 1999 until 2003, and where he developed a broad knowledge of the town's social economy, living conditions, and main formal and informal actors.
- Arnold van de Klundert (regional project adviser) obtained B.Sc. Building Engineering in 1968-1973 in College of Advanced Technology, Amsterdam and B. Sc Roads and Hydraulic Engineering in 1973-1974 in College of Advanced Technology, Amsterdam. Since 1989 his main experiences lie with urban solid waste management and particularly with the integration of the great variety of stakeholders to achieve an Integrated Sustainable Waste

Management (ISWM). He is founder of WASTE and was director of the Urban Waste Expertise Programme (UWEP 1995-2001). Nowadays he works as the regional desk-manager of ISSUE Programme for East Africa. He managed various project in Kenya and Tanzania for UNIDO and ILO. He is co-author of several publications, developed the ISWM concept and is part-time lecturer at the IHE, Delft, the Netherlands.

- Gert de Bruijne (sanitation adviser) obtained MA Political Science in 1985 in Free University of Berlin, Germany thesis on Middle East Studies, Labour Market Policies. In 1980 he got BA Political Science, Free University of Amsterdam, the Netherlands. Gert de Bruijne works at WASTE since 2002. He has built up his expertise in the Middle East responsible for several decentralised sanitation projects. His fields of experience extend to sustainable integrated land and water management. He has hand-on experience in sanitation project implementation involving various stakeholders. Nowadays he is the ISSUE Programme manager and regional manager for The Philippines and Pacific Islands.
- Verele de Vreede (dissemination) studies Human Geography at the University of Utrecht in 1985 – 1992 and got MSc specialization on Developing Countries. She works within the organization since 1999. Her main activities are web design, library management, text editing, development of publications and knowledge products, knowledge management. Her organisational skills make her a good facilitator.

5) LSHTM

- Organisation name: London School of Hygiene & Tropical Medicine (LSHTM), Disease Control & Vector Biology Unit, Department of Infectious and Tropical Diseases, UK
- Type: Higher Education
- Size: LSHTM employs 755 full-time staff over the following groups: Academic (248), Research (174), Admin/Library/Computing (113), Clerical (144), Other (76).
- Full range of activities: The Environmental Health Group (EHG) is part of the Disease Control & Vector Biology (DCVB) Unit within the Department for Infectious & Tropical Diseases (ITD). The EHG is a skilled multi-disciplinary team of engineers, anthropologists, business specialists, consumer researchers, epidemiologists and economists with strong field experience. The group has a long history of research with many publications in environmental health including use of wastewater in agriculture, marketing of sanitation, evidence reviews, cost-effectiveness and sustainability of interventions, tools for understanding household behaviour for programme design and MDG monitoring.
- Degree of involvement in the project: LSHTM will design and conduct the study on implementation of the updated WHO guidelines for use of waste and excreta in agriculture and aquaculture.
- Qualifications: Long-term experience and expertise in the field of sanitation and wastewater reuse in Africa and Asia, including Tanzania, Kenya and Uganda.
- Expected benefits from participating: LSHTM has had a strong interest in ecological sanitation and inclusion in this project will enable the group to pursue this whilst strengthening partnerships in the field.

Key personnel involved:

- Mr. Steven Sugden has been working in international development for over 10 years, designing and implementing sanitation programmes aimed at sustainable delivery and maintenance systems. He has a strong interest in ecological sanitation and the resultant benefits relating to household economy and environmental sustainability. His current role as Research Fellow involves partnership building to support marketing of sanitation in African urban centres (Dar es Salaam, Maputo, Entebbe).
- Dr. Marion Jenkins is a qualified Civil & Environmental Engineer currently working on sanitation marketing and consumer demand assessment in developing countries, including the informal settlements of Dar es Salaam, Tanzania and Accra, Ghana. Dr. Jenkins has worked extensively as a public health engineer in developing countries such as Chad, DRC, Benin, Kenya and Madagascar.
- Mr. Jeroen Ensink has been working in the field of waste water irrigation and health for seven years (1998- present), designing and managing research projects in several towns and cities in Pakistan and India. He is currently in the final stages of a PhD on “Wastewater irrigation on the Indian Sub-continent, the impact of wastewater quality on hookworm infection and agricultural use”.
- Mr. Kristof Bostoen is a qualified engineer with twelve years experience overseas in the water and sanitation sector, working for MSF-Belgium, Oxfam and Save the Children (amongst others) in many African countries. He is currently completing his WSSCC-supported PhD on best practice for monitoring the water and sanitation sector, towards the achievement of the MDGs.

6) MAK

- Organization name: Department of Civil Engineering ,Makerere University, Kampala, Uganda
- Type: Academic higher institution of learning (University)
- Size: About 35,000 student population, 1000 academic staff
- Full range of activities: Research and teaching in public health and environmental engineering. The Department of Civil Engineering has introduced resource re-use concepts, specifically dry urine diverting ecosan systems in the teaching.
- Degree of involvement in the project: The Department of Civil Engineering will be a partner in research, involved in performing fieldwork involving field investigations, trials, set-ups, supervision and monitoring and laboratory analyses
- Qualifications: Six (6) years working experience with ecological sanitation systems. Currently involved in research aspects on treatment of human excreta by incineration and composting. Also involved in research aimed at assessing the pathogen die-off in toilet systems when different additives are used.
- Expected benefits from participating: There is a kind of two-way benefit.
 - 1) As we have introduced ecosan concepts in the teaching curricula at undergraduate level, our involvement in this project will offer a wide range of possibilities to look at implementation of various approaches and hence a good future for the university especially when planning field excursions involving undergraduate students.

- 2) We have reasonable working experience with practical sanitation/treatment of human excreta from ecosan systems. This project will tap and utilise this experience during implementation

Key personnel involved:

- Mr. Charles B. Niwagaba studied Bachelor of Science in Civil Engineering, which he completed in 1999. He immediately embarked on Masters of Science in Environmental Engineering, completing it in 2002. At the same time CHARLES B. NIWAGABA worked with the Department of Civil Engineering, Makerere University as Research Assistant (1999-2000), as Teaching Assistant (2000-2003) and was later promoted to Assistant Lecturer (2004 – Present) in the same Department, a position he currently holds. At the Department of Civil Engineering, Charles B. Niwagaba is the research leader of Ecological Sanitation and heads a project on research on pathogen die-off, funded by the Directorate of Water Development of the Ministry of Water, Lands and Environment.
- Ms. Robinah Nakawunde Kulabako holds a Bachelor of Science in Civil Engineering from Makerere University, Kampala (1991-95) and Masters of Science Degree in Environmental engineering from The University of Manchester in the United Kingdom (1999-2000). She was appointed an assistant lecturer on a temporary contract at the Department of Civil Engineering, Makerere University in November 1995 and following completion of her Masters degree in 2001, was appointed on a permanent basis, an assistant lecturer in Public Health and Environmental Engineering, a position she currently holds. At the Department of Civil Engineering, she is in charge of the public health and environmental engineering laboratory in which water and wastewater analysis (bacteriological, physical and chemical and heavy metal) are undertaken as well as research activities dealing with aspects of water/wastewater treatment. She is currently pursuing a PhD in Environmental engineering and her topic is the analysis of anthropogenic pollution loading and transportation on shallow groundwater in peri-urban areas in Kampala.
- Mr. Joel Robert Kinobe studied Bachelor of Arts in Environmental Engineering from Makerere University. Between 2001 and 2004, Joel worked with the Public Health and Environmental Engineering Laboratory at the Department of Civil Engineering in Makerere University, where he was seconded as Research Assistant on a project with Lake Victoria Environmental Management Program (LVEMP). In October 2005, Joel began a Master of Science in Environment and Natural Resources. He is currently completing the write-up of his thesis on "Comparing die-off of indicator bacteria when using soil, saw dust and ash in dry urine diverting ecological sanitation toilets". Joel has continued to work with the Department of Civil Engineering, as research Assistant. He is currently Tutorial Assistant on aspects of water and wastewater quality as well as in Environmental Chemistry in the Third Year Civil Engineering Class.
- Mr. Emmanuel Atwine is assigned to the Public Health and Environmental Engineering Laboratory, in the Department of Civil Engineering, Makerere University. He holds a Bachelor of Commerce (Finance) of Makerere University, 2004. Emmanuel Atwine also holds a Certificate in Computer Application packages (Microsoft Word, Microsoft Excel, Power point and Access). From the time of joining the research group in Environmental Engineering, Atwine has worked on two research projects as Research and Administrative Assistant, a position he performed diligently. The project worked on include, Analysis and Documentation of Ecological Sanitation Experiences in Uganda, and Feasibility Study on Development of a Holistic Sanitation System Selection Algorithm for Enhancing Decentralised Sanitation service Delivery in Uganda. His career objective is to contribute creatively and innovatively in organizations, in an environment that guarantee take up of challenging tasks and eventual career development.

- Mr. Mugadde Moses, studied Diploma in Science Technology (Chemistry/Biochemistry) from Kyambogo University, which he completed in 1997. He also has completed level two of the ACCA course. For the period 1997 – 1999, Moses Mugadde worked as Laboratory Assistant at the Geological Mines Survey and Mines, Uganda Government. He later worked with Kawanda Agricultural Research Organization, also as laboratory Assistant for the period 2000 – 2004. Beginning with the period January 2005 until Present, Moses Mugadde was been assigned to the Department of Civil Engineering as Laboratory Technician and Research Assistant attached to the Public Health and Environmental Engineering Laboratory, Department of Civil Engineering, Makerere University, Kampala, Uganda.

7) UDSM

- Organization name: University of Dar es Salaam, Water Resources Engineering Department; Tanzania
- Type: Educational, Research and Development Institution
- Size: 12 full time staff, 4 technicians and 1 supporting staff
- Full range of activities: The department is involved in teaching, research and development in eco-technologies including and especially waste stabilization ponds and constructed wetlands for treatment of domestic as well as industrial wastewaters. Reuse of treated wastewater such as in fish farming, re use of excreta and urine as fertilizer are also considered. The department is involved in these activities through research projects initiated by staff members, student works, and collaborative research projects with international and regional partners.
- Degree of involvement in the project: UDSM will be the workpackage leader for Tanzania. Besides that UDSM will also research in constructed wetlands.
- Qualifications: Training in scientific research methodologies in sanitation, involved in steering committee for development of a proposal for Sustainable Water and Sanitation for Africa Innovative and Ecological Approaches to Achieve MDG 4 and 7.
- Expected benefits from participating: sharing of knowledge and experience

Key personnel involved:

- Prof. Damas Alfred Mashauri: Prof. Mashauri got his B.Sc. degree (1979) from University of Dar es Salaam and the M.Sc. (1981) and PhD (1986) degrees from Tampere University of Technology, Finland. He is the Head of Department of Civil Engineering at University of Dar es Salaam.
- Dr. Tumaini Anderson Kimaro got his B.Sc. degree (1995) and M.Sc. degree (1997) from University of Dar es Salaam. He holds a PhD degree from Kyoto University, Japan (2003, "Physically Based Distributed Modeling for Hydrological Impact Assessment of Catchment Environmental Change"). His research includes the development of computer tools for sustainable watershed management.
- Dr. Patrick Valimba holds a B.Sc. degree (1997) and M.Sc. degree (1999) from University of Dar es Salaam. He completed his PhD at Rhodes University, South Africa in 2004 (Rainfall Variability in Southern Africa, Its Influences on Streamflow Variations and Its Relationships with Climatic Variations). Dr. Valimba was involved in several research projects including projects on soil testing and soil data analysis, defining and investigating the spatio-temporal variations of the rainy seasons in Northern Tanzania.

- Dr. Richard Joseph Kimwaga is Lecturer at the Water Resources Engineering Department of the University of Dar es Salaam since 2005. From 1999-2004 he was research assistant within UDSM's "Waste Stabilization Ponds and Constructed Wetlands Research Project" and was also involved in other research projects. Dr. Kimwaga holds a PhD from University of Dar es Salaam on constructed wetlands (2004), a MSc on System Analysis and Environmental Modelling from the Danish University of Pharmaceutical Sciences (1999) and an MSc on Water Resources Engineering (1998) and a BSc. On Civil Engineering (1996) from University of Dar es Salaam.

8) EGE

- Organisation name: Department of Water and Environmental Engineering, Egerton University, Njoro, Kenya
- Type: Education and Research
- Size: 12,000 students, 600 academic staff, 2500 non-teaching staff
- Full range of activities: teaching, research and outreach.
- Degree of involvement in the project: EGE will be the workpackage leader for Kenya
- Qualifications: Water Resources Engineering
- Expected benefits from participating: generate knowledge, share with other professionals, implement findings to improve living conditions of people, economize on the use of resources through recycling, and generate jobs to alleviate poverty in peri-urban areas in Africa.

Key personnel involved:

- Dr. Saenyi Wycliffe Wanyonyi completed his PhD degree in Water Resources Engineering at BOKU, Vienna, Austria, in 2002. He holds a MSc in Water Resources Engineering, University of Dar es Salaam, Tanzania, 1995, and a BSc Agricultural Engineering, Egerton University, Njoro, Kenya, 1992. Currently he is senior lecturer in Water Resources Engineering at the Department of Civil and Environmental Engineering at the Faculty of Engineering & Technology. He has experience in reservoir sedimentation, water treatment, Flood modeling, wastewater management, and Sanitary Engineering.
- Mr. Edward Wanee Muchiri is lecturer at the Environmental Engineering Civil & Environmental Engineering Department. He holds a MSc. in Water & Waste Engineering from Loughborough University, UK (1997). Special skills include Online Facilitation & Tutoring (The University of Hull, UK, 2005), Irrigation & Fertigation (The Volcani Centre, Bet Degan, Israel, 2002), and Computer Applications (Egerton University, 1995). Mr. Muchiri has experience in Integrated Solid Waste Management, Urban and Rural Water Supply Management, Wastewater system design, treatment, disposal and reuse, Peri-Urban and Rural Sanitation, Rainwater harvesting, and Surface Runoff harvesting for irrigation by small holder farmers.
- Dr. Benedict Mwavu Mutua holds a PhD in Civil and Environmental Engineering (2005) from BOKU, Vienna, Austria. He is specialised in Water resources and Environmental Engineering. Post-doctoral research included Stream Flow Modelling and Predictions at the Institute of Hydraulics and Rural Water Management at BOKU for 6 months in 2005. His previous education includes an MSc. in Civil and Environmental Engineering (2000) from The University of Melbourne, Australia, and a BSc. Agricultural Engineering (1995) from Egerton University, Kenya. Currently he is lecturer and researcher in the Faculty of

Engineering and Technology, at the Departments of Agricultural Engineering, and Civil & Environmental Engineering, Egerton University.

- Mr. Charles Charo Lugo has a BSc. (1996) and MSc. (2002) in Natural Resources Management from Egerton University. Currently he is lecturer and researcher at the Department of Environmental Sciences at Egerton University. He has experience in Environment, Peace & Human Rights; Environmental Policy and Law; Environmental Risk Assessment; National environmental, Disaster Preparedness and Management, Environment, Gender and Development.

9) AMU

- Organization name: Research & Publication Coordination Department, Arbaminch University, Ethiopia
- Type: University
- Size: total 654 (teaching /academic staff 374, administrative staff 280)
- Full range of activities: To provide theoretical and practical education designed for producing low, intermediate and high level manpower in various aspects of engineering. To carry out researches which focus on all fields of engineering. To prepare, plan and conduct various refresher courses in response to the specific training needs forwarded by different governmental and non-governmental organization.
- Degree of involvement in the project: 1) Participate in the development of the strategic sanitation and waste plan. 2) Carry out the necessary investigation and research work for the implementation of ROSA project.
- Qualifications: Long term work experience in education and in construction works.
- Expected benefits from participating: The work in the project is very much related to the aims of the Arbaminch University which will therefore support the achievements of the University.

Key personnel involved:

- Mr Markos Mahala studied civil engineering at Lenin Grad University in Russia (M.Sc.). He has worked for 23 years in governmental and non-governmental organizations in the water sector. He is currently working as a lecturer in Arbaminch University in Civil Engineering Department.
- Mr. Fiqre Assefa studied chemistry at Awassa Teachers Trainig College in Ethiopia (Diploma in 2000). He has worked for 6 years as technical assistant in Water and Environmental Engineering Department and has assisted research projects running under research department at Arbaminch University. He is currently doing his Degree in Environmental Engineering Department at Arbaminch University and will graduate next year.
- Mr. Kinfе Kassa studied Chemistry at Addis Ababa University (B.Sc. and M.Sc.). He has also studied in University of Leuven in Belgium (M.Sc.) in the field of water quality and sanitary engineering. He has a total of 18 years teaching experience. He is currently working as a lecturer in Arbaminch University in Water and Environmental Engineering Department.
- Mr. Simon Shibru Cheche studied Biology at Addis Ababa University (B.Sc. and M.Sc.). From 1993-2000 he was teaching at the High School & Teacher Training Institute, was working from 2000 to mid 2004 in the GTZ Forest Genetic Resources Conservation Project

and is teaching at Arba Minch University since 2004. Currently he is the head of continuing education division of Arba Minch University and gives courses in Soil and Water Resources Conservation and Natural Resources Conservation and Management among others.

- Dr. Nigatu Chafu has got PhD degree in structural engineering from Technical University Hamburg-Harburg (TUHH) in 2003. He worked as a lecturer before doing his PhD and also participated in some construction projects in the southern region of Ethiopia. Presently, he is the president of the Arbaminch University .

10) KIT

- Organization name: Kitgum Town Council
- Type: Government
- Size: 45
- Full range of activities: Kitgum Town Council is the administrative body established as Local Council III according to the Local Government Act in line with Uganda's decentralisation policy. Accordingly among other issues relevant to the management of a Town of app. 40.000 inhabitants all rights and obligations to manage water supply and sanitation in town are transferred to Kitgum Town Council. In this respect Kitgum Town Council acts as the Water Supply and Sanitation Authority on behalf of the Ministry of Water, Lands and Environment.
- Degree of involvement in the project: Kitgum Town Council will act as the end user in Uganda
- Qualifications: Kitgum Town Council has a long working relationship with the ESCA and in particular Elke Müllegger and Markus Lechner (since 2001) with regard to the improvement of water supply and sanitation in the Town Council. Due to the completed privatisation of water supply and sanitation services all required structures to implement the project to the above mentioned extent are in place
- Expected benefits from participating: It is expected to develop appropriate solutions for the most pressing sanitation problems in the Town Council, particularly unserved periurban areas as well as the neighbouring refugee camps.

Key personnel involved:

- Mr. Vincent Ogaba, Town Health Inspector, will be the responsible contact person in the Kitgum Town Council.
- Mr. George Albert Ocen, Town Clerk
- Mr. William Oryem, Chairman of the Water Supply and Sewerage Board
- Mr. Atube Benson, Town Water Engineer, is since 2003 the Technical Advisor to the Board of Director Kitgum Town Water Supply and Sanitation system. He is also acting as the hydrogeological consultant in siting and drilling supervision of boreholes, and was supervising the construction of demonstration ecosan toilets. Mr. Benson is a board member of Kitgum cooperative savings and credit society Limited and a chairperson loan committee. He holds a diploma in Water Engineering from Polytechnic Kyambogo, Kampala.
- Mr. Charles K. Omona holds a BSc in Civil Engineering (2005) from Makerere University, Kampala, and a diploma in Water Engineering (1996) from Polytechnic Kyambogo, Kampala. He worked as a trainee engineer from 2001 to 2004 with ESCA under the Austrian Development cooperation. Since 2005 he is the Acting Emergency project

Manager in the Worldwide-Uganda Project: Pader Emergency water and Sanitation. He also provided technical support in the implementation of the Austrian funded photovoltaic solar pumping project in Kitgum Town Council.

- Mr. Richard Komakech holds a degree in Environmental Management from Makerere University, Kampala. He also participated courses in water quality analysis, computers, sustainable organic farming, and participatory rural appraisal. At Kitgum Town Council he worked as Assistant District Water Officer-Hygiene Education (from 2004-2005 Oct) and as Environment Officer (Nov 2005- up to date).

11) ARU

- Organization name: Arusha City Council
- Type: Government
- Size: about 80
- Degree of involvement in the project: Arusha City Council will act as the end user in Tanzania.
- Qualifications: Arusha City Council has a long working relationship with the Austrian Development Cooperation and since 2003 the consultant Markus Lechner with regard to the improvement of the sanitary situation of the City Council's abattoir. Since 2002 research activities on the use of macrophytes for wastewater treatment, jointly with the University of Dar es Salaam, Department of Civil Engineering are on the way and pilot plants available on site.
- Expected benefits from participating: It is expected to develop appropriate solutions for the most pressing sanitation problems in the Town Council, particularly unserved periurban areas as well as the neighbouring refugee camps.

Key personnel involved:

- Dr. Job Thomas Laizer was recently nominated as the Municipal Director of the Arusha City Council. He was the Arusha City Council's City Medical Officer of Health since 2000 and will be the responsible contact person in the Arusha City Council. Before he was District Medical Officer for Mtwara, Manyoni and Korogwe, Regional Medical Officer for Lindi and Singida, Medical Officer at Mount Meru Hospital, and Commissioner for Health in Dar es Salaam.
- Mr. Nicholus Andrew Ntobi is employed at the Arusha City Council since 1992 and responsible for design, construction and maintenance of sanitation infrastructure as well as for solid waste collection and disposal. He holds an advanced diploma in Public Health Engineering (1984) from Ardhi Institute, Dar es Salaam.
- Eng. Joshua Z. Mgeyekwa is working as an Environmental Engineer in the Arusha Urban Water Supply and Sewerage Authority. He has an Advanced Diploma in Public Health Engineering from Ardhi Institute, Dar es Salaam (1990). Currently he is finalizing a MBA Course at ESAMI, Arusha, Tanzania. In addition Eng. Mgeyekwa attended several courses, e.g. Urban squatter upgrading, Sustainable renewable energies, and Strategic management of Urban Water and Sewerage utilities among others. He is working as the Public Health Engineer (Environmental Engineer) in field of Water and Sewerage and is involved in Planning, Design, Construction, Operation and Maintenance of Water Supply and Sewerage systems. He is registered with the Engineers Registration Board of Tanzania as Professional Engineer in the field of Environmental Engineering.

- Eng. Asili Munisi is the Managing Director of the Arusha Urban Water Supply and Sewerage Authority since 1998. He was trained in Water Resources Engineering at Dar es Salaam Technical College, Civil Engineering (BSc) at University of Roorkee, India, and attended a International Sanitary Engineering Course at the Institute for Hydraulic and Environmental Engineering, Delft, The Netherlands. He is involved in Planning, investigation, design construction, operation and maintenance including Management, Co-ordination and control of Water Supply and Sewerage Schemes.
- Eng. Joseph Mosha is the Technical Manager of the Arusha Urban Water Supply and Sewerage Authority. His education includes an Undergraduate Civil Engineering Studies (BSc) at University of Roorkee, India, and a Postgraduate Engineering Studies (MSc) at Tampere University of Technology, Finland. He also attended a International Short Course in Environmental/Water Management for Developing Countries at Dresden University of Technology in Germany. Eng. Mosha has 20 years experience in Planning, Design, Construction & Contract Supervision, and Management of water supply and sewerage projects. Further 5 years experience in Contract Supervision, Site Management and Management of Water Supply and Sewerage Utility at the Technical Level.
- Further persons involved in the project are: Sofi J.R. Sama, the head of the finance department of the Arusha City Council, Fabian Kisingi, and company accountant for the Arusha Meat Company at the Arusha City Council, and Lilian Charles Matingsa, general manager of the Arusha Meat Company.

12) NAK

- Organization name: Municipal Council of Nakuru, Department of Environment, Kenya
- Type: Local Authority
- Size: Approx. 450'000 Pop.
- Full range of activities: Service delivery- (design, financing and implementation), Governance (by-law development and Enforcement), Lead agency on Environmental Management.
- Degree of involvement in the project: Municipal Council of Nakuru will act as the end user in Kenya.
- Qualifications: The Department of Environment- deals with environmental support and sanitation development; and Nakuru Water and Sewerage Company.
- Expected benefits from participating:
 - Outcomes guide on policy making and interventions on sanitation improvement
 - Strengthen the municipal information centre
 - Support municipal development partners
 - Support development strategy of the municipal corporation- water and sanitation company.

Projects/Publications

- ISSUE programme
- JICA environmental programme
- Local Agenda 21- UN HABITAT/Leuven
- Nakuru Strategic Plan

Key personnel involved:

- Mr. Symon C. Kiarie is the Director of Environment at Municipal Council of Nakuru.
- Mr. George Gachomba is trained in environmental health sciences – occupational health and with interest in sanitation/human environmental issues. He has past experience in urban environmental issues with ground knowledge of the complexity of these issues. He has worked with Municipal Council of Nakuru since 2002 and currently in charge of pollution control. Has also been in charge of solid waste management section of the council in the past. With these experience and professional background, George will be working as a supervisor and field-based technician in ROSA and offer support to the target groups that we will be working with.
- Mr. James Kamau is trained in environmental health sciences featuring occupational health. He has also had short training courses related to his area of interest in rural and urban sanitation issues that included: Control of Diarrhoeal diseases, rural water supply and sanitation and integrated solid waste management with an entrepreneurship perspective. He has worked as a project coordinator for the projects in Malaria Control Activities and Water and sanitation programme: And is now working as section head, cleansing service for the municipal council of Nakuru.
- Mr. David Kuria is Project Manager in the Water and Environmental Sanitation Program of Practical Action. David is currently studying for a Masters of Arts in Environmental Planning and Management at University of Nairobi, 2002-2005. He also obtained a certificate in Urban Indicators, Society for Development Studies, India, 2000. He has a strong architectural background with a 6 year Bachelor of Architecture: Jomo Kenyatta university of Agriculture and Technology, 1997. David has since 2003 been working as a programme manager water and environmental sanitation programme of Practical Action. During this period he has also been able to chair key national consultancies, e.g. Solid Waste Secretariat (Nairobi), supported by UNDP-Kenya and UNEP-Regional Office for Africa. Mr. Kuria will be giving key technical support to the project that will range for development issues, environmental issues to planning and other related aspects of the project. He will also seek to advice on the possible synergies that need to be created between this project and other experiences for the country and elsewhere from his diverse experiences.
- Ms. Carolyne Nekesa is Project Officer in the Water and Environmental Sanitation Program at Practical Action. Ms. Nekesa has a Master of Science – in Environmental Planning and Management from Kenyatta University. Her key strengths are in areas of urban and regional planning and development and community-based/participatory natural resource management especially related to land, forestry and wildlife. She has key interest in the development and management of Arid-lands. She also has a strong background in Research from 2 years practice in social research with Research International before joining Practical Action. Her role in this project will be technical advice but with a hands on role in the day to day facilitation of the project on the issues of research in collaboration with the technical officers from the Municipal Council. She will also advice on the local level synergies and cross-cutting issues of the environment, poverty, local and regional development, community mobilization, environmental impacts and implications of policy and environmental legislation in shaping local development.
- Mr. Kimani Isaac Muraya is working for the Municipal Council of Nakuru since 1988 and is currently the Deputy Director of Environment involved in Environmental projects planning and implementation, pollution control and prevention among other duties. From 1984-1988 he worked as Public Health Officer of Transmara district. Mr. Muraya obtained a post-graduate diploma at the Institute for Housing and Urban Development Studies, Rotterdam,

the Netherlands, in 1998. In 1995/96 he studies at Wageningen University, the Netherlands, and in April/May 1996 at Rhodes University, South Africa.

13) ARB

- Organisation name: Arbaminch Water Town Water Service, Ethiopia
- Type: GOV
- Turnover: annual turnover appr. 160.000 USD
- Personnel: 57
- Full range of activities:
 1. Rendering service of supplying sufficient potable water and sewerage service to Arbaminch town and vicinity.
 2. Maintain and repairing water and wastewater works.
 3. Carrying out similar activities to attain its objectives.
- Degree of involvement in the project: ARB will be the end-user for the Ethiopian model city.
- Qualifications: ARB has experience in providing water supply and sanitation to Arbaminch town.
- Expected benefits from participating: At the end of the project ARB will have experience in the implementation, operation and maintenance of resource-oriented sanitation and greywater treatment systems. The systems are replicable and can be applied on a large-scale.

Key personnel involved:

- Mr. Fitsum Gebreyohannes studied hydraulic engineering at the University of Arbaminch in Ethiopia (Diploma in 1998). He has worked for 7 years as water engineer, head of technical department and general manager in Arbaminch Water Supply and Sewerage enterprise. He is currently working as general manager in Arbaminch Water Supply and Sewerage enterprise.
- Mr. Worku Gebre Egziabiher has diploma in general mechanics. He has worked for 22 years in different Water Supply and Sewerage enterprises as general manager, plant operation head and maintenance head. He is currently working as technical head in Arbaminch Water Supply and Sewerage enterprises.
- Mr. Wudneh Ayele Shewa studied Sanitary Engineering Arbaminch Water Technology Institute (1989-1994) and Civil Engineering with specialization in Environmental Engineering at the University of Roorkee, India (MSc., 1995-1997). In addition he attended courses for C⁺⁺, MS Office, GIS and AutoCAD. Recently he worked as a General Manager for the South Housing Development and Administration Enterprise (from 2004), as Construction Department Head of the South Water Works Construction Enterprise in Awassa (2002-2004) and as Department Head of Gammo Goffa Zone Water , Mines & Energy Resources Development Department (2000-2002) and North Omo Zone Water , Mines & Energy Resources Development Department (1998-2000).

A.2 Sub-contracting

Sub-contracting for management purposes is requested for

1. External audits: 3 audits are foreseen for BOKU, ESCA and WASTE, 2 audits for TUHH and LSHTM, and 1 audit for each East African partner. Audit costs are assigned as management costs to each partner. For the European partners the costs assigned are based on experience or existing contracts. 2'000 EUR are assigned to each East African partner. The East African partners will be given advice and support on the need for good record keeping by the European partner and especially by the co-ordinator.
2. Technical and socio-economical consultants: EUR 15'000 are foreseen for subcontracting of local consultants in special fields that can not be covered by the project partners. The costs for subcontracting the consultants are assigned to BOKU.

For implementing of the resource-oriented sanitation concepts subcontracting construction companies:

3. Construction company Ethiopia: For subcontracting a firm for construction work in Arbaminch 15'000 EUR are assigned to Arbaminch.
4. Construction company Kenya: For subcontracting a firm for construction work in Nakuru 15'000 EUR are assigned to Nakuru.
5. Construction company Tanzania: For subcontracting a firm for construction work in Arusha 15'000 EUR are assigned to Arusha.
6. Construction company Uganda: For subcontracting a firm for construction work in Kitgum 15'000 EUR are assigned to Kitgum.

The tendering for local contracts will be supervised by the responsible European partners and the award of the local contracts will be approved by the co-ordinator. Relevant performance clauses will be integrated in the contract.

A.3 Third parties

TuTech Innovation GmbH is 51% owned and controlled by Hamburg University of Technology (TUHH), acting as a technology transfer department for TUHH. Resources may be provided to TUHH on the basis of the respective agreement which has been passed to the COM.

A.4 Funding of third country participants

No other countries other than EU and Associated states, INCO target countries or countries having an RTD co-operation agreement with the European Community are involved in the proposal.

As it is requested in the call local research institutions and end-users have been included in the consortium. Partners from Ethiopia, Kenya, Tanzania and Uganda, all INCO target countries, are included. From each country a university and an end-user is included in the ROSA consortium.

Appendix B – Memorandum of Understanding - Draft



Resource-Oriented Sanitation concepts for peri-urban areas in Africa

ROSA

*a Specific Target REsearch Project
funded within the EU 6th Framework Programme
Sub-priority "Global Change and Ecosystems"*

1.10.2006 – 30.9.2009

*Memorandum of Understanding for **COUNTRY** (draft)*

This Memorandum of Understanding (MoU) made and entered into by and among:

1. **East African University Partner** herein referred to as the **University partner**;
2. **East African municipality** herein referred to as the **Municipality**; and
3. **European Partner** herein referred to as the **European partner(s)**;

hereinafter referred to as the **Contractors**.

Preamble

WHEREAS, the **University partner** is committed to be the Workpackage Leader for **COUNTRY** within the ROSA project.

WHEREAS, the **Municipality** is committed to good governance and sustainable development ever conscious of upholding a balance between social and economic development and environmental preservation; subscribes to the principles of environmental citizenship whereby citizens and the government come together to build a partnership for the environment to maintain its life-supporting eco-systems for the present and future generations; and have sounded a request to pilot resource-oriented sanitation (ecological sanitation) in the Municipality.

WHEREAS, the **European partner(s)** is responsible for supervising and assisting the **University partner** and the **Municipality** during the ROSA project.

WHEREAS, the **Contractors** in addition to the Consortium Agreement of the ROSA project wish to specify or supplement, between themselves, the provisions of the anticipated Contract, with respect to the carrying out thereof.

NOW THEREFORE, the **Contractors** to this MoU do hereby commonly declare and agree to strengthen collaboration and complementarily support and assist one another for the further development, and implementation of the ROSA project in **CITY, COUNTRY**, with the objectives of sustainable development and environmental citizenship.

Therefore, the Contractors hereby agree as follows:

Part I - Collaborative Activities

For the purpose of the present MoU, the parties have agreed to collaborate in

1. The creation of a local project consortium for the collective formulation, management and implementation of the ROSA project objectives in **CITY, COUNTRY**, in accordance and consistent with their respective legal mandates;
2. The conduct of surveys, studies and/or assessments contributing to the development of information base for integrated sustainable sanitation with special focus on water supply, sanitation and solid waste;
3. The development of projects for enhancing public awareness and community participation in the implementation of the ROSA project, including mobilization of non-governmental organizations, community-based organizations and entrepreneurs;
4. The provision of technical assistance and management support to target staff of the municipality in its supervision, coordination and management pertaining to the implementation of the ROSA project activities; and
5. The exchange of information and documentary outputs on the topics produced under their respective programmes.

Part II - Responsibilities

To carry out the activities as stated above, the parties agree to undertake the following responsibilities:

University

1. Co-ordinate the activities of ROSA in **COUNTRY** as described in the Description of Work;
2. Assist the municipality in planning and implementation of the resource-oriented sanitation concepts;
3. Designate a permanent representative to the Consortium and counterpart local project staff to facilitate continuity of programme planning, management and implementation;
4. Make available to and/or provide partners with information, databases, manuals and guidelines; and
5. Assist in training, workshops, seminars, study tours and other forms of exchanges by providing the means so experts, trainees and participants meet in the most productive way.

Municipality

1. Provide legal and technical support to the ROSA project, e.g., necessary resolutions and/or ordinances, construction work, and authorize escorts and transportation to partner members and staff and the provision of working space; and
2. Designate a permanent representative to the Consortium and counterpart local project staff to facilitate continuity of programme planning, management and implementation.

European partner(s)

1. Supervise and assist the University in co-ordinating the activities of ROSA in **COUNTRY**;
2. Supervise and assist the tendering procedures and evaluate the tenders;
3. Assist partners by providing technical support, e.g., identification of possible relevant small and micro enterprises or business venture, conduct of feasibility studies, promotion and management of sustainable financing and evaluation and monitoring;
4. Make available to and/or provide partners with information, databases, manuals and guidelines; and
5. Prepare training, workshops, seminars, study tours and other forms of exchanges by providing the means so experts, trainees and participants meet in the most productive way.

Part III - Duration of the Agreement

The parties to the present MoU shall carry out the activities and responsibilities as stated in the present MoU during the 3-year life of the ROSA project.

Part IV - Waiver

Nothing contained in the MoU shall constitute a waiver, expressed or implied of any privilege or immunity which the parties to the present MoU may enjoy in a convention or agreement, law, order or decree of any international and/or national character.

Part V - Settlement of Disputes

Any dispute among the parties to the present MoU concerning the interpretation or application of this MoU shall be settled amicably.

Part VI - Effectivity

This Memorandum of Understanding shall take effect upon the signing of all parties.

IN WITNESS WHEREOF, the parties have hereunto affixed their signatures

East African University Partner

Name (block letters):

Title:

Date:

Signature:

East African municipality

Name (block letters):

Title:

Date:

Signature:

European Partner

Name (block letters):

Title:

Date:

Signature: