



## Full Proposal Application Form

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<b>A.1. TITLE AND DATES</b>	
<b>Project title</b>	<b>Sustainable and resilient sanitation service chains in Maputo province, Mozambique – action research and piloting for the benefit of the urban poor</b>
<b>Acronym if applicable</b>	CLASS-A
<b>Date of Start of project</b>	1 April 2011
<b>Date of End of Project</b>	31 March 2014

<b>A.2. DETAILS OF LEAD ORGANISATION</b>	
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### A.3. PARTNER DETAILS

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## B. SPECIFIC PROJECT INFORMATION

### B.1. Project abstract

The purpose of the project is to develop and promote appropriate intervention strategies to enhance the resilience of urban sanitation services and their supply chains through the adoption of risk-based management strategies. The project activities and outputs will support local stakeholders to make collective decisions about the types of interventions that are most effective at mitigating risks related to sanitation service delivery. With support from The International Water Association (IWA) and other international partners, local agencies and service providers will develop stronger capacities for sanitation planning which incorporate risk-based management approaches.

The research will assess the role of an action and learning alliance ('CLASS-A') in Maputo to act as an interface between government agencies, private sector actors and poor communities that currently lack adequate sanitation services. It further aims to communicate its findings to decision makers, especially at Provincial and central levels, and to the wide international community. The research will provide international expertise for capacity building and to support local academic and training institutions to promote human resource development.

The research will develop the capacity of Class-A members, to make autonomous decision-making processes about investments at the local level. Small investments to improve sanitation services managed by CLASS-A will provide practical and focused demonstration projects which will aim to test policies, methodologies and practices. CLASS-A will support the establishment of a platform for relevant stakeholders for dialogue, discussion and social learning at the community level. The project will explore the role of a Community Centre for Sanitation Improvement (CCSI) for this purpose and as a hub for helping institutional stakeholders communicate with and understand how to respond to the needs of the urban communities in Maputo Province.

### B.2. Aims and Objectives

The project aims to contribute towards the development of long-term strategies to reduce urban risk, improve public / environmental health and sustainable development by understanding the dynamics and relative strengths of sustainable and resilient sanitation service chains.

Through an action and learning alliance (CLASS-A), the research project aims to support local government, service providers and service users (communities) to work collectively to achieve the following outcomes:

1. Reduce the vulnerability of urban populations from sanitation related hazards through the development and application of risk-based systems analysis.
2. Influence policy for sanitation service delivery and formulate appropriate regulatory instruments that support private sector entrepreneurship.
3. Identify resilient sanitation technologies and develop and apply strategies for their implementation.
4. Increase the capacity of stakeholders at all levels to work collectively to enhance the sustainability of sanitation services.
5. Stimulate interest for funding and investment and ensure that investments are well targeted.
6. Develop communications and mechanisms for stakeholder interaction to promote effective multi-stakeholder collaboration.

## ***Research outputs***

**Output 1: Sanitation ‘Charter:** A sanitation ‘Charter’ will form the basis for collective agreement for action between Class-A and stakeholders in the pilot area of action orientated planning.

**Output 2: Risk-based sanitation planning tool:** Risk-based planning tool to identify hotspots in sanitation facilities and service chains. The risk analysis will focus on both physical risks and institutional risks caused by a weak regulation of service providers.

**Output 3: Establishment of Community Centre for Sanitation Improvement (CCSI):** The Community Centre for Sanitation Improvement will be a platform for multi-stakeholder interaction and communication at the local level to act as an interface between the community, service providers and local government. The experiences from the CCSI will inform policy for future interactions with civil society to improve the accountability of service providers and sustainability of the services that they provide.

**Output 4: Training tools and Capacity building events:** The output will focus on the development of training tools to support the vocational training of sanitary technicians and academic curricula for schooling of public health engineers. These will be used for a range of awareness raising and capacity building activities for different stakeholders including those from local government and technicians working for the public, private and non-governmental sector.

**Output 5: City-wide Sanitation Improvement Action Plan:** The Sanitation Improvement Plan will draw upon the lessons from the pilot and will be developed so that investments in sanitation can be targeted to increase the sustainability and resilience of sanitation service chains.

**Output 6: Policy recommendations for investment strategies:** Set of policy recommendations for governmental policy makers, International Financing Agencies and bi-lateral and multi-lateral donor agencies regarding their investment portfolios for sanitation improvements in Maputo.

## ***Relevance to the context of the SPLASH call***

Sustainable sanitation is dependent on resilient supply chains of goods and services to meet the needs of communities. The resilience of these supply chains is continually challenged by a diverse range of factors. These include, inter alia, changes related to progressive urban population growth, critical incidents such as natural or man-made disasters, and lack of trained, technical capacity and ‘know-how’ in the sector. The effect of these factors can either be intensive (single large critical events) or pervasive (a sequence of small repeated shocks): in both cases, the outcome leads to the failure of service chains.

In collaboration with local stakeholders (municipalities, service providers and civil society), this project will support local government efforts to put in place appropriate policy and institutional infrastructure relevant for the decision making process, promote critical sanitation priorities, implement a demand led participatory planning process, and thus accelerate the development of sustainable sanitation supply chains. While the proposal anticipates concrete outcomes in support of local government’s goals, it will provide a case study for research, assessment, and a field pilot of adapting best practices of sustainable sanitation provision to the local context and communities.

The proposed monitoring, documentation and analysis in the project are expected to significantly contribute to the development of an adaptable and scalable model, responding to similar societal challenges and critical needs of other cities in low-income countries. The research will explore the added value of working with other sectors in addressing sustainable sanitation service chains – with a view towards shifting from sectoral to an integrated approach – and will include analysis from environment, health, water resources, climate change and urban planning sectors.

## **B.3. Degree of innovation and progress beyond current state-of-the-art**

### **1) *Action-oriented urban learning alliances***

The promotion of 'learning alliances' is a mechanism used to support scaling-up of best practices in which the concept of sector learning is central to the development of more sustainable practices. In Mozambique, the *Grupo de Agua e Saneamento* (GAS), which is a technical subgroup to the larger donor coordination body, serves as a forum for government and donors to discuss and evaluate sector progress and acts as a learning alliance in the WASH sector. However, the group is mainly a forum for exchange of information with a national focus and as it is more orientated towards water services; its role in urban sanitation in Maputo is limited.

Therefore, there is a need for a dedicated group of sector professionals, service providers, local government and civil society representatives operating locally in Maputo to: function as a platform for learning and integration; to develop and actively promote sustainable sanitation strategies, and to support the institutional and policy reforms needed to enable these strategies to be realised. The notion of smaller, more action-oriented urban learning alliances is a novelty with great potential.

This research aims to pilot and test the setup, approach and activities of such an action-oriented urban learning alliance (CLASS-A) supporting the goal of developing sustainable and resilient sanitation service chains benefiting the urban poor in Mozambique as well as other countries. IWA can play a role in helping to document and replicate similar groups elsewhere.

### **2) *'Extended' supply chain analysis***

Service chains are normally confined directly to services for households. This research will broaden the perspective to include secondary service chains (which include downstream waste treatment facilities that are required to complete the system), and tertiary supply chains (which are those supply chains that are required to keep higher level supply chains and services functioning). For example, spare parts are essential for the repair of trucks that de-sludge on-site sanitation facilities and to keep waste treatment facilities in operation. These systems also require fuel which is also included as part of the extended supply chain analysis.

### **3) *Risk assessment***

Traditional engineering based assessments that evaluate individual components of sanitation systems tend to overlook the complexities of urban infrastructure and the collective vulnerabilities associated with these systems. Whilst integrated risk assessment and management techniques have been developed, these have been applied primarily in European and American situations. There is limited research that applies these approaches to the context of developing countries, where the risks are in many instances greater.

Understanding the risks within sanitation service chains, and having appropriate risk management strategies is vital to ensuring the continuity of basic urban services. By linking the concepts of disaster risk and climate adaptation with more practical issues in urban sanitation, an understanding of resilient approaches and the link to sustainable sanitation supply chains will be made.

#### ***4) The role of private sector entrepreneurs in the delivery of sanitation services***

The research will aim to support service providers (private/community operated) to create and enter the sanitation service market. It will contribute to the important lessons emerging about successful ways of increasing access to sanitation and creation and maintenance of sanitation service chains. Important insights are derived from the dialogue between civil society (communities), urban service providers and government and which can create innovative solutions for the specific contexts and better tailored to service users. For instance, the project will research the entrepreneurship of women and women groups who access micro-credits through a revolving fund; such funds could be used for latrine construction.

There needs to be increased awareness within communities of entrepreneurial opportunities from sanitation, as well as influence to government to open up these markets. The scientific and technical community need awareness and capacity building to be able to engage and participate as service providers respectively. The focus on practical application and applied research in combination with a mechanism to influence government will support market developments for private operation and service provision.

#### ***5) International networking support and capacity building from international community***

The international community have a very strong willingness to help build sustainable systems in developing countries, including Mozambique. However, international actors may inadvertently build influential local organisations which shift power relationships which in turn becomes a barrier to local leadership and local capacity building. The notion of networking with international expertise is highly attractive in developing countries; however the mechanisms for achieving capacity building are expensive and effectiveness is not always proven. There is therefore some uncertainty how international support adds value locally and how these organisations really assist capacity building efforts in the long term. The approach of empowering local organisations to drive this networking and capacity building process is fundamental to strengthening local institutional capacity. This project will research the role of organisations such as IWA and WSMART to provide focused technical expertise from their networks, through their expertise exchange mechanisms and other relevant programmes.

## B.4. Project Description

### Background

Sanitation services in Maputo are grossly inadequate, especially in low-income communities. Those services that do exist are at risk from failure due to a range of factors including, amongst others, overuse from rapid urbanisation, insufficient and inadequate numbers of de-sludging vehicles which frequently break down, and annual flooding exacerbated as a result of climatic changes. These culminate in a situation of increasing risk and vulnerability to environmental hazards that compound upon urban populations – especially the poor living in vulnerable physical locations.

Sanitation systems in Mozambique were originally designed for much smaller populations than live in the towns and cities today and environmental health conditions in these areas are not good, particularly for the poor. The National Water Policy of 1995 provided opportunities for beneficiary participation, decentralized autonomous and financially self-sustaining sanitation services, and encouraged a more prominent role for the private sector in service provision. Sanitation has not been high on the agenda until recently. In the sanitation strategic plan developed for greater Maputo in 2004, the focus of increasing coverage in peri-urban areas with low cost sanitation measures is to be reached via municipalities establishing independent sanitation services and introducing sanitation taxes.

Maputo city centre is served by a conventional sewerage system that covered 24% of the population in 2000. Adjacent to the city centre are various high density neighbourhoods where people live in congested and unplanned settlements with on-site sanitation facilities. In 2000, 36% of residents in Maputo city used low cost improved latrines, 28.3% unimproved latrines, and 15.2% used septic tanks. Servicing of these latrines is inadequate. At present there are only a few larger companies operating the sludge emptying trucks, one that is managed by the local community and various other smaller illegal operators.

Apart from the areas which were built by the Portuguese, Maputo Province and Maputo City Province lack proper urban planning. There are only ten staff working in the Department of Infrastructure, Urban Planning and Environment of the Maputo municipality responsible for sanitation. In the Department of Environment and Planning in Matola there are less than five full time staff. Personnel typically lack the capacity to plan for development to be resilient to floods and adapted to the environment they are being built in; in which many areas remain poor planned, are low-lying and inadequately drained.

In approximately 12 neighbourhoods of Maputo people live in areas with a high water table that are prone to annual flooding in the rainy season. In these neighbourhoods, the risk of poor on-site sanitation causing cholera is a significant concern for the authorities. Drainage is therefore a very important part of the resiliency of sanitation chains in Maputo. This became very clear in 2000 when flooding occurred and created damage throughout the city. However, in several low income settlements (Bairras) there had been annual problems with flooding every rainy season, where in some places better drainage (subsurface and surface drainage) has reduced the number of reported cholera cases and thus contamination.

The role of solid waste collection is key to the resiliency of sanitation service as drains need maintenance in order to work and transport away water. The maintenance of waste collection is currently organised by communities in the Bairras as well as by the municipality, who will pick up the waste in containers and maintain most of the drains.

### *CLASS-A action and learning alliance*

CLASS-A ('Confederação de Legitimação e Assessoria ao Saneamento Sustentável e Água') is an action and learning alliance promoting better water and sanitation in Maputo. CLASS-A's primary role is to be a representative body for public and private service providers, acting as an interface between national and regional governmental agencies, local government, and the recipients of services themselves. It facilitates better lines of accountability and coordination between these actors, thus synergising the resources from

different organisations towards the common goal of improved delivery of water and sanitation services.

This is particularly important in the sphere of sanitation where the investments made by the Ministry of Public Works for the construction of sanitation facilities are disconnected from those activities of the Department of Health, which is responsible for promoting improved hygiene behaviours, and the Ministry of the Environmental Coordination (MICOA) which is responsible for promoting better local environmental management. Between these types of initiatives there is often little or no coordination and CLASS-A plays an important role in promoting better communications between these different governmental agencies.

Through the representation from the relevant government ministries, CLASS-A acts to create greater awareness amongst policy makers in central government to understand sanitation issues and to ensure that policies are developed in a way that ensures that local level actors are empowered to work in a unified way towards a common goal of improved public and environmental health.

The members of CLASS-A are currently:

Name		Representative
MOPH	<i>Ministério das Obras Públicas e Habitação</i> (Ministry of Public Works and Housing) in Matola Province	Mr Moises Mabote
MICOA	Ministry of Coordination of Environmental Affairs in Matola Province	Mrs Alcina Manhiça
<i>Biobox</i>	a Mozambique branch of a Southern African water cycle consultancy company),	Mr Louis Lousada and Mr Patricílio Mucavele
<i>Escopil</i>	Consultants for environment, standardisation, management of human resources)	Mr Antoninho Chitseve

CLASS-A has agreed upon a Memorandum of Understanding (MoU) with the Provincial Government to establish a formal, working relationship and be free to interact with stakeholders in the Province including those at the district and community level. Mr Patricílio Mucavele from Biobox has been appointed as the Executive Director of Class-A and has the responsibility to sign on behalf of Class-A.

All relevant government agencies in terms of SRSSC (Environment; Public works & housing Health; Education; Industry & trade, Woman & social affairs; Agriculture Fisheries, Labour; Tourism; Science & technology; Youth & sports; Justice) are represented in the Provincial government and the MoU will clearly delegate responsibilities and duties to each of its composing bodies. CLASS-A is at an advanced stage in the process of establishing itself as an autonomous legal entity with a separate bank account. In addition, representatives from other institutions have expressed their interest to join CLASS-A. The most important being those from the Health and Education sectors.

#### **Overview of work packages in the project**

The project is divided into 6 interconnected work packages:

- Work Package 1: Project management and co-ordination of research activities
- Work Package 2: Sanitation services supply-demand balance and assessment of service chains
- Work Package 3: Improved governance of urban sanitation services
- Work Package 4: Community engagement and sanitation planning
- Work Package 5: Training and Capacity building
- Work Package 6: Outreach and dissemination

## **Work Package 1: Project management and co-ordination of research activities**

This work package is designed to ensure that the research achieves its aims in relation to the specific objectives and outputs presented in other work packages. The International Water Association (IWA) will be primarily responsible for project management and co-ordination of the research. IWA will manage work flow and inputs from other international organisations, provide financial management and oversight, research documentation and reporting. IWA will work in close partnership with Biobox, who will act as the local research coordinator and communication liaison within the CLASS-A group.

### **Task 1.1: Inception Phase**

During the preparation of this proposal, IWA entered into detailed discussions with CLASS-A about various technical and managerial aspects of the research. Assuming a successful outcome with the proposal submission, it is foreseen that another visit to Maputo at an early stage in the project will be required to discuss work plan implementation with local partners. Furthermore, the inception phase will undertake additional work to finalise specific agreements and contractual terms that define expectations from project partners. IWA will discuss details of the project with individual consultants and sign consultancy sub-contracts with those that have the technical expertise to provide specific inputs to the project at different stages during implementation.

During the inception phase, support will be provided by project partners to help CLASS-A define in greater detail arrangements for local coordination of the research and to develop consensus amongst local partners about individual and collective specific interests, roles and responsibilities throughout the life of the project. CLASS-A will develop a strategy for communication and interaction with key local stakeholders in Maputo.

An Inception report will be submitted to SPLASH at the end of Month 3.

### **Task 1.2: Development of monitoring and reporting framework**

Building on the indicators and means of verification specified in the logical framework, this task will focus on the development of a results and monitoring framework. The focus will be on improving the standard of service delivery through the adoption of indicators that improve the regulatory capacity of local government and the accountability to communities.

### **Task 1.4: Project communications**

IWA and Biobox (representing the interests of CLASS-A) will prepare guidelines for project documentation, communications and dissemination. IWA will be responsible for establishing a project website and communications platform. IWA and Biobox will prepare a quarterly external newsletter.

### **Task 1.4: Ongoing internal project reporting**

Biobox (on behalf of Class-A) will prepare internal progress reports relating to ongoing work under thematic areas reflecting the issues in this research proposal. These will be based on surveys, workshops, dialogues and meetings with local stakeholders. These reports will be the basis for internal project reviews for submission to SPLASH on a quarterly basis and an annual external evaluation against key performance indicators in the project logical framework analysis.

## **Work Package 2: Sanitation services supply-demand balance and risk assessment of service chains**

This work package focuses on the development of a risk assessment methodology to identify, strategize and plan for upgrades to vulnerable ‘hotspots’ in the sanitation service chain. The analysis will consider both those parts of the sanitation system that provide a direct connection to the household and those that are essential for these household services to operate. This will include, for example, downstream waste treatment facilities that are required to dispose of sludge collected from pits and septic tanks in the city. As part of extended systems analysis, it will also include tertiary service chains that are required to keep higher level systems and services functioning.

The research will evaluate the benefits and limitations of the methodology and the approach developed for the project. To achieve this outcome, CLASS-A will work with the Eduard Mondlane University and the CFPAS Technical School, with support from international expertise within the consortium, to understand and survey relevant issues and help support the development of appropriate solutions for local sanitation service users and potential suppliers.

### **Task 2.1: Literature review**

The first activity will be a literature review looking at systems analysis of urban sanitation and possible risk based methodologies.

### **Task 2.2: Identification of service delivery risk**

Sanitation service delivery risks will be identified and categorised in terms of those that affect communities and those that affect the environment. Risks will include both physically-based risk and those related to the regulatory environment which may result in institutional failures.

### **Task 2.3: Risk modelling**

This task involves development of methodology to assess impacts from gaps in sustainable, resilient sanitation service chains. Risks identified in Task 2.2 will be quantified in terms of their level of potential impact through a series of structured interviews and evidence-based assessments which will form the basis for risk modelling.

### **Task 2.4: Develop contingency plans**

Task 2.4 involves the development, for stakeholders involved in supporting service delivery, contingency plans to respond to service delivery ‘shocks’, or critical incidents, and to address risk ‘hotspots’. Recommendations will be made with regard to actions necessary to improve the identification and management of sanitation risks. Specific outputs will be technical guidelines for technologies that are considered to be resilient and contract documents between service providers and either local government and/or local community groups which can improve resilience of sanitation service chains by ensuring that the service provider needs to fulfil obligations of service delivery. Recommendations for scaling up will be incorporated in the City Wide Sanitation Plan developed by Class-A.

## Work Package 3: Improved governance of urban sanitation services

Work package 3 focuses on governance and institutional issues relevant for the research, covering the political, institutional and regulatory framework for delivery of sanitation services that impact on service providers in Mozambique. Work within this package is informed by preparatory stakeholder analysis within Maputo. To date, the key stakeholders for political buy-in to the research proposal include:

<i>Stakeholder</i>	<i>Rationale for involvement</i>
<ul style="list-style-type: none"> <li>Ministry of the Environmental Coordination (MICOA)</li> <li>Vice Minister for Environment, Mrs Ana Chichava;</li> <li>National Director of MICOA</li> </ul>	Mostly responsible for environmental monitoring and regulation / policy
<ul style="list-style-type: none"> <li>Provincial Director for MICOA in Maputo Province</li> </ul>	Activities of CLASS-A will be reported here
<ul style="list-style-type: none"> <li>8 Districts in the Province (including Sevcio e Planeamento Infraestrutura and representatives from MICOA and Public Works)</li> </ul>	Implementing activities
<ul style="list-style-type: none"> <li>Ministry of Public Works and Housing Minister Carvalho Muaria</li> <li>DNA, National Director of DNA, Mr J. Matsine</li> <li>CRA regulator</li> </ul>	Mostly responsible for sanitation and its infrastructure
<ul style="list-style-type: none"> <li>Ministry of Tourism</li> </ul>	Relevant for influencing sustainable sanitation practices for tourism lodges
<ul style="list-style-type: none"> <li>Provincial Government</li> </ul>	Overall responsibility for activities in the Province
<ul style="list-style-type: none"> <li>Minister of Health</li> <li>Ana Cardoso, National Director, Public Health, epidemiology</li> <li>National Directorate of Public Health</li> </ul>	Public health mandate. The ministry of health has a series of labs which are working very well.
<ul style="list-style-type: none"> <li>Municipality of Maputo</li> <li>Drainage Cabinet</li> </ul>	Responsible for drainage and sanitation in Maputo City Province (including approval of linking to reticulation system for new housing, stabilisation lagoons)

### Task 3.1: Institutional stakeholder analysis

Task 3.1 will include targeted meetings with key ministries, in particular MICOA, and Ministry of Public Works and Housing, and local authorities, including municipalities.

### Task 3.2: Strengths-Weaknesses-Opportunities-Threats (SWOT) analysis

The SWOT analysis will assist CLASS-A to identify key issues related to the theme of this work package and will be used as a reference point to inform relevant forward-looking implementation strategies. The outcome from this task will include priority issues identification and an understanding of key activities needed to address issues identified through the SWOT.

### Task 3.3: Detailed institutional and regulatory assessment

The purpose of this task will be to undertake an assessment that will review the relevance and impact of the political and regulatory environment, and to identify and evaluate the implications of amendments to policy instruments and regulations on service delivery. A further review of policies affecting establishment of small scale businesses will be conducted.

#### Task 3.4: Cross-sectoral interaction

Policy makers are frequently working towards similar goals and objectives, yet rarely consult on internal and external policy making processes. This activity will aim to review cross-sectoral goals related to public and environmental health issues, and seek participation through relevant government ministries. This task will involve consultation interviews, small focus group discussions and a province level forum attendance.

### Work Package 4: Community engagement and sanitation planning

The outputs from the other work package (particularly work packages 2 and 4) will be used as the basis for engaging with local stakeholders in the implementation of a pilot project. The primary focus of project activity for the pilot will be a Community Centre for Sanitation Improvement (CCSI) (based in an existing community centre), which will provide opportunities for stakeholders to discuss existing problems related to sanitation services and identify potential improvement options. The pilot will be closely linked with the other outputs and processes of associated work packages and will indirectly provide a means for engaging in capacity building and training to develop entrepreneurship in the sanitation sector.

#### Task 4.1: Select area for pilot

Identify possible areas suitable for piloting the CCSI based on a preliminary physical assessment and consultation with local stakeholders. The project pilot will target poor inhabitants in one of several peri-urban areas located in Maputo City (Maputo City Province) in one of the following low-income settlements (*bairras*): Chamanculo, Mafalala, Urbanicacao, Naaquene, Polana and Caneso. These areas are not planned, densely populated, and formally illegal settlements with no right to use the land. Final location for the CCSI will be selected through joint agreement between members of CLASS-A and IWA.

#### Task 4.2: Baseline study

Collection of relevant baseline data and preparation of a base map of the study area to identify the stress that service chains will be put under given anticipated future growth in demand for sanitation services. The study will include relevant stakeholder consultation and analysis to understand local concerns with sanitation service chains. The baseline study will also involve the application of an approach developed by IWA's 'Health-Related Water Microbiology Specialist Group' for microbial source tracking of faecal contamination to characterize and quantify human (faecal) pollution in water.

#### Task 4.3: Application of methodology for sanitation services supply-demand balance and risk assessment of service chains (Work Package 2)

This task will involve the practical application of the methodology for supply-demand balance of sanitation services and risk assessment of service chains developed in work package 2. This will also involve focus group discussions and participatory consultations with community stakeholder groups, so as to confirm of the nature of failures of sanitation service chains and assess their degree of impact as part of wider risk assessment approaches.

#### Task 4.4: Capacity building of local actors

This task will involve the capacity building of local actors with particular focus on the strengthening the ability of local government to work with community based groups, NGOS and regulate small-scale service providers.

#### Task 4.5: Assessment of impacts of pilot

Task 4.5 will document the factors that may influence the implementation of the pilot and will stimulate discussion in relation to municipal policy toward managing risks associated with service delivery and the impacts on communities.

#### Task 4.6: Development of City-wide sanitation plan

This will focus on scaling up of the findings from the pilot in the form of a city-wide sanitation plan. This will draw upon IWA's expertise in sanitation planning from the Sanitation21 Planning Approach.

### Work Package 5: Training and Capacity building

This work package is closely linked with work packages 3 and 4. Emerging from the results from stakeholder analysis conducted in work package 2, the CCSI will provide guidance based on lessons learned on risk assessment around sustainable sanitation service chains. Process documentation and learning support will be sourced from the specialised scientific community of practice partnering in the research consortium.

#### Task 5.1: Identification of capacity building needs and development of training tools

To discuss capacity building requirements, the project will stage technical forums involving private operators, consultants, universities, engineers, architects, designers of systems, ADASBU (Association for the Development of Water and Sanitation in Urbanização Quarter), operators, and the local Association of Civil Engineers. With international support, Class-A will engage with the Eduard Mondlane University and CFPAS Technical School and will be responsible for organising a range of awareness raising and capacity building activities for different stakeholders.

#### Task 5.2: Building capacity of training institutions

This task will provide an assessment and scoping of the capacity needs of technical staff at academic training institutes in Maputo. Selective training of trainers will be conducted to strengthen capacity in target areas, which will provide longer term capacity strengthening in Maputo and Mozambique. Through engagement with the CCSI, the University can also build its capacity on the more practical applications as well as the social components of sanitation service chains.

CLASS-A will identify relevant partners, such as the Ministry of Science and Technology, who have an interest in establishing a platform and knowledge hub for applied research. The most relevant organisations will be the Department of Civil Engineering at the Eduard Mondlane University (EMU), which has a four-year course for civil engineering on topics of water and sanitation and drainage, and the CFPAS Technical School. The project will engage in sanitation curricula development, also addressing teacher training, focusing on the wider issue of sanitation (including sustainable and resilient sanitation service chains) and its solutions. This will be completed with help of University College London and IWA's specialist group on environmental education (E3), in collaboration with local Ministry of Education in Maputo Province.

#### Task 5.3: Vocational training of technicians from private sector, utilities and service providers

To address capacity gaps identified amongst the private sector, utilities and other service providers, vocational training courses will be staged, focusing on best practices. Given the need to improve management and technical capabilities for operation and maintenance of sanitation infrastructure and facilities through better servicing, the consortium will utilise expertise from the *Operation and Maintenance Network* (OMN) which is a collaboration between the National Institute of Public Health in Japan, the World Health Organization and the International Water Association. The OMN supports water and sanitation system managers and operators in low and middle-income countries via provision of technical guidance material and assistance from experts on specific O&M issues.

#### Task 5.4: Building capacity of local government

Task 5.4 will complete an assessment and scoping of the capacity needs of government staff, and in turn raise awareness on sanitation service chains through a provincial forum.

Interaction with the international technical community will help inform topics relevant for applied research within this project, and ensure that the link to governmental activities and policy making is based on a sound evidence base. There will be an ongoing dialogue between CLASS-A, IWA and WSMART around whether capacity building needs will require sourcing of experts from within international networks or sourcing local expertise in Mozambique and in the region (especially South Africa).

## **Work Package 6: Outreach and dissemination**

Results emerging from the research are anticipated to have direct and significant relevance to both policy and practice decision making processes. The practical guidance and recommendations arising from the consultations and pilot will be of interest to stakeholders in Mozambique, elsewhere in Africa and internationally.

Work package 6 therefore governs the approach to be taken towards effective communication, dissemination and uptake of research findings.

### **Task 6.1: Preparation of project communication and dissemination strategy**

The first activity will be to draft (and translate) the project communication and dissemination strategy. This will guide the portfolio of interventions to be made, and determine the anticipated outcomes to be expected from such strategies.

### **Task 6.2: Internet based dissemination**

A project based website for the research will be developed where all details relating to work packages and outputs will be uploaded for widespread dissemination. Here, working papers will be published providing current progress reports and updates on methodological developments. Additional virtual tools to aid dissemination will include: IWA Water Wiki (<http://iwawaterwiki.org/xwiki/bin/view/Main/WebHome>).

### **Task 6.3: Traditional research dissemination**

With support from IWA, the project will engage conventional publication strategies at relevant IWA conferences, through journals and in relevant sector based magazines.

### **Task 6.4: Engagement with media**

Task 6.4 will initially involve preparation of an inventory of local media (including newspapers, magazine and other local television stations) followed by a series of interviews and discussions with those who express the most interest in sanitation related issues.

Interested members of local media agencies will be invited to participate in project workshops/stakeholder consultation activities. The task will aim to assess how the media can be involved in promoting improved sanitation service delivery chains particularly by informing and raising awareness of local communities..

### **Task 6.5: National and regional dissemination (guidelines, workshops, exchange visits).**

The project aims to communicate its findings to decision makers, especially at Provincial and central levels, and to the wide international community primarily through events which will be held annually and will coincide with capacity building at the international level and coordinated with water and sanitation forum on the provincial level.

In Mozambique, as well as information sharing at sector events such as Grupo de Agua e Saneamento (GAS), dissemination will include presentations at provincial fora such as CONDES *Conselho Desenvolvimento Sustentavel* (an existing Water and Sanitation Provincial Forum which occurs twice yearly) and the *Forum Provincial de Saneamento* (the Provincial Sustainable Development Forum).

## B.5. Work Schedule

### Work Package

#### 1 Project management and co-ordination of research activities

Task 1.1: Inception Phase

Task 1.2: Development of monitoring and reporting framework

Task 1.3: Project communications

Task 1.4: Ongoing internal project reporting

#### 2 Sanitation services supply-demand balance and assessment of service chains

Task 2.1: Literature review

Task 2.2: Identification of service delivery risk

Task 2.3: Risk modelling

Task 2.4: Develop contingency plans

#### 3 Improved governance of urban sanitation services

Task 3.1: Institutional stakeholder analysis

Task 3.2: Strengths-Weaknesses-Opportunities-Threats (SWOT) analysis

Task 3.3: Detailed institutional and regulatory assessment

Task 3.4: Cross-sectoral interaction

#### 4 Community engagement and sanitation planning

Task 4.1: Select area for pilot

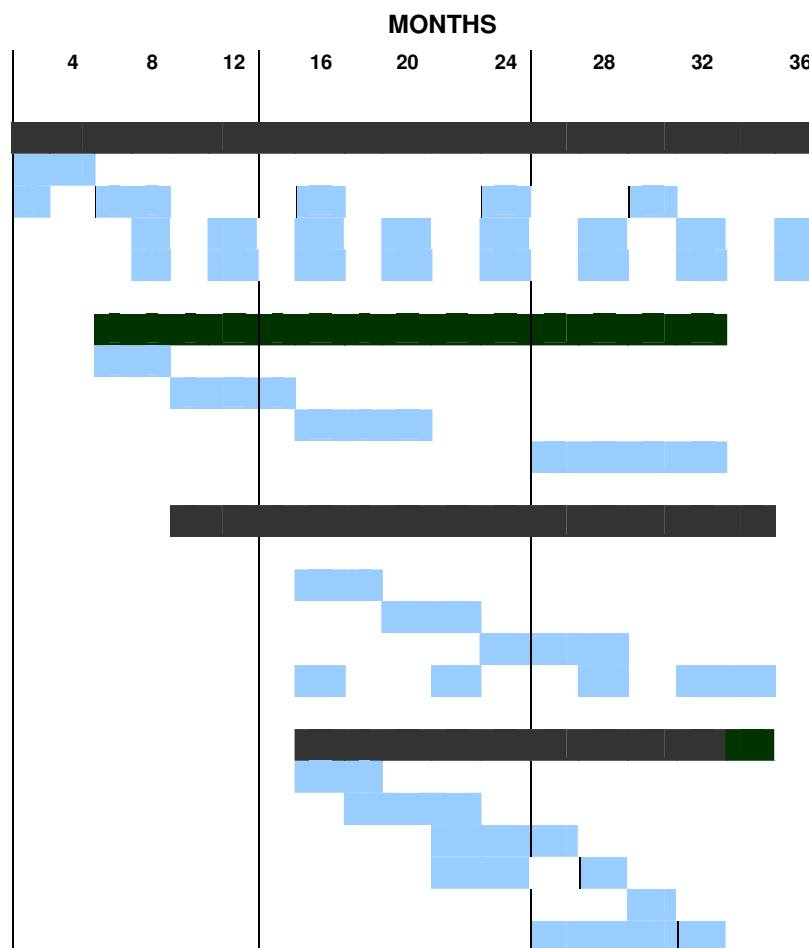
Task 4.2: Baseline study

Task 4.3: Application of work package 2

Task 4.4: Capacity building of local actors

Task 4.5: Assessment of impacts of pilot

Task 4.6: Development of City-wide sanitation plan



## Work Package

### 5 Capacity building

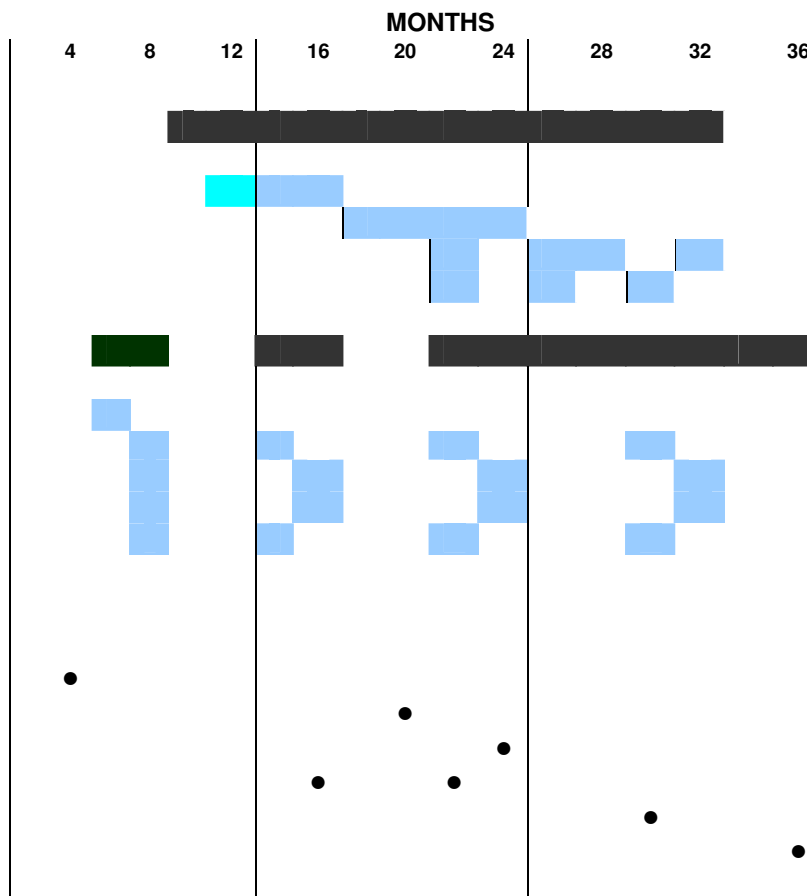
- Task 5.1: Identification of capacity building needs and development of training tools
- Task 5.2: Building capacity of academic training institutes
- Task 5.3: Vocational training of technicians from private sector, utilities and service providers
- Task 5.4: Building capacity of local government

### 6 Outreach and dissemination

- Task 6.1: Preparation of project communication and dissemination strategy
- Task 6.2: Internet based dissemination
- Task 6.3: Traditional research dissemination
- Task 6.4: Engagement with media
- Task 6.5: National, regional dissemination (guidelines, workshops, exchange visits).

## Outputs

1. Sanitation 'Charter'
2. Risk-based sanitation planning tool
3. Establishment of Community Centre for Sanitation Improvement
4. Training tools and Capacity building events
5. City Sanitation Improvement Action Plan
6. Policy recommendations for investment strategies for sanitation improvements in Maputo



## B.6. Monitoring Plan

### Management activities (work package 1):

A logical framework – see B13 - will govern the project, monitoring identified performance measures (and indicators) of activities described in B4. Additionally, a monitoring protocol for the project (adapted from a mix of methodologies such as the logical framework, balanced scorecard) will be used to enable internal learning throughout the life of the research.

### Research activities (work packages 2-6):

Wherever appropriate and possible, key indicators of progress will be defined with the participation of the main stakeholders in the project, detailing progress against both the quantity and quality of the action.

Work packages and tasks within the project will require different monitoring approaches:

- For work package 2 (sanitation services supply-demand balance and assessment of service chains), monitoring of activities will be standardised around completion dates of milestones, printing of deliverables such as literature review and methodology, and analysis of engagement of stakeholders in seminar, workshops and fora.
- For work package 3 (governance – policy, institutional frameworks, regulation and financing) a situation analysis to describe the institutional and policy landscape at the baseline (with the help of SWOT, surveys and/or semi-structured interviews, causal loop analysis) will be used. Minutes of meetings from task 3.4 will be important for monitoring relevant tasks within this work package;
- For work package 4 (pilot and community engagement), monitoring will be achieved through an evaluation of participants in CCSI, engagement of local stakeholders, adoption rates of the methodology to assess risk amongst key Ministries and municipalities and an assessment report of the impact of the pilots published and distributed locally.
- For work packages 5 (capacity building) and 6 (outreach and dissemination), monitoring measurements will include participant evaluation surveys, focus groups discussions, semi structured interviews, labour market analysis, in addition to more standardised records and logs of dissemination activities (number of publications printed, distributed, feedback forms, journal citations, workshop participants).

## B.7. Management of Risks and Assumptions

The project recognizes that the design, plan and implementation of the research is not devoid from risk; the following section attempt to identify, categorize and explain how these risks will be mitigated.

### Institutional risk/assumptions

- No legal autonomy granted to CLASS-A. (addressed by close monitoring of the application procedure timeline for legal registration).
- National government fails to provide an enabling environment (addressed by: consortium following closely national and city strategies and policies to ensure alignment with CLASS-A objectives)
- Participation of partners and cooperation requires more time and available financial resources than initially anticipated (addressed by: clear and strong project coordination; early planning and orientation visits to Mozambique; periodic consortium planning meetings).
- International actors dominate research priorities and activities without adequate consultation (addressed by: effective local coordination and management ensuring ownership)
- Language and cultural barriers reduce efficiency of project coordination (addressed by: local coordination, training of trainers, twinning with Lisbon, and Brazilian expertise in IWA/SMART network.
- Inadequate involvement and participation in the project by relevant stakeholders (addressed by: adequate stakeholder analysis, communication strategy and communication mechanisms).

### Societal risk/assumptions:

- Inadequate focus on the poor, women and vulnerable groups (addressed by: incorporate group representatives in the project design, adequate outreach during field visits and pilot activity)

### Operational risk/assumptions:

- Partners will reach agreement on key decisions and manage the project in a collective spirit (addressed by: ensuring coordination and facilitation of the action and learning alliance group)

### Financial risks/assumptions:

- No unforeseen financial expenditure, and planned activities will stay within budget (addressed by: effective project management, including timely auditing and monitoring of project expenditures)

## B.8. Project Coordination and Management

This team will meet once every 6 months (either at a workshop or using virtual communication means). Collectively, the team steers the project and advises the coordinator.

### International Water Association (IWA)

Overall project coordination and management of the consortium will be the responsibility of the International Water Association (IWA). The Project Management Team involves:

*Dr. Jonathan Parkinson* who will maintain overall responsibility for the project, *Frances Lucraft*, who will be the Assistant Project Manager and Communications Officer, and *Dr. Darren Saywell* (Development Director) who will act as Senior Sanitation Specialist with additional responsibility for quality assurance procedures.

IWA will take the lead in maintaining the focus on project deliverables, deadlines and reports to SPLASH.

### CLASS-A

In Mozambique, local level coordination will be taken forward by CLASS-A members as representatives of DPOH, DPCAM and Biobox.

## B.9. Description of the Consortium

### **Project Partner 1: International Water Association (IWA)**

#### Role/s:

- Research and project coordinator; expert partner (through core staff and global membership).

#### Key experts:

- Jonathan Parkinson, Darren Saywell and Frances Lucraft

#### Responsibilities:

- IWA is the lead organisation responsible for overall project oversight and control, including work flow, financial management and monitoring reports to SPLASH.
- Providing technical and other support to Class-A / local government / project partners where necessary
- Responsibility for international communications and dissemination of results and outputs from the project

### **Project Partner 2: Class-A**

#### **Biobox Moçambique**

#### Role/s:

- Executive Director of Class-A responsible for co-ordination and management of research activities in Maputo

#### Key expert:

- Patricilio Mucavele

#### Responsibilities:

- Portuguese-English link, local coordinator, supporting the Research Director and CLASS-A activities.

### **Provincial Directorate of Public Works and Housing, Maputo (DPOPH)**

#### Role/s:

- Research Director for Maputo based research activities

Key expert: Joaquim Jorge

#### Responsibilities:

- Responsible for sanitation related issues in Maputo.

### **Provincial Directorate for Environmental Action Coordination, Maputo (DPCAM)**

#### Role/s:

- co-Research Director for Maputo based research activities

#### Key expert:

- Lote Maueia

#### Responsibilities:

- Responsible for environmental monitoring

### **Project Partner 3: WSMART**

#### Role/s:

- Scientific Director and expert partner

#### Key experts:

- Ilan Juran, Executive Director of W-SMART
- Ase Johannessen, Technical Adviser
- Joao Fidalgo, President of EPAL, (Empresa Portuguesa das Águas Livres, SA, Portugal)

#### Responsibilities:

- Oversight and quality assurance relating to scientific approach, methodology and reporting from the project

### **Project Partner 4: UCL**

#### Role:

- International partner capacity building with focus on training and academic institutions

#### Key expert:

- Dr Luiza Cintra Campos

#### Responsibilities:

- Assistance with Workpackage 2

## **B.10. Interdisciplinarity and transdisciplinarity**

The proposed research will integrate disciplines of sanitation, health and risk management. The project addresses both inter-disciplinary and trans-disciplinary aspects by:

- Involving a broad cross-section of stakeholders working on sanitation (e.g. municipality, local government, operators, service providers, civil society, etc); creating opportunities for civil society influence, transparency, integration, social learning and emergent policy making;
- Including a diverse set of practitioners and experts in conducting the research, e.g. policy makers, regulators, water and sanitation researchers, practitioners, service providers (including community associations), environmental managers, health researchers & practitioners, educators and the media;
- The outcomes emerging from the research will be policy and practice relevant to multiple disciplines and/or sectors;

Involving a range of international community partners, providing extended opportunities to broker different disciplines together through working groups, multi-stakeholder platforms and innovation

## **B.11. Potential Impact, Potential for Large-Scale Application of the Results**

The potential impact and opportunities for large scale application of the research results can be characterized through the following points:

- The strengthening of the resilience of service chains/delivery mechanisms to man-made and natural disasters.
- Experience in the adoption of sustainable and resilient sanitation systems in the province of Maputo, thereby ensuring strong local capacity development.
- Potential for income generation for community based and private service providers through effective operation of sanitation service chains and an enabling environment for them to operate within.
- The involvement of media and schools will ensure long-term knowledge base and a positive spiral of awareness raising.
- Opportunity to adopt and adapt the social learning process and its facilitation mechanisms. This could be targeted to other cities in and around Mozambique, or in tourism areas (coastal ecosystems).
- Lessons learned from the research will further contribute to the development of a global model of how to respond to disaster risk in low and middle income country cities, how local government systems can adapt to these challenges, and how the international community can best support these processes.

## **B.12. Dissemination strategy and exploitation of project outputs**

Outputs from the research project will be guided by a dissemination and communication strategy that will define target audiences, information needs, mechanisms and outputs. This strategy will seek to respond to several guiding principles governing the strategy, including:

- Outputs are tailored to the information needs of their target audiences;
- A portfolio of outputs are essential for effective outreach to the range of target audiences anticipated in the project;
- Similarly, a range of communication methods will be adopted in order to ensure up-take of the recommendations from the research
- Where relevant, different partners in the consortium will take the lead in dissemination at different levels (i.e., local-international). For example, CLASS-A will disseminate within the local government and municipalities and relevant authorities mostly through their day to day meetings.

All projects outputs will be made available on the project website, the WASH disaster risk management toolbox and IWA Water WIKI. In addition, active dissemination is foreseen to operate on three primary levels:

#### Local dissemination

- The CCSI will facilitate city wide dissemination to urban communities, especially targeting women and vulnerable groups, media, civil society, schools and health care facilities.

#### National dissemination

- Class-A will take the lead role in informing other stakeholder groups and presenting information about the project at events nationally such as the Provincial Fora.
- CONDES *Conselho Desenvolvimento Sustentavel*, (Sustainable Development Forum), is held in every Province twice a year and the outcomes are fed back to the Prime Minister. CLASS-A will ensure that sanitation is on the agenda and will aim to lobby for adoption of recommendations from the research project.
- *Forum Provincial de Saneamento*, Province of Maputo is a forum mainly for the Ministry of Public Works, Department of Environment, Department of Health, and Department of Education. Similarly, the newly established bi-annual Forum for Water and Sanitation at provincial level (a government initiative) – which aims to coordinate actions in the area of water and sanitation – will be used to disseminate further the experiences with CLASS-A and the findings from the research.

#### International dissemination

- The main research findings and policy recommendations will be presented at various international conferences such as IWA's Development Congress in Kuala Lumpur, Malaysia in September 2011 and the Stockholm Water Symposium. IWA will also organise seminars at these events focussing on different aspects of the research for more detailed discussion and promotion of findings.
- The consortia will publish 2 papers published in international journal (1 in Journal of Water, Sanitation and Hygiene for Development) and 2 journal articles
- Findings shared with a global audience at the *Forum for Urban Disaster Resiliency* ([www.iwahq.org/Home/Development/Disaster\\_Risk\\_Management/Forum\\_for\\_Urban\\_Disaster\\_Resiliency](http://www.iwahq.org/Home/Development/Disaster_Risk_Management/Forum_for_Urban_Disaster_Resiliency)) which *aims to* promote disaster resilient societies through sustainable water supply and sanitation systems and promotes awareness of the challenges posed to local urban governments, municipalities, utilities and hospitals by the growing frequency of extreme natural disasters in vulnerable regions. The research is in line with the forum's objectives to support capacity building through decentralised cooperation, develop tools for risk and vulnerability assessments, and publish case studies from low and middle income countries of how to build disaster resiliency.

Other avenues for dissemination will include :

- SUSANA – the Sustainable Sanitation Alliance ([www.susana.org](http://www.susana.org)) of which IWA is an active member.

## B.13. Logical framework

Objective hierarchy	Performance indicators	Monitoring mechanisms / Means of verification	Assumptions and risks
<b>Goal (overall objective, development objective)</b>			
<ul style="list-style-type: none"> <li>Reduced vulnerability of urban populations in Maputo from sanitation related hazards</li> </ul>	<ul style="list-style-type: none"> <li>Reduced incidence of diarrhoea and excreta related diseases</li> </ul>	<ul style="list-style-type: none"> <li>Data from local health clinics</li> <li>Participatory community monitoring</li> <li>Reporting in the media</li> </ul>	<ul style="list-style-type: none"> <li>Risks can be mitigated effectively and measurably as a result of investments related to sanitation service chains</li> </ul>
<b>Purpose (project development objective)</b>			
<ul style="list-style-type: none"> <li>Develop and promote appropriate intervention strategies to enhance the resilience of urban sanitation services and their supply chains through the adoption of risk-based management strategies.</li> </ul>	<ul style="list-style-type: none"> <li>Services are provided for all socio-economic groups</li> <li>Services are resilient to shocks caused by external hazards</li> </ul>	<ul style="list-style-type: none"> <li>Local constituents (particularly those in poor communities) report improvements in sanitation services</li> </ul>	<ul style="list-style-type: none"> <li>Sanitation services are affordable to the urban poor</li> </ul>
<b>Outputs (results)</b>			
1. Sanitation 'Charter'	<ul style="list-style-type: none"> <li>Sanitation 'Charter' prepared by Month 4</li> </ul>	<ul style="list-style-type: none"> <li>'Charter' signed by all main stakeholders.</li> </ul>	<ul style="list-style-type: none"> <li>Principles of the Charter are understood and complied with by local stakeholders</li> </ul>
2. Risk-based sanitation planning tool	<ul style="list-style-type: none"> <li>Planning tool prepared by Month 20</li> </ul>	<ul style="list-style-type: none"> <li>Planning tool is adopted by local stakeholders in work plans; workshops and documents</li> </ul>	<ul style="list-style-type: none"> <li>Sufficient capacity available to facilitate implementation of planning tool</li> </ul>
3. Establishment of Community Centre for Sanitation Improvement	<ul style="list-style-type: none"> <li>Progress reports</li> <li>Presentations at conferences and international publications</li> </ul>	<ul style="list-style-type: none"> <li>Workshops reports document involvement from local stakeholders.</li> </ul>	<ul style="list-style-type: none"> <li>Local stakeholders are interested and willing to co-operate with researchers and participate in workshops</li> <li>Location for Community Centre is identified</li> </ul>
4. Training tools and Capacity building events	<ul style="list-style-type: none"> <li>Training tools prepared by Month 16</li> <li>Training events staged by Month 22</li> </ul>	<ul style="list-style-type: none"> <li>Training tools formally accepted by academic and training institutions</li> <li>Number of professionals completing training through the research</li> </ul>	<ul style="list-style-type: none"> <li>Target audience for training perceive courses to be practical and relevant</li> </ul>
5. City Sanitation Action Plan	<ul style="list-style-type: none"> <li>City Sanitation Action Plan prepared by Month 30</li> </ul>	<ul style="list-style-type: none"> <li>Action plan adopted by key stakeholders as basis for future developments of sanitation services in Maputo</li> </ul>	<ul style="list-style-type: none"> <li>Plan is actionable and resources available and committed to implement plan</li> </ul>

<p>6. Policy recommendations for investment strategies for sanitation improvements in Maputo.</p>	<ul style="list-style-type: none"> <li>• Investment plans and donor agreements prepared based on findings and advocacy from the research</li> </ul>	<ul style="list-style-type: none"> <li>• Governmental policies and strategies for urban sanitation refer to the Class-A policy recommendations</li> <li>• International Financing Agencies, bi-lateral and multi-lateral donor agencies, and International NGOs subscribe to policy recommendations.</li> </ul>	<ul style="list-style-type: none"> <li>• Suitable political support for donor investments</li> </ul>
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## E. CURRICULUM VITAE OF KEY MEMBERS OF THE CONSORTIA

### List of staff

#### Project Partner 1 :

#### International Water Association

- |                       |                                                      |
|-----------------------|------------------------------------------------------|
| 1. Jonathan Parkinson | Project Director                                     |
| 2. Frances Lucraft    | Assistant Project Manager and Communications Officer |
| 3. Darren Saywell     | Senior Sanitation Specialist and Quality Assurance   |

#### Project Partner 2:

#### Class-A

- |                           |                                                              |
|---------------------------|--------------------------------------------------------------|
| 4. Patricilio Mucavele    | Executive Director (CLASS A), Biobox Mocambique Lda          |
| 5. Moises Mabote          | Provincial Directorate of Public Works and Housing – Maputo  |
| 6 . Alcina Olivia Manhica | Provincial Directorate for Environmental Action Coordination |

#### Project Partner 3:

#### WSMART

- |                    |                     |
|--------------------|---------------------|
| 7. Ilan Juran      | Scientific Director |
| 8. Ase Johannessen | Technical Adviser   |

#### Project Partner 4:

#### University College London

- |                            |                                             |
|----------------------------|---------------------------------------------|
| 9. Dr. Luiza Cintra Campos | University Lecturer and academic researcher |
| 10. Philippa Ross          | EngD student at UCL                         |