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VicInAqua

Integrated aquaculture based on sustainable water recirculating system for the Victoria Lake Basin

Deliverable 7.4
Report on the joint agenda on sustainable water management

Revision: **1**
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Dissemination level		*VicInAqua*
PU	Public	X
PP	Restricted to other program 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)	

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Deliverable Administration & Summary					*VicInAqua*
Status	Final	**Due**	M 34	**Date**	31/03/2019
Author(s)	Lanta Daniel (STIPRO) and Innocent Wawa (STIPRO)				
Editor	Musambya Mutambala (STIPRO)				
DoA	A series of three round tables reaching 20 participants each – one to be held in Tanzania, Uganda and Kenya each –will bring together local policy stakeholders, scientists and representatives of the fisheries & water treatment sector and possibly international organisation (EAC, EU, UNO bodies or GIZ) representatives to boost local knowledge and to discuss how water supply and effective water management can be facilitated through VicInAqua and similar solutions. Every round table will focus on the local conditions of each country. This includes Identification of cross-boundary (Kenya, Uganda, Tanzania) and international (e.g. EU, intl. organisations) collaboration opportunities Pathways towards an improved regulatory framework and economic instruments (including financing instruments such as mixed-financing) in water supply and management Summarising the outcomes of the local round tables, a skype meeting by the three partners will be held to consolidate and work towards a potential joint agenda of the three countries for sustainable waste water management. STIPRO with the support of JKUAT, NARO and DALF will be responsible for the delivery of D7.4, which includes a report on the round tables as well as the latest version of the joint agenda on sustainable water management.				
Comments					

Document change history			*VicInAqua*
V	**Date**	**Author**	**Description**
1.	20/12/2018	Lanta Daniel (STIPRO)	First version.
2.	08/03/2019	Lanta Daniel (STIPRO)	Second version
3.	14/05/2019	Innocent Wawa (STIPRO)	Final version.

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Contents

This project has received funding from the *European Union's Horizon 2020 research and innovation programme* under grant agreement No **689427**".

1. Abstract

VicInAqua is a medium-scale focused research project on Integrated aquaculture based on sustainable water recirculating system for the Victoria Lake Basin. The project aimed at developing an innovative multipurpose self-cleaning water filtration solution, adapted for sanitation of different wastewater streams. The clean water can then be reused in Recirculation Aquaculture Systems (RAS) and Agriculture Irrigation.

As part of the project outreach activities, VicInAqua held three round tables in Kenya, Tanzania and Uganda. The round tables were meant to to boost local knowledge and to discuss how water supply and effective water management can be facilitated through VicInAqua and similar solutions.

This report has a summary of the key issues that prevailed during the discussions; issues on policies, collaborations, the financing of water management activities and people's perceptions on VicInAqua solutions. Towards the end, a joint agenda to contribute to water management in the Lake Victoria basin was put forward. The report ended by concluding remarks as per major issues that came out during the round table discussions.

2. Deviations from workplan

No deviation from workplan

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3. Results

Lake Victoria is the second largest fresh water lake in the world bordering the three East African countries; Kenya, Tanzania and Uganda. The lake serves a population of around 30million people through different social and economic activities. Due to this, the lake is facing a number of problems, pollution and over exploitations of fish stock being top on the list. Contributing to solutions to these problems is where the VicInAqua project comes up. This Integrated aquaculture based on sustainable water recirculating system for the Victoria Lake Basin project aims at developing innovative multipurpose self-cleaning water filtration solutions adapted for sanitation of different waste water streams, which will be reused in Recirculation Aquaculture Systems (RAS) and Agriculture Irrigation. As part of the project, three roundtables discussions on Integrated solutions in water supply and management were conducted. The round tables had the aim to facilitate the introduction of improved regulatory and economic instruments, international collaboration & best practice exchange. The discussion was also meant for Boosting local knowledge on issues surrounding waste water management. These discussions brought together local policy stakeholders, scientists, private sectors, representatives from the fisheries and water treatment sector to boost local knowledge and to discuss how water supply and effective water management can be facilitated through VicInAqua and similar solutions. In terms of gender composition, the round tables comprised of 2, 6 and 5 females and 22,14 and 16 males from Tanzania, Kenya and Uganda respectively.
The roundtables took place between the month of September to December 2018. Kenyan discussions were held on the 21st September at the DALF office premises, the Ugandan one took place on 20th November at LAICO hotel in Entebbe Uganda, while the Tanzanian roundtable took place on the 7th of December at Afrilux Hotel in Musoma.

The discussions topics during the roundtables included the existing policies in on wastewater re-use and management, collaborators in the area of wastewater management, financing activities related to wastewater, existence of agendas on wastewater management within the organizations and lastly the perception of the VicInAqua project concept in water supply and effective water management.

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3.1. Existing policies on water and wastewater re-use and management

On country level, there exist a number of policies and Acts by the governments. It is normal for a single country to have more than one policy or Acts that guide issues of water and waste water management. For example, in Kenya there is the Water Act of 2016, Water Industry Act of 1994 and the State Environment Protection Policies of June 2003 which talks of waters of Lake Victoria. Others are the Tanzanian National Water policy of 2002, the Ugandan National Water Policy of 1999, and The Tanzanian national Irrigation Policy of 2010. Common issues that are found from these different documents include guidance on water distribution, water use and re use, waste water management, guides on technology, public private partnership issues in water management, integrated Water Resources Management and issues on Monitoring, collective responsibility, data collection and research.

On unit level, it was revealed that few institutions and organizations have policies and programmes in place for wastewater management. Most of the institutions rely on the government policies and arrangements on waste water management.

3.2. Actors in the area of wastewater management

Water management issues cut across different sectors such as health, environment management and community welfare. They thus involve different actors from a wide range; that include ministries and their related national Agencies, authorities and institutions. Generally, they have core roles of regulation, coordination, supervision and monitoring, as well as management of standards. Other actors are such as universities and research institutions in the area of research and capacity building and also the water and sewerage companies.

Each region has water and wastewater companies with a mandate to distribute and provide water for consumptions to the public; they also collect waste water from the households through sewage infrastructure to the waste water treatment plants. However, it is worth mentioning here that only big city centres have the sewerage system in place and the rest of the peripheral households use privately owned vacuum tracks that take waste water from the households to the sewerage treatment plants owned by the sewerage companies.

Furthermore, in enhancing collaboration, it was agreed that it is essential to inform stakeholders of sectors problems, successes and needs by encouraging exchange of solutions and experiences and to provide mechanisms for joint actions. Moreover, the lack of co-ordination and collaboration most of the time results in duplication of efforts while leaving other angles un attended and misallocation of little resources available.

3.3. Financing activities related to wastewater

Financing of waste water activities and management is partly run as a form of governments business and at the same time as a social service. Based on that, generally the public institutions, such as ministries have budget for wastewater management. Consequently, most of the private sector do not have special budget for wastewater management and therefore depend on the government facilities where they pay for sewage services. The cost for waste

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water management is shared since sewerage services are charged for by the government for those areas that have sewerage system. And for those who are not connected to the sewerage system, the cost of collection of waste water from their premises to the sewerage companies by the vacuum trucks, are solely upon them (the households). Other areas on which financing for waste water management comes include revenues from fine and penalties and donner funding. However, generally resources allocated to water supply and sewage services delivery have been in adequate to meet investment requirements. Therefore, conducive environment for investors need to be provided, as well as necessary efforts to be taken to mobilize internal and external resources to be deployed in the sector

3.4. Local Perception on VicInAqua concept in water supply and effective water management for the Lake Victoria Basin.

With the population growth, civilization and rural urban migration increasing water use especially in the urban centres, there is a tremendous increasing of pollution in the lake and increase in sanitation cases. The VicInAqua concept provides a sustainable aquaculture-based initiative which reduces fish resources depletion and at the same time reducing strain of waste water pollution in the lake. The general perceptions of the stakeholders during the roundtables were;

- The technology looks sophisticated hence the capital investment on the technology is perceived high. Based on that perception, therefore, a scaled down version was proposed so that it could fit to what the locals can afford. However, the technology presents a number of opportunities in terms of investment areas, employment creation and environmental gains.
- The technologies (MBR, RAS, Biogas system and The remote sensor) in this project are rather new and therefore further capacity building is needed .Once it is proven that the technology is effective, it can be adapted and the VicInAqua pilot site can be used as a centre for research, training and promotion of different project concepts from the project
- It was observed that the MBR system mainly removes biological agents, but concerns were also on the dissolved heavy metals like Lead, Mercury, and Zinc since the lake zone area is an area that is surrounded by several mining companies
- The project pilot showed a limited capacity to handle huge volumes of waste water thus it can be utilized in small facilities as opposed to discharges from big factories such as fish factories.

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- The project needs to have another accessible pilot sites other than Kisumu, and also in different settings i.e. both Urban and Rural

4. Joint agenda on sustainable water management

As it is an agreed that water is a finite resource with growing demands and competing uses, it is important to have workable agendas that foster water and waste water management. Studies shows that up to two thirds of the World's population are projected to live under water stress by 2025 and therefore important for every stakeholder to contribute efforts towards water management. The SDGs in goal number 6 has been able to identify diverse issues concerning the water sector. But again, water nature and the stakeholders that are involved makes it a complex goal and therefore the need of as many mini agendas as needed to be able to contribute towards the main agenda in goal 6 on the Sustainable development goals 2030. As a result of these roundtable discussions, an agenda on sustainable water management was highlighted. The agenda will contribute to SDG goal number 6 into 3 different areas; collaborations, technology and innovation and advocacy and outreach.

1. **Enhancing Collaborations and integrated approaches for sustainable water solutions**

Almost 90 percent of the world population lives in countries sharing transboundary waters[i], and like many water bodies, Victoria's basin Water run across political boundaries, covering the three countries; Kenya, Tanzania and Uganda. It also cut across a lot of sectoral boundaries – from health to environment to agriculture to finance and a lot more others - and therefore calls for collaborations from different stakeholders across the three countries. There is a need to building partnerships and cooperation among international partners, private sector, water governing bodies and authorities, environmental institution and the Non-Government Organisations.

2. **Technology and innovation**

Work in the areas of water and waste water managment involves the application of tools and technologies that might be new to the region. Therefore it is important to

- Increase in working with technical stakeholder in the area of water solutions in order to build capacity
- Encouraging innovation and transfer of innovative technologies.
- Invest in data and do more studies around water to generate data that are context specific in order to inform policies. This can be achieved by employing global modern water management tools for current and prompt data capture and processing

3. **Advocacy and outreach**

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Since water and waste water management biggest stake holder is the public, it is important that the public is aware of the precious resource water is. To achieve, this advocacy and outreach programmes are of the great necessity. This will be attained by

- Doing more awareness activities to inform the public on the value of water and the importance of managing the resources that we have
- Reduce strain in water bodies by advocating alternative methods and technologies that reduce strain on water bodies (i.e. water re use technologies, aquaculture which will reduce the over fishing that deplete the flora and fauna
- Increase promotion and support to various local programs that strives for sustainable water management

5. Concluding remarks

- The biggest part of the lake Victoria regions have no any sewarage network. They have waste water ponds and sludge digesters that treats wastewater by means of anaerobic processes. The processes mainly involve collection of wastewater using emptier vacuum trucks owned by Private vendors

- There is a presentence of different organs and institutions that have various roles in water management; example the environmental institutions manage the quality of waste water while the service providers like the water and sewerage companies manage the water quality once it gets into the sewer line. On the other hand, bodies dealing with fisheries manages water quality in the pond, tanks, dams and in the lake where there is presence of fish. Therefore, it was agreed that waste water management was an issue that cuts across many departments and there was a need to coordinate all the regulatory bodies for effective law enforcement and management.

- Public participation was identified as very important to the project. This will help the local community to understand and to reduce most of the stereo types which might be associated with the project output.

- The project was well understood and acknowledged as a great source of food for the communities as well as for sanitation .

- With this technologies being efficient, plans are underway to work with informal sector for fabrication of the same for widespread use of the technologies.

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- The discussions highlighted the importance of a policy on wastewater reuse to be put in place as a means of reducing water pollution and depletion of water sources.

[i] UNEP 2016 Transboundary River Basins: Status and Trends; The Transboundary Water Assessment Program http://www.geftwap.org/publications/river-basins-spm

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